

APPENDIX C
Historical
Topographic Maps & Aerial
Photographs



Proposed Kroger N-549

SR 33 At W. 5th Street
Marysville, OH 43040

Inquiry Number: 3448336.4

November 06, 2012

EDR Historical Topographic Map Report

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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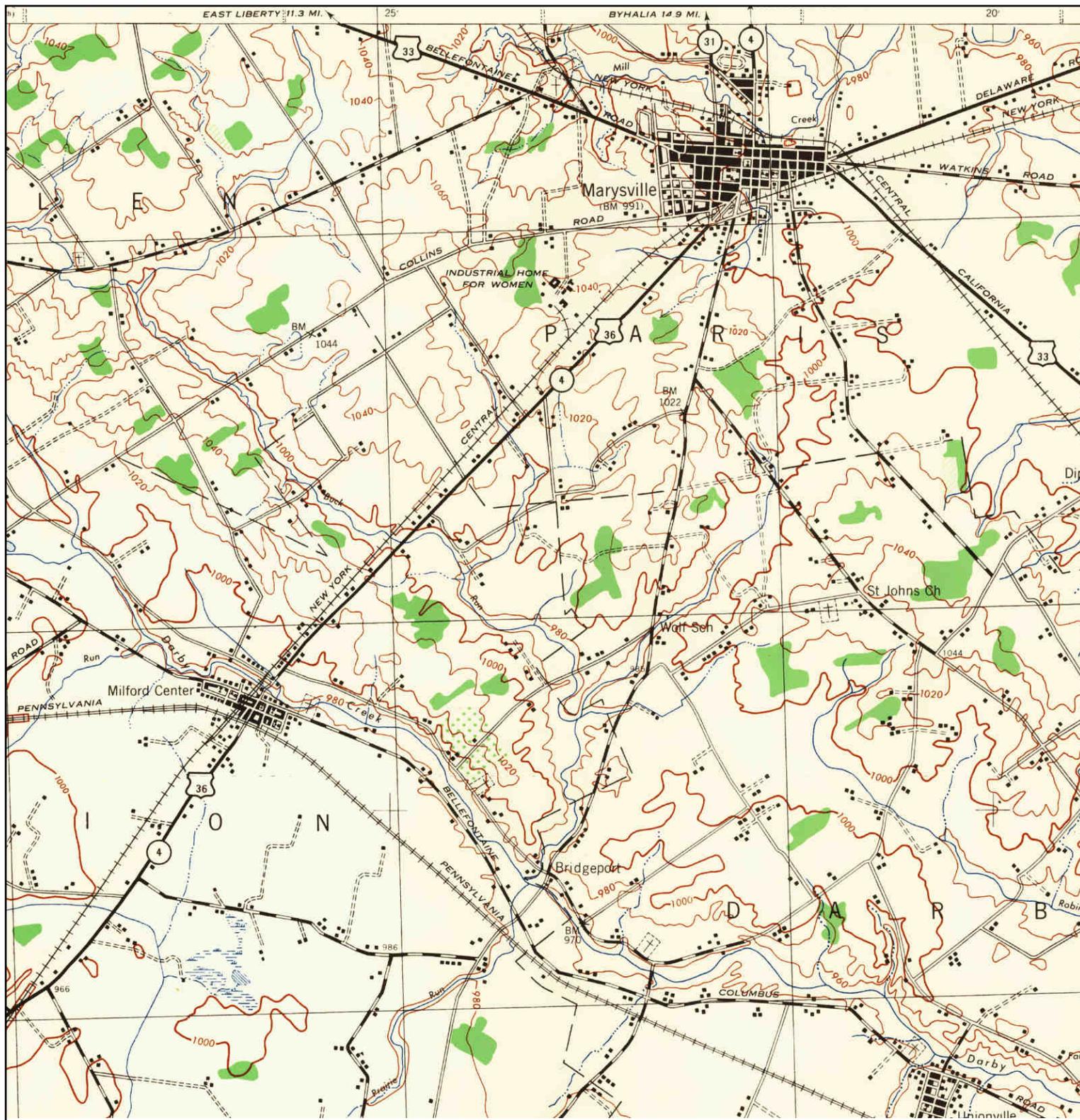
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Historical Topographic Map



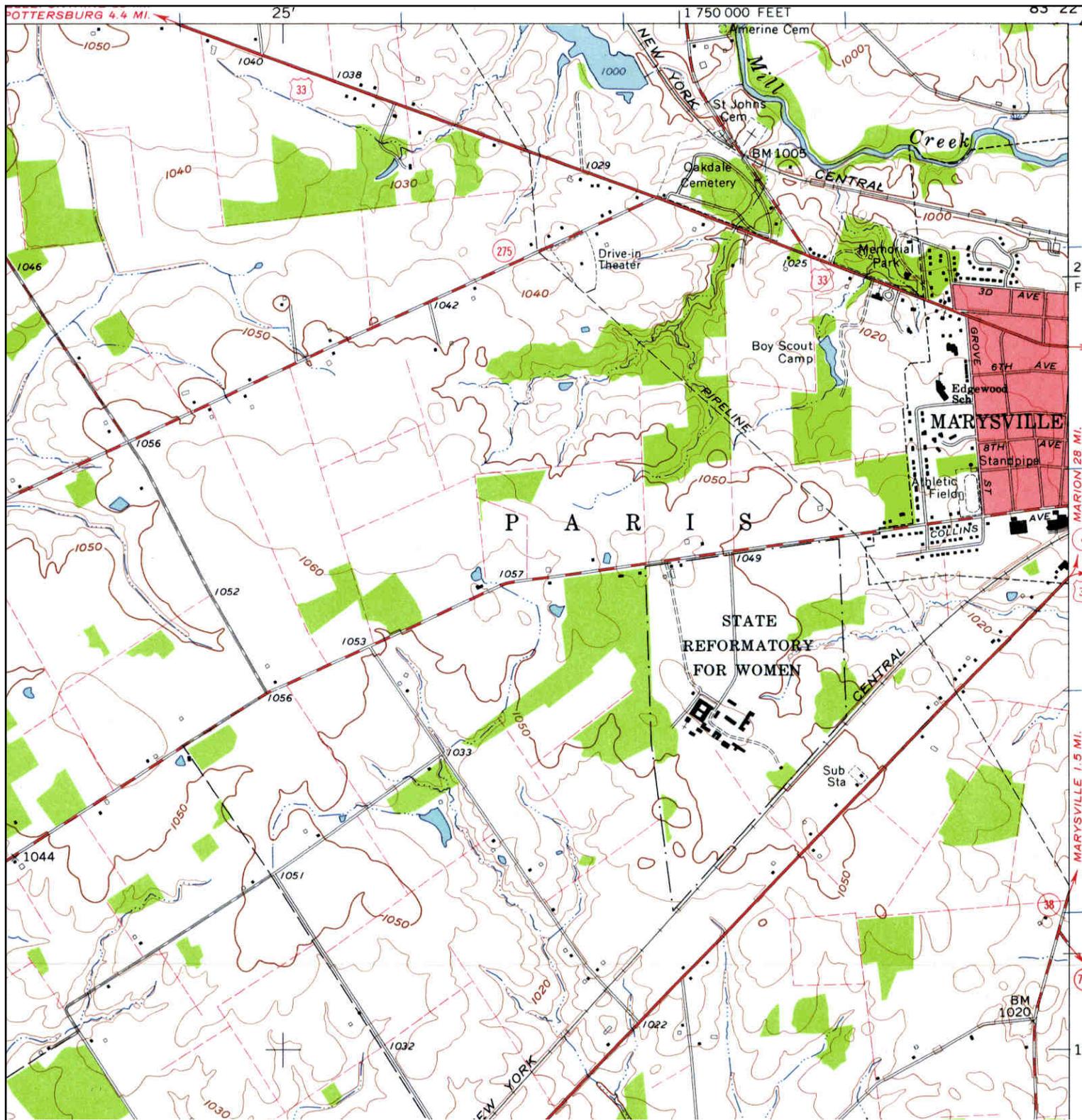
<p>N</p>	<p>TARGET QUAD</p> <p>NAME: MILFORD CENTER</p> <p>MAP YEAR: 1916</p>	<p>SITE NAME: Proposed Kroger N-549</p> <p>ADDRESS: SR 33 At W. 5th Street Marysville, OH 43040</p> <p>LAT/LONG: 40.2412 / -83.3952</p>	<p>CLIENT: AMEC E&I, Inc.</p> <p>CONTACT: Deborah Cockrum</p> <p>INQUIRY#: 3448336.4</p> <p>RESEARCH DATE: 11/06/2012</p>
	<p>SERIES: 15</p> <p>SCALE: 1:62500</p>		

Historical Topographic Map



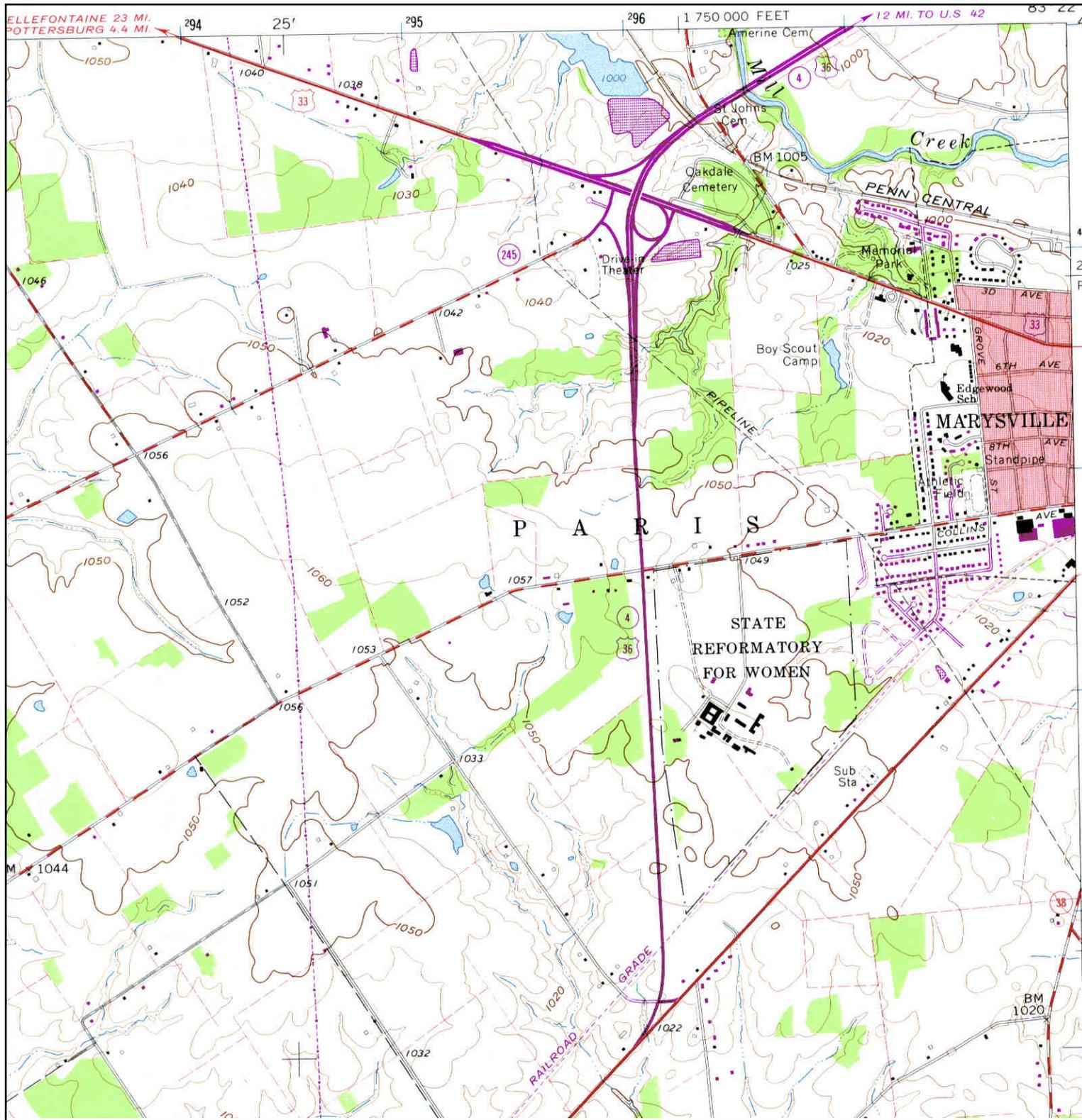
<p>N ↑</p>	<p>TARGET QUAD</p> <p>NAME: MILFORD CENTER</p> <p>MAP YEAR: 1944</p>	<p>SITE NAME: Proposed Kroger N-549</p> <p>ADDRESS: SR 33 At W. 5th Street Marysville, OH 43040</p> <p>LAT/LONG: 40.2412 / -83.3952</p>	<p>CLIENT: AMEC E&I, Inc.</p> <p>CONTACT: Deborah Cockrum</p> <p>INQUIRY#: 3448336.4</p> <p>RESEARCH DATE: 11/06/2012</p>
	<p>SERIES: 15</p> <p>SCALE: 1:62500</p>		

Historical Topographic Map



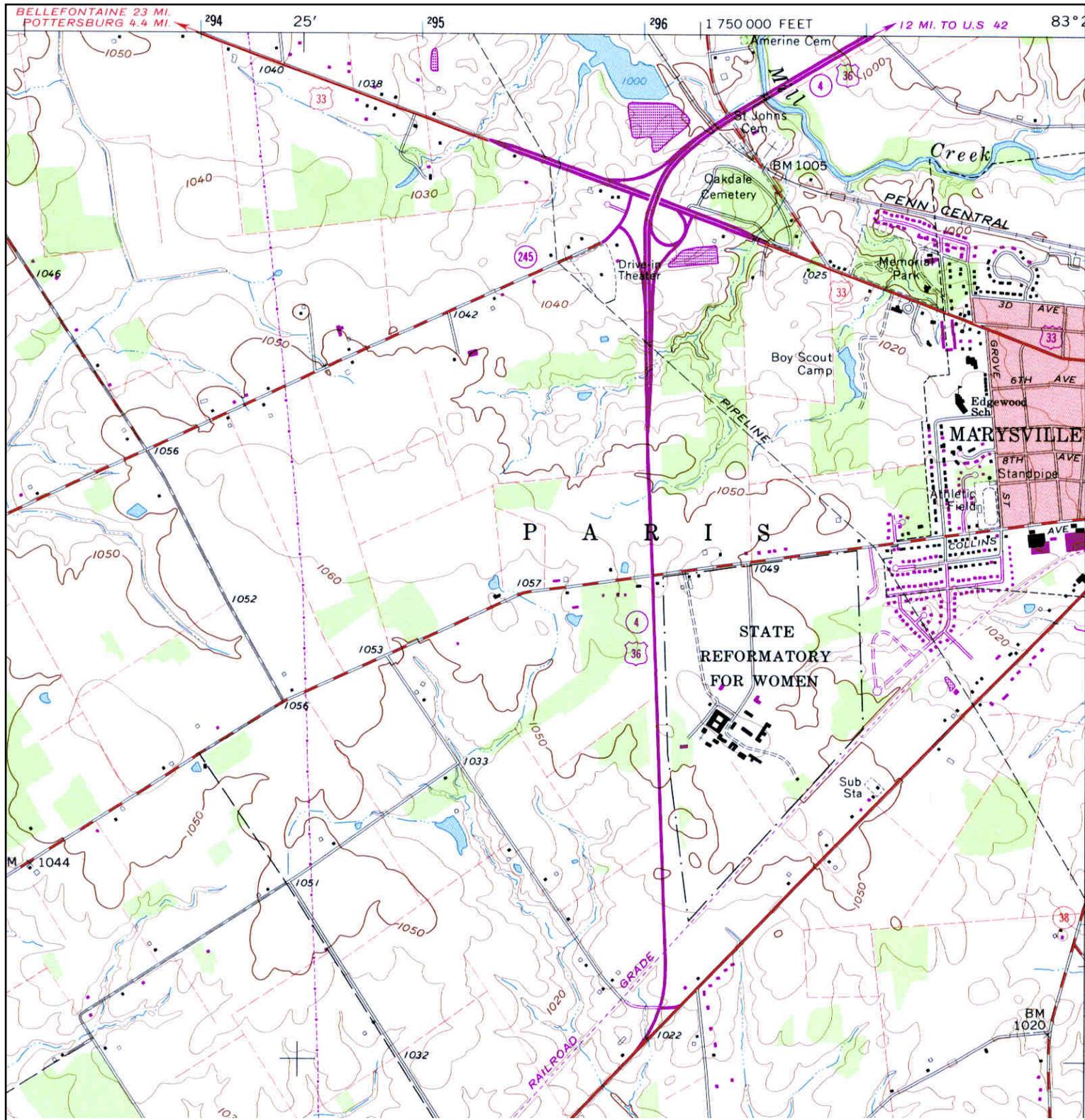
<p>N ↑</p>	<p>TARGET QUAD NAME: MILFORD CENTER MAP YEAR: 1961</p>	<p>SITE NAME: Proposed Kroger N-549 ADDRESS: SR 33 At W. 5th Street Marysville, OH 43040 LAT/LONG: 40.2412 / -83.3952</p>	<p>CLIENT: AMEC E&I, Inc. CONTACT: Deborah Cockrum INQUIRY#: 3448336.4 RESEARCH DATE: 11/06/2012</p>
	<p>SERIES: 7.5 SCALE: 1:24000</p>		

Historical Topographic Map



<p>N ↑</p>	TARGET QUAD	SITE NAME: Proposed Kroger N-549	CLIENT: AMEC E&I, Inc.
	NAME: MILFORD CENTER	ADDRESS: SR 33 At W. 5th Street	CONTACT: Deborah Cockrum
	MAP YEAR: 1973	Marysville, OH 43040	INQUIRY#: 3448336.4
	PHOTOREVISED FROM :1961	LAT/LONG: 40.2412 / -83.3952	RESEARCH DATE: 11/06/2012
	SERIES: 7.5		
	SCALE: 1:24000		

Historical Topographic Map



<p>N ↑</p>	TARGET QUAD	SITE NAME: Proposed Kroger N-549	CLIENT: AMEC E&I, Inc.
	NAME: MILFORD CENTER	ADDRESS: SR 33 At W. 5th Street	CONTACT: Deborah Cockrum
	MAP YEAR: 1980	Marysville, OH 43040	INQUIRY#: 3448336.4
	PHOTOINSPECTED FROM : 1961	LAT/LONG: 40.2412 / -83.3952	RESEARCH DATE: 11/06/2012
	SERIES: 7.5		
	SCALE: 1:24000		



Proposed Kroger N-549

SR 33 At W. 5th Street
Marysville, OH 43040

Inquiry Number: 3448336.5

November 12, 2012

The EDR Aerial Photo Decade Package

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Date EDR Searched Historical Sources:

Aerial Photography November 12, 2012

Target Property:

SR 33 At W. 5th Street

Marysville, OH 43040

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
1959	Aerial Photograph. Scale: 1"=500'	Panel #: 40083-B4, Milford Center, OH;/Flight Date: November 29, 1959	EDR
1973	Aerial Photograph. Scale: 1"=1000'	Panel #: 40083-B4, Milford Center, OH;/Flight Date: March 27, 1973	EDR
1980	Aerial Photograph. Scale: 1"=1000'	Panel #: 40083-B4, Milford Center, OH;/Flight Date: October 30, 1980	EDR
1988	Aerial Photograph. Scale: 1"=750'	Panel #: 40083-B4, Milford Center, OH;/Flight Date: April 08, 1988	EDR
1994	Aerial Photograph. Scale: 1"=500'	Panel #: 40083-B4, Milford Center, OH;/Composite DOQQ - acquisition dates: April 07, 1994	EDR
2000	Aerial Photograph. Scale: 1"=750'	Panel #: 40083-B4, Milford Center, OH;/Flight Date: October 12, 2000	EDR
2005	Aerial Photograph. Scale: 1"=500'	Panel #: 40083-B4, Milford Center, OH;/Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Panel #: 40083-B4, Milford Center, OH;/Flight Year: 2006	EDR



INQUIRY #: 3448336.5

YEAR: 1959

| = 500'





INQUIRY #: 3448336.5

YEAR: 1973

| = 1000'



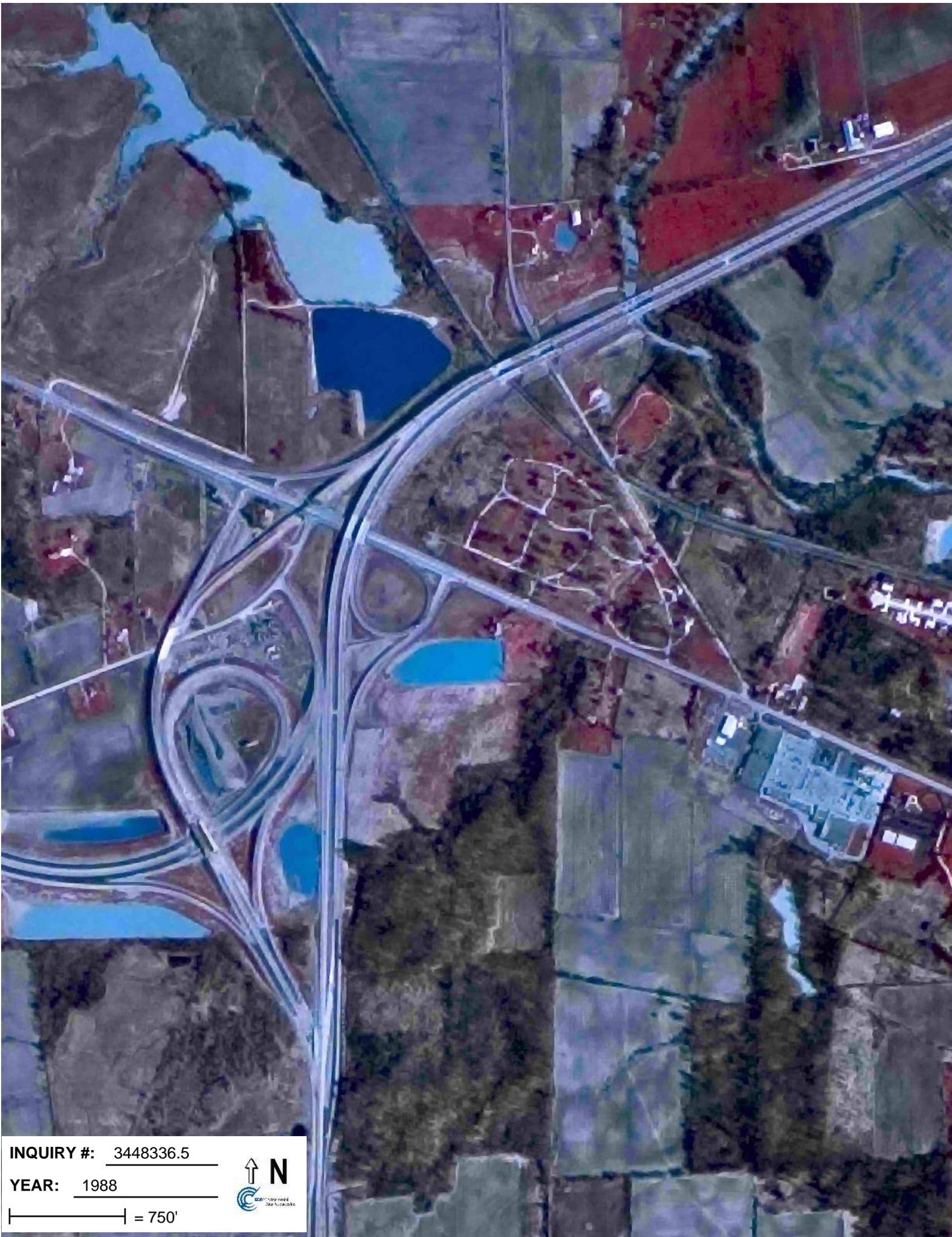


INQUIRY #: 3448336.5

YEAR: 1980

| = 1000'





INQUIRY #: 3448336.5

YEAR: 1988

| = 750'





INQUIRY #: 3448336.5

YEAR: 1994

|—————| = 500'



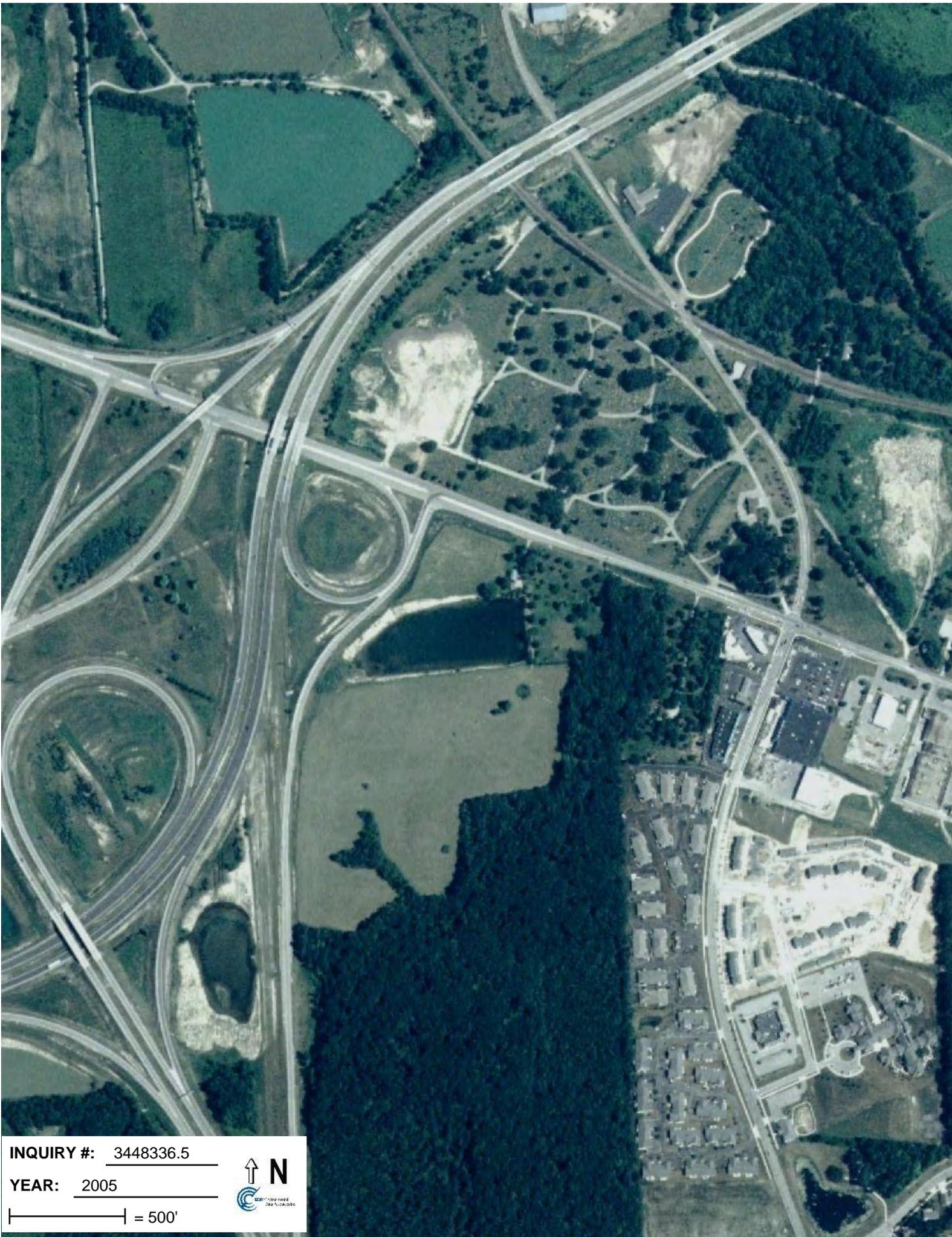


INQUIRY #: 3448336.5

YEAR: 2000

 = 750'





INQUIRY #: 3448336.5

YEAR: 2005

| = 500'





INQUIRY #: 3448336.5

YEAR: 2006

| = 500'



APPENDIX D
Approved
USACE Jurisdictional
Determination Form

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Buffalo District,

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Ohio County/parish/borough: Union City: Marysville
Center coordinates of site (lat/long in degree decimal format): Lat. 40 14.466 ° **N**, Long. -83 23.708° **W**.
Universal Transverse Mercator: NAD 1983

Name of nearest waterbody: Mill Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: flows to Ohio River through Scioto River

Name of watershed or Hydrologic Unit Code (HUC): Upper Scioto Watershed - 05060001

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 4/24/2014

Field Determination. Date(s): 5/2/2013

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: Stream 2 (264) Stream 3 (segment of unnamed trib to Mill Creek -372 ft) linear feet: Stream 2 (~3ft)
Stream 3 (~10ft) width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM.

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: **A 184-foot drainage extends from US 36/33 that appears to carry runoff from the road to the pond. This drainage appears to have formed as a result of the development of the US 36/33 interchange. It occurs in a mapped upland soil. The 4.1 acre excavated pond was also developed at this time. Based on historical topo maps, this occurred between 1961 and 1973.**

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”: .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: 37.35 inches

Average annual snowfall: 18.31 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **3** tributaries before entering TNW.

Project waters are **30 (or more)** river miles from TNW.

Project waters are **1 (or less)** river miles from RPW.

Project waters are **30 (or more)** aerial (straight) miles from TNW.

Project waters are **1 (or less)** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW⁵: Stream 2 flows into unnamed tributary to Mill Creek (Stream 3), to Mill Creek, to Scioto River to Ohio River.

Tributary stream order, if known: .

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width: Stream 2 (~3ft), Stream 3 (~10ft) feet
Average depth: Stream 2 (0.5ft), Stream 3 (variable) feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):
 Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain: woody debris.

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain: Stream 2 (run only); Stream 3 (run and pond primarily).
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Intermittent but not seasonal flow**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime:
Other information on duration and volume:

Surface flow is: **Discrete and confined**. Characteristics:

Subsurface flow: **Unknown**. Explain findings:
 Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: no visual water quality concerns noted in Stream 2 or 3 at the time of the field visit.
Identify specific pollutants, if known:

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width): Stream 2 (~3ft wooded), Stream 3 (50+ ft wooded).
- Wetland fringe. Characteristics: .
- Habitat for:
 - Federally Listed species. Explain findings: .
 - Fish/spawn areas. Explain findings: .
 - Other environmentally-sensitive species. Explain findings: .
 - Aquatic/wildlife diversity. Explain findings: .

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain: .

Ecological connection. Explain: .

Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

Riparian buffer. Characteristics (type, average width): .

Vegetation type/percent cover. Explain: .

Habitat for:

Federally Listed species. Explain findings: .

Fish/spawn areas. Explain findings: .

Other environmentally-sensitive species. Explain findings: .

Aquatic/wildlife diversity. Explain findings: .

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
- Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: USCG topographic map and general site observations.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: **Stream 2 (264) Stream 3 (segment of unnamed trib to Mill Creek -372 ft)** linear feet **Stream 2 (3ft) Stream 3 (varies)** width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from “waters of the U.S.,” or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): **Waters are manmade and were ecavated/created in upland area as a result of US 36/33 development.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: See Wetland Report.
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name:Milford Center, Ohio.
- USDA Natural Resources Conservation Service Soil Survey. Citation:NRCS Web Soil Survey, Accessed 1 May 2013.
- National wetlands inventory map(s). Cite name: USFWS Mapper, Accessed 1 May 2013.
- State/Local wetland inventory map(s): .
- FEMA/FIRM maps:39021C0225D effective 11/18/09.
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date):see Appendix C and Figures in Wetland Report.
or Other (Name & Date):See Appendix B of Wetland Report for Site Photos.
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD:



July 18, 2014

Ms. Lee Robinette
Regulatory Project Manager
U.S. Army Corps of Engineers
Huntington District, Regulatory Division
502 8th Street
Huntington, WV 25701

**Subject: Revised Delineation and Preliminary Jurisdiction Determination
Proposed Kroger Store N-549, 1457 West 5th Street, Marysville, Union County, Ohio**

Dear Ms. Robinette,

As discussed on July 2, 2014, EMH&T has been engaged by The Kroger Co. (Kroger) to revise the delineation and complete the 404/401 permitting for their proposed Kroger Store N-549 Development in Marysville, Union County, Ohio. A delineation and Preliminary Jurisdictional Determination (PJD) Form for this project was previously submitted to your attention on June 3, 2014 by AMEC Environment & Infrastructure, Inc. (AMEC). This letter and the attached information are intended to revise that delineation and PJD Form.

EMH&T completed site visit on July 14, 2014. The purpose of this site visit was to (1) verify the location and characteristics of the streams previously identified by AMEC, and (2) to investigate a suspected stream channel at the southern end of the property boundary, located in the vicinity of "Sample Point 1" as identified in the June 2014 AMEC submittal.

Based on EMH&T's limited site reconnaissance, one additional ephemeral stream channel was documented. This stream is identified as Stream 3 on the revised Figure 5, attached. A culvert was observed northwest of this channel; however, a defined bed and bank were not observed at the culvert. The extent of the channel that exhibited a defined bed and bank was delineated using a hand-held Trimble GPS unit to sub-foot accuracy.

No other wetlands or streams not previously identified were observed on the property. Per your request, the delineation map (Figure 5) and stream nomenclature have been revised and the "Roadside Ditch" and "Concrete Conveyance" previously identified by AMEC have been removed from the delineation. The revised summary of surface water features is provided below.

Table 1. Summary of Surface Water Features on the Subject Property

Surface Water Feature	Description	Classification	Potentially Jurisdictional	Amount in Project Area
Pond	Open water feature located entirely within the property that receives ephemeral flow from Stream 1.	Open Water	Yes	4.1 acres
Stream 1	Drainage channel with defined bed and bank, approximately 3 feet wide, that exhibits ephemeral flow. Originates at a culvert beneath US 36/33 and flows east 184 feet to the pond; flows out of the pond via a culvert and flows east 356 feet to the unnamed tributary to Mill Creek (Stream 2).	Ephemeral	Yes	540 feet (0.04 ac)
Stream 2	Ephemeral stream channel, approximately 10 feet wide, that flows generally southwest to northeast; a 327-foot segment occurs within the southern portion of the property and an additional 578-foot segment is located in the northeast portion of the property.	Intermittent	Yes	950 feet (0.22 ac)
Stream 3	An ephemeral drainage channel, approximately 3 feet wide, that originates from overland sheet flow and flows 28 feet southeast on the property toward its confluence with Stream 2 (located outside the project boundary).	Ephemeral	Yes	28 feet (0.002 ac)
Total:	4.1 acres of open water and 1,518 feet (0.26 ac) of stream			

Please note that the segment previously identified as “Stream Segment 2” (the segment downstream of the pond) was shown to have an impact of 356 feet on Figure 5 of the AMEC report, but was listed as 264 feet within the report text and on the PJD form. EMH&T verified that the segment located within the project area is in fact 356 feet.

The following documents are attached to this letter to complete the submittal:

1. Figure 5 – Surface Water Delineation Map
2. Site Photographs
3. Revised PJD Form

Ms. Lee Robinette
Revised Delineation and PJD – Kroger Store N-549

July 18, 2014

EMH&T trusts that the information provided herein is sufficient in order to revise the delineation and allow for issuance of a PJD. If you need any additional information or have any questions regarding this submittal, please contact me at (614) 775-4523 or Rob Milligan at (614) 775-4515. Please provide a copy of your response to my attention at EMH&T, 5500 New Albany Road, Columbus, OH 43054.

Sincerely,

A handwritten signature in blue ink that reads "Heather Dardinger". The signature is written in a cursive style with a long, sweeping underline.

Heather L. Dardinger
Senior Environmental Scientist

Enclosures: 3

Copies: Jim Brown, The Kroger Co.

Path: J:\20141168\GIS\Figure 5 - Surface Water Delineation Map.mxd



Legend

- Culvert
- Stream on Site
- Stream
- Pond
- Delineation Boundary

EMHT
 Engineers • Surveyors • Planners • Scientists
 5500 New Albany Road, Columbus, OH 43054
 Phone: 614.775.4500 Toll Free: 888.775.3648
 emht.com

CITY OF MARYSVILLE, UNION COUNTY, OHIO
The Kroger Co.
N-549 Store Development
Figure 5
Surface Water Delineation Map

SCALE: 1" = 300'

0 150 300 600 Feet

Source: Aerial - OSIP, 2013



Photograph No. 1

View of Stream 3 at the point of jurisdiction facing northwest (EMH&T, 7/14/14)



Photograph No. 2

View of Stream 3 facing downstream (EMH&T, 7/14/14)

**Photograph No. 3**

View of the culvert in the shrubby area northwest of Stream 3 (EMH&T, 7/14/14)

**Photograph No. 4**

View from the culvert in the shrubby area facing southeast (EMH&T, 7/14/14)



Photograph No. 5

View of the shrubby area northwest of Stream 3 facing south (EMH&T, 7/14/14)



Photograph No. 6

View of the shrubby area northwest of Stream 3 facing north (EMH&T, 7/14/14)

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

U.S. Army Corps of Engineers

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): July 18, 2014

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Mr. Jim Brown
The Kroger Company, Regional Engineering, Columbus Division Office
4111 Executive Parkway
Westerville, OH 43081

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CELRL-OP-Choose an item.,
File Name & Number

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: Ohio County: Union City: Marysville

Center coordinates of site: Latitude and Longitude (NAD 83): UTM Zone 16N

Latitude: 40° 14' 24.26" North, Longitude: -83° 23'44.965" West

Authority: Section 404 Section 10

Name of nearest waterbody: Mill Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters: 1,518 linear feet of stream and 4.1 acres of open water (see Table).

Cowardin Class:

Stream Flow: Intermittent and Ephemeral

Wetlands: 0 acres.

Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: N/A

Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: June 3, 2014

Field Determination. Date(s): May 7, 2014

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring “pre-construction notification” (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. §331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there “*may be*” waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply)
- checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: [Click here to enter text.](#)
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: [Click here to enter text.](#)
- Corps navigable waters' study: [Click here to enter text.](#)
- U.S. Geological Survey Hydrologic Atlas: see Figure 4
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: Milford Center, Ohio.
- USDA Natural Resources Conservation Service Soil Survey. Citation: NRCS Web Soil Survey, Accessed 1 May 2013
- National wetlands inventory map(s). Cite name: USFWS Mapper, Accessed 1 May 2013
- State/Local wetland inventory map(s): [Click here to enter text.](#)
- FEMA/FIRM maps: 39021C0225D effective 11/18/09
- 100-year Floodplain Elevation is: [Click here to enter text.](#)
(National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): see Appendix C and Figures in Wetland Report
- or Other (Name & Date): Site Photographs – Appendix B of Wetland Report
- Previous determination(s). File no. and date of response letter: [Click here to enter text.](#)
- Applicable/supporting case law: [Click here to enter text.](#)
- Applicable/supporting scientific literature: [Click here to enter text.](#)
- Other information (please specify): Delineation revision letter dated July 18, 2014

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of Regulatory Project
Manager (REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site Number	Latitude/ Northing	Longitude/ Easting	Cowardin Class/ Stream Flow	Estimated Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
Stream 1	40° 14' 26.91" (upst) 40° 14' 29.73" (dst)	-83° 23' 51.30" (upst) -83° 23' 34.31" (dst)	Riverine	540 feet	Section 404
Stream 2	40° 14' 19.95" (upst) 40° 14' 30.11" (dst)	-83° 23' 42.10" (upst) -83° 23' 34.67" (dst)	Riverine	950 feet	Section 404
Stream 3	40° 14' 17.13" (upst) 40° 14' 17.92" (dst)	-83° 23' 46.47" (upst) -83° 23' 46.22" (dst)	Riverine	28 feet	Section 404
Pond	40° 14' 27.865"	-83° 23'44.554"	---	4.1 acre	Section 404
			---		---
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			---		---



A legacy of **experience**. A reputation for **excellence**.

ATTACHMENT 3B

PHOTOGRAPHS



Photograph No. 1

View of Stream 1 west of the pond, facing southwest (EMH&T, 7/14/14)



Photograph No. 2

View of the pond facing southwest (EMH&T, 7/14/14)



Photograph No. 3

View of the drainage culvert on the eastern end of the pond (EMH&T, 7/14/14)



Photograph No. 4

View of Stream 1 east of the pond, facing east (EMH&T, 7/14/14)

**Photograph No. 5**

View of Stream 2 on the northern portion of the site facing south
(EMH&T, 8/15/14)

**Photograph No. 6**

View of Stream 2 on the south-central portion of the site facing north
(EMH&T, 8/15/14)



Photograph No. 7

View of Stream 3 facing northeast (EMH&T, 7/14/14)



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ATTACHMENT 3C

DETERMINATION OF EXISTING USE DOCUMENTATION

Site ID:

Date: 08/15/14

Investigator(s): Steve Bailey

3. Macroinvertebrate Scoring Sheet:

THE HEADWATER MACROINVERTEBRATE FIELD EVALUATION INDEX (HMFEI) SCORING SHEET

NOTE: Record the number of observed taxa for each group.

Indicate Abundance of Each Taxa Above each White Box.

Only multiply # of taxa by HMFEI points for EPT taxa!

Record HMFEI Scoring Value Points Within each Box.

For EPT taxa, also indicate the different taxa present.

Key: V = Very Abundant (> 50); A = Abundant (10 -50); C = Common (3 -9); R = Rare (< 3)

Sessile Animals (Porifera, Cnidaria, Bryozoa) (HMFEI pts = 1) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Crayfish (Decapoda) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Fishfly Larvae (Corydalidae) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>
Aquatic Worms (Turbellaria, Hirudinea, Oligochaeta) ¹ No. taxa: <input type="text" value="1"/>	<input type="text" value="R"/>	Dragonfly Nymphs (Anisoptera) No. taxa: <input type="text" value="2"/>	<input type="text" value="R"/>	Water Penny Beetles (Psephenidae) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>
Sow Bugs (Isopoda) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Riffle Beetles (Dryopidae, Elmidae, Ptilodactylidae) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Crane-fly Larvae (Tipulidae) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>
Scuds (Amphipoda) (HMFEI pts = 1) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Larvae of other Flies (enter name in comments) (Diptera): No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	EPT TAXA*	
Water Mites (Hydracarina) (HMFEI pts = 1) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Midges (Chironomidae) (HMFEI pts = 1) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Total No. EPT Taxa = <input type="text" value="0"/>	
Damselfly Nymphs (Zygoptera) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Snails (Gastropoda) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Mayfly Nymphs (Ephemeroptera) Taxa Present: <input type="text" value="0"/>	
Alderfly Larvae (Sialidae) (HMFEI pts = 1) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Clams (Bivalvia) (HMFEI pts = 1) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	HMFEI pts = <input type="text" value="NA"/>	<input type="text" value="0"/>
Other Beetles (Coleoptera) No. taxa: <input type="text" value="0"/>	<input type="text" value="NA"/>	Other Taxa : <input type="text"/>		No. Taxa (x) 3] <input type="text" value="NA"/>	<input type="text" value="0"/>
Other Taxa: <input type="text" value="Water striders present"/>		Other Taxa: <input type="text"/>		Caddisfly Larvae (Trichoptera) Taxa Present: <input type="text" value="0"/>	
Other Taxa: <input type="text"/>		Other Taxa: <input type="text"/>		HMFEI pts = <input type="text" value="NA"/>	<input type="text" value="0"/>
				No. Taxa (x) 3] <input type="text" value="NA"/>	<input type="text" value="0"/>

*Note: EPT identification based upon Family or Genus level of taxonomy

Notes on Macroinvertebrates: (Predominant Organisms; Other Common Organisms; Diversity Estimate)

Macroinvertebrates found in muck on stream bottom

Final HMFEI Calculated Score (Sum of All White Box Scores) =

IF Final HMFEI Score is > 19, Then CLASS III PHWH STREAM
 IF Final HMFEI Score is 7 to 19, Then CLASS II PHWH STREAM
 IF Final HMFEI Score is < 7, Then CLASS I PHWH STREAM

PHWH STREAM BIOLOGICAL CHARACTERISTICS FIELD SHEET:

1. Fish: Voucher Specimens Retained? (circle) Y / N Time Spent (minutes): 20
 Sample Method Wade Stream Length Assessed (meters) ~95

Species	Number Caught	Notes
<i>Semotilus atromaculatus</i>	12	fish caught in 2 isolated pools along stream reach

2. Salamanders: Voucher Specimens Retained? (circle) Y / N Time Spent (minutes): 30
 Sample Method Wade Stream Length Assessed (meters) ~95

Species (Genus)	# Larvae	# Juveniles/Adults	Total Number
Mountain Dusky (<i>Desmognathus ochrophaeus</i>)			
Northern Dusky (<i>Desmognathus fuscus</i>)			
Two-lined (<i>Eurycea bislineata</i>)			
Long-tailed (<i>Eurycea longicauda</i>)			
Cave (<i>Eurycea lucifuga</i>)			
Red (<i>Pseudotriton ruber</i>)			
Mud (<i>Pseudotriton montanus</i>)			
Spring (<i>Gyrinophilus porphyriticus</i>)			
Mole spp. (<i>Ambystoma spp.</i>)			
Four-toed (<i>Hemidactylum scutatum</i>)			
Other (name)			
Total			

Notes on Vertebrates: No salamanders observed

PHWH STREAM BIOLOGICAL SURVEY FIELD SHEET:

VISUAL ENCOUNTER SURVEY (VES)

Date: 8/15/14 Investigator: Steve Bailey VES/HHEI reach #:

AMPHIBIANS:

1. Salamanders/Newts: Voucher Specimens Retained? Yes No Time Spent (minutes): 30

Sample Method: Wade Stream Length Assessed (meters): ~95

Common Name (<i>Genus, species</i>)	# Larvae	# Juveniles/Adults	Total Number
Eastern Hellbender (<i>Desmognathus ochrophaeus</i>)			
Red-Spotted Newt (<i>Notophthalmus viridescens</i>)			
Smallmouth Salamander (<i>Ambystoma texanum</i>)			
Marbled Salamander (<i>Ambystoma opacum</i>)			
Spotted Salamander (<i>Ambystoma maculatum</i>)			
Jefferson Salamander (<i>Ambystoma jeffersonianum</i>)			
Northern Dusky Salamander (<i>Desmognathus fuscus</i>)			
Redback Salamander (<i>Plethodon cinereus</i>)			
Northern Ravine Salamander (<i>Plethodon richmondi</i>)			
Four-Toed Salamander (<i>Hemidactylium scutatum</i>)			
Northern Slimy Salamander (<i>Plethodon glutinosus</i>)			
Spring Salamander (<i>Gyrinophilus porphyriticus</i>)			
Midland Mud Salamander (<i>Pseudotriton montanus diastictus</i>)			
Northern Red Salamander (<i>Pseudotriton ruber ruber</i>)			
Southern Two-Lined Salamander (<i>Eurycea cirrigera</i>)			
Longtail Salamander (<i>Eurycea longicauda</i>)			

Notes on Salamanders & Newts:

None observed

Most likely to encounter during VES

PHWH STREAM BIOLOGICAL SURVEY FIELD SHEET:

VISUAL ENCOUNTER SURVEY (VES)

Date: 8/15/14 Investigator: Steve Bailey VES/HHEI reach #:

AMPHIBIANS:

2. Toads and Frogs:

Voucher Specimens Retained? Yes No

Time Spent (minutes): 30

Sample Method: Wade

Stream Length Assessed (meters): ~95

	Common Name (<i>Genus, species</i>)	Tally **	Total No.
Toads:	American Toad (<i>Anaxyrus americanus</i>)		
	Fowler's Toad (<i>Anaxyrus fowleri</i>)		
	Eastern Spadefoot Toad (<i>Scaphiopus holbrookii</i>)		
Frogs:	Eastern Cricket Frog (<i>Acris crepitans crepitans</i>)		
	Northern Spring Peeper (<i>Pseudacris crucifer crucifer</i>)		
	Gray Treefrog* (<i>Hyla versicolor</i>)		
	Cope's Gray Treefrog* (<i>Hyla chrysoscelis</i>)		
	Western Chorus Frog (<i>Pseudacris triseriata</i>)		
	Mountain Chorus Frog (<i>Pseudacris brachyphona</i>)		
	Bullfrog (<i>Lithobates catesbeiana</i>)		
	Green Frog (<i>Lithobates clamitans melanota</i>)		6
	Nothern Leopard Frog (<i>Lithobates pipiens</i>)		
	Pickerel Frog (<i>Lithobates palustris</i>)		
	Wood Frog (<i>Lithobates sylvatica</i>)		

* Morphologically indistinguishable (*H. chrysoscelis* has a faster "trill" than *H. versicolor*)

** Use 'I' or 'l' for tally marks

Notes on Toads & Frogs:

frogs found in isolated pools along stream reach

Most likely to encounter during VES