OHIO HISTORY CONNECTION

In reply refer to
2014-LOR-28367-2

September 11, 2014

Andrew Bielakowski
Environmental Resources Management
1701 Golf Road, Suite 1-700
Rolling Meadows, IL 60008

Dear Mr. Bielakowski:

RE: NRG Ohio Pipeline, Lorain County, Ohio

This is in response to the receipt, on July 22, 2014, of *A Phase I Archaeological Investigation for the NRG Ohio Pipeline Company's Proposed Pipeline Project, Lorain County, Ohio.* The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Subsurface testing and intensive visual inspection of the project area resulted in the identification of five previously unrecorded archaeological sites. These sites, 33 LN 278-282, range from prehistoric isolated find spots to historic farmstead remnants. These sites are not likely to yield additional information about Ohio prehistory or history. Based on the information provided, I concur with the opinion that these properties are not eligible for inclusion in the National Register of Historic Places. Therefore the project will not affect historic properties. No further coordination is required unless the project changes or additional archaeological remains are discovered during the course of the project. In such a situation, this office should be contacted as per 36 CFR 800.13.

If you have any questions, please contact me at (614) 298-2000, or by email at nyoung@ohiohistory.org.

Sincerely,

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

Environmental Resources Management

1701 Golf Road
Suite 1-700
Rolling Meadows, IL
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December 19, 2014

Mr. Mark Epstein
Ohio Historic Preservation Office
800 East 17th Avenue
Columbus, Ohio 43211-2474

Subject: NRG Ohio Pipeline Company LLC Pipeline Project
Lorain County, Ohio
NADB# 19553

Dear Mr. Epstein:

NRG Ohio Pipeline Company LLC ("NRG Ohio Pipeline") is developing an approximately 20-mile natural gas pipeline in Lorain County, Ohio in order to provide natural gas as a fuel source to the Avon Lake Power Plant, which is owned by an affiliate of NRG Ohio Pipeline ("Pipeline Project or Project"). The proposed Project will require a permanent 50 foot right-of-way ("ROW"), typically, for operation and maintenance and up to 100 additional feet of temporary ROW for construction. The permanent and temporary ROWs have been reduced in some areas to reduce environmental impacts and to incorporate landowner requests.

Environmental Resources Management ("ERM"), on behalf of NRG Ohio Pipeline, submitted the results of our initial Phase I archaeological investigation on July 15, 2014. Since that time, NRG Ohio Pipeline has initiated easement acquisition efforts for the required ROW. Some affected landowners have requested adjustments to the proposed route, many of which NRG Ohio Pipeline has incorporated. To account for these route adjustments, ERM performed an additional Phase I archaeological investigation in September and October 2014, where the route has been adjusted outside of the original survey corridor. The results of this investigation are provided in the attached Addendum I report.

Thank you in advance for your time and consideration. If you have any questions or require additional information about the proposed Project, please do not hesitate to contact me at 443-207-0519, or via email at andrew.bielakowski@erm.com.

Sincerely,

Andrew Bielakowski
Principal Investigator

Enclosure: Addendum I Phase I Archaeological Investigation Report

Cc: Nathan Young, Ohio Historic Preservation Office
Nate Rozic, NRG
Doni Murphy, ERM
Matt Teichert, ERM

Phase I Archaeological Investigation for the NRG Ohio Pipeline Company's Proposed Pipeline Project Lorain County, Ohio

Addendum I

Municipalities Crossed: Avon, Avon Lake, Elyria, and North Ridgeville
Townships Crossed: Eaton, LaGrange, and Carlisle

National Archaeological Database No. 19553

Lead Public Agency:
Ohio Power Siting Board

Prepared For:
NRG Ohio Pipeline Company LLC
211 Carnegie Center
Princeton, New Jersey 08540

Prepared By:
Environmental Resources Management
1701 Golf Road, Suite 1-700
Rolling Meadows, IL 60008

Principal Investigators and Report Authors:
Andrew Bielakowski, M.A.
Mark Doperalski, M.A., RPA

December 2014

ABSTRACT

Environmental Resources Management (ERM) conducted a Phase I archaeological survey on behalf of NRG Ohio Pipeline Company LLC ("NRG Ohio Pipeline") for a proposed natural gas pipeline in May 2014, which was reported in *Phase I Archaeological Investigation for the NRG Ohio Pipeline Company's Proposed Pipeline Project, Lorain County, Ohio* (Bielakowski and Doperalski 2014). Since June 2014, NRG Ohio Pipeline has been working with affected landowners to acquire the necessary easements. Some affected landowners have requested adjustments to the proposed route, many of which NRG Ohio Pipeline have been able to incorporate. To account for these route adjustments, this addendum to the Bielakowski and Doperalski 2014 Report details the results of additional survey work completed in September and October 2014 where the route has been adjusted outside of the May 2014 survey corridor.

NRG Ohio Pipeline is developing an approximately 20-mile natural gas pipeline in Lorain County, Ohio in order to provide natural gas as a fuel source to the Avon Lake Power Plant, which is owned by an affiliate of NRG Ohio Pipeline ("Project"). The Avon Lake Power Plant is a 734 MW coal-fired generating facility located in Avon Lake, Ohio ("Power Plant").[1] The Power Plant is owned by NRG Power Midwest LP, which is a subsidiary of NRG Energy, Inc. ("NRG Midwest"). The Power Plant was slated for retirement by the facility's prior owner as a result of significant expenditures required to meet increasingly stringent environmental requirements. NRG Midwest has decided to move ahead with a gas addition project, which will keep the facility in operation on natural gas beyond its planned deactivation date (the "Avon Lake Gas Addition Project"). To add natural gas as a fuel supply for the Power Plant, the proposed natural gas pipeline must be designed, permitted and constructed. The Avon Lake Gas Addition Project will bring environmental, economic, employment, and electric supply reliability benefits to the State. The expected operation date for the pipeline is April 2016.

The proposed 24-inch diameter high-grade steel pipeline will extend south from the Power Plant, which is located along the Lake Erie shoreline in the City of Avon Lake, to a proposed supply tap location southwest of the Village of Grafton (the "Proposed Route"). The Proposed Route is the most feasible direct route between these two points upon evaluating and balancing all factors, including environmental, geographic, cultural, and social and constructability considerations, while taking into account landowner concerns and requests.

Approximately 3,922 feet of the proposed pipeline will be aboveground. The pipeline will require a permanent (operation) right-of-way ("ROW") ranging from 25 to 50 feet in width and a temporary (construction) ROW of up to an additional 50 feet. In some areas, additional temporary workspace areas ("TWAs") outside of the temporary construction ROW will be needed for short durations during construction. Existing public and private

[1] The Power Plant also has one oil-fueled unit.

roads will be utilized for access to most of the construction ROW; however, approximately 11,806 feet (2.2 miles) of 25-foot-wide temporary access roads are anticipated. The required regulating station will occupy up to approximately one acre in size.

The proposed Project will require siting approval from the Ohio Power Siting Board ("OPSB") in accordance with Ohio Administrative Code 4906. Ohio Revised Code 149.53 states that state agencies, such as OPSB, should cooperate and work with the Ohio Historic Preservation Office ("OHPO") during the planning and construction of state-reviewed projects. Therefore, OPSB requires consultation with the OHPO regarding the protection of National Register of Historic Places ("NRHP") properties, including any sites that are eligible for listing, or state significant historic properties. The proposed Pipeline Project will require additional approvals from other state and federal agencies, including a Section 404 permit from the U.S. Army Corps of Engineers. Therefore, the proposed Pipeline Project would be subject to review under Section 106 of the National Historic Preservation Act of 1966, as amended.

As a result, ERM, on behalf of NRG, conducted a Literature Review and a Phase I archaeological survey in the spring of 2014 for the proposed Project. Subsequently, ERM conducted an additional Phase I archaeological survey in September and October of 2014 to supplement survey work completed in the spring of 2014. This addendum report discusses only those results of the September/October 2014 (Addendum I) investigation and provides survey results for the portions of the Project Area where route adjustments have been made to the Project route. The Area of Potential Effect ("APE"), for the purposes of this investigation, included all areas of proposed construction activities or other potential ground disturbing activities outside of the original APE. However, similar to the original spring 2014 investigation, the "Project Area" encompassed the APE and an area extending beyond the APE. This additional area on either side of the anticipated right-of-way was included in the Project Area to allow for flexibility in the event of minor route or workspace adjustments. The adjusted route portions of the Project Area (Addendum I) consist of 194.75 acres (78.81 hectares), which includes a 200-foot corridor centered on the centerline of the Proposed Route, as well as anticipated TWAs outside the 200-foot corridor.

The Phase I archaeological survey was conducted within the scope of the Ohio Historic Preservation Office's ("OHPO") *Archaeological Guidelines* (OHPO 1994 as reprinted in 2011) and *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* [48 Federal Register 44716-44740] (National Park Service [NPS] 1983). The investigation was conducted to identify archaeological resources associated with the Project Area that may be potentially eligible for inclusion in the NRHP.

A portion of the Project Area (nearly 17 percent) will be located in or along previously disturbed rights-of-way or along existing developed areas. Based on both a desktop and field delineation of wetlands, nearly 30 percent of the Project Area will cross wetlands.

Areas considered to have a high potential to contain significant, intact archaeological resources include those in upland (non-wetland) areas near water sources that have not been previously disturbed by the installation and operation of existing utilities or other infrastructure, or by any other form of land development.

Because the majority of the Project Area is located in or along areas that have been previously disturbed and given the prevalence of wetlands, only a portion of the Project Area falls within areas that were assumed to have a high potential to encounter significant, intact archaeological resources. As a result, Phase I archaeological survey was only conducted within the portions of the Project Area that occur within these assumed high potential areas (the "Survey Area") (see Appendix A: Survey Results Maps). The September/October 2014 (Addendum I) Survey Area encompassed approximately 123.72 acres (50.07 hectares). The remaining 71.03 acres (28.74 hectares) of the 194.75-acre (78.81-hectare) adjusted route portion of the Project Area were excluded from survey. Fieldwork was conducted from September 2 to September 6, and October 28 to October 29, 2014. Andrew Bielakowski and Mark Doperalski served as Principal Investigators.

The Survey Area was comprised almost exclusively of agricultural lands complimented with a small extent of wooded flatlands and manicured residential yards. Nearly all of the agricultural lands that occur within the Survey Area consisted of actively cultivated fields exhibiting 30 to 50 percent surface visibility due to maturing crops. A small extent of the low-lying agricultural lands had been allowed to grow over in fallow grassland vegetation. The small extent of wooded flatlands that occur within the Survey Area often exhibited standing water or saturated soils. Pedestrian survey was completed for 122.43 acres (49.55 hectares) and pedestrian survey with shovel testing was completed for 1.29 acres (0.52 hectares). The survey included excavation of 23 shovel tests in one area that was assessed as warranting subsurface investigation.

During the Phase I archaeological survey, ERM identified one newly recorded archaeological site (33LN0284) within the Addendum I Survey Area. The site consists of a U-plan limestone-block foundation, two dilapidated wooden outbuildings, a brick-lined well shaft, and an artifact scatter comprised of historic-period artifacts and a single prehistoric-period lithic tool. The site components were identified between two extant dwellings, a gable-el at 39385 Sugar Ridge Road and a foursquare at 39325 Sugar Ridge Road. Based on the results of the September/October 2014 investigation, 33LN0284 is recommended not eligible for listing in the NRHP.

One additional find spot, AV212-1, was identified during the Phase I archaeological survey. AV212-1 is a secondary dump deposit consisting of several piles of discarded concrete slab fragments and limestone block located within the forest just beyond the edge of a cultivated field. The location of this find spot was noted for due diligence; however, it was not recorded as an official archaeological site due to the apparent recent and secondary nature of the deposit.

Based on the results of the Phase I archeological survey, no further archaeological work is recommended prior to construction within the portions of the Project Area surveyed and discussed in this Addendum I report. If the Project uncovers resources that might be of archeological interest within the Project Area during construction, the OHPO should be contacted immediately. If human remains should be encountered during construction activities, all ground disturbing activity must cease and local law enforcement and the OHPO must be notified. Additionally, should the Project Area be adjusted beyond the area that has been surveyed, additional Phase I archaeological survey may be completed in advance of construction, to the extent necessary or appropriate.

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Environmental Resources Management (ERM) conducted a Phase I archaeological survey on behalf of NRG Ohio Pipeline Company LLC ("NRG Ohio Pipeline") for a proposed natural gas pipeline in May 2014, which was reported in *Phase I Archaeological Investigation for the NRG Ohio Pipeline Company's Proposed Pipeline Project, Lorain County, Ohio* (Bielakowski and Doperalski 2014). NRG Ohio Pipeline has been working with affected landowner to acquire the necessary easements throughout most of 2014. Some affected landowners requested adjustments to the proposed route, many of which NRG Ohio Pipeline have been able to incorporate. To account for these route adjustments, this addendum to the Bielakowski and Doperalski 2014 Report details the results of additional survey work completed in September and October 2014 where the route has been adjusted outside of the May 2014 survey corridor.

NRG Ohio Pipeline is developing an approximately 20-mile natural gas pipeline in Lorain County, Ohio in order to provide natural gas as a fuel source to the Avon Lake Power Plant, which is owned by an affiliate of NRG Ohio Pipeline ("Project"). The Avon Lake Power Plant is a 734 MW coal-fired generating facility located in Avon Lake, Ohio ("Power Plant").[2] The Power Plant is owned by NRG Power Midwest LP, which is a subsidiary of NRG Energy, Inc. ("NRG Midwest"). The Power Plant was slated for retirement by the facility's prior owner as a result of significant expenditures required to meet increasingly stringent environmental requirements. NRG Midwest has decided to move ahead with a gas addition project, which will keep the facility in operation on natural gas beyond its planned deactivation date (the "Avon Lake Gas Addition Project"). To add natural gas as a fuel supply for the Power Plant, the proposed natural gas pipeline must be designed, permitted and constructed. The Avon Lake Gas Addition Project will bring environmental, economic, employment and electric supply reliability benefits to the State. The expected operation date for the pipeline is April 2016.

NRG Ohio Pipeline is proposing to install a 24-inch diameter high-grade steel pipeline that will extend south from the Power Plant, which is located on the Lake Erie shoreline in the City of Avon Lake, to a proposed supply tap location west-southwest of the Village of Grafton (the "Proposed Route"). The Proposed Route is the most feasible direct route between these two points upon balancing all factors, including environmental, geographic, cultural, and social and constructability considerations, while taking into account landowner concerns and requests.

Approximately 3,922 feet of the proposed pipeline will be aboveground. The pipeline will require a permanent (operation) right-of-way ("ROW") ranging from 25 to 50 feet in width and a temporary (construction) ROW of up to an additional 50 feet. In some areas

[2] The Power Plant also has one oil-fueled unit.

nrg
Power to be free

AVON LAKE GAS ADDITION PROJECT

Project Location

Avon Lake Plant

Potential Tap Location

Proposed Tap Location

Lake Erie

LORAIN COUNTY

CUYAHOGA COUNTY

MEDINA COUNTY

Avon Lake
Sheffield Lake
Sheffield
Avon
Lorain
Vermilion
Amherst
South Amherst
Oberlin
Elyria
North Ridgeville
Westlake
Bay Village
Rocky River
Fairview Park
Cleveland
North Olmsted
Olmsted Falls
Berea
Middleburg Heights
Brook Park
Brunswick
Strongsville
Columbia Station
Eaton Estates
Grafton
Kipton

SHEFFIELD TOWNSHIP
ELYRIA TOWNSHIP
BROWNHELM TOWNSHIP
AMHERST TOWNSHIP
NEW RUSSIA TOWNSHIP
HENRIETTA TOWNSHIP
CARLISLE TOWNSHIP
EATON TOWNSHIP
COLUMBIA TOWNSHIP
CAMDEN TOWNSHIP
PITTSFIELD TOWNSHIP
LAGRANGE TOWNSHIP
GRAFTON TOWNSH P
LIVERPOOL TOWNSH P
OLMSTED TOWNSHIP
BRUNSWICK HILLS TOWNSHIP

Weiss Field
Sweetbriar Golf Course
French Creek Reservation
Red Tail Golf Club
Bradley Woods Res Metro Park
Cleveland-Hopkins Int'l Airport
Carlisle Reservation
Carlisle Golf Club
Mallard Creek Golf Club
Royal Crest Golf Club
Hickory Nut Golf Club
Dorlon Golf Club
Grey Hawk Golf Club

Legend

- Above Ground Project Route
- Below Ground Project Route
- County Boundary
- Political Township Boundary
- Municipal Boundary
- Lake
- Railroad

Roads

- Interstate
- US Highway
- State Highway

1:122,000

0 0.45 0.9 1.8 2.7 3.6 Miles

OHIO
Columbus
Cincinnati
Cleveland
Detroit
Windsor
WEST VIRGINIA
Frankfort
Charleston

Date: 12/15/2014
Drawn by: JPS

Figure: 1

additional temporary workspace areas ("TWAs") outside of the construction ROW will be needed for short durations. Existing public and private roads would be utilized for access to most of the construction ROW; however, approximately 11,806 feet (2.2 miles) of 25-foot-wide temporary access roads are anticipated. The required regulating station will occupy up to approximately one acre in size.

1.2 AGENCY INVOLVEMENT AND LEGISLATIVE REQUIREMENTS

The proposed Project will require siting approval from the Ohio Power Siting Board ("OPSB") in accordance with Ohio Administrative Code 4906. Ohio Revised Code 149.53 states that state agencies, such as OPSB, should cooperate and work with the Ohio Historic Preservation Office ("OHPO") during the planning and construction of state-reviewed projects. Therefore, OPSB requires consultation with the OHPO regarding the protection of National Register of Historic Places ("NRHP") properties, including any sites that are eligible for listing, or state significant historic properties. The proposed Pipeline Project will require additional approvals from other state and federal agencies, including a Section 404 permit from the U.S. Army Corps of Engineers. Therefore, the proposed Pipeline Project would be subject to review under Section 106 of the National Historic Preservation Act of 1966, as amended.

1.3 PURPOSE AND NATURE OF THE ARCHAEOLOGICAL RESOURCES INVESTIGATION

The Addendum I Phase I archaeological investigation was conducted within the scope of the Ohio Historic Preservation Office's ("OHPO") *Archaeological Guidelines* (OHPO 1994 as reprinted in 2011) and *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* [48 Federal Register 44716-44740] (National Park Service [NPS] 1983). This addendum report discusses only those results of the September/October 2014 (Addendum I) investigation and provides survey results for the portions of the Project Area where route adjustments had been made to the Project route as previously planned. The Area of Potential Effect ("APE"), for the purposes of this investigation, included all areas of proposed construction activities or other potential ground disturbing activities outside of the original APE. However, similar to the original spring 2014 investigation, the "Project Area" encompassed the APE and an area extending beyond the APE. The investigation was conducted to identify archaeological resources within the Project Area that may be potentially eligible for inclusion in the NRHP.

This supplemented Phase I archaeological investigation consisted of a literature search of documents of previously recorded sites within one mile (1.6 km) of the revised Project centerline and of previously conducted surveys within the Project Area. The archaeological investigation also consisted of a Phase I archaeological survey to identify any intact archaeological sites within the Project Area. During September and October of 2014, approximately 123.72 acres (50.07 hectares) were surveyed.

This report describes survey methodology, environmental and cultural settings, previous investigations, results, and recommendations for the Project.

2.0 ENVIRONMENTAL HISTORY OVERVIEW

This chapter is designed to give a brief overview of the environmental landscape of the Project Area.

2.1 GLACIAL HISTORY, GEOLOGY, AND HYDROLOGY

The Project Area falls within the Erie Lake Plain and Mautnee Lake Plain Physiographic Regions within the Huron-Erie Lake Plains Section of the Central Lowlands Province (Brockman 1998). The topography of the region can best be described as a relatively flat to gently rolling lake plain dissected by numerous drainages and exhibiting large tracts of wetland.

The Project Area was covered by Illinoisan glaciation more than 75,000 years ago, and by Wisconsin glaciation approximately 15,000 to 20,000 years ago. Soils generally consist of clays formed in glacial drift. Surface drift in Lorain County consists of three predominant till deposits: Hiram till, Mogadore till, and an unnamed till of the Killbuck lobe (Ernst and Musgrave 1976). The underlying bedrock of the Project Area is primarily comprised of shale and sandstone of the Olentangy and Ohio Formation of the Devoniam System (ODNR 2006).

The Project Area is located within the Black-Rocky watershed. The area is drained by several intermittent streams and ditches as well as French Creek. French Creek runs west for a short distance where it drains into the Black River. The Black River runs northwesterly until it empties into Lake Erie at Lorain. In addition to crossing various streams and ditches, significant waterbodies crossed by the Project Area include French Creek and the East Branch of the Black River (USGS 2014).

2.2 CLIMATE

At the beginning of the Holocene period, much of the Midwest was dominated in summer by cool/dry air masses from Canada; however, as the Laurentide ice sheet began to retreat during the early Holocene, strong Pacific and Gulf air masses became increasingly dominant during the summer months. The warmth and dryness brought on by the Pacific and Gulf air masses reached a maximum at about 7200 B.P., after which came a period of small floods, likely brought about by convectional thunderstorms. This period, which ended around 6000 B.P., ushered in a period of larger floods and general cooling (Knox 1983). The vegetation "may be related directly to climatic controls such as storms and floods rather than indirectly to broad-scale [Holocene] changes in vegetative cover" (Knox 1983:33). After the complete retreat of the Laurentide ice sheet, the large differences in summer temperatures from Canada to the Gulf Coast no longer existed. Temperatures in the late Holocene favored those of the present-day regional and seasonal variations from moderately warm in summer to reasonably cold in the winter as both the

Canadian and Gulf air masses were allowed to penetrate deep within the region (Knox 1983).

Today, warm, humid summers and cold, dry winters characterize the mid-continental climate of the Project Area, greatly influenced by its location off of Lake Erie. Average winter temperature in Lorain County within the Project Area is 29° Fahrenheit (F), with a winter average daily minimum temperature of 21° F. The summer average temperature is 71° F, with an average daily maximum temperature of 83° F. Total annual precipitation is an average of 35 inches per year, with 64 percent of the precipitation falling between March and September. Average annual snowfall is approximately 43 inches (Ernst and Musgrave 1976).

2.3 SOILS

General soil series encountered within the Project Area are listed below in Table 1 (Ernst and Musgrave 1976; USDA-NRCS 2014). Detailed descriptions of soils encountered during subsurface excavations are discussed in the relevant sections below in Section 6.

TABLE 1. SOIL SERIES ENCOUNTERED WITHIN THE PROJECT AREA

Soil Series	Description
Mahoning	Very deep somewhat poorly drained soils formed in low-lime till on till plains of Wisconsin age. The till is derived primarily from shale and siltstone, with minor amounts of limestone and crystalline erratics. Slope is primarily 0 to 6 percent, but ranges to 15 percent.
Udorthents	Moderately well drained to excessively drained soils that have been disturbed by filling, and areas that are disturbed or covered by development. Slopes range from 0 to 10 percent but are dominantly 0 to 5 percent.
Orrville	Very deep, somewhat poorly drained soils formed in loamy alluvium and are on flood plain steps on flood plains. They formed in alluvium from upland areas of low-lime drift, and from areas of sandstone, siltstone, shale, and limestone. They are in or bordering areas of Wisconsinan or Illinoian glaciation. Slope ranges from 0 to 3 percent.
Miner	Very deep, very poorly drained soils formed in low-lime glacial till principally derived from acid shale on lake plains which have been modified by lake action, and in shallow depressions and narrow drainageways on till plains. They formed in till principally derived from acid shale. The slope gradient ranges from 0 to 2 percent.
Lorain	Very deep, very poorly drained soils that formed in Wisconsin age fine-textured glaciolacustrine sediments. These soils formed in Wisconsin age glaciolacustrine sediments in depressions on lake plains, terraces, and till

Soil Series	Description
	plains. Slope ranges from 0 to 2 percent.
Fitchville	Very deep, somewhat poorly drained soils formed in stratified Wisconsinan age glaciolacustrine sediments that are derived mainly from materials high in sandstone and shale and are on summits and shoulders on lake plains and are on treads on terraces. Slope ranges from 0 to 12 percent.
Mermill	Very deep, very poorly drained soils on lake plains, and less commonly on till plains of late Wisconsinan age. They have a plane or concave surface with a slope gradient of 0 to 2 percent.
Oshtemo	Very deep, well drained soils formed in stratified loamy and sandy deposits on outwash plains, valley trains, moraines, and beach ridges. These soils formed in stratified loamy and sandy deposits that have a high content of quartz and contain variable amounts of material derived from igneous and metamorphic rocks, sandstone, limestone, and dolomite. Slope ranges from 0 to 55 percent.
Holly	Very deep, very poorly and poorly drained soils formed on broad flat areas and in slight depressions on flood plains receiving alluvium from upland areas of low-lime drift and noncalcareous sandstone and shale. Slope ranges from 0 through 3 percent.
Chili	Very deep, well drained soils on outwash plains, terraces, kames, and beach ridges. The soils formed in Wisconsinan age stratified outwash derived largely from noncalcareous sandstone and shale that contains a high amount of quartz gravel. Commonly, the outwash is mantled with silt. The slope gradient typically is 0 to 18 percent, but the range is up to 70 percent.
Haskins	Very deep, somewhat poorly drained soils that are moderately deep or deep to dense till on lake plains and on till plains of late Wisconsinan age. They formed in loamy water-sorted or glaciolacustrine material and in the underlying till. These soils are on lake plains and till plains. Slope ranges from 0 to 6 percent.
Lobdell	Very deep, moderately well drained soils that formed in recent loamy alluvium. These soils are on nearly level flood plains receiving loamy alluvium from upland areas of sandstone, shale, and low lime glacial drift. Slope ranges from 0 to 3 percent.
Mentor	Very deep, well drained soils formed in silty lacustrine material. These soils are on threads and risers on terraces, dissected lake plains, and silty outwash plains. These soils are formed in stratified glaciolacustrine or terrace deposits derived from materials high in

Soil Series	Description
	sandstone and shale. Slope ranges from 0 to 70 percent.
Luray	Very deep, very poorly drained soils formed in silty lacustrine material or slack water sediments. These soils are on slight depressions or on level areas on lake plains, terraces, outwash plains, and in small local areas on till plains. Slope ranges from 0 to 2 percent.
Sebring	Very deep, poorly drained soils formed in stratified Wisconsinan age glaciolacustrine sediments and are on broad flats and depressions on lake plains and slackwater terraces. Slope ranges from 0 to 2 percent.
Trumbull	Deep, poorly drained soils formed in low-lime glacial till. These soils are on level to gently sloping and depressional portions of till plains. Slopes are dominantly less than 4 percent but range to 6 percent.
Rawson	Very deep, moderately well drained soils that formed in loamy sediments and till on till plains, outwash plains and lake plains of Wisconsinan age. They are moderately deep or deep to dense till. Slope ranges from 0 to 12 percent.
Bogart	Very deep, moderately well drained soils that formed in Wisconsinan age stratified outwash deposits and are on convex slopes in areas of low relief on stream terraces, beach ridges, and outwash plains. Slopes range from 0 to 12 percent.
Tioga	Very deep, well drained soils formed in alluvium on higher positions in flood plains. These soils formed in recent alluvium, mainly from areas of sandstone, siltstone, and shale. Slope ranges from 0 to 3 percent.
Ellsworth	Very deep, moderately well drained soils formed in low-lime till on plains of Wisconsin age typically with a with a calcium carbonate equivalent of between 5 and 15 percent. The till is derived from shale and sandstone, with minor amounts of limestone and crystalline rocks. Slope ranges from 0 to 70 percent.
Allis	Moderately deep, poorly drained soils on bedrock controlled uplands. They are less frequently located on lake plains. They are on till plains and, less frequently, lake plains. The soils are formed in a thin mantle of glacial till dominated by, and underlain by, acid shale which, in some places is interbedded with siltstone and sandstone. Slope is 0 to 2 percent.
Jimtown	Very deep, somewhat poorly drained soils formed in Wisconsinan Age stratified outwash deposits on stream terraces, outwash terraces, outwash plains, and beach ridges. Slope ranges from 0 to 6 percent.

2.4 FLORA AND FAUNA

Following the initial retreat of the Laurentide Ice Sheet, the Late Glacial period (14,000-10,000 B.P.) exhibited warm and dry conditions allowing for spruce parkland and mixed parkland communities to thrive, representing a mosaic of diverse plant communities (Grimm and Jacobson 2004). Environmentally sensitive species of voles and lemmings as well as large mammals and megafauna existed together in the Late Glacial period (Custer 1985). A mix of woodland musk-ox, mammoth, mastodon, giant moose, woodland peccaries, white-tailed deer, caribou, elk, and giant beaver, among other species, would have dominated the landscape and been prime game resources. Later period megafaunal extinctions would have forced native peoples to intensify the procurement of animals of smaller sizes, but lessening the need to travel greater distances to exploit these resources. Transition zones of grassland and woodland would have been the focus of the greatest variety of these types of species. However, low order streams, bogs, ponds, and swamps would also have been high potential game resource areas (Anderson 2001; Custer 1985).

The Pre-boreal/Boreal period (10,000-8,000 B.P.) saw a reduction of open grassland and a spread of boreal forests with spruce and pine as the dominant species, although some oak forests would have existed at this time. The spread of coniferous forest would have dramatically lowered the opportunities for megafauna and other large fauna to thrive. As a result, poorly drained swampy areas and other waterbodies would have been the focus of game animals such as deer, moose, and elk (Anderson 2001). The warming trend of the Atlantic climatic period (8,000-5,000 B.P.) was characterized by greater precipitation and an expansion of mesic forests, starting with hemlock and followed by oak, which became the dominant species by approximately 5,000 B.P. (Grimm and Jacobson 2004). During this time, fauna would have relatively mirrored that of the present day, with deer and turkey as major game animals; however, locally available plant species that were later domesticated may have begun to be intensively collected at this time (Anderson 2001; Custer 1985).

Dramatic changes in flora and fauna was experienced during the Sub-boreal climatic period (5,000-3,000 B.P.) as moisture increased and temperature slowly decreased. These changes were evidenced by an increase in nut bearing trees such as hickory and an expansion of grasslands (Grimm and Jacobson 2004). These types of changes would have favored species such as deer and gaming birds, such as turkey. Hydrologic fluctuations due to the increase in moisture and precipitation would have also affected riverine and estuarine systems and, therefore, the species in them. Species with limited tolerance to temperature and salinity fluctuations, such as oysters and anadromous fish, would have been affected (Anderson 2001; Custer 1985).

The climate of the sub-Atlantic period (3,000 B.P. to Present) saw an increase in moisture and cooler temperatures and led to a relative approximation of modern conditions. Flora would have represented vast forests of largely white pine with smaller amounts off basswood and yellow birch. Roots, tubers, berries, and nuts would have supported white-

tailed deer, black bear, turkey, cottontail, beaver, raccoon, elk, woodchuck, gray squirrel, ruffed grouse, and migratory water fowl, which would have been important species to the Project Area's native populations. This area also supports several species of reptiles, amphibians, and native fish populations, which would have equally been important to diversified animal resource procurement. Previously collected plant species, now heavily domesticated during this period, would have functioned as primary plant resources for native populations (Anderson 2001; Custer 1985).

3.0 CULTURAL HISTORY OVERVIEW

3.1 PREHISTORIC PERIOD

The sequence of precontact cultural traditions is divided into generalized periods based on material culture (e.g., projectile-point types, ceramic types) and subsistence adaptations (e.g., hunting and gathering, horticulture, and agriculture). Other sources of information, including oral traditions and language studies, have also been used to "type" cultural traditions. The generalized periods presented here are Paleoindian, Archaic, and Woodland.

3.1.1 Paleoindian Period

The Paleoindian period (ca. 15,000-9,000 B.P.) is traditionally considered the earliest period of human occupation in Ohio. Prior to 15,000 B.P., Ohio was largely covered by the Wisconsin glacier. As the ice receded and Pleistocene megafauna moved into Ohio, so did Paleoindians. The Paleoindians were organized in small nomadic hunting and gathering bands, and brought with them the technology and skill necessary to exploit the local resources (Blank 1982). Archaeological remains suggest that seasonal rounds were followed, exploiting hill, bluff, and terrace locations, and, very rarely, caves as campsites.

The Early Paleoindian period tool kit includes fluted points such as Clovis and Cumberland types. Archaeologically, fluted points are concentrated along the Ohio, Scioto, and Miami Rivers and in Coshocton County, where Upper Mercer chert could be quarried (Seeman and Prufer 1982). The Late Paleoindian or Plano period tool kit included unfluted lanceolate projectile points of the parallel-flake tradition, and stemmed lanceolates such as Scottsbluff-Eden types (Prufer and Baby 1963). The Plano period shows transition between the Early Paleoindian period and the Archaic period, retaining much of the tool kit of the former, but shifting to the subsistence patterns of the latter, as Pleistocene megafauna became unavailable (Mason 1962, Prufer and Baby 1963). Archaeological remains of the Plano period are concentrated in northwestern Ohio.

3.1.2 Archaic Period

The Archaic period in Ohio (ca. 10,000-2,500 B.P.) shows a continuation of Paleoindian lifeways, modified to accommodate the disappearance of Pleistocene megafauna. A wide variety of small fauna were exploited within a more restricted seasonal round. Archaic tool kits differ significantly from Paleoindian tool kits. Projectile points of stemmed, corner-notched, and bifurcate base forms prevail (Prufer and Long 1983).

The Early Archaic (10,000-8,000 B.P.) tool kit shows a continued emphasis on hide working and hunting. New to the tool kit are heavy wood-working and groundstone tools, which did not become common until later in the Archaic. Dalton, Kirk/Thebes, and

Bifurcate projectile point types are common (Shane 1967; Broyles 1970). Most Kirk component sites in Ohio occur in riverine settings (Blank 1970).

Wood-working tools, groundstone tools, and atlatl weights become more prevalent in the Middle Archaic (8,000-5,500 B.P.) tool kit (Fiedel 1987). Middle Archaic sites also show an apparent increase in fishing, as suggested by net sinkers (Fowler 1959; Funk 1978; Griffin 1983). The prevalent projectile point types of the Middle Archaic in Ohio are Eva, Morrow Mountain, Big Sandy, Kanawha, and Stanley stemmed (Justice 1987).

Regional diversity flourishes in the Late Archaic (5,500-3,000 B.P.) archaeological record (Funk 1983; Griffin 1983; Feidel 1987). Populations grew during the Late Archaic, as regional cultures adapted to local conditions. One such local adaptation is the Laurentian Tradition, first defined in the St. Lawrence Valley of New York. The Laurentian Tradition is characterized by broad-bladed notched projectile points, biface knives, and end scrapers (Tuck 1977). In Ohio, Brewerton and Vosburg projectile points are common to Laurentian sites (Shane 1967; Justice 1987). Modern climate, environment, flora, and fauna were established in Ohio by ca. 3,000B.P. (Blank 1970; Funk 1978).

Archaeological remains of Archaic settlements suggest repeated seasonal use, and include more specialized activity sites and rockshelters than evident during the Paleo-Indian period. During the Late Archaic, semi-permanent settlements with large populations appear in the archaeological record. Exotic grave goods recovered from human burials suggest that long-distance trade networks were available (Blank 1982).

3.1.3 Woodland Period

The transition from the Archaic to the Woodland period in Ohio is evidenced archaeologically by broad spear points, including Perkiomen, Lehigh, and Ashtabula types (Shane 1967; Justice 1987). The Woodland period (ca. 3,000 B.P.-AD 1600) is distinguished archaeologically by continuously occupied habitation sites, horticulture, agriculture, and grit-tempered cord-marked ceramics. Burial practices are more elaborate than during the Archaic period.

The Early Woodland or Adena Phase (ca. 3,000-2,100 B.P.) is characterized by elaborate mortuary practices and circular earthworks. The Adena Phase is believed to have developed in the Ohio River Valley and spread to Indiana, Kentucky, and West Virginia. Blocked end tubular pipes, gorgets, Adena projectile points, copper items, and ceramics are among items typically recovered from Adena Phase sites. Adena people subsisted by hunting, plant collecting, fishing, and cultivating squash and corn (Blank 1982). The number and distribution of Adena mounds suggest that small social groups exploited small local territories (Seeman 1984).

The Middle Woodland, or Hopewellian Phase (ca. 2,100 B.P. to AD 600), had a wide-spread influence, centered in the Sciota River Valley in southern Ohio, Indiana, and Illinois. The Hopewellian Phase is characterized by burial mound clusters, geometric earthworks, exotic artifacts and raw materials, and subsistence based on hunting, fishing, plant collection, and squash, maize, amaranth, and goosefoot cultivation. Grave offerings are more elaborate than in the Adena Phase, and include mica and tortoise shell objects, grizzly bear canines, effigy pipes, woven plant fiber fabrics, and human clay figurines (Fiedel 1987).

The Late Woodland period (AD 600-1600) shows continuation of Hopewellian Phase subsistence strategies, but not of the elaborate mortuary practices. Large nucleated village sites develop as maize agriculture becomes more important, and hunting less important. Archaeological evidence of the Late Woodland period is most frequently found on major floodplains with fertile, well drained soils. The Intrusive Mound people, who inhabited Ohio during the Late Woodland period, were so named by Squire and Davis in the 1840s when they discovered intrusive burials in Adena and Hopewell mounds. Grave offerings with these intrusive burials include large triangular chert blades, and scrapers of chert, deer bone, and shell. Bone and antler barbed harpoons were used for fishing. A cutting tool made of a beaver incisor mounted in an antler handle is characteristic of the Intrusive Mound people. Platform pipes similar to those used by the Hopewell have been found associated with the Intrusive Mound people, suggesting that the two groups could be related (Potter 1968:55-56).

Also occupying central and southern Ohio during the Late Woodland period were the people of the Cole Complex, so named after the Walter S. Cole Site in Delaware County, excavated in 1948 (Potter 1968:56-57). Archaeological evidence suggests that Cole Complex people hunted, collected wild plants, and cultivated some plants. Projectile points associated with this complex vary in size and thickness, but tend to be side notched. Large chipped triangular chert knives and chipped slate disks for skinning are characteristic to the Cole Complex (Potter 1968:57). Cole Complex sites include semi-permanent villages and temporary camp sites. Pottery from this complex is generally large, coiled, cord-marked, and grit-tempered, and is similar to Peters Cordmarked (Potter 1968:59; Prufer 1975:13). It is unclear whether Cole Complex people are related to the Hopewell, who preceded them, or to the Fort Ancient people, who followed them (Potter 1968:61-62). Fort Ancient people occupied southern Ohio, and Erie (Whittlesey) people occupied northern Ohio at the end of the Woodland period, both continuing typical Woodland lifeways (Potter 1968:63-72).

3.2 PROTO-HISTORIC PERIOD

At the end of the Woodland period, populations in Ohio began to decrease. While there is no conclusive evidence of the reason for this general population decline, the transmission of European diseases inland from the East Coast through trade goods and inter-group contact is a likely cause (Griffin 1978). French maps from 1681 show that

Shawnee (believed derived from the Mississippian-influenced Fort Ancient people) villages north of the Ohio had been destroyed, and that residents had relocated to western Tennessee (Callender 1978; Hunter 1978). Early historic records of what Native American groups had legitimate claim to territories in Ohio during the early contact period are not conclusive (Wallace 1969).

3.3 HISTORIC PERIOD

From the 1730s to the 1750s, the Shawnee, Wyandot, and Delaware moved into Ohio. This region was beyond the strongest reach of the Iroquois and served as a refuge for tribes avoiding the Iroquois (Hurt 1996:9-10). At this time, the French and the British were vying for control of the Ohio area. The allegiance of the Native American tribes in the area was sought by both the French and the British, not only for the capital gains to be made in trade with the Indians, but also for the military support the Indians could provide. The British strategy for obtaining Indian support included generous trading practices. The French on the other hand, were viewed by the Indians as greedy in trade, but they were more willing to take up arms alongside the Indians, or even against them if they were displeased. The balance of power, and the allegiance of the Ohio tribes, swung back and forth between the British and French in the early history of Ohio (Hurt 1996).

In 1753, the French claimed all land north of the Ohio River, while the British claimed all land to the south of the Ohio River, leaving no land for Indian claims. The predicament of the Ohio tribes at this time was that the French were willing to have the Indians fight to protect French interests, as were the British, but neither side was willing to join the Indians in the fight for Indian land. Beginning in 1754, and throughout the French and Indian War, the Ohio tribes were allied with the French (Hurt 1996:40). Under the Treaty of 1763, also known as the Treaty of Paris, England was granted the area of Great Lakes from Pennsylvania to the Mississippi River, after Britain's victory over France and Spain formally ending the French and Indian War. Various eastern states, such as Virginia, Connecticut, and Pennsylvania, claimed all or part of Ohio. After the war, the British victors demanded the return of all prisoners, and viewed the Ohio tribes as their subjects. Indian tradition does not require the return of captives, who are often assimilated into the tribe to compensate for tribal members killed in conflict. The Pontiac Rebellion was born of the Ohio tribes' frustration over attempts to negotiate with the British (Hurt 1996:45).

In 1763, Neolin, a Delaware, began teaching that European ways and goods were sinful, and encouraging a return to traditional tribal ways of life (Hurt 1996:46). Pontiac, an Ottawa war chief, combined Neolin's message with military force directed at driving White settlers off of tribal land (Hurt 1996:47). When the Pontiac Rebellion drew to a close in 1766, there was some recognition of tribal land rights by the British, but the tribes were still viewed as British subjects, and very little had changed (Hurt 1996:54).

The Treaty of Fort Stanwix was negotiated by the British with the Iroquois in 1768 for all lands south and east of the Ohio River, ostensibly a permanent boundary between tribal and British lands. The Shawnee refused to acknowledge this treaty, claiming that the Iroquois had no right to negotiate regarding that area (Hurt 1996:56-57). By 1774, the Treaty of Fort Stanwix was violated by settlers moving into Virginia and Kentucky, with bloody results. Shawnee retaliated for the encroachment by murdering settlers along the Ohio River; settlers retaliated for those murders by murdering Shawnee (Hurt 1996:57). The Shawnee were not offered support by the Iroquois, or by neighboring tribes. The Shawnee finally had to accept the Treaty of Fort Stanwix and stop hunting south of the Ohio River, the first cession of land by an Ohio tribe (Hurt 1996:58).

During the Revolutionary War, the Ohio tribes joined the British to maintain trade relations and to be on the winning side. Since the British had defeated the French, the Indians believed they would also defeat the Americans. The Americans, meanwhile, courted peace with the Indians, who did not trust them (Hurt 1996:76). After the Treaty of Paris of 1783, the land north of the Ohio River was a bone of contention between the Americans and the Ohio tribes (Hurt 1996). In 1785, the Treaty at the Mouth of the Great Miami, between the Shawnee and the United States, gave the United States control of the land north of Ohio River. The Ohio land claims of the eastern states were settled by the Ordinance of 1787, creating the Northwest Territory. Connecticut retained a strip of land 120 miles long from Pennsylvania to Sandusky along Lake Erie, called the Western Reserve. In 1796, the State of Connecticut sold the Western Reserve to the Connecticut Land Company, and settlers began coming to the Western Reserve in great numbers in the following decades (WPA 1940).

After "Mad Anthony" Wayne negotiated the Treaty of Greenville in 1795, American and Indian relations changed:

> After Wayne's victory, the Indian policy of the United States changed as Thomas Jefferson had wished from "war to bribery." Thereafter, the government assumed that whenever it wanted more land, the Indian nations would sell it on demand, a perverse form of preemption by whites on Indian lands (Hurt 1996:142).

While the Indians saw this as a permanent boundary, the United States viewed it as temporary (Hurt 1996:142).

From that point on, the little territory left to the Ohio tribes was reduced incrementally. After the constitution of the state of Ohio was approved by the United States Congress on February 19, 1803, white settlement of the state proceeded quickly (Hurt 1996:282). After The War of 1812, the economy boomed and the rate of settlement by whites increased rapidly. In 1815, residents of European descent owned 75% of the land in the state, the Western Reserve also held land (Hurt 1996:344).

The Treaty of Fort Meigs, in 1817, relegated the Wyandots to a reservation in northwestern Ohio (Hurt 1996:1), as were the Delaware in the same year (Hurt 1996:212). In 1832, and again in 1836, this area was reduced in size. The Seneca and the Shawnee were removed from Ohio by 1840, as were the Wyandot in 1843. At that time, only about 700 Wyandot remained in the state, to be relocated in Kansas (Hurt 1996:1-2).

3.3.1 Lorain County

The lands in Ohio currently known as Lorain County were purchased by the Connecticut Land Company in 1795 for about 42 cents per acre. In the first years of the nineteenth century, some of the first European settlers began to arrive from Connecticut and other eastern states. Some traveled overland on muddy roads, and the rest by boat. The first family to settle the county was the Beebes, who came in 1807 as the advance agents of Nathan Perry, Jr., son of Nathan Perry of Cleveland. Shortly after their arrival, Perry built a house a short distance east of Black River, in which he opened a store and began trading with the Native Americans. In April of 1811, William Martin came from Pennsylvania with his family. They were followed in that same year by the Gillmore family from Massachusetts (Nichols 1924).

In 1822, having enough residents, Lorain County, named for the province of Lorraine in France, was formed out of parts of Cuyahoga, Medina, and Huron counties. Up to 1830, little or no settlement was made in the county away from Lake Erie. In 1833, a number of Germans immigrants arrived. Among the family names were: Feber, Baumhart, Friend, Bark, Haulkauer, Hageman, Hahn, Vetter, Harwick and others. Heman Ely first came to the area in the early 1800s. He donated land and money for the construction of the courthouse in Elyria, swaying the legislator's decisions to locate the county seat there (Nichols 1924).

By the mid-nineteenth century, industries such as shipbuilding, steelmaking, and fishing brought people, money and railroads to the area. In 1832, Presbyterian minister John L. Shipherd began planning to establish an institution of higher education in Oberlin, Ohio. The school opened in December 1833 and became known as Oberlin College. It was the first institution of higher education in the United States to admit women and African Americans into the same classes as white men (Ohio Historical Society 2005).

During the twentieth century, Lorain County's population has continued to grow. One of the reasons for this growth was the township's proximity to Cleveland, Ohio, in neighboring Cuyahoga County. Many Cleveland residents moved to the area hoping to escape the high housing costs and congestion of the city. However, many of Carlisle Township's residents commute to Cleveland to work. Between 1990 and 2000, Lorain County's population increased by five percent to a total of 284,664 residents in 2000. Lorain County has remained largely rural, with only seven percent of the county deemed to be urban. Despite the area's rural character, most residents earn their livings by

working in manufacturing, sales, or service positions. Lorain's harbor has remained an important source of industry, sending products across the Great Lakes and around the world. For a brief period, during the late nineteenth and early twentieth centuries, steel was a major industry in Lorain County. By the mid-twentieth century, those operations had disappeared from the county (Ohio Historical Society 2005).

4.0 METHODS

4.1 OBJECTIVES

The primary objectives of the investigation were to determine whether the area to be affected by the proposed Project contains any archaeological resources and if those resources are potentially eligible for listing in the NRHP. All work was conducted in accordance with the OHPO *Archaeological Guidelines* (OHPO 1994 as reprinted in 2011) and *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* [48 Federal Register 44716-44740] (National Park Service [NPS] 1983).

4.2 AREA OF POTENTIAL EFFECT (APE)

The APE, for the purposes of this investigation, included all areas of proposed construction activities or other potential ground disturbing activities outside of the original APE. However, similar to the original spring 2014 investigation, the Project Area encompassed the APE and an area extending beyond the APE. This additional area on either side of the anticipated ROW was included in the Project Area to allow for flexibility in the event of minor route or workspace adjustments. The adjusted route portion of the Project Area (Addendum I) consists of 194.75 acres (78.81 hectares), which includes a 200-foot corridor centered on the centerline of the Proposed Route, as well as anticipated TWAs outside the 200-foot corridor.

4.3 ARCHAEOLOGICAL SURVEY AREA

A portion of the Project Area (nearly 17 percent) will be located in or along previously disturbed rights-of-way or along existing developed areas. Based on both a desktop and field delineation of wetlands, nearly 30 percent of the Project Area will cross wetlands. Areas considered to have a high potential to contain significant, intact archaeological resources include those in upland (non-wetland) areas near water sources that have not been previously disturbed by the installation and operation of existing utilities or other infrastructure, or by any other form of land development.

Because the majority of the Project Area is located in or along areas that have been previously disturbed and given the prevalence of wetlands, only a portion of the Project Area falls within areas that were assumed to have a high potential to encounter significant, intact archaeological resources. As a result, Phase I archaeological survey was only conducted within the portions of the Project Area that occur within these assumed high potential areas (the "Survey Area") (see Appendix A: Survey Results Maps). The September/October 2014 (Addendum I) Survey Area encompassed approximately 123.72 acres (50.07 hectares). The remaining 71.03 acres (28.74 hectares) of the 194.75-acre (78.81-hectare) adjusted route portion of the Project Area were excluded from survey. Fieldwork was conducted from September 2 to September 6, and

October 28 to October 29, 2014. Andrew Bielakowski and Mark Doperalski served as Principal Investigators.

4.4 ARCHAEOLOGICAL BACKGROUND RESEARCH

On February 26, 2014, staff from ERM conducted background research online using the OHPO's *Online Mapping System* for information regarding previously identified archaeological sites within one mile (1.6 km) of the proposed centerline, as well as archaeological surveys previously conducted within the Project Area. In addition, USGS topographic quadrangles, historical plat maps, aerial photographs, soils data were consulted and reviewed in order to assess the portions of the Project Area that may possess a higher potential for containing previously unidentified archaeological sites.

4.5 ARCHAEOLOGICAL SURVEY METHODS

The Addendum I Phase I archaeological survey work for the Project was conducted during September and October of 2014. Andrew Bielakowski, M.A., RPA and Mark Doperalski, M.A., RPA served as Principal Investigators, and Mark Doperalski, M.A., RPA conducted the fieldwork with Ryan Lisson, B.S. (see Appendix C for a list of Project personnel).

The following survey methodology was implemented to identify archaeological resources within the Survey Area as defined above. All work was conducted in accordance with the OHPO *Archaeological Guidelines* (OHPO 1994 as reprinted in 2011).

4.5.1 Pedestrian Survey

Systematic pedestrian surface reconnaissance was carried out across the entire Survey Area as defined above. Pedestrian reconnaissance was employed to ascertain whether above ground features, such as earthworks, stone features, or abandoned structural foundations, were present within the Survey Area. Pedestrian survey was also employed to identify artifacts in all areas where 50 percent or more of the ground surface was visible. Pedestrian reconnaissance was conducted at 10-meters (m) (33-ft) intervals and was reduced to 1- to 5-m (3- to 16-ft) intervals at locations where artifacts were identified or within the boundaries of previously recorded archaeological sites.

4.5.2 Shovel Testing

At least one shovel test was excavated in each area exhibiting greater than 50 percent surface visibility where artifacts were identified on the surface. Shovel tests were excavated at 15-m (49-ft) intervals in areas exhibiting less than 50 percent ground surface visibility that were not inundated or exhibiting excessive slope. Shovel tests were square excavations, measuring approximately 50 by 50 centimeters (cm). All excavated soil matrices were passed through ¼-inch hardware mesh to ensure the consistent recovery of

artifacts. Tests were excavated in 10 cm arbitrary levels within soil layers to a minimum of 10 cm into the subsoil.

4.5.3 Site Delineation

When archaeological sites were identified during the pedestrian surface reconnaissance survey, an intensive surface examination of the site area was conducted to determine the boundary of the site area as well as record artifact concentrations and feature locations. Shovel tests were be used to establish the soil stratigraphy at the site, determine the vertical limits of the site, and assess if subsurface deposits were likely to exist below the plow zone or initial soil horizon.

When archaeological sites were identified during subsurface survey (i.e., shovel testing) within areas exhibiting less than 50 percent ground surface visibility, additional shovel tests were placed 5 to 10-m (16 to 33-ft) from the original find spot to further delineate the site area; however, testing was confined to within the Survey Area.

4.5.4 Field Documentation

The Survey Area was navigated using a Trimble GeoExplorer XH sub-meter global positioning system ("GPS") unit. All archaeological finds and site boundaries were documented using GPS. Survey data was recorded through standardized forms and the field director's daily log. Recorded information included: shovel test locations and methods of testing; the numbers, types, and locations of recovered archaeological materials; the depth of shovel tests and the thickness of excavated soil layers; soil textures and inclusions (both natural and archaeological); and soil color according to Munsell® color charts.

4.6 LABORATORY METHODS

For the purposes of cataloging and analysis, each provenience from which artifacts were collected was assigned a unique bag number in the field, beginning with bag number "1" at each site. Upon completion of the fieldwork, all artifacts collected during the archaeological investigation were returned to the ERM archaeological laboratory for cleaning, processing, and cataloging. All artifacts identified on public lands will be curated in accordance the OHPO *Archaeological Guidelines* (OHPO 1994 as reprinted in 2011). ERM is currently in the process of setting up a curation agreement with the Ohio Historical Society. In the case of artifacts identified on private lands, a letter will be sent to the appropriate landowner asking if the landowner is willing to donate their artifacts to an OHPO-approved curation facility. If the landowner is unwilling to donate their artifacts to a curation facility, the artifacts will be photographed and fully documented prior to the artifacts being returned to the landowner.

4.7 EVALUATION

Upon completion of the fieldwork and laboratory analyses, the eligibility of the identified sites for listing on the NRHP was assessed based on the site's significance and integrity. The NRHP criteria, summarized below, were used to help assess the significance of the site. While all four criteria are considered, prehistoric archaeological sites are typically eligible for listing on the NRHP under Criterion A or D.

- Criterion A – association with the events that have made a significant contribution to the broad patterns of our history;
- Criterion B – association with the lives of persons significant in our past;
- Criterion C – embodiment of the distinctive characteristics of a type, period, or method of construction; representation of the work of a master; possession of high artistic values; or representation of a significant and distinguishable entity whose components may lack individual distinction
- Criterion D – potential to yield information important to prehistory or history (NPS 1983).

5.0 LITERATURE REVIEW

5.1 PREVIOUS ARCHAEOLOGICAL STUDIES

Previous archaeological resources studies conducted within the Project Area are discussed in the original survey report (Bielakowski and Doperalski 2014). No previous investigations beyond those already discussed have been conducted within the current Project Area, as revised.

5.2 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES

No archaeological sites were previously identified within one mile (1.6 km) of the centerline of the current Project, as revised, that were not already discussed in the original survey report (Bielakowski and Doperalski 2014).

6.0 ARCHAEOLOGICAL SURVEY RESULTS AND RECOMMENDATIONS

6.1 INTRODUCTION

The current (Addendum I) archaeological survey for the Project was conducted from September 2 to September 6, and October 28 to October 29, 2014. Andrew Bielakowski, M.A., RPA and Mark Doperalski, M.A., RPA served as the Principal Investigators for the Project (see Appendix C for a list of Project personnel).

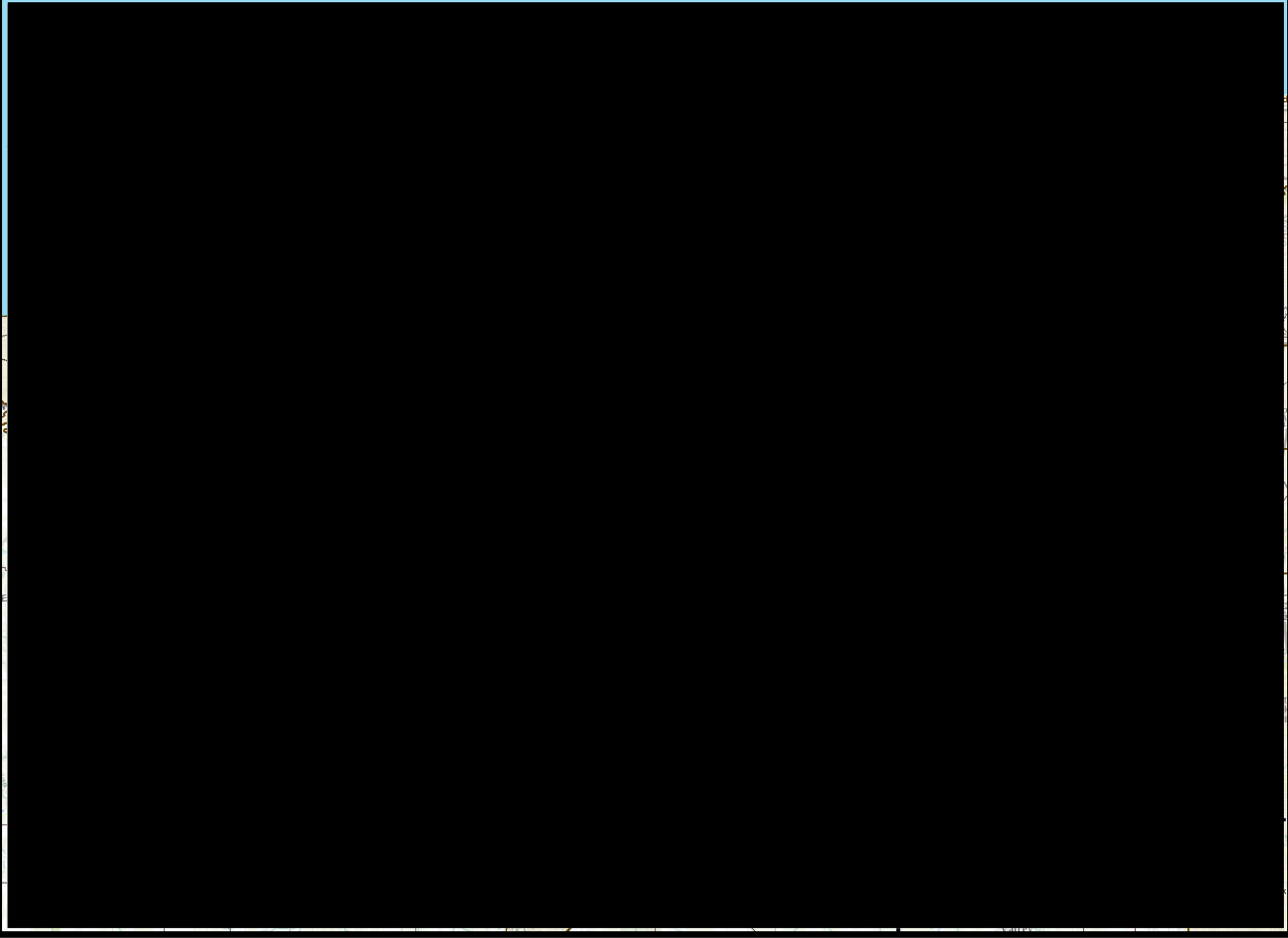
6.2 SURVEY COVERAGE

The 123.72-acre (50.07-hectare) Addendum I Survey Area consisted almost exclusively of agricultural lands complimented with a small extent of wooded flatlands and manicured residential yards. Nearly all of the agricultural lands that occur within the current Survey Area consisted of actively cultivated fields exhibiting 30 to 50 percent surface visibility due to maturing crops. A small extent of the low-lying agricultural lands had been allowed to grow over in wetland vegetation. The small extent of wooded flatlands that occur within the current Survey Area often exhibited standing water or saturated soils. Pedestrian survey was completed for 122.43 acres (49.55 hectares) and pedestrian survey with shovel testing was completed for 1.29 acres (0.52 hectares). The survey included excavation of 23 shovel tests in one area that was assessed as warranting subsurface investigation.

6.3 SURVEY RESULTS

During the Phase I archaeological survey, ERM identified one newly recorded archaeological site (33LN0284) within the Addendum I Survey Area (Figure 2; Appendix A: Map 12). The site consists of a U-plan limestone-block foundation, two dilapidated wooden outbuildings, a brick-lined well shaft, and an artifact scatter comprised of historic-period artifacts and a single prehistoric-period lithic tool. The site components were identified between two extant dwellings, a gable-el at 39385 Sugar Ridge Road and a foursquare at 39325 Sugar Ridge Road. Based on the results of the current investigation, 33LN0284 is recommended not eligible for listing in the NRHP. This newly recorded archaeological site is described in detail below within Section 6.3.1.

One additional find spot, AV212-1, was identified during the Phase I archaeological survey. AV212-1 is a secondary dump deposit consisting of several piles of discarded concrete slab fragments and limestone block located within the forest just beyond the edge of a cultivated field. The location of this find spot was noted for due diligence and is depicted on Figure 2 and Appendix A: Map 18; however, it was not recorded as an official archaeological site due to the apparent recent and secondary nature of the deposit.



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Power to be free-

AVON LAKE GAS ADDITION PROJECT

Archaeological Survey Results

Legend

- Above Ground Proposed Route
- Below Ground Proposed Route
- Newly Identified Archaeological Site
- Find Spot
- County Boundary
- Political Township Boundary
- Municipal Boundary
- Lake
- Railroad

Roads

- Interstate
- US Highway
- State Highway

N

W E

S

1:122,000

0 0.45 0.9 1.8 2.7 3.6 Miles

Date: 12/15/2014	Figure: 2
Drawn by: JPS	

6.3.1 Site 33LN0284

Site 33LN0284 consists of a U-plan limestone-block foundation, two dilapidated wooden outbuildings, a brick-lined well shaft, and an artifact scatter comprised of historic-period artifacts and a single prehistoric-period lithic tool. The site components were identified between two extant dwellings, a gable-el at 39385 Sugar Ridge Road and a foursquare at 39325 Sugar Ridge Road.

At the time of survey, the area exhibited a mix of deciduous woodland vegetation and manicured grasses providing little to no surface visibility. Pedestrian survey was conducted at 10-m intervals across this portion of the Project Area, which led to the discovery of several historic-period features in addition to the extant, abandoned house.

Due to the poor surface visibility 18 shovel tests set at 10-m intervals were excavated to determine if this portion of the Project Area contained subsurface deposits. One shovel test contained a single prehistoric-period artifact, six shovel tests contained historic-period artifacts, and three shovel tests encountered a thick gravel deposit as they were situated on an overgrown gravel driveway. Five additional shovel tests at 5-m intervals were excavated around the single prehistoric find spot to determine the extent of the prehistoric-period component within the site. Two shovel tests at 5-m intervals were excavated in all four cardinal directions from the prehistoric-period find spot. No additional prehistoric-period resources were identified. The contents of the positive shovel tests are further explored below in Table 2 (see Appendix B for full artifact catalog). It should be noted that the mortar fragments observed in shovel tests 5 and 18 were not collected.

TABLE 2. POSITIVE SHOVEL TESTS AT 33LN0284

Shovel Test No.	Artifact Class	Artifact Type	Artifact Depth	Material
ST 1	Ceramic; Stoneware	Base Fragment	20-30 cmbs	Stoneware; Gray Salt Glaze Exterior and Albany Slip Interior
ST 5	Mortar	Fragment	20-30 cmbs	Mortar
ST 9	Metal; Ferrous Alloy	Wire Nail	0-10 cmbs	Ferrous Alloy
	Metal; Ferrous Alloy	Wire Nail	0-10 cmbs	Ferrous Alloy
	Metal; Ferrous Alloy	Wire	0-10 cmbs	Ferrous Alloy
ST 14	Metal; Ferrous Alloy	Bolt	0-10 cmbs	Ferrous Alloy
	Metal; Ferrous Alloy	Nail	0-10 cmbs	Ferrous Alloy
	Metal; Ferrous Alloy	Nail	0-10 cmbs	Ferrous Alloy
ST 17	Lithic; Chipped Stone	Biface	20-25 cmbs	Indeterminate Chert
ST 18	Glass; Curved	Body Fragment	10-20 cmbs	Glass-Clear
	Mortar	Fragment	10-20 cmbs	Mortar
ST 19	Glass; Curved	Shattered	0-10 cmbs	Glass-Aqua

A total of 23 shovel tests were excavated at the site. The soils were moderately well developed revealing two layers, and were excavated to an average depth of 36 cmbs. The initial layer consisted of silt clay to clay soil containing gravel and ranged in color from very dark grayish brown (10YR3/2) to brown (10YR4/3). The initial layer extended to depths ranging from 22 to 45 cmbs overlying a second layer consisting of dark yellowish brown (10YR4/6) to light brownish gray (10YR6/2) sandy clay with gravel.

FIGURE 3. EXAMPLE OF SOIL STRATIGRAPHY AT SITE 33LN0284; FACING NORTH

A boundary was drawn to encompass the limestone-block foundation, the two dilapidated wooden structures, and the brick-lined well shaft identified between two extant dwellings, a gable-el at 39385 Sugar Ridge Road and a foursquare at 39325 Sugar Ridge Road. This boundary also encompassed the portion of the sparse artifact scatter identified within the Project Area (see Figure 4). The 1.24-acre area was designated Site 33LN0284. It should be noted that the artifact scatter likely extends further west beyond the Project Area toward the gable-el dwelling at 39385 Sugar Ridge Road.

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AVON LAKE GAS ADDITION PROJECT

Archaeological Survey Site Map: 33LN0284

Legend

- Above Ground Proposed Project Route
- Below Ground Proposed Project Route
- Negative Shovel Test
- Positive Shovel Test - Historic
- Positive Shovel Test - Prehistoric
- Workspace
- Building Feature
- Gravel Drive Feature
- Archaeological APE
- Newly Identified Archaeological Site
- Addendum I Pedestrian Survey Area
- Addendum I Pedestrian & Shovel Test Survey Area
- Well Feature
- County Boundary
- Political Township Boundary
- Municipal Boundary
- Railroad

Roads

- Interstate
- US Highway
- State Highway

Data Source: Ohio Historic Preservation Office Online Mapping System 2014

Aerial Photo Source: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

DRAFT

N
W E
S

1:1,200

0 50 100 Feet

Date: 11/14/2014	Figure:4
Drawn by: JPS	

Site Features and Artifacts

As stated above, the site consists of a U-plan limestone-block foundation (Feature 1), two dilapidated wooden outbuildings (Features 2 and 3), a brick-lined well shaft (Feature 4), and an artifact scatter comprised of historic-period artifacts and a single prehistoric-period lithic tool (see Figure 4).

Feature 1 is a U-plan limestone-block foundation opening to the south with the north wall built into a slight earthen rise (see Figures 4 and 5). The feature measures 40 feet west to east by 31 feet north to south. The north wall, the tallest of the three walls, measures approximately 5 foot 7 inches tall with the west and east walls tapering off to the south corresponding to the slope of the surrounding land. The foundation walls measure approximately 16 inches in width. Modern debris has been discarded within and adjacent to the foundation feature. A poured-concrete floor was observed within the rectangular feature beneath several inches of leaf litter, vegetation, and modern debris.

FIGURE 5. FEATURE 1 AT SITE 33LN0284; FACING NORTHWEST

Feature 2 is a dilapidated wood-frame shed exhibiting post and beam construction with hand-hewn beams and wooden spikes (see Figures 4, 6, 7, 8, 9, and 10). The outbuilding measures 21 feet north to south by 16 feet west to east. The wooden frame rests on several large rocks placed at the corners of the foundation. The structure shows evidence that it has been repaired over the years, but has now fallen into disrepair and is partially collapsed. Fragments of concrete noted below abundant amounts of leaf litter suggest the outbuilding once exhibited a pour-concrete floor. The walls and roof are constructed of planks with the south wall and roof exhibiting sheet metal overlay. The roof is sloped toward the west with the east side of the shed at 144 inches high and the west side at 114 inches. Notches in the main beam along the southern floor suggest smaller beams once ran north from this primary beam carrying an elevated wooden floor (see Figure 10).

FIGURE 6. FEATURE 2 AT SITE 33LN0284; FACING SOUTHEAST

FIGURE 7. FEATURE 2 AT SITE 33LN0284; FACING NORTHEAST

FIGURE 8. FEATURE 2 AT SITE 33LN0284; FACING SOUTHEAST

FIGURE 9. FEATURE 2 AT SITE 33LN0284; FACING NORHTEAST

FIGURE 10. FEATURE 2 AT SITE 33LN0284; FACING EAST

Feature 3 is a dilapidated wood-frame shed that appears to have been last used as a chicken coup (see Figures 4 and 11). The outbuilding measures 16 feet north to south by 12 feet west to east. The wooden frame rests on a poured concrete slab. The structure shows evidence that it has been repaired over the years, but has now fallen into disrepair. The walls and roof are constructed of planks with the roof exhibiting sheet metal overlay. The construction techniques are more modern than those employed for Feature 2 and the shed appears to have been pieced together and/or repaired re-using scraps of wood from other structures. The roof is sloped toward the west with the east side of the shed at 93 inches high and the west side at 58 inches.

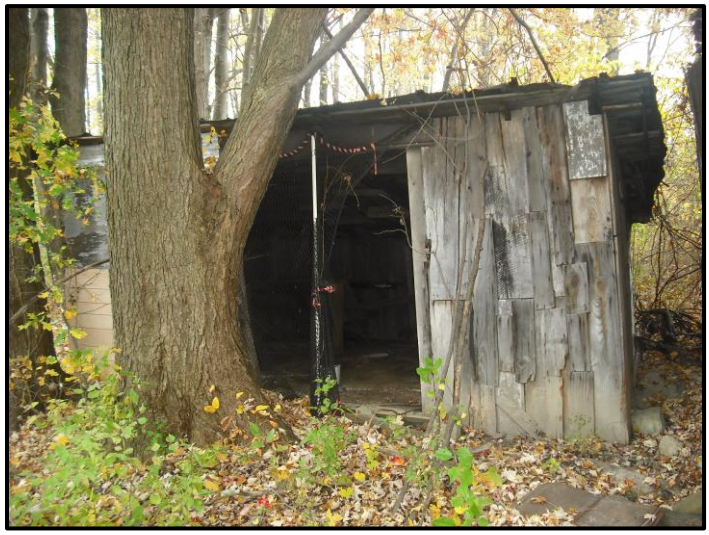

FIGURE 11. FEATURE 3 AT SITE 33LN0284; FACING SOUTHWEST

Summary: Application of NRG Ohio Pipeline Company LLC continued - Attachment C (Part 5) electronically filed by Teresa Orahood on behalf of Sally Bloomfield