

**Attachment C: Phase I Archaeological Survey and  
Correspondence**

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November 17, 2014

Lynn Gresock, Environmental Consultant  
Telra Tech  
238 Littleton, Suite 201B  
Westford, MA 01886

Re: Middletown Energy Center  
Middletown, Butler County, Ohio

Dear Ms. Gresock,

This is in response to correspondence received September 30, 2014, regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]) and the Memorandum of Agreement for this undertaking.

The correspondence transmits the report titled "Phase II Archaeological Investigation of Site 33-BU-1071, for the Middletown Energy Center, Middletown, Butler County, Ohio" by Robert Jacoby, September 2014. The report presents findings from archaeological investigations conducted at site 33-BU-1071 to thoroughly describe the site and offer a recommendation on the eligibility of the site for inclusion in the National Register of Historic Places. The investigations included pedestrian walk-over, intensive shovel testing, unit excavations, and geophysical testing. The investigations resulted in the collection of additional artifacts and the identification of one feature. The feature produced a piece of fire cracked rock and residues but little else. Based on the information presented in the report we concur that site 33-BU-1071 does not meet National Register eligibility criteria. No further archaeological work is needed for this project.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

A handwritten signature in cursive script that reads "David Snyder".

David Snyder, Ph.D., RPA, Archaeology Reviews Manager  
Resource Protection and Review

DMS/ds (OHPO Serial Number 1055495)

# Phase I Archaeological Survey

for

## Middletown Energy Center

City of Middletown, Butler County, Ohio

Prepared for:

NTE Ohio, LLC  
24 Cathedral Place  
Saint Augustine, Florida 32084



**Middletown  
Energy Center**  
an NTE Energy Project

Prepared by:



1000 The American Road  
Morris Plains, New Jersey 07950

May 2014

## EXECUTIVE SUMMARY

Tetra Tech, Inc. (Tetra Tech) conducted a Phase I archaeological survey of the NTE Ohio, LLC (NTE) Middletown Energy Center (MEC), a proposed electric generating facility (the Project) in the City of Middletown, Butler County, Ohio, during May 2014. The survey was undertaken to support the Project's permit application to the Ohio Power Siting Board (OPSB). The OPSB rules to certify an application require the project sponsor to estimate the impact of a proposed undertaking on the "preservation and continued meaningfulness" of documented cultural resources located within five miles of the undertaking, and to develop plans to mitigate any adverse impacts upon those resources (Ohio Administrative Code 4906-13-07).

Tetra Tech conducted a literature review and archaeological site file review of the area within five miles of the proposed Project, utilizing resources available on file at the Ohio Historic Preservation Office (OHPO) in Columbus, Ohio, and searchable databases of the Ohio Archaeological Inventory, the National Park Service, the Ohio Department of Transportation, the Ohio Department of Natural Resources, and other accessible websites. The five-mile review resulted in the identification of 222 archaeological sites, seventeen cemeteries, and 1 historic bridge. These documented cultural resources are depicted on maps and described in tables included in this report.

The Project's archaeological area of potential effects (APE) encompasses a total area of 70 acres. Tetra Tech utilized pedestrian reconnaissance and shovel testing as survey methods. The Phase I archaeological survey identified three archaeological sites within the Project APE. Site 33BU1071 is a broad scatter of prehistoric chert (flint) tools and chipping debris located on a low rise within the open field of the AK Steel property of the proposed Facility Site. Among the recovered tools are diagnostic projectile points datable to the Early Archaic period (circa 8000 – 6000 BC), Middle Woodland Hopewell phase (circa 200 BC – AD 400), and Late Prehistoric Fort Ancient phase (circa AD 1100 – 1450). A variety of tool types and chert types was revealed during the survey. Site 33BU1181 is a low-density locus of several chert flakes and one scraper tool, located in the eastern extension of the Facility Site between the Norfolk Southern Corporation tracks and Cincinnati Dayton Road. Extensive ground disturbances have occurred around the site, and are likely to have removed or disturbed portions of it. Site 33BU1182 is a chert flake isolated find located in the open field of the Precision Strip property of the proposed Construction Site.

Tetra Tech concludes that Site 33BU1071 is potentially eligible for listing on the National Register of Historic Places (NRHP). Since complete avoidance of the site is not possible because Site 33BU1071 occurs across a substantial portion of the proposed development area, Tetra Tech has recommended a Phase II testing program to evaluate the site on the basis of NRHP eligibility criteria. Therefore, Tetra Tech will be working with NTE and the OHPO to develop and implement a Phase II testing program.



Tetra Tech concludes that Sites 33BU1181 and 33BU1182 do not possess sufficient research value to be considered NRHP-eligible. Tetra Tech, therefore, recommends no further archaeological investigations at these two sites.

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## 1.0 INTRODUCTION

Tetra Tech Inc. (Tetra Tech) conducted a Phase I archaeological survey of the NTE Ohio, LLC (NTE) proposed 525 megawatt (MW) combined cycle gas turbine electric generating facility (the Project) in the City of Middletown, Butler County, Ohio (Figures 1 and 2). The survey was undertaken to support the Project's permit application to the Ohio Power Siting Board (OPSB). The proposed facility is situated within a 45-acre parcel. An adjoining 25-acre parcel is proposed as a construction laydown yard. The combined parcels (the Project Area) are bounded to the southwest and east by railroad tracks, to the north by Dicks Creek, and to the northwest by Precision Strip's manufacturing facility. An eastern extension of the Facility Site parallels Duke Energy's 345 kV electric transmission line right-of-way and will provide access to Cincinnati Dayton Road.

Prior to initiating the Phase I archaeological survey, Tetra Tech conducted a literature and site file review to identify recorded cultural resources within the Project vicinity, as specified by the guidelines of the OPSB rules regarding the development of electric generation facilities (Ohio Administrative Code 4906-13). Federal permits, licenses, or funding are not anticipated to be required for the Project, with the potential exception of a Nationwide Permit from the United States Army Corps of Engineers.

This report presents the results and recommendations of Phase I background research and archaeological field investigation undertaken in compliance with the Ohio Historic Preservation Office (OHPO) Archaeology Guidelines (1994). Section 2 describes the Project's environmental setting. Section 3 presents background research, historical contexts, and literature and site file reviews. Section 4 provides field and lab methods, and the results of the Phase I survey. Section 5 is Tetra Tech's conclusions and cultural resource management recommendations.

Lynn Gresock serves as Tetra Tech project manager for the Project. Sydne Marshall, Ph.D., RPA, serves as Tetra Tech cultural resources manager. Robert Jacoby, M.A., who served as Tetra Tech field and lab director, also conducted the background research, developed the research design, supervised the fieldwork, and authored this report. The field team consisted of Mr. Jacoby and Sarah Haugh.

## 2.0 ENVIRONMENTAL SETTING

### 2.1 Physiography and Geology

The proposed Project lies within the Southern Ohio Loamy Till Plain physiographic province, a region of low to moderate relief dissected by steep-valleyed streams (Brockman 1998). Bedrock underlying this region consists of interbedded shales and limestones of Upper Ordovician age (ODNR 1991). The project area lies entirely within the glaciated portion of Ohio, with at least three Pleistocene glacial advances represented by surficial geology. The pre-Illinoian, dating more than 300,000 years before the present (BP), is the least well known of the three advances and shows limited evidence as ground moraine in the middle Ohio River valley, south of the Project. The Illinoian glacial advance dates from 300,000 to

130,000 BP and is broadly expressed as ground moraine in a sinuous band from southwestern to northeastern Ohio. There is some evidence of the Illinoian episode in southern Butler County in the form of dissected ground moraines. The final glacial advance during the Pleistocene, the Wisconsin, covered two-thirds of the surface of Ohio in the period from 24,000 to 14,000 BP, and is responsible for sediment deposits above bedrock that range from near-surface to more than 200 feet in depth (Bartels et al. 2014, ODNR 1991).

Another spatial framework for organizing environmental settings is the ecoregion, which is defined as an area of similar climate within which ecological communities recur in predictable patterns (Bailey 2005:S14). Conceived at a somewhat finer-grained resolution than the physiographic province, the Loamy, High Lime Till Plains subsection of the Eastern Corn Belt Plains contains fertile soils that supported beech, oak, and sugar maple forests, and elm-ash swamp forests prior to Euro-American settlement (Woods et al. 1998).

The principal drainage in the Project vicinity is the Great Miami River, which drains Indian Lake in Logan County, Ohio, and flows southwesterly to its confluence with the Ohio River west of Cincinnati, Ohio. At its closest approach, the Great Miami River lies approximately 3.7 miles west of the Project. To the east, the Little Miami River roughly parallels the course of the Great Miami River, coming within about 8.7 miles of the Project. The Project parcels are bounded to the south and west by Shaker Creek and to the north by Dicks Creek, low gradient streams that drain westward into the Great Miami River.

The climate of southwest Ohio is characterized as continental temperate. The 30-year (1981-2010) mean temperature in Hamilton, Ohio is 30 to 75 degrees Fahrenheit (°F), with a mean maximum of 86°F in July and a mean minimum of 21°F in January. The 30-year (1971-2000) mean precipitation in Middletown is 40 inches, with February registering 2.3 inches and May 4.4 inches (NOAA 2014).

## 2.2 Flora and Fauna

Following retreat of glacial ice, herbaceous plants colonized the glacial landscape, with alders and water birch expanding along drainages. By 12,000 BP, warmer-adapted trees began expanding into the lower Erie-Ontario Lowlands, including white pines, northern hardwoods (birch, alder, beech and hemlock), and oaks. Climate became warmer during the subsequent Boreal period (10,200 to 8000 BP) corresponding with increases of pine, oak, birch, hemlock, and ash across uplands and lowlands. Climatic warming culminated in a period of maximum heat and dryness during the Atlantic climatic period (8000 to 5000 BP), corresponding with increases of oaks and other hardwoods, with hemlocks dominating in moister areas. Late Holocene climates became wetter and cooler during the Sub-Boreal climatic period (5000 to 2500 BP), then warmer during the Sub-Atlantic climatic period (2500 to 500 BP) to a cold period during the Little Ice Age (500 to 100 BP). The Little Ice Age marked a significant cold period discernible by the expansion of spruce, northern hardwoods, spruce, and hemlock on uplands of the Appalachian Plateau (Davis 1983).

The present distribution of plants in the Project Area bears little resemblance to the natural environment first encountered by Euro-American traders and settlers. At the time of earliest Euro-American settlement, nearly all of Butler County was forested with beech and maple communities on better-drained uplands, and elm and ash communities on poorly drained soils. A nineteenth century account of common tree species in Butler County included hackberry, sweet buckeye, box-alder, sycamore, honey locust, black walnut, and shell-bark hickory in the bottomland, and white oak, white ash, black locust, red-bud, elm, and dogwood in upland settings (Western 1882:56-57 and 124-125). The narrative continues that by 1890, 80 percent of the forests had been cut. In the late twentieth century, only around ten percent of the county supported woodland, generally small and isolated stands in poorly drained soils considered unsuitable for cultivation (Lerch et al. 1980:3).

Faunal remains recovered at Sheriden Cave (33WY252), a Paleo-Indian-period site located about 100 miles northeast of the Project Area, indicate the presence of a wide range of taxa, including caribou, black bear, white-tailed deer, beaver, woodchuck, small mammals, amphibians, and lizards (Redmond and Tankersley 2005:512-513). Many of the same species were present in the Late Woodland archaeological deposits at Chesser Cave, located about 110 miles east of the project area (Prufer 1967a:45). Economically significant mammals mentioned in early written descriptions of the area include bear, deer, wolf, raccoon, fox, opossum, squirrel, and wild turkey, among others (Western 1882). Most large mammals have been extirpated from the Project Study Area as a result of land clearance and the elimination of habitat.

### 2.3 Soils

Soils within the Project area are classified as the Fincastle-Patton-Xenia association, found on nearly level and gently sloping terrain, and derived from loess, glacial till, and glacio-lacustrine silt (Lerch et al. 1980). The well-drained Princeton sandy loam is found on the dune-like low ridge that traverses the Facility Site and on which is located the identified prehistoric site 33BU1071 (see Section 4.3). Princeton sandy loam is also found in a portion of the scrub-vegetation zone within the Duke Energy electric transmission line corridor in the southeast segment of the Facility Site. This occurrence of the sandy loam contains identified prehistoric site 33BU1181. Lastly, Princeton sandy loam occurs in the northwest quadrant of the Construction Site adjacent to Dicks Creek. Mapped soil units within the Project Area are depicted in Figure 3. Table 1 presents information on the soil units.

Table 1. Mapped Soil Units within the Project Area.

Map Unit Symbol	Map Unit Name	Description	Acres	Percent of Project Area
EIB2	Eldean loam, 2 to 6 percent slopes, moderately eroded	Deep, well-drained soils on stream terraces and outwash plains	1.0	1.4
Pa	Patton silty clay loam	Deep, poorly drained soils in low basins	35.3	49.8
PrB	Princeton sandy loam, 2 to 8 percent slopes	Deep, well-drained soils on slight rises and knolls	16.9	23.8
Rn	Ross loam	Deep, well-drained recent alluvium	17.7	25.0
Ud	Udorthents	modern fill	<0.1	<0.1
TOTAL	-	-	70.9	100

Source: NRCS (2014)

### 3.0 BACKGROUND RESEARCH

#### 3.1 PREHISTORIC CONTEXT

Ohio prehistory is characterized by four major chronological periods that correspond to human adaptive shifts to changing natural and cultural conditions. These are the Paleo-Indian Period (12,000 – 8000 BC), the Archaic Period (8000 – 800 BC), the Woodland period (800 BC – AD 1000), and the Late Prehistoric Period (AD 1000 – 1650). The Archaic and Woodland periods are further subdivided into Early, Middle, and Late periods based on differences among chronologically diagnostic artifacts such as projectile points, ground- and chipped-stone technologies, and ceramic styles during the Woodland stage.

##### 3.1.1 Paleoindian Period (12,000 – 8000 BC)

Paleoindian groups, the first known prehistoric populations to occupy the Ohio region, were highly mobile, small-band hunters of large game. The evidence from Sheriden Cave, located about 100 miles northeast of the Project Area, indicates that Paleoindian groups exploited a wide range of available food resources. Their lithic tool kits are characterized by fluted, lanceolate-shaped projectile points, discoidal cores, serrated blades, and unifacial endscrapers with graver spurs. Paleoindian tools in Ohio were most often manufactured from high quality lithic raw material, such as Upper Mercer and Flint Ridge cherts. Sites associated with Paleo-Indian occupations are rare, and isolated finds of shaped-stone fluted points are the most common expression of this archaeological period. Excavations at Sheriden Cave yielded two examples of bone points with beveled edges (Redmond and Tankersley 2005:514-515, Waters et al. 2009:107).

### 3.1.2 Archaic Period (8000 – 800 BC)

The Archaic Stage reflected hunting, fishing, and plant gathering subsistence patterns developed in response to increasing environmental diversity. Climatic warming led to forest closure after 8000 BC and increasing dominance of Boreal conifers and northern hardwoods over Boreal conifers (Davis 1983, Shane et al 2001). The Pleistocene megafauna that were one focus of Paleo-Indian adaptation had become extinct by the Early Archaic Period (8000 BC – 7000 BC). The expanding deciduous forests produced a more favorable habitat for such species as white-tailed deer and elk, and though still nomadic, human groups gradually became more geographically restricted as seasonally-oriented hunting and gathering activities were focused on smaller, well-exploited territories (Chapman 1977). Artifacts and assemblages from the Early Archaic period were more diverse in style than earlier toolkits, probably reflecting an increased diversity in resource exploitation, including a broader spectrum of plant foods and aquatic species. Beveled hafted bifaces (e.g. Palmer, Thebes, Lost Lake, and St. Charles varieties) are interpreted as specialized deer-processing tools (Stothers et al 2001). Another stylistic element of the Early Archaic tool form is the manufacture of points with bifurcated bases, such as the MacCorkle and St. Albans varieties. The Leonard Haag Site (12D29), located at the confluence of the Great Miami River and the Ohio River, contained a Kirk corner-notched component (Vickery 2008:4). The toolkit from this site was similar to that of the St. Albans Site in West Virginia.

The Middle Archaic period (7000 – 3500 BC) is rather poorly represented in the archaeological record in southwestern Ohio, and Purtill (2006) has suggested that this paucity of evidence reflects population reduction or out-migration during this period. It is likely that cultural adaptations were little differentiated from the Early Archaic period, exemplified by the continued use of bifurcated points, such as LeCroy, Lake Erie, and Kanawha varieties. It is during the Middle Archaic period, however, that grooved axes, pestles, and atlatl weights are first noted in the record (Broyles 1971). Four Middle Archaic upland sites have been identified in nearby Clermont County (Vickery 2008:5).

The Late Archaic period (3500 – 800 BC) is characterized by increased population evidenced by larger and more numerous sites, the onset of long-distance trade networks, and an increased focus on riverine settings for site locations. These factors appear related to increased environmental stress caused by a shift toward a warmer, drier climate. Evidence suggests that after the onset of the Xerothermic Interval in southwest Ohio, circa 2000 BC, the Archaic economy became geared to a narrower list of food sources, focusing on deer, freshwater mussel, and nuts (Vickery 2008:25). The manufacture and use of small notched point and narrow stemmed point types became common over broad regions of the eastern woodlands, tool styles that are found in the archaeological record for extended periods. Increased territorial permanence was coupled with the appearance of regional cultural adaptations such as Glacial Kame, Red Ochre, and the Old Copper Cultures (Cleland 1966:93). Ceremonialism grew in importance, indicated by more elaborate, formalized burial practices and the presence of exotic raw materials as symbols of enhanced status and rank.



### 3.1.3 Woodland Period (800 BC – AD 1000)

The Early Woodland period (800 – 200 BC) represents a cultural expansion of ongoing Late Archaic adaptations, and includes the use of ceramic vessels as a major technological innovation. In southern and central Ohio the local Early Woodland expression was the Adena culture, noted for its construction of conical burial mounds and circular ceremonial earthworks (Dragoo 1963). Characteristic artifacts of this culture include Fayette Thick (plain and cordmarked), Montgomery Incised, and Adena Plain pottery, gorgets made of ground stone and occasionally of copper, shell bead necklaces, and tobacco pipes of tubular design manufactured from both clay and stone. Projectile types associated with the Adena culture are ovate-based stemmed Adena, and broad bladed stemmed Robbins points (Dragoo 1963:178-180). Indicative of increased ceremonialism and trade, animal effigies were incorporated into smoking pipes and pendants, which were sometimes manufactured from exotic stone. The effigies are believed to be expressions of totemic clans. Adena culture is marked by more territorially restrictive seasonal movement than occurred in the Archaic period, with evidence of semi-permanent camp sites in the larger drainage basins, especially along the lower Scioto River (Prufer 1967b). Sites associated with Adena are numerous in southwest Ohio, and include mortuary mounds, ceremonial circles, and habitation and activity zones.

Long distance trade networks reached a zenith with the Hopewell culture during the Middle Woodland period (200 BC – AD 500). Reaching outward from its core area in the lower Scioto River valley, Hopewell was present throughout southern and central Ohio and reached into Illinois, Wisconsin, and West Virginia. Ceremonially, Hopewell appears to represent a continuation of the Adena culture, although on a more expanded scale. Hopewell groups built burial mounds containing elaborate grave goods, and large geometric earthworks. Trade goods from the Upper Great Lakes (copper), Rocky Mountain front (obsidian), and Gulf Coast (marine shell) have been found at Hopewell burial and habitation sites. The earthwork architecture, burial practices, and artifact styles reveal social ranking and leadership roles in Hopewell society. Recent excavations in Ohio suggest that Hopewell society represented dispersed sedentary households practicing horticulture (Pacheco 1996, Smith 2001). Pollen records at the Fort Ancient hilltop enclosure site along the Little Miami River in Warren County, Ohio indicate that Hopewell peoples domesticated a variety of plant species with starchy or oily seeds, including goosefoot, maygrass, sumpweed, and sunflower (McLauchlan 2003). Investigations at Brown's Bottom #1 Site (33RO21), located along the Scioto River near Chillicothe, Ohio, indicate the presence of large house structures and deep storage pits during the Hopewell phase (Pacheco et al. 2009). Characteristic point types of this period include the broad bladed, corner notched Snyders, followed by the narrower Steuben Expanded Stemmed and Chesser Notched forms (Justice 1987). Grit-tempered McGraw plain and McGraw cordmarked ceramics are associated with southwest Ohio Hopewell (Sunderhaus et al. 2001).

After the decline of Scioto Hopewell circa AD 500, long-distance trade networks contracted and Late Woodland (AD 500 – 1000) groups shifted residential focus from riverine to a variety of environmental settings. This period is rather poorly represented for most of Ohio, and its definition is based largely on ceramic differentiation. In central Ohio, the predominant ceramic type is the Cole series, a grit tempered, cordmarked ware. There is a notable modification of projectile point design during the Late Woodland

period, with smaller, triangular forms gaining popularity. The triangle point is associated with use of bow and arrow, and continued as the predominant point type through the following Late Prehistoric period. Toward the end of the period, the cultivation of maize and other cultigens began to make up a significant portion of dietary requirements leading to greater nucleation of residential settlement patterns.

#### 3.1.4 Late Prehistoric Period (AD 1000 – 1650)

An influx of Mississippian groups and influences circa AD 1000 led to the appearance of the Fort Ancient culture in the Ohio valley and central Ohio (Drooker 1997). With an emphasis on maize agriculture, Fort Ancient sites reflect increased sedentism and population size, along with a focus on riverine settings. More stable food surpluses, increased social complexity, and greater territoriality are associated with the emergence of chiefdoms during this period. The economic system was one in which elites exerted some control over the production and distribution of surplus subsistence goods, craft goods, and high-value ritual objects. Settlement systems include dispersed farmsteads and hamlets, small villages, and nucleated populations in large villages, towns, and mound centers. The presence of some palisaded villages among Fort Ancient communities suggests that population pressure and competition for resources led to conflict between groups. Diagnostic artifacts recovered from early Fort Ancient sites continue the Late Woodland patterns of grit-tempered ceramics and triangular projectile points.

After circa AD 1400, late Fort Ancient ceramics are dominated by shell-tempering, and Madison points are replaced by Fort Ancient serrated points. The Sunwatch Site (33MY57, also known as the Incinerator Site) is a village site in Dayton that dates to circa AD 1300, situating it in the middle Fort Ancient phase. The circular, palisaded site contains well-defined house and pit features that were oriented around a large, central red cedar post (Cook 2007:441). The patterning of house and pit features has been interpreted as reflecting a highly ordered, hierarchical community of several family units. Carbon dates and ceramic seriation indicate that the site was occupied for a relatively short interval, perhaps just 10 to 30 years between late AD 1200s and early AD 1300s (Cook 2007:457).

#### 3.1.5 Contact Period (AD 1650-1780)

Earliest historic references to Ohio indicate extensive raiding by the Iroquois into the region south of Lake Erie, which wrested control from the Erie around 1650 (Hunter 1978:588). The Iroquois utilized the area between Lake Erie and the Ohio River for hunting, especially in their pursuit of deer hides for their lucrative trade with the French and English. Contacts between Native Americans and Europeans can be confirmed by the mid-seventeenth century in the Ohio valley, but within interior regions these encounters occurred decades later (Hunter 1978:588). Initially of a limited nature, interaction between the two groups intensified through the eighteenth century as British and French vied for control of commercial trade and territory.

The French established an outpost at Vincennes on the lower Wabash River in what is now the State of Indiana, in 1731. For the French, Vincennes was strategically important, because it linked their possessions

in Canada with Louisiana, in effect, outflanking the British and restricting their movements in the Great Lakes (Tanner 1987:42). In 1749 an English trading post was established on the bank of the Great Miami River near its junction with the Ohio River. In a signal of their determination to fend off competition in the northwest, the French destroyed this post in 1752 (Bartlow et al. 1905:2). Two years later, the French seized a British post on the upper Ohio River and renamed it Fort Duquesne, triggering the onset of the French and Indian War (1755-1760). During this period, groups of Miami entered western Ohio from the region south of Lake Michigan, and occupied the Wabash drainage and the headwaters of the Maumee and Great Miami Rivers. Shawnee were resident between the Scioto, Great Miami, and Ohio Rivers (Tanner 1987:62-63).

### 3.2 HISTORIC CONTEXT (AD 1780-present)

#### 3.2.1 Ohio as Frontier

The Treaty of Paris, signed in 1783 between American and British representatives, formally ended the American War of Independence and recognized the transfer of sovereignty of the Ohio Country to the United States. This treaty, however, did not halt conflict in the region, as Native American concerns about American encroachment on tribal lands had been ignored in the peace settlement. For a decade, the two groups perpetrated raids and killings upon the other, making western Ohio a hostile region and restricting the movement there of American settlers. American military expeditions to pacify the Native Americans on the western frontier were repulsed in 1790 and 1791. The latter action was a decisive defeat of Federal troops and Kentucky militia under the command of General Arthur St. Clair by a combined force of Miami and Shawnee near the Wabash River (Tanner 1987:73). Not until General Anthony Wayne's defeat of the Shawnee at the Battle of Fallen Timbers on the Maumee River in 1794, was the region considered to be under firm American control and open to settlement (Bartlow et al. 1905:78). Beginning with the Treaty of Greenville in 1795, the United States forced a series of concessions from Native Americans, disenfranchising them first from the Ohio Valley and Miami drainage, then from the western basin of Lake Erie. In 1842, when the Wyandot surrendered their final claim to land around Upper Sandusky, Ohio was emptied of its Native American inhabitants (Hunter 1978:593).

Anxious to promote settlement in the west and to gain some profit from the one true commodity it owned, land, the U.S. Government sold nearly 1 million acres between the Great Miami River, the Little Miami River, and the Ohio River to John Cleeves Symmes in 1788. Symmes arranged for the platting and sale of the "Between the Miamis" lands, but as a result of inaccurate surveys the section lines were askew, leading to frequent land disputes. Symmes claimed, and sold, lands he did not actually own. In addition, his surveyors did not adhere to the numbering standards of the Land Ordinance Act of 1785, creating townships that ran eastward and ranges that ran northward. To clarify the situation, the U.S. Government divided the "Between the Miamis" lands into the Symmes Purchase and the North of Symmes Purchase. Despite their inconsistencies, the section lines and township and range numbers were maintained in the Symmes and North of Symmes Purchases by a ruling of the U.S. Supreme Court (Western 1882:22-31; USGS 2003:5-7).

### 3.2.2 Butler County

Butler County was organized by order of the Ohio legislature on March 24, 1803 and was named for General Richard Butler, St. Clair's second in command who was killed in the defeat at the Wabash (Western 1882: 45). The town of Hamilton became the county seat after having been established as Fort Hamilton by St. Clair in 1791. Economic activity in Butler County was centered along the Great Miami River, with most early settlement occurring along the river or one of its larger tributaries. Flat boats transported goods northward from Cincinnati and local produce was sent south. In 1802, Steven Vail built a crude wooden dam on the river near Middletown to power a gristmill and saw mill (Bartlow et al. 1905:290). By 1810, numerous water-powered mills had been erected on the Great Miami River and its tributaries, including Indian Creek, Four Mile Creek, and Dry Run.

Despite the growth of cities along the Ohio River, such as Louisville and Cincinnati, southwestern Ohio was at an economic disadvantage because of its great distance to the urban markets on the east coast and Great Lakes. The idea of a canal system that would link the Ohio River and Lake Erie gained support from investors and the merchant class, and in 1822 the Ohio legislature authorized a commission to undertake surveys and to choose a route (Bartlow et al. 1905:107-108). Construction began in 1825 of the Miami and Erie Canal, which would eventually extend from Cincinnati to Toledo, running along the Great Miami and Maumee Rivers. The canal opened for traffic to Middletown in 1828 and to Dayton the following year, spurring economic development and population growth along its route. Turnpikes between Cincinnati, Dayton, Lebanon, and Hamilton, were constructed in the 1810s and macadamized in following decades. These roads include the Hamilton and Lebanon Pike (Princeton Road), the Great Miami Turnpike (Cincinnati Dayton Road), and the Hamilton and Middletown Pike (Ohio Route 4).

However, the period of prosperity for the Miami Canal was short-lived, as railroads proved to be faster, more efficient, and were not prone to the vagaries of water supply. The first railroad in southwest Ohio was the Little Miami Railroad, which connected Cincinnati with Springfield in 1846 (Blant 1999). The Cincinnati, Hamilton & Dayton Railroad was the first line in Butler County, reaching Middletown in 1852, and followed that same year by the Eton & Hamilton Railroad (Bartlow et al. 1905:110). Expanding upon the water-powered mills and workshops that were erected in the first decades of the nineteenth century, the railroads stimulated the rapid growth of business and industry in Butler County. The county experienced double-digit population increase in seven decades of the nineteenth century and in each decade of the twentieth century except the 1930s. Many of the early settlers to Butler County originated from New Jersey and Pennsylvania. The lure of industrial jobs later attracted many German and middle-European immigrants. Table 2 presents decennial federal census data for Butler County.

Table 2. Butler County Decennial Census Data.

Year	Population	% Increase
1810	11,150	-
1820	21,746	95
1830	27,142	24.8
1840	28,173	3.8
1850	30,789	9.3
1860	35,840	16.4
1870	39,912	11.4
1880	42,579	6.7
1890	48,597	6.7
1900	56,870	17
1910	70,271	23.6

Year	Population	% Increase
1920	87,025	23.8
1930	114,084	31.1
1940	120,249	5.4
1950	147,203	22.4
1960	199,076	35.2
1970	226,207	13.6
1980	258,787	14.4
1990	291,479	12.6
2000	332,807	14.2
2010	368,130	10.6

Source: Ohio Development Services Agency (2014).

Although industrial expansion was responsible for most of the population growth and accounted for an increasing percentage of employment in Butler County, agriculture continued to play an important role in the economic activity of the county through the nineteenth and mid-twentieth centuries. In 1880, there were approximately 4,000 individual farms in the county, of which nearly two-thirds were less than 80 acres and one-third less than 40 acres in size (Western 1882:129). Major crops in the last quarter of the nineteenth century comprised wheat, barley, and corn, complemented by potato, flax, sorghum, and tobacco, among others. Thin financial margins on farm income and the consumption of agricultural land by residential, commercial, and industrial development in the twentieth century have diminished the importance of the agricultural sector. By 1974 there were 1,489 farms on 198,000 acres (Lerch et al. 1980:3), declining to 865 farms on 146,054 acres in 2012 (USDA 2012). Presently, principal crops are corn and soybeans. Cattle and hog raising contribute to the sector, which had a total market value of \$65 million in 2012.

### 3.2.3 Lemon Township

Lemon Township encompasses approximately 15 square miles on the east bank of the Great Miami River, and when established in 1810, comprised the villages of Middletown, Amanda, Excello, Lesourdsville, Monroe, and Blue Ball. David Logan and Thomas Irwin are known to have settled within the borders of the township around 1795, and are generally credited with being the first permanent Euro-American inhabitants (Western 1882:623). The Miami River floodplain supported a rich prairie habitat while the remainder of the township was thickly forested. Farming and timbering were the principal economic activities of the earliest settlers. Dicks Creek, which bounds the northern limit of the Project Area, supported saw mills, gristmills, and distilleries. The opening of the Miami Canal established Middletown as an important way-station for travelers and boatmen. Accommodating this traffic were taverns, hotels, and warehouses. A feeder dam on the Miami River served the canal, with excess water diverted along races to power new mills. The Middletown Hydraulic Company was organized in 1854 to secure, regulate, and license these water rights

(Bartlow 1905:292-293). As the pace of economic development quickened in Middletown, local goods and produce found their way on the canal boats to Cincinnati and elsewhere. The railroads intensified this process.

The W.B. Oglesby Paper Company opened a factory in Middletown in 1852, the first large-scale industrial facility in the township (Bartlow 1905:301). By the end of the decade, three more paper companies were operating. After the Civil War, Middletown became an industrial center for paper, tobacco, and implements, and at the end of the nineteenth century the city was served by five rail lines. Waterworks, electricity, gas mains, and a horse trolley were all installed in Middletown in the decade from 1873 to 1883, with telephone service following later in the 1880s (Bartlow 1905:304-305). The American Rolling Mill Company (later known as Armco Steel and currently as AK Steel) built a steel rolling mill in Middletown in 1900, inaugurating steel as a major presence in the manufacturing life of the city. The Armco plant in Middletown specialized in continuous rolled steel, electrical (silicon) steel, and galvanized steel for culverts. In the 1930s, Armco's Middletown Works innovated the production of all-steel prefabricated houses, which it offered from \$3,500 to \$5,500 each (NY Times, Jan. 4, 1936:23).

Although tobacco workers, led by the Congress of Industrial Organizations (CIO), went on strike in 1938, Middletown's industrial unions largely avoided labor strife. When 4,200 steelworkers went on strike in September 1986, it was the first labor action at Armco Steel since its founding in 1900 (The Bryan [OH] Times, Sept. 15, 1986:12). By this point Middletown, like other industrial cities in Ohio, had already lost many factory jobs to the Sun Belt regions of the United States or overseas. Factory loss began in the 1950s when Lorillard closed its tobacco plant due to declining use of chewing tobacco. Armco employed approximately 7,000 workers at its Middletown Works in 1971, and only 1,750 were employed in 2012. The City of Middletown has made progress in revitalizing the downtown area through economic development programs in recent years.

### 3.2.4 Project Parcels

For most of the historical record, the Project vicinity has been on the outskirts of urban development in the area. Although situated only 4 miles from Middletown's riverfront core, the Project parcels were, and remain, cultivated fields. As depicted on the 1875 Butler County Atlas (Everts 1875), the Project was largely owned by Christian Holly, who farmed 252 acres (Figure 4). Holly's house is shown approximately 900 feet northwest of the Project, with an orchard situated east and south of the building. No buildings or features are depicted within the Project borders. Although decidedly of a rural character, the Holly farm was adjacent to the Great Miami Pike (Cincinnati Dayton Road), and would have been exposed to a wide variety of travelers, teamsters, and merchants. The county atlas illustrates a toll gate alongside the pike on Holly's property.

Thirty years after the Holly farm was illustrated on the county atlas, the Project vicinity continued to be lightly settled (Figure 5). The 1906 quadrangle shows only a handful more buildings in the area than were present in 1875 (USGS 1906). One major difference depicted on the map, however, is the presence of the



Cincinnati, Lebanon and Northern Railroad (CL&N) along what will be the Project’s western border. Today, the railroad on the Project’s western border is owned by Norfolk Southern and is only used as a siding. Built in 1891, the CL&N provided freight and passenger service between Cincinnati and Dayton, and was a precursor of the industrial facilities that sprang up on Oxford State Road through the twentieth century. The Project area’s location vis-à-vis Middletown, the CL&N, and the Great Miami Pike is evident in Figure 6.

### 3.3 RECORDED CULTURAL LANDMARKS AND PREVIOUS ARCHAEOLOGICAL SURVEYS

The OPSB has expressed in its “Rules for Certification for Electric Generating Facilities” that the presence of registered landmarks of historic, religious, archaeological, scenic, natural or other cultural significance within the vicinity of a project area and the mitigation of adverse impacts upon these resources are factors in its approval process for developers’ permit applications (Ohio Administrative Code 4906-13-07). The OPSB defines registered landmarks as any historic districts, archaeological sites, buildings, structures, or objects that have been listed on or that might be eligible for listing on the National Park Service’s National Registry of Natural Landmarks (NRNL), the Ohio Historical Society, the Ohio Department of Transportation (ODOT), or the Ohio Department of Natural Resources (ODNR). OPSB rules require project proponents to generate maps at 1:24,000 scale depicting the locations of registered landmarks within five miles (eight kilometers) of the proposed undertaking. The five-mile radius around the Project is defined as the Project Study Area.

A review of the site files maintained by OHPO and other available databases revealed the presence of 222 previously recorded archaeological sites, 17 cemeteries, and 1 historic bridge within the Study Area (Figures 8 to 16). Tables 3 and 4 provide information on the archaeological sites, Table 5 on the cemeteries, and Table 6 on ODOT historic bridges. Each site, cemetery, or bridge is depicted on Figures 8 to 16 by its Map ID (Table Column B). The study area contains no listings from the ODNR Division of Natural Areas and Preserves, or the NRNL. The three individual buildings and two historic districts listed on the National Register of Historic Places (NRHP), and the approximately 256 buildings recorded on the Ohio Historic Inventory (OHI) that are located within the Study Area will be described and depicted on maps in a separate Project report that will be submitted by Tetra Tech as *Historic Architecture Survey*.

Table 3. Previously Recorded Archaeological Sites Within the Project Study Area.

Site No.	Map ID*	Township	Township/Range/Section**	Period	Sub-period	NRHP Status
33BU0121	1	Liberty	3/3/15	Prehistoric	Woodland	undetermined
33BU0123	2	Liberty	3/3/18	Prehistoric	Woodland	undetermined
33BU0124	3	Liberty	3/3/12	Prehistoric	Woodland	undetermined
33BU0125	4	Middletown	2/4/13	Prehistoric	Woodland	undetermined
33BU0126	5	Madison	2N/4E/32	Prehistoric	Woodland	undetermined

Site No.	Map ID*	Township	Township/Range/Section**	Period	Sub-period	NRHP Status
33BU0173	6	Lemon	2/4/31	Prehistoric	-	undetermined
33BU0200	7	Middletown	2/4/17	Prehistoric	Woodland	undetermined
33BU0241	8	Liberty	3/3/12	Prehistoric	-	undetermined
33BU0296	9	Middletown	2/4/12	Prehistoric	-	undetermined
33BU0302	10	Madison	1N/4E/8,17	Prehistoric	Early Woodland, Late Prehistoric	undetermined
33BU0303	11	Madison	1N/4E/8	Prehistoric	Late Archaic	undetermined
33BU0304	12	Madison	1N/4E/8	Prehistoric	Late Archaic, Middle Woodland	undetermined
33BU0305	13	Madison	1N/4E/8	Prehistoric	Late Archaic	undetermined
33BU0306	14	Madison	1N/4E/8	Prehistoric	Early Archaic, Late Archaic, Early Woodland, Middle Woodland	undetermined
33BU0307	15	Madison	1N/4E/9	Historic	-	undetermined
33BU0308	16	Madison	1N/4E/17	Prehistoric/ Historic	Late Prehistoric/19th cent.	potentially eligible
33BU0311	17	Madison	1N/4E/17	Prehistoric	Woodland, Late Prehistoric	undetermined
33BU0328	18	Madison	1N/4E/9	Prehistoric	Middle Woodland	undetermined
33BU0335	19	Madison	1N/4E/8	Prehistoric	-	undetermined
33BU0336	20	Madison	1N/4E/8	Prehistoric	-	undetermined
33BU0339	21	Madison	1N/4E/17	Historic	-	undetermined
33BU0355	22	Madsion	3N/4E/22	Prehistoric	-	not eligible
33BU0390	23	Madison	1N/4E/17	Prehistoric	Late Prehistoric	undetermined
33BU0392	24	Lemon	2/4/13	Prehistoric	-	undetermined
33BU0394	25	Liberty	3/3/10	Prehistoric	Late Archaic	undetermined
33BU0393	26	Liberty	3/3/10	Prehistoric	Late Archaic, Transitional Archaic, Early Woodland	undetermined
33BU0395	27	Liberty	3/3/10	Prehistoric	Early Archaic	undetermined
33BU0397	28	Liberty	3/3/10	Prehistoric	-	not eligible
33BU0398	29	Lemon	3/3/11	Prehistoric	-	not eligible
33BU0399	30	Monroe	2/4/7	Prehistoric	Late Archaic	undetermined
33BU0400	31	Lemon	2/4/7	Prehistoric	-	undetermined
33BU0401	32	Lemon	2/4/7	Prehistoric	-	not eligible
33BU0402	33	Middletown	2/4/12	Historic	-	undetermined
33BU0423	34	Middletown	2/4/8	Historic	-	undetermined
33BU0424	35	Middletown	2/4/13	Prehistoric/ Historic	-/19th cent.	not eligible



Site No.	Map ID*	Township	Township/ Range/ Section**	Period	Sub-period	NRHP Status
33BU0425	36	Middletown	2/4/13	Historic	19th cent.	not eligible
33BU0426	37	Middletown	2/4/13	Prehistoric/ Historic	Archaic/19th cent.	not eligible
33BU0427	38	Middletown	2/4/13	Historic	19th cent.	not eligible
33BU0428	39	Middletown	2/4/19	Prehistoric	-	undetermined
33BU0485	40	Middletown	2/4/11	Prehistoric	Woodland	undetermined
33BU0486	41	Middletown	2/4/11	Prehistoric	Paleo, Late Archaic	undetermined
33BU0585	42	Lemon	3/3/10	Prehistoric	Early Archaic	undetermined
33BU0586	43	Lemon	3/3/10	Prehistoric/ Historic	Early Archaic, Early Woodland, Late Woodland/-	undetermined
33BU0588	44	Lemon	2/4/8	Historic	-	undetermined
33BU0589	45	Lemon	2/4/8	Historic	-	eligible
33BU0590	46	Lemon	2/4/9	Historic	-	eligible
33BU0635	47	Lemon	3/3/11	Prehistoric	-	undetermined
33BU0636	48	Lemon	3/3/11	Prehistoric	-	undetermined
33BU0637	49	Lemon	3/3/11	Prehistoric	-	undetermined
33BU0638	50	Liberty	3/3/10	Historic	-	undetermined
33BU0639	51	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0640	52	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0641	53	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0642	54	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0643	55	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0644	56	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0645	57	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0646	58	Liberty	3/3/10	Historic	-	undetermined
33BU0647	59	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0648	60	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0649	61	Liberty	3/3/10	Prehistoric	-	undetermined
33BU0813	62	Lemon	3/3/35	Prehistoric	-	undetermined
33BU0815	63	Lemon	3/3/29	Historic	19th cent.	undetermined
33BU0826	64	Lemon	3/3/29	Prehistoric	-	undetermined
33BU0827	65	Lemon	3/3/29	Prehistoric	-	undetermined
33BU0949	66	Lemon	3/3/35	Prehistoric	-	undetermined
33BU0950	67	Lemon	3/3/35	Prehistoric	-	undetermined
33BU0951	68	Lemon	3/3/35	Prehistoric	-	undetermined
33BU0993	69	Middletown	2/4/12	Prehistoric/ Historic	-	undetermined
33BU1035	70	Lemon	3/3/36	Prehistoric	-	undetermined

Site No.	Map ID*	Township	Township/ Range/ Section**	Period	Sub-period	NRHP Status
33BU1036	71	Madison	1N/4E/8,17	Prehistoric	-	undetermined
33BU1037	72	Madison	1N/4E/8,17	Historic	-	not eligible
33BU1038	73	Lemon	2/4/13	Historic	-	not eligible
33BU1039	74	Lemon	2/4/13	Historic	18th-20th cent.	potentially eligible
33BU1040	75	Lemon	2/4/13	Historic	-	not eligible
33BU1041	76	Monroe	2/4/13	Prehistoric	Early Archaic	undetermined
33BU1042	77	Monroe	2/4/13	Historic	19th cent.	not eligible
33BU1066	78	Lemon	3/3/30	Prehistoric	-	undetermined
33BU1067	79	Lemon	3/3/30	Prehistoric/ Historic	-	undetermined
33BU1068	80	Lemon	2/4/19	Historic	-	undetermined
33BU1069	81	Middletown	2/4/7	Prehistoric	-	not eligible
33BU1070	82	Middletown	2/4/7	Prehistoric	-	not eligible
33BU1071	83	Middletown	2/4/7	Prehistoric	-	not eligible
33BU1072	84	Middletown	2/4/7	Prehistoric	Early Woodland	not eligible
33BU1073	85	Middletown	2/4/7	Prehistoric	-	undetermined
33BU1095	86	Monroe	2/4/13	Prehistoric	-	not eligible
33BU1096	87	Middletown	2/4/7	Historic	19th-20th cent.	not eligible
33BU1097	88	Lemon	2/4/7	Historic	-	undetermined
33BU1103	89	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1104	90	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1105	91	Lemon	2/4/25	Prehistoric/ Historic	-/18th-19th cent.	not eligible
33BU1106	92	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1107	93	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1108	94	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1109	95	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1110	96	Lemon	2/4/25	Prehistoric	Early Archaic, Late Archaic, Early Woodland, Middle Woodland, Late Woodland	eligible
33BU1111	97	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1112	98	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1113	99	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1114	100	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1115	101	Lemon	2/4/25	Prehistoric	Late Archaic, Early Woodland	not eligible
33BU1116	102	Lemon	2/4/25	Prehistoric	-	not eligible

Site No.	Map ID*	Township	Township/ Range/ Section**	Period	Sub-period	NRHP Status
33BU1117	103	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1118	104	Lemon	2/4/26	Prehistoric	-	not eligible
33BU1119	105	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1120	106	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1121	107	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1122	108	Lemon	2/4/25	Prehistoric	Early Archaic, Early Woodland, Late Woodland	eligible
33BU1123	109	Lemon	2/4/25	Prehistoric	-	not eligible
33BU1124	110	Lemon	2/4/25	Prehistoric	Late Archaic	undetermined
33BU1125	111	Lemon	3/3/27	Historic	19th cent.	not eligible
33BU1132	112	Lemon	3/3/30	Prehistoric	-	not eligible
33BU1133	113	Lemon	3/3/30	Prehistoric	-	not eligible
33BU1134	114	Lemon	3/3/34	Prehistoric	Middle Woodland, Late Woodland	not eligible
33BU1135	115	Lemon	3/3/34	Prehistoric	-	not eligible
33BU1136	116	Lemon	3/3/34	Historic	18th-19th cent.	not eligible
33BU1146	117	Madison	1N/4E/8	Prehistoric	-	not eligible
33WA0059	118	Turtle Creek	3/4/25	Prehistoric	Woodland	listed
33WA0060	119	Turtle Creek	3/4/25	Prehistoric	woodland	listed
33WA0115	120	Franklin	2/4/4	Prehistoric	Archaic	undetermined
33WA0336	121	Turtle Creek	4/3/36	Prehistoric/ Historic	Late Archaic, Woodland/-	undetermined
33WA0337	122	Turtle Creek	4/3/36	Prehistoric	Late Archaic	undetermined
33WA0338	123	Turtle Creek	4/3/28	Prehistoric	-	undetermined
33WA0339	124	Turtle Creek	4/3/28	Prehistoric	-	undetermined
33WA0340	125	Turtle Creek	4/3/30	Prehistoric	-	undetermined
33WA0341	126	Turtle Creek	4/3/30	Prehistoric	-	undetermined
33WA0342	127	Turtle Creek	4/3/30	Prehistoric	-	undetermined
33WA0343	128	Turtle Creek	4/3/30	Historic	-	undetermined
33WA0344	129	Turtle Creek	4/3/30	Historic	-	undetermined
33WA0345	130	Turtle Creek	4/3/34	Prehistoric	Paleo, Late Archaic, Middle Woodland	undetermined
33WA0401	131	Turtle Creek	4/3/23	Prehistoric	-	undetermined
33WA0402	132	Turtle Creek	4/3/23,24	Prehistoric	-	undetermined
33WA0403	133	Turtle Creek	4/3/23	Prehistoric	Late Woodland, Late Prehistoric	undetermined
33WA0404	134	Turtle Creek	4/3/29	Prehistoric/ Historic	-	undetermined

Site No.	Map ID*	Township	Township/ Range/ Section**	Period	Sub-period	NRHP Status
33WA0405	135	Turtle Creek	4/3/30	Prehistoric/ Historic	-	undetermined
33WA0406	136	Turtle Creek	4/3/29	Prehistoric/ Historic	-	undetermined
33WA0407	137	Turtle Creek	3/4/19	Historic	-	undetermined
33WA0412	138	Franklin	2/4/6	Prehistoric	-	undetermined
33WA0415	139	Franklin	3/4/28	Prehistoric	Late Archaic	undetermined
33WA0416	140	Turtle Creek	3/3/5	Prehistoric/ Historic	-	undetermined
33WA0417	141	Turtle Creek	4/3/36	Prehistoric	-	undetermined
33WA0424	142	Franklin	2/4/5,6	Prehistoric	Early Woodland	undetermined
33WA0425	143	Franklin	3/4/35	Prehistoric	-	undetermined
33WA0426	144	Franklin	3/4/28	Prehistoric	-	undetermined
33WA0481	145	Turtle Creek	3/4/14	Historic	-	undetermined
33WA0482	146	Turtle Creek	3/4/20	Prehistoric/ Historic	-	undetermined
33WA0483	147	Turtle Creek	3/4/20	Prehistoric	-	undetermined
33WA0484	148	Turtle Creek	3/4/20	Prehistoric	-	undetermined
33WA0485	149	Turtle Creek	3/4/20	Prehistoric	-	undetermined
33WA0486	150	Turtle Creek	3/4/26	Historic	-	undetermined
33WA0487	151	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0488	152	Turtle Creek	2/4/1	Prehistoric	-	undetermined
33WA0497	153	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0498	154	Turtle Creek	3/4/26	Historic	-	undetermined
33WA0499	155	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0500	156	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0501	157	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0603	158	Turtle Creek	4/3/24	Prehistoric	Woodland	undetermined
33WA0669	159	Franklin	2/4/3	Historic	-	undetermined
33WA0670	160	Franklin	2/4/3	Historic	-	undetermined
33WA0674	161	Turtle Creek	3/4/20	Prehistoric/ Historic	-	undetermined
33WA0675	162	Turtle Creek	3/4/26	Historic	-	undetermined
33WA0676	163	Turtle Creek	3/4/32	Historic	-	undetermined
33WA0688	164	Turtle Creek	2/4/2	Prehistoric	-	undetermined
33WA0700	165	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0701	166	Turtle Creek	3/3/5	Prehistoric	-	undetermined

Site No.	Map ID*	Township	Township/ Range/ Section**	Period	Sub-period	NRHP Status
33WA0702	167	Turtle Creek	3/3/5	Prehistoric	Early Archaic, Late Archaic, Late Woodland, Late Prehistoric	undetermined
33WA0703	168	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0704	169	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0705	170	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0706	171	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0707	172	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0708	173	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0709	174	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0710	175	Turtle Creek	3/3/5	Prehistoric	Early Archaic, Late Archaic	undetermined
33WA0711	176	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0713	177	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0714	178	Turtle Creek	3/3/5	Prehistoric/ Historic	-	undetermined
33WA0715	179	Turtle Creek	3/3/5	Historic	-	undetermined
33WA0716	180	Turtle Creek	3/3/5	Prehistoric	Late Woodland, Late Prehistoric	undetermined
33WA0717	181	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0718	182	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0719	183	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0720	184	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0722	185	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0723	186	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0724	187	Turtle Creek	3/3/5	Prehistoric	-	undetermined
33WA0741	188	Franklin	3/4/33	Prehistoric	-	undetermined
33WA0742	189	Franklin	3/4/33	Prehistoric	-	undetermined
33WA0743	190	Franklin	3/4/33	Prehistoric	-	undetermined
33WA0745	191	Turtle Creek	3/3/5	Prehistoric/ Historic	-	undetermined
33WA0746	192	Turtle Creek	3/3/5	Historic	-	undetermined
33WA0758	193	Turtle Creek	4/3/30	Historic	-	undetermined
33WA0759	194	Franklin	3/4/33	Prehistoric	-	undetermined
33WA0763	195	Turtle Creek	2/4/1	Prehistoric	-	undetermined
33WA0809	196	Turtle Creek	2/4/1	Prehistoric	-	undetermined
33WA0810	197	Turtle Creek	2/4/1	Prehistoric	-	undetermined

Site No.	Map ID*	Township	Township/ Range/ Section**	Period	Sub-period	NRHP Status
33WA0811	198	Turtle Creek	3/4/31	Prehistoric	Paleo, Late Archaic, Middle Woodland	undetermined
33WA0812	199	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0813	200	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0814	201	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0815	202	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0816	203	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0817	204	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0818	205	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0819	206	Turtle Creek	3/4/31	Prehistoric	-	undetermined
33WA0820	207	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0821	208	Turtle Creek	3/4/26	Prehistoric	-	undetermined
33WA0822	209	Turtle Creek	3/4/14	Prehistoric	-	undetermined
33WA0847	210	Franklin	3/4/34	Prehistoric	-	undetermined
33WA0848	211	Franklin	3/4/33	Prehistoric	-	undetermined
33WA0869	212	Turtle Creek	4/3/36	Prehistoric	-	undetermined
33WA0870	213	Turtle Creek	3/4/32	Historic	-	undetermined
33WA0871	214	Turtle Creek	3/4/20	Prehistoric/ Historic	-	undetermined
33WA0895	215	Turtle Creek	4/3/36	Prehistoric	-	undetermined
33WA0900	216	Turtle Creek	3/4/14	Prehistoric	-	undetermined
33WA0901	217	Turtle Creek	3/4/14	Historic	-	undetermined
33WA0903	218	Turtle Creek	3/4/14	Prehistoric	-	undetermined
33WA0939	219	Turtle Creek	2/4/1	Historic	-	undetermined
33WA0943	220	Turtle Creek	3/4/31	Prehistoric	Early Archaic, Late Prehistoric	undetermined
33WA0944	221	Turtle Creek	3/4/26	Prehistoric	Woodland	undetermined
33WA0945	222	Turtle Creek	3/4/26	Prehistoric	-	undetermined

\*Depicted on Figures 8 to 16.

\*\* The “Between the Miamis”-North of Symmes Purchase and Symmes Purchase regions were platted without Township and Range directions.

The archaeological sites consist of 34 historic period sites, 169 prehistoric period sites, and 19 sites with historic and prehistoric components. Two archaeological sites are listed on the NRHP, Armco Park Mound I (33WA0059) and Armco Park Mound II (33WA0060). Both of these mounds are characterized as unspecified Woodland period sites and are situated on upper terraces above Shaker Creek. Armco Park Mound I lies approximately 3.5 miles (5,600 meters) east-southeast of the Project; Armco Park Mound II is located approximately 3.1 miles (5,000 meters) east-southeast of the Project. OHPO has determined that two historic sites (33BU589 and 33BU590) and two prehistoric sites (33BU1110 and 33BU1122) are

eligible for listing on the NRHP. Two sites have been determined to be potentially NRHP-eligible, 33BU1039 and 33BU0308, which are historic and prehistoric/historic, respectively. Forty-four sites have been determined to be not eligible for the NRHP, and the remaining sites have not received determinations regarding NRHP significance.

Forty-seven prehistoric sites contain datable components or diagnostic artifacts, with 18 of these sites possessing components or artifacts from multiple prehistoric periods. Table 4 presents information on the datable prehistoric components of sites identified within the Study Area.

Table 4. Site Components Assigned to Prehistoric Periods.

Paleo	Archaic	EA	MA	LA	TA	Wood	EW	MW	LW	LP
3	2	10	0	18	1	13	10	11	6	10

Abbreviations: EA=Early Archaic, MA=Middle Archaic, LA=Late Archaic, TA=Transitional Archaic, Wood=Woodland, EW=Early Woodland, MW=Middle Woodland, LW=Late Woodland, LP=Late Prehistoric.

There are 11 documented prehistoric mounds located within the Project Study Area, including the NRHP-listed Armco Park Mound I and II. Mills (1913) identified 10 mounds in Butler County and 7 mounds in Warren County located within the Project Study Area. Based on current satellite imagery, it appears likely that several of these mounds are no longer extant due to twentieth century construction or agricultural activities.

There have been 39 archaeological investigations previously conducted within the Project Study Area, including 33 Phase I surveys, 4 Phase II testing programs, and 2 Phase III data recovery excavations. Several of these surveys (e.g., pipelines and the Interstate 75 investigation), passed through and extended well beyond the Project Study Area. Among the larger surveys conducted within the Project Study Area were:

- Cincinnati Crossings Project, 466 acres, 36 sites identified (Parish et al. 1999);
- Middletown Coke Co. Cogeneration Station, 238 acres, 22 sites identified; Sites 33BU1110 and 33 BU1122 contained multiple prehistoric components and underwent data recovery excavations (Kelly and Vehling 2008);
- Fort Ancient Chronology and Settlement Evaluation in the Great Miami Valley, 188 acres, 21 sites identified (Scheurer 1986);
- Windsor Estates Residential Development, 183 acres, 5 sites identified (Kreinbrink and Von Strohe (2010); and
- AT&T Fiber Optic Cable Line, 179 acres, 18 sites identified (Bergman and Rue 1990).

Eleven previous surveys have been located within 1 mile of the Project, either partially or wholly, with three improvement projects to the Cincinnati Dayton Road accounting for four identified sites. Four surveys have been undertaken within or immediately adjacent to the Project area. These surveys are:



- Matrix Gas Corporation Pipeline (Perkins and Striker 1998);
- AT&T Fiber Optic Cable Line (Bergman and Rue 1990);
- Texas Eastern Transmission Petroleum Pipeline (Hornum and Godwin 2012); and
- Rockies Express Pipeline (Schneider et al. 2007).

Schneider et al. (2007) identified two small artifact scatters, 33BU1071 and 33BU1072, within the APE of the proposed Rockies Express pipeline corridor. Site 1071 contained 4 chert flakes; Site 1072 yielded 4 chert flakes, an Early Woodland grit-tempered pottery sherd, and 2 igneous celts. Schneider et al. recommended no further investigations because neither site possessed sufficient research potential to satisfy NRHP eligibility criteria. Both of these sites are located within the MEC Project APE.

The Ohio Genealogical Society (OGS) maintains an inventory of historic cemeteries across the state, and OHPO has incorporated this information into the online Ohio Archaeological Inventory dataset. The data review indicates that there are 17 cemeteries with OGS registration numbers (OGSID) located within the Project Study Area. These cemeteries are depicted by Map ID in Figures 8 to 16. Table 4 presents information relating to each cemetery.

Table 5. Registered Cemeteries Located within Project Study Area.

OGSID	Map ID*	Name	Town	T/R/Sec**
1279	1	Amanda	Lemon	2/4/26
1280	2	Calvary Catholic	Middletown	2/4/28
1282	3	Middletown	Middletown	2/4/28
1283	4	Monroe North	Lemon	3/3/18
1284	5	Mound	Lemon	3/3/17
1285	6	Saint Anthony	Lemon	2/4/7
1286	7	Woodside	Middletown	2/4/27
1291	8	Augsburger	Madison	1N/4E/5
12225	9	Grace Memorial Garden	Franklin	3/4/33
12296	10	Bigger	Turtle Creek	3/4/31
12297	11	Bunnel Farm	Turtle Creek	3/4/19
12299	12	East Shaker	Turtle Creek	3/4/19
12310	13	Otterbein Shaker	Turtle Creek	4/3/24
15513	14	Baptist Graveyard	Middletown	2/4/23
15515	15	McClellan	Middletown	2/4/15
15516	16	Old Middletown Burying Ground	Middletown	2/4/28
15848	17	Solid Rock	Lemon	3/3/18

\*Depicted on Figures 8 to 16.

\*\* The “Between the Miamis”-North of Symmes Purchase and Symmes Purchase regions were platted without Township and Range directions.

ODOT maintains a Historic Bridge List for all bridges within the state that are potentially NRHP-eligible based upon date of construction. The list contains one entry located within the Study Area that has been determined NRHP-eligible. This bridge, constructed in 1910, is located in the City of Middletown, and



presently conveys a pedestrian walkway over the Hydraulic Canal from North Main Street into Smith Park. The bridge is depicted in Figure 9. Table 6 presents information about the bridge taken from the ODOT Historic Bridge List.

Table 6. Historic Bridges Located within Project Study Area.

ODOT Bridge #	Map ID*	Name	T/R/Sec**	Description	Date	NRHP Status
0960055	1	Hydraulic Canal	2/4/29	steel, Pratt-riveted pony truss	1910	eligible

\*Depicted on Figure 9.

\*\* The “Between the Miamis”-North of Symmes Purchase and Symmes Purchase regions were platted without Township and Range directions.

## 4.0 PHASE I SURVEY

The Phase I archaeological survey was conducted from May 5 to May 9, 2014. Weather during the survey was a mixture of clear and cloudy conditions, with temperatures ranging from morning lows of 48°F to afternoon highs of 82°F. Light rain was of short duration in the afternoon of May 9.

The Construction Laydown Site comprises approximately 25 acres of cultivated field. A series of four parallel underground gas and petroleum pipelines are conveyed across the southern portion of the Construction Site, trending west-southwesterly from east to west. An oblong-shaped push-pile measuring approximately 100 meters by 50 meters is present in the southwest quadrant of the Precision Strip Property (Figure 2). The Facility Site comprises approximately 45 acres, consisting of a 32.5-acre cultivated field and 12.5 acres of woodlot and scrub vegetation that extend eastward from the southern tip of the cultivated field to Cincinnati Dayton Road (Figure 2). The scrub vegetation lies within the Duke Energy electric transmission line right-of-way (ROW).

Most of the cultivated fields had been planted in soybeans in 2013, with a narrow strip of corn in the pipeline easement separating the Construction Site from the Facility Site. All of the cultivated fields comprising the Construction Site and the Facility Site were disked by the tenant farmer during the last week of April 2014. The disked fields were washed by 1.95-inches of rain prior to the start of field survey (NOAA 2014). During field survey activities, the ground visibility was in excess of 90 percent.

### 4.1 FIELD METHODS

The fieldwork employed two methods of survey, shovel testing and pedestrian reconnaissance, depending on the degree of ground visibility exhibited within a given segment of the Project. Pedestrian reconnaissance was undertaken wherever ground visibility was greater than 50 percent, that is, when at least one-half of the surface soils were exposed for visual inspection. When a survey area was determined suitable for pedestrian reconnaissance, the survey team lined up at 5-meter intervals and walked the APE

to locate cultural material, making as many transects as necessary to inspect each survey area. The team pin-flagged all observed artifacts and recorded locations as a find spot with a Trimble XT GPS mapping unit and data collector. Artifacts were then individually collected by find spot, stored in reclosable polyethylene bags, and tagged with provenience information.

Tetra Tech utilized shovel testing as a survey method when ground visibility was less than 50 percent. Shovel tests were spaced at 15-meter intervals, measured 50 x 50-centimeters in plan, and were excavated in natural soil strata into Pleistocene-age sterile subsoil. All excavated soils were screened through ¼-inch hardware cloth for the systematic recovery of artifacts. Results of each shovel test, including stratigraphic depths, soil color, soil textures, gravel/cobble inclusions, and artifact descriptions were recorded, using standard terminology of the U.S. Department of Agriculture (USDA) soil texture categories and Munsell color codes. Every shovel test was plotted by global positioning satellite (GPS) and promptly backfilled following excavation and documentation. Artifacts recovered from shovel tests were processed in similar manner as surface finds. A complete log of shovel test results is presented as Appendix A.

## 4.2 LABORATORY METHODS

Artifacts recovered from the Phase I survey were brought to Tetra Tech's lab for cleaning, analysis, and cataloguing. This three-step procedure led from in-field artifact collection to the compilation of an artifact database and the preparation of artifacts for long-term curation.

Tetra Tech staff employed a sortable spreadsheet to compile an artifact inventory for data manipulation and storage. Attribute fields recorded locational data, functional classes, material types, counts, and other descriptive traits when appropriate.

The analysis of prehistoric lithic artifacts was grounded in an approach linking attributes of form and function to particular stages in stone tool reduction and use strategies (Andrefsky 1998, 2001; Callahan 1979; Clark 1986; Crabtree 1972; and Parry 1987). Emphasis was also placed on the identification of projectile points within the context of regionally recognized cultural horizons. The texts of Prufer and McKenzie (1967), Converse (2007), and DeRegnaucourt (1992) on Ohio archaeology were particularly important in this regard.

All lithic artifacts were classified into major type, including debitage, biface, and uniface. Analysis then proceeded to categorize artifacts by sub-type yielding a typology that combines tool-making debris with a continuum of end-products representing manufacturing failures, single-use tools, and rejuvenated tools, as well as thermally altered specimens. All chipped-stone artifacts were analyzed for the amount of remnant cortex, or patinated rind, on their surfaces. A number of studies (e.g., Andrefsky 1994; Johnson 1989; Seddon 1992) have demonstrated relationships between cortex and such variables as stages of reduction, distance from lithic sources, and the size of raw material nodules. The degree of remnant cortex on an artifact was cataloged as Cortex Rank. An item with no remnant cortex was classified as Cortex Rank 0;

those with <25 percent remnant cortex were classified as Cortex rank 1; 25-50 percent remnant cortex was classified as Cortex Rank 2; and >50 percent remnant cortex as Cortex rank 3 (see Appendix B).

Two types of cortex were identified: cobble and block. Cobble cortex refers to a piece of rock that has been stream or glacial-rolled, producing a rounded to sub-rounded cobble or gravel with a smoothed and weathered outer surface. Items exhibiting cobble cortex were classified as Cortex Type 1. Block cortex refers to chunks, or blocks of stone that were quarried from an outcropping. Typically, the cortex surface on these pieces is somewhat roughened and flat, reflecting internal cleavages within the rock matrix. Items exhibiting block cortex were classified as Cortex Type 2. Artifacts without cortex were classed as Cortex Type 0. The characterization of artifacts by their lithic raw material was a key element in the analysis. Toward this goal, DeRegnaucourt (1992), Foradas (1994), and Converse (2007) proved to be valuable references due to the variety of chert types recovered at Site 33BU1071.

#### 4.3 RESULTS OF FIELD SURVEY

For purposes of field survey, the Project APE was divided into three survey Areas. Survey Area A comprises the open field of the Facility Site; Survey Area B is the open field of the Construction Site; and, Survey Area C consists of the wooded and scrub vegetation zones of the Facility Site dogleg that extends eastward to Cincinnati Dayton Road. Prehistoric period lithic artifacts were recovered in each of the three survey areas. The survey results in the three survey areas follows.

##### 4.3.1 Survey Area A

The field survey examined 100 percent of Survey Area A via pedestrian reconnaissance due to the high degree of ground visibility achieved by field disking and subsequent rain (Figure 2). The cultivated field is marked by a low rise extending approximately 300 meters by 80 meters that trends east to west along its long axis. At its highest extent, the rise reaches 5 feet above the otherwise level landscape (Figure 17). As previously mentioned (see Section 2.3), the rise principally consists of well-drained Princeton sandy loam, in contrast to the poorly-drained Patton silty clay loam that surrounds it. Even from a distance, the soils exhibit distinct color differentiation that reflects their disparate composition and drainage patterns (Photograph 1). Figure 2 also clearly illustrates the darker (wetter) soils of the Patton series that is present south and north of the rise, in contrast to the lighter colored sandy loam.

The pedestrian reconnaissance identified 51 chert (flint), chipped-stone artifacts on the rise and its slopes (Figures 2 and 17). This assemblage included tools and chipping debris, or debitage, manufactured from a variety of local and non-local chert sources. To obtain additional information about the stratigraphic position of the artifact deposit, and to recover additional diagnostic artifacts that could assist in securing relative dates for the material, ten shovel tests were excavated in two groups of five across the rise (Figures 2 and 17). Seven of the shovel tests were positive for lithic finds. In all, 64 chert artifacts were recovered from the rise and its slopes. Appendix B presents a catalog of finds.

The previously conducted survey for the Rockies Express Pipeline had identified two small prehistoric artifact loci (Schneider et al. 2007). These loci, designated as Site 33BU1071 and 33BU1072, contained, respectively, four chert flakes, and four chert flakes, an Early Woodland pottery sherd, and two igneous celts. Schneider et al. (2207) concluded that neither site was a significant archaeological resource. Based on the Universal Transverse Mercator (UTM) coordinates of each site as listed on their OHPO site forms, both 33BU1071 and 33BU1072 are located firmly within the clustering of artifacts identified in the MEC survey. After consulting with OHPO's archaeology survey and data manager, Tetra Tech consolidated the previous site designations with the new finds as Site 33BU1071. The site forms of 33BU1071 and 33BU1072 will be updated to reflect these changes.

The following analysis of the artifact assemblage from Site 33BU1071 excludes the finds from Schneider et al. (2007), except where noted. Although the artifact density of Site 33BU1071 is modest, the assemblage contains a very high percentage of finished stone tools. With 9 bifaces and 1 unifacial scraper, the tools account for 16 percent of the site assemblage. The set of bifaces includes five whole or fragmented projectile points, two late-stage bifaces, one small drill, and one small chopper (Photograph 2). The projectile points originate from Early Archaic, Middle Woodland, and Late Prehistoric periods. Find Spot 1 is a thin biface, made from Vanport chalcedony, and exhibits alternating beveling on the rather broad blade (see Photograph 2). Although much of the base is non-extant due to breakage, one corner notch is visible. The blade size, beveling, and notch position is consistent with an Early Archaic Thebes point, circa 8000-7000 BC (Converse 2007:88-89, Justice 1987:54-55). Find Spot 48 has a biconvex cross-section, with a short stem and two very small corner notches (see Photograph 2). Though the point is rather thick, its edges are well-executed on local Cedarville-Guelph chert. The base has some minor damage, but appears to have a burin-removal on one side. This point is interpreted as a possible late-Early Archaic Decatur variety, or a fractured-base point, dating to circa 7000-6000 BC (Converse 2007:92-93, Justice 1987:81). Find Spot 21 is a Middle Woodland small Hopewell point fashioned from Vanport chert, dating to circa 200 BC to AD 400 (Converse 2007:134-135, Justice 1987:) (see Photograph 2). Find Spot 34 is a small, Fort Ancient serrated point of fine-grained gray Indiana hornstone, dating to the Late Prehistoric period, circa AD 1000 to AD 1450 (Converse 2007:152-153, Justice 1987:227) (see Photograph 2). The fifth projectile point, Find Spot 25, is too fragmentary to assign a type. It consists of one blade edge of Vanport chalcedony. The edge is robust and well-made, and might be from an Early Archaic heavy duty or Archaic side-notch point form, common point types in southern Ohio (Converse 2007:40-41, 62-63).

Find Spot 39 is a small unifacial scraper of glacial chert. The edge angle is approximately 75 degrees, which Carr (1982:280-282) classifies as a scraper for use on hard wood or bone. This item also appears to have a graver spur. Gravers were sharpened projections that may have been used to pierce or incise bone, wood, or shell, although actual use is considered to be somewhat conjectural. Find Spot 38 includes a small, whole, bifacial drill made from Delaware chert (Photograph 2). Find Spot 4 is a small hand chopper manufactured from local Four Mile Creek chert with block cortex. The working end of this artifact is a minimally prepared bifacial edge. The unifacial scraper, drill, and chopper are not assignable to a specific prehistoric time period. The igneous celts that were identified by Schneider et al. (2007) from

Site 33BU 1072 are generally assigned in Ohio to the Early Woodland Adena culture (circa 450 BC to AD 100) or Middle Woodland Hopewell culture (circa 200 BC to AD 400) (Converse 1973). Celts are interpreted as heavy duty wood working tools, which began to replace grooved stone axes in toolkits at the beginning of the Early Woodland period (Applegate 2008:343; Converse 1973).

The chert debitage (flakes and block shatter) includes various forms that describe a continuum of manufacturing and maintenance activities from initial production to final bifacial edge preparation and re-sharpening. Fifty-five percent of the debitage sample (n=28) consists of biface reduction flakes, representing late-stage and final biface manufacture. The absence of all cortex from the biface reduction flakes confirms that these items are the product of end-stage manufacturing or tool maintenance. The debitage assemblage contains a broad variety of local stone (Four Mile Creek chert and glacial cherts), medium-distance non-local stone (Cedarville-Guelph chert originates in Logan County approximately 60 miles northeast of the Project; Delaware chert originates in western Franklin and Delaware Counties approximately 75 to 85 miles from the Project), and more distant non-local stone such as Vanport and Coshocton cherts which come from quarries located more than 100 miles east of the Project, and at least one item (Find Spot 34, Fort Ancient point) of Indiana hornstone from the lower Ohio River valley.

The artifacts recovered from shovel tests all originated from the plow zone. This surface layer in cultivated fields represents the product of plow-mixed soils, and lies atop undisturbed subsoils. Plow zone soil at Site 33BU1071 was categorized as brown sandy loam; subsoil was dark yellowish brown sandy clay loam (see Appendix A). Shovel testing did not reveal any remnant feature fill at the interface of the plow zone and subsoil.

The plot of mapped artifacts across the rise shows two distinct distribution clusters (Figure 2 and 17). One cluster is along the western edge of the rise at a point closest to Shaker Creek. The western cluster contains three of the recovered bifaces, including the small Hopewell point. Arrayed on the crest of the rise and its southeastern slope is the second artifact cluster. The eastern cluster contains three bifaces, including the early Archaic Decatur point and the Late Prehistoric Fort Ancient point. Artifact distribution between the two clusters was very limited. No artifacts were recovered outside of the delineated boundaries of Site 33BU1071 within Survey Area A (Figure 2).

#### 4.3.2 Survey Area B

Survey Area B is the open cultivated field that comprises the Construction Site (Photograph 3). Field disking and subsequent rain created ground visibility in excess of 90 percent, allowing pedestrian reconnaissance as the survey methodology. The gas pipeline easement was avoided by the archaeological survey due to the deep excavations and consequent ground disturbance for the installation of the pipelines. Survey found one prehistoric stone artifact, Find Spot 49, identified as a Vanport chalcedony early reduction flake (Appendix B). A close-interval search for further finds in the vicinity was negative. This artifact is considered an Isolated Find and was designated as Site 33BU1182 in the OHPO database.

#### 4.3.3 Survey Area C

The non-cultivated portion of the Facility Site is a mixture of woodlot and scrub vegetation that parallels the Duke Energy electric transmission line corridor (Figure 2; Photograph 4). It is bounded to the east by Cincinnati Dayton Road, to the south by Shaker Creek, to the west by a railroad line, and to the north by an abandoned liquids pipeline (Figure 2). Areas of extensive ground disturbance were observed in the APE. An abandoned transportation feature extends across the APE in a southeast to northwest orientation. An electric transmission tower that conveys Duke Energy's 345 kV line is present in the western portion of the APE (Photograph 5). A 15-foot wide stormwater sewer easement runs north to south across the APE. A large push-pile measuring approximately 95 meters by 95 meters is present at the eastern end of the APE. The height of the push-pile reaches 3 meters above surrounding grade (Photograph 6). Wet, hydric soil was observed within 45 to 55 meters north of Shaker Creek. The areas of disturbance and wet soils were avoided and not surveyed.

A grid of 26 shovel tests was excavated within the portion of the APE that was testable (Figure 2). Four contiguous shovel tests forming a square (nos. 17, 18, 20, and 21) were positive for prehistoric lithic artifacts (Appendix A and B). Radial shovel tests were excavated at each of the positive tests, with three of the radials also yielding stone artifacts (Figure 2). Negative shovel tests bounded the cluster. Soils in the vicinity of the cultural material were a brown silty loam surface layer atop dark yellowish brown silty clay loam subsoil.

In all, eight prehistoric stone artifacts were recovered from the seven positive shovel tests. This assemblage includes a humpback bifacial scraper on Delaware chert (Photograph 2), five biface reduction flakes on a variety of chert types, one decortication flake from glacial chert, and piece of block shatter on Coshocton black chert (Appendix B). The artifact cluster has been designated Site 33BU1181 in the OHPO database. The site measures approximately 20 meters by 35 meters and encompasses around 550 square meters (0.14 acre).

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Phase I survey for the Project identified prehistoric stone artifacts in two locales within the Facility Site and an isolated find within the Construction Site. No historic artifacts were recovered in pedestrian reconnaissance or shovel testing.

Pedestrian reconnaissance and shovel testing identified a broad scatter of prehistoric stone artifacts along a low rise that extends east to west across a cultivated field within the proposed Facility Site. The site has been designated 33BU1071 in the OHPO database. Among the recovered artifacts are four projectile points that are interpreted as dating to the Early Archaic period (circa 8000-6000 BC), the Middle



Woodland Hopewell phase (circa 200 BC – AD 400), and the Late Prehistoric Fort Ancient phase (circa AD 1100-1450). Other tools include a small drill, a small chopper, a scraper, and biface fragments. Schneider et al. (2007) recovered two igneous celts and an Early Woodland pottery sherd from the rise during a previously undertaken survey for the proposed Rockies Express Pipeline but concluded that neither site was a significant archaeological resource. Three factors indicate that Site 33BU1071 may be potentially eligible for listing on the National Register of Historic Places:

- First, the wide range of tool forms suggests that site occupants were engaged in a variety of subsistence tasks during their stays on the rise. Short-duration campsites typically yield only flake debris with an occasional tool. Rarely do they contain the array of tools found at 33BU1071.
- Second, the recovery of diagnostic artifacts from four different prehistoric time periods indicates that the landform was stable for a long duration, and provided visitors with well-drained ground on which to camp next to Shaker Creek and near Dicks Creek, and within six kilometers of the Great Miami River, a relatively short distance for people accustomed to prolonged and frequent travel.
- And lastly, the broad variety of chert types among the artifact assemblage reflects visits to the site by people from geographically distant parts of the Ohio Valley and interior drainages, or by people who interacted and traded with distant groups.

Field survey recovered a lone chert flake in the cultivated field of the proposed Construction Site. It is classified as an isolated find, and is designated as Site 33BU1182 in the OHPO database. Tetra Tech concludes that Site 33BU1182 is not a significant cultural resource because it lacks potential research value, and is therefore not NRHP-eligible.

Shovel testing revealed a low density scatter of seven flakes and one scraper tool in the eastern extension of the Facility Site between the Norfolk Southern railroad tracks and Cincinnati Dayton Road. This cluster, designated Site 33BU1181 in the OHPO database, is confined to plow zone context and measures about 550 square meters in horizontal extent. Ground disturbances in the form of push piles, railroad beds, transmission tower footings, sewer line, and a natural gas pipeline bound the site on all four sides. These structures have likely eliminated an unknown portion of the site. Based upon the low density of finds and the proximity of major ground disturbances, Tetra Tech concludes that Site 33BU1181 does not possess sufficient integrity, or research potential, to be considered NRHP-eligible.

## 5.2 Recommendations

Tetra Tech makes the following recommendations regarding the three archaeological sites identified during the Phase I Middletown Energy Center Survey:

- **Site 33BU1071** - Since complete avoidance of the site is not possible because Site 33BU1071 occurs across a substantial portion of the proposed development area, Tetra Tech has

recommended a Phase II testing program to evaluate the site on the basis of NRHP eligibility criteria. Therefore, Tetra Tech will be working with NTE and the OHPO to develop and implement a Phase II testing program.

- **Site 33BU1181** - Tetra Tech recommends no further archaeological investigations at this site.
- **Site 33BU1182** - Tetra Tech recommends no further archaeological investigations at this site.



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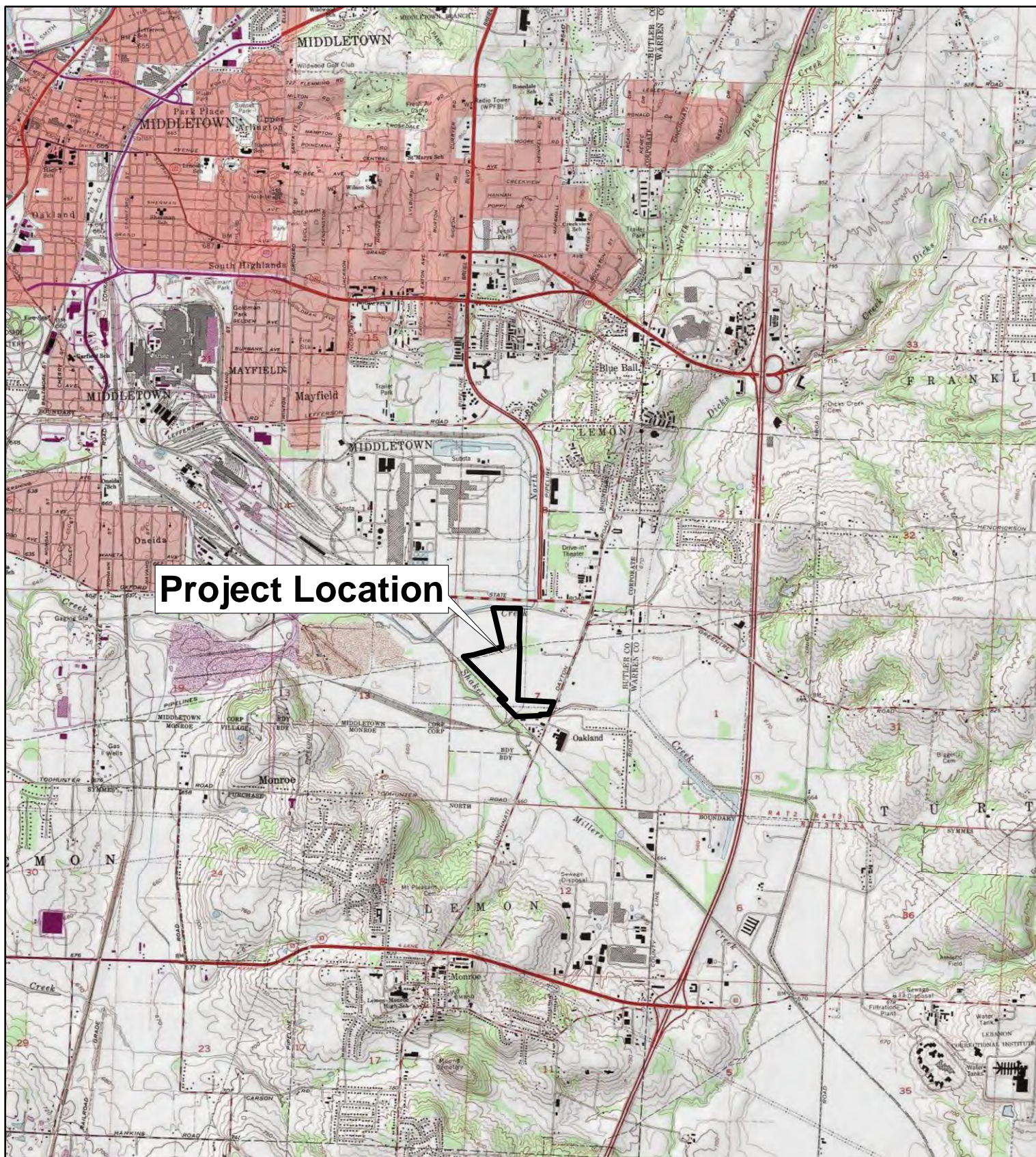
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## FIGURES





**Legend**  
 Project Area



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Miles

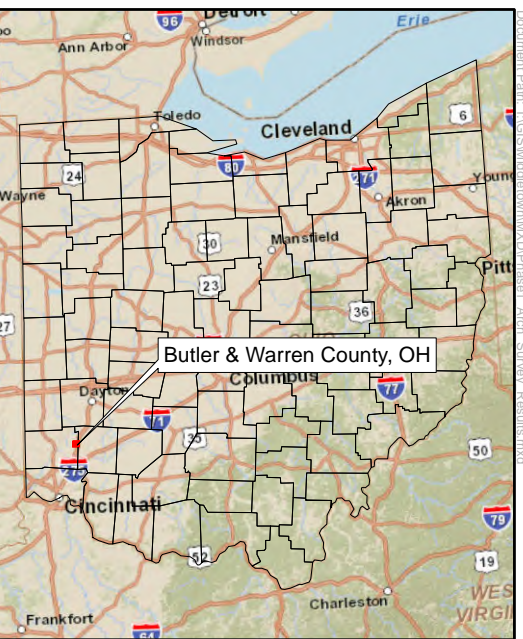
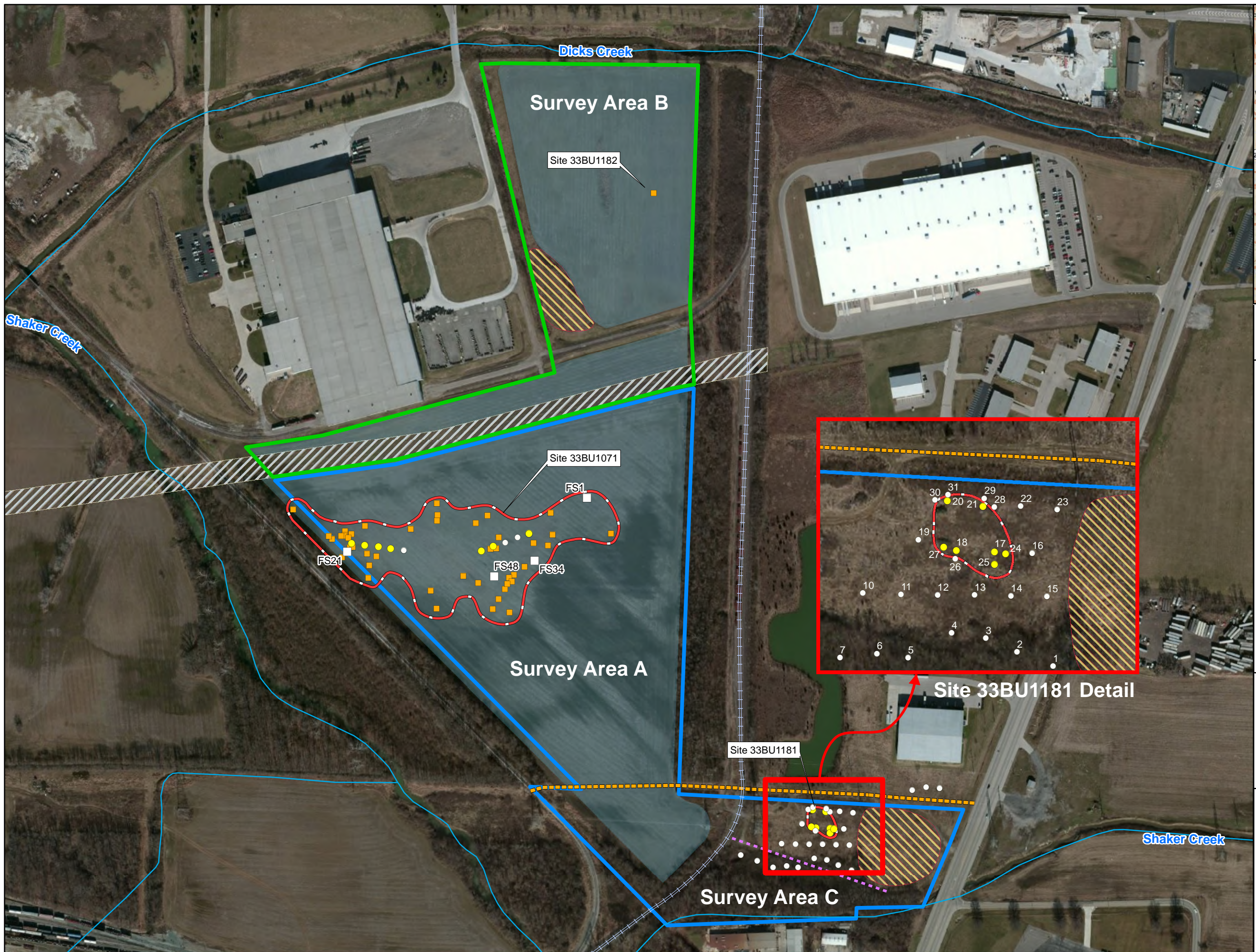
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**Middletown Energy Center**

**Figure 1**  
**Project Location Map**

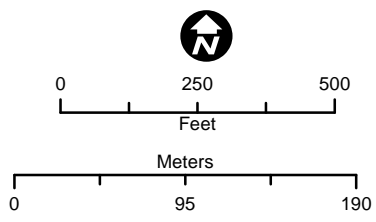




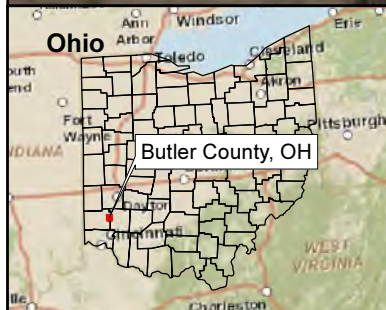


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- Legend**
- Find Spot - Projectile Point
  - Find Spot - Debitage
  - Positive Shovel Test
  - Negative Shovel Test
  - Rail Road
  - Abandoned Transportation Feature
  - Abandoned Liquids Pipeline
  - Streams
  - Archeological Site Boundary
  - Construction Site
  - Facility Site
  - Pedestrian Reconnaissance
  - Pipeline Easement
  - Push Pile







### Legend

- Project Area
- NRCS Soils

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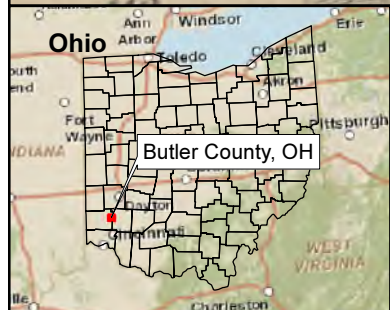
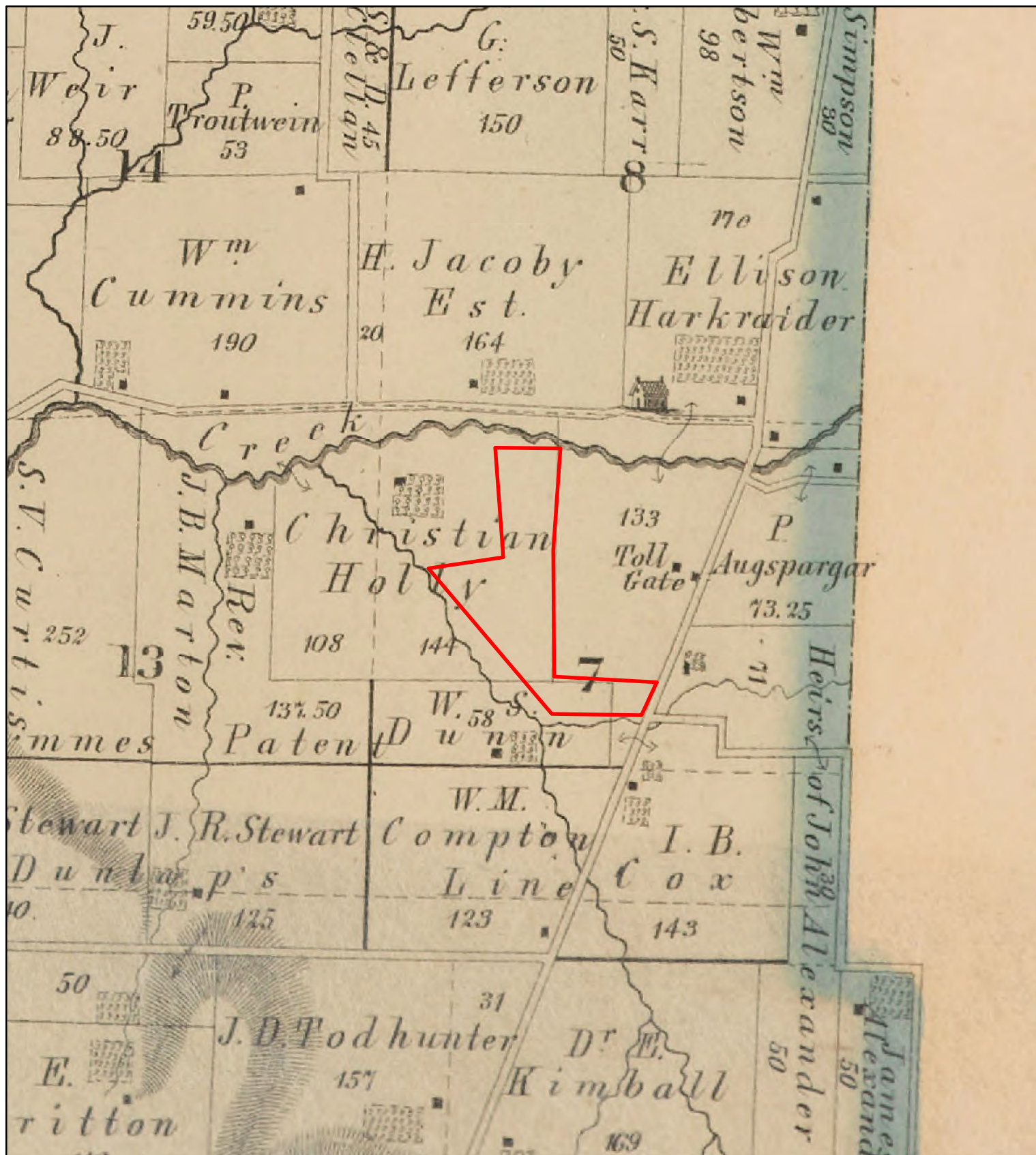
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### Middletown Energy Center

Figure 3  
Soils Map







### Legend

Project Area

Source:  
L.H. Everts, Philadelphia (1875)  
Combination Atlas Map of Butler County, Ohio.

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom,



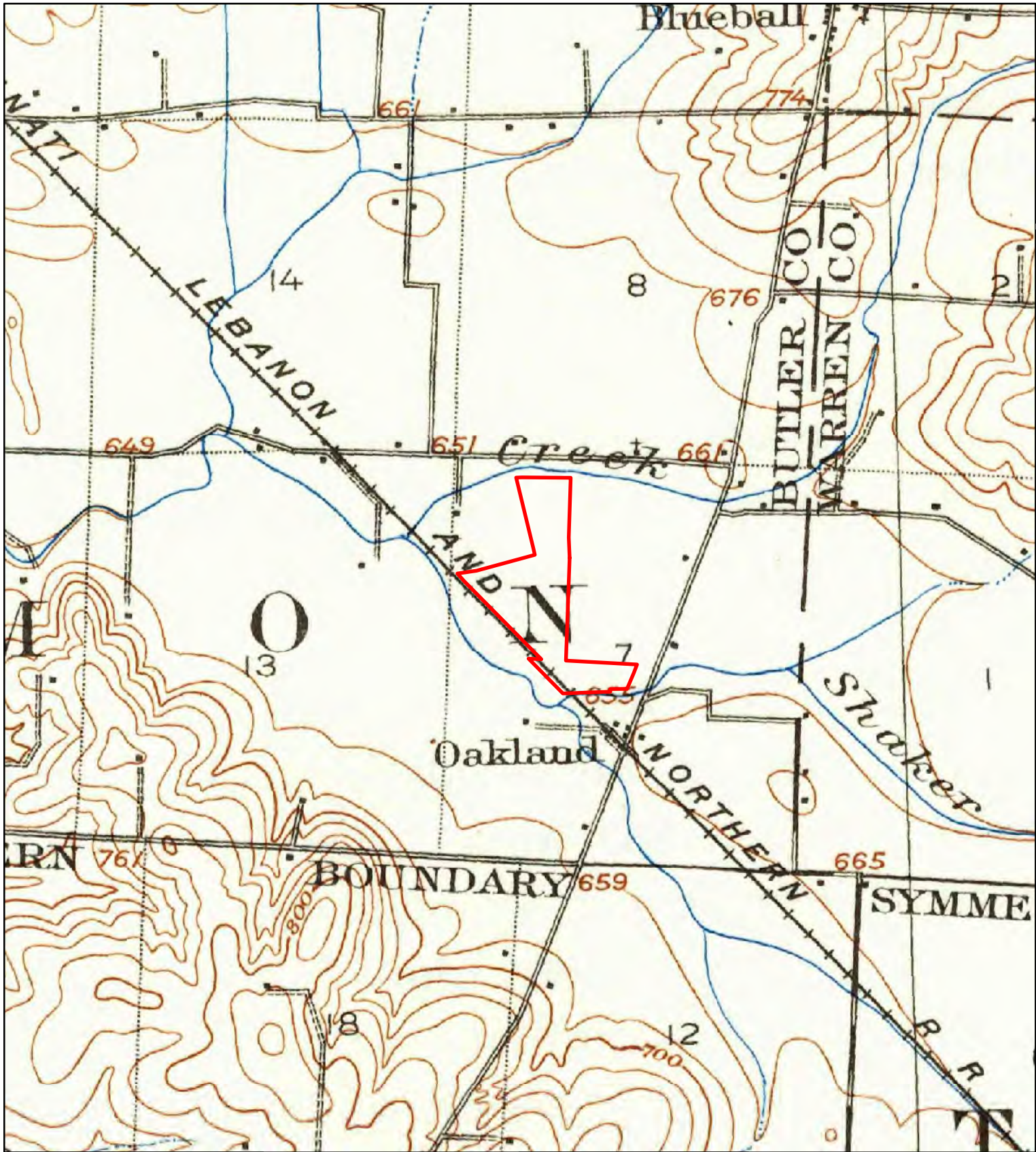
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### Middletown Energy Center

**Figure 4**  
**Project Location,**  
**1875 Butler County Atlas**







### Legend

 Project Area

Source: USGS 1906 (Mason OH)

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom,



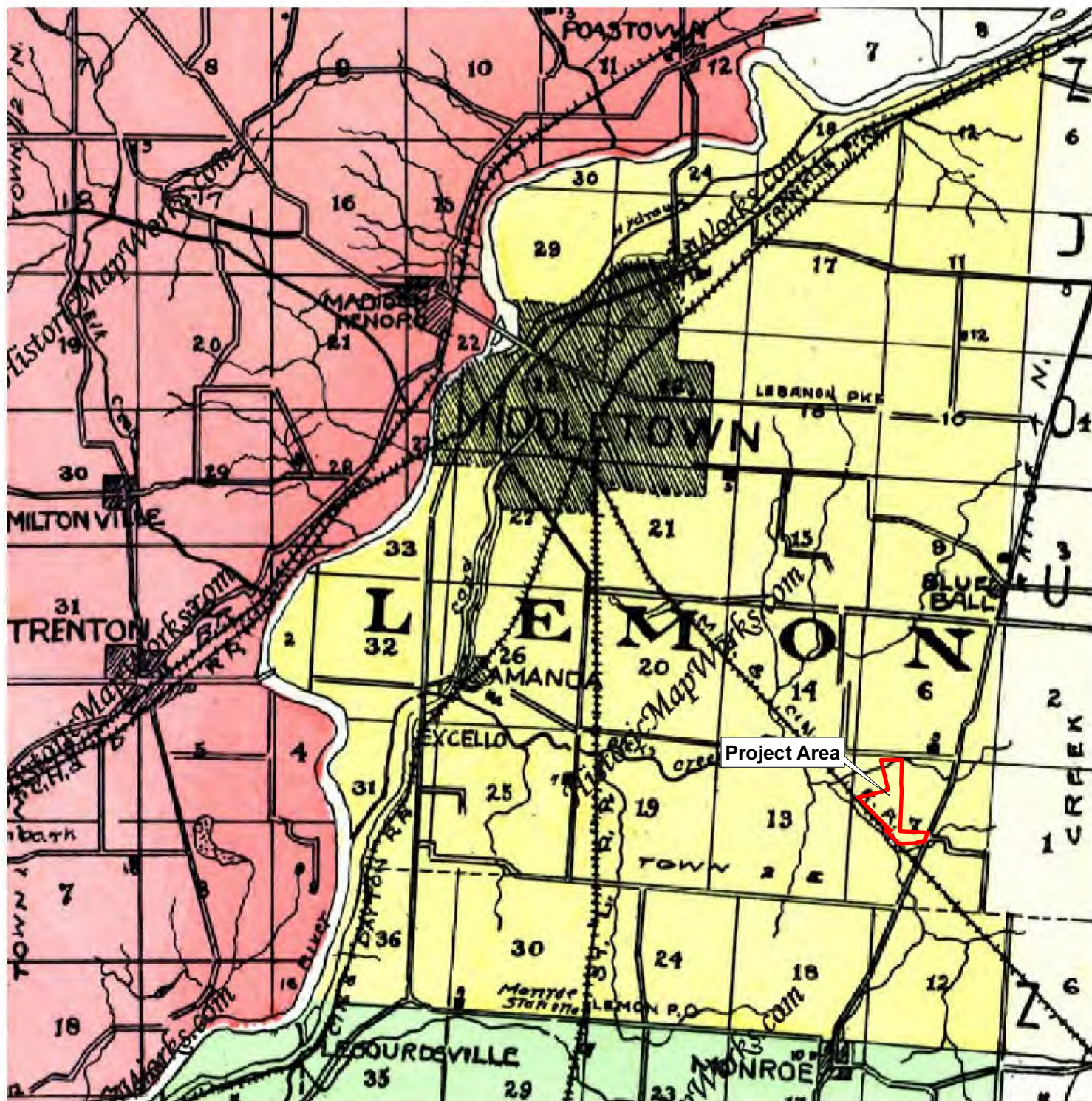
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Feet

### Middletown Energy Center

Figure 5  
Project Location,  
1906 USGS Quadrangle







**Legend**  
 Project Area

Source:  
Republican Pub. Co. Butler County Atlas (1914)  
digital reproduction from HistoricMapWorks.com

Service Layer Credits: Sources: Esri, DeLorme, HERE,  
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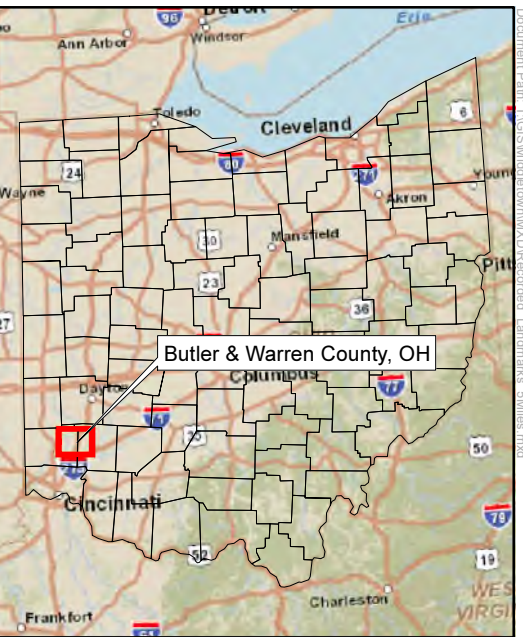
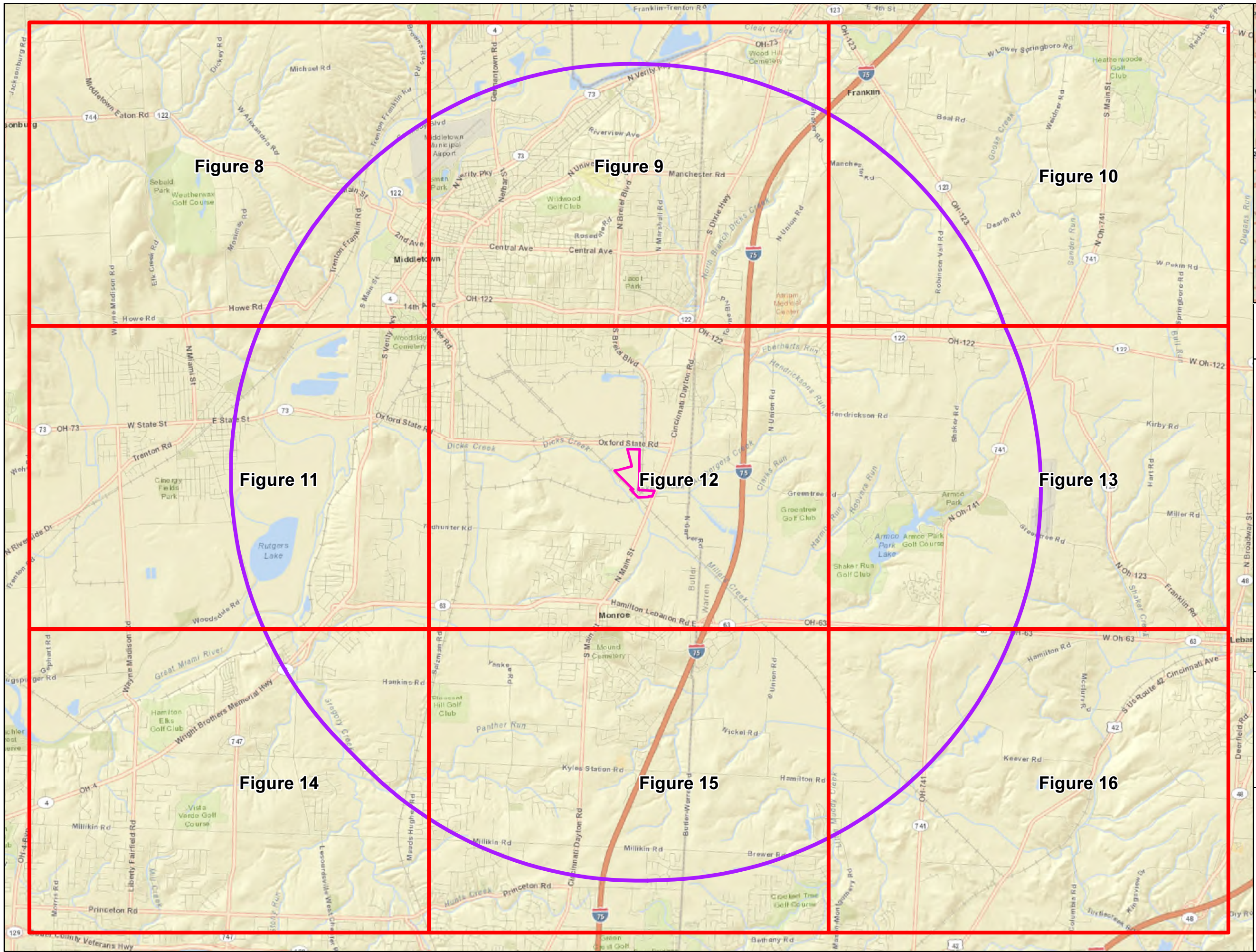
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**Middletown Energy Center**

**Figure 6**  
**Project Location,**  
**1914 Butler County Atlas**

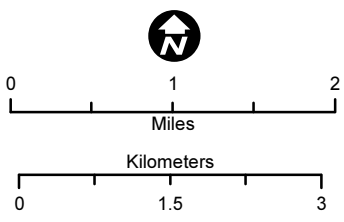






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- Legend**
- Map Index
  - Project Area
  - 5 Mile Buffer of OPSB Study Area

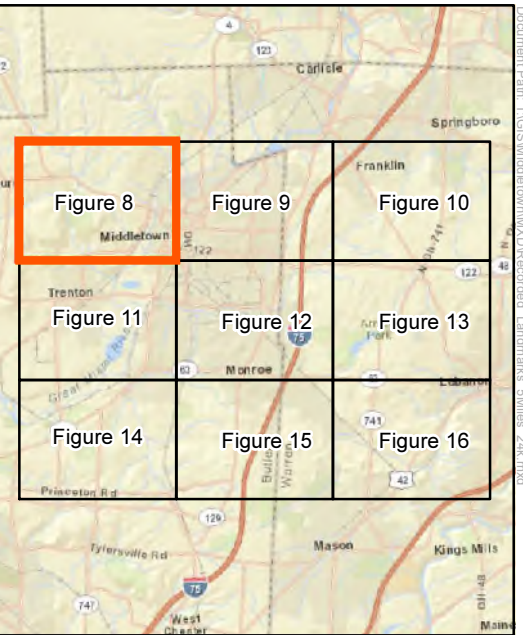
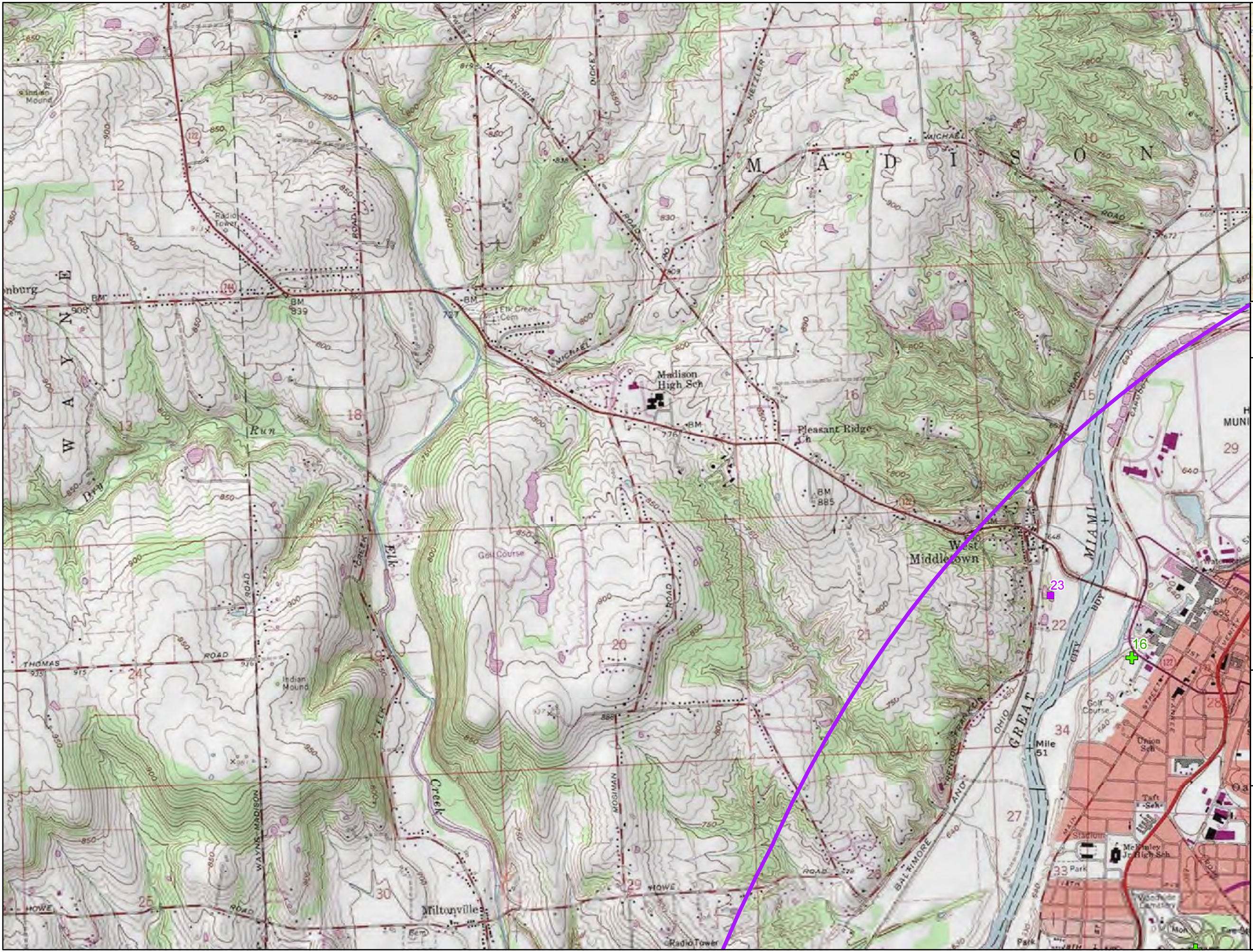


**Middletown Energy Center**

**Figure 7**  
**Recorded Landmark Locations**  
**Index Map**

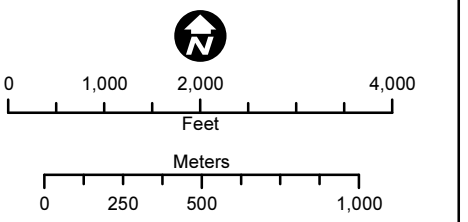






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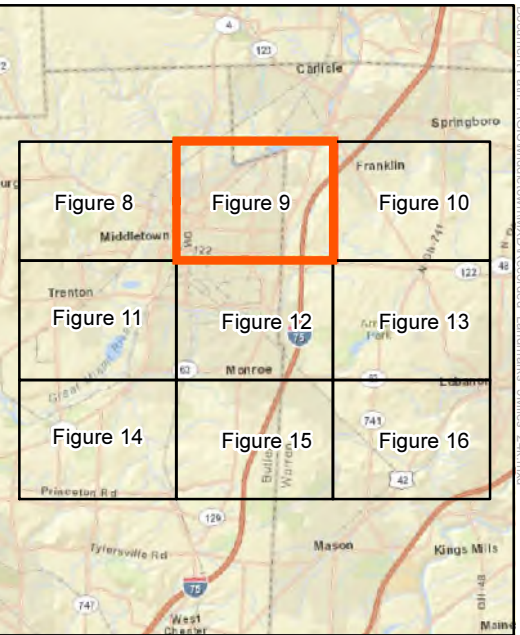
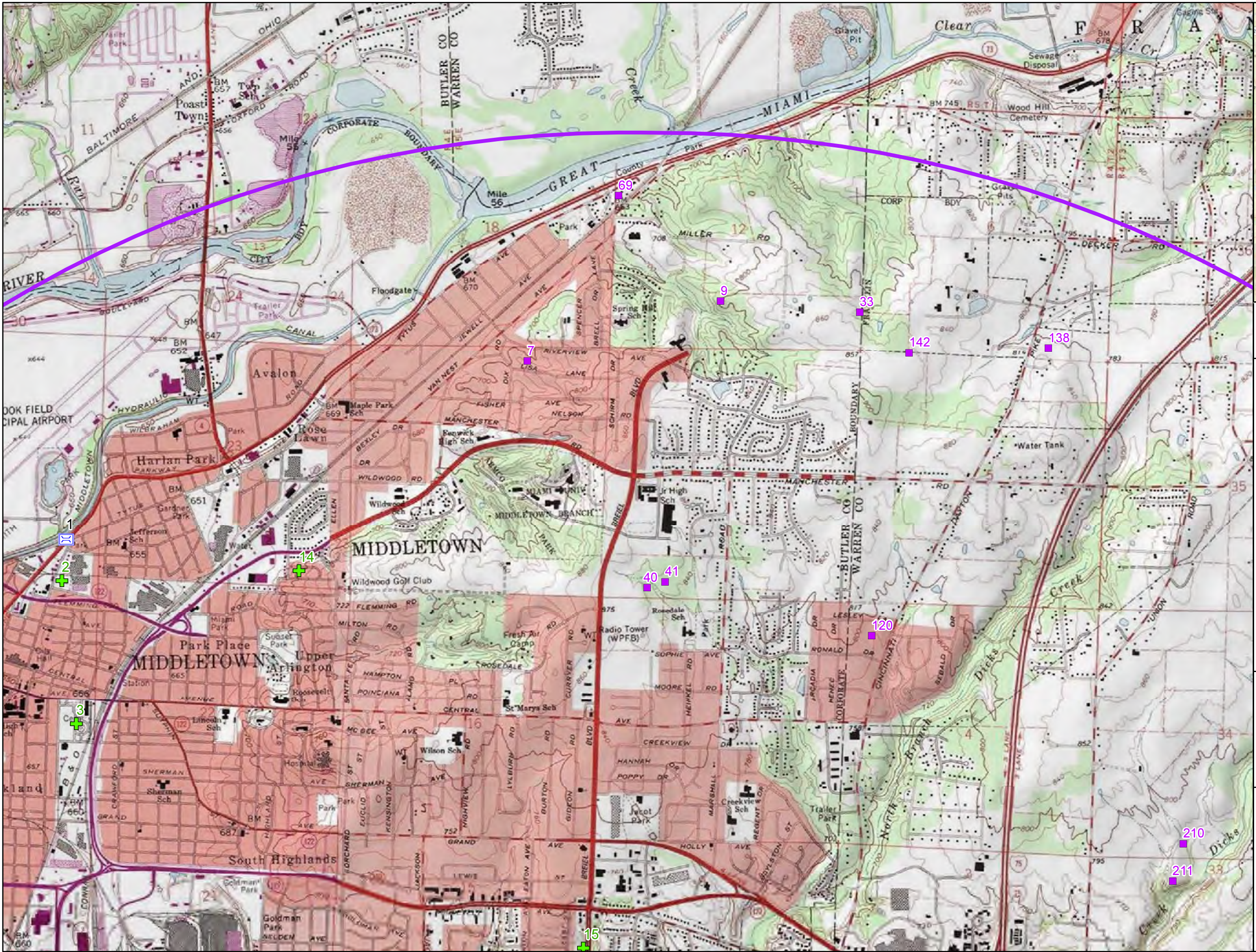
- Legend**
- Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of OPSB Study Area



**Middletown Energy Center**  
**Figure 8**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**

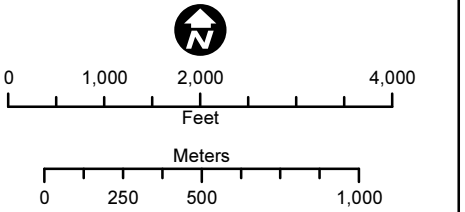






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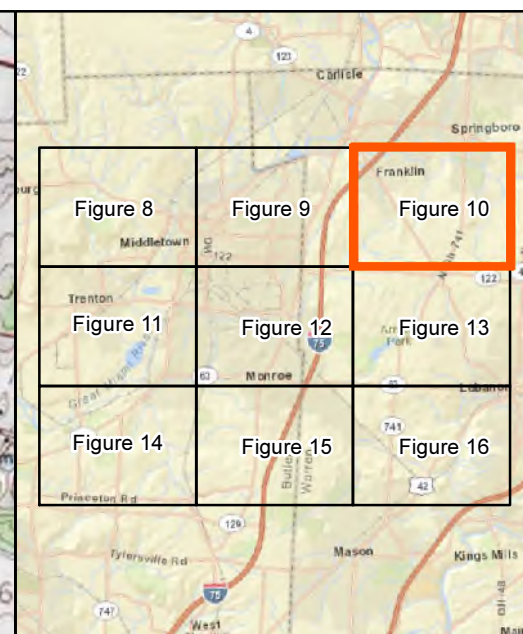
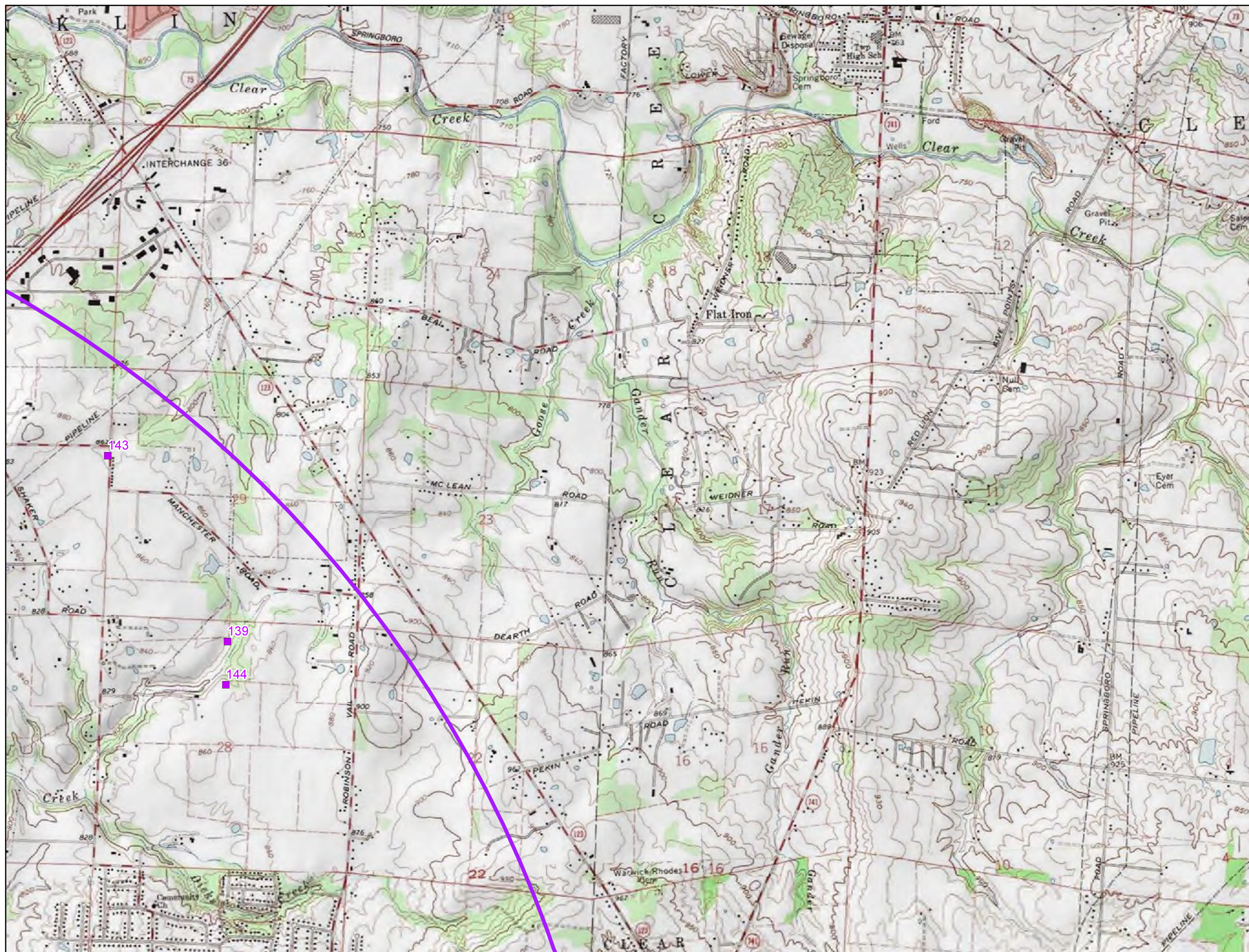
- Legend**
- Bridges  
(Numbers Refer to Table 6)
  - Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of OPSB Study Area



**Middletown Energy Center**  
**Figure 9**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**






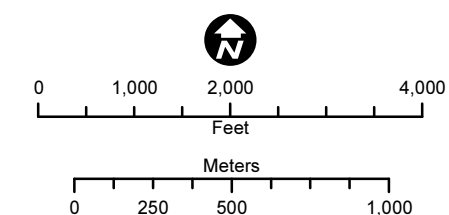




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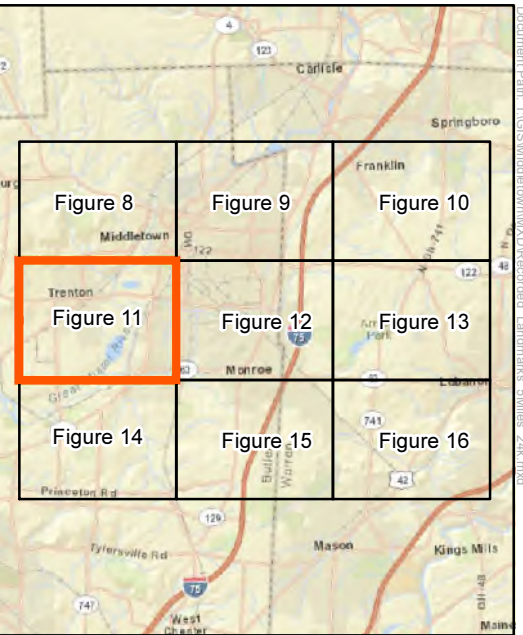
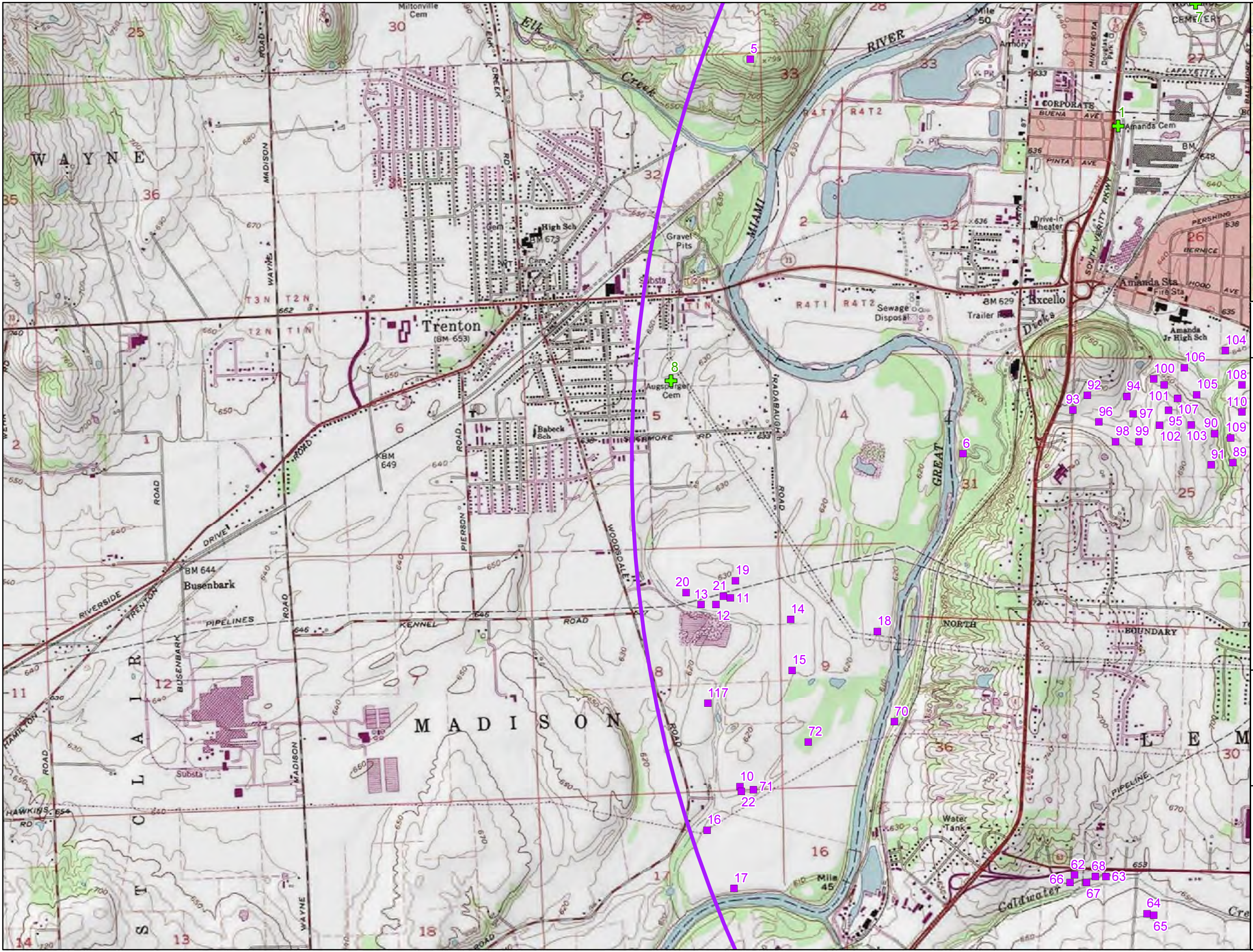
### Legend

-  Archeological Sites  
(Numbers Refer to Table 3)  
 Project Area  
 5 Mile Buffer of  
OPSB Study Area



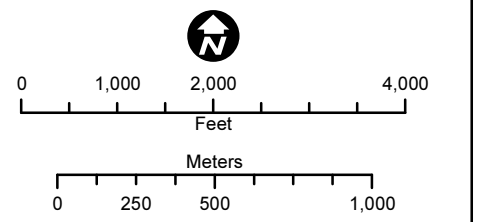
**Middletown Energy Center**  
**Figure 10**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**





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- Legend**
- Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of OPSB Study Area

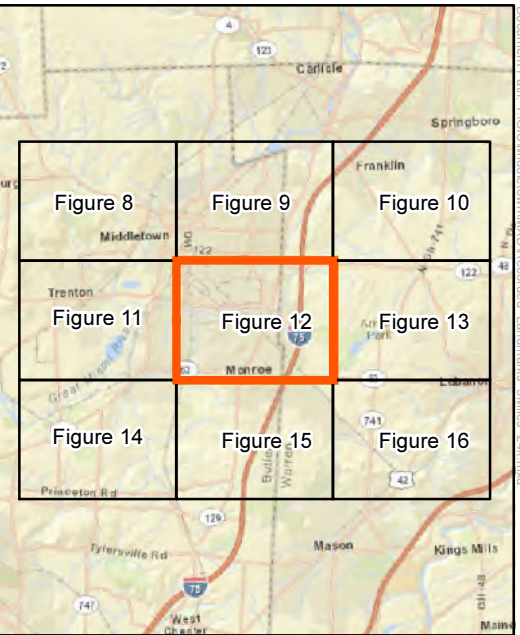
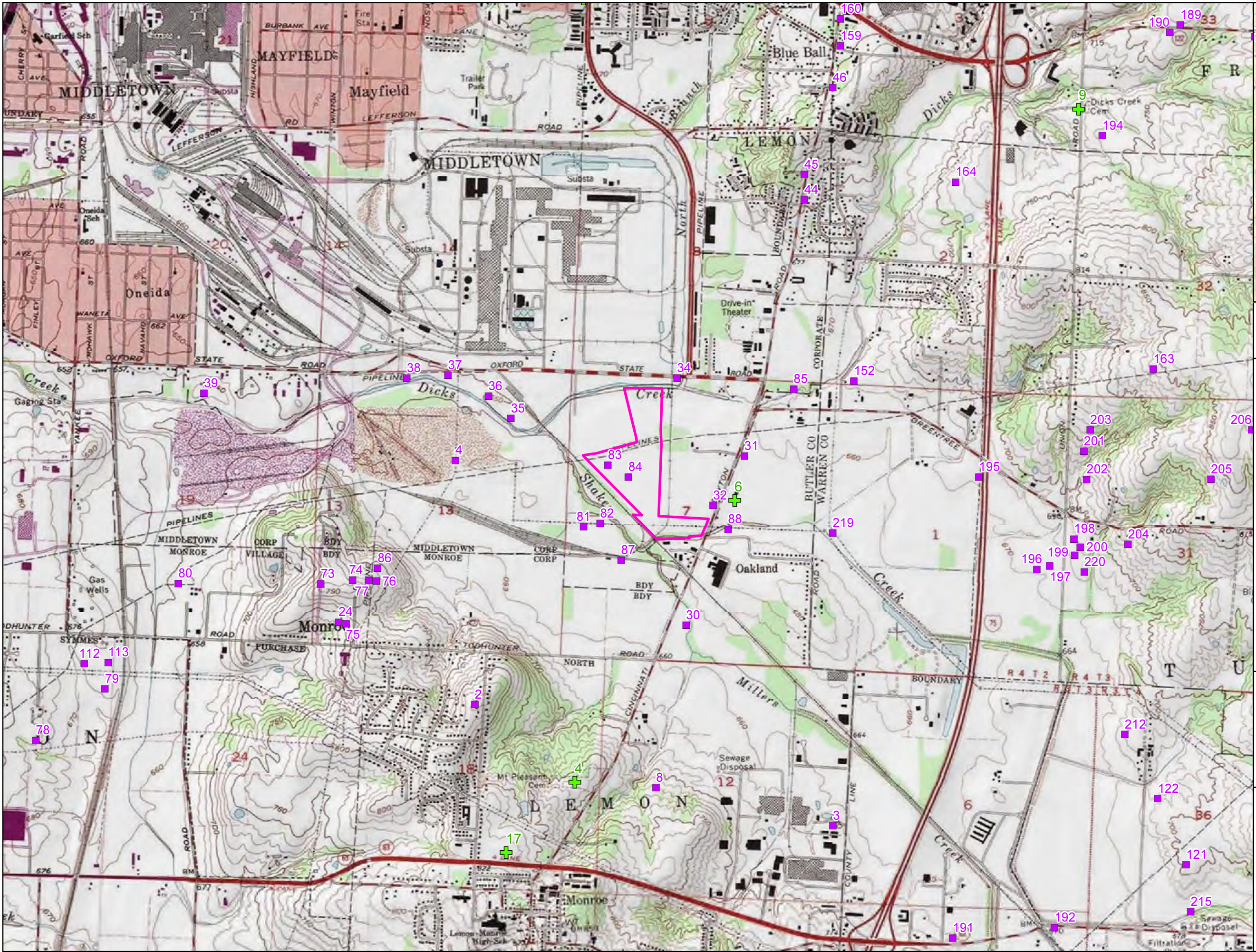


**Middletown Energy Center**

**Figure 11**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**

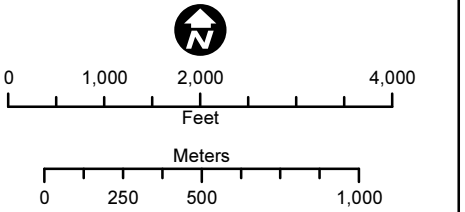






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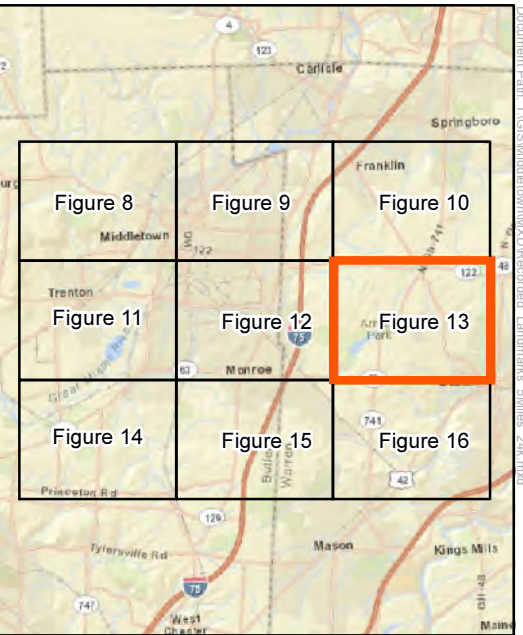
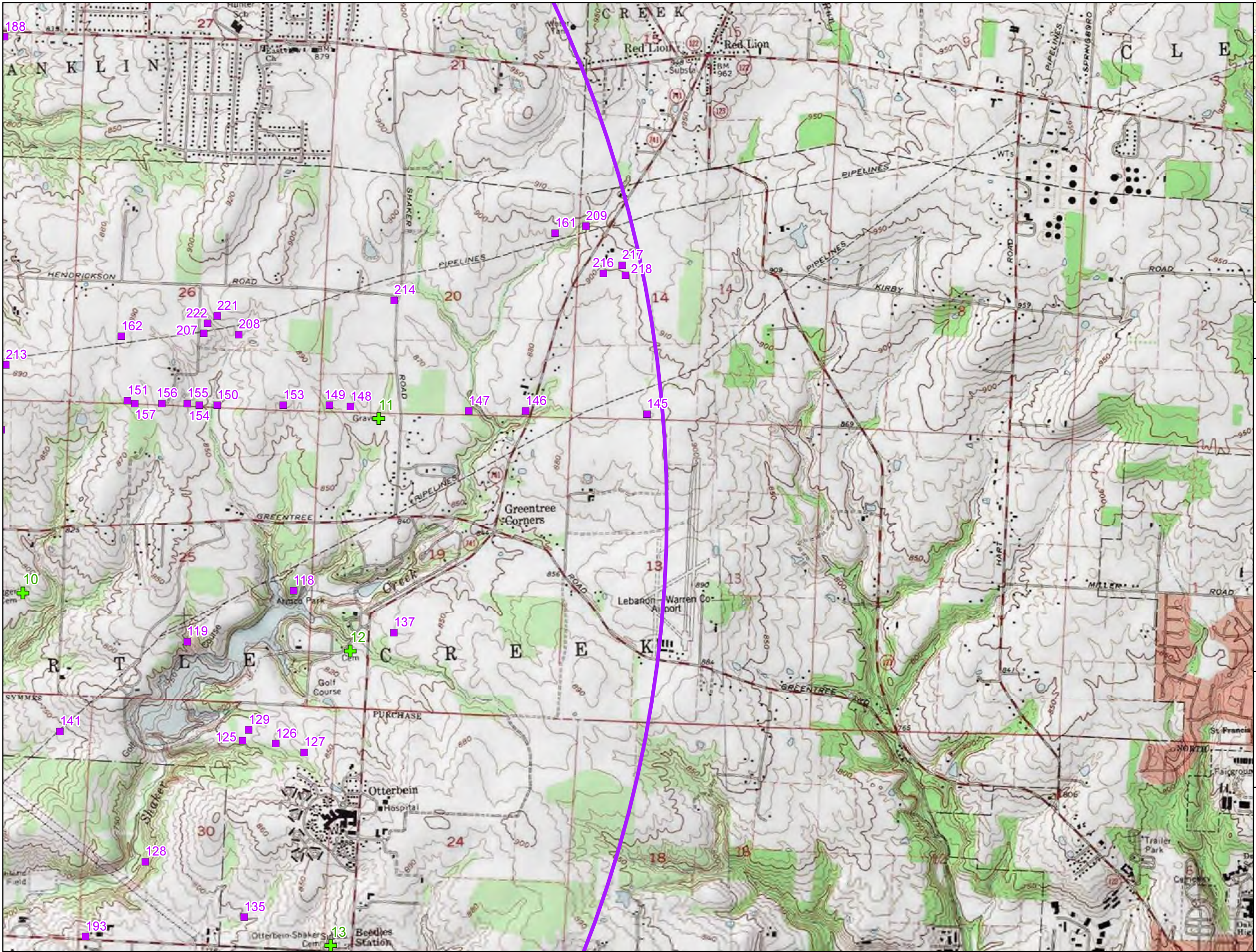
- Legend**
- Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of OPSB Study Area



**Middletown Energy Center**  
**Figure 12**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**

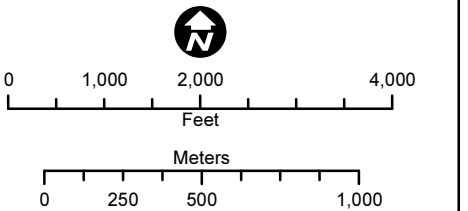






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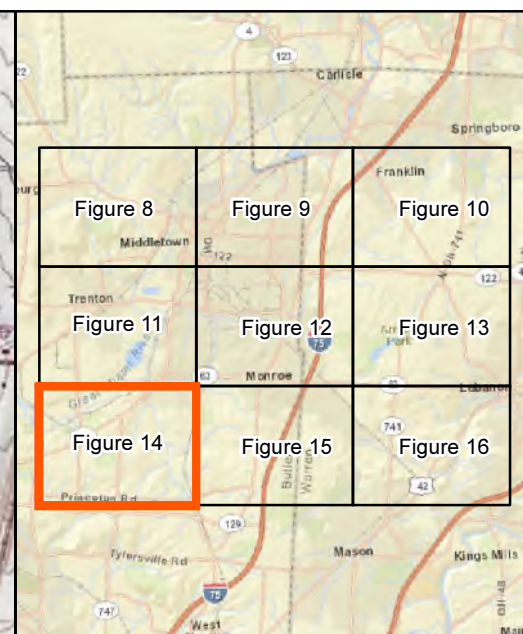
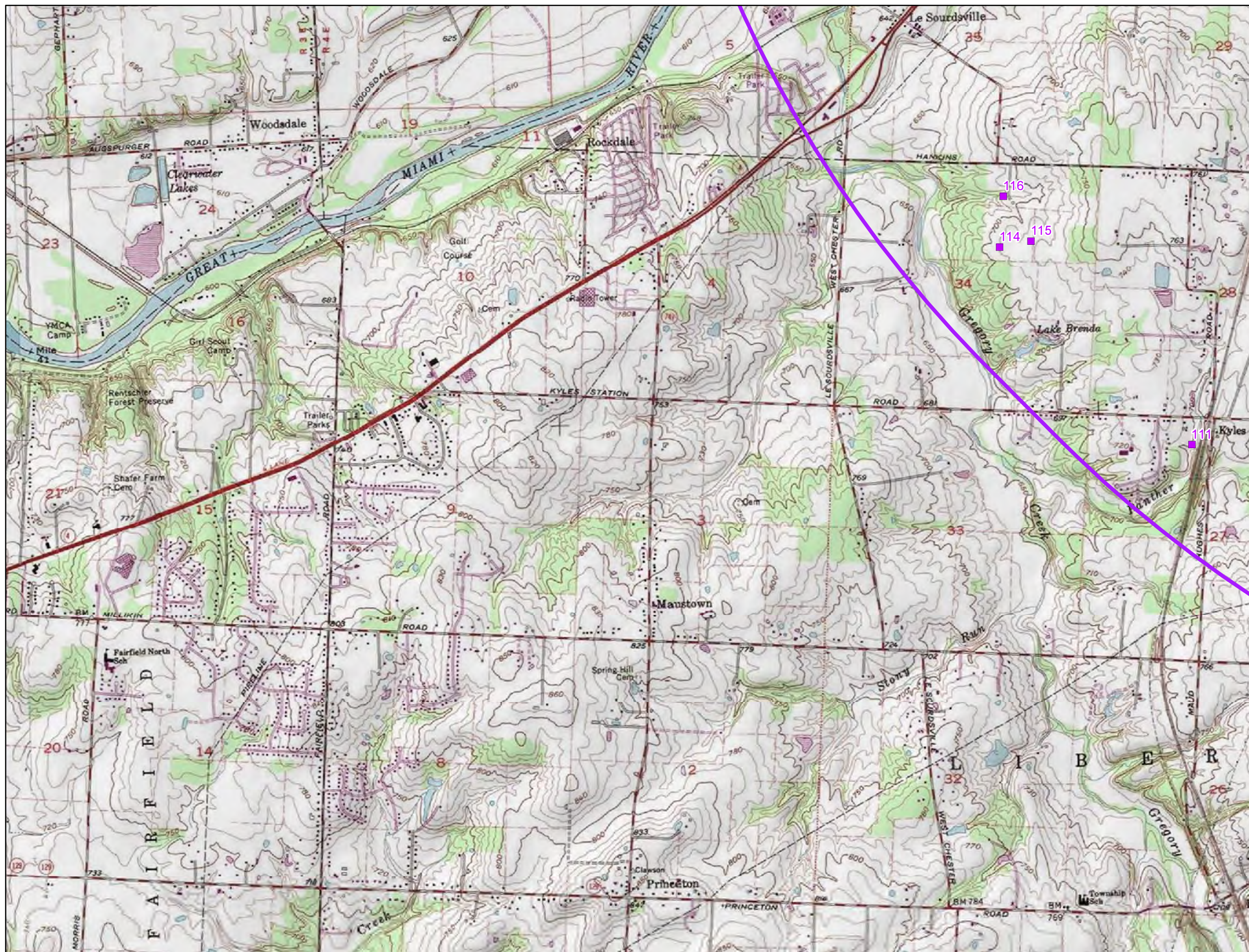
- Legend**
- Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of OPSB Study Area



**Middletown Energy Center**  
**Figure 13**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**



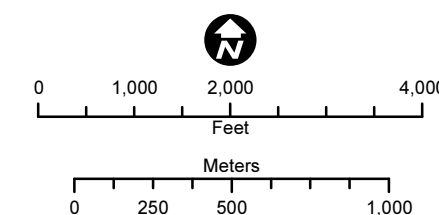




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### Legend

- Archeological Sites  
(Numbers Refer to Table 3)
- Project Area
- 5 Mile Buffer of OPSB Study Area



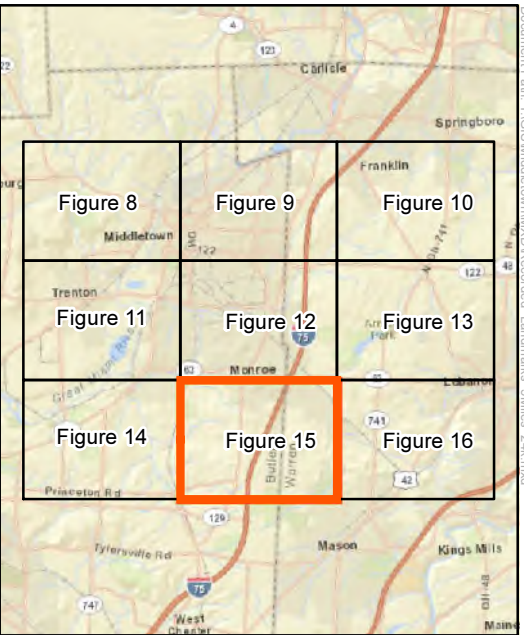
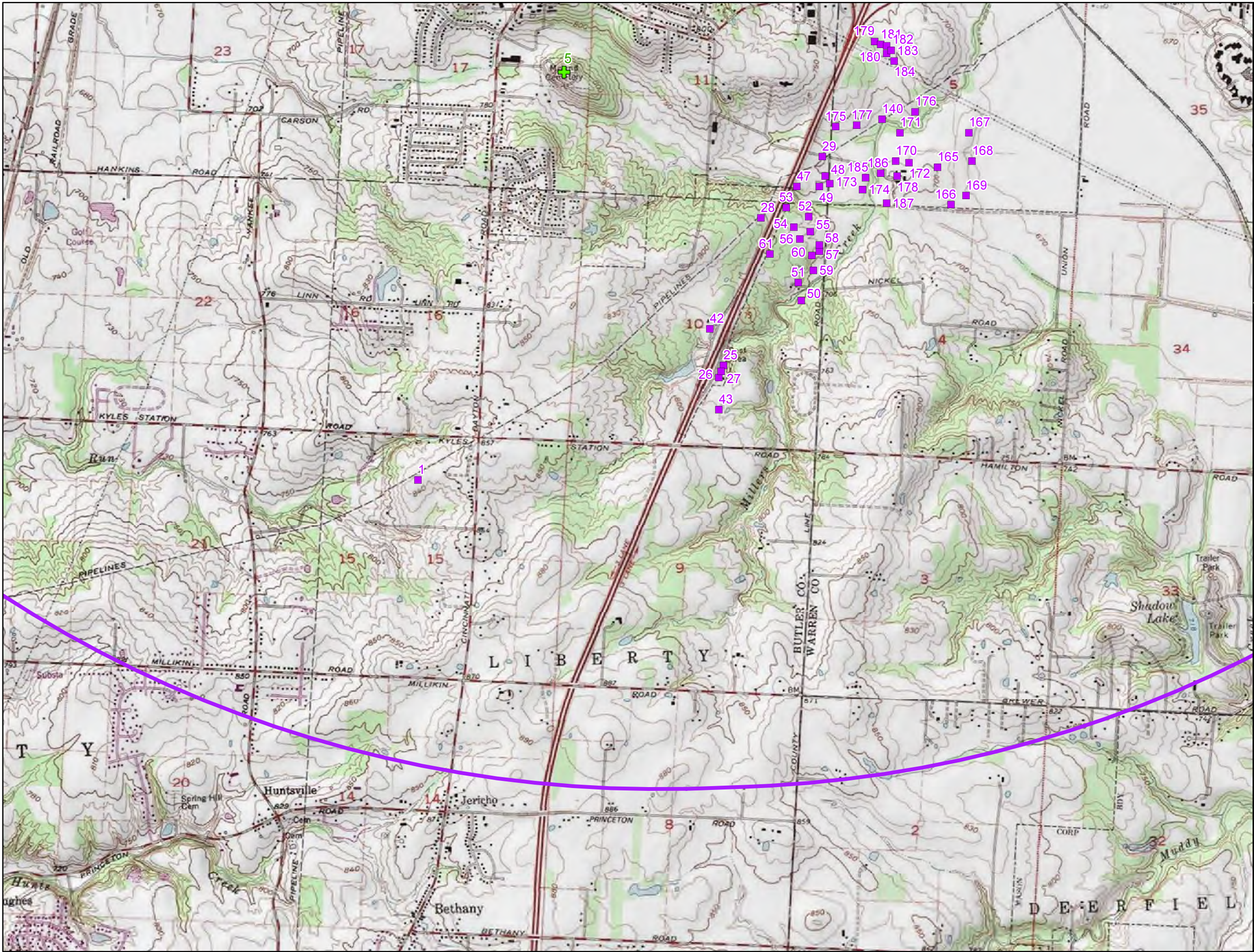
**Middletown Energy Center**

**Figure 14**

**Recorded Landmark Locations**  
**Within 5 Miles of Project**

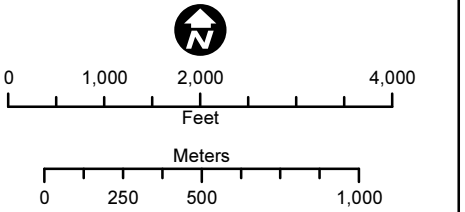






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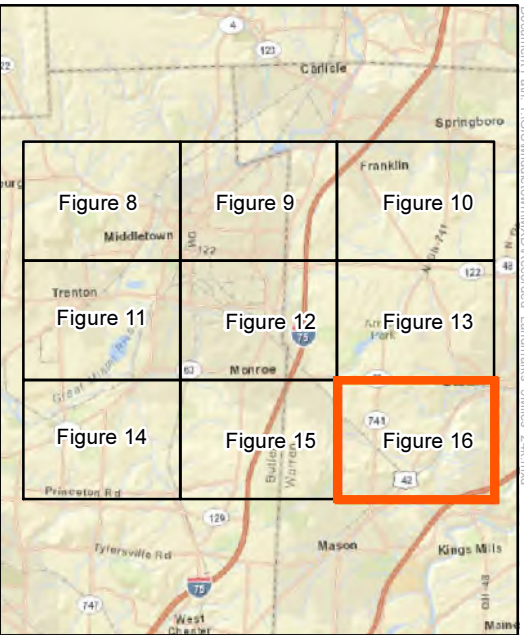
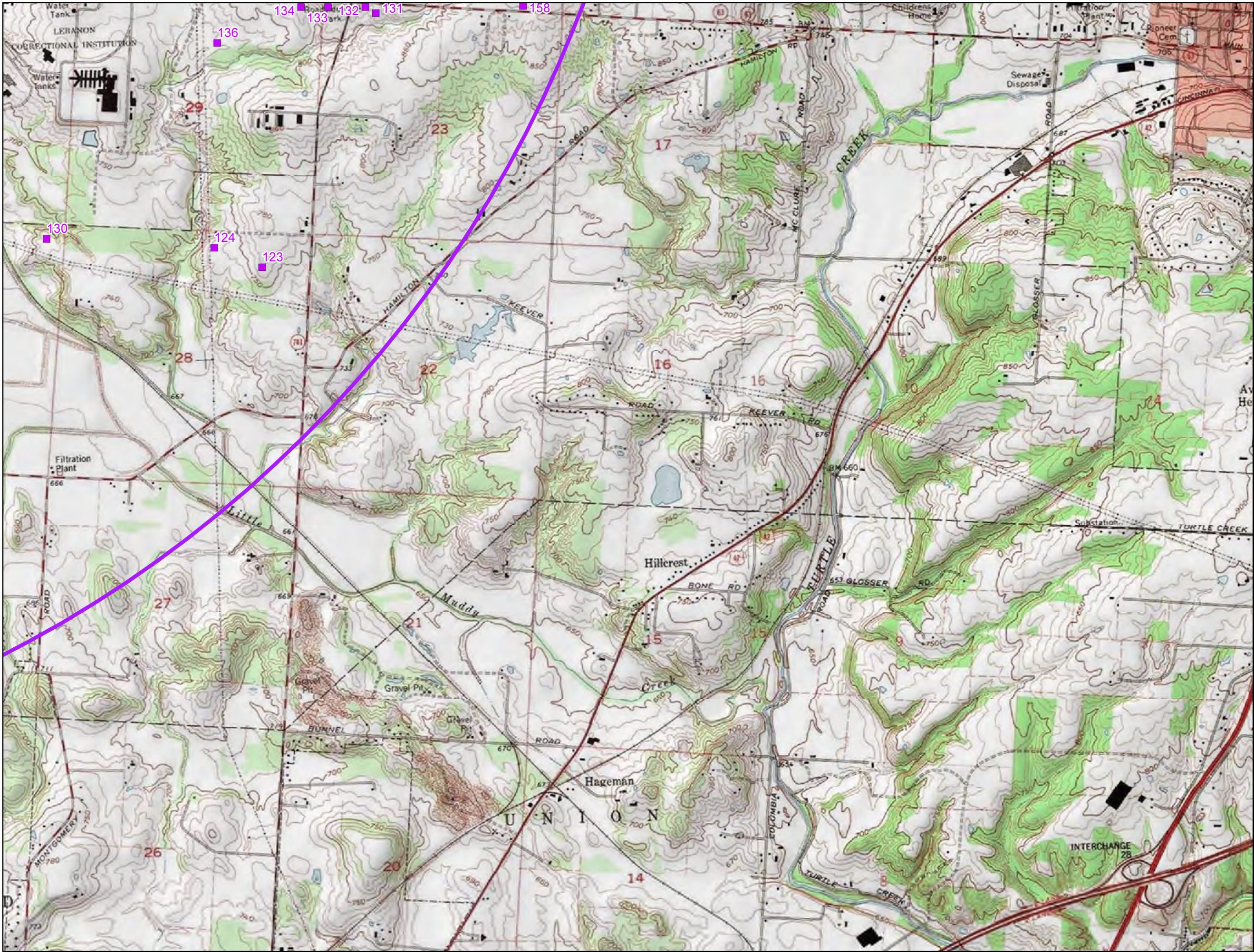
- Legend**
- Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of OPSB Study Area



**Middletown Energy Center**  
**Figure 15**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**

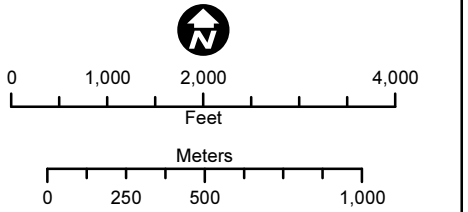






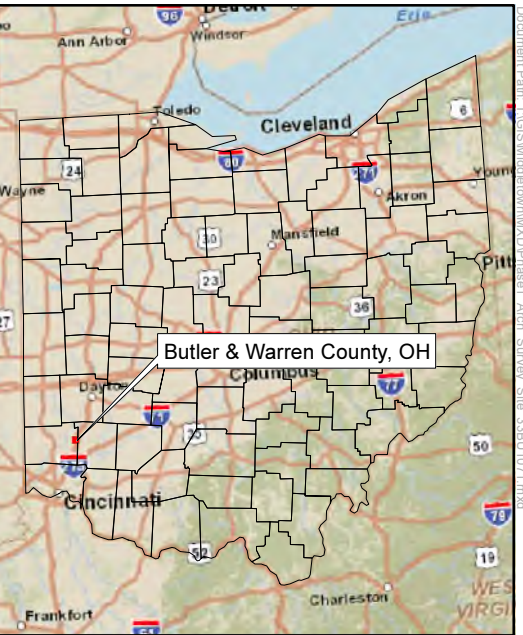
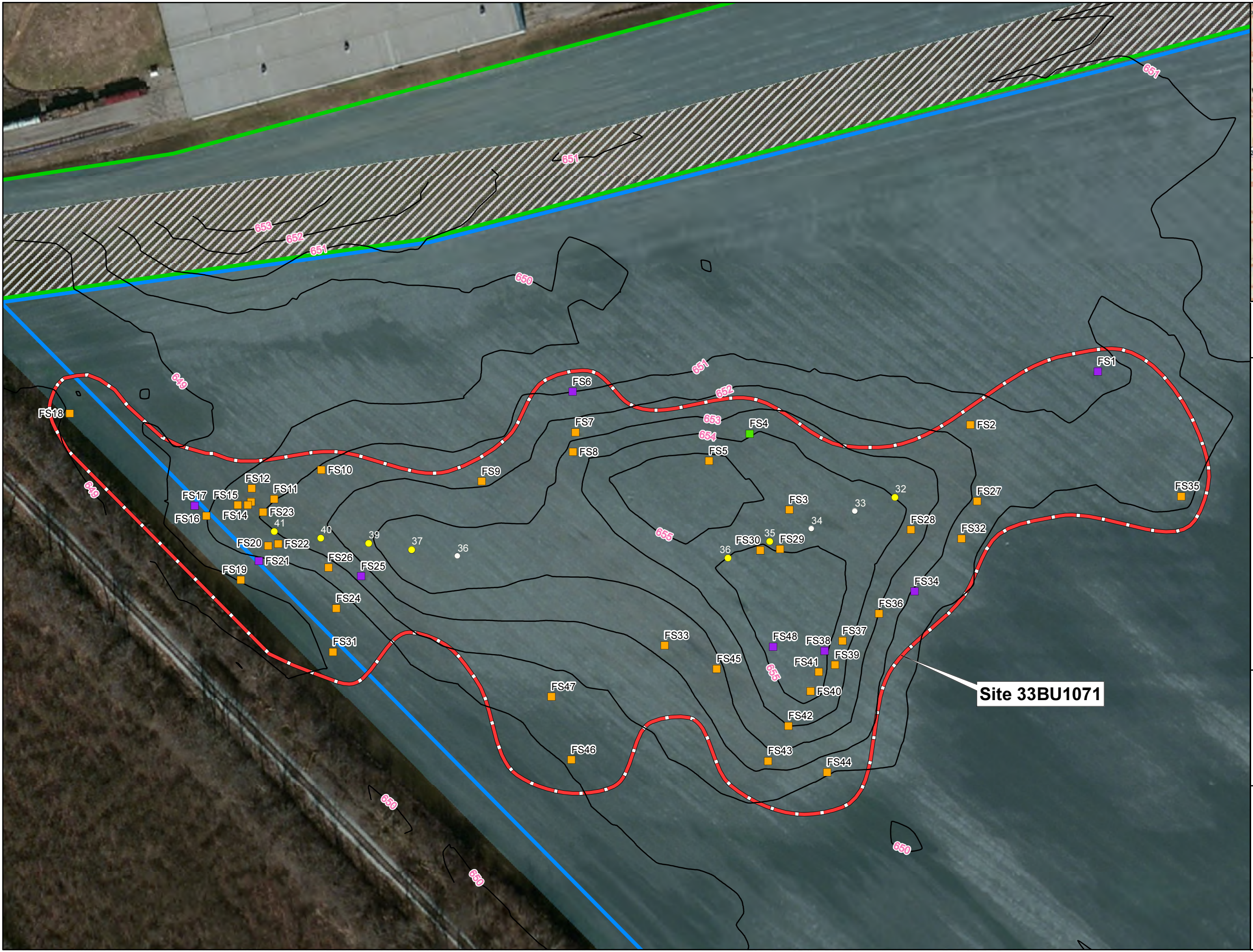
Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS

- Legend**
- Cemeteries  
(Numbers Refer to Table 5)
  - Archeological Sites  
(Numbers Refer to Table 3)
  - Project Area
  - 5 Mile Buffer of  
OPSB Study Area



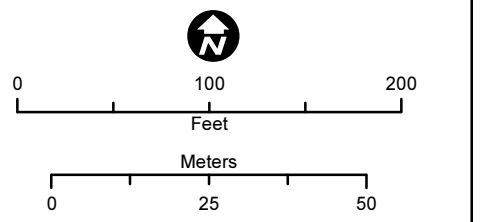
**Middletown Energy Center**  
**Figure 16**  
**Recorded Landmark Locations**  
**Within 5 Miles of Project**





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- Legend**
- Find Spot - Debitage
  - Find Spot - Biface
  - Find Spot - Uniface
  - Positive Shovel Test
  - Negative Shovel Test
  - Topographic Contours (ft)
  - Archeological Site Boundary
  - Construction Site
  - Facility Site
  - Pedestrian Reconnaissance
  - Pipeline Easement



Middletown Energy Center

Figure 17  
Site 33BU1071





## **PHOTOGRAPHS**



**Photograph 1.** Facility Site (Survey Area A). Site 33BU1071 occupies low rise in middle ground. The rise is visible as slightly lighter color than foreground soils. View to southwest.

Photographer: Rob Jacoby      Date: May 8, 2014.



**Photograph 2.** Selected Project Artifacts.

Upper row (l. to r.):

Find Spot 1, Thebes point (circa 8000 – 7000 BC), Vanport chalcedony, Site 33BU1071;  
Find Spot 48, Decatur point (circa 7000 – 6000 BC), Cedarville-Guelph chert, Site 33BU1071;  
Find Spot 21, small Hopewell point (circa 200 BC – AD 400), Vanport chert, Site 33BU1071;  
Find Spot 34, Fort Ancient point (circa AD 11 – 1450), Indiana hornstone, Site 33BU1071.

Lower row (l. to r.):

Shovel Test 17, bifacial humpback scraper, Delaware chert, Site 33BU1181;  
Find Spot 38, small drill, Delaware chert, Site 33BU1071.

Photographer: Rob Jacoby      Date: May 22, 2014



**Photograph 3.** Precision Strip Property of Construction Laydown Site (Survey Area B). Site 33BU1182 is located at upper right of frame. View to northeast.

Photographer: Rob Jacoby      Date: May 8, 2014





**Photograph 4.** Facility Site, eastern extension (Survey Area C). Site 33BU1181 is in foreground. View to east.

Photographer: Rob Jacoby      Date: May 9, 2014





**Photograph 5.** Facility Site, eastern extension (Survey Area C). Site 33BU1181 is to the rear of the photographer. The railroad tracks and transmission tower are two of the ground disturbing features near the site. A stormwater sewer line (unmarked) runs perpendicular to the electric transmission in the foreground. View to west.

Photographer: Rob Jacoby      Date: May 9, 2014



**Photograph 6.** Facility Site, eastern extension (Survey Area C). The push pile is to rear of Sarah Haugh, archaeologist. Site 33BU1181 is out of view, to left of frame. View to east.

Photographer: Rob Jacoby      Date: May 9, 2014

## **APPENDIX A**

APPENDIX A  
PHASE I MIDDLETOWN ENERGY CENTER SHOVEL TEST LOG

Shovel Test	Stratum	Depth (cm)	Soil Color	Soil Texture	Rock Shape	Gravel	Cobbles	Prehist. Count	Hist. Count	Comments
1	A	0-46	10YR 2/2	Clay Loam	R	R	-	-	-	-
	B	46-60	10YR 4/2	Loam Clay	R	R	-	-	-	-
2	A	0-32	10YR 3/2	Loam Clay	R	R	-	-	-	-
	B	32-46	10YR 4/2	Loam Clay	R	R	-	-	-	-
3	A	0-43	10YR 3/2	Loam	-	-	-	-	-	-
	B	43-55	10YR 4/3	Loam Clay	-	-	-	-	-	-
4	A	0-13	10YR 4/2	Loam	-	-	-	-	-	-
	B	13-32	10YR 4/3	Silty Loam	-	-	-	-	-	-
	C	32-55	10YR 4/4	Loam Clay	-	-	-	-	-	Mottled w/ 10YR 5/6 & 5/3; small lenses of small gravel
5	A	0-39	10YR 3/2	Loam Clay	-	-	-	-	-	-
	B	39-49	10YR 4/3	Clay	-	-	-	-	-	-
6	A	0-26	Multi	Fill	A	C	-	-	-	-
	B	26-57	10YR 3/3	Clay Silt	-	-	-	-	-	-
	C	57-68	10YR 3/2	Silty Clay	R	R	-	-	-	-
7	A	0-35	10YR 3/2	Silty Clay Loam	R	R	-	-	-	-
	B	35-48	10YR 3/3	Clay Loam	R	R	-	-	-	-
8	A	0-42	10YR 3/2	Silty Clay	R	R	-	-	-	-
	B	42-53	10YR 4/2	Clay	R	R	-	-	-	-
9	A	0-38	10YR 3/2	Silty Clay Loam	R	R	-	-	-	-
	B	38-52	10YR 3/3	Clay Loam	-	-	-	-	-	-
10	A	0-54	Multi	Fill	A	C	-	-	-	Compact
	B	54-62	10 YR 5/4	Clay	-	-	-	-	-	-
11	A	0-25	10 YR 4/3	Silty Loam	-	-	-	-	-	-
	B	25-36	10 YR 4/6	Clayey Silt Loam	-	-	-	-	-	-
12	A	0-37	10 YR 4/3	Silty Loam	-	-	-	-	-	-
	B	27-38	10 YR 4/6	Clayey Silt Loam	-	-	-	-	-	-
13	A	0-24	10 YR 4/3	Silty Loam	-	-	-	-	-	-
	B	24-35	10 YR 4/6	Clayey Silt Loam	-	-	-	-	-	-
14	A	0-28	10 YR 4/3	Silty Loam	-	-	-	-	-	-
	B	28-40	10 YR 4/6	Clayey Silt Loam	-	-	-	-	-	-
15	A	0-23	10 YR 4/3	Silty Loam	-	-	-	-	-	-

APPENDIX A  
PHASE I MIDDLETOWN ENERGY CENTER SHOVEL TEST LOG

Shovel Test	Stratum	Depth (cm)	Soil Color	Soil Texture	Rock Shape	Gravel	Cobbles	Prehist. Count	Hist. Count	Comments
	B	23-37	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
16	A	0-21	10 YR 4/3	Silty Clay Loam	-	-	-	-	-	Compact
	B	21-34	10 YR 4/3	Silty Clay Loam	-	-	-	-	-	Mottled w/ 10YR 3/6; compact
	C	34-46	10 YR 4/6	Clay	-	-	-	-	-	Compact
17	A	0-27	10 YR 4/3	Silty Loam	R/A	R	-	2	-	1 biface scraper, 1 flake
	B	27-40	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
18	A	0-30	10 YR 4/3	Silty Loam	R/A	R	-	1	-	1 flake
	B	30-41	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
19	A	0-21	10 YR 4/3	Silty Loam	R/A	R	-	-	-	-
	B	21-37	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
20	A	0-26	10 YR 4/3	Silty Loam	-	-	-	1	-	1 flake
	B	26-40	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
21	A	0-24	10 YR 4/3	Silty Loam	-	-	-	-	-	-
	B	24-40	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
22	A	0-23	10 YR 4/3	Silty Loam	-	-	-	-	-	-
	B	23-33	10 YR 4/6	Silty Clay Loam	-	-	-	-	-	-
23	A	0-33	10 YR 4/3	Silty Loam	A	R	-	-	-	-
	B	33-47	10 YR 4/6	Silty Clay Loam	A	R	-	-	-	-
24	A	0-23	10 YR 4/3	Silty Loam	R/A	R	-	1	-	Radial 5 m E of ST 17; 1 shatter
	B	23-33	10 YR 4/6	Silty Clay Loam	R/A	R	-	-	-	-
25	A	0-26	10 YR 4/3	Silty Loam	-		-	1	-	Radial 5 m S of ST 17; 1 flake
	B	26-38	10 YR 4/6	Silty Clay Loam	-		-	-	-	-
26	A	0-28	10 YR 4/3	Silty Loam	-		-	-	-	Radial 5 m S of ST 18
	B	28-38	10 YR 4/6	Silty Clay Loam	-		-	-	-	-
27	A	0-28	10 YR 4/3	Silty Loam	R	R	-	1	-	Radial 5 m W of ST 18; 1 flake
	B	28-40	10 YR 4/6	Silty Clay Loam	R	R	-	-	-	-
28	A	0-30	10 YR 4/3	Silty Loam	R	R	-	-	-	Radial 5 m E of ST 21
	B	30-44	10 YR 4/6	Silty Clay Loam	R	R	-	-	-	-
29	A	0-26	10 YR 4/3	Silty Loam	R	R	-	-	-	Radial 3 m N of ST 21

APPENDIX A  
PHASE I MIDDLETOWN ENERGY CENTER SHOVEL TEST LOG

Shovel Test	Stratum	Depth (cm)	Soil Color	Soil Texture	Rock Shape	Gravel	Cobbles	Prehist. Count	Hist. Count	Comments
	B	26-41	10 YR 4/6	Silty Clay Loam	R	R	-	-	-	-
30	A	0-33	10 YR 4/3	Silty Loam	R	R	-	-	-	Radial 5 m W of ST 20
	B	33-45	10 YR 4/6	Silty Clay Loam	R	R	-	-	-	-
31	A	0-28	10 YR 4/3	Silty Loam	R	R	-	-	-	Radial 5 m N of ST 20
	B	28-39	10 YR 4/6	Silty Clay Loam	R	R	-	-	-	-
32	A	0-28	10 YR 4/3	Sandy Loam	R	R	-	2	-	1 flake, 1 granitic rock
	B	28-40	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
33	A	0-30	10 YR 4/3	Sandy Loam	R	R	-	-	-	-
	B	30-44	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
34	A	0-26	10 YR 4/3	Sandy Loam	R	R	-	-	-	-
	B	26-36	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
35	A	0-30	10 YR 4/3	Sandy Loam	R	R	-	2	-	2 flakes, minor charcoal in wall
	B	30-47	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
36	A	0-37	10 YR 4/3	Sandy Loam	R	R	-	1	-	1 flake
	B	37-47	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
37	A	0-28	10 YR 4/3	Sandy Loam	R	R	-	-	-	-
	B	28-46	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
38	A	0-28	10 YR 4/3	Sandy Loam	R	R	-	5	-	flakes, shatter
	B	28-40	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
39	A	0-36	10 YR 4/3	Sandy Loam	R	R	-	1	-	1 shatter
	B	36-48	10 YR 4/6	Sandy Clay Loam	R	R	-	-	-	-
40	A	0-17	10 YR 4/3	Sandy Loam	R	R	-	2	-	2 flakes
	B	17-30	10 YR 5/4	Clayey Loam	R	R	-	-	-	-
41	A	0-16	10 YR 4/3	Silty Loam Clay	-	-	-	1	-	1 flake
	B	16-35	10 YR 5/4	Silty Clay	-	-	-	-	-	-
42	A	0-30	10 YR 5/3	Fill with Sandy Loam	A	A	-	-	-	Mixed with 10 YR 7/4; truncated A horizon; Fill included plastic
	B	30-38	10 YR 4/6	Sandy Clay Loam	-	-	-	-	-	-
43	A	0-16	10 YR 3/3	Fill With Sandy Clay Loam	A	A	-	-	-	-
	B	16-30	10 YR 4/3	Sandy Loam	-	-	-	-	-	-
	C	30-38	10 YR 5/4	Sandy Clay	-	-	-	-	-	-



APPENDIX A  
PHASE I MIDDLETOWN ENERGY CENTER SHOVEL TEST LOG

Shovel Test	Stratum	Depth (cm)	Soil Color	Soil Texture	Rock Shape	Gravel	Cobbles	Prehist. Count	Hist. Count	Comments
44	A	0-37	Multi	Fill	A	A	-	-	-	-
	B	37-47	10 YR 5/4	Clay Loam	-	-	-	-	-	-

## **APPENDIX B**

APPENDIX B  
MIDDLETOWN ENERGY  
PHASE I ARCHAEOLOGICAL SURVEY 2014-ARTIFACT CATALOGUE

Survey Area	Find Spot	Shovel Test	Stratum	OHPO Site #	Artifact Type	Artifact Subtype	Material	Cortex Type	Cortex Rank	Heat Treated	Comments
A	1	-	-	33BU1071	biface	projectile point	Vanport chert	0	0	0	possible Thebes point (Early Archaic)--stem damage
A	2	-	-	33BU1071	debitage	biface reduction flake	Coshocton black chert	0	0	0	-
A	3	-	-	33BU1071	debitage	early reduction flake	Four Mile Creek chert	0	0	0	-
A	4	-	-	33BU1071	biface	small chopper	Four Mile Creek chert	2	3	0	-
A	5	-	-	33BU1071	debitage	early reduction flake	Four Mile Creek chert	1	1	0	-
A	6	-	-	33BU1071	biface	late stage	unknown	1	1	1	possible Karnak stemmed point (Late Archaic)--basal cortex
A	7	-	-	33BU1071	debitage	bipolar flake	Four Mile Creek chert	1	2	1	-
A	8	-	-	33BU1071	debitage	biface reduction flake	Cedarville-Guelph chert	0	0	0	vitreous spicules
A	9	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	-
A	10	-	-	33BU1071	debitage	biface reduction flake	Vanport chert	0	0	0	broken
A	11	-	-	33BU1071	debitage	early reduction flake	glacial chert	1	1	0	-
A	12	-	-	33BU1071	debitage	block shatter	glacial chert	1	1	0	-
A	13	-	-	33BU1071	debitage	block shatter	Four Mile Creek chert	1	1	0	-
A	14	-	-	33BU1071	debitage	biface reduction flake	Delaware chert	0	0	1	-
A	15	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	-
A	15	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	-
A	16	-	-	33BU1071	debitage	block shatter	glacial chert	1	3	0	-
A	17	-	-	33BU1071	debitage	decortication flake	Cedarville-Guelph chert	1	3	0	vitreous spicules
A	18	-	-	33BU1071	debitage	biface reduction flake	Cedarville-Guelph chert	0	0	0	vitreous spicules
A	19	-	-	33BU1071	debitage	biface reduction flake	unknown	0	0	1	-
A	20	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	broken
A	21	-	-	33BU1071	biface	projectile point	Vanport chert	0	0	0	small Hopewell point; length=33mm; width=26mm; thickness=7mm
A	22	-	-	33BU1071	debitage	early reduction flake	Four Mile Creek chert	2	2	1	-
A	23	-	-	33BU1071	debitage	biface reduction flake	Cedarville-Guelph chert	0	0	0	broken
A	24	-	-	33BU1071	debitage	block shatter	unknown	2	2	0	-
A	25	-	-	33BU1071	biface	late stage	unknown	2	1	0	fragment
A	26	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	-
A	27	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	possible utilized flake
A	28	-	-	33BU1071	debitage	decortication flake	glacial chert	1	2	0	-

APPENDIX B  
MIDDLETOWN ENERGY  
PHASE I ARCHAEOLOGICAL SURVEY 2014-ARTIFACT CATALOGUE

Survey Area	Find Spot	Shovel Test	Stratum	OHPO Site #	Artifact Type	Artifact Subtype	Material	Cortex Type	Cortex Rank	Heat Treated	Comments
A	29	-	-	33BU1071	debitage	biface reduction flake	Upper Mercer chert	0	0	0	quartz veins
A	30	-	-	33BU1071	debitage	biface reduction flake	Upper Mercer chert	0	0	0	-
A	31	-	-	33BU1071	debitage	decortication flake	unknown	2	3	1	limestone matrix
A	32	-	-	33BU1071	debitage	biface reduction flake	unknown	0	0	0	-
A	33	-	-	33BU1071	debitage	biface reduction flake	Delaware chert	0	0	0	-
											Fort Ancient serrated point; length=37mm; width=12mm; thickness=6mm
A	34	-	-	33BU1071	biface	projectile point	Indiana hornstone	0	0	0	
A	35	-	-	33BU1071	debitage	decortication flake	glacial chert	1	3	0	-
A	36	-	-	33BU1071	debitage	biface reduction flake	Cedarville-Guelph chert	0	0	0	broken
A	37	-	-	33BU1071	debitage	decortication flake	Four Mile Creek chert	1	3	0	-
A	38	-	-	33BU1071	biface	drill	Delaware chert	0	0	0	-
A	38	-	-	33BU1071	debitage	early reduction flake	unknown	2	1	0	-
A	38	-	-	33BU1071	biface	projectile point	Vanport chalcedony	0	0	0	fragment
A	39	-	-	33BU1071	uniface	scraper/graver	Coshocton gray chert	2	1	0	-
A	40	-	-	33BU1071	debitage	block shatter	Upper Mercer chert	2	1	0	-
A	41	-	-	33BU1071	debitage	block shatter	Coshocton gray chert	2	2	0	-
A	42	-	-	33BU1071	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	-
A	43	-	-	33BU1071	debitage	biface reduction flake	Delaware chert	0	0	0	-
A	44	-	-	33BU1071	debitage	block shatter	unknown	0	0	0	-
A	45	-	-	33BU1071	debitage	biface reduction flake	Vanport chert	0	0	0	-
A	46	-	-	33BU1071	debitage	biface reduction flake	unknown	0	0	0	jasper-like
A	47	-	-	33BU1071	debitage	biface reduction flake	Delaware chert	0	0	0	-
											possible Decatur or fractured-base point; length=n.a., tranverse snap; width=24mm; thickness=9mm
A	48	-	-	33BU1071	biface	projectile point	Cedarville-Guelph chert	0	0	0	
A	-	32	A	33BU1071	debitage	biface reduction flake	unknown	0	0	0	-
A	-	35	A	33BU1071	debitage	biface reduction flake	Delaware chert	0	0	0	-
A	-	35	A	33BU1071	debitage	early reduction flake	unknown	0	0	0	-
A	-	36	A	33BU1071	debitage	biface reduction flake	Delaware chert	0	0	0	-
A	-	38	A	33BU1071	debitage	biface reduction flake	Coshocton black chert	0	0	0	-
A	-	38	A	33BU1071	debitage	block shatter	glacial	1	2	0	-
A	-	38	A	33BU1071	debitage	decortication flake	Delaware chert	2	2	0	-



APPENDIX B  
MIDDLETOWN ENERGY  
PHASE I ARCHAEOLOGICAL SURVEY 2014-ARTIFACT CATALOGUE

Survey Area	Find Spot	Shovel Test	Stratum	OHPO Site #	Artifact Type	Artifact Subtype	Material	Cortex Type	Cortex Rank	Heat Treated	Comments
A	-	38	A	33BU1071	debitage	decortication flake	glacial	1	3	1	-
A	-	38	A	33BU1071	debitage	decortication flake	glacial	1	3	0	-
A	-	39	A	33BU1071	debitage	block shatter	unknown	0	0	0	-
A	-	40	A	33BU1071	debitage	biface reduction flake	unknown	0	0	0	-
A	-	40	A	33BU1071	debitage	early reduction flake	unknown	0	0	0	-
A	-	41	A	33BU1071	debitage	undetermined flake	Delaware chert	0	0	0	broken
C	-	17	A	33BU1181	debitage	biface reduction flake	Four Mile Creek chert	0	0	0	-
C	-	17	A	33BU1181	biface	scraper	Delaware chert	0	0	0	hump-backed
C	-	18	A	33BU1181	debitage	decortication flake	glacial	1	3	1	-
C	-	20	A	33BU1181	debitage	biface reduction flake	Vanport chert	0	0	0	broken
C	-	21	A	33BU1181	debitage	biface reduction flake	Coshocton black chert	0	0	0	-
C	-	24	A	33BU1181	debitage	block shatter	Coshocton black chert	0	0	0	-
C	-	25	A	33BU1181	debitage	biface reduction flake	Coshocton black chert	0	0	0	-
C	-	27	A	33BU1181	debitage	biface reduction flake	Coshocton gray chert	0	0	0	-
B	49	-	-	33BU1182	debitage	early reduction flake	Vanport chalcedony	0	0	0	-

## **APPENDIX C**



## OHIO ARCHAEOLOGICAL INVENTORY (Draft Form )

### A. Identification

1. Type of Form: **Revised Form** 4. Site Name:  
2. County: **Butler** 5. Project Number: **Middletown Energy Center**

### B. Location

1. UTM Zone: **16** Easting: **727564** Northing: **4371881**  
3. Township: **2** Range: **4** Section: **7** 1/4 Section: **NW** Not Applicable  
Township Name: **Lemon**  
4. Quadrangle Name: **Monroe** 5. Quadrangle Date: **1979** 6. Confident of Site Location: **Yes**

### C. Ownership

1. Name: **AK Steel Corporation** 2. Tenant (if any):  
Address: **9227 Centre Pointe Drive** Address:  
City, State, Zip: **West Chester, OH 45069** City, State, Zip:  
Phone: Phone:  
3. Ownership Status: **Private (single)**

### D. Temporal Affiliations

1. Affiliations Present: **Prehistoric**

#### Prehistoric

2. Prehistoric Temporal Period(s) represented:

	Unassigned Prehistoric	Paleoindian			
Archaic:	Unassigned	<input checked="" type="checkbox"/>	Early	Middle	Late
Woodland:	Unassigned		Early	<input checked="" type="checkbox"/> Middle	Late
	<input checked="" type="checkbox"/> Late Prehistoric		Protohistoric		Other:

3. Minimum Number of Prehistoric Temporal Periods Represented: **3**

4. Basis for Assignment of Prehistoric Temporal Period(s):

<input checked="" type="checkbox"/> Diagnostic Artifacts	Diagnostic Features	Radiometric
Unrecorded	Other:	

5 & 6. List Prehistoric Cultural Components Identified and describe how determined (list diagnostic artifacts and/or features and include type names).

- **4 Diagnostic material(s) recorded. See Continuation sheet for details.**

7 & 8. Specific Prehistoric Cultural Materials Observed or Collected (list diagnostic artifacts and/or features and include type names).

- **64 Prehistoric cultural material(s) recorded. See Continuation sheet for details.**

**Historic**

9. Affiliation Present:

10. Historic Temporal Period(s) Represented:

Pre-1795	1796-1829	1830-1849
1850-1879	1880-1899	1900-1929
1930-1949	1950-1974	1975-2000
Historic	18th Century	19th Century
20th Century	Historic Aboriginal	21st Century

11. Minimum Number of Historic Temporal Periods Represented:

12. Basis for Assignment of Historic Temporal Period(s):

Diagnostic Artifacts	Diagnostic Architectural Remains	Diagnostic Features
<input checked="" type="checkbox"/> Documentary Evidence	Oral Tradition	Other:

13. Describe how Historic Temporal Period(s) were determined (list any diagnostic architectural remains, diagnostic artifacts and/or features and include type names). When listing artifacts and/or features correlate to letters used for Temporal Periods in D.10

14 & 15. Functional Categories of Historic Materials Present at Site and Specific Cultural Materials Collected:

- **0 historic material(s) recorded. See Continuation sheet for details.**

**General**

16. Describe Prehistoric and/or Historic Cultural Materials observed but not collected. State reason(s) for not collecting.

17. Affiliated Ohio Historic Inventory Site Number and Name:



**E. Physical Description**1. Archaeological Setting: **Open**

2. Prehistoric Site Type:

Habitation:	Camp	Village	Hamlet	<b>X</b>	Unspecified Habitation
Extractive:	Quarry	Workshop			
Ceremonial:	Unspecified Mound		Earth Mound		Stone Mound
	Effigy Mound		Mound Group		Hilltop Enclosure
	Geometrical Earthwork		Cemetery		Isolated Burial(s)
	Petroglyph/Pictograph		Unknown		Other:

3. Historic Site Type:

Residential	Commercial	Social	Government
Religious	Educational	Mortuary	Recreation
Subsistence	Industrial	Health Care	Military
Transportation	Unknown	Other:	

4. State the basls on which site type assignment(s) were made.

***high percentage of tools in artifact assemblage***5. Site Condition: **Disturbed-Extent Unknown**

6. Dominant Agent(s) of Disturbance:

None Apparent	<b>X</b>	Agriculture	Water	Historic Construction
Transportation		Mining	Vandalism	Archaeological Excavation
Unrecorded		Other:		

7. Nature of Disturbance/Destruction

***cultivated field***

8. Current Dominant Land Use:

***Cropland and Pasture***

9. Land Use History:

10. Site Elevation: **200** Meters A.M.S.L.11. Physiographic Setting of Site: **Till Plain**12. Glacial Geomorphology: **Wisconsin Ground Moraine**13. Regional Geomorphological Setting: **Stream Valley**14. Local Environmental Setting: **Low Rise on Floodplain**

15. Soils

Soil Association: **Fincastle-Patton-Xenia**Soil Series-Phase/Complex: **Princeton sandy loam, 2-8% slopes**16. Down Slope Direction: **All**17. Slope Gradient (percent): **0** % Unrecorded:

18. Drainage System:

Major Drainage: **Ohio River**Minor Drainage: **GREAT MIAMI RIVER**19. Closest Water Source Name **Shaker Creek**Water Source Type: **Permanent Stream**20. Horizontal Distance to Closest Water Source: **100** (m from UTM point)

21. Elevation Above Closest Water Source: (m A.M.S.L. from UTM point)

F. Reporting Information

1. Investigation Type:

Reported

Examination of Collection

☒ Surface Collection

Auger/Soil Corer

☒ Shovel Test(s)

Test Pit(s)

Deep Test(s)

PZ or Humus Removal

Test Trench(es)

Aerial Photograph

Mitigation/Block Excavation

Testing/Excav. (strategy unknown)

Chemical Analysis:

Other:

Remote Sensing:

2. Surface Collection Strategy:

Not Applicable

Grab Sample

Diagnostics

Unrecorded

Controlled-Unknown

☒ Controlled-Total

Controlled-Sample

Other

3. If surface collection strategy is Controlled-Total, Controlled-Sample, or Other, describe methodology and percentage.  
**5-meter intervals; pin-flags at finds; each find designated a Find Spot; GPS all finds; bagged each Find Spot with provenience tag**

4. Surface Visibility: **91-100%**

5. Describe surface conditions. **cultivated field was disked 2 weeks prior to fieldwork; 2 inches of rain washed disked field prior to fieldwork**

6. Site Area (square meters): sq. m **12**

7. Basis for Site Area Estimate: **Other** Other: **GPS**

8. Confident of site boundaries? **YES**

9. Estimated Percentage of Site Excavated: %

10. Name of Form Preparer: **Robert Jacoby**

12. Date of Form: **05/23/2014**

11. Institution: **Tetra Tech, Inc.**

13. Field Date: **05/09/2014**

14. Time Spent at Site: **16 hours**

15. Weather Conditions: **mixed clouds and sun**

16. Name(s), Address(es), Phone Number(s) of Local Informants

17. Artifact Repository(ies): **Tetra Tech, Inc.**

18. Name(s), Address(es), Phone Number(s), of Owners of Collections from Site (attach inventories of private collections).

21. National Register Status:

24. Special Status (select only one, as appropriate): **None**

G. References - List Primary Documentary References

Primary Author	Secondary Author	Year	Title
Robert Jacoby		2014	Phase I Archaeological Survey for Middletown Energy Center, City of Middletown, Butler County, Ohio

23. Discuss the potential significance of the site .

Three factors indicate that Site 33BU1071 may be potentially eligible for listing on the National Register of Historic Places. First, the range of tool forms suggests that site occupants were engaged in a variety of subsistence tasks during their stays on the rise. Short-duration campsites typically yield only flake debris with an occasional tool. Rarely do they contain the array of tools found at 33BU1071. Second, the recovery of diagnostic artifacts from four different prehistoric time periods indicates that the landform was stable for a long duration, and provided visitors with well-drained ground on which to camp next to Shaker Creek and near Dicks Creek, and within six kilometers of the Great Miami River, a relatively short distance for people accustomed to prolonged and frequent travel. And lastly, the variety of chert types among the artifact assemblage reflects visits to the site by

people from geographically distant parts of the Ohio Valley and interior drainages, or by people who interacted and traded with distant groups.

## I. Description of Site

1. *State physical description of the site and its setting, including dimensions, features (with Measurements), nature and location of artifacts and concentrations, extent, and location of disturbances, etc.*

The cultivated field is marked by a low rise extending approximately 300 meters by 80 meters that trends east to west along its long axis (Photograph 1). At its highest extent, the rise reaches 5 feet above the otherwise level landscape. The rise principally consists of well-drained Princeton sandy loam, in contrast to the poorly-drained Patton silty clay loam that surrounds it. Even from a distance, the soils exhibit distinct color differentiation that reflects their disparate composition and drainage patterns.

The pedestrian reconnaissance identified 51 chert (flint), chipped-stone artifacts on the rise and its slopes. This assemblage included tools and chipping debris, or debitage, manufactured from a variety of local and non-local chert sources. To obtain additional information about the stratigraphic position of the artifact deposit, and to recover additional diagnostic artifacts that could assist in securing relative dates for the material, ten shovel tests were excavated in two groups of five across the rise. Seven of the shovel tests were positive for lithic finds. In all, 64 chert artifacts were recovered from the rise and its slopes (Figure 1). The previously conducted survey for the proposed Rockies Express Pipeline had identified two small clusters of lithic artifacts, plus one pre-Adena phase pottery sherd (Schneider et. al. 2007). These two artifact clusters, designated as Site 33BU1071 and 33BU1072, contained, respectively, four chert flakes, and four chert flakes, the pre-Adena sherd, and two igneous celts. Based on the UTM coordinates of each site as listed on their OHPO site forms, both 33BU1071 and 33BU1072 are located firmly within the clustering of artifacts identified in the Phase I survey. After consulting with OHPO, Tetra Tech consolidated the previous site designations with the new finds as Site 33BU1071.

The following analysis of the artifact assemblage from Site 33BU1071 excludes the finds from Schneider et. al. (2007), except where noted. Although the artifact density of Site 33BU1071 is modest, the assemblage contains a very high percentage of finished stone tools. With 9 bifaces and 1 unifacial scraper, the tools account for 16 percent of the site assemblage. The set of bifaces includes five whole, or fragmented, projectile points, two late-stage bifaces, one small drill, and one small chopper (Photograph 2). The projectile points originate from Early Archaic, Middle Woodland, and Late Prehistoric periods. Find Spot 1 is a thin biface, made from Vanport chalcedony, and exhibits alternating beveling on the rather broad blade. Although much of the base is non-extant due to breakage, one corner notch is visible. The blade size, beveling, and notch position is consistent with an Early Archaic Thebes point, circa 8000-7000 BC (Converse 2007:88-89, Justice 1987:54-55). Find Spot 48 has a biconvex cross-section, with a short stem and two very small corner notches. Though the point is rather thick, its edges are well-executed on local Cedarville-Guelph chert. The base has some minor damage, but appears to have a burin-removal on one side. This point is interpreted as a possible late-Early Archaic Decatur variety, or a fractured-base point, dating to circa 7000-6000 BC (Converse 2007:92-93, Justice 1987:81). Find Spot 21 is a Middle Woodland small Hopewell point fashioned from Vanport chert, dating to circa 200 BC to AD 400 (Converse 2007:134-135, Justice 1987:). Find Spot 34 is a small, Fort Ancient serrated point of fine-grained gray Indiana hornstone, dating to the Late Prehistoric period, circa AD 1000 to AD 1450 (Converse 2007:152-153, Justice 1987:227). The fifth projectile point, Find Spot 25, is too fragmentary to assign a type. It consists of one blade edge of Vanport chalcedony. The edge is robust and well-made, and might be from an Early Archaic heavy duty or Archaic side-notch point form, common point types in southern Ohio (Converse 2007:40-41, 62-63).

Find Spot 39 is a small unifacial scraper of glacial chert. The edge angle is approximately 75 degrees, which Carr (1982:280-282) classifies as a scraper for use on hard wood or bone. This item also appears to have a graver spur. Gravers were sharpened projections that may have been used to pierce or incise bone, wood, or shell, although actual use is considered to be somewhat conjectural. Find Spot 38 includes a small bifacial drill made from Delaware chert. Find Spot 4 is a small hand chopper manufactured from local Four Mile Creek chert with block cortex. The working end of this artifact is a minimally prepared bifacial edge. The unifacial scraper, drill, and chopper are not assignable to a specific prehistoric time period. The igneous celts that were identified by Schneider et. al. (2007) from Site 33BU 1072 are generally assigned in Ohio to the Early Woodland Adena culture

(circa 450 BC to AD 100) or Middle Woodland Hopewell culture (circa 200 BC to AD 400) (Converse 1973). Celts are interpreted as heavy duty wood working tools, similar to chisels.

The chert debitage (flakes and block shatter) includes various forms that describe a continuum of manufacturing and maintenance activities from initial production to final bifacial edge preparation and re-sharpening. Fifty-five percent of the debitage sample consists of biface reduction flakes, representing late-stage and final biface manufacture. The absence of all cortex from the biface reduction flakes confirms that these items are the product of end-stage manufacturing or tool maintenance. The debitage assemblage contains a broad variety of local stone (Four Mile Creek chert and glacial cherts), medium-distance non-local stone (Cedarville-Guelph chert originates in Logan County approximately 60 miles northeast of the Project; Delaware chert originates in western Franklin and Delaware Counties approximately 75 to 85 miles from the Project), and more distant non-local stone such as Vanport and Coshocton cherts which come from quarries located more than 100 miles east of the Project, and at least one item (Find Spot 34, Fort Ancient point) of Indiana hornstone from the lower Ohio River valley.

The artifacts recovered from shovel tests all originated from the plow zone. Plow zone soil at Site 33BU1071 was categorized as brown sandy loam; subsoil was dark yellowish brown sandy clay loam. Shovel testing did not reveal any remnant feature fill at the interface of the plow zone and subsoil.

The plot of mapped artifacts across the rise shows two distinct distribution clusters (Figure 1). One cluster is along the western edge of the rise at a point closest to Shaker Creek. The western cluster contains three of the recovered bifaces, including the small Hopewell point. Arrayed on the crest of the rise and its southeastern slope is the second artifact cluster. The eastern cluster contains three bifaces, including the early Archaic Decatur point and the Late Prehistoric Fort Ancient point. Artifact distribution between the two clusters was very limited.

*2. Discuss the relationship between the site and other known sites in the area in terms of location, physical characteristics, size, etc.*

Within a 5-mile radius of the Project, 222 archaeological sites are documented. The sites consist of 34 historic period sites, 169 prehistoric period sites, and 19 sites with historic and prehistoric components. Two archaeological sites are listed on the NRHP, Armco Park Mound I (33WA0059) and Armco Park Mound II (33WA0060). Both of these mounds are characterized as unspecified Woodland period sites and are situated on upper terraces above Shaker Creek. Armco Park Mound I lies approximately 5,600 meters east-southeast of the Project; Armco Park Mound II is located approximately 5,000 meters east-southeast of the Project. OHPO has determined that two historic sites (33BU589 and 33BU590) and two prehistoric sites (33BU1110 and 33BU1122) are eligible for listing on the NRHP. Two sites have been determined to be potentially NRHP-eligible, 33BU1039 and 33BU0308, which are historic and prehistoric/historic, respectively. Forty-four sites have been determined to be not eligible for the NRHP, and the remaining sites have not received determinations regarding NRHP significance.

Forty-seven prehistoric sites contain datable components or diagnostic artifacts, with 18 of these sites possessing components or artifacts from multiple prehistoric periods. Table 1 presents information on the datable prehistoric components of sites identified within the 5-mile Study Area.

Table 1. Site Components Assigned to Prehistoric Periods.

Paleo	Archaic	EA	MA	LA	TA	Wood	EW	MW	LW	LP
3	2	10	0	18	1	13	10	11	6	10

Abbreviations: EA=Early Archaic, MA=Middle Archaic, LA=Late Archaic, TA=Transitional Archaic, Wood=Woodland, EW=Early Woodland, MW=Middle Woodland, LW=Late Woodland, LP=Late Prehistoric.

There are 11 documented prehistoric mounds located within the Project Study Area, including the NRHP-listed Armco Park Mound I and II. Mills (1913) identified 10 mounds in Butler County and 7 mounds in Warren County located within the Project



Study Area. Based on current satellite imagery, it appears likely that several of these mounds are no longer extant due to twentieth century construction or agricultural activities.

Schneider et al. (2007) identified two small artifact scatters, 33BU1071 and 33BU1072, within the APE of the proposed Rockies Express pipeline corridor. Site 1071 contained 4 chert flakes; Site 1072 yielded 4 chert flakes, an Early Woodland grit-tempered pottery sherd, and 2 igneous celts. Schneider et al. recommended no further investigations because neither site possessed sufficient research potential to satisfy NRHP eligibility criteria.

In addition to Site 33BU1071, the field survey identified Site 33BU1181 and Site 33BU1182 in the Project APE. BU1181 is a low-density scatter of 7 chert flakes and a chert scraper located approximately 400 meters southeast of BU1071. All artifacts were recovered from plow zone contexts by shovel tests. BU1181 is situated around 100 meters north of Shaker Creek. BU1182 is an Isolated Find chert flake. It was identified by pedestrian reconnaissance and is located approximately 400 meters north-northeast of Site BU1071.

**D. 5 & 6 Diagnostic Artifact List**

<u>Diagnostic Artifact</u>	<u>Cultural Component</u>	<u>Description</u>	<u>Count</u>
Decatur point	Decatur Phase		1
Fort Ancient point	Fort Ancient Traditi		1
small Hopewell point	Scioto Hopewell Cult		1
Thebes point	Thebes Phase		1

**D. 7 & 8 Preshistoric Artifact List**

<u>Material</u>	<u>Category</u>	<u>Other</u>	<u>Count</u>
bifaces	Lithics		9
debitage	Lithics		54
unifaces	Lithics		1

**D. 14 & 15 Historic Artifact List**

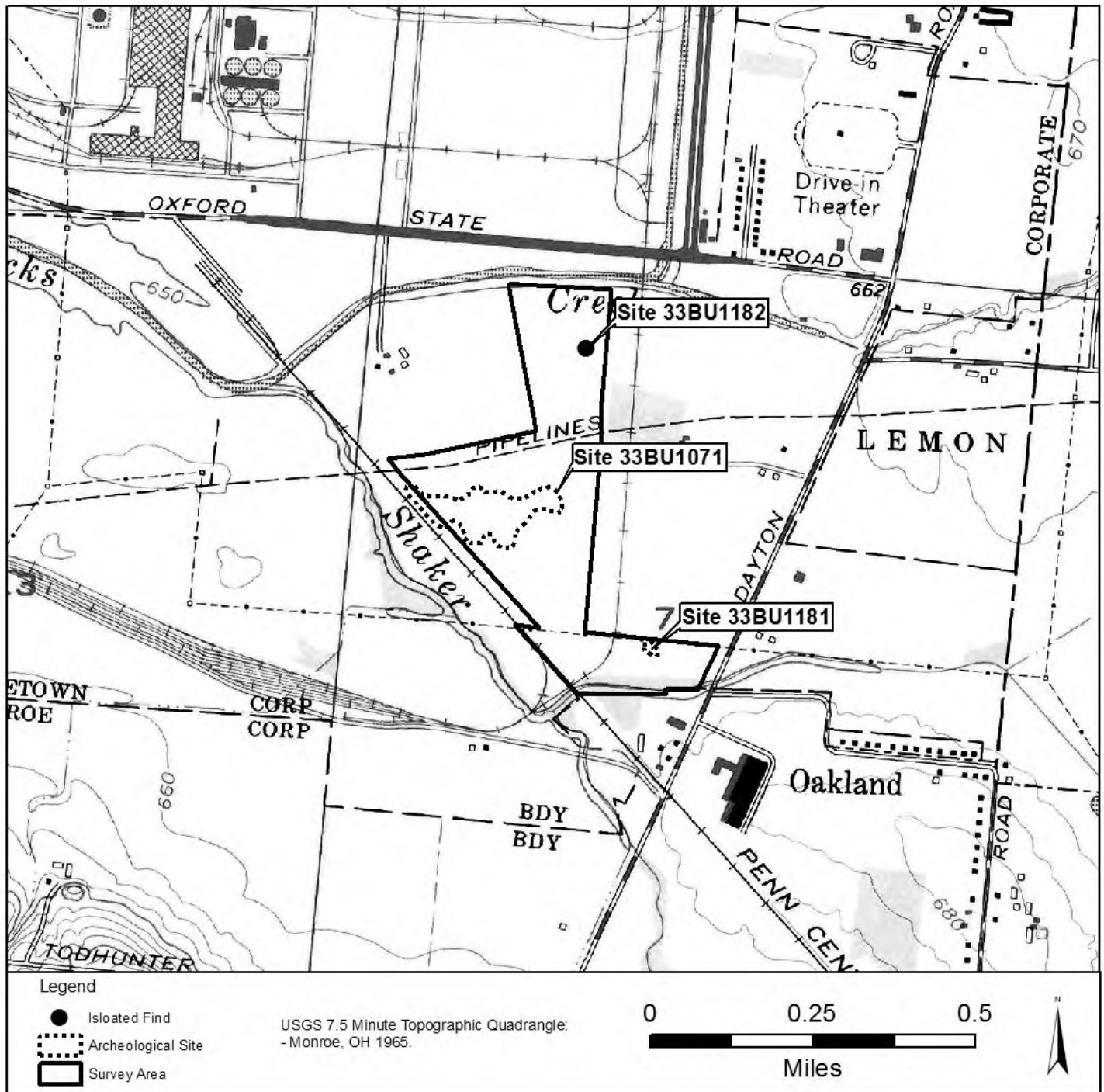
<u>Material</u>	<u>Category</u>	<u>Other</u>	<u>Count</u>
No Records	..	..	..

**H. Radiometric Date List**

<u>Material Dated</u>	<u>Date (uncorrected C14 years)</u>	<u>Laboratory</u>	<u>Sample #</u>
No Records	..	..	..

**K. Sketch Map or Copy of Project Map of Site.**

Include north arrow and scale of the appropriate U.S.G.S. quadrangle. Outline total area surveyed and include locations of all identified sites.





## OHIO ARCHAEOLOGICAL INVENTORY (Draft Form )

### A. Identification

1. Type of Form: **New Form** 4. Site Name:  
2. County: **Butler** 5. Project Number: **Middletown Energy Center**

### B. Location

1. UTM Zone: **16** Easting: **728007** Northing: **4371567**  
3. Township: **2** Range: **4** Section: **7** 1/4 Section: **NW** Not Applicable  
Township Name: **Lemon**  
4. Quadrangle Name: **Monroe** 5. Quadrangle Date: **1979** 6. Confident of Site Location: **Yes**

### C. Ownership

1. Name: **AK Steel Corporation** 2. Tenant (if any):  
Address: **9227 Centre Pointe Drive** Address:  
City, State, Zip: **West Chester, OH 45069** City, State, Zip:  
Phone: Phone:  
3. Ownership Status: **Private (single)**

### D. Temporal Affiliations

1. Affiliations Present: **Prehistoric**

#### Prehistoric

2. Prehistoric Temporal Period(s) represented:

**X** Unassigned Prehistoric Paleoindian  
*Archaic:* Unassigned Early Middle Late  
*Woodland:* Unassigned Early Middle Late  
Late Prehistoric Protohistoric Other:

3. Minimum Number of Prehistoric Temporal Periods Represented:

4. Basis for Assignment of Prehistoric Temporal Period(s):

Diagnostic Artifacts Diagnostic Features Radiometric  
Unrecorded Other: **no diagnostic artifacts**

5 & 6. List Prehistoric Cultural Components Identified and describe how determined (list diagnostic artifacts and/or features and include type names).

- **0 Diagnostic material(s) recorded. See Continuation sheet for details.**

7 & 8. Specific Prehistoric Cultural Materials Observed or Collected (list diagnostic artifacts and/or features and include type names).

- **8 Prehistoric cultural material(s) recorded. See Continuation sheet for details.**

**Historic**

9. Affiliation Present:

10. Historic Temporal Period(s) Represented:

Pre-1795	1796-1829	1830-1849
1850-1879	1880-1899	1900-1929
1930-1949	1950-1974	1975-2000
Historic	18th Century	19th Century
20th Century	Historic Aboriginal	21st Century

11. Minimum Number of Historic Temporal Periods Represented:

12. Basis for Assignment of Historic Temporal Period(s):

Diagnostic Artifacts	Diagnostic Architectural Remains	Diagnostic Features
Documentary Evidence	Oral Tradition	Other:

13. Describe how Historic Temporal Period(s) were determined (list any diagnostic architectural remains, diagnostic artifacts and/or features and include type names). When listing artifacts and/or features correlate to letters used for Temporal Periods in D.10

14 & 15. Functional Categories of Historic Materials Present at Site and Specific Cultural Materials Collected:

- **0 historic material(s) recorded. See Continuation sheet for details.**

**General**

16. Describe Prehistoric and/or Historic Cultural Materials observed but not collected. State reason(s) for not collecting.

17. Affiliated Ohio Historic Inventory Site Number and Name:



**E. Physical Description**1. Archaeological Setting: **Open**

2. Prehistoric Site Type:

Habitation:	Camp	Village	Hamlet	Unspecified Habitation
Extractive:	Quarry	Workshop		
Ceremonial:	Unspecified Mound		Earth Mound	Stone Mound
	Effigy Mound		Mound Group	Hilltop Enclosure
	Geometrical Earthwork		Cemetery	Isolated Burial(s)
	Petroglyph/Pictograph	<b>X</b>	Unknown	Other:

3. Historic Site Type:

Residential	Commercial	Social	Government
Religious	Educational	Mortuary	Recreation
Subsistence	Industrial	Health Care	Military
Transportation	Unknown	Other:	

4. State the basis on which site type assignment(s) were made.

5. Site Condition: **Disturbed-Extent Unknown**

6. Dominant Agent(s) of Disturbance:

None Apparent	<b>X</b>	Agriculture	Water	<b>X</b>	Historic Construction
<b>X</b>		Mining	Vandalism	<b>X</b>	Archaeological Excavation
Unrecorded		Other:			

7. Nature of Disturbance/Destruction

***natural gas pipeline, push-pile, railroad tracks, sewer line, and electric transmission line tower***

8. Current Dominant Land Use:

***Transportation, Communications, Utilities***

9. Land Use History:

10. Site Elevation: **200** Meters A.M.S.L.11. Physiographic Setting of Site: **Till Plain**12. Glacial Geomorphology: **Wisconsin Ground Moraine**13. Regional Geomorphological Setting: **Stream Valley**14. Local Environmental Setting: **Terrace Remnant**

15. Soils

Soil Association: **Fincastle-Patton-Xenia**Soil Series-Phase/Complex: **Princeton sandy loam, 2-8 % slopes**16. Down Slope Direction: **S**17. Slope Gradient (percent): **2** % Unrecorded:

18. Drainage System:

Major Drainage: **Ohio River**Minor Drainage: **GREAT MIAMI RIVER**19. Closest Water Source Name **Shaker Creek**Water Source Type: **Permanent Stream**20. Horizontal Distance to Closest Water Source: **100** (m from UTM point)21. Elevation Above Closest Water Source: **3** (m A.M.S.L. from UTM point)

F. Reporting Information

1. Investigation Type:

Reported

Examination of Collection

Surface Collection

Auger/Soil Corer **X** Shovel Test(s)

Test Pit(s)

Deep Test(s)

PZ or Humus Removal

Test Trench(es)

Aerial Photograph

Mitigation/Block Excavation

Testing/Excav. (strategy unknown)

Chemical Analysis:

Other:

Remote Sensing:

2. Surface Collection Strategy:

Not Applicable

Grab Sample

Diagnostics

Unrecorded

Controlled-Unknown

Controlled-Total

Controlled-Sample

Other

3. If surface collection strategy is Controlled-Total, Controlled-Sample, or Other, describe methodology and percentage.

4. Surface Visibility:

5. Describe surface conditions.

6. Site Area (square meters): sq. m **550**

7. Basis for Site Area Estimate: **Other**

Other: **GPS**

8. Confident of site boundaries? **YES**

9. Estimated Percentage of Site Excavated: %

10. Name of Form Preparer: **Robert Jacoby**

12. Date of Form: **05/23/2014**

11. Institution: **Tetra Tech, Inc.**

13. Field Date: **05/08/2014**

14. Time Spent at Site: **16 hours**

15. Weather Conditions: **mixed clouds and sun**

16. Name(s), Address(es), Phone Number(s) of Local Informants

17. Artifact Repository(ies): **Tetra Tech, Inc.**

18. Name(s), Address(es), Phone Number(s), of Owners of Collections from Site (attach inventories of private collections).

21. National Register Status:

24. Special Status (select only one, as appropriate): **None**

G. References - List Primary Documentary References

Primary Author	Secondary Author	Year	Title
Robert Jacoby		2014	Phase I Archaeological Survey for Middletown Energy Center, City of Middletown, Butler County, Ohio

23. Discuss the potential significance of the site .

none

I. Description of Site

1. State physical description of the site and its setting, including dimensions, features (with Measurements), nature and location of artifacts and concentrations, extent, and location of disturbances, etc.

The non-cultivated portion of the Facility Area is a mixture of woodlot and scrub vegetation that parallels the Duke Energy electric transmission line corridor (Figure 1; Photograph 1). It is bounded to the east by Cincinnati Dayton Road, to the south by

Shaker Creek, to the west by a Norfolk Southern Corporation railroad line, and to the north by an abandoned liquids pipeline. Areas of extensive ground disturbance were observed in the APE. An abandoned transportation feature extends across the APE in a southeast to northwest orientation. An electric transmission tower that conveys Duke Energy’s 345 kV line is present in the western portion of the APE. A 15-foot wide stormwater sewer easement runs north-south across the APE. A large push-pile measuring approximately 95 meters by 95 meters is present at the eastern end of the APE. The height of the push-pile reaches 3 meters above surrounding grade. Wet, hydric soil was observed within 45 to 55 meters north of Shaker Creek. The areas of disturbance and wet soils were avoided and not surveyed.

A grid of 26 STs was excavated within the portion of the APE that was testable. Four contiguous STs forming a square (nos. 17, 18, 20, and 21) were positive for prehistoric lithic artifacts. Radial STs were excavated at each of the positive tests, with three of the radials also yielding stone artifacts. Negative STs bounded the cluster. Soils in the vicinity of the cultural material were a brown silty loam surface layer atop dark yellowish brown silty clay loam subsoil.

In all, eight prehistoric stone artifacts were recovered from the seven positive STs. This assemblage includes a humpback bifacial scraper on Delaware chert (Photograph 2), five biface reduction flakes on a variety of chert types, one decortication flake from glacial chert, and piece of block shatter on Coshocton black chert. The artifact cluster has been designation Site 33BU1181 in OHPO database. The site measures approximately 20 meters by 35 meters and encompasses around 550 square meters (0.14 acre).

*2. Discuss the relationship between the site and other known sites in the area in terms of location, physical characteristics, size, etc.*

Within a 5-mile radius of the Project, 222 archaeological sites are documented. The sites consist of 34 historic period sites, 169 prehistoric period sites, and 19 sites with historic and prehistoric components. Two archaeological sites are listed on the NRHP, Armco Park Mound I (33WA0059) and Armco Park Mound II (33WA0060). Both of these mounds are characterized as unspecified Woodland period sites and are situated on upper terraces above Shaker Creek. Armco Park Mound I lies approximately 5,600 meters east-southeast of the Project; Armco Park Mound II is located approximately 5,000 meters east-southeast of the Project. OHPO has determined that two historic sites (33BU589 and 33BU590) and two prehistoric sites (33BU1110 and 33BU1122) are eligible for listing on the NRHP. Two sites have been determined to be potentially NRHP-eligible, 33BU1039 and 33BU0308, which are historic and prehistoric/historic, respectively. Forty-four sites have been determined to be not eligible for the NRHP, and the remaining sites have not received determinations regarding NRHP significance.

Forty-seven prehistoric sites contain datable components or diagnostic artifacts, with 18 of these sites possessing components or artifacts from multiple prehistoric periods. Table 1 presents information on the datable prehistoric components of sites identified within the 5-mile Study Area.

Table 1. Site Components Assigned to Prehistoric Periods.

Paleo	Archaic	EA	MA	LA	TA	Wood	EW	MW	LW	LP
3	2	10	0	18	1	13	10	11	6	10

Abbreviations: EA=Early Archaic, MA=Middle Archaic, LA=Late Archaic, TA=Transitional Archaic, Wood=Woodland, EW=Early Woodland, MW=Middle Woodland, LW=Late Woodland, LP=Late Prehistoric.

There are 11 documented prehistoric mounds located within the Project Study Area, including the NRHP-listed Armco Park Mound I and II. Mills (1913) identified 10 mounds in Butler County and 7 mounds in Warren County located within the Project Study Area. Based on current satellite imagery, it appears likely that several of these mounds are no longer extant due to twentieth century construction or agricultural activities.

Schneider et al. (2007) identified two small artifact scatters, 33BU1071 and 33BU1072, within the APE of the proposed Rockies Express pipeline corridor. Site 1071 contained 4 chert flakes; Site 1072 yielded 4 chert flakes, an Early Woodland grit-tempered pottery sherd, and 2 igneous celts. Schneider et al. recommended no further investigations because neither site possessed sufficient research potential to satisfy NRHP eligibility criteria.

In addition to Site 33BU1181, the field survey identified Site 33BU1071 and Site 33BU1182 in the Project APE. BU1071 is a broad scatter of chert flakes and tools located approximately 400 meters northwest of BU1181. Datable projectile points include Thebes (Early Archaic), possible Decatur (late-Early Archaic), small Hopewell (Middle Woodland), and Fort Ancient serrated (Late Prehistoric). BU1071 is situated around 100 meters east of Shaker Creek. BU1182 is an Isolated Find chert flake. It was identified by pedestrian reconnaissance and is located approximately 700 meters north-northwest of Site BU1181.

**D. 5 & 6 Diagnostic Artifact List**

<u>Diagnostic Artifact</u>	<u>Cultural Component</u>	<u>Description</u>	<u>Count</u>
No Records	..	..	..

**D. 7 & 8 Preshistoric Artifact List**

<u>Material</u>	<u>Category</u>	<u>Other</u>	<u>Count</u>
chert debitage	Lithics		7
chert humpback scraper	Lithics		1

**D. 14 & 15 Historic Artifact List**

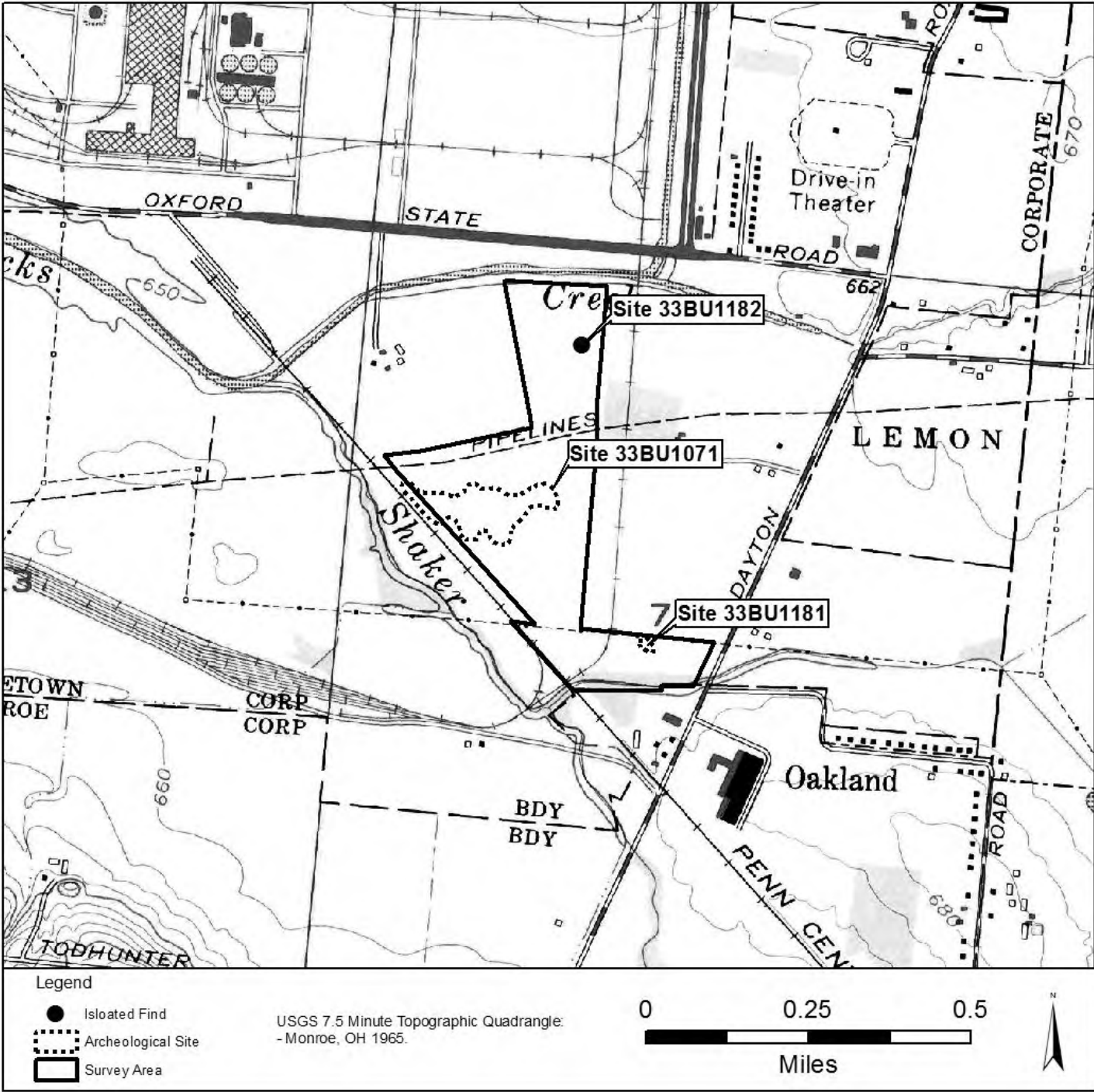
<u>Material</u>	<u>Category</u>	<u>Other</u>	<u>Count</u>
No Records	..	..	..

**H. Radiometric Date List**

<u>Material Dated</u>	<u>Date (uncorrected C14 years)</u>	<u>Laboratory</u>	<u>Sample #</u>
No Records	..	..	..



**K. Sketch Map or Copy of Project Map of Site.**  
Include north arrow and scale of the appropriate U.S.G.S. quadrangle. Outline total area surveyed and include locations of all identified sites.





Ohio Historic Preservation Office  
800 E. 17th Avenue  
Columbus, OH 43211  
614/298-2000

Site No 33- BU1182

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**OHIO ARCHAEOLOGICAL INVENTORY ISOLATED FIND SITE FORM (Draft Form)**

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**Location:**

Zone: **16**

Easting: **727809**

Northing: **4372302**

Quadrangle: **Monroe**

Quadrangle Date: **1979**

Township: **2**

Range: **4**

Section: **7**

Quarter Section: **NW**

Not Applicable:

Township Name: **Lemon**

**Drainage System:**

Minor Drainage: **GREAT MIAMI RIVER**

Major Drainage: **Ohio River**

**Temporal Affiliation: Prehistoric**

**Artifact Description:**

Lithics	flake	1
No Records	..	..

**Reporting Information:**

Form Preparer: **Robert Jacoby**

Institution: **Tetra Tech, Inc.**

Form Date: **05/27/2014**

Field Date: **05/07/2014**

**References**

Author	Author	Year	Title
Robert Jacoby		2014	Phase I Archaeological Survey for Middletown Energy Center, City of Middletown, Butler County, Ohio



**Sketch Map or Copy of Project Map of Site.**

Include north arrow and scale of the appropriate U.S.G.S. quadrangle. Outline total area surveyed and include locations of all identified sites.

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**12/30/2014 12:24:43 PM**

**in**

**Case No(s). 14-2314-EL-BLN**

Summary: Application of NTE Middletown Energy Center Electrical Interconnection continued  
- Attachment C electronically filed by Teresa Orahod on behalf of Sally Bloomfield