Vinton Solar Energy LLC
Case No. 19-393-EL-BLN

Application Part 2 of 3

Part 2 includes:

Figure 1 **Facility Overview February 2019**

Figure 2 **Aerial Facility Overview February 2019**

Exhibit A **Structure Diagrams**

Exhibit B **Viewshed Analysis January 2019**

Exhibit C **Vinton Solar Energy Center Phase I Cultural Resources Records Review Report June 2017**

Exhibit D **Vinton Solar Transmission Line Phase I Cultural Resources Investigation January 2019**

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Attorneys for Vinton Solar Energy LLC

Date Filed: February 15, 2019

Vinton Solar Energy LLC
Case No. 19-393-EL-BLN

Figure 1

Facility Overview February 2019

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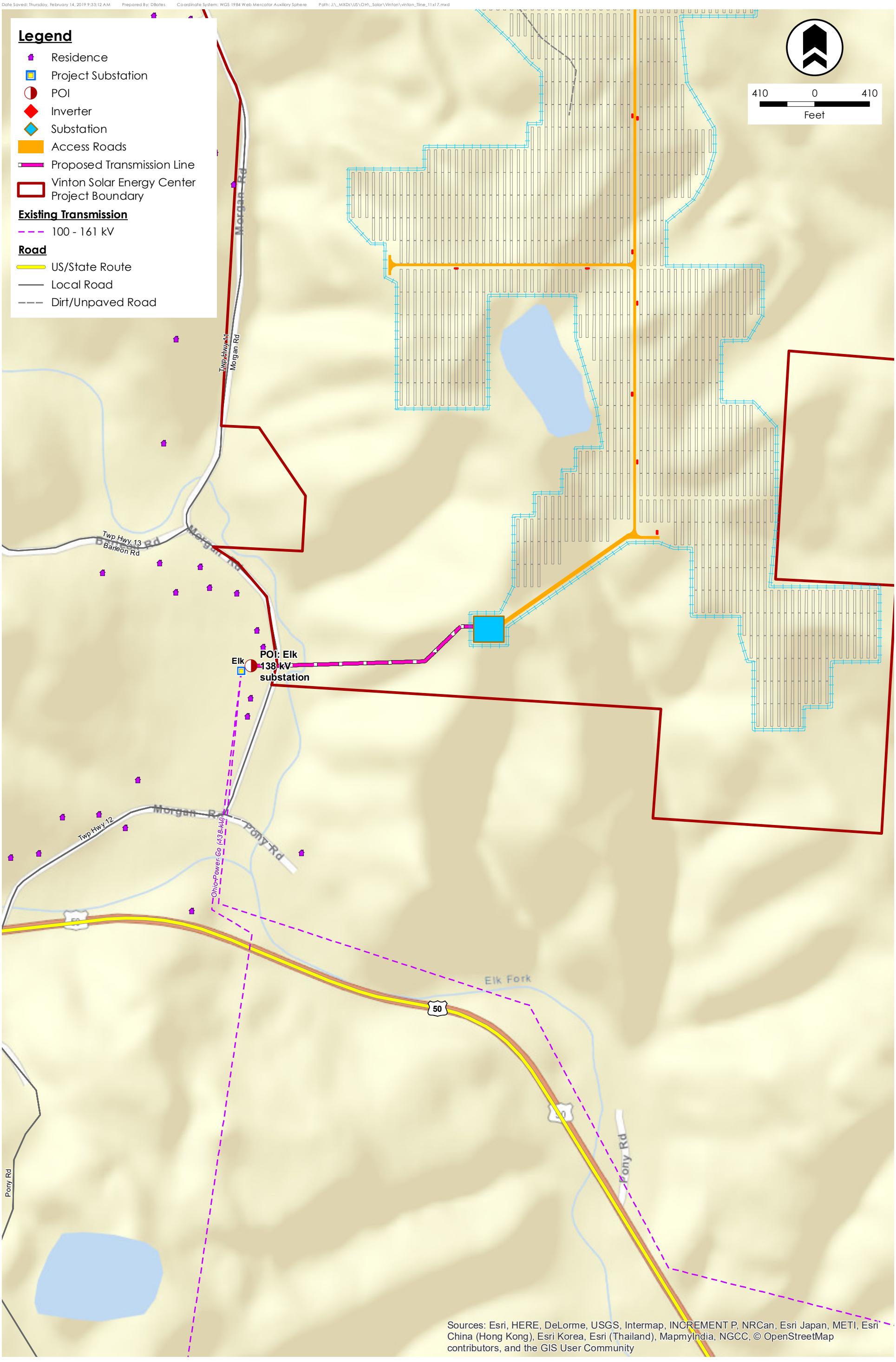
Date Filed: February 15, 2019

Date Saved: Thursday, February 14, 2019 9:33:12 AM Prepared By: DBates Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Path: J:_MXDs\US\OH_Solar\Vinton\vinton_Tline_11x17.mxd



Facility Overview

Vinton Solar Energy Center | Vinton County, Ohio

Rev. 00

February 14, 2019

Invenergy

Figure 2

Aerial Facility Overview February 2019

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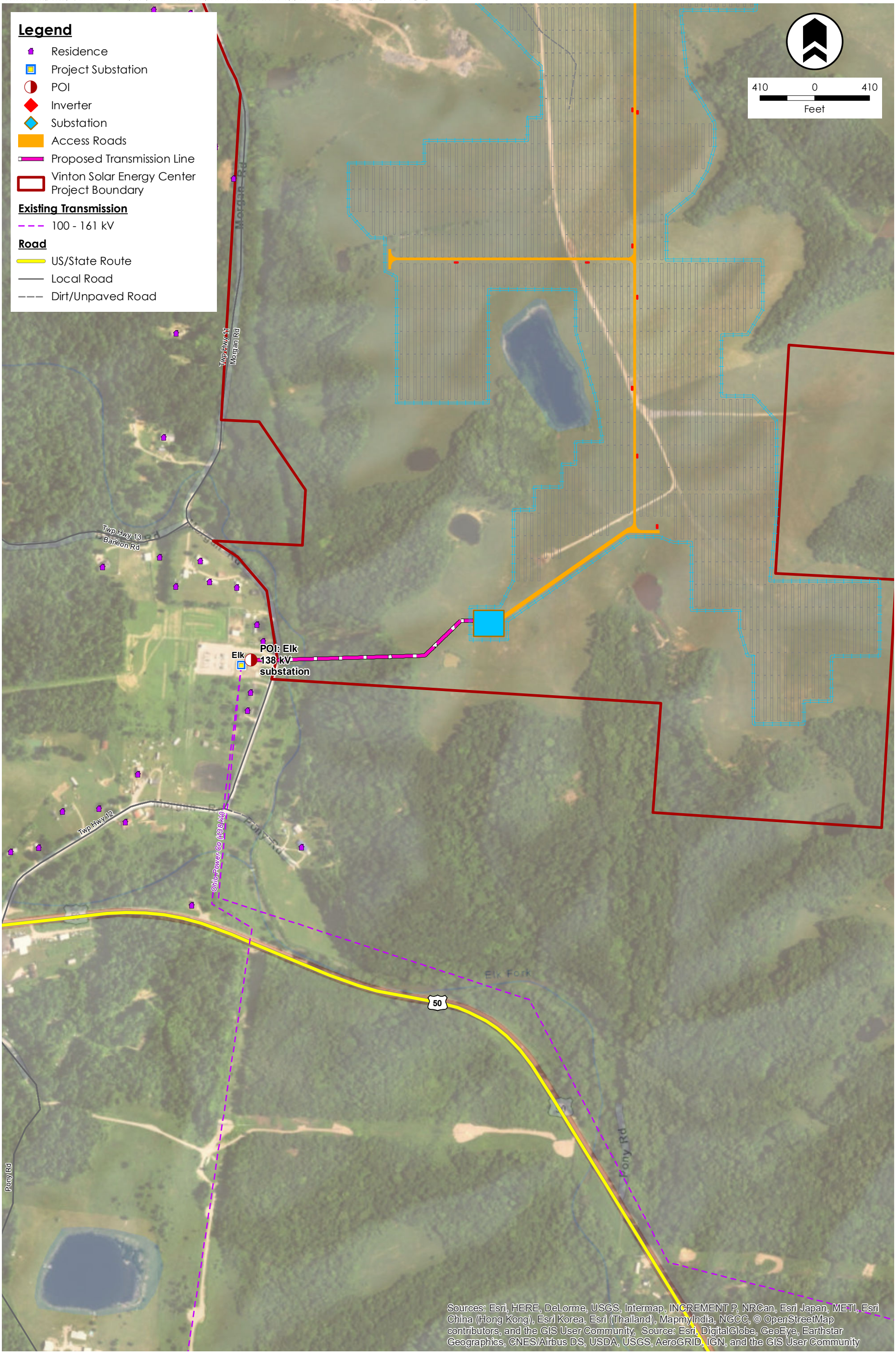

Facility Overview

Vinton Solar Energy Center | Vinton County, Ohio

Rev. 00
February 14, 2019

Invenergy

Vinton Solar Energy LLC
Case No. 19-393-EL-BLN

Exhibit A

Structure Diagrams

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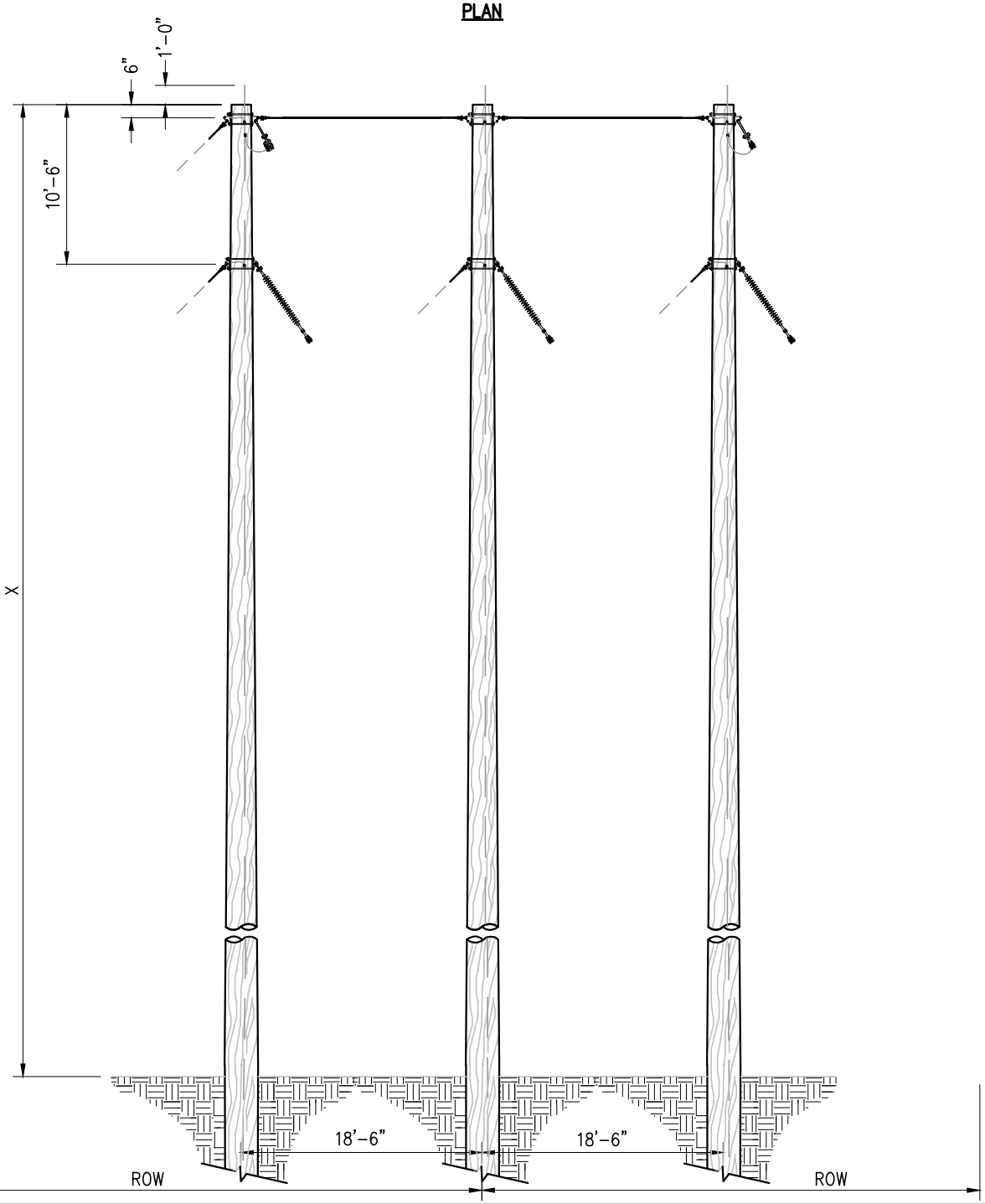
Date Filed: February 15, 2019

PLAN



Engineering with Distinction
ECI ELECTRICAL CONSULTANTS, INC.

Invenergy

ENGINEERING RECORD		DATE
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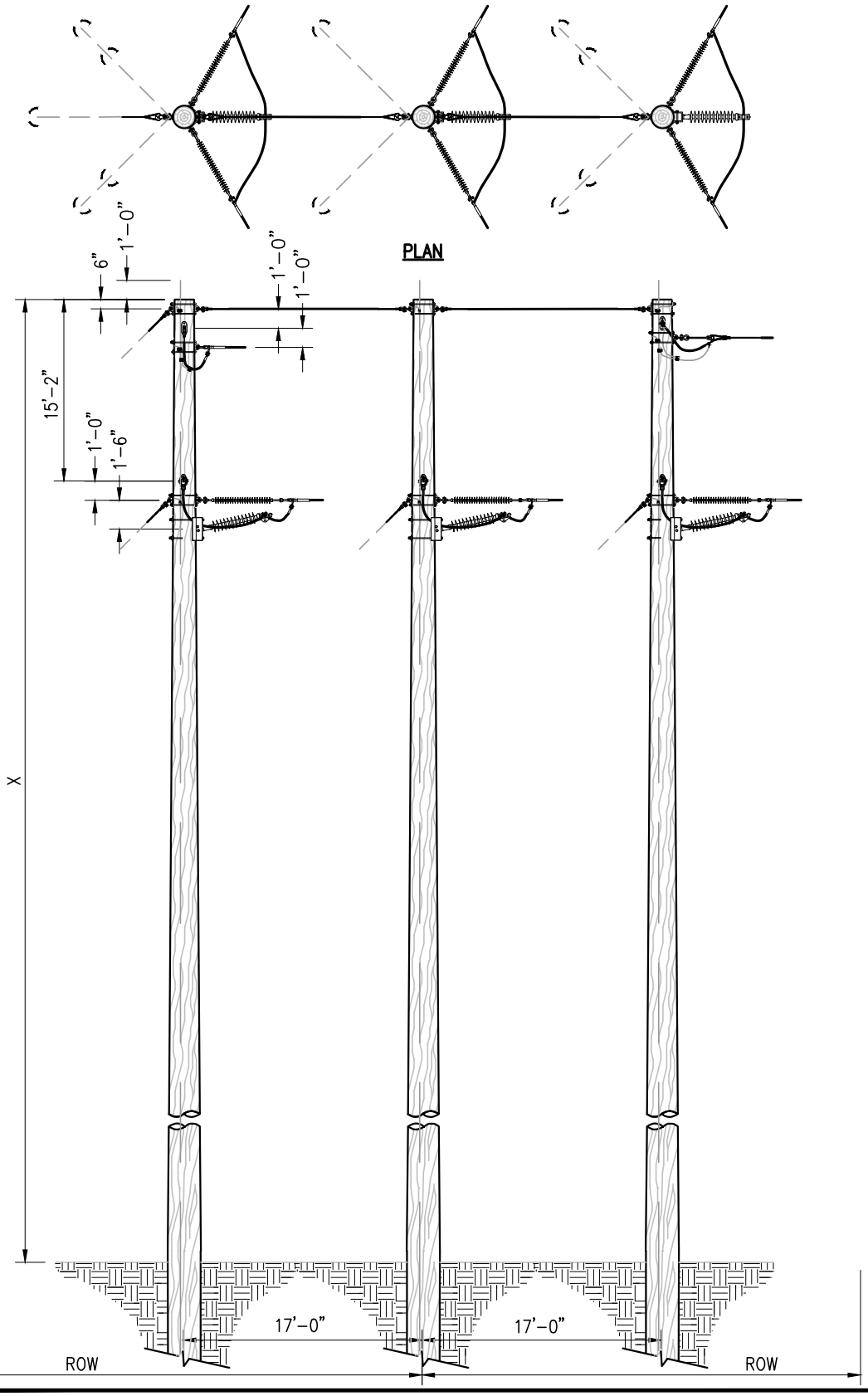
DESIGNED	J. SELENSKY	02/16/18
CHECKED	A. WHITE	02/19/18
APPROVED		
DWG SCALE: AS NOTED	PLT SCALE: 1:1	

VINTON SOLAR 138 kV TRANSMISSION LINE
SINGLE CIRCUIT RUNNING ANGLE STRUCTURE
TH3-138-MA

DWG. NAME: VS-A-T009-2 | REVISION NO : A



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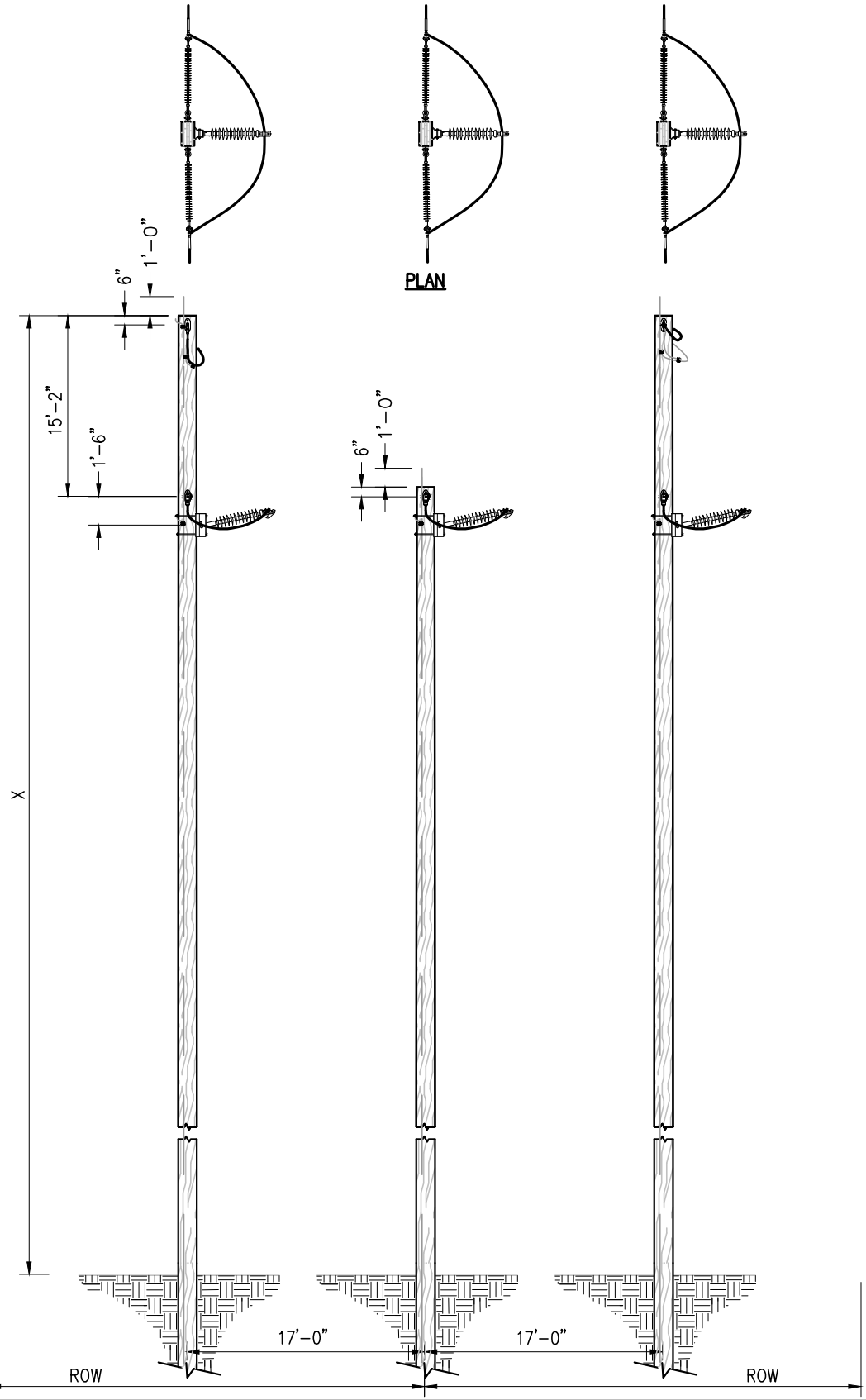
"Engineering with Distinction"
ECI ELECTRICAL CONSULTANTS, INC.

Invenergy

ENGINEERING RECORD		DATE
DRAWN	M. COTTET	02/19/18
DESIGNED	J. SELENSKY	02/16/18
CHECKED	A. WHITE	02/19/18
APPROVED		
DWG SCALE: AS NOTED	PLT SCALE: 1:1	

VINTON SOLAR 138 kV TRANSMISSION LINE
SINGLE CIRCUIT DEADEND STRUCTURE
TH3DE-138-J

DWG. NAME: VS-A-T009-3 | REVISION NO : A



Engineering with Distinction	ELECTRICAL CONSULTANTS, INC.	Invenergy

ENGINEERING RECORD		DATE
DRAWN	M. COTTET	02/19/18
DESIGNED	J. SELENSKY	02/16/18
CHECKED	A. WHITE	02/19/18
APPROVED		
DWG SCALE: AS NOTED	PLT SCALE: 1:1	

VINTON SOLAR 138 kV TRANSMISSION LINE
SINGLE CIRCUIT DEADEND STRUCTURE
TH3I-138L-J

DWG. NAME: VS-A-T009-4 | REVISION NO : A

Vinton Solar Energy LLC
Case No. 19-393-EL-BLN

Exhibit B

Viewshed Analysis January 2019

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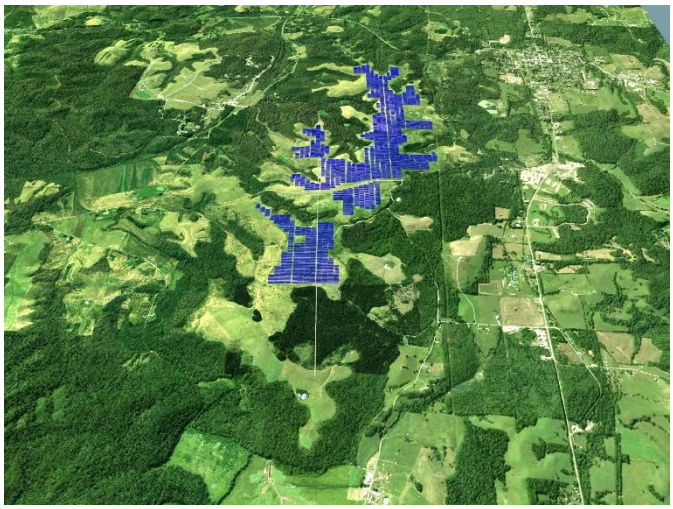
Attorneys for Vinton Solar Energy LLC

Date Filed: February 15, 2019

VIEWSHED ANALYSIS OF THE VINTON SOLAR ENERGY CENTER TRANSMISSION LINE

Vinton Solar Energy LLC

Vinton County, Ohio



January 2019

TRC Project No. 321839.VIEW.0000

Prepared For:

Vinton Solar Energy, LLC
One South Wacker Drive, Suite 1800
Chicago, IL 60606
Phone: 812.224.1400

Prepared By:

TRC Environmental Corporation
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Tracy Engle
Senior Project Manager

Jesse Papez
Senior GIS Specialist

Results you can rely on

CONFIDENTIAL BUSINESS INFORMATION

TABLE OF CONTENTS

List of Figures

ACRONYMS

2D	Two Dimensions/Dimensional
3D	Three Dimensions/Dimensional
ESRI	Earth Systems Research Institute (GIS software company)
Ft	Feet
GIS	Geographic Information System
GPS	Global Positioning System
LiDAR	Light Detection and Ranging
LAS	LiDAR Data File naming convention (i.e. *.las)
MW	Megawatt
m	Meter
TRC	TRC Environmental Corporation
U.S.	United States
USGS	United States Geological Survey
VSE	Vinton Solar Energy LLC (Project)

1 INTRODUCTION

On behalf of Vinton Solar Energy LLC, TRC Environmental Corporation (TRC) has completed a supplementary limited visual assessment for the Vinton Solar Energy Center transmission line project (Project). The study is focused on the visual impacts related to the transmission line portion of the project. This information builds upon the study completed by TRC in June 2017. The planned project boundary is approximately 1,950 acres (7.89 km2) in size and will supply up to 125 MW of power. The current land use / land cover on the project site is pasture land, grassland and forestland. The current solar panel layout is set primarily on the grass and pasture land and avoids the forested lands within the project footprint.

The viewshed analysis identifies areas where the proposed transmission line poles may be visible. The proposed transmission line is approximately 0.27 miles (0.43 km) long, extending from the proposed project substation to the existing substation east of the Village of McArthur, Ohio. This analysis also identifies areas where the visibility of these poles overlaps or is different than the solar array viewshed analysis previously conducted.

2 VIEWSHED ANALYSIS

A viewshed analysis out to 2 miles (3.2 km) was conducted to determine potential visibility of the transmission line poles for the Project. This search distance was selected to be consistent with analyses previously conducted. The viewshed analysis is a GIS analytical technique that allows for the determination and location of where project features, such as transmission lines, solar panels, fences, or substations will be likely to be visible in the surrounding area of the site. The results of the viewshed analysis are typically displayed over a topographic map or aerial photo. A map displaying the results of the viewshed analysis assists in understanding the potential for project visibility at sensitive resource locations and provides a better understanding of the potential visual impacts the Project may have.

2.1 VIEWSHED METHODOLOGY

Light Detection and Ranging (LiDAR) data provided by the Ohio Geographically Referenced Information Program (OGRIP) was used for the analysis (Ohio, 2007). The LiDAR survey for Vinton County was conducted in 2007. Forested, vegetated areas, and structures were extracted from the first-return subset of the LiDAR data and were separated from the bare-earth (topographic) surface information. The site review of the proposed solar array area shows no significant tall vegetation present; thus the vegetated surface model was used to conduct a viewshed analysis without accounting for any clearing during construction. The transmission line includes a 95' (29.0m) wide clearing area. For the analysis the vegetation was cleared in that corridor and the bare-earth surface was used to ensure results that are as accurate as possible.

Environmental Systems Research Institute, Inc. (ESRI) Spatial Analyst GIS software was used to develop the viewshed model. X, Y and Z data representing the typical height of the project features were incorporated into the model with the LiDAR terrain information. Per the client's request the transmission line poles were assumed to be 90' (27.4m) tall. The solar array component height information was based on specifications for typical fixed position, pole mounted solar panels, with an assumed height of 8.5' used for the solar panels and 7' used for site fence for this analysis. The results of the 2-mile model for the array and transmission poles can be found on **Figure 1**.

2.2 Assumptions and Limitations of the Viewshed Model

The viewshed analysis identifies cells (raster pixels) that contain elevation information and computes the differences along the terrain surface between an observer at any point within the study area and a target (e.g. substation component) (ESRI 2017). The analysis is a clear line-of-sight and therefore certain factors in the interpretation of results need to be considered:

1. The model does not account for the limitations of human vision at greater distances or atmospheric conditions that may cause reduced visibility. Additionally, at increasing distances away from project features, they will appear smaller and less detailed and will have a reduced visual impact even if shown as visible in the model.

2. Because an area may show visibility, it does not mean the entirety of a substation component will be seen. In many cases for this project, the existing tree stands and buildings in the area provide visual impediments for all or lower portion of the facility.

3. The viewshed model assumes that any vegetation is opaque and therefore represents a leaf-on condition. During leaf-off conditions or where ground level vegetation is sparse, visibility may be possible where the model did not indicate.

4. The model was developed with the assumption that a viewer would not see the Project if standing amongst tree groups.

5. Due to the large size of the Project and many panel locations, it was not readily possible to model every individual structure for the viewshed analysis, as such perimeter and high feature points were used for conducting the viewshed analysis.

2.3 Viewshed Analysis Results and Discussion

The Project study area is generally surrounded by dense forested areas and rolling hills, which can naturally reduce visibility of the project, particularly from lower relative elevation viewpoints. **Figure 1** depicts the visibility of the transmission poles shown relative to the visibility of the overall project. As can be seen, nearly all visibility of the transmission poles is concurrent with the visibility of the solar array. There are a few areas near the transmission poles with additional resulting visibility from the poles. These areas are likely to have existing views of the substation and previously constructed transmission lines. Overall, little additional visibility is created due to the transmission poles, even though they are much taller than the solar array. This is likely due to the small geographic footprint and small number of poles proposed. The results

for the analysis of the transmission poles only can be found on **Figure 2**. The results for the solar array and fence only can be found on **Figure 3**.

Given that there is little added visibility from the poles relative to the overall project visibility and the current existence of similar transmission infrastructure associated with the tie-in substation, the added transmission poles do not appear to add a significant visual impact to the existing setting.

TRC - GIS

LEGEND

- PROJECT BOUNDARY
- PROPOSED TRANSMISSION POLE
- 2-MILE SETBACK FROM TRANMISSION POLES
- PROPOSED SITE FENCE
- PROPOSED SOLAR RACK
- 2-MILE SETBACK FROM PROJECT
- AREAS WITH POTENTIAL VISIBILITY OF SOLAR ARRAY
- AREAS WITH POTENTIAL VISIBILITY OF TRANSMISSION POLES
- AREAS WITH OBSTRUCTED VIEWS (NO VISIBILITY)
- FORESTED/VEGETATED AREA

NOTES

1. TOPOGRAPHIC INFORMATION FROM LIDAR LAS DATA PROVIDED BY OHIO GEOGRAPHICALLY REFERENCED INFORMATION PROGRAM (OGRIP).
2. THE VIEWSHED ANALYSIS WAS CONDUCTED USING THE DATA EXTRACTED FROM THE LiDAR DATA. VEGETATION AREAS ARE REPRESENTED AS THE DIFFERENCE BETWEEN THE FIRST-RETURN SURFACE AND THE BARE-EARTH SURFACE. AN OBSERVER HEIGHT OF 5.5' WAS USED FOR THE ANALYSIS.
3. TRANSMISSION POLES ASSUMED TO BE 90' TALL, SOLAR ARRAY - 8.5' TALL, AND FENCE - 7' TALL FOR VIEWSHED ANALYSIS.
4. INFORMATION PRESENTED HERE IS THE RESULTS OF A DESKTOP ANALYSIS AND HAS NOT BEEN GROUND-TRUTHED.

0 4,000 8,000 Feet

1 " = 4,000 '

1:48,000

PROJECT:

VINTON SOLAR ENERGY LLC (VSE)
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:

COMBINED VIEWSHED ANALYSIS WITHIN 2 MILES OF PROJECT SITE

DRAWN BY:	J. PAPEZ	PROJ NO.:	321839
CHECKED BY:	K. CAPA		**FIGURE 1**
APPROVED BY:	T. ENGLE		
DATE:	JANUARY 2019		

TRC
921 Eastwind Drive, Suite 122
Westerville, OH 43081
Phone: 614.423.6334
www.trcsolutions.com

FILE NO.: 321839-001.mxd

Plot Date: 1/17/2019, 14:57:04 PM by JPAPEZ -- LAYOUT: ANSI B(11"x17")
Path: S:\1-PROJECTS\INVENERGY\VintonSolar\321839-Visuals\321839-001.mxd
Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 (Meter)
Map Rotation: 0

TRC - GIS

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Map Rotation: 0

LEGEND

- PROJECT BOUNDARY
- PROPOSED TRANSMISSION POLE
- 2-MILE SETBACK FROM TRANMISSION POLES
- PROPOSED SITE FENCE
- PROPOSED SOLAR RACK
- 2-MILE SETBACK FROM PROJECT
- AREAS WITH POTENTIAL VISIBILITY OF TRANSMISSION POLES
- AREAS WITH OBSTRUCTED VIEWS (NO VISIBILITY)
- FORESTED/VEGETATED AREA

NOTES

1. **THIS FIGURE SHOWS TRANSMISSION LINE POLE VISIBILITY ONLY. SOLAR ARRAY VISIBILITY IS NOT SHOWN.**
2. TOPOGRAPHIC INFORMATION FROM LIDAR LAS DATA PROVIDED BY OHIO GEOGRAPHICALLY REFERENCED INFORMATION PROGRAM (OGRIP).
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0 4,000 8,000 Feet

1 " = 4,000 '
1:48,000

PROJECT:
VINTON SOLAR ENERGY LLC (VSE)
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:
TRANSMISSION LINE POLE VIEWSHED ANALYSIS WITHIN 2 MILES OF PROJECT SITE

DRAWN BY:	J. PAPEZ	PROJ NO.:	321839
CHECKED BY:	K. CAPA		
APPROVED BY:	T. ENGLE		**FIGURE 2**
DATE:	JANUARY 2019		

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Phone: 614.423.6334
www.trcsolutions.com

FILE NO.: 321839-003vs.mxd

TRC - GIS

Plot Date: 1/17/2019, 14:57:48 PM by JPAPEZ -- LAYOUT: ANSI B(11"x17")
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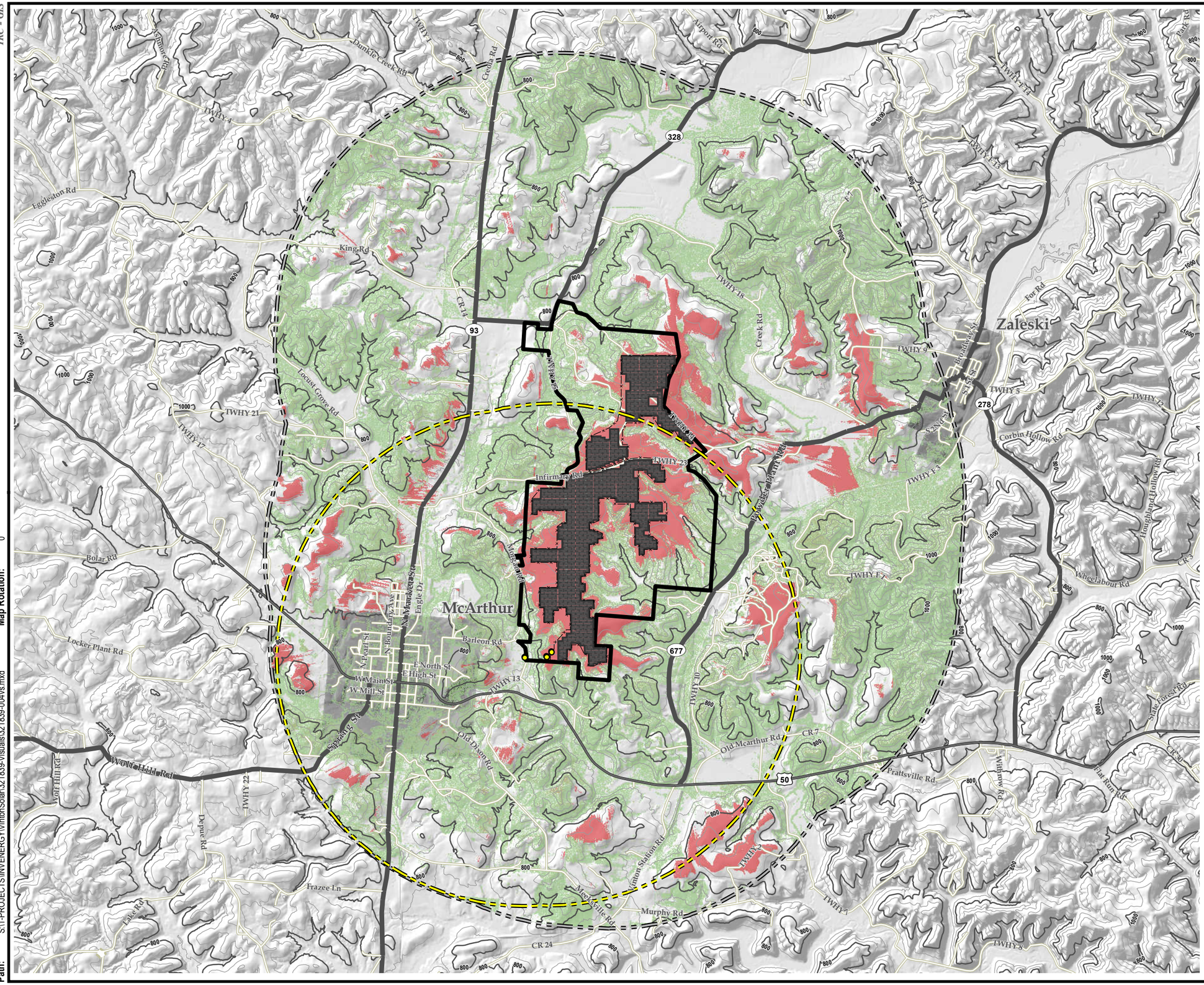

LEGEND

- PROJECT BOUNDARY
- PROPOSED TRANSMISSION POLE
- 2-MILE SETBACK FROM TRANMISSION POLES
- PROPOSED SITE FENCE
- PROPOSED SOLAR RACK
- 2-MILE SETBACK FROM PROJECT
- AREAS WITH POTENTIAL VISIBILITY OF SOLAR ARRAY
- AREAS WITH OBSTRUCTED VIEWS (NO VISIBILITY)
- FORESTED/VEGETATED AREA

NOTES

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2. TOPOGRAPHIC INFORMATION FROM LIDAR LAS DATA PROVIDED BY OHIO GEOGRAPHICALLY REFERENCED INFORMATION PROGRAM (OGRIP).
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1 " = 4,000 '
1:48,000

PROJECT:
VINTON SOLAR ENERGY LLC (VSE)
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:
SOLAR ARRAY VIEWSHED ANALYSIS WITHIN 2 MILES OF PROJECT SITE

DRAWN BY:	J. PAPEZ	PROJ NO.:	321839
CHECKED BY:	K. CAPA		
APPROVED BY:	T. ENGLE		
DATE:	JANUARY 2019		

FIGURE 3

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FILE NO.: 321839-004vs.mxd

References Cited

ESRI 2017. Environmental Systems Research Institute. Retrieved May 09, 2017, from http://desktop.arcgis.com/en/arcmap/10.3/tools/spatial-analyst-toolbox/using-viewshed-and-observer-points-for-visibility.htm

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USGS 1961, USGS 1:24000-scale Quadrangle for Alger, OH 1961: U.S. Geological Survey.U.S. Geological Survey, 1960, USGS 1:24000-scale Quadrangle for Roundhead, OH 1960: U.S. Geological Survey.

Vinton Solar Energy LLC
Case No. 19-393-EL-BLN

Exhibit C

Vinton Solar Energy Center Phase I Cultural Resources Records Review Report June 2017

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Attorneys for Vinton Solar Energy LLC

Date Filed: February 15, 2019

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June 9, 2017

Gabe Klooster
Analyst, Business Development
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Chicago, IL 60606

Re: Cultural Resources Due Diligence Records Review
Vinton Solar Energy Center Project
Vinton County, Ohio

Project Description

On behalf of the Vinton Solar Energy, LLC (VSE), TRC Environmental Corporation (TRC) has prepared this Cultural Resources Due Diligence Records Review as part of the environmental studies conducted for the Vinton Solar Energy Center Project located in Elk Township, Vinton County, OH (Figure 1). The Project Area of Potential Effects (APE) consists of approximately 658 acres of pasture land and comprises all areas of proposed ground disturbance. The project area in its entirety has been previously impacted by past surface coal mining activity.

Database Review

TRC conducted a records review of the resources available from the State Historic Preservation Office (SHPO), i.e. Ohio Historic Preservation Office (OHPO) including the Ohio Historic Inventory (OHI), the Ohio Archaeological Inventory (OAI), and the National Register of Historic Places (NRHP) files, as well as information on historic cemeteries maintained by the Ohio Genealogical Society (OGS). As part of this records review, TRC examined all available cultural resources survey reports relating to previous investigations in the area. This review identified previously surveyed, National Register-eligible, or National Register-listed resource structures or districts within the defined area of interest (AOI) and constituted the initial cultural background research and architectural (visual effects) Area of Potential Effects (APE) for the project.

The APE for architectural resources is based primarily on those resources and areas that could potentially fall within line of sight of the proposed facility. It consisted of an 8-km (5-mi) radius around the proposed Vinton Solar Power Facility (Figure 2). Based on topography, areas of potential site visibility and areas of potential obstructed viewshed, TRC further refined the research area to include only those resources within a 0.6-km (1-mi) radius of the project footprint as well.

The APE for ground disturbance consists of the approximately 658 acres which comprises all areas that will fall within the proposed fence-line in which the construction will take place.

This records review was conducted in accordance with the Secretary of the Interior's Standards for Archaeology and Historic Preservation (Federal Register Vol. 48, No. 190, Part IV, (1983) and the OHPO's Archaeological Guidelines (1994).

The final task of the background research was to conduct a brief review of soils and topographic conditions. Archaeological sites in the area are known to be associated with certain environmental parameters, which can then be used to help assess the relative potential of the project for containing archaeological sites.

Historic Architectural Resources

Background research in the OHPO Online Mapping System revealed there are no previously surveyed architectural resources or NRHP-listed or eligible resources located within the APE boundaries. There are five NRHP-listed architectural resources located within the 5-mile radius AOI (see Figure 2). Four of these NRHP-listed resources are located in the town of Zaleski approximately three miles east of the project area, and the remaining is located in the town of McArthur, approximately one mile to the west of the project area. There are a total of 351 previously surveyed resources located within the 5-mile AOI. Most of these previously surveyed resources are clustered in the towns of Zaleski and McArthur. Based on topography, areas of potential site visibility and areas of potential obstructed viewshed, the research area was further refined to include only those resources within a 0.6-km (1-mi) radius. Only eight previously surveyed resources were identified within a 1-mile radius of the project area, which are listed in the table below and depicted on Figure 3. These resources within the 1-mile radius have yet to be evaluated for NRHP eligibility. In addition to these resources, three cemetery resources were identified within the 1-mile AOI (see Figure 3).

HISTORIC ARCHITECTURAL RESOURCES WITHIN 1-MILE RADIUS		
OHI SURVEY ID#	**RESOURCE NAME/TYPE**	**DATE**
VIN0009407	**Dwelling**	**c.1900**
VIN0008807	**Dwelling**	**c.1860**
VIN0001607	**Dwelling**	**c.1890**
VIN0001707	**ODOT Building**	**c.1930**
VIN0010107	**Dwelling**	**c.1850**
VIN0023907	**Dwelling - Farmhouse**	**c.1890**
VIN0024007	**Howard & Cristal Lyle House**	**c.1920**
VIN0024207	**Gene Engle Barn**	**c.1900**
OGSID12106	**Elk Fork Cemetery**	
OGSID12107	**Thaddues Fuller Cemetery**	
OGSID12112	**Stevens-Robb Cemetery**	

Archaeological Resources

The file review revealed 434 archaeological resources were previously documented within the 8-km (5-mi) radius of the project location (see Figure 2). A total of 383 of these resources are characterized as

open habitation sites primarily dating to an unknown prehistoric cultural temporal period. Of the remaining sites, 31 of these are characterized as prehistoric and historic multi-component resources, and 20 are characterized as historic period sites.

Of the 434 resources, 101 were identified within a 0.6-km (1-mi) radius of the project footprint, and 22 of these previously recorded archaeological resources were identified within the boundaries of the APE. These resources are listed in the table below and depicted on Figure 4. Similar to the sites documented throughout the region, the majority of the resources, 19 in total, are characterized as open habitation sites primarily dating to an unknown prehistoric cultural temporal period. Of the remaining sites within in the APE, two dated from the Archaic prehistoric temporal period and one from the Woodland period. Although these archaeological resources were previously documented within the APE footprint, they were initially identified during previous investigation areas that have been cleared for cultural resources, and are located in areas previously destroyed by past surface coal mining activity. Site 33VI0374, which is located on a hilltop adjacent to the APE was avoided during the mining activity and could potentially yield cultural material; however, this resource will also be avoided as part of the proposed solar project. To preserve it, a clearance buffer has been incorporated into the project design thereby the resource will be outside the proposed disturbed area.

ARCHAEOLOGICAL RESOURCES WITHIN THE APE		
SITE #	**SITE NAME**	**SITE TYPE**
33VI0164	**Unnamed**	**Prehistoric**
33VI0165	**Unnamed**	**Prehistoric**
33VI0166	**Unnamed**	**Prehistoric**
33VI0167	**Unnamed**	**Prehistoric**
33VI0168	**Unnamed**	**Prehistoric**
33VI0362	**Unnamed**	**Prehistoric**
33VI0363	**Unnamed**	**Prehistoric**
33VI0364	**Unnamed**	**Prehistoric**
33VI0365	**Unnamed**	**Prehistoric**
33VI0367	**Unnamed**	**Archaic Prehistoric**
33VI0369	**Unnamed**	**Prehistoric**
33VI0370	**Unnamed**	**Prehistoric**
33VI0371	**Unnamed**	**Prehistoric**
33VI0372	**Unnamed**	**Prehistoric**
33VI0373	**Unnamed**	**Prehistoric**
33VI0375	**Unnamed**	**Prehistoric**
33VI0378	**Unnamed**	**Prehistoric**
33VI0382	**Unnamed**	**Prehistoric**
33VI0495	**Unnamed**	**Prehistoric**
33VI0510	**Unnamed**	**Prehistoric**
33VI0513	**Unnamed**	**Woodland Prehistoric**

ARCHAEOLOGICAL RESOURCES WITHIN THE APE		
SITE #	**SITE NAME**	**SITE TYPE**
33VI0514	**Unnamed**	**Archaic Prehistoric**

Previous Cultural Resource Surveys

During the file review of previously conducted survey records maintained by the SHPO, it was revealed 43 Phase I Cultural Resources Surveys, seven Phase II Surveys, and one Phase III Data Recovery were completed within the 8-km (5-mi) radius of the project that have been previously cleared for cultural resources (see Figure 2). Of these surveys, six Phase I and two Phase II surveys were conducted within the APE footprint, which are listed in the table below and depicted on Figure 5.

CULTURAL RESOURCES SURVEY WITHIN THE APE		
NADB #	**SURVEY NAME**	**SURVEY TYPE**
12465	**A Benedict, Inc. Coal Mine (Permit #0718), Elk Township, Vinton Co., OH**	**Preliminary Archaeological Reconnaissance Survey**
12472	**A Benedict, Inc. Strip Mine Application #803, Elk Township, Vinton Co., OH**	**Phase I and II Archaeological Survey**
12484	**Surface Mining Permit Area D-609-2, Elk Township, Vinton Co., OH**	**Archaeological Assessment**
13128	**Surface Mining Permit Area D-609-3, Elk Township, Vinton Co., OH**	**Phase I Archaeological Investigation**
13629	**Surface Mining Permit Area D-609-4, Elk Township, Vinton Co., OH**	**Phase I Cultural Resource Survey**
13992	**Surface Mining Permit Area D-609-5, Elk Township, Vinton Co., OH**	**Phase I Cultural Resource Survey**
12485	**Sites 33VI0365, 33VI0367, and 33VI0374, Three Prehistoric Lithic Scatters Located within the Proposed Benedict, Inc. Surface Coal Mining Tract (Permit Area D-609-2, Elk Township, Vinton Co., OH**	**Phase II Archaeological Assessment Survey**
14126	**Sites 33VI0514, 33VI0564, 33VI0572, and 33VI0573, Elk Township, Vinton Co., OH**	**Phase II Cultural Resource Evaluation**

Conclusions

The OHPO Online Mapping System revealed no previously surveyed architectural resources or NRHP-listed or eligible resources located within the APE boundaries; however, five NRHP-listed architectural resources were identified within a 5-mile radius of the APE. Based on topography, areas of potential site visibility and areas of potential obstructed viewshed, TRC further refined the research area to include only those resources within a 0.6-km (1-mi) radius of the project footprint as well. Only eight previously surveyed resources were identified within a 1-mile radius. In addition to these above ground resources, three cemetery resources were also identified within the 1-mile radius of the APE.

Based on the records review, a total of 22 archaeological resources have been previously documented within the proposed APE. Although these archaeological resources were previously documented within the APE footprint, all were located in areas that were subjected to past surface coal mining activity. Site 33VI0374 was not destroyed by past coal mining activity, but this resource location will also be avoided as part of the proposed solar project and is outside of the proposed disturbed area. It is highly probable, that past mining activity has impacted all areas within the APE, leaving no area for further archaeological investigations.

This review was conducted by professionals who meet the 36 CFR 61 Secretary of the Interior's Professional Qualification Standards.

Sincerely,

Curtis L. Biondich, M.S., RPA
PPL Office Practice Leader/Practice Safety Lead
36CFR61-Qualified Archaeologist

References

Bier, Donald R., and John P. Nass

1986 *A Phase I and II Archaeological Survey for* a *Benedict, Inc. Strip Mine Application #803, Elk Township, Vinton Co., OH.*

Genheimer, Robert A.

1990 *An Archaeological Assessment of a Surface Mining Permit Area D-609-2, Elk Township, Vinton Co., OH.*

Haywood, Norman A.

1997 *A Phase I Cultural Resources Survey for a Surface Mining Permit Area D-609-4, Elk Township, Vinton Co., OH.*

1998 *A Phase I Cultural Resources Survey for a Surface Mining Permit Area D-609-5, Elk Township, Vinton Co., OH.*

1998 *Phase II Cultural Resource Evaluation of Sites 33VI0514, 33VI0564, 33VI0572, and 33VI0573, Elk Township, Vinton Co., OH.*

Immel-Blei, Elsie

1986 *A Preliminary Archaeological Reconnaissance Survey for a Benedict, Inc. Coal Mine (Permit #0718), Elk Township, Vinton Co., OH.*

McDaniel, Gary

1998 *A Phase II Archaeological Assessment Survey of Sites 33VI0365, 33VI0367, and 33VI0374, Three Prehistoric Lithic Scatters Located within the Proposed Benedict, Inc. Strip Mining Tract (Permit Area D-609-2, Elk Township, Vinton Co., OH.*

United States Geological Survey (USGS)

1983 McArthur, Ohio 7.5-minute Quadrangle. Photorevised 1985.

1983 Zaleski, Ohio 7.5-minute Quadrangle. Photorevised 1985.

Legend

- Area of Potential Effects (APE)
- Project Area

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PROJECT:
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TITLE:
USGS TOPOGRAPHIC MAP
PROJECT LOCATION MAP

DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
CHECKED BY:	J.WHITTLE		1
APPROVED BY:	M.SPONSLER		
DATE:	JUNE 2017		

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FILE NO.: Figure 1 Vinton.mxd

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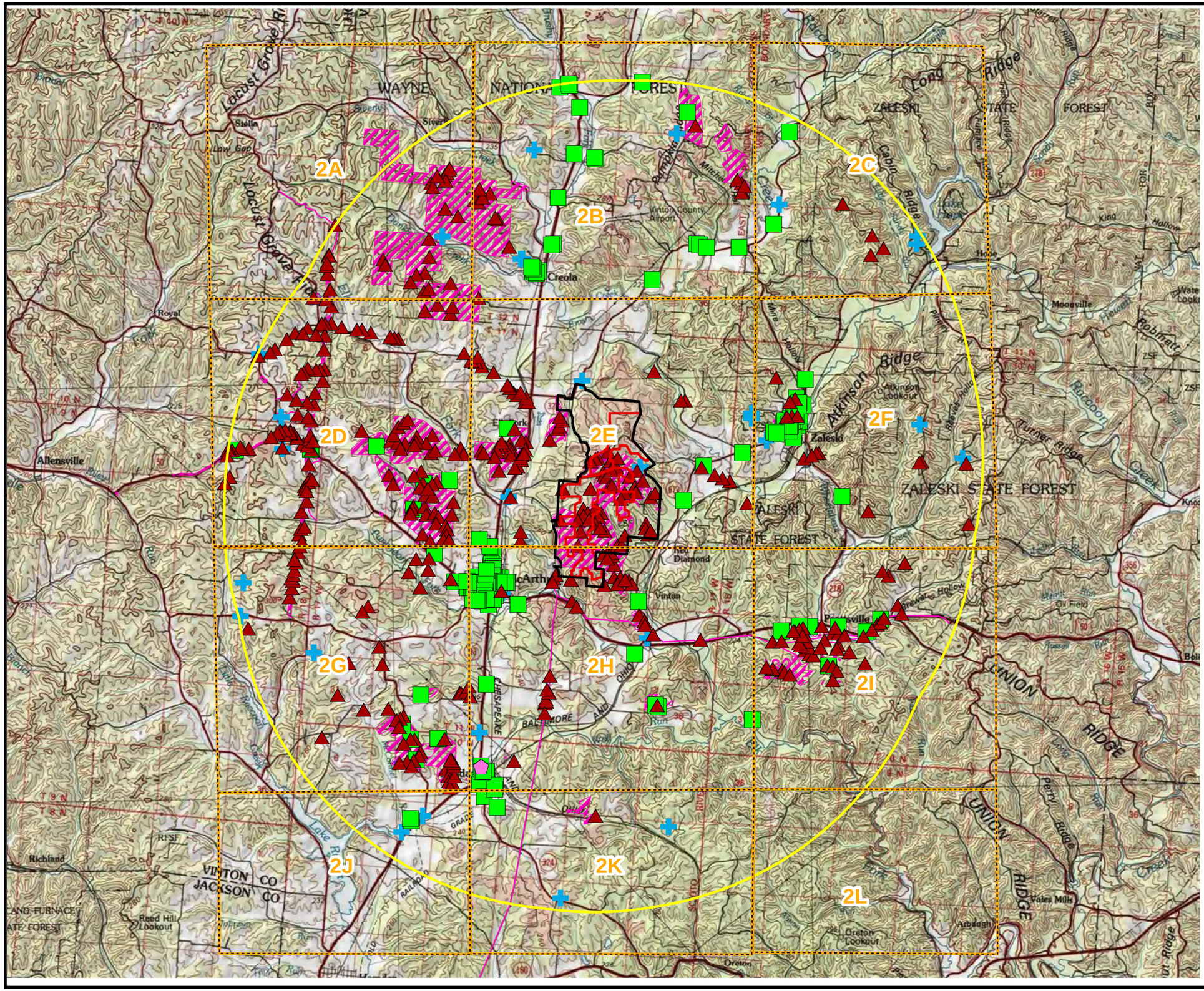

Legend

- Area of Potential Effects (APE)
- Project Area
- 5 Mile Buffer
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid

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1 " = 7,500 '

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USGS TOPOGRAPHIC MAP
5 MILE RADIUS OF NR DETERMINATIONS OF ELIGIBILITY, ARCHAEOLOGICAL SITES, HISTORIC STRUCTURES, OGS CEMETERIES, AND PHASE 1, 2 AND 3 SURVEYS

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APPROVED BY:	M.SPONSLER		2
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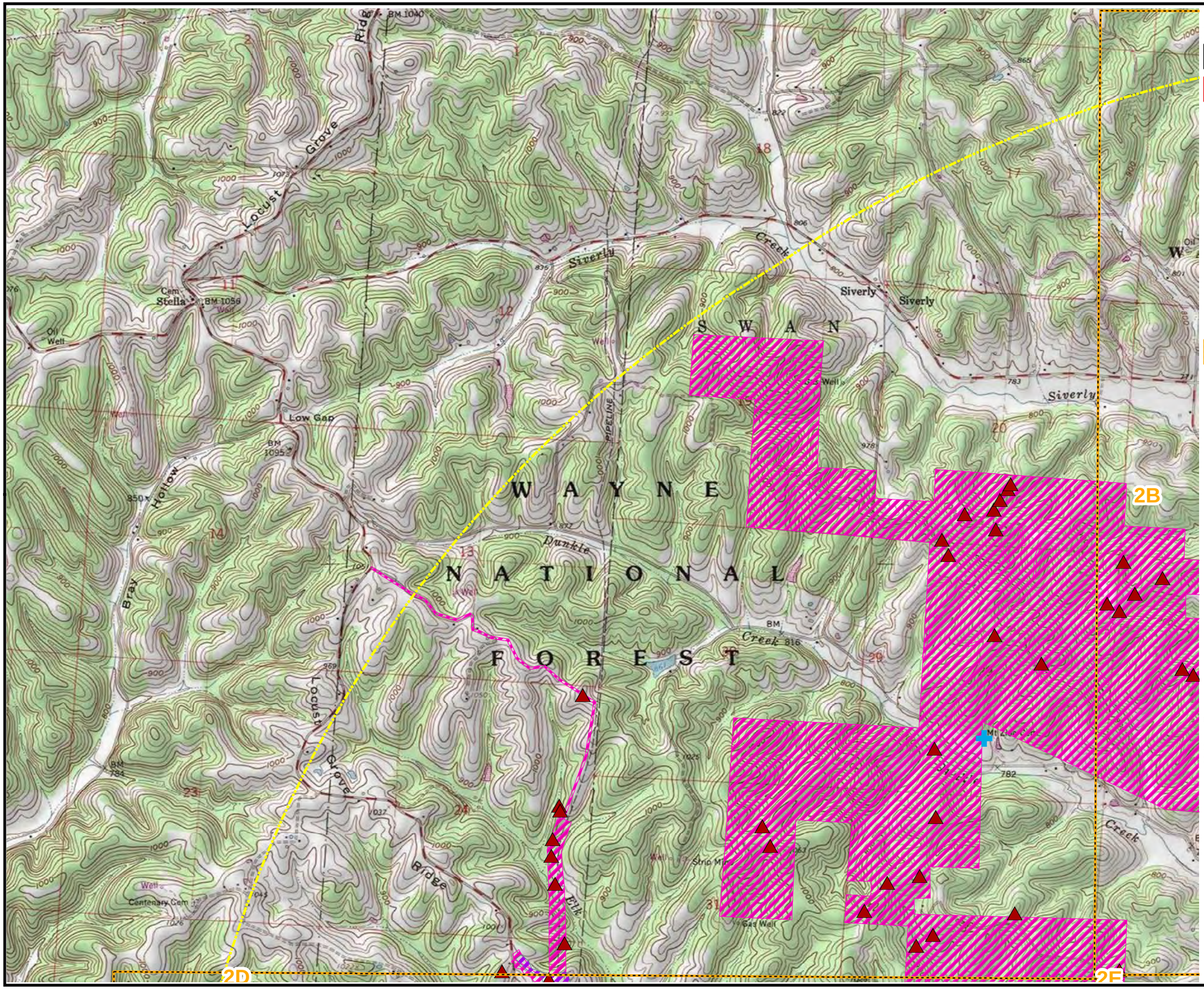
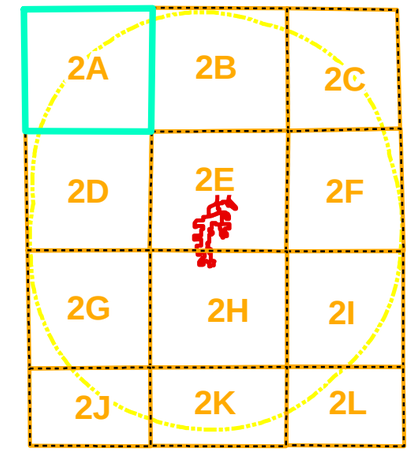


Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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1 " = 2,000 '

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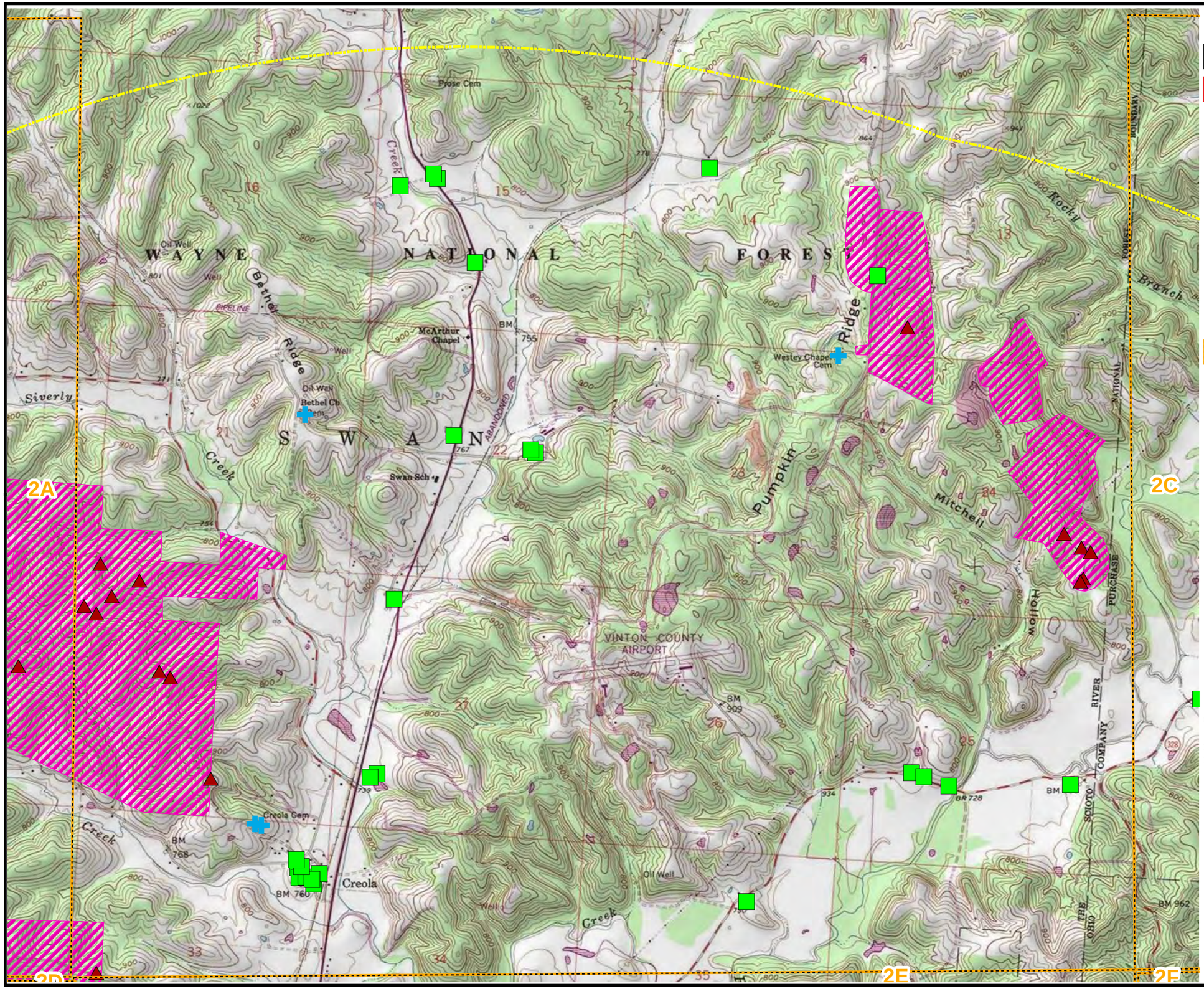
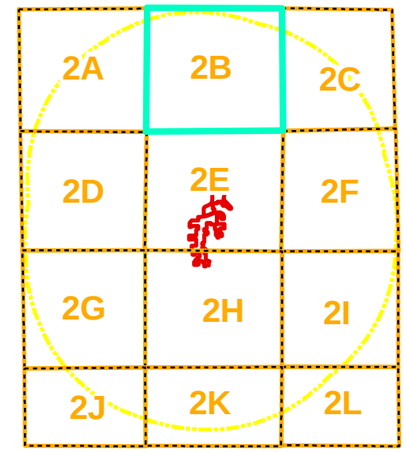


Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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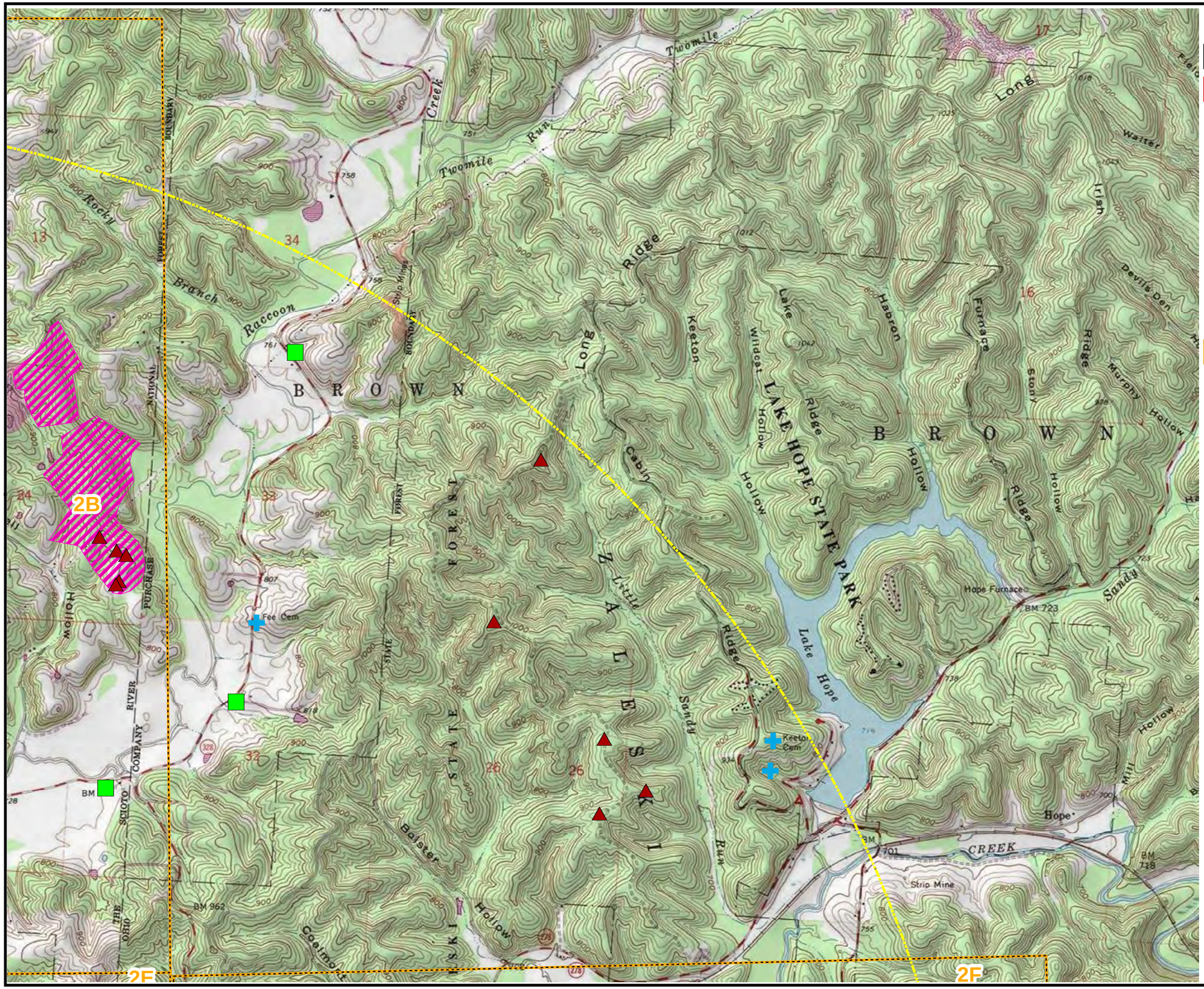
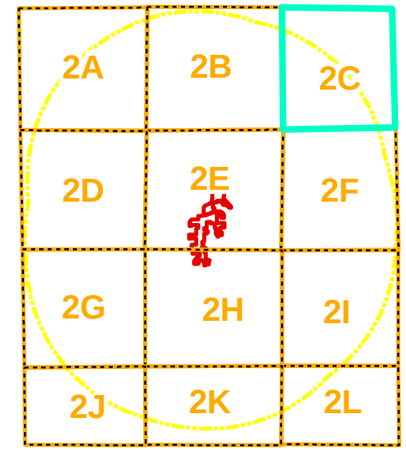


Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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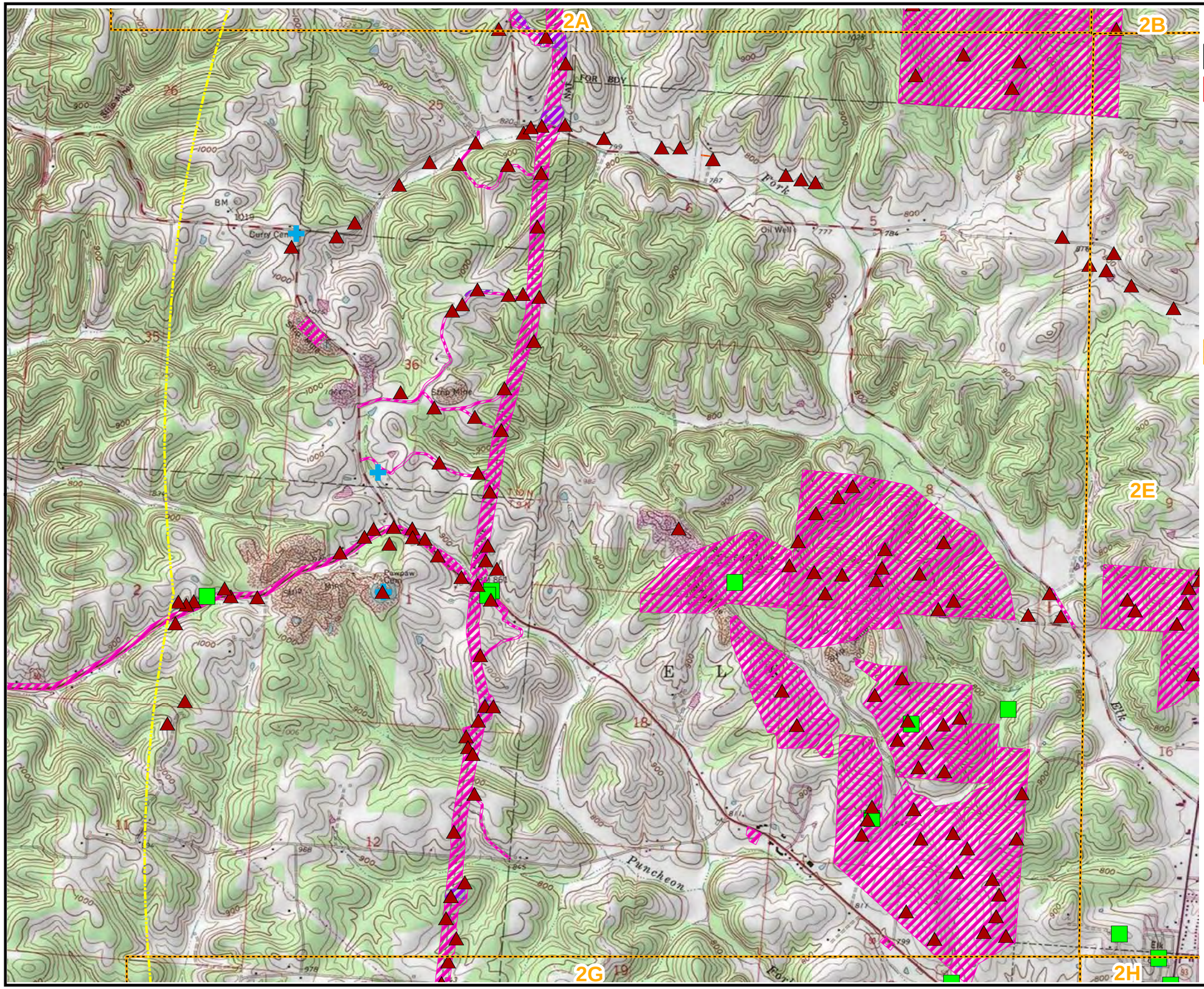

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- Project Area
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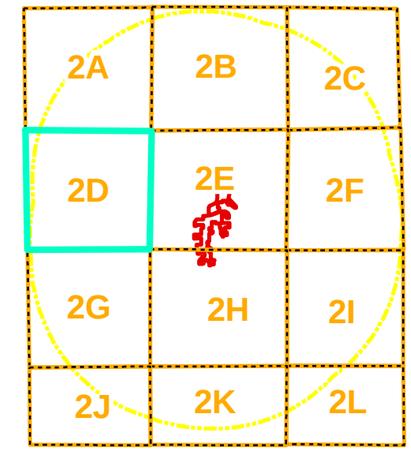
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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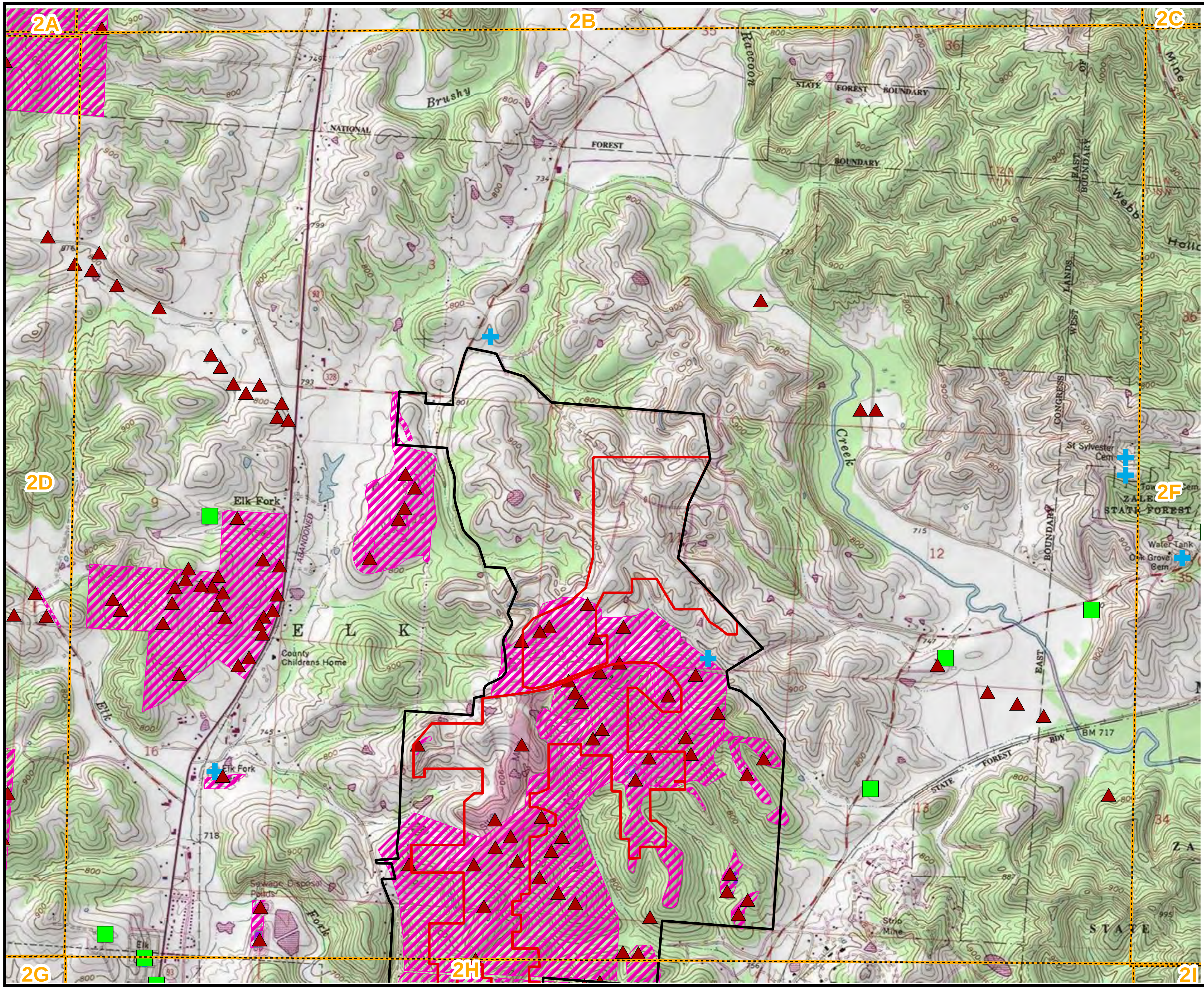

Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
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- Phase 1
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- Phase 3
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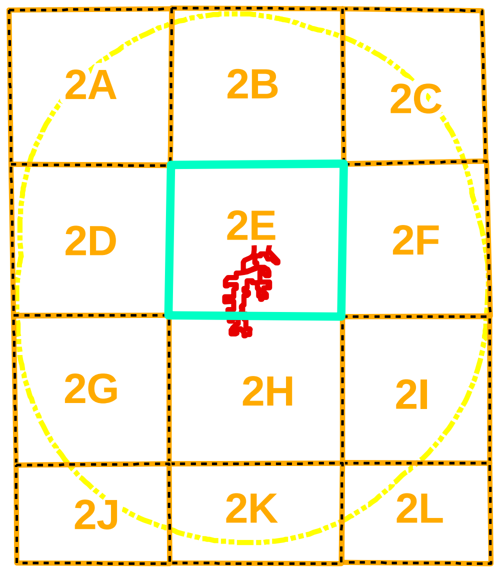

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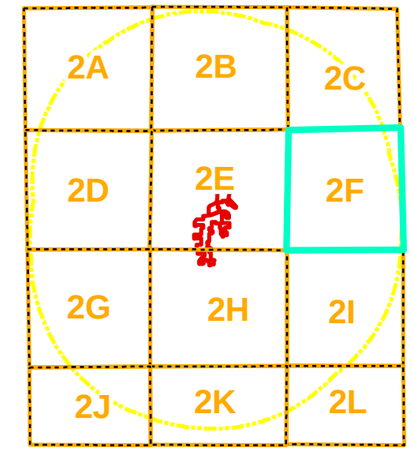
Map Rotation: 0

Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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DATE:	JUNE 2017		

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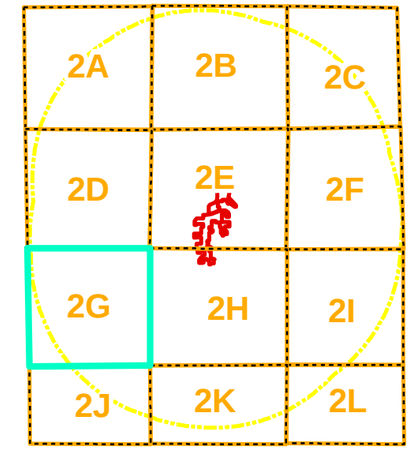
Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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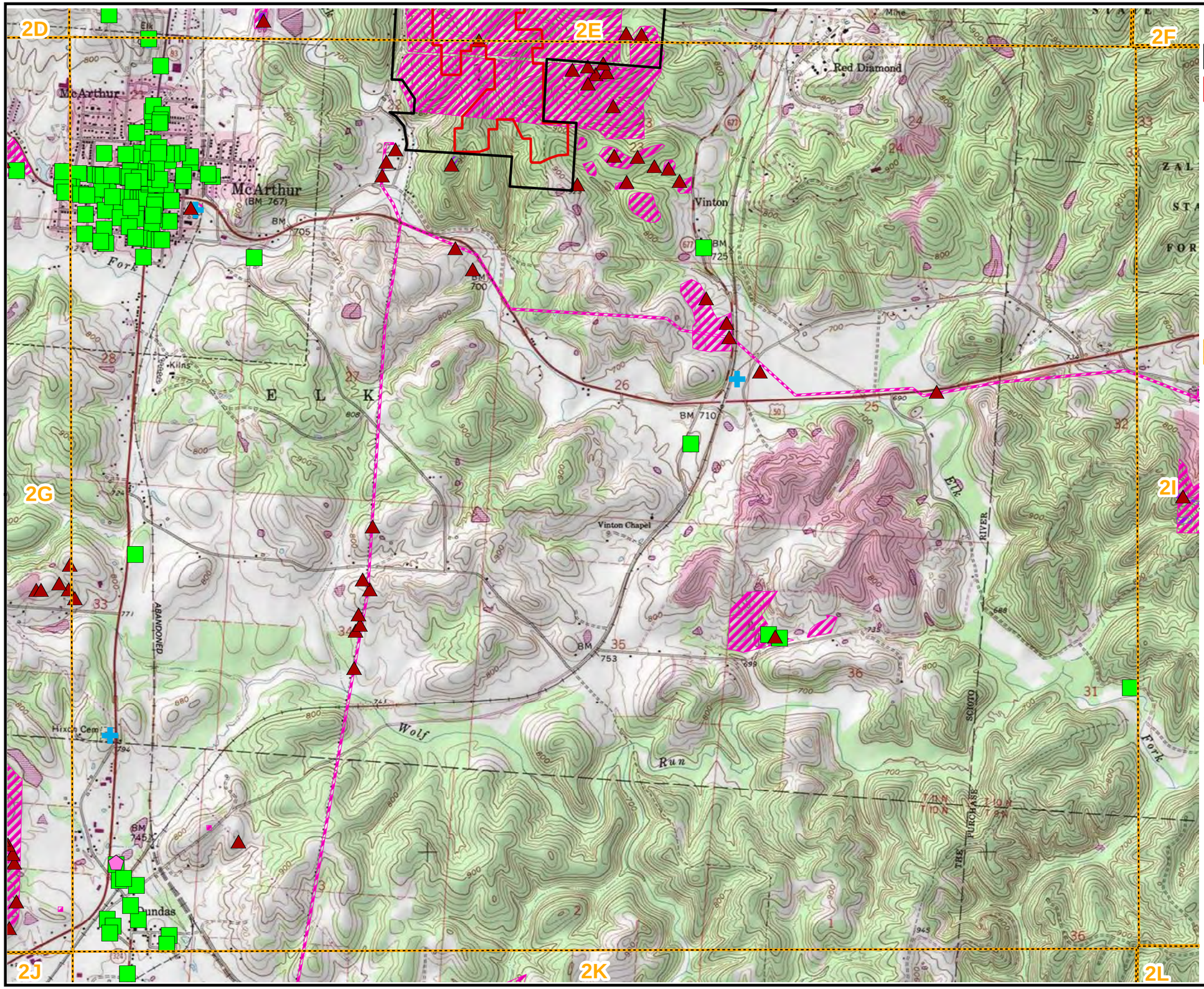

Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
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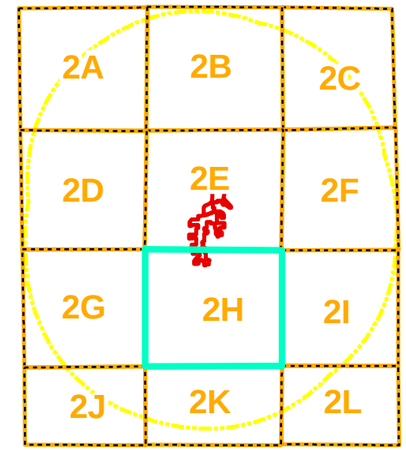

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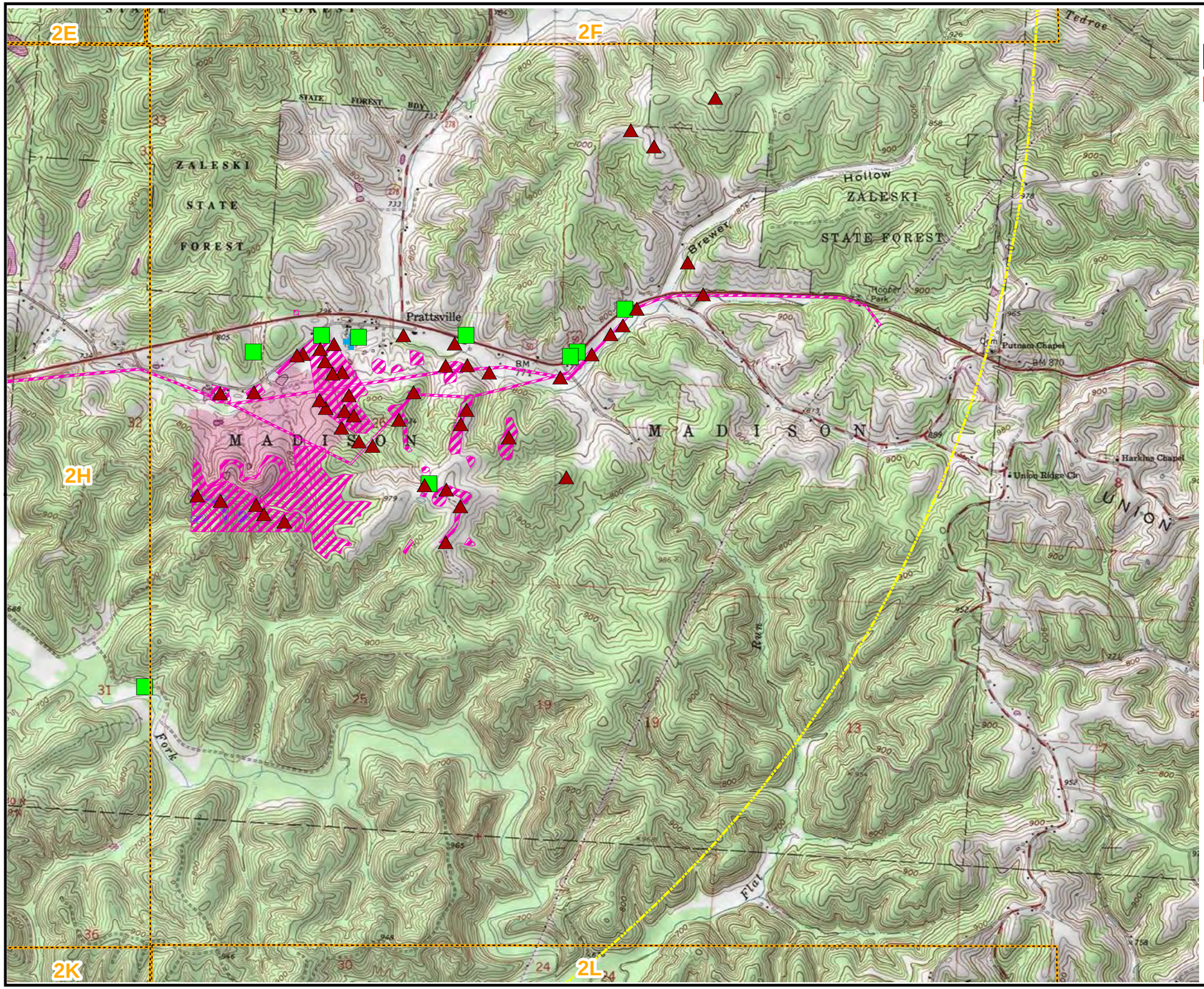
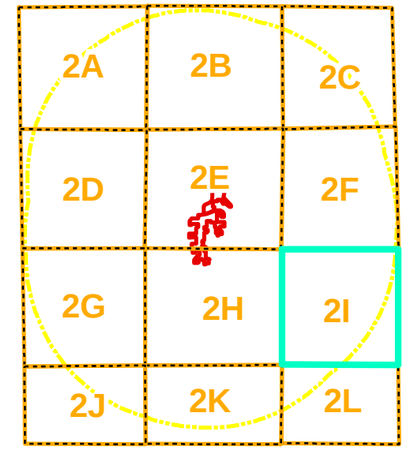


Legend

- Project Area
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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PROJECT:

VINTON SOLAR ENERGY, LLC
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:

USGS TOPOGRAPHIC MAP
5 MILE RADIUS OF NR DETERMINATIONS OF ELIGIBILITY, ARCHAEOLOGICAL SITES, HISTORIC STRUCTURES, OGS CEMETERIES, AND PHASE 1, 2 AND 3 SURVEYS

DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
CHECKED BY:	J.WHITTLE		**2 - 2I**
APPROVED BY:	M.SPONSLER		
DATE:	JUNE 2017		

TRC
921 Eastwind Drive, Suite 122
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FILE NO.: Figure 2 24K Vinton.mxd

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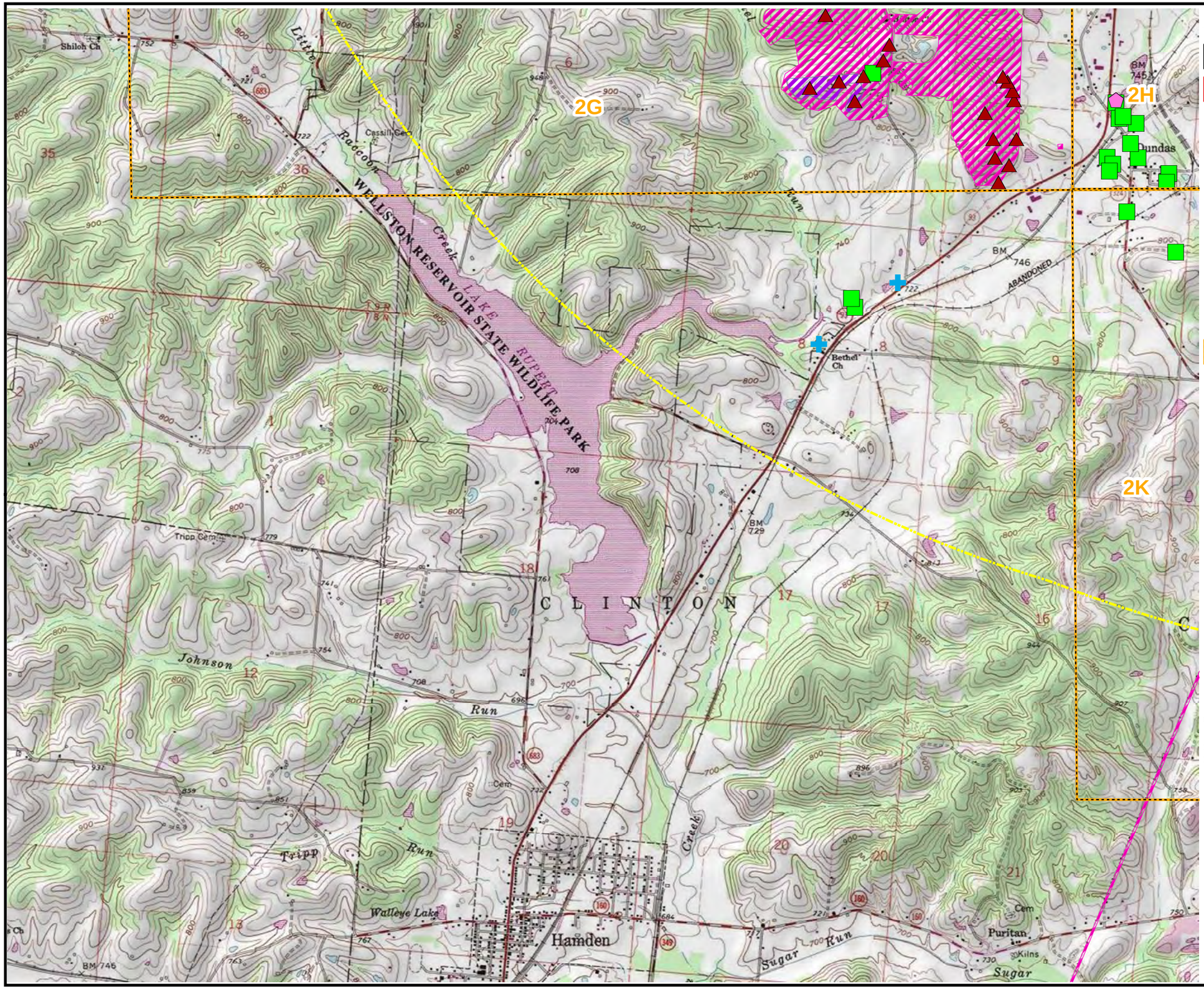

Legend

- Project Area
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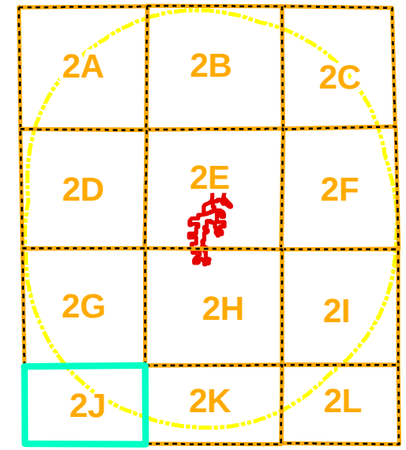

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PROJECT:
VINTON SOLAR ENERGY, LLC
VINTON SOLAR ENERGY CENTER PROJECT
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DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
CHECKED BY:	J.WHITTLE		
APPROVED BY:	M.SPONSLER		**2 - 2J**
DATE:	JUNE 2017		

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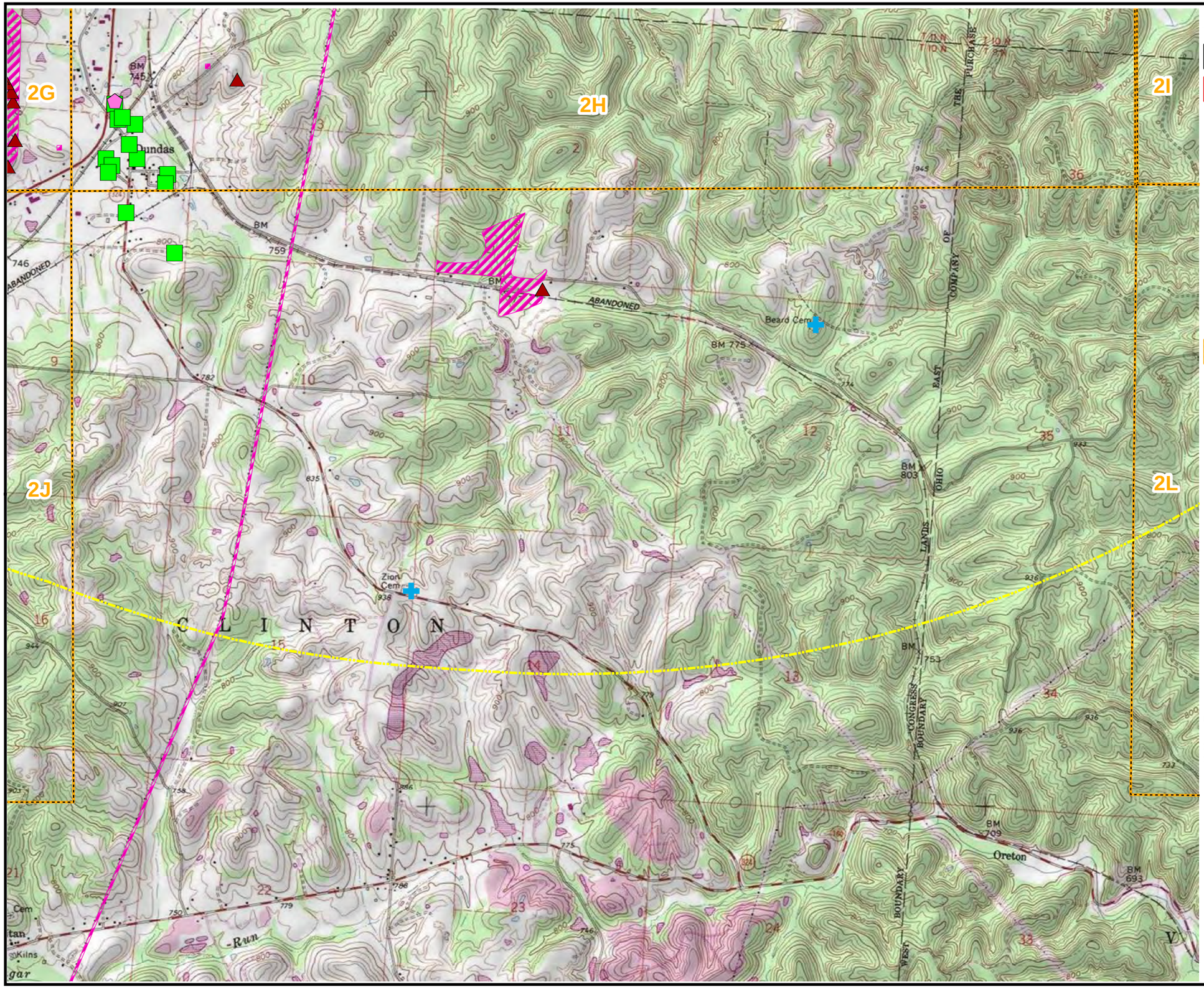

Legend

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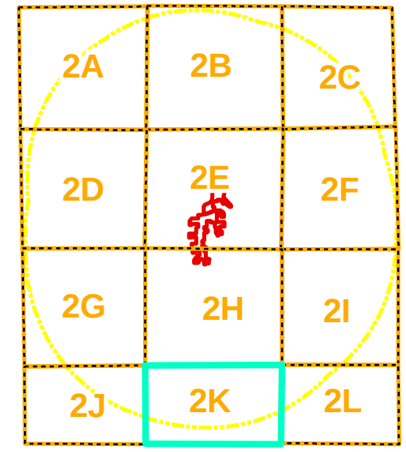
- Area of Potential Effects (APE)
- NR Determinations of Eligibility
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- Index Grid



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PROJECT:

VINTON SOLAR ENERGY, LLC
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:

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DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
CHECKED BY:	J.WHITTLE		**2 - 2K**
APPROVED BY:	M.SPONSLER		
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TRC - GIS

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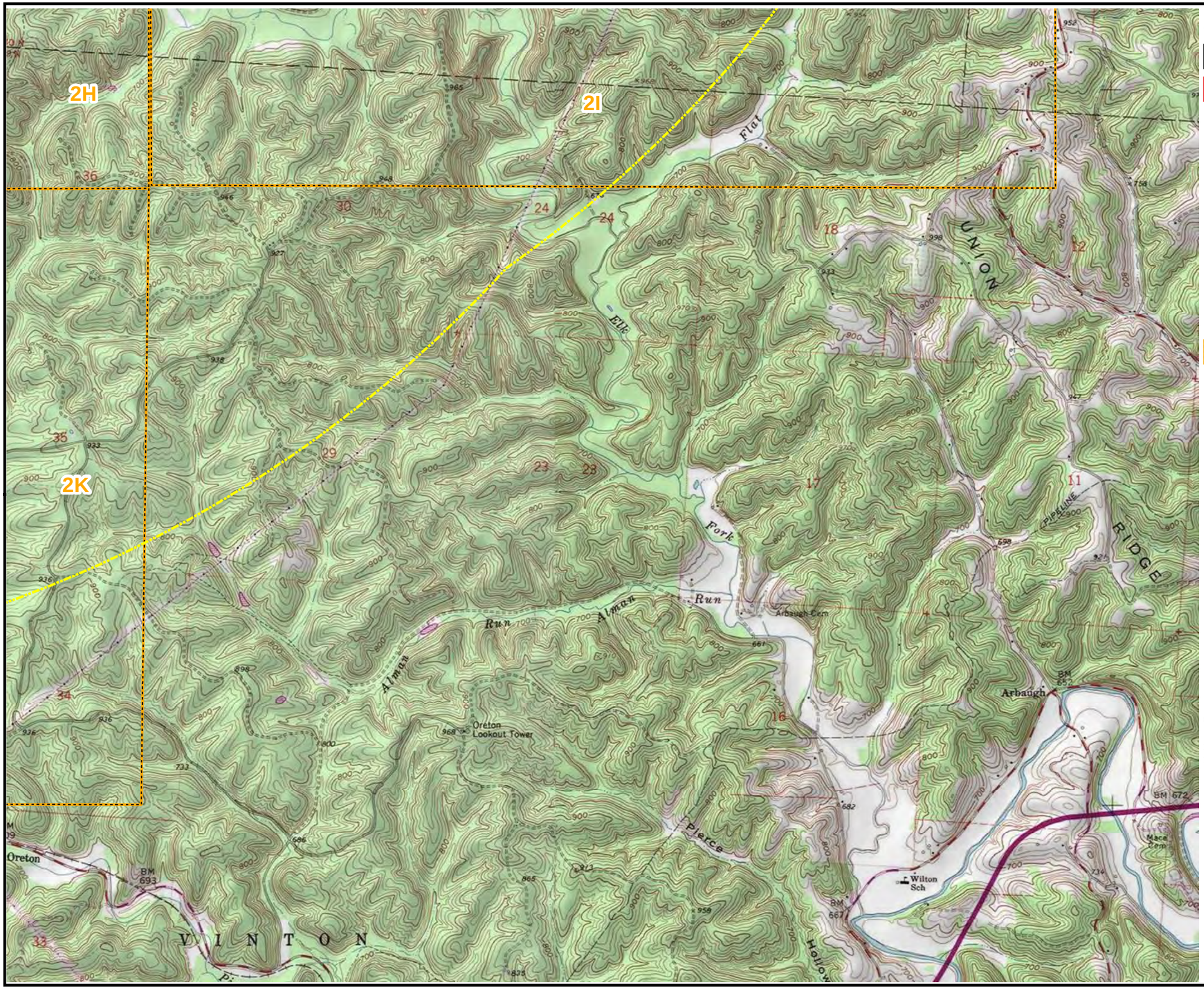

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- Project Area
- Area of Potential Effects (APE)
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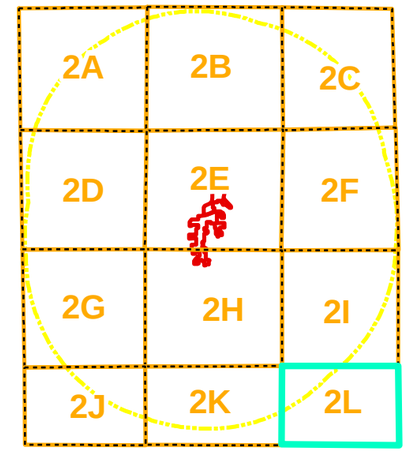

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PROJECT:

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FILE NO.: Figure 2 24K Vinton.mxd

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Coordinate System: NAD 1983 CORS96 StatePlane Ohio South FIPS 3402 Ft US (Foot US)
Map Rotation: 0

Legend

- Area of Potential Effects (APE)
- Project Area
- One Mile Buffer

Historic Structures

- 1 = VIN0009407
- 2 = VIN0008807
- 3 = VIN0001607
- 4 = VIN0001707
- 5 = VIN0010107
- 6 = VIN0023907
- 7 = VIN0024007
- 8 = VIN0024207

Cemeteries

- 1 = 12106
- 2 = 12112
- 3 = 12107

N

0 1,500 3,000 Feet

1 " = 3,000 '

1:36,000

PROJECT:
VINTON SOLAR ENERGY, LLC
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:
USGS TOPOGRAPHIC MAP
HISTORIC STRUCTURES AND CEMETERIES

DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
CHECKED BY:	J.WHITTLE		3
APPROVED BY:	M.SPONSLER		
DATE:	JUNE 2017		

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FILE NO.: Figure 3 Vinton.mxd

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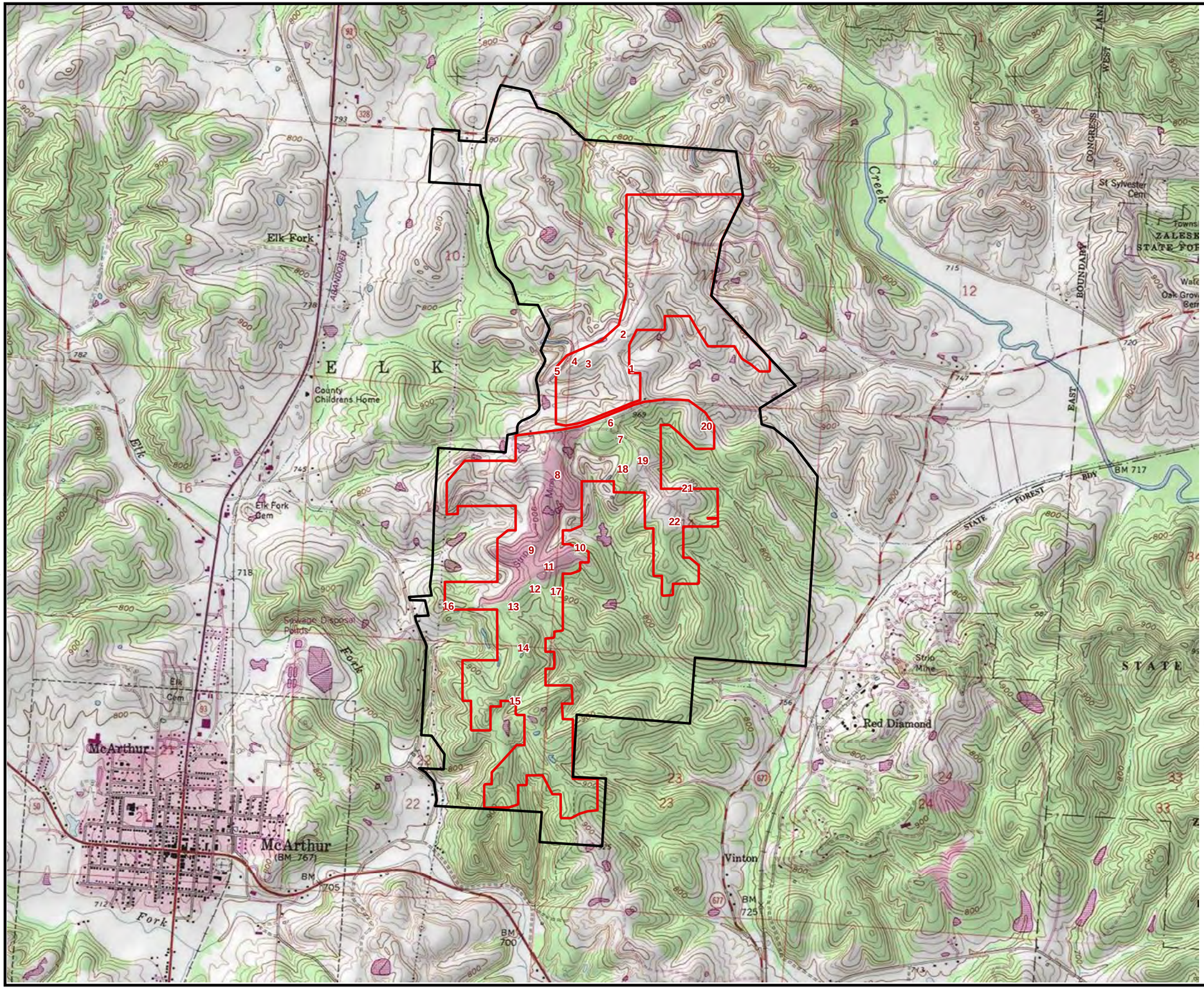

Legend

- Area of Potential Effects (APE)
- Project Area

Archaeological Sites

- 1 = VI0164
- 2 = VI0165
- 3 = I0166
- 4 = VI0167
- 5 = VI0168
- 6 = VI0362
- 7 = VI0363
- 8= VI0364
- 9 = VI0365
- 10 = VI0367
- 11 = VI0369
- 12 = VI0370
- 13 = VI0371
- 14 = VI0372
- 15 = VI0373
- 16 = VI0375
- 17 = VI0378
- 18 = VI0382
- 19 = VI0495
- 20 = VI0510
- 21 = VI0513
- 22 = VI0514

N

0 1,000 2,000 Feet

1 " = 2,000 '

1:24,000

PROJECT:

VINTON SOLAR ENERGY, LLC
VINTON SOLAR ENERGY CENTER PROJECT
CONFIDENTIAL BUSINESS INFORMATION

TITLE:

USGS TOPOGRAPHIC MAP ARCHAEOLOGICAL SITES

DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
CHECKED BY:	J.WHITTLE		
APPROVED BY:	M.SPONSLER		4
DATE:	JUNE 2017		

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FILE NO.: Figure 4 Vinton.mxd

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Coordinate System: NAD 1983 CORS96 StatePlane Ohio South FIPS 3402 Ft US (Foot US)
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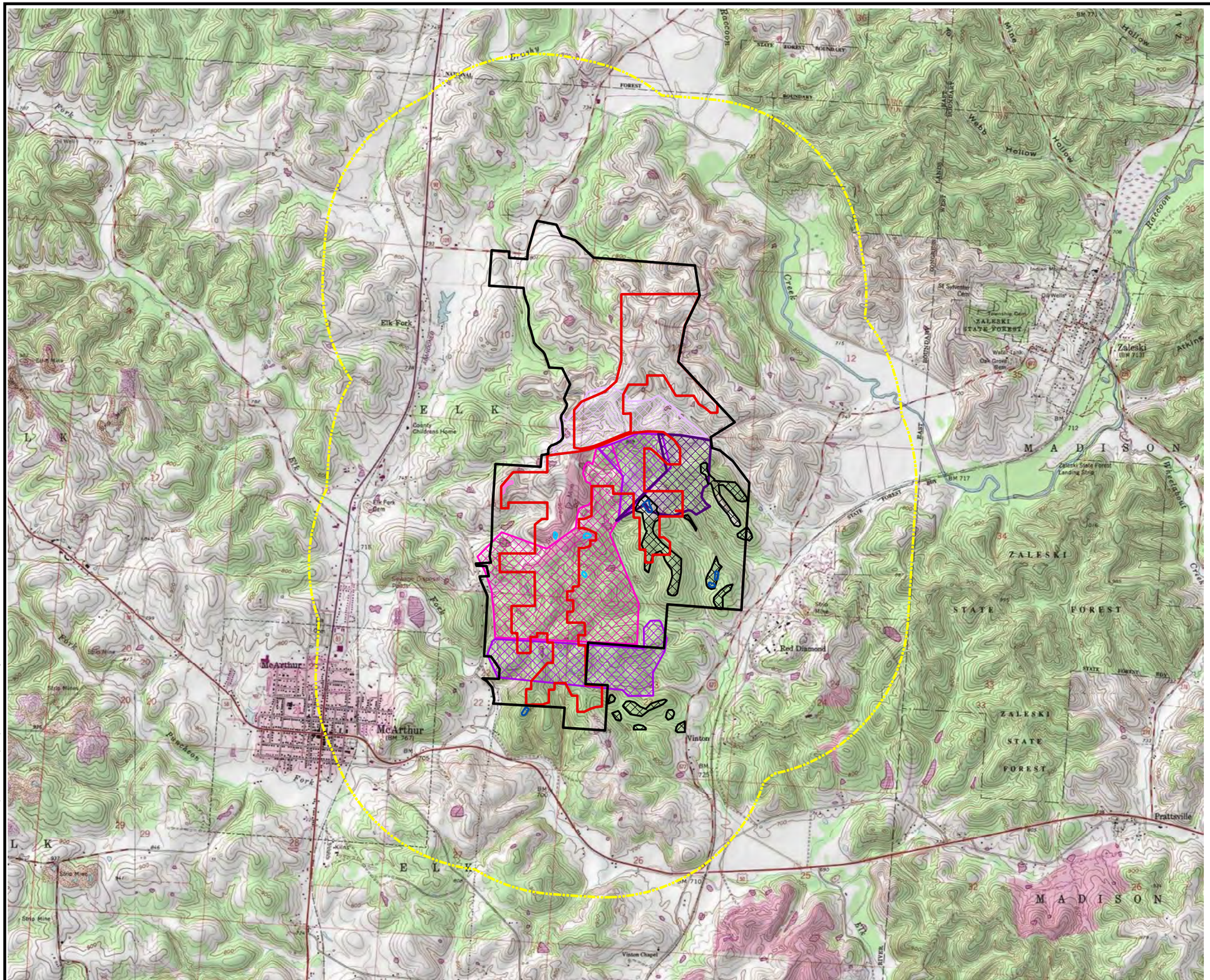

Legend

- Area of Potential Effects (APE)
- Project Area
- One Mile Buffer

Phase 1

- 12465
- 12472
- 12484
- 13128
- 13629
- 13992

Phase 2

- 12485
- 14126

N

0 1,500 3,000 Feet

1 " = 3,000 '

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PROJECT:
VINTON SOLAR ENERGY, LLC
VINTON SOLAR ENERGY CENTER PROJECT
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TITLE:
USGS TOPOGRAPHIC FIGURE CULTURAL SURVEY

DRAWN BY:	N.RENAUDIN	PROJ NO.:	274099.0000.0000
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APPROVED BY:	M.SPONSLER		5
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FILE NO.: Figure 5 Vinton.mxd

Exhibit D

Vinton Solar Transmission Line Phase I Cultural Resources Investigation January 2019

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(Counsel of Record)
William V. Vorys (0093479)
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Attorneys for Vinton Solar Energy LLC

Date Filed: February 15, 2019

Phase I Cultural Resources Investigation of the Vinton Solar Energy Center Transmission Line, Vinton County, Ohio.

Prepared For:
Vinton Solar Energy, LLC
One South Wacker Drive, Suite 1800
Chicago, IL 60606

Submitted by:
TRC Environmental, Inc.
1865 Air Lane Drive, Suite 9
Nashville, Tennessee 37210

TRC Project Number: 321839
Date: January 2019

Phase I Cultural Resources Investigation of the Vinton Solar Energy Center Transmission Line, Vinton County, Ohio.

Prepared for:

Vinton Solar Energy, LLC
One South Wacker Drive, Suite 1800
Chicago, IL 60606
Phone: (312) 224-1400

Submitted by:

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Email: jgreene@trcsolutions.com

TRC Project #304083

James N. Greene, MS, RPA, Principal Investigator

Authored by Brenda L. Detty and James N. Greene

January 2019

Management Summary

TRC Environmental Corporation (TRC), under contract to Vinton Solar Energy, LLC (Vinton), conducted cultural resource services for the Vinton Solar Energy Center Transmission Line Project (Project) in Vinton County, Ohio. The Project encompasses approximately 1.45 hectares (ha) (3.5 acres [ac]) of rolling agricultural fields to be used for the right of way for the point of interconnect associated with the proposed Vinton Solar Energy Center.

The Project will include approximately 460 meters (m) [1,525 feet (ft)] of transmission line connecting the proposed Vinton Solar Energy Center facility to the Elk 138 kV substation Point of Interconnect (POI), with a survey corridor width of 30.4 m (100 ft). The Project area has been previously impacted by past surface coal mining activity and extends through areas of excessive slope.

This report details the Phase I Archaeology Survey that TRC performed under the guidelines set by the Ohio Historic Preservation Office's Archaeological Guideline (1994), the Guidelines for Conducting History/ Architecture Surveys in Ohio (Revised 2014), and in consultation with the Ohio State Historic Preservation Office (SHPO) which is housed under the Ohio History Connection (OHC). The investigation was conducted in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 USC § 470), as amended; the Advisory Council on Historic Preservation regulations carried forth in 36 Code of Federal Regulations Part 800 (36 § 800); and Section 149.53 and 149.54 of the Ohio Revised Code. As per the Secretary of the Interior's Professional Qualification Standards (36 CFR § 61), an archaeologist meeting the professional qualification for archaeological investigation oversaw the cultural resource investigation.

The area of potential effects (APE) for direct effects will consist of the 1.45 ha (3.5 ac) of transmission line that will connect the proposed solar facility to the Elk Township Sub-Station. Portions of the Project area have been previously disturbed by coal strip mining. Prior to initiating fieldwork, TRC requested the preliminary records search from the OHC. The purpose of the records search was to identify previously recorded archaeological properties listed in, or eligible for inclusion in the National Register of Historic Places (NRHP). Research revealed that no previously recorded archaeological sites or historic architectural resources are located within the Project APE; however, 368 archaeological resources were previously documented within the 8-km (5-mi) radius of the project location. Of these resources, 39 were identified within a 0.6-km (1-mi) radius of the project footprint, and four of these archaeological sites are located within a 305 m (1,000 ft) buffer study area. Research also indicated that there have been 10 previous archaeology investigations located within a 0.6-km (1-mi) radius of the project area.

From December 11-12, 2018, TRC conducted the Phase I archaeological survey for the Project. The survey followed the field standards for terrestrial Phase I Cultural Resource Survey set by the OHC. There were no cultural resources found, and no sites were documented during this investigation.

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TABLES

FIGURES

1.0 Introduction

On behalf of Vinton, TRC has prepared this Phase I Cultural Resources Investigation report for Vinton Solar Center Transmission Line Project located in Vinton County, Ohio (Figure 1). The Project will be comprised of approximately 460 m (1,525 ft) of transmission line connecting the proposed Vinton Solar Energy Center facility to the Elk 138 kV substation POI. The APE is located within an open pasture previously used for strip mining activities and a steeply sloped tree line, 1.6 kilometers (km) (1 miles [mi]) east of the city of McArthur, Ohio (Figure 2).

This report details the Phase I Archaeology Survey that TRC performed under the guidelines set by the Ohio Historic Preservation Office's Archaeological Guideline (1994), the Guidelines for Conducting History/ Architecture Surveys in Ohio (Revised 2014) and in consultation with the Ohio SHPO which is housed under the OHC. The investigation was conducted in compliance with Section 106 of the NHPA of 1966 (16 USC § 470), as amended; the Advisory Council on Historic Preservation regulations carried forth in 36 Code of Federal Regulations Part 800 (36 § 800); and Section 149.53 and 149.54 of the Ohio Revised Code. As per the Secretary of the Interior's Professional Qualification Standards (36 CFR § 61), an archaeologist meeting the professional qualification for archaeological investigation oversaw the cultural resource investigation.

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This Phase I archaeological survey was conducted on December 11-12, 2018. James Greene M.A, RPA, served as the Principal Investigator. Field work was conducted by James Greene and Amanda Garvin. Brenda Detty authored the report. All mapping and graphics were prepared by Rebecca Spring.

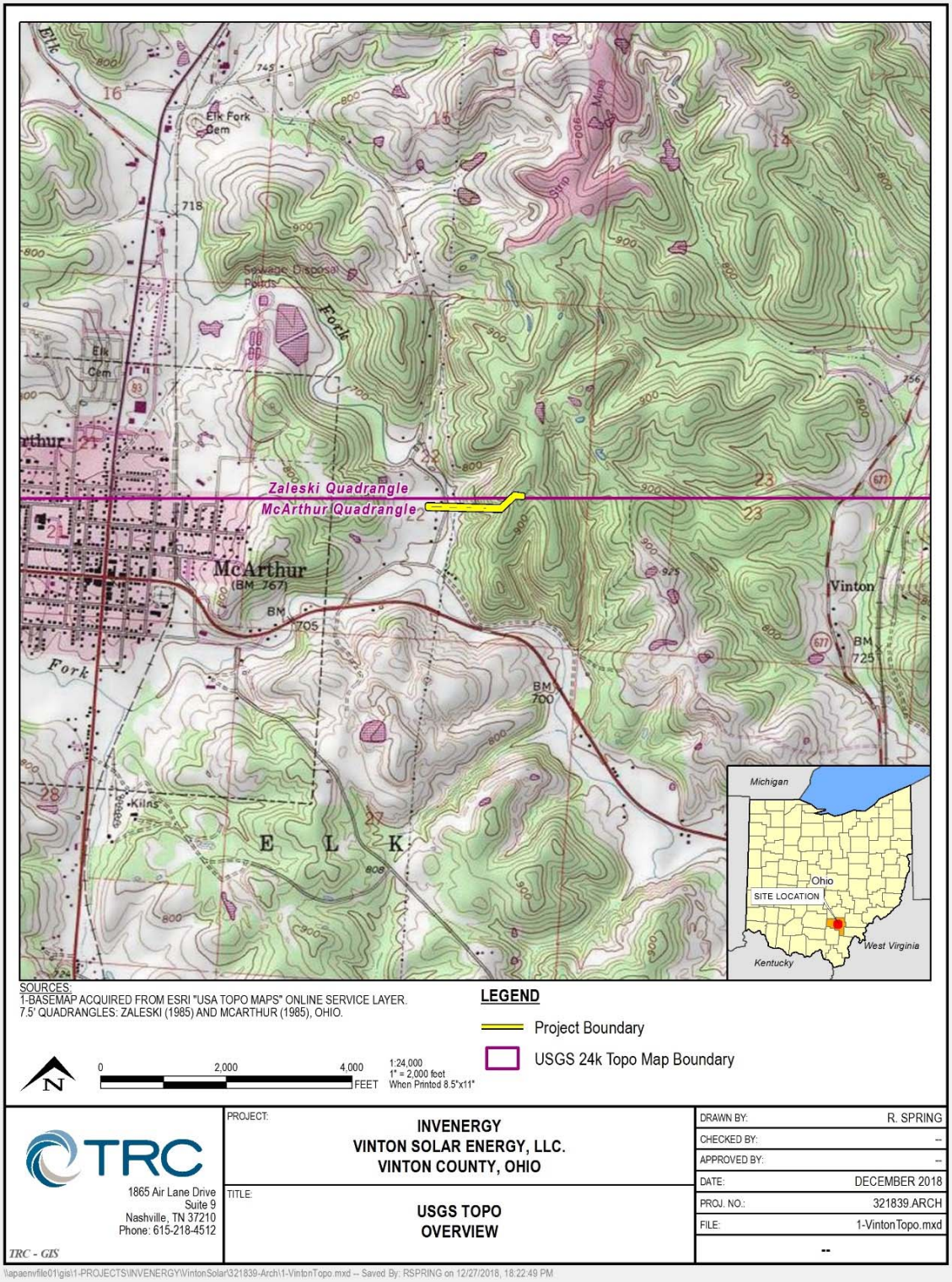

Figure 1. Project location.

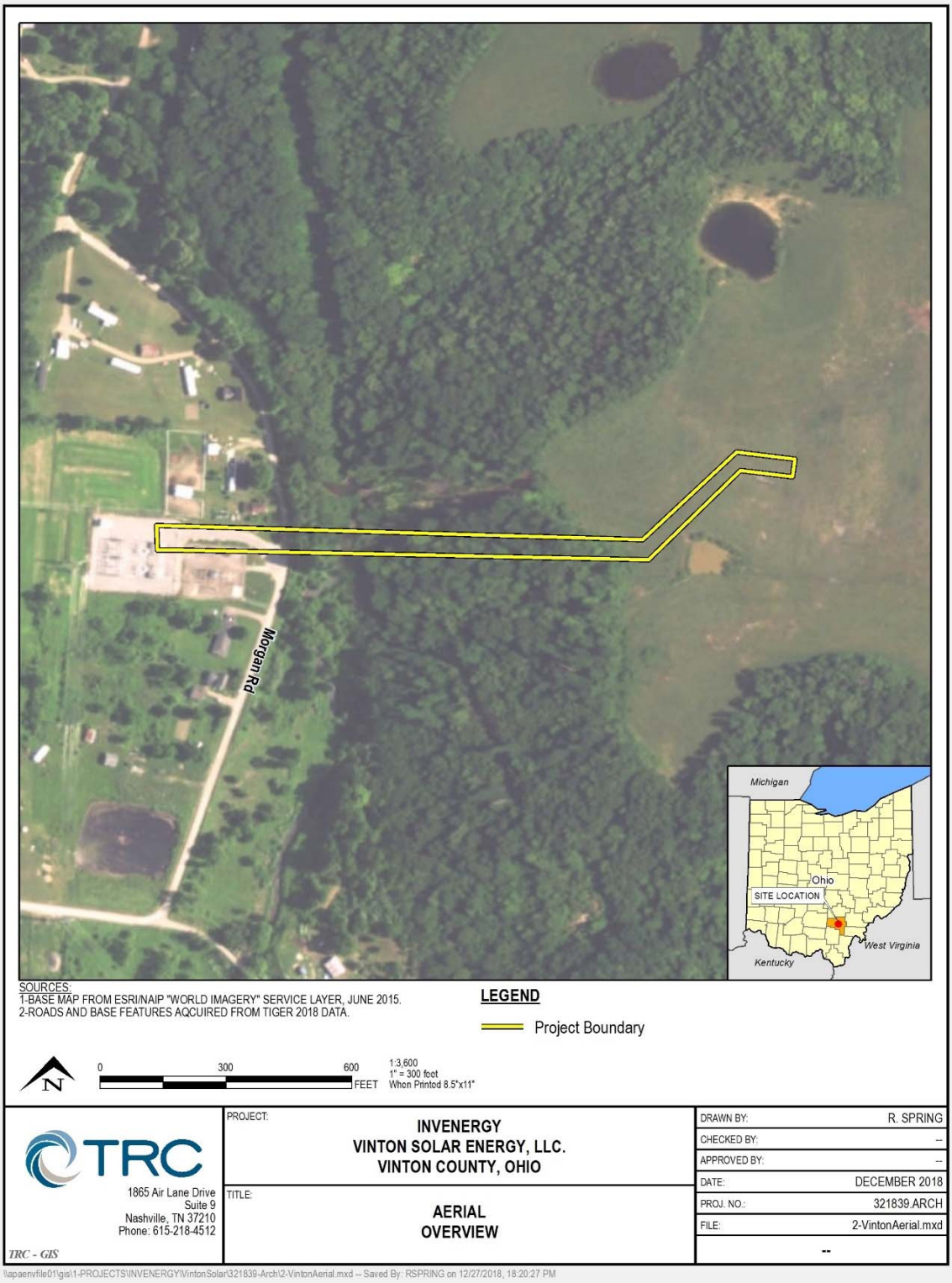

Figure 2. Aerial of Project APE.

2.0 Environmental Setting

2.1 Project Setting

The Project area lies on 1.45 ha (3.5 ac) of wooded land situated between the Elk 138 kV substation to the west and proposed Vinton Solar Center to the east, approximately 1.6 km (1 mi) east of the city of McArthur, Ohio (Figure 3). Elk Fork Creek flows generally in a north-south direction cutting perpendicularly through the APE. The project area has a predominantly hilly terrain, with some open pasture areas.

2.2 Physiography and Hydrology

The APE is located in the unglaciated Western Allegheny Plateau of the Appalachian Plateaus geomorphic province (Figure 4). This area can be further described as the Muskingum-Pittsburgh Plateau, defined as a dissected plateau with broad valleys containing outwash terraces and tributaries with lacustrine terraces. Relief ranges from moderately high to high with elevations of 300 to 600 ft (91 to 183 m) (Ohio Division of Geological Survey 1998). Some lands were flat and fertile enough for agricultural activity, others were forested and used for logging, and many have continually been strip mined for coal, and natural gas. Drainage patterns in this area tend to be dendritic. Dominant geomorphic processes include mass wasting, karst solution, and fluvial erosion, transport, and deposition (Forest Service 2018).

Vinton County is an unglaciated part of the Appalachian Plateaus; however, its landscape was drastically affected by the presence of glaciers in other areas of Ohio. Advancing ice sheets blocked major streams and their tributaries, which caused lakes to form in the valleys. Subsequently, the amount of deposition in those valleys also changed. At present, the master drainage system leads to the Ohio River after a series of complicated rearrangements (Forest Service 2018). The province is characterized by a high volume of streams, including Elk Fork, which flows into the Ohio River, and is ultimately a part of the Mississippi River watershed.

2.3 Geology and Soils

Ohio is underlain by bedrock of sedimentary origin; moving east across the state progressively younger Paleozoic era Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, and Permian surface strata are present (Bownocker 1992). The Project area is in the portion of Vinton County that is underlain by Mississippian [322-359 million years ago (mya)] and Pennsylvanian (307-318 mya) siltstones, shales, sandstones, coals, and claystones (Forest Service 2018; Ohio Division of Geological Survey 2006).

Soil units that occur directly within the APE include: Bethesda silt loam (20.7 percent of the APE), Omulga silt loam (8.6 percent of the APE), Stokly-Philo silt loams (18.7 percent of the APE), Steinsburg-Gilpin association (24.5 percent of the APE), and Wharton-Latham silt loams (27.6 percent of the APE) (NRCS 2018). Bethesda silt loams, with 8 to 25 percent slopes, are found in hills and mountains, commonly where surface mining, spoil banks/piles, and reclaimed land tend to be. Omulga silt loams occur on terraces and are a part of valley fills from an abandoned preglacial drainage system of the Allegheny Plateau. They are on 2 to 6 percent slopes in the Project area. Stokly-Philo silt loams have components that occur very deep in floodplains that are frequently flooded on 0 to 3 percent slopes. Steinsburg-Gilpin soils in the APE are very steep located on uplands and formed of residuum parent materials.

Wharton-Latham silt loams are fine, mesic Aquic Hapludults, and are found on 25 to 40 percent slopes in the APE. Its parent material is a residuum (California Soil Resource 2018).

2.4 Modern Climate

Vinton County is a part of the Hot Continental Regime Mountains ecoregion and can be further subdivided into the Southern Unglaciated Allegheny Plateau Region (Bailey 1994; Forest Service 2018). Temperatures in this region average 52 degrees Fahrenheit (F) with a growing season (frost-free period) of 120 to 180 days. The average precipitation for this area averages 90 to 115 cm (35 to 45 in) during the summer, winter, and spring seasons. Summers are characterized as dry with low humidity, and rain on snow is common during the winter and early spring (Forest Service 2018)

2.5 Flora and Fauna

Vegetation in this region is primarily classified as forested, including mixed mesophytic, Appalachian, mixed oak, oak-hickory-chestnut, oak-pine, hemlock, beech, floodplain, and swamp forests. The wildlife in this region is highly diversified. Mammalian populations include white-tailed deer, gray fox, woodchuck, opossum, gray squirrel, white-footed mouse, and the short-tailed shrew. Bison, elk, black bear, mountain lion, timber wolf, and bobcat were historically prevalent, but have since been eradicated except for small populations of black bear and bobcat. Wild Turkey, ruffed grouse, barred owl, pileated woodpecker, eastern phoebe, blue-gray gnatcatcher, Acadian flycatcher, white-eyed vireo, ovenbird, Kentucky warbler, yellow-breasted chat, and summer tanager are the common birds found in the section. Reptiles and amphibians that typify this region include the red-spotted newt, dusky salamander, fence lizard, American toad, wood frog, box turtle, snapping turtle, painted turtle, ringneck snake, northern water snake, black rat snake, copperhead, and rarely the timber rattle snake, and green salamander. The Ohio River and lower portions of its tributaries contain fish such as the black bass, sunfish, sauger, catfish, hybrid saugeye, and striped bass. Man-made reservoirs tend to contain largemouth bass, bluegill, channel catfish, and crappie. Mussels were historically present in the region, but many populations are on State and Federal threatened/endangered species lists (Forest Service 2018).

2.6 Paleoenvironment

Human occupation of North America spans two geological epochs, and because understanding human/environmental interaction is critical to an overall understanding of cultural adaptations, it is necessary to consider changes in climatic and ecological conditions. The New World is known to have been occupied from the latter part of the Pleistocene (glacial) epoch into the present Holocene epoch, spanning 12,000 years. The transition between these epochs itself is particularly important because it is at this temporal threshold that some of the most dramatic changes in environmental and ecological conditions took place.

During the Pleistocene, forests of the region were predominantly spruce-pine, with some mixed hardwood (Wesler et al. 1981; Whitehead 1973; Wright 1981), but it is probable that the overall plant and animal communities were more complex than at present and were composed of a combination of modern and now-extinct species (Graham and Lundelius 1984; Kelly and Todd 1988). In general, regional environments seem to have been less homogeneous than the modern eastern woodlands. The glacial terrain was probably characterized by relatively cool summers and mild winters.

The patchy, park-like vegetation of the full glacial period was replaced with northern hardwoods during the late glacial period 15,000–10,000 years ago. The climate became harsher, with more extreme winter temperatures. This period of dramatic ecological change coincided with the earliest movement of human groups into the eastern United States. The most dramatic ecological change at this time involved extinction of numerous species. Meltzer and Mead (1983) suggest that by 10,000 B.P. as many as 35 genera of mammals may have already vanished from North America.

The modern faunal and floral communities of the region were becoming established as early as 12,500 B.P. (Delcourt 1978). Spruce-Pine forest yielded to modern Oak-Hickory forest by 8000 B.P. Pleistocene megafauna gave way to deer and smaller mammals as a result of the changing environment. These floral and faunal changes had a marked effect on the cultural adaptations made through prehistory by the regional inhabitants. Those adaptations are reflected in the known artifact assemblages for each temporal period.

Figure 3. View of Project Area facing south.

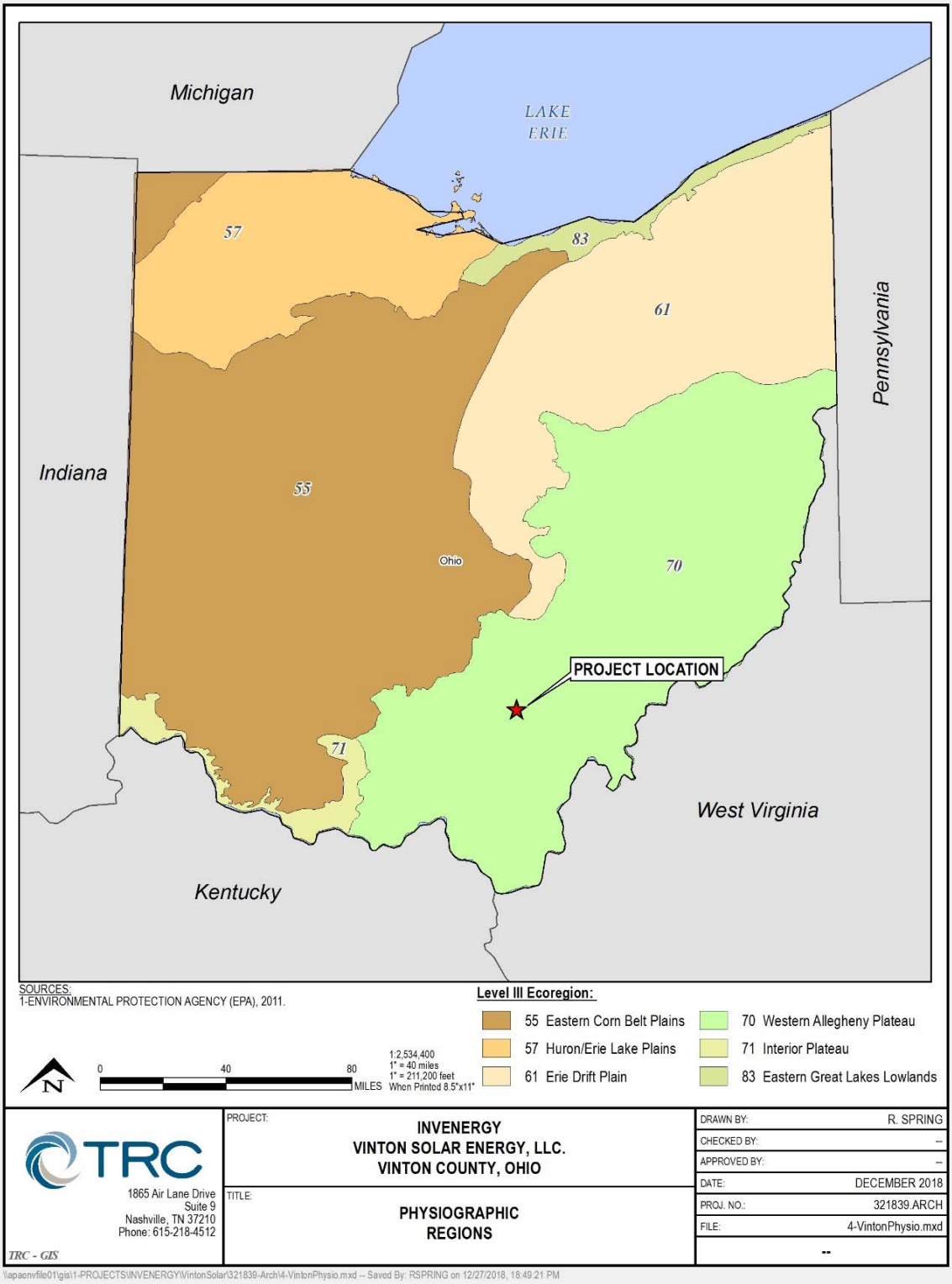

Figure 4. Physiographic map of Ohio with Project location.

3.0 Cultural Background

3.1 Prehistoric Overview

Prehistoric occupation of the region surrounding the Project area is likely to have occurred continuously, beginning as early as 16,000 B.P. Over the course of this vast period, both major and minor changes have taken place in the technology, settlement patterns, subsistence practices, population density, social organization, ideology, and other aspects of human behavior. The following discussion provides a general overview of the currently accepted trajectory of human development in the region, as documented in the archaeological record of southeastern Ohio, as well as Ohio as a whole. For organizational purposes, the prehistoric overview is divided into four prehistoric periods: Paleoindian, Archaic, Woodland, and Mississippian. The description of these cultural sequences and their sub-periods are based largely on changes in temporally diagnostic artifacts, subsistence, settlement, and mortuary patterning. These periods are discussed below and are followed by a summary of the Protohistoric and Historic Era in Vinton County, Ohio.

3.1.1 Paleoindian (16,000 – 9,500) B.P.

The movement of prehistoric peoples into western Ohio was restricted by the receding of the Wisconsin Glacier. At present, very few sites have yielded unequivocal evidence of human occupation south of the Wisconsin ice sheets prior to ca. 14,000 B.P. There may be older sites prior to this date, but there is a lack of technological evidence or a misinterpretation of previously found cultural materials. Nearby in western Pennsylvania, however, exists a site that has been radiocarbon dated to ca. 16,000 B.P. Meadowcroft Rock Shelter also has associated stone tools that are not similar to tools that were thought to have been the first human occupants in North America. Adovasio believes the individuals using this rock shelter came before these Clovis peoples but may not necessarily be their ancestors (Adovasio 1992).

In Ohio, the first human occupation in the region occurs around or shortly after this time and is characterized by fluted, lanceolate Clovis and Clovis-variant projectile points. Most of our knowledge of the Paleoindian occupation of the region has come from surface finds of isolated fluted points. Few sites of this period with extensive artifact assemblages have been identified or intensively investigated. The closest site to the Project area is the Sandy Springs in Adams County, Ohio (Converse 2003). Other well documented sites of this time period in Ohio include Sheriden Cave, Mielke Site, Nobles Pond in Stark County, Paleo Crossing in Medina County and the Welling Site in Coshocton County (Brose 1994; Prufer and Wright 1970; Seeman 2005; Seeman et al. 1994;).

Sandy Springs is a well-known Paleoindian site, located approximately 65 miles southwest of the Project area, in Adams County. Unfortunately, no professional investigations or reports have been completed within the area. All artifacts were found on the surface by amateur/recreational collectors and include varying Paleo projectile point styles, a variety of stone tools, and debitage. Due to the lack of investigations surrounding the site, there are no radiocarbon dates or other information available at present (Converse 2003).

The Sheriden Cave is an important Pleistocene site located one County east of the APE. Within a thirty-foot sink hole at this site are Pleistocene animal bones like peccary, stag moose, giant beaver, bear, and caribou. Among the bones were a uniface blade, small fluted point, and cut bones that range from 10,500-11,000 BP (Converse 2003). Closer to the Project area is the Mielke Site in Shelby County, Ohio. This site contained fluted points and uniface blades made of Harrodsburg chert from Harrison County,

Indiana. The artifact assemblage from this site included more than 40 Paleo endscrapers, gravers and tools. It is thought that the Mielke people migrated with these tools from southern Indiana (Converse 2003). It is also believed that the Mielke site may be the oldest habitation in the state

The Nobles Pond Site is one of the most extensive Paleoindian sites in eastern North America. The site can be dated to circa 11,000 to 10,800 B.P. and appears to have been a large, multi-activity base camp, encompassing about 8.1 ha (20 ac) and composed of a minimum of 10 distinct artifact concentrations that are situated on a series of slight ridges on glacial outwash terraces (Seeman 2005). To date, Nobles Pond has yielded 43 finished diagnostic early Paleoindian fluted points of the "Gainey style," two miniature fluted points, two later "Crowfield" fluted points, 1707 trianguloid end scrapers, and a variety of other tools associated with the Paleoindian occupations (Seeman 2005).

The Paleo Crossing Site (33ME274) may be one of the earliest Paleoindian manifestations in the Great Lakes region, dating to circa 11,100 to 10,800 B.P. (Brose 1994). A large number of Clovis and Clovis-like points have been unearthed. Charcoal from the bottom of a pit feature yielded a radiocarbon date of 13,100±100 B.P. Interestingly, over 65 percent of the chert at Paleo Crossing was Wyandotte chert and Dongola or Hopkinsville flint from quarries and outcrops in the region of the lower Ohio River Valley between Clarksville, Indiana, and Hopkinsville, Kentucky, approximately 311 miles south of the Paleo Crossing site (Aument et al. 1997).

The Welling Site, is one of the first Ohio Paleo Site to be investigated (Converse 2003). The site was discovered when a number of fluted pointed were unearthed near the village of Nellie, Ohio. It was located near the Coshocton flint quarries; a quarrying and manufacturing location. The Welling assemblage includes a number of Paleo tools that revealed an understating of the technology used in producing fluted points (Converse 2003:27).

The Paleoindian period can be further divided into the Late Paleo period, occupied by a group known as the Plano people. This time period is characterized by the unfluted Lanceolate and Stemmed Lanceolate forms, as well as semi-permanent settlements. Additionally, these Lanceolate forms were made of a much lower chert quality when compared to earlier fluted points (Converse 2003).

Plano sites are common in many parts of Ohio. This includes the northern Willard Marsh and Sawmill sites, central Florence, Betts Farm, and Stringtown sites, and western McConnell, Globe Hill, East Steubenville, and Eschbaugh (Converse 1982; Converse 1991; Converse 1993; Converse and Good 1974; Prufer 1963; Smith 1960). The sites closest to the Vinton County area are the Stringtown and Eschbaugh sites.

Stringtown, located in Franklin County, Ohio, is a significant site producing surface finds of greater than 250 whole and fragmented Lanceolate and Stemmed Lanceolate points (Converse and Good 1974). From this site the distinguishable Stringtown Points were described; these were Stemmed Lanceolates having stems with a squared design and spurs/projections at each corner. Converse suggests that this may be an indication of desire for better hafting technology (Converse 2003).

The closest site to the APE is the southeastern Eschbaugh site in Washington County, Ohio (Converse 1982). A cache of 200 Lanceolate points and 1 Stemmed Lanceolate point was found 1.7 m (5.5 ft) below surface in a pit measuring approximately 0.5 m by 1 m (2 ft x 3 ft). All points were made of Upper Mercer flint from Coshocton deposits located up-river from the site. A hunk of abraded hematite was also found with the cache and was the source of the heavy deposit of red ocher covering the entire cache. Red

ocher is a symbol of blood in many Native American cultures. Converse postulates that the combination of the red ocher, depth of the pit, and the number of points suggests the cache was a part of some ceremony or ritual (Converse 2003).

The Plano/Late Paleoindian period lasted only about 1,000 years (10,500 to 9,500 B.P.). There are many theories regarding the disappearance of this group, including absorption, displacement, or eradication by other groups. Regardless, the proceeding time period is occupied by people who were better adapted to the conditions brought about by the encroaching forests in Ohio.

3.1.2 Archaic (10,000-2500) B.P.

The Archaic period formally begins with the onset of Holocene, postglacial climatic conditions in eastern North America. The Archaic period was characterized by a relatively long and successful foraging adaptation, with subsistence based on hunting, fishing, and the collection of wild plant resources resulting in the utilization and occupation of a wide array of topographic settings. This time period can be split into three sub-periods: Early Archaic (10,000 to 7,000 B.P.), Middle Archaic (7,000 to 5,000 B.P.), and the Late Archaic (5,000 to 2,5000 B.P.).

There is limited written information available on the Early Archaic period (10,000 to 7,000 B.P.) in Ohio. At present, there are no known skeletal remains of Early Archaic peoples. It is thought, however, that there were regionally distinct groups across eastern North America made up of small bands with strong kinship ties. Evidence shows that people appeared to be utilizing both river valleys and uplands, but sites are more concentrated around the rivers. They had adapted their subsistence strategies to the encroaching forests; what Fowler (1959) calls Primary Forest Efficiency, they were gatherers, foragers, fishers, hunters, and scavengers. Temporary camps tended to coincide with prey migrations/seasonality, harvesting seasons for plants, and nut tree locations. Although there was a lack of evidence for more permanent structures, some sites show evidence that people may have been exploiting them for more extended periods of time than during the Paleoindian Period (Milner 2004). The projectile points during this time period were characterized as having new hafting and basal designs, including features such as corner-notching, bifurcation, serration (Converse 2003; Fagan 2005). In addition to the change of stone tool technology, the appearance of the atlatl occurs during this time period. This is a tool – usually wooden – that aided in hunting, as it greatly increased the force and accuracy of spear (Converse 2003). Early Archaic sites relatively near the Project area include the St. Albans site in West Virginia, and the Florence Farm and Troyer sites in Madison County, Ohio (Broyles 1971; Converse 1991 and 1993).

The Middle Archaic (7,000 to 5,000 B.P.) is marked by a shift in subsistence strategies in response to the increasingly warming climate (Converse 2003; Fagan 2005; Milner 2004). Projectile points during this time were generally larger in size when compared to their predecessors. There were also new methods of hafting and notching, the latter of which was common for points used for spears. Projectile point styles of the Middle Archaic period in the general region include Stanly Stemmed (ca. 8000–7600 B.P.) and Big Sandy Side Notched (ca. 8000–6000 B.P.), following the classic Archaic sequence (Broyles 1966, 1971; DeRegnaucourt 1992).

The Late Archaic, from 5,000 to 2,500 B.P. is marked by increased population and sedentism. During the Late Archaic, several localized traditions became evident in the eastern woodlands (Fagan 2005). The two present in Ohio are the Central Riverine Archaic Tradition and the Mast Forest Late Archaic

Tradition. Also important at this time were the changes exhibited in new cultural distinctions between groups evident in the unique and ceremonial burial rituals. This included a large expansion of trade networks (materials such as copper, cannel coal, ocean shell, etc.) of resources as well as ideas between burial cults. Artifacts tended to be traded/shared between groups, but there were also many that can only be found with their original group (Converse 2003).

3.1.3 Woodland Period (2500-1200) B.P.

The Woodland Period is marked by the appearance of pottery, a greatly increased role for horticulture in subsistence economies, an elaboration of mortuary ceremonialism, including the appearance of burial mounds, and larger, more permanently occupied sites. In Ohio, the Woodland period has been divided into three subperiods, the Early, Middle, and Late Woodland (Lepper 2005).

The Early Woodland period (ca. 2,500–1,700 B.P.) is associated with the Adena cultural development in the Ohio River valley of southern Ohio (Lepper 2005) and is thought to reflect an elaboration of several cultural manifestations of the preceding Terminal Archaic lifeways. This period is characterized by the appearance of grit-tempered plain and cordmarked pottery, more elaborate burial ceremonialism with the association of earthworks, and rudimentary agriculture. Artifacts recovered at Early Woodland sites include pendants, blocked-end tubular pipes, effigy pipes, reel-shaped gorgets, engraved tablets, and copper implements. Animal imagery in the material culture continues to be an important component at this time.

Settlement patterning and resource exploitation appear to parallel Archaic patterns while incorporating new ones, such as adding horticulture to subsistence practices. However, Early Woodland peoples continued to rely on naturally occurring foodstuffs obtained through hunting, gathering, fishing, and foraging. The addition of pottery to their subsistence practices allowed for them to either cook or store food more efficiently, adding to the theory that they led an increasingly sedentary lifestyle.

In addition to changes in lifestyle there were also changes in the physical appearance of the Adena peoples themselves. Moorehead (1892) described them as having round heads, tall and robust statures, and protruding chins when compared to the longheaded and short Archaic people. It is also during this time period that cranial deformations caused by cradleboarding or head-binding can be observed in skeletal remains. Additionally, it appears physical abnormalities were revered by the Adenans, as they tend to have elaborate burials and are depicted in cultural materials (i.e., the famous Adena pipe depicting an individual with dwarfism) (Converse 2003).

Although some Adena sites occur in northern Ohio, the majority occur in the southern part of Ohio, northern Kentucky and West Virginia, eastern Indiana, and isolated sites along the Atlantic coast. Sites near the current Project Area include the mound at Adena Mansion (from which the culture was named) and Redman Farm Mound #36 in Ross County, and the Cresap Mound in Moundsville, West Virginia. Burials at these sites included males, females, and children, many with a large quantity of grave goods associated with the individuals. Interestingly, the Cresap Mound contained a male burial with a polished skull of another individual placed at his midsection – indicating there may have been some level of violence between groups during this time.

During the Middle Woodland period (ca. 1800–1500 B.P.), there is an intensification of mortuary ceremonialism identified as the Hopewell culture. Hopewellian influences are represented by large burial mounds and elaborate geometric earthworks. The presence of locally unattainable items in large

quantities such as copper, mica, obsidian, exotic flints, and marine shell provides evidence that Hopewell groups had established long distance trade networks. Hopewell seems to have centered in southern Ohio, Indiana, and Illinois (Converse 2003).

Because of the overlap of dates between the Hopewell and the Adena, archaeologists once believed that the Hopewellians were descendants of the Adenans. On the contrary, there seems to be more influence on the Adenans from the Hopewellians. Additionally, the Hopewellians were not as robust as the Adenans and tended to have long heads as opposed to the Adenan round head. There were also differences between the artifacts, especially in the quality and abundance of the artifacts left with burials. Therefore, it is postulated that the Hopewellians developed their cultures elsewhere, moved into Ohio, and lived contemporaneously with the Adenans for approximately 200 years (Converse 2003).

The loaf-shaped mounds, geometric earthworks, hilltop enclosures, and non-geometric earthworks are paramount when describing the Hopewell culture. Each class of earthwork has their own set of general features, including the possibility of solar, lunar, or astronomical orientation of the geometric earthworks. Some were even in the shape of animals, such as the Opossum of Licking County, Ohio. Most, unfortunately, have been destroyed or restored so determining their exact magnitude is difficult. Even surveyors of the early 19th century would not have seen the works in their original state and would not have been able to survey the remnants accurately (Converse 2003).

Based on the burials and the craftsmanship of the elaborate artifacts, it is suggested that the Hopewellians had a hierarchical society, including a class of elite and a class of artisans. Subsistence strategies are contested, but it is thought that they were cultivating wild oily seeds (e.g., Chenopodium), gathering nuts, and hunting the plentiful wildlife of the region. While the earthworks may have acted as ceremonial centers for the Hopewell and those who they extensively traded with, evidence also shows that there were also habitation sites (some call them villages or hamlets) in, around, and distanced from the mound sites.

Many of the artifacts found at these sites are made of materials that were brought in from all over the country: mica from the Carolinas, copper and silver from the Lake Superior region, quartz from Arkansas, obsidian from the Yellowstone region, galena from Illinois, grizzly bear teeth from the Rocky Mountains, and much more – including some that have yet to have been sourced. The variety of artifacts found at Hopewell sites is immense, and the representation of animals in these artifacts is still prevalent.

There are many sites near Vinton County area, including the Harness Village sites and numerous earthworks throughout the Ross County area nearby. As previously mentioned, these sites not only contain elaborate burials, but also enormous caches of a wide variety of objects (e.g., fossil shark teeth, human trophy ornaments, copper headdresses, pottery, projectile points, animal and anthropomorphic effigies, copper ear spools, etc.) (Converse 2003).

The Late Woodland period (ca. 1500–1000 B.P.) in the region sees the emergence of sedentary village life based on intensive maize agriculture and the continued reliance on hunting, gathering, and fishing, as well as occupation of a wide range of topographic settings. The bow and arrow were also introduced at this time. However, it is one of the least studied periods in Ohio prehistory, and is almost a liminal stage between the disappearance of the Hopewell culture and the advent of the Fort Ancient culture (Converse 2003). There have been attempts at defining the cultures at this time, and one of the only groups identified is the Intrusive Mound Culture.

The Intrusive Mound culture in Ohio was first described during investigations of mounds at Mound City, Ross County, Ohio. Burials were found in multiple mounds that had been cut into previously built mounds (although not all burials found were cut into mounds). They were identified as being separate and distinct from the Hopewell culture, and it is possible that they may have come from the lower Great Lakes region. Based on the evidence available, it is probable that they were mostly small unit groups who were hunters and gatherers. Artifacts associated with this group include thin/delicate chert projectile points, hardstone picks, platform pipes, bone/antler harpoons, antler tools with a beaver tooth at one end, celts, elk antler combs and mallets, human head effigies, bone awls and deer bone beamers, and socketed antler sections. Known Intrusive Mound sites near the Project Area include Mound City, Harness (C-Plus), and Frankfort all in Ross County, Ohio.

3.1.4 Late Prehistoric Period (1100-400) B.P.

The Late Prehistoric period spans from 1100 B.P. to the time of European contact, roughly 400 B.P. Ohio was occupied by many different cultures who had become increasingly dependent on agriculture (especially maize agriculture). An almost exclusive use of shell-tempering in ceramics distinguishes this period from earlier periods. By the end of the Late Prehistoric, external influences on ceramic attributes were greatly reduced and came from the northeast rather than the south (Aument 1990).

During this period, four cultures have been identified in Ohio: Fort Ancient Culture, Sandusky Culture, Whittlesey Culture, and Monongahela Culture. Fort Ancient Culture (950–300 B.P.) occupied southern Ohio and northern Kentucky. They are considered to be the first true agriculturalists of the Central Ohio River Valley, cultivating maize, beans, and sunflowers. Although they weren't as big as the southeastern Mississippian villages, Fort Ancient villages could be quite large, normally occur along rivers, and were sometimes fortified. They are best known for their effigy pipes (especially those of pregnant women and dual imagery), discoidals, may different types of bone and antler artifacts, engravings, and serrated arrow points (Converse 2003; Lepper 2005). Sites near the APE include the Gartner Village site in Ross County, the Leo Petroglyph in Jackson County, and Serpent Mound in Adams County.

The Sandusky Culture (1100–400 B.P.) inhabited northwest Ohio, specifically around the Sandusky River, and is distinguished by Parker Festooned Ceramics. The Monongahela Culture (950–300 B.P.) occupied eastern Ohio and western Pennsylvania, while the Whittlesey Culture occupied northeast Ohio. The most distinct artifacts that can be used to distinguish the different groups is the types and styles of pottery (Converse 2003).

3.2 Protohistoric and Historic Overview

Well-documented historic evidence of Native American settlements in the region dates to the early eighteenth century. Starting about 1720, the upper Ohio Valley was the scene of a western migration by native tribes who paid tribute to the Iroquois (Callender 1978; Sipe 1927). The Shawnee settled the area in the greatest numbers in the years from 1720 to 1745 (Downes 1940). Between the 1730s and the 1750s, the Shawnee, Wyandot, and Delaware moved into Ohio. During this time, the French and the British were both attempting to control the Ohio area through strategic alliances with the native groups. The balance of power for control of the Appalachian frontier oscillated between the French and the British, culminating in the French and Indian War beginning in 1754. During the war, many of the Delaware and Shawnee living in villages along the Ohio and Allegheny rivers were allied with the French, while the Iroquois were allied with the British. Great Britain was ultimately victorious and all the

territory bordering the Ohio River came under British control by the terms of the Treaty of Paris of 1763. However, the British proclaimed the territory off-limits to white settlement, holding it for Native American settlement. In 1763, the Delaware established Tuscarora Town on the Tuscarawas River, which was on the Great Trail between Fort Pitt (Pittsburg) and Fort Sandusky on Lake Erie (Downes 1949). Another Delaware Town was located about seven miles upriver from Tuscarora Town (Perrin 1881), which would have placed it in the vicinity of Navarre.

During the American Revolution, the Iroquois again sided with the British, drawing attacks on their villages in New York and Pennsylvania by the Continental Army. In 1778, British forts on the Ohio were captured and the Americans claimed the Ohio country. General McIntosh established Fort Laurens on the Tuscarawas River in what is now Bolivar, Ohio in 1779. This was the first American fort in Ohio during the war. It was attacked by British troops and their Native American allies in March 1779, and McIntosh was forced to evacuate (Noble and Korsok 1975; Shetrone 1919).

The Treaty of Paris of 1783 ending the Revolutionary War officially gave the United States possession of the Ohio country. The British persisted in courting the Native American groups that occupied the area, however, resulting in continuing conflict with frontier settlers. In January 1785, the Delaware, Ojibwa, Ottawa, and Wyandot signed the Treaty of Fort McIntosh ceding claims to eastern Ohio. By agreeing to the treaty, the tribes acknowledged American sovereignty in Ohio and agreed to the boundary of the frontier at the Tuscarawas and Muskingum rivers. Later, in 1795 the Treaty of Greenville, negotiated by "Mad Anthony" Wayne, ceded all of Ohio except the northwest corner to the United States and the territory comprising eastern Ohio became permanently open to Euro-American settlement.

In 1803, Ohio was admitted as a state in to the Union. Americans were unable to fully settle Ohio, however, until the United States were victorious over the British during the War of 1812. Later, Ohio played a significant role in the American Civil War, which started in 1861. The state of Ohio provided the U.S. with artillery units, cavalry units, and infantry units, providing the Union with more than 15,000 soldiers over the federal government requirements. Although Ohio was divided regarding its opinion on the war and the abolition of slavery, they still made great contributions to the victory of the Union (OHC 2018a, 2018d).

On March 23, 1850, Vinton County was created and named for House of Representatives Ohio member Samuel Finley Vinton. Previously called McArthurstown and named after Ohio Governor Duncan McArthur, the town of McArthur is the county seat of Vinton County. The area is chiefly rural with only six percent of the land considered to be urban. Farming is the primary occupation, government work is the second largest employer, and manufacturing is third. In the mid- to late 19th Century; however, coal and iron ore mining were major occupations in the county, producing much of the iron used by the Union Army in the Civil War. The county was also known at this time for their pottery and brick production (OHC 2018b, 2018c; Vinton County Convention and Visitor's Bureau 2018).

Vinton County has the smallest population of the 88 counties of Ohio. The population as of 2000 was 12,806, which was a large increase of about 15.4 percent from 1990. The latest census shows that the population in 2017 was approximately 13,092, a reduction by 2.5 percent since 2010. The income of the county is relatively low compared to the U.S. average. The per capita income in 1999 was $16,423 with almost 19 percent of people living in poverty. Although the per capita income has increased to $19,876, the amount of people in poverty has also increased to almost 20 percent, as of 2017 (OHC 2018c; U.S. Census Bureau 2018).

4.0 Background Literature and Records Search

4.1 Archaeological Resources

TRC personnel contacted the OHC for background literature and record searches in order to locate any archaeological sites or previous investigations located directly within the APE. This information would provide context for the types of sites that might be encountered in the Project area. The file review revealed that no previously recorded archaeological resources are present within the footprint of the proposed transmission line right of way. However, 368 archaeological resources were previously documented within the 8-km (5-mi) radius of the project location. The majority of these resources are characterized as open habitation sites dating to an unknown prehistoric cultural temporal period. Of these resources, 39 were identified within a 0.6-km (1-mi) radius of the project footprint, which are listed in the Table 1. A total of four archaeological sites are located within a 305 m (1,000 ft) buffer study area, which are listed in the Table 2.

Table 1. Archaeological Sites within a One-Mile Radius of the Project Area.

SITE #	SITE NAME	SITE TYPE
33VI0365	Unnamed	Unknown Prehistoric
33VI0366	Unnamed	Unknown Prehistoric
33VI0368	Ogan Family Cemetery	Historic
33VI0369	Unnamed	Unknown Prehistoric
33VI0370	Unnamed	Unknown Prehistoric
33VI0371	Unnamed	Unknown Prehistoric
33VI0372	Unnamed	Unknown Prehistoric
33VI0373	Unnamed	Unknown Prehistoric
33VI0374	Unnamed	Woodland Prehistoric
33VI0375	Unnamed	Unknown Prehistoric
33VI0376	Unnamed	Unknown Prehistoric
33VI0377	Unnamed	Unknown Prehistoric
33VI0378	Unnamed	Unknown Prehistoric
33VI0591	Old McArthur Cemetery Site	Prehistoric and Historic
33VI0489	Unnamed	Unknown Prehistoric
33VI0493	Unnamed	Unknown Prehistoric
33VI0496	Unnamed	Unknown Prehistoric
33VI0491	Unnamed	Unknown Prehistoric
33VI0492	Unnamed	Unknown Prehistoric
33VI0487	Unnamed	Unknown Prehistoric
33VI0488	Unnamed	Unknown Prehistoric
33VI0486	Big Bang I	Unknown Prehistoric
33VI0355	Unnamed	Unknown Prehistoric

SITE #	SITE NAME	SITE TYPE
33VI0356	Unnamed	Prehistoric and Historic
33VI0719	Unnamed	Unknown Prehistoric
33VI0720	Unnamed	Unknown Prehistoric
33VI0721	Unnamed	Unknown Prehistoric
33VI0722	Unnamed	Unknown Prehistoric
33VI0723	Unnamed	Unknown Prehistoric
33VI0490	Unnamed	Unknown Prehistoric
33VI0579	Unnamed	Historic
33VI0564	Unnamed	Unknown Prehistoric
33VI0565	Unnamed	Archaic Prehistoric
33VI0566	Unnamed	Unknown Prehistoric
33VI0567	Unnamed	Historic
33VI0568	Unnamed	Unknown Prehistoric
33VI0569	Unnamed	Unknown Prehistoric
33VI0570	Unnamed	Unknown Prehistoric
33VI0571	Unnamed	Historic

Table 2. Archaeological Sites within 1,000 ft of the Project Area.

SITE #	SITE NAME	SITE TYPE
33VI0564	Unnamed	Unknown Prehistoric
33VI0719	Unnamed	Unknown Prehistoric
33VI0720	Unnamed	Unknown Prehistoric
33VI0721	Unnamed	Unknown Prehistoric

4.2 Previous Cultural Resource Surveys

During the file review of previously conducted survey records maintained by the OHC, it was revealed that 10 Cultural Resources Surveys were conducted within the 0.6-km (1-mi) radius of the project, which are listed in Table 3.

Table 3. Previous Archaeological Investigations within a One-Mile Radius of the Project Area.

NADB #	SURVEY NAME	SURVEY TYPE
12479	Three Proposed Borrow Areas, Zaleski-Saltz Reclamation Project, Elk Township, Vinton Co., OH (Sprague 1989)	Phase I and II Cultural

NADB #	SURVEY NAME	SURVEY TYPE
		Resource Survey
12482	Proposed Waste Water Treatment Plant Expansion, Village of Mc Arthur, Elk Township, Vinton Co., OH (McDaniel 1989)	Literature Review and Reconnaissance Survey
12484	Surface Mining Permit Area D-609-2 in Elk Township, Vinton Co., OH (Genheimer 1990)	Archaeological Assessment
12485	Sites 33VI0365, 33VI0367, and 33VI0374, Three Prehistoric Lithic Scatters Located within the Proposed Benedict, Inc. Surface Coal Mining Tract (Permit Area D-609-2, Elk Township, Vinton Co., OH (McDaniel 1990)	Phase II Archaeological Assessment Survey
12491	Sites 33 VI 355 and 33 VI 356 in the Proposed Waste Water Treatment Plant Expansion, Village of Mc Arthur, Elk Township, Vinton Co., OH (Wright 1990)	Assessment Survey
13128	Mining Application D-0609-3 Elk Township, Vinton Co., OH (Weller Von Molsdorff 1996)	Phase I Archaeological Survey
13992	Mining Permit Number D-0609-5 in Elk Township, Vinton County, OH (Haywood 1998)	Phase I Cultural Resources Survey
14126	Sites 33VI514, 33VI564, 33VI572, and 33VI573 in Elk Township, Vinton Co., OH (Haywood 1998)	Phase II Cultural Resource Evaluation
14363	ODOT Project VIN-50-27.885 (PID 10537): Evaluation of a Small Right-of-Way Take from Old McArthur Cemetery, Elk Township, Vinton Co., OH (Clarke 1998)	Cemetery Resource Evaluation
18910	American Electric Power's 32 km (19.9 mi) Elk 138 kV Extension Transmission Line Project in Elk and Clinton Townships, Vinton County and Milton Township, Jackson County, Ohio (Weller 2012)	Phase I Archaeological Survey

4.3 Historic Architectural Resources

Preliminary background research on the OHPO Online Mapping System revealed no previously surveyed

architectural resources or NRHP-listed or eligible resources located within the project area boundaries. A total of 28 previously surveyed resources were identified within a 1-mile radius of the project area; these structures have yet to be evaluated for NRHP eligibility. In addition to these resources, a single cemetery resource was identified within the 1-mile radius of the project foot print. However, no previously recorded architectural resources that are listed or eligible for listing on the NRHP were documented within the 305 m (1,000 ft) buffer of the Project APE.

4.4 Historic Maps

Historic maps were consulted during the background research effort. A 1908 map suggests that there were no buildings near or within the APE at that time. Only two light-duty roads are present nearby, as well as a perennial stream cutting through the APE in a north/south direction (Figure 5) (USGS, Wilkesville 1908). By 1961 there are three buildings to the west of the APE along the north/south running light-duty road to the west of the APE, as well as two along the east/west light-duty road just south of the APE (USGS, McArthur 1961). In 1985 two more buildings have appeared along the north/south road, as well as a large strip mining area less than 805 m (0.5 mi) to the south and approximately 402 m (0.25 mi) to the east (Figure 6) (USGS, McArthur 1985). Additionally, there seems to be a new intermittent lake/pond within the strip mining area to the south. By 1995, one more building has been built along the E-W road to the south of the APE, and the large strip mines have disappeared from the area (Figure 7) (USGS, McArthur 1995).

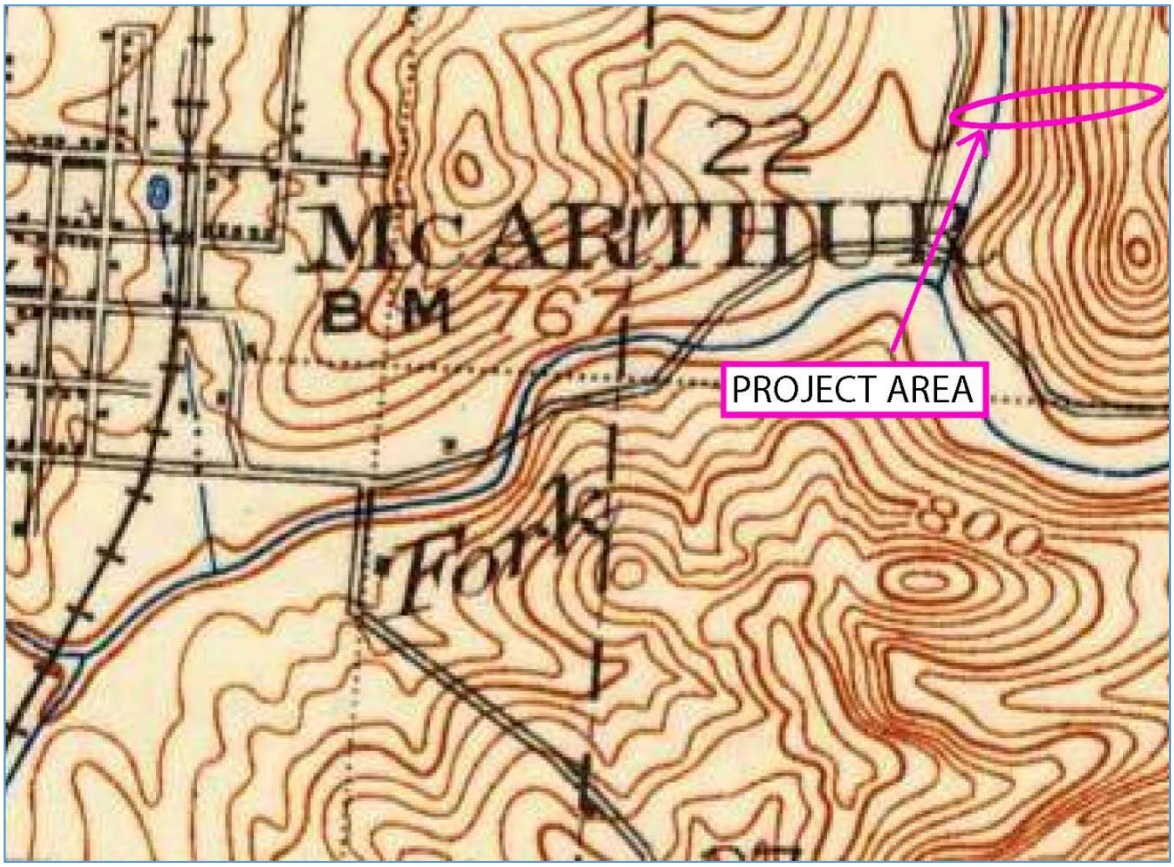

Figure 5. Project area located on 1908 Wilkesville, OH, USGS Topographic Quadrangle.

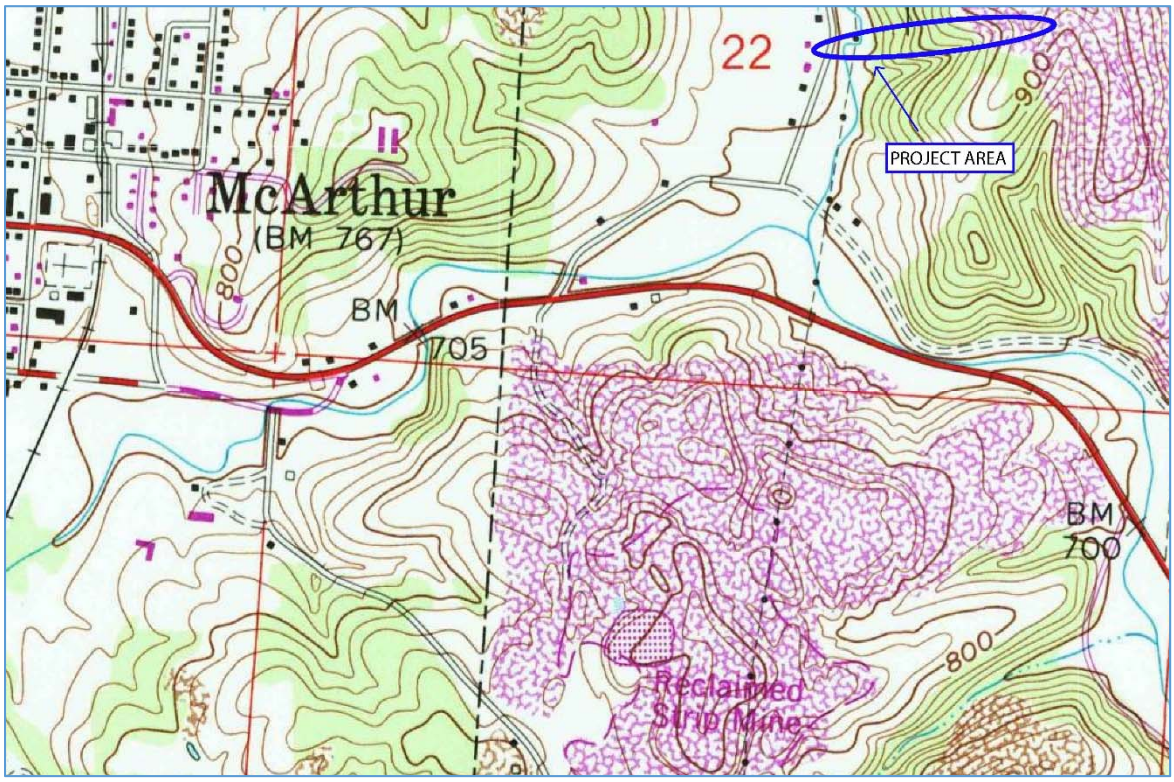

Figure 6. Project area located on 1995 McArthur, OH, USGS Topographic Quadrangle.

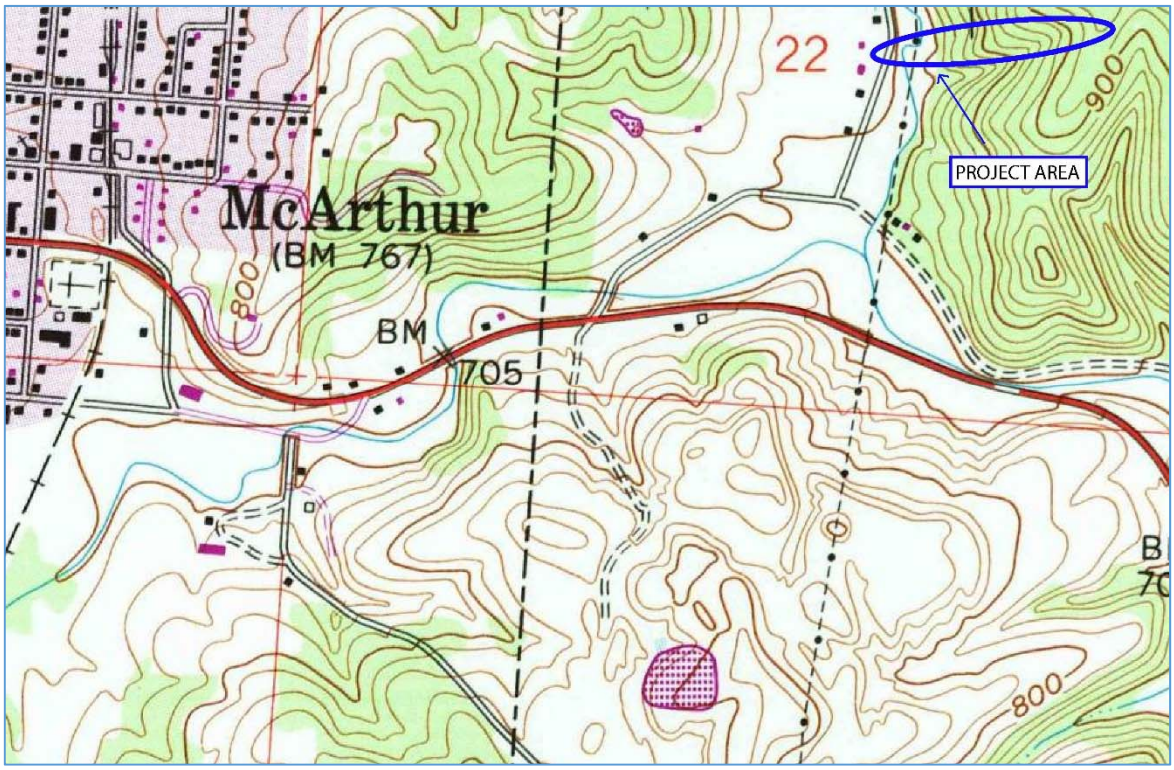

Figure 7. Project area located on 1985 McArthur, OH, USGS Topographic Quadrangle.

5.0 Methods

5.1 Archaeological Survey Methods

TRC personnel surveyed the APE on foot, utilizing systematic pedestrian survey and shovel testing to determine the likelihood of archaeological deposits. Visual inspection was conducted throughout the entire Project area. Shovel tests measured 50 x 50 cm (19.7 x 19.7 in) in size and were excavated to a minimum of 50 cm (1.14 ft) in depth or until bedrock or sterile soil was reached.

Soil was screened through ¼-inch mesh hardware cloth to ensure uniform artifact recovery. If found, artifacts would have been bagged separately by shovel test and marked with appropriate provenience and depth information. Separate notes were maintained for each shovel test excavated, and included grid locations, depth, soil stratigraphy, soil description, and notes on artifact recovery.

In-field data recording was conducted using a hand-held sub-meter GPS unit. Notes were maintained using standard archaeological nomenclature (Munsell soil colors, terrain descriptions, notes on findings and stratigraphy, etc.) The Project was documented using a high resolution digital camera. The field notes, maps, photographs, and other technical materials generated as a result of this archaeological testing will be curated at the TRC office in Nashville.

5.2 NRHP Eligibility Criteria

According to 36 CFR 60.4 (eCFR 2017b NRHP 2002), cultural resources eligible for listing in the NRHP are defined as buildings, structures, objects, sites, and districts that have "integrity," and that meet one or more of the criteria outlined below.

- Criterion A (Event). Association with one or more events that have made a significant contribution to the broad patterns of national, state, or local history.

- Criterion B (Person). Association with the lives of persons significant in the past.

- Criterion C (Design/Construction). Embodiment of distinctive characteristics of a type, period, or method of construction; or representation of the work of a master; or possession of high artistic values; or representation of a significant and distinguishable entity whose components may lack individual distinction.

- Criterion D (Information Potential). Properties that yield, or are likely to yield, information important in prehistory or history. Criterion D is most often (but not exclusively) associated with archaeological resources. To be considered eligible under Criterion D, sites must be associated with specific or general patterns in the development of the region. Therefore, sites become significant when they are seen within the larger framework of local or regional development.

"Integrity" is perhaps the paramount qualification of NRHP eligibility, and can be related to any or all of the following (CFR 2010a:322–323):

- Location: the place where the historic property (or properties) was/were constructed or where the historic event(s) occurred;

- Design: the combination of elements that create the form, plan, space, structure, and style of a property (or properties);
- Setting: the physical environment of the historic property (or properties);
- Materials: the physical elements that were combined to create the property (or properties) during the associated period of significance;
- Workmanship: the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
- Feeling: the property's (or properties') expression of the aesthetic or historic sense of the period of significance; and
- Association: the direct link between the important historic event(s) or person(s) and the historic property (or properties).

For the purposes of archaeology, assessment of site integrity depends largely on the level of disturbance exhibited by archaeological deposits. The nature of deposits (intact, partially disturbed, obliterated, etc.) has direct bearing on the potential to view a site within the context of its past, and on the degree to which it can provide data based on the material record (NRHP 2002). In short, the integrity of a site (and thereby it's potential for NRHP eligibility) is directly tied to its capacity to address research questions.

6.0 Archaeological Survey Results

6.1 Archaeological Survey Results

The Phase I archaeological survey was conducted on December 11 to 12, 2018. The APE encompasses approximately 1.45 ha (3.5 ac) of hilly terrain mixed with a fallow pasture and steeply sloped wooded areas cut by Elk Fork Creek, in Vinton County, Ohio. Shovel testing was conducted at areas where surface visibility was less than 50 percent, and slope was no greater than 15 degrees.

Due to the steep terrain and disturbances in the area from strip mining, only 12 shovel tests were excavated during this investigation. Intact soils along the Elk Fork Creek exhibited a 10YR 5/3 brown silty loam from 0 to 50 cm (0 to 19.6 in) below surface before transitioning to a silty clay from 50 to 100 cm (19.6 to 39.4 in) below surface (Figure 8). Figure 9 represents a typical soil profile of the areas with disturbance due to strip mining. TRC's field efforts resulted in no archaeological resources located within the Project APE (Figure 10).

Figure 8. Representative soil profile.

Figure 9. Soil profile of disturbance caused by strip mining.

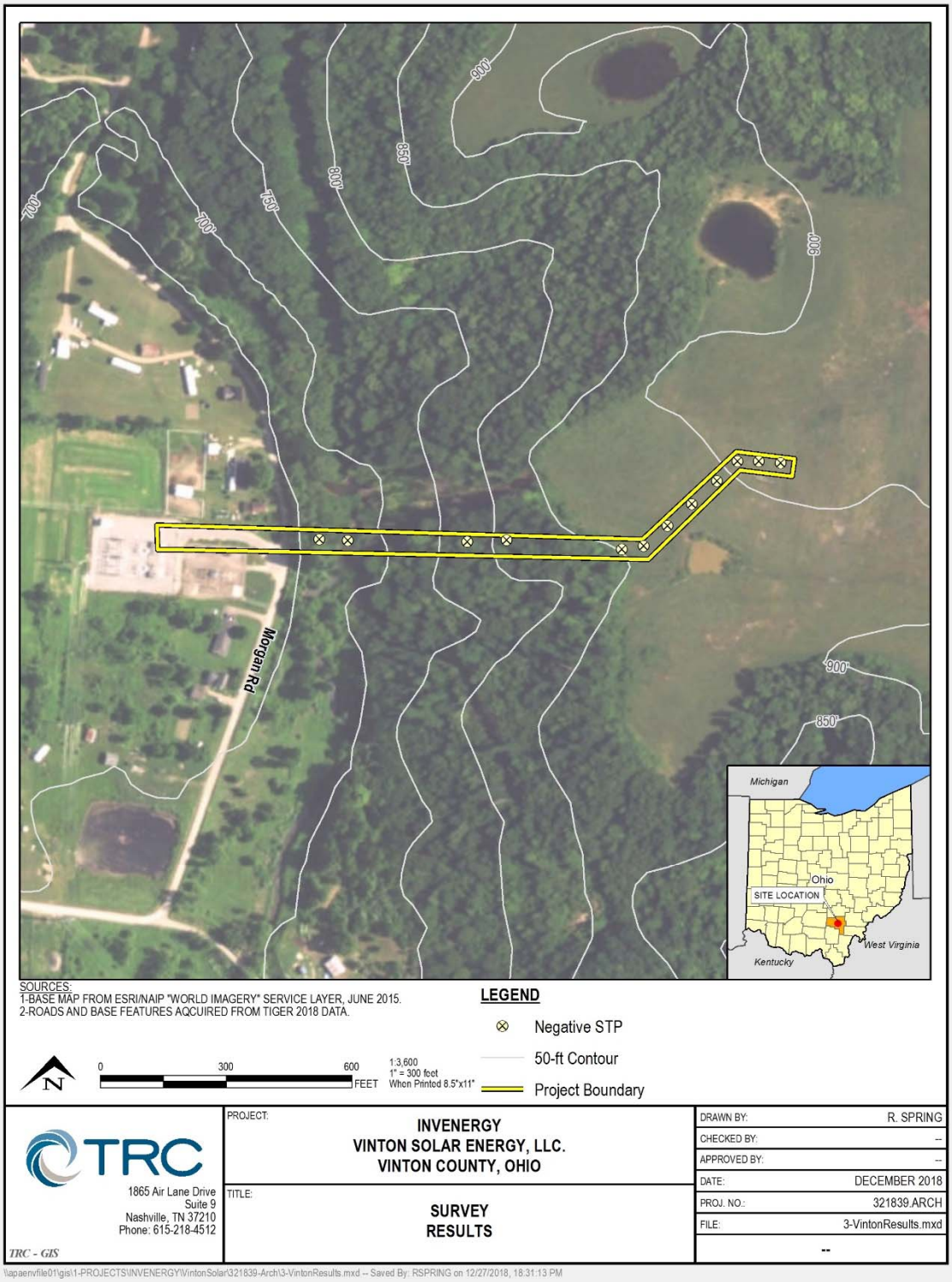

Figure 10. Survey results.

7.0 Conclusions and Recommendations

TRC, under contract with Vinton, conducted cultural resource services for the Vinton Solar Energy Center Transmission Line Project in Vinton County, Ohio. The Project encompassed approximately 1.45 ha (3.5 ac) and plans to include approximately 460 m (1,525 ft) of transmission line connecting the proposed facility to the Sub-Station Point of Interconnect.

Prior to initiating fieldwork, TRC requested the preliminary records search from the OHC. Research revealed that no previously recorded archaeological sites or historic architectural resources are located within the APE of the Project; however, 368 archaeological resources were previously documented within the 8-km (5-mi) radius of the project location. Of these resources, 39 were identified within a 0.6-km (1-mi) radius of the project footprint, and four of these archaeological sites are located within a 305 m (1,000 ft) buffer study area. Research also indicated that there have been 10 previous archaeology investigations located within a 0.6-km (1-mi) radius of the project area.

From December 11-12, 2018, TRC conducted the Phase I archaeological survey for the Project. The APE exhibited no surface visibility and much of the area was steeply sloped. 12 shovel tests were excavated and revealed the soil disturbance caused by historic strip mining. As a result, no archaeological sites were found within the APE.

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Summary: Application - Part 2 of 3 electronically filed by Christine M.T. Pirik on behalf of Vinton Solar Energy LLC