



# Staff Report of Investigation

In the Matter of the Application of Buckeye )  
Wind LLC for a Certificate to Install Numerous )  
Electricity Generating Wind Turbines in )  
Champaign County to be Collected at an Electric )  
Substation in Union Township, Champaign County )

Case No. 08-666-EL-BGN

## THE OHIO POWER SITING BOARD

**EQUAL OPPORTUNITY EMPLOYER AND SERVICE PROVIDER**

([www.OPSB.ohio.gov](http://www.OPSB.ohio.gov))

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Staff Report of Investigation  
and Recommended Findings

Submitted to the  
Ohio Power Siting Board

BEFORE  
THE POWER SITING BOARD  
OF  
THE STATE OF OHIO

In the Matter of the Application of Buckeye	)	
Wind LLC for a Certificate to Install Numerous	)	
Electricity Generating Wind Turbines in	)	Case No. 08-666-EL-BGN
Champaign County to be Collected at an Electric	)	
Substation in Union Township, Champaign County	)	

Members of the Board:

Alan R. Schriber, Chairman, PUCO	Louis W. Blessing Jr., State Representative
Lisa Patt-McDaniel, Director, ODD	Timothy J. DeGeeter, State Representative
Alvin Jackson, M.D., Director, ODH	Tom Sawyer, State Senator
Robert Boggs, Director, ODA	VACANT, State Senator
Christopher Korleski, Director, OEPA	
Sean Logan, Director, ODNR	
Lorry Wagner, Ph.D., Public Member	

To The Honorable Power Siting Board:

In accordance with provisions of the Ohio Revised Code (ORC) Section 4906.07 (C), and the Commission's rules, the Staff has completed its investigation in the above matter and submits its findings and recommendations in this Staff Report for consideration by the Ohio Power Siting Board (Board).

The Staff Report of Investigation and Recommended Findings has been prepared by the Staff of the Public Utilities Commission of Ohio. The findings and recommendations contained in this report are the result of Staff coordination with the Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio Department of Development, the Ohio Department of Natural Resources and the Ohio Department of Agriculture. In addition, the Staff coordinated with the Ohio Department of Transportation, the Ohio Historical Society, and the U.S. Fish and Wildlife Service.

In accordance with ORC Section 4906.07 and 4906.12, copies of this Staff Report have been filed with the Docketing Division of the Public Utilities Commission of Ohio on behalf of the Ohio Power Siting Board and served upon the Applicant or its authorized representative, the parties of record and the main public libraries of the political subdivisions in the project area.

The Staff Report presents the results of the Staff's investigation conducted in accordance with ORC Chapter 4906 and the Rules of the Board, and does not purport to reflect the views of the Board nor should any party to the instant proceeding consider the Board in any manner constrained by the findings and recommendations set forth herein.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Klaus Lambeck", written in dark ink.

Klaus Lambeck, Chief  
Facilities, Siting, & Environmental Analysis Division

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## ACRONYMS

AEPS	Alternative Energy Portfolio Standard
AMSL	Above Mean Sea Level
BMP	Best Management Practice
FAA	Federal Aviation Administration
HCP	Habitat Conservation Plan
HHEI	Headwater Habitat Evaluation Index
IFR	Instrument Flight Rules
ITP	Incidental Take Permit
JCARR	Joint Committee on Agency Rule Review
kV	Kilovolt
MDA	Minimum Descent Altitude
MW	Megawatt
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTIA	National Telecommunications and Information Administration
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
OPSB	Ohio Power Siting Board
ORAM	Ohio Rapid Assessment Methodology
ORC	Ohio Revised Code
PUCO	Public Utilities Commission of Ohio
SPCC	Spill Prevention, Control and Countermeasures
SWPPP	Storm Water Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rules

## **I. INTRODUCTION**

### **Ohio Power Siting Board**

The Ohio Power Siting Board (Board or OPSB) was created on November 15, 1981, by amended Substitute House Bill 694 as a separate entity within the Public Utilities Commission of Ohio. The authority of the Board is outlined in Ohio Revised Code (ORC) Chapter 4906.

The Board is authorized to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities as defined in ORC Section 4906.01. Included within this definition are electric generating plants and associated facilities designed for or capable of operation at fifty megawatts (MW) or more, electric transmission lines and associated facilities of a design capacity greater than or equal to 125 kilovolts (kV), and gas and natural gas transmission lines and associated facilities designed for, or capable of, transporting gas or natural gas at pressures in excess of 125 pounds per square inch. In addition, per ORC Section 4906.20, the Board has jurisdiction for economically significant wind farms, defined as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of five or more megawatts but less than fifty megawatts.

Membership of the Board is specified in ORC Section 4906.02(A). The members include: the Chairman of the Public Utilities Commission who serves as Chairman of the Board, the directors of the Environmental Protection Agency, the Department of Health, the Department of Development, the Department of Agriculture, and the Department of Natural Resources. The Governor appoints a member of the public, specified as an engineer, to the Board from a list of three nominees provided by the Ohio Consumers' Counsel. Included as ex-officio members of the Board are two members (with alternates) from each House of the Ohio Legislature.

The OPSB has promulgated rules and regulations, found in Chapter 4906 of the Ohio Administrative Code (OAC), which establish application procedures for major utility facilities and wind farms. Pursuant to ORC Section 4906.07(C) and these rules, the Board's Staff (Staff) evaluates and investigates applications and reports the results of such investigations, including recommended findings and recommended conditions for certification, in the Staff Report of Investigation.

## **Buckeye Wind, LLC**

In this proceeding, Buckeye Wind, LLC (Buckeye Wind or Applicant), is seeking authority to construct a wind-powered electric generating facility in Champaign County.

Buckeye Wind is a wholly-owned subsidiary of EverPower Wind Holdings, Inc (EverPower). EverPower is a New York-based developer, established in 2002, that focuses on the development of utility grade wind projects.

EverPower is currently pursuing wind projects in several states in addition to Ohio, including Oregon, Pennsylvania, and New York. The Company's 62.5 MW Highland project, located in Pennsylvania, became operational in August 2009.



## **Project Description**

The Applicant proposes to construct a wind-powered electric generating facility. The facility would be located in Champaign County. The facility, as proposed, would consist of 70 wind turbines, an electric substation, an operations and maintenance (O&M) building, 3 construction staging areas, access roads, and an electric collection system.

According to the application, Buckeye Wind is anticipating beginning construction in mid 2010. Construction is expected to continue for approximately one year, at which point the facility would be placed in-service in mid 2011.

## **Project Area Location**

The facility would be located in Champaign County, in the townships of Goshen, Rush, Salem, Union, Urbana, and Wayne. See Figure 1. The project area is comprised of approximately 9,000 acres of leased private lands involving approximately 60 landowners. The Applicant expects that, of the 9,000 acres under lease, approximately 72 acres would experience a land use change as a result of the project.

## **Wind Turbines**

The Applicant has not yet selected the turbine model for this proposed project, and is considering turbines with nameplate generating capacities ranging from 1.8 MW to 2.5 MW. The Applicant has applied to install Nordex N100, Nordex N90, or RePower MM92 turbines, based on availability at order time. Utilizing 70 turbines, this equates to a project generating capacity between 126 and 175 MW.

The hub height for the turbines would be up to 100 meters (328 feet), with a rotor diameter up to 100 meters. Total turbine height, assuming blade tip at its highest position, would therefore be up to 150 meters (492 feet).

## **Turbine Foundations**

The Applicant has stated that a site-specific geotechnical report will be performed and that a final turbine foundation design will be chosen upon the results of that report.

The Applicant indicates that there are three possible types of foundations currently under consideration with the most likely being a spread footing foundation. The Applicant is also considering two other designs which are the Patrick and Henderson,

Inc. post-tensioned foundation and the rock anchored pile-supported foundation. Staff has found that these are typical foundation designs used for wind turbines.

The Applicant intends to grade and remove vegetation within a 200 foot radius around most tower locations, with adjustments made as necessary to protect sensitive ecological resources. The Applicant has also stated that the foundation construction process will generally proceed from hole excavation, outer form setting, rebar and bold cage assembly, casting and finishing of the concrete, backfilling and compacting, through to site restoration.

### **Electric Substation**

The electric substation would be designed to step-up the electricity from the 34.5 kilovolt (kV) electric collection system for connection to the Urbana-Mechanicsburg-Darby 138 kV electric transmission line that crosses the proposed project area.

The substation, to be enclosed by chain link fence, would be approximately 350 feet by 200 feet. The substation would be accessed by a new gravel road of approximately 0.1 miles in length from Pisgah Road.

### **O&M Building**

An O&M building would be utilized to house operations personnel, provide for parking, and store equipment and materials. The Applicant expects to make use of an existing structure, but it is possible that a new building will be constructed to serve the above-listed purposes. If a new facility is constructed, the Applicant indicates that it would require a permanent land disturbance of less than 2 acres. The Applicant further indicates that any new O&M building would be aesthetically comparable to agricultural buildings in the area.

### **Construction Staging Areas**

The Applicant expects to develop three temporary construction staging areas for the proposed project. One of the staging areas is planned for the northwest corner of the State Route 36 / North Ludlow Road intersection. An additional staging area is planned for just south of Pisgah Road, near the proposed Substation location. The final laydown area would be located on the east side of Perry Road, north of Route 36. Each staging area is expected to be approximately 3.75 acres, with an additional 0.7 acres to host construction trailers at the Ludlow location, for a total of 12 acres.

The staging areas would be used for material storage and construction parking. The construction trailers at the Ludlow location would be enclosed by fencing. No lighting of the staging areas is proposed initially, but could be installed later if warranted.

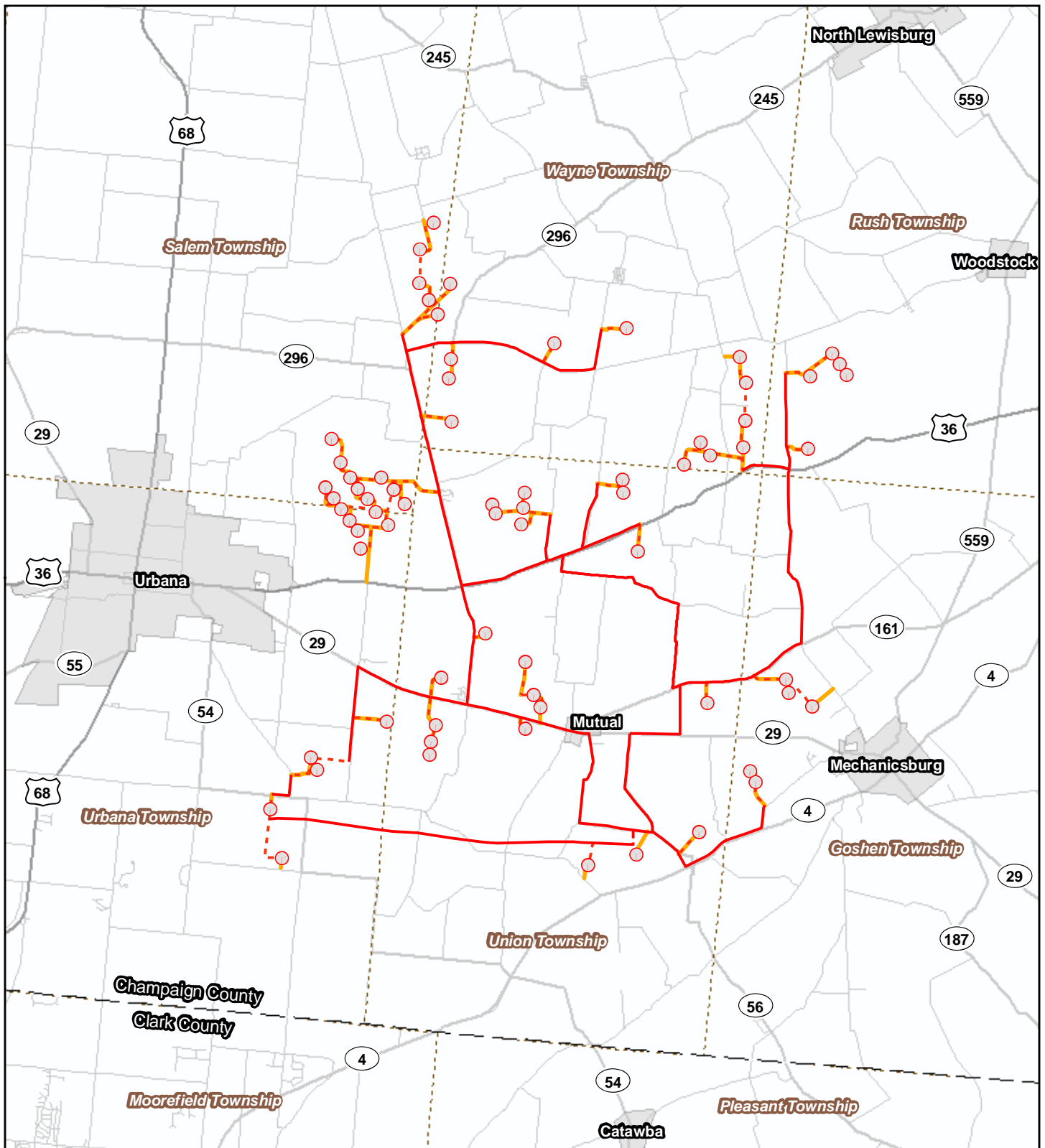
### **Access Roads**

According to information in the application, approximately 23 miles of new or improved access roads will be necessary to support the new wind-powered electric generating facility. The Applicant intends to make use of existing farm lanes to the extent possible. The access roads would be gravel-surfaced. Access road width during construction would be up to 40 feet, although a reduced width would be utilized in areas where additional width is not necessary. The finished width would generally be 16 feet, although some sections may need to be expanded an additional 4 feet in width.

### **Electric Collection System**

An electric collection system would be installed to transfer the power from the wind turbines to the substation for connection to the electric transmission grid. The collection system would consist of both above-ground and buried segments. In general, segments on public lands would be above-ground, while segments on private lands would be buried. The exact routes for the collection system would be a function of final turbine locations. However, based on the layout as filed, the collection system would total approximately 65 miles with approximately 40 miles above-ground and the remaining 25 miles buried underground.

For the above-ground segments of the electric collection system, the Applicant is currently in negotiations with Dayton Power & Light (DP&L) to coordinate usage of distribution poles in public road right-of-ways, either through the use of existing poles or through rebuilt distribution poles. For the buried segments, approximately 84% of the length would be installed co-linear with access roads. Applicant indicates that the buried segments would be located deep enough so as to not interfere with agricultural activities.



1 inch = 10,000 feet  
 1:120,000  
 NORTH  
 0 1.5 3  
 Scale in Miles  
 NAD 83 SP Ohio South (Feet)

- Turbines
- Interconnect (Overhead)
- - - Interconnect (Buried)
- Access Roads
- Ohio Counties
- Ohio Townships
- Ohio Cities

**Figure 1**  
 08-0666-EL-BGN  
 Buckeye Wind  
 Champaign County  
 October 12, 2009  
*This map is for general reference only*

## **II. HISTORY OF THE APPLICATION**

Application procedures and requirements for information are specified in Section 4906.06(A) of the ORC, and are detailed in the Rules and Regulations of the Board.

Prior to formally submitting an application, the Applicant consulted with the Staff and representatives of the Board, including Ohio EPA, regarding application procedures.

On June 10, 2008, the Applicant held a public informational meeting in Champaign County regarding the proposed wind-powered electric generating facility.

On April 24, 2009, the Applicant filed its application for a certificate to construct the proposed wind-powered electric generating facility in Champaign County, Ohio. In addition, the Applicant filed a Motion of Protective Order and a Motion for Waivers.

On June 23, 2009, the Chairman of the Board issued a letter to the Applicant stating that the application, filed on April 24, 2009, had been found to comply with the requirements of Chapter 4906-01, et seq., OAC.

On July 31, 2009, the Administrative Law Judge issued an Entry scheduling a local public hearing for this case to take place on October 8, 2009. The adjudicatory hearing was scheduled to take place on October 13, 2009. This Entry also approved the requests for intervention of Union Neighbors United (UNU) and the Ohio Farm Bureau Federation. Further, the Entry addressed the Applicant's request for waivers.

On August 12, 2009, the Applicant submitted a request for an extension of time to provide additional information as directed by the July 31, 2009, Entry in this case.

On August 28 and September 1, 2009, the Applicant filed supplemental information as directed by the July 31, 2009, Entry in this case.

On September 1, 2009, the Administrative Law Judge issued an Entry establishing revised hearing dates for this case. The local public hearing was rescheduled for October 28, 2009, at 6:00 p.m. at Triad High School Auditoria, 8099 Brush Lake Road, North Lewisburg, Ohio 43060. The adjudicatory hearing will commence on October 27, 2009, at 10 a.m., at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Hearing Room 11-F, Columbus, Ohio 43215-3793. This Entry also granted intervention to the Urbana Country Club, the Board of Trustees of Union Township, the Board of Commissioners of Champaign County, the McConnells, and Julia Johnson.

This summary of the history of the application does not include every filing that has been made in case no. 08-666-EL-BGN. The docketing record for this case, which lists all documents filed to the date of publication of this Staff Report, is provided in Appendix 3 to this report.

### III. CRITERIA

The recommendations and conditions in this Staff Report of Investigation and Findings were developed pursuant to the criteria for certification set forth in Chapter 4906, ORC. Technical investigations and evaluations were conducted under guidance of the OPSB Rules and Regulations.

Section 4906.10(A) of the ORC reads in part:

The Board shall not grant a certificate for the construction, operation and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas or natural gas transmission line;
- (2) The nature of the probable environmental impact;
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
- (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
- (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under Sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under Section 4561.32 of the Revised Code, the Board shall consult with the Office of Aviation of the Department of Transportation under Section 4561.341 of the Revised Code;
- (6) That the facility will serve the public interest, convenience, and necessity;
- (7) In addition to the provisions contained in divisions (A)(1) through (A)(6) inclusive of this section, and rules promulgated thereunder, what its impact will be on the viability as agricultural land of any land in an existing agricultural

district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternate site; and

- (8) That the facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of the various alternatives.



#### **IV. NATURE OF INVESTIGATION**

The Board's Staff has reviewed the application submitted by Buckeye Wind, LLC, for certification of the proposed wind-powered electric generating facility. The Applicant is seeking authority from the Board to construct a wind-powered electric generating facility consisting of 70 wind turbine generators and related equipment. The application was prepared and submitted pursuant to OAC Chapters 4906-1, 4906-5, and 4906-13, of the Board Rules and Regulations. The Applicant included additional information pursuant to 4906-17.

The Board's Staff, which consists of career professionals drawn from the Staff of the Public Utilities Commission of Ohio and other member agencies of the OPSB, has the responsibility to evaluate, assess, and make recommendations on applications subject to Board jurisdiction. The Staff has reviewed and evaluated the application and additional information submitted by the Applicant and other materials filed with the Board under Case Number 08-666-EL-BGN. The investigation has been coordinated among the agencies represented on the Board and with other interested agencies such as the Ohio Department of Transportation, the Ohio Historical Society, and the U.S. Fish and Wildlife Service (USFWS).

The Recommended Findings resulting from the Staff's investigation in this Report are made pursuant to ORC Section 4906.07(C) and the Board's Rules and Regulations.

## **V. CONSIDERATIONS AND RECOMMENDED FINDINGS**

In the matter of the application of Buckeye Wind, LLC, the following considerations and recommended findings are submitted pursuant to and in accordance with ORC Section 4906.07(C).

### **Considerations for ORC Section 4906.10(A)(1)**

#### **Basis of Need**

The basis of need as specified under 4906.10(A)(1), Revised Code, is not applicable to this electric generating project.

#### **Recommended Findings**

Staff recommends that the Board find that 4906.10(A)(1) is not applicable to this wind-powered electric generating facility project. The Staff also recommends that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

## **Considerations for ORC Section 4906.10(A)(2)**

### **Nature of Probable Environmental Impact**

The Staff has reviewed the environmental information contained in the record compiled to date in this proceeding and has supplemented its review with site visits to the project area and discussions with employees and representatives of the Applicant. As a result, the Staff has found the following with regard to the nature of the probable environmental impact:

- (1) The proposed project involves the construction and operation of a wind-powered electric generating facility comprised of 70 wind turbines in Champaign County. The project, as proposed, would have an aggregate generating capacity between 126 and 175 MW, depending on the turbine model selected for the project.
- (2) The Applicant anticipates a one-year construction phase starting in mid 2010. The facility is currently expected to be brought on-line in mid 2011.
- (3) Air emissions during construction would include NO<sub>x</sub>, SO<sub>2</sub>, CO<sub>2</sub>, PM, and VOCs. Because of the relatively low volume of emissions and the temporary nature of construction activities, it is not expected that these emissions would have any significant adverse impacts on-site or beyond the site boundary. There would not be any material air emissions associated with the operation of the proposed wind-powered electric generating facility.
- (4) The Applicant identified 12 wetlands within the project area. Six of the wetlands are located near access roads or proposed turbine locations. However, based on the proposed project layout, impacts to all wetlands would be avoided during construction.
- (5) The electric collection system, as proposed in the application, would cross 21 streams. Depending upon how these lines are installed (overhead vs. buried, trenchless vs. open-cut), construction activities could impact 16 of the 21 streams (Streams B, D, E, H, I, J, P, Q, R, S, T, U, V, W, X and Y). These impacts potentially include the loss of riparian habitat, erosion, and downstream sedimentation.
- (6) Potential access roads have generally been located so as to avoid direct impacts to streams and wetlands, with existing stream crossing sites (e.g., farm lane culverts, etc.) to be used where avoidance is not possible. All temporary stream

crossings would be removed following construction, though permanent crossings will remain at some locations for future access. Following construction, access roads would either be narrowed down to a smaller width, or removed entirely, and sites restored.

- (7) Approximately 15 acres of trees and vegetation would be cleared for construction of the substation and laydown areas. A 200-foot radius would be cleared around most turbine sites, and a 55-foot wide corridor would be cleared for portions of the still-to-be-determined electric collection system right of way. Since most of the facility is proposed to be located in agricultural fields or other areas lacking trees, only limited tree removal is expected. The potential impacts of tree removal include the loss of food and habitat for wildlife, increased potential for erosion and sedimentation, and aesthetic impacts. In addition, impacts of tree clearing near streams may include an increase in water temperature and a decrease in dissolved oxygen.
- (8) The project area is largely agricultural, and therefore provides limited high-quality diverse wildlife habitat. However, segments of the project area do contain habitat likely to support numerous common reptile, amphibian, avian, and mammalian species. These species will likely be impacted, both directly and indirectly, during the construction, operation, and maintenance of the proposed facility. Faunal impacts will include the loss of habitat, increased habitat fragmentation, increased disturbance (i.e., noise, lighting, human activity), and temporary and permanent displacement. In addition, operational impacts are expected to include bird and bat mortalities through either direct strike or barotrauma.
- (9) Threatened or endangered species historically in or near the project site include:
  - (a) Plants: The Applicant identified a number of plant species that could occur within the project area based on identified habitat types. However, the Applicant's field investigations did not identify any of these plant species at the project area. Based on field assessments, there are no expected impacts to state-listed plant species associated with this project.
  - (b) Birds: To assess the potential for the project to impact avian species, the Applicant consulted with the ODNr's Division of Wildlife and the US Fish and Wildlife Service (USFWS) to develop an adequate preconstruction avian surveying plan. These field surveys were subsequently conducted during 2007 and 2008. The ODNr's Natural

Heritage Database (ODNR database) has historical records near the project area for the upland sandpiper (*Bartramia longicauda*) and the least bittern (*Ixobrychus exilis*), both state threatened species, as well as the state endangered loggerhead shrike (*Lanius ludovicianus*). The field surveys conducted by the Applicant's consultants also included limited sightings of two state-endangered species, the northern harrier (*Circus cyaneus*) and sandhill crane (*Grus canadensis*), as well as the state-threatened least flycatcher (*Empidonax minimus*). Based on the results of the avian studies and the plans to locate the turbines within largely agricultural areas, significant impacts to bird species are not expected as a result of the proposed project.

- (c) Reptiles and amphibians: The ODNR database has a historical record for the eastern massasauga (*Sistrurus catenatus*) near the project area. Likewise, the database shows records of two state-threatened species, the spotted turtle (*Clemmys guttata*) and the Kirtland's snake (*Clonophus kirtlandii*). However, given the current land use for the majority of the project area, the project is not expected to impact these species.
- (d) Mammals: The project site falls within the historical range of the Indiana bat (*Myotis sodalis*), a state and federally-endangered species. The Applicant's avoidance of habitat typically identified as suitable (i.e., wooded areas) for Indiana bats reduces the likelihood of the project impacting this species. To assess the potential for the project to impact the Indiana bat, the Applicant consulted with the ODNR's Division of Wildlife and the USFWS to develop an adequate preconstruction surveying plan. The surveying plan was conducted during 2007 and 2008 to assess the presence of Indiana bats. These surveying efforts did document the existence of several bat species in the area, but the Indiana bat was not observed at this proposed project area.

Surveying efforts conducted during the summer of 2009 by another developer, after the filing of this application, did reveal the presence of at least one colony of Indiana bats less than one mile from the proposed project. As a result of these more recent findings, the Applicant is working with both the ODNR and the USFWS to develop an appropriate plan to avoid, minimize, and mitigate any potential impacts to the Indiana bat at this project. Such consultation activities are on-going at the time of this report's writing.

- (e) Aquatic species: Records indicate the historical presence of two state-threatened species near the project area, the lake chubsucker (*Erimyzon sucetta*) and the tongue-tied minnow (*Exoglossum laurae*). These species are not expected to be impacted based on the project area habitat and proposed construction methodologies.
- (10) During construction, the use of best management practices (BMPs) such as silt fencing, reseeded, and straw bales would help control storm water discharges. A storm water pollution prevention plan (SWPPP) will be developed prior to construction.
- (11) There are potential adverse traffic impacts associated with construction of the proposed facility, particularly with temporary increases in traffic on routes leading to the site due to the delivery of equipment and materials. Traffic coordination and management would be required to minimize temporary impacts associated with ingress and egress points, road or lane closures, increased traffic, slow moving truck traffic, dirt and dust.
- (12) The Applicant conducted a literature review and evaluation of cultural resource surveys previously performed in the area. This review was based on data provided by the Ohio Historic Preservation Office's (OHPO) Records Search Service. The application also contains a visual impact assessment on cultural resources.
- (13) From the literature review, the Applicant identified 33 cultural resources listed in the National Register of Historic Places (NRHP) within the study area. These sites include three historic districts, two in Urbana and one in Mechanicsburg. (Note: The application identified four historic districts, but one of the historic districts is north of the five-mile study area for this particular project, in Logan County). Likewise, of the remaining NRHP-listed resources identified, two are located beyond the five-mile study area for this project, one in Union County and one in Logan County. There are twenty NRHP sites located within the village of Mechanicsburg and eight within the city of Urbana. Additionally, there is one NRHP site determined for eligibility within the city of Urbana.
- (14) At over 400 feet tall, it is expected that there will be aesthetic impacts from the turbines on NRHP sites. Impacts to NRHP sites within Urbana and Mechanicsburg are likely to be minimal, as the direct line of sight and noise associated with the turbines will be interrupted by changes in the terrain, as well as other buildings and infrastructure. The Staff agrees with the Applicant's

assessment that the nature of these impacts should not change the historical nature or meaningfulness of any of the NRHP designated sites, as there is over one mile from a NRHP-listed resource in Mechanicsburg to the nearest turbine, and over 2 miles from Urbana NRHP sites. Also, Staff notes that the landscape presently is not without visual impact of tower-type structures, as there are existing cellular and communication towers, as well as water towers, in the vicinity.

- (15) The Applicant also identified over 800 Ohio Historic Inventory (OHI) sites, and nearly 400 Ohio Archaeological Inventory (OAI) sites from the literature review. The literature review revealed no known archeological sites or structures at the site-specific turbine locations as proposed by the Applicant. Staff would be principally concerned about ground disturbance activities at the specific turbine sites. The location of the turbine footprints, access roads, and auxiliary lines does not appear to directly impact listed OHI and OAI sites.
- (16) No structures or inhabited dwellings (NRHP or otherwise) will need to be removed as part of this project.
- (17) The Applicant has completed a noise study of potential impacts expected from construction and operation of the facility. The study used 50 dBA as a design goal for operational noise at property lines of non-participating properties. Further, based on a study of ambient noise conditions within the project area, the Applicant developed a nominal night time impact threshold of 34 dBA, as a sound level that could result in perceptible noise in the project area. Although the noise study shows that the level of 34 dBA is likely to be exceeded during certain operating conditions at many non-participating residences around the facility, the Applicant has shown that the period of time during which this level will be perceived above background noise levels will be quite limited.

Noise levels during construction will be considerably higher than during operation. However, this noise will be intermittent and temporary, with noise levels in the range of 85 – 92 dBA at property boundaries experienced over a several week period. In order to help mitigate negative effects of construction noises, the Applicant intends to limit general construction activity to normal daytime working hours.

- (18) There are 181 residences located within 100 feet of the proposed collection lines or access roads. There are 579 residences within 1,000 feet of the facility. The

majority of these residences are within 1,000 feet of the collection lines and access roads or non-turbine components of the facility.

- (19) Per 4906-17, OAC, the minimum property line setback is established at 1.1 times the height of the turbine from the turbine base to the blade tip. The height of the turbine under consideration for this facility is 492 feet, which yields a minimum property line setback of 541 feet. One non-participating property is located within the property line setback.
- (20) Per 4906-17, OAC, a turbine's nearest blade tip at ninety degrees must be at least 750 feet in horizontal distance from the exterior of the nearest habitable residential structure on an adjacent property. This project will consist of turbines with blades that will extend up to 164 feet from the turbine base; therefore, the turbine base can be no closer than 914 feet from a residence on an adjacent property. Turbine 70, as proposed, is 873 feet from a habitable residence. The distance for all other turbine locations range from 932 to 4,503 feet, with an average distance of 2,059 feet.
- (21) The project area contains or intersects 43 agricultural district parcels, 25 of which will be directly impacted by the placement of a turbine, collection line, or access road.
- (22) The Applicant identified 14 recreational use sites in the project area: Barbara Howell Park, Buck Creek State Park, Cedar Bog Nature Preserve, Goshen Memorial Park, Gwynne Street Park, Indian Springs Golf Club, Melvin Miller Park, Ohio Caverns, Roadside Park, Stanley Park, Urbana Country Club, Urbana Wildlife Propagation Unit, Ward Street Park, and the Woodland Golf Club. Turbines will be visible from these recreational uses. There would be some noise, shadow flicker, and temporary construction traffic impacts on the two golf courses.
- (23) The Applicant states that roughly 87% (127,243 acres) of the total acreage of the townships in which the project is located is agricultural fields. The disturbance area for agricultural lands totals 395 acres, of which 327 acres would be temporarily disturbed and 68 acres would be permanently removed from agricultural production.
- (24) Residential land use accounts for roughly 8% of the project area. All other non-agricultural land uses combined total 5% of the project area.



- (25) The introduction of wind turbines that will be 492 feet from base to blade tip will represent an aesthetic impact to this rural agricultural setting. New overhead collection lines will also have an aesthetic impact, though the Applicant states that most overhead collection lines will follow existing distribution lines.
- (26) The project is not expected to conflict with known local or regional development projects or land use plans.
- (27) The Applicant estimates that a facility with a rated capacity of 131.4 MW would generate approximately 131 full time jobs during the approximately 12-month construction phase of the facility. The Applicant is recommending an agreement with local trade unions to ensure that the majority of the facility is constructed with labor from the local labor pool. Some specialized labor would be brought in from outside the region when necessary.

### **Recommended Findings**

The Staff recommends that the Board find that the nature of the probable environmental impacts has been determined for the proposed facility. Further, the Staff recommends that any certificate issued by the Board for the proposed facility includes the conditions specified in the section of the report entitled Recommended Conditions of Certificate.

## **Considerations for ORC Section 4906.10(A)(3)**

### **Minimum Adverse Environmental Impact**

The Staff has studied the Applicant's description and analysis of the ecological, social, and economic impacts that could result from the construction and operation of the proposed wind-powered electric generating facility at the proposed project area. The Staff requested and received additional information from the Applicant necessary to complete its review of the proposed project. Additionally, Staff conducted field visits to supplement the information contained in the Applicant's filings.

### **Site Selection Study**

The Applicant received a waiver from providing a complete site alternatives analysis due to the constraints associated with the siting of wind-powered electric generation facilities. Per the Applicant, potential wind farm sites must meet the following minimum requirements: adequate wind resources, proximity to electric transmission infrastructure with adequate capacity, accessibility via public roads and railroads that can accommodate delivery of equipment, adequate geotechnical conditions, limited sensitive ecological resources, compatible land use, and landowners who are willing to lease their property for the construction and operation of the facility. Using these constraints, the Applicant identified the Buckeye Wind project area as a suitable site for wind power development.

Several additional siting factors were considered in determining the placement of the wind turbines within the project area. The Applicant first had to eliminate areas that are restricted by required setbacks from residences, property lines, public rights-of-way, and other features. Within the remaining available land area, the Applicant evaluated shadow flicker and noise impacts, slopes and other access road limitations, ecologically-sensitive resources, wind resources and turbine engineering requirements, agricultural impacts, and landowner preferences regarding the placement of the wind turbines. Numerous potential layouts were evaluated to determine the optimal layout, which was presented in the application.

### **Wetlands**

The Applicant identified numerous wetlands within the proposed project area. However, when determining its project layout, the Applicant opted to avoid all wetlands. Therefore no wetlands are expected to be directly impacted by the construction and operation of the proposed facility. In instances where construction

activities are expected to occur in the proximity of wetlands, steps will be taken to prevent direct impact to the wetlands. Such steps would include clearly marking wetlands in advance of construction so as to prevent material storage or vehicle traffic within wetlands. In addition, erosion and sedimentation controls would be utilized around wetlands to prevent disturbance to wetlands during construction activities.

## **Streams**

Environmental impacts associated with vegetation clearing near streams include the loss of riparian habitat, erosion, and downstream sedimentation. Best management practices (BMPs), such as installing silt fencing and/or straw bales around the work site, would be utilized to minimize erosion and downstream sedimentation near streams. Within the cleared areas near streams where turbine excavation or access road installation work would not occur, tree stumps would be left in place, to help maintain soil stability.

Horizontal directional drilling (HDD) technology may be used for installing some areas of proposed underground electric collection system. Potential stream impacts associated with HDD include disturbances around the bore pits and frac-outs (i.e., surface eruption of drilling mud). In order to minimize impacts during HDD, the drilling equipment would be set up outside of stream riparian areas, and the drilling activity would be closely monitored for signs of frac-outs. Also, the Applicant would submit a detailed frac-out contingency plan.

Some streams would be open trenched for the installation of the electric collection system. In order to minimize impacts to streams, Staff believes it would be necessary for the Applicant to conduct trenching during low flow conditions. BMPs, such as silt fencing and straw bales, would be utilized to minimize downstream sedimentation and erosion. The stream banks would be rip-rapped, seeded, or mulched to prevent soil erosion, and small shrub and tree species would be planted after construction is complete.

## **Tree Removal**

The proposed project area is largely agricultural, so tree removal would be minimal. The Applicant estimates that a total of approximately 4.1 acres of forested area would be cleared to accommodate various project components. Of the approximately 9,000 acres under lease, the 4.1 acres represents less than 0.1%. The Applicant's efforts while determining its overall project layout helped to minimize potential tree clearing associated with the project.

## Wildlife

The project area hosts numerous wildlife species, including commercial and recreational species. The construction, operation, and maintenance of the proposed facility will likely negatively impact some of these species in the form of habitat loss, increased habitat fragmentation, increased disturbance (i.e., noise, lighting, human activity), temporary and permanent displacement, and direct mortality.

The Applicant conducted extensive avian and bat preconstruction surveys during 2007 and 2008 in coordination with ODNR and USFWS. Based on the survey results, it is unlikely that this project will significantly impact avian species in the project area. With regard to the Indiana bat (*Myotis sodalis*), the Applicant is in the process of developing a conservation plan due to a confirmed presence of this species in the vicinity of the project. At the time of this writing, a Habitat Conservation Plan (HCP) is being evaluated as one possible approach to address avoidance, minimization, and mitigation of potential impacts to the Indiana bat. Any HCP would be developed with assistance from both ODNR and USFWS, and if implemented, would assist in minimizing potential impacts to Indiana bats. An Incidental Take Permit for the Indiana bat issued by the USFWS is a possible requirement for this project. Currently there are no Ohio-specific mortality estimates for migratory tree bats. These more common species make up the majority of bat fatalities at wind turbine facilities in the eastern United States. The avoidance, minimization, and mitigation measures used to address potential impacts to Indiana bats may also decrease the likelihood of impacts to other species of bat.

Impacts to other species would be minimized by the Applicant's efforts to locate the overall project footprint so as to avoid many of the more environmentally-sensitive areas. This includes wooded areas, streams, and wetlands. Of the 9,000 leased acres for this project, approximately 72 acres are expected to change land use as a result of this project. Therefore, the vast majority of the project area will maintain its current usage, helping to reduce the potential impact to the area's existing wildlife.

## Cultural Resources

The Applicant included an assessment of impacts to cultural resources within five miles of the project area. The Applicant limited its assessment of impacts to cultural resources to a database or literature review of previously recorded elements. The Applicant asserts that additional impacts are not likely based on several factors, including: the nature of the project being located in upland areas, turbine location not

being near identified cultural resource sites, and placement of access roads and electric collection system along existing roads. Based on the information provided in the application, Staff concurs that impacts to *known* resources are likely to be minimal, but Staff cannot conclude that impacts to cultural resources in an area the size of this project will be minimal, while only reviewing existing data.

To date, the Applicant has not conducted archeological testing at the specific turbine footprint locations, access roads, or auxiliary line locations beyond the literature review. Likewise, Staff is not aware of any architectural inventory performed in the study area by the Applicant beyond the literature review.

#### *Archeological Sites*

There are several areas of cultural interest in the study area including the Cedar Bog, the grave of Simon Kenton, and Grimes Field in Urbana. Exhibit U of the application shows a cluster of OHI and OAI sites on the west, east and south of the project area. There is also a band of mounds identified to the south between the city of Urbana and the village of Mechanicsburg. As shown in Exhibit U, the area is not without known cultural resources.

To better determine the presence, or absence, of important archeological sites at the project location, Staff believes that at a minimum Phase I testing is appropriate at turbine locations, access roads and electric collection line locations. Staff observes that the turbine locations are clustered into groups that could make a systematic approach to further survey work feasible, in order to get a sampling of data representative of impacts to the study area.

#### *Architectural Resources*

While studying the area, Staff noticed several structures in Union Township dating to the 1800s, in and around the village of Mutual, that were not listed in the Applicant's literature review as being previously inventoried. This suggests to Staff that additional research of structures may be needed that focuses on the core area of the project between Urbana and Mechanicsburg.

As stated in the Nature section, Staff agrees that adverse impacts to significant cultural resources in the Urbana and Mechanicsburg areas should be minimal, due to distance, vista and terrain. What is not clear, however, is the impact the wind project may have to cultural resources in smaller, crossroad type locations (an example being the Village of Mutual) that are located in the area between Urbana and Mechanicsburg and directly adjacent to the core of wind turbine locations for the project. In order to determine such

effects, Staff needs additional architectural survey information with actions for mitigation, if necessary.

### *Conclusions*

Staff agrees that placement of the turbine locations, access roads and electric collection system seem to avoid previously recorded cultural resource locations. Staff cannot conclude, however, that there will be no adverse effects to historic properties just because a resource is not identified in the OHPO database. This only indicates that prior survey work was not performed by others at that particular location. Staff finds that there is enough evidence in the area to suggest that the potential for finds of cultural significance should be evaluated further at the specific turbine locations, access roads and electric collection system. From an archeological and cultural perspective, the Applicant should develop a systematic research program at these locations for further analysis that is acceptable to Staff, in consultation with OHPO, prior to construction.

Staff concurs with the Applicant that impacts to architectural resources in the developed areas of Urbana and Mechanicsburg, where the majority of the OHI and NRHP resources are located, are not likely to result in adverse effects to those resources. Staff finds that while Urbana and Mechanicsburg are more densely developed and populated, there could be areas in between, where the core of the wind farm is located, where NRHP resources could be more susceptible to the effects of turbine locations. These areas are generally flatter in terrain, have smaller buffer areas to the nearest turbines, and are less dense from a development standpoint. Additionally, Staff is not aware of these areas having been surveyed independent of existing literature research for cultural resources.

While the application accurately characterizes impacts to known or listed landmarks, Staff needs to better understand the entire project area and the potential effects the proposed project would have on important archeological sites, architectural properties, and other places of importance that may not have been inventoried to date.

### **Socioeconomic Impacts**

The project is not expected to have any significant impact to existing land use within the project area. The facility is located in an agricultural area and all agricultural activities could continue upon completion of the facility. Impacts to farmland would be minimized by constructing access roads and collection lines along crop edges and parallel to crop rows. The Applicant states that all damaged drainage tiles from

construction activities would be repaired, all construction debris would be removed, and landowners would be compensated for lost crops.

The project is expected to have a long-term aesthetic impact on residences near the facility. The project would be visible from many of the residences in the project area. All of the turbines in the project area are outside the residential setback (914 feet, in this instance) except Turbine 70. All of the turbines are outside the property line setback except Turbine 57. Screening the turbines from view is not a practical mitigation measure in most cases and visual impacts would be unavoidable.

Of the 14 recreational land uses, two golf courses and one park are located within one mile of a turbine. The two golf courses are located within one-half mile of a turbine. Shadow flicker has its longest reach during winter months which is also the off season for a golf course. However, the golf courses in the project area may receive some low intensity shadow flicker in the early morning and late evening. Both golf courses would be exposed to noise in the 35 dBA range. Traffic delays due to construction that may impact recreational land uses would be temporary and minimal.

The Applicant states that the population in the participating townships of Champaign County is projected to grow by approximately 6.5% from 2010 to 2020. Construction of the wind farm could limit future commercial and residential development in the project area; however based on the population projections, the project would not limit growth beyond expected levels in the townships where the facility is planned. Agriculture is the dominant land use in the area and this use is compatible within the project area. This is consistent with the Champaign County Comprehensive Plan's land use goal to protect agricultural land. The plan also states that the plan partners will not support the conversion of prime agricultural lands to non-agricultural uses and will guide land development to those areas which are shown as urban service areas on the Township Land Use Map. The potential reduction in developable land may have the impact of driving new commercial and residential development towards urban areas, which is also consistent with the county's comprehensive plan.

The project is expected to have a positive economic impact in the region by providing an additional source of tax revenue for the participating townships, lease revenues for participating landowners, 131 full-time construction jobs for an approximate 12 month duration, and 12 full time permanent jobs for facility operations.

## **Conclusion**

Staff concludes that the project, as proposed, would introduce both temporary and permanent impacts to the project area and surrounding areas. These impacts include social, cultural, and environmental factors. In order to address and minimize these impacts, Staff has included several conditions, compliance with which should be required as part of the issuance of any certificate for this case. With the Staff recommended conditions, Staff believes that minimum adverse impacts will be realized at the project area.

## **Recommended Findings**

The Staff recommends that the Board find that the proposed wind-powered electric generating facility represents the minimum adverse environmental impact provided that any certificate issued by the Board for the proposed facility includes the conditions specified in the section of the report entitled Recommended Conditions of Certificate.



## **Considerations for ORC Section 4906.10(A)(4)**

### **Electric Grid**

The purpose of this section is to review studies of interconnecting the proposed Buckeye Wind project into the existing regional electric transmission system.

The Applicant plans to use a 34.5 kV collector system, consisting of both underground and overhead lines, to connect the wind turbines to a proposed interconnect transmission substation. The proposed substation, which will be located in the Dayton Power and Light (DP&L) control area, will interconnect to the local and regional grid near the Givens to Mechanicsburg section of the Urbana – Mechanicsburg – Darby 138 kV transmission line.

### **PJM Interconnection Analysis**

The Applicant proposes to construct a new interconnect transmission substation on DP&L's Urbana – Mechanicsburg – Darby 138 kV transmission line. This line is part of the regional bulk electric transmission system operated by PJM Interconnection L.L.C (PJM). PJM is charged with the operation of the regional transmission system and administers the interconnection process of new generation to the system. Generators wanting to interconnect to the bulk electric transmission system located in the PJM service area are required to submit an interconnection application to PJM for their review of system impacts. Buckeye Wind, LLC, submitted the proposed project to PJM on December 6, 2006. The application along with the new substation on the Urbana – Mechanicsburg – Darby 138 kV line was given a queue number of R52 by PJM.

PJM has completed the Feasibility Study and System Impact Study, which includes Stability and Short Circuit Analysis. These studies looked at the impacts of adding the proposed facility to the regional bulk power system and identified any transmission system upgrades that would be required to maintain the reliability of the regional transmission system. As of October 7, 2009, the only study that has not been released is the Facilities Study, which identifies engineering design work necessary to begin construction, an estimate of costs that the Applicant will be charged for attachment facilities, local upgrades, and network upgrades, and a timeline for design and construction of facilities and upgrades. Buckeye Wind, LLC, has not yet signed a Construction Service Agreement for the upgrades identified in the studies or an Interconnection Service Agreement with PJM for the proposed facility. Signature on the Interconnection Service Agreement will need to be obtained before PJM will allow the Applicant to interconnect the proposed facility to the bulk electric transmission system.

Staff reviewed the System Impact Study report as prepared by PJM. The study summarized network impacts that may occur with the injection of 200 MW of energy (40 MW of capacity) when the proposed facility is connected to the bulk power system. Staff notes that only the 40 MW of capacity can be relied on for the facility to meet capacity obligations. The Applicant requested a generation injection of 200 MW from PJM and listed 126 to 175 MW in its application to the OPSB. PJM's policy allows for a reduction in electrical output prior to the execution of an Interconnection Service Agreement. A summer peak power flow model and short circuit model for 2012 was used to evaluate the reliability impacts. These studies revealed that some existing transmission lines would become overloaded with the addition of the new generating facility connected to the system under multiple contingency outage conditions.

### **North American Electric Reliability Corporation Standard Requirements**

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the bulk power system. NERC requires planners of the bulk electric transmission system to meet Reliability Standards<sup>1</sup> TPL-001-0.1 through TPL-004-0 under transmission outage conditions for categories A, B, C, and D contingencies. According to NERC, a contingency is an unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element.

Under category A (i.e. no contingencies, normal system conditions) and category B (i.e. single contingency outage), the planning authority and transmission planner shall demonstrate that the interconnected transmission system can operate to supply projected customer demands and firm transmission service at all demand levels over the range of forecast system demand. Under category C (i.e. multiple contingency outages), the planning authority shall demonstrate that the interconnected transmission system can operate to supply projected customer demands and firm transmission service at all demand levels over the range of forecast system demand and may rely upon the controlled interruption of customers or curtailment of firm transmission service. Finally, under category D (i.e. extreme events resulting in multiple contingencies), the planning authority shall demonstrate that its portion of the interconnected transmission system is evaluated for the risks and consequences of a number of each of the extreme contingencies that are listed in the standard. PJM

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<sup>1</sup> North American Electric Reliability Corporation. Reliability Standards - Transmission Planning, TPL-001-0.1 - TPL-004-0. [www.nerc.com/page.php?cid=2|20]

analyzed the bulk electric system for all of the above categories with the proposed new facility interconnected to the bulk power system. PJM conducted a Feasibility Study and System Impact Study of the possibility of delivering 200 MW (40 MW capacity) output from the proposed facility to the rest of the PJM regions during 2012 summer peak load period. The results of the PJM System Impact Study are as follows:

Category A:

No Contingencies

- No Overloads

Category B:

Single Contingency

- No Overloads

Category C and Category D:

Multiple Contingencies

- An outage of the Darby – Eagle – Mechanicsburg 138 kV line and Darby – Delaware 138 kV line for a breaker failure at Darby 138 kV station causes the Johnson WP - NW Urbana 69 kV line to overload. Loading on the line increases from 77.2% to 100.1%. This can be alleviated by upgrading the line drop in Urbana and reconductoring the 1.82 mile Johnson WP – NW Urbana 69 kV line.
- An outage of the Darby – Eagle – Mechanicsburg 138 kV line and Darby – Delaware 138 kV line for a breaker failure at Darby 138 kV station causes the Urbana – Johnson WP 69 kV line to overload. Loading on the line increases from 82.7% to 107.1%. This can be alleviated by upgrading the line trap in Urbana and reconductoring the 2.47 mile Urbana – Johnson WP 69 kV line.

## **Short Circuit Analysis**

The short circuit analysis study evaluates the interrupting capabilities of circuit breakers located at the proposed plant site and other circuit breakers impacted by the proposed generation addition. The results showed that three circuit breakers must be replaced or upgraded. Due to the breakers age of greater than 50 years and slow open time, it is not feasible to upgrade the breakers. In addition, a set of transformer fuses and holders at the Logan Substation would need to be replaced.

## **Stability Analysis**

The stability analysis study evaluates the ability of the power system to withstand disturbances (contingencies) and maintain stable operation of the bulk electric grid. The study was run at 2013 summer light load conditions, with the plant at maximum output. No stability problems were identified.

## **Previously Identified Overloads**

PJM studied contingencies that this project may cause on earlier projects in the PJM Queue. No overloads were identified.

## **Previously Identified System Reinforcements**

PJM studied overloads initially caused by prior Queue positions with additional contribution to overloading by this project. No overloads were identified.

## **Conclusion**

The studies indicate that a small number of transmission system upgrades will be required with the addition of the proposed facility to the bulk power system in order to maintain transmission system reliability during multiple contingencies. In addition, the short circuit analysis indicated that three circuit breakers and a set of transformer fuses and holders need to be replaced. With the exception of the system issues above, PJM identified no other problems.

The Staff believes that with the upgrades identified in the PJM studies, the proposed facility is expected to provide reliable generation to the bulk electric transmission system. The proposed facility is consistent with plans for expansion of the regional power system, and will serve the interests of electric system economy and reliability. The facility will serve the public interest, convenience, and necessity by providing additional electrical generation to the regional transmission grid. In addition, Ohio Senate Bill Number 221 requires electric distribution utilities to provide alternative energy resources. Staff believes this facility may help meet this requirement.

### **Recommended Findings**

The Staff recommends that the Board find that the proposed generation facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability. Further, the Staff recommends that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

## **Considerations for ORC Section 4906.10(A)(5)**

### **Air, Water, Solid Waste, and Aviation**

#### **Air**

Air quality permits are not required for construction and operation of the proposed facility. However, fugitive dust rules adopted pursuant to the requirements of ORC Chapter 3704 may be applicable to the proposed facility. The Applicant has indicated an intention to control fugitive dust through the use of several practices. The extent of disturbed construction areas at any given time will be minimized by stabilizing and restoring such areas as soon as possible after construction. Water or calcium carbonate would be used on unpaved public roads and facility access roads, as necessary to control dust. Some roadways may be temporarily paved with a stone and oil mixture. However, this treatment would not be used in the vicinity of streams or wetlands. The Applicant has also indicated that it would develop a reporting process to monitor for excessively dusty conditions. Other construction related air emissions would include emissions from construction vehicles and equipment. Such emissions would be minimized by maintaining construction equipment in good working condition. Staff believes that construction and operation of the facility, as described by the Applicant, would be in compliance with air emission regulations.

#### **Water**

Neither construction nor operation of the proposed facility will require the use of significant amounts of water, so requirements under ORC §1501.33 and §1501.34 are not applicable to this project.<sup>2</sup>

The application indicates that there are 21 perennial and ephemeral streams, and several acres of wetlands in the project area. The Applicant intends to avoid direct impact to all wetlands in the project area by designing the facility so that wetlands will be avoided in the placement of facilities and in access to facilities during construction and operation. Wetlands in the vicinity of project construction activities will be protected by flagging or fencing the edges of the wetlands and implementing appropriate erosion controls in its construction areas. Many of the streams will need to be crossed by construction equipment or electrical collection lines. However, the Applicant intends to cross streams using methods that do not disturb the streambeds

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<sup>2</sup> Preparation of concrete for the wind turbine foundations will consume up to approximately 20,000 gallons of water per foundation. Although this is a large amount of water, it is not significant in the context of ORC §1501.33, which involves the use of more than 2,000,000 gallons per day over a 30 day period.

wherever possible. In addition to avoiding or minimizing direct impacts to streams and wetlands, the Applicant intends to avoid indirect impacts through the implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would be developed in association with the Applicant's National Pollution Discharge Elimination System (NPDES) permits for construction of the facility.<sup>3</sup> However, the Applicant has indicated that, because of its planned avoidance and minimization of direct impacts to streams and wetlands, compliance with Clean Water Act Section 401 or 404 requirements will be achieved under nationwide permits. Staff believes that construction of this facility would comply with requirements of ORC Chapter 6111, and the rules and laws adopted under this chapter.

### **Solid Waste**

The application indicates that solid waste generated from construction activities would include items such as plastics, wood, cardboard, metals, packaging materials, construction scrap and general refuse. The Applicant intends to remove construction debris from work areas and dispose of the materials in dumpsters located at staging areas. A private contractor would be used to dispose of the construction debris at a licensed solid waste facility. The Applicant would develop and follow Spill Prevention Containment and Countermeasure (SPCC) procedures to prevent the release of hazardous substances, such as petroleum products, into the environment during construction. Any spills of hazardous substances would be reported pursuant to Ohio EPA and ODNR procedures. During operation, the Applicant anticipates that solid waste generated will be similar to a typical small business office, and will be handled through a local solid waste disposal service. Waste oils generated during operation of the facility would be disposed of in accordance with state and local regulations. Where trees and other woody vegetation would be cleared, the timber would be cut into logs and left for use by the landowner, or removed from the site. Limbs and brush will be chipped, buried or otherwise disposed of but not left on-site as mulch pursuant to landowner preference and as allowed by federal, state and local regulations. Staff believes that the Applicant's solid waste disposal plans would comply with solid waste disposal requirements in ORC Chapter 3734, and the rules and laws adopted under this chapter.

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<sup>3</sup> The Applicant anticipates the need for two separate NPDES construction permits: a construction storm water general permit; and, a general permit for storm water discharges for construction activity within the Big Darby Creek watershed. No NPDES permits will be needed for operation of the facility.

## Aviation

Two airfields are within two miles or less of the project area and are as follows:

### **A. Grimes Field ( 40° 07' 47.5"N, -83° 45' 16.6"W ) – FAA Identifier I74**

This airport is a public use, municipal airport that maintains two active runways.

Runway 1, (01 & 19): Asphalt surface, 4,400' length x 100' width, with approach and departure vectors of 191° and 11° (magnetic).

Runway 2, (02 & 20): Turf (grass) surface, 3,000' length x 100' width, with approach and departure vectors of 202° and 22° (magnetic).

### **B. Urbana – Weller Airport ( 40° 05' 28.2" N, -83° 41' 21.7" W ) – FAA Identifier 38I**

This airport is a privately owned, public use airport that maintains one active runway.

Runway 1, (09 & 27): Turf (grass) surface, 2534' length x 75' width, with approach and departure vectors of 91° and 271° (magnetic).

Staff contacted the Ohio Office of Aviation during review of this application in order to coordinate review of potential impacts the facility might have on local airports. The Ohio Office of Aviation recommended disapproval for eleven (11) of the seventy (70) proposed turbines. As such, the Office of Aviation mailed letters to the Applicant recommending disapproval of these particular turbines on April 27, 2009. These recommendations were based on the proposed structures' penetration into protected airspace from the above mentioned airports' respective runway centerline. These eleven turbines are numbers 19, 29, 46, 48, 50, 57, 58, 60, 61, 62, and 63.

In accordance with FAA Advisory Circular 70/7460.2k *"Proposed Construction or Alteration of Objects That May Affect the Navigable Airspace"*, the Applicant filed FAA Form 7460-1 *"Notice of Proposed Construction or Alteration."* Any structure that the FAA deems to be dangerous to air travel and/or would have an adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities, will receive a presumed hazard designation and a letter explaining this will be mailed to the Applicant. A presumed hazard designation is effectively a disapproval of a structure's construction.



On September 1, 2009, the FAA published the results of their aeronautical studies concerning the proposed Buckeye Wind turbine locations. These studies concluded that 38 of the 70 turbine locations would have an adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities and as such, received a determination of presumed hazard.

The 38 turbines that have received presumed hazard designations from the FAA are numbers 17, 19, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 52, 55, 57, 58, 60, 61, 62, 63, 66 and 68. The eleven turbines identified as problematic by the Ohio Office of Aviation are included within these 38 turbines.

FAA disapproval does not bar construction and if a disapproved structure is built, the FAA will require adjustments at any affected airport. Such adjustments may include raising an airport's minimum descent altitude (MDA). The MDA is the lowest altitude, in feet above mean sea level, to which descent is authorized on final approach during a non-precision instrument (instrument flight rules or IFR) landing. IFR landings are conducted at an airport during times of low visibility, or if inclement weather prohibits a pilot from making a visual (visual flight rules or VFR) landing. Raising an airport's MDA creates a steeper glide slope/angle at which a plane must land in bad weather (IFR) conditions and reduces the percentage of time that an aircraft can land in IFR conditions. This can reduce the amount of air traffic an airport receives relative to the amount of time the airport is under IFR conditions. A prerupt glide path, coupled with bad weather, can create a less safe landing scenario.

Pending resolution of the issues presented in the initial FAA study findings, the FAA has determined that these 38 structures (turbines and towers) should not be constructed as proposed. In recourse and pursuant to the FAA determination letters, the Applicant can employ an engineer to re-survey each disapproved turbine site, thus presenting the possibility of a presumed hazard designation reversal. Any resolution of the issues described in the FAA determination letters must be communicated to the FAA within 60 days from the date of the determination (9/1/09), so that a favorable determination can be subsequently issued if deemed appropriate.

With the 70 turbines initially proposed, this project would have a generating capacity between 126 and 175 MW. With 32 turbines (removing the 38 presumed hazard turbines), the project would have an aggregate capacity between 58 and 80 MW.

### **Recommended Findings**

The Staff finds that the proposed facilities, with the recommended conditions, will comply with the requirements specified in ORC Section 4906.10(A)(5). Further, the Staff recommends that any certificate issued by the Board for the certification of the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

## **Considerations for ORC Section 4906.10(A)(6)**

### **Public Interest, Convenience, and Necessity**

#### **Alternative Energy Portfolio Standard**

In May 2008, the Governor signed Senate Bill 221 which included an alternative energy portfolio standard (AEPS) for the state of Ohio. Ohio's AEPS has specific requirements for both renewable and advanced energy resources, including escalating annual requirements for renewable energy resources beginning in 2009. The annual requirements include an in-state provision. Wind power is specifically recognized as an eligible renewable energy resource under ORC, 4928.01(A)(35). It is likely that the proposed facility could contribute to the renewable requirements under 4928.64, ORC.

#### **Setbacks**

The Board incorporated minimum setback requirements in rule, OAC Section 4906-17-08(C)(1)(c), and it indicated that such minimum setbacks would be applied to all wind projects under Board jurisdiction.

According to the language in 4906-17, OAC, there are specific minimum setbacks from both property lines of the wind farm property and residential structures on adjacent properties. The rule also includes language in which both setbacks may be waived in certain circumstances.

For property lines, the minimum distance from the turbine's base to the property line of the wind farm property must be at least 1.1 times the total height of the turbine as measured from its base to the tip of the blade at its highest point. Assuming a maximum turbine height of 492 feet as proposed in the application, this minimum property line setback equates to a distance of 541 feet.

OAC 4906-17 further provides that the minimum distance from a wind turbine to the exterior of the nearest habitable residential structure, if any, located on an adjacent property at the time of the certification application must be no less than 750 feet in horizontal distance from the tip of the turbine's nearest blade at ninety degrees to the structure. Using maximum blade lengths assumed in the application (50 meters), this minimum setback calculates to 914 feet.

A review of the facility layout, as presented in the application, shows two turbine locations that do not satisfy the minimum setback requirements.

Turbine 57 does not currently satisfy the minimum setback from the property line of a non-participating parcel. However, there appears to be sufficient space on the hosting parcel to accommodate a slight adjustment to the turbine location within the current parcel so that it no longer violates this minimum setback provision.

Turbine 70 does not satisfy the minimum setback requirement from a habitable residential structure on an adjacent property. Specifically there is a residence to the west/northwest of the proposed turbine location that is within the minimum 914 foot setback for this project. Because of a stream immediately to the east of the proposed location for turbine 70, as well as the limiting shape and size of the parcel hosting proposed turbine 70, there does not appear to be sufficient flexibility within the parcel to adjust the location of turbine 70 so that it satisfies the setback requirement without introducing incremental ecological impacts.

While 4906-17, OAC, requires minimum setback distances, it does not preclude the Board from requiring greater setbacks if the Board determines it is appropriate. Citing a lack of hard scientific evidence on potential health impacts associated with utility-scale wind projects, the Ohio Department of Health has suggested that a setback from non-consenting residents greater than that included in 4906-17, OAC, may be warranted. Staff expects this topic to be addressed extensively during the public and evidentiary hearings. Therefore, the final record in this case should provide sufficient evidence for the Board to determine if a setback greater than that proposed by the Applicant is necessary.

## **Aesthetics**

Each wind turbine consists of three major components: the tower, the nacelle, and the rotor. The height of the tower, or “hub height” (height from the foundation to the top of the tower) will be up to 328’ (100 M). The nacelle is positioned atop the tower and the rotor hub is mounted to the front of the nacelle. The rotor diameter will be up to 328’ (100M), which equates to a total structure height of up to 492’ (150M).

Microwave and communication towers are pre-existing within the project area and vicinity. These are distributed as follows:

**Mechanicsburg** – 7 towers, with heights ranging from 79.2 Meters – 139 Meters.

**Mutual** – 5 towers, with heights ranging from 76.2 Meters – 97.5 Meters

**Urbana** – 3 towers, with two having heights of 108 Meters and one at 110 Meters

These pre-existing towers are readily noticeable in contrast to the surrounding agricultural landscape that is made up of valleys and gently rolling hills. A best comparison of scale between the turbine equipment and pre-existing towers could be made to the 139 meter tower located in the vicinity of Mechanicsburg.

Ten miles of visibility is the greatest reportable visibility value for terrestrial-based observations. This value can be exceeded if the observer is elevated above an object, or conversely if an object is elevated (or taller) than the observer and surrounding landscape. The latter will of course be the case for wind turbine construction.

The project area is in the Bellefontaine Uplands physiographic sub-region of the Central Ohio Till Plains. This area is distinguished by gently rolling hills and moderate slopes formed as a result of glacial processes. Elevations within the study area range from approximately 950 to 1,400 feet above mean sea level (amsl). Higher elevations do occur within the project area and are located along a dissected plateau oriented North-South with the lower elevations occurring on the lee side of this plateau.

The Applicant utilized established visual assessment methodology to define a study area within a five mile radius of each proposed turbine location. This study area included 268 square miles of Champaign County, Ohio and included all, or portions, of the city of Urbana, the villages of North Lewisburg, Woodstock, Mechanicsburg, Mutual and Catawba and the hamlets of Middletown, Fountain Park, Kennard, Cable, and Mingo.

The Applicant conducted an analysis of the project visibility to identify locations within the study area where potential for the proposed wind turbines to be visible from ground-level vantage points existed. The Applicant's analysis included identifying and labeling potentially visible areas on viewshed maps, preparing technical cross sections, and verifying visibility through field observations. Two five-mile radius topographic viewsheds were mapped, one to illustrate "worst-case" daytime visibility (based on a maximum blade tip height of 492 feet above the existing grade) and the other to illustrate potential visibility of the turbine lights at night (based on a nacelle height of 328 feet above the existing grade). This assessment also utilized a vegetation screening factor of 40 feet in addition to the existing topographic elevations.

Visibility of the proposed project was evaluated by the Applicant through field observation on January 24-25, 2008. The Applicant's topographic "worst-case" analysis yielded results showing that the proposed project could potentially be visible within 95.5% of the five mile study area. This "worst-case" assessment of potential visibility

indicates the area where any portion of any turbine could possibly be seen without considering the screening effects of existing vegetation and structures.

Areas where there exists no possibility of turbine visibility are generally limited to the backside of hills and within stream valleys primarily located near Catawba and Mingo. In most areas where this visibility potential occurs, views of the majority (37-70) of the turbines would be available. About 15% of the five mile study area has the potential for views that include less than 19 turbines.

Areas of potential nighttime visibility equal 92.7% of the five mile study area and are indicated in roughly the same locations shown by the aforementioned worst-case analysis.

When the 40 foot vegetation screening is introduced, project visibility values decrease to 84.6% for worst-case analysis. This value serves as a more likely reflection of what the actual project visibility is likely to be. This screening also increases the amount of receptors that will have views of fewer than 19 turbines from 15% to 31% of the study area.

Approximately 40 miles of 34.5 kV overhead collection system are to be installed to support the project's energy generation. The Applicant states that these lines may consist of some combination of over build and new construction. These lines would generally parallel public roads until they reach the appropriate substation. Where coordinated with existing facilities, any incremental aesthetic impacts associated with above-ground segments of the electric collection system are expected to be minimal.

A newly constructed substation will be located on private land near the intersection of Pisgah Rd. and Route 56 in the Town of Union, adjacent to the Givens to Mechanicsburg section of the Urbana – Mechanicsburg – Darby 138kV transmission line. The substation will encompass up to 1.75 acres and will be enclosed by a chain link fence to be accessed by a new gravel access road. The substation will also require phone and electrical service and as such, lines will be strung to the nearest pole for service.

## **Blade Shear**

Blade shear is the phenomenon where a rotating wind turbine blade, or segment, separates from the nacelle and travels a distance from the tower. This is usually due to a manufacturing defect, improper maintenance, control system malfunction, or lightning strike.

The Applicant asserts that past incidences of blade shear have generally been the results of human error, design defects during manufacturing, poor maintenance, control system malfunction, or lightning strikes. The Applicant also indicates that the turbines under consideration (Nordex N100, Nordex N90, and the RePower MM92) are certified to international engineering standards. Staff has found that the Germanischer Lloyd certification incorporates material safety factors into the blade design. The Applicant also states that the turbines will have the following safety features: two independent braking systems, a lightning protection system, and turbine shut down at excessive wind speeds and at excess blade vibration or stress. Compliance with these safety control mechanisms minimizes the potential likelihood of blade shear.

If blade shear were to occur, the Applicant states that the maximum calculated blade throw distance is 500 feet; this is within the property line setback distance.

Staff believes that the Applicant has adequately evaluated and described the potential impact from blade shear at the nearest property boundary. Compliance with the safety control mechanisms mentioned above is the Applicant's plan to minimize potential impacts.

### **Ice Throw**

Ice throw is the phenomenon where accumulated ice on the wind turbine blades separates from the blade and falls or is thrown from the tower. Applicant asserts that this occurs during a thaw. The Applicant also states that the turbines will have the following safety features: two independent braking systems, turbine shut down at excessive wind speeds and at excess blade vibration or stress. Compliance with these safety control mechanisms minimizes any potential risk associated with ice throw.

The Applicant has stated that ice fragments typically land within 328 feet of the wind turbine tower. This is within the setback distance. The Applicant also states that the risk from ice throw is negligible beyond 722 feet; this is within the setback distance from the exterior of the nearest habitable residential structure on an adjacent parcel.

Staff believes that the Applicant has adequately evaluated and described the potential impact from ice throw at the nearest property boundary. The Applicant's plan to minimize potential impacts is: compliance with the safety control mechanisms, a setback distance to the nearest property boundary, and restrictions to unauthorized public access to the site.

Staff has included conditions that restrict public access with appropriately placed warning signs along access roads and that the Applicant conduct training instructing workers of potential hazards of ice conditions. Compliance with these should be required as part of the issuance of any certificate for this case.

### **Shadow Flicker**

Shadow flicker from wind turbines occurs when rotating wind turbine blades pass between the sun and the viewer at low solar elevation angles. Shadow flicker is generally experienced in areas near wind turbines where the distance between the viewer and blade is short enough that the glare from the sunlight is insufficient to conceal the blade. When the blades rotate, this shadow creates a visual effect with the sun known as shadow flicker.

From longer distances (> 0.6 miles), however, the wind turbine covers an increasingly smaller portion of the sun. Thus, light rays will "recombine" to eliminate the shadow flicker effect and the turbine will be perceived as an object moving with the sun behind it. No flicker shadow will be cast when the sun is obscured by clouds or when the turbine is not rotating.

This phenomenon can impact residents who live very close to turbines. Computer simulations can help project developers position turbines so that flicker does not interfere with nearby residences.

Shadow flicker generally does not affect receptors located 10 rotor diameters or more (about 0.5 miles) from the turbine. Flicker values rarely exceed 0.6 miles in northern latitudes such as Ohio, but can occur seasonally at sunrise/sunset when lower sun elevation angles are experienced. The Applicant states, and Staff concurs, that any shadow flicker beyond 0.6 miles would be low intensity shadow flicker.

No state or national standards exist for acceptable frequency or duration of shadow flicker from wind turbine projects. However, international studies/guidelines from Germany and Australia have suggested 30 hours of shadow flicker per year as the threshold of significant impact, or the point at which shadow flicker is commonly perceived as an annoyance. This 30 hour standard is used in at least four other states (*Michigan, New York, Minnesota and New Hampshire*) as well. Accordingly, the Applicant and Staff utilized a threshold of 30 hours of shadow flicker per year for their analysis.



In reviewing shadow flicker amounts, the Applicant selected EAPC ([www.eapc.net](http://www.eapc.net)) as the contractor to run the mathematical and graphical scenarios necessary to determine exposure amounts and affected areas.

Dimensions for wind turbine models proposed for the Buckeye Wind project, and used for this study, are shown below.

<b>Turbine Model</b>	<b>Rated Capacity (MW)</b>	<b>Hub Height (M)</b>	<b>Rotor Diameter (M)</b>	<b>Blade Tip Height (M)</b>
Nordex N100	2.5 MW	100	100	150
Nordex N90	2.5 MW	100	90	145
Repower MM92	2.0 MW	100	92.5	146.25

The initial shadow flicker calculation produced a site-wide shadow flicker map used to assess the flicker at 2,087 area residences. This calculation took into account the wind turbine location, elevation, dimensions, receptor location and elevation, and assumed that shadow flicker can only occur when at least 20% of the sun is covered by the wind rotor disk. Based on the values obtained in the preliminary calculation, a more detailed “greenhouse-mode” (worst-case scenario) analysis was subsequently performed for those homes predicted to receive shadow flicker amounts approaching the 30 hours/year threshold mentioned above.

The fourteen receptors which were initially anticipated to exceed 30 hours/year of shadow flicker were represented in the model by omni-directional shadow receptors that simulate a 1 m<sup>2</sup> window located 1 meter above ground level. Reductions based on turbine operational time, operational turbine direction and sunshine probabilities were used to calculate a realistic amount of shadow flicker to be expected at each shadow receptor. These factors would reduce the operational time, line-of-sight, and shadow size / amount cast by a wind turbine.

Although probable, no screening factors (i.e. trees) were used to reduce modeled shadow flicker amounts. In the summer, deciduous trees can help screen shadow flicker to varying degrees. In the winter months, these trees are without leaves and therefore have a lessened screening ability; whereas coniferous trees tend to provide screening year round.

The estimated annual shadow flicker hours for these fourteen receptors ranged from 25 hours 01 minutes to 57 hours 04 minutes based on an average monthly sunshine probabilities obtained from the National Climatic Data Center and representative wind turbine operational hours based on the model specific cut-in speeds. Of these fourteen

receptors, seven are projected to experience shadow flicker of more than 30 hours per year. Six of these seven receptors are identified as non-participants. Five turbines influence these seven receptors and are as follows: 70 (*influences three receptors*), 21, 18, 48 and 16.

The model applies a minimum solar elevation angle of 3° and considers the topographic characteristics of the project area. Higher elevations may exist outside the modeled boundary which would obstruct the sun at or above the 3° angle, thus reducing the impact. This screening is likely to occur during dusk/twilight time periods.

Shadow flicker intensity is defined as the difference in brightness at a given location in the presence and absence of a shadow<sup>4</sup>. Some details are outlined below:

- A. A wind turbine blade is narrow at the blade tip with increasing width up to the rotor hub. When a turbine is located sufficiently close to a receptor such that the wider blade portion covers most of the sun's disk (as seen by the receptor) the flicker intensity will increase. At greater distances a lower intensity will occur since the blades cover a smaller portion of the sun's disk.
- B. The shadow flicker intensity is lowest when the cast shadow passing over a receptor originates from the rotor tip. This intensity increases as the cast shadow moves in along the blade length to a maximum at the hub/nacelle, to then diminishes as it moves back out along the opposite blade side.
- C. Low shadow flicker impacts are usually indicative of greater receptor-turbine separation distances and incident shadows of low intensity originating from the rotor tips.
- D. Low visibility weather conditions (still sunlight) will result in lower shadow flicker intensity.
- E. At longer wind turbine–receptor distances, the cast shadow is “out of focus”. This does not contribute to lower intensity but the flickering is less distinct.

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<sup>4</sup> The WindPro software program uses a very conservative model for evaluating shadow flicker. None of the below aspects are directly considered in the WindPro shadow flicker model – only flicker or no flicker are considered. Consequently, it is likely that all receptors would experience less shadow flicker impact than modeled. It is further likely that marginally affected receptors may not experience shadow flicker at all. At times when shadow-flicker does occur, the intensity is likely to be very low.

- F. Shadows are fainter in a lighted room. Consequently, switching lights on at a receptor will lower the intensity of incident shadow flicker.
- G. Covering a receptor window (curtains, blinds or shutters) will prevent shadow flicker.
- H. Screening, such as trees, will reduce or prevent shadow flicker.

## **Safety Manuals**

The Applicant wishes to install Nordex N100, Nordex N90, or RePower MM92 turbines based on availability at order time. The Applicant has included the turbine manufacturer's safety manual for all of these turbines.

The Nordex turbine safety manual covers the following topics: personal rescue, ascent and fall protection, protection against falling objects, material transport using the on-board crane, lighting, protection against noise, handling of hazardous substances, and electrical equipment.

The Applicant has included a copy of the manufacturer's safety manuals and Staff believes that these safety manuals are adequate. Staff has included conditions that the Applicant comply with the turbine manufacturer's safety manual and maintain it on-site.

## **Noise**

Noise will be generated during both construction and operation of the wind farm facility. Construction noise will be associated with construction equipment and construction procedures that are common to many large scale construction activities. Noise producing activities would include the operation of dozers, front end loaders, graders, excavators, pile driving equipment, concrete pumps, various trucks, and cranes. Prior to conducting certain particularly noisy construction activities (such as blasting, if necessary), the Applicant intends to provide advance notice to affected landowners. The Applicant has made conservative estimates of sound levels associated with operation of this construction equipment, and included those estimates in its application. Although the Applicant intends to use best management practices for noise abatement during construction, many of the construction activities will generate significant noise levels. However, Staff believes that the adverse impact of this noise will be minimal because of the transient nature of the construction activities, the distance of the activities from most residential structures, the limitation of construction

activities to normal daytime working hours, and noise mitigation that has been proposed in the application.

During facility operation, noise will be associated with the nacelle and turbine blades when the units are generating electricity. In order to determine the potential impacts of this noise, the Applicant conducted a noise study in which existing background noise levels were measured and wind farm operational noise levels were modeled. The study presented in the application is the result of evaluating several different turbine arrangements and attempts to configure turbine arrangements in order to minimize noise impacts. In its study, the Applicant used several conservative, or worst-case, estimates in order to minimize the chance of underestimating potential noise impacts.<sup>5</sup> Based on the Applicant's analysis, noise associated with facility operation will be below normally detectable levels during typical daytime and nighttime conditions. However, under infrequently occurring environmental conditions in which background nighttime noise levels are at a minimum, the Applicant's model shows that wind turbine noise will be audible at numerous residential structures.

In order to address potential operational noise concerns experienced by the public in the vicinity of the wind facility, the Applicant has proposed to implement a noise complaint resolution procedure. At the time of preparation of this report, the noise complaint resolution procedure had not yet been fully developed. The Staff will therefore recommend that completion of the noise complaint resolution procedure, and submission to Staff for review and approval, be made a condition of any certificate issued by the Board for this facility.

Staff believes that the Applicant has properly evaluated and minimized the adverse impact associated with construction and operation noise of the facility.

### **Communication System Interference**

To evaluate the potential for the facility to impact existing telecommunication signals, the Applicant hired a contractor (*Comsearch*) to conduct analyses of off-air television reception, AM/FM broadcast station operations, microwave paths, and cellular/PCS

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<sup>5</sup> For example, conservative estimates used in the study include: using the higher sound power levels of the two types of turbines under consideration at the time that the study was conducted; modeling with the wind speed that produces the highest noise levels; comparison to low winter time sound levels; ignoring sound reduction occurring inside residential structures; assuming wind direction blowing toward every sensitive receptor at all times; and, using a ground absorption coefficient in its model that underestimates noise absorption occurring through interaction with surface features. Staff notes that, if the turbine model that was not considered in the noise study is chosen by the Applicant, the results of the noise study may not be applicable. However, Staff still would expect the Applicant to operate the facility within the noise levels predicted by the model.

telephone communications in the vicinity of the project area. Potential impacts to each of these resources are described below.

#### *Off-air Television Analysis*

The television reception analysis identified all off-air television stations within a 100-mile radius of the approximate center point of the proposed project area. Off-air television stations transmit broadcast signals from terrestrially located facilities that can be received directly by a television receiver or house-mounted antenna.

The results of the study indicate that there are 41 licensed off-air television stations within 40 miles of the project area. Of these 41 stations, 22 are fully operational television stations. Six of the operating television stations are translators, or stations that transmit at low power, with limited range and limited programming.

At the time of application, there were five full-power analog television stations, and four full-power digital television stations servicing the area. There were also three low-power analog television stations with full programming, and four full-power digital television stations operating on temporary Special Transmit Authority from the Federal Communications Commission. *A Federal Communications Commission (FCC) mandate required all off-air television broadcasts to transition from analog signals to digital signals by June 12, 2009 (before Facility construction) – thus converting all analog stations to digital and thereby reducing predicted impacts to signal/associated picture quality.*

It can be expected that some, but not all, channels in some of the nearby communities may suffer some degradation of off-air television signal reception once the wind turbines are installed. This degradation would be the result of television signal attenuation or reflection caused by one or more of the facility wind turbines. This effect is due to the relative location of the off-air television broadcast antenna, the wind turbines, and the point of reception.

Since the television signals could still be subject to attenuation caused by wind turbines if the path between the transmitter and receiver is blocked, the signal for certain stations could be weakened to the point where it will not produce video. Specific impacts to TV reception could include noise generation at low VHP channels within 0.5 mile of turbines and reduced picture quality; however, the transition to digital signal has reduced the likelihood of these effects occurring.

The selection of off-air television available to the local communities is considered good, since there are an adequate number of full-power digital channels available. It can be

concluded that off-air television is an important method of reception for communities in the area based on the number of off-air television channels available.

Some communities may not be affected at all, while others may have multiple channels affected. The Applicant has noted that if the facility's operation results in any impacts to existing off-air television coverage, the Applicant intends to address and resolve (i.e. mitigate) each individual problem as commercially practicable.

#### *AM Analysis*

There are records of six AM stations licensed within 20 miles, as measured from the approximate center of the project area. Two of the AM stations (WBLL and WULM) each have two database records because they operate at two distinct transmittal powers, so there are actually only four distinct broadcast stations.

The separation distance of the closest AM station antenna from the planned center of the project area is approximately 14.83 miles. No degradation of AM broadcast coverage due to the presence of the wind turbines is anticipated since the separation distance to the nearest wind turbine is greater than 2 miles.

#### *FM Analysis*

There are records of sixteen FM stations licensed within 20 miles, as measured from the approximate center of the project area. Of the sixteen FM stations, ten are licensed and operational, with the remainder under application or otherwise non-operational at the time of the application.

Six of the FM stations are very-low-power stations. Very-low-power FM stations are designed for limited coverage (typically less than 0.5 mile), and should be unaffected as long as wind turbines are installed at distances greater than the coverage of the stations. The remaining ten stations are medium and full-power stations. For full and medium-power FM stations, a separation distance of 2.5 miles is recommended so that the stations can maintain normal operation and coverage. All of the FM station antennas are located at distances greater than 10 miles from the center of the project area, and therefore, no degradation of FM radio broadcast coverage is anticipated.

#### *Microwave Path Analysis*

Microwave telecommunication systems are wireless point-to-point links that communicate between two antennas and require clear line-of-sight conditions between each antenna.

The Applicant identified 14 microwave paths in the vicinity of the project area. The Applicant calculated a worst case scenario for each of the 14 microwave paths identified. Digital files of each were analyzed for potential interference that may be caused by the proposed turbines.

Based upon the calculated worst case scenario and subsequent analysis, it was determined that only turbine 37 has the potential to interfere with microwave transmission. The Applicant has shown interest in avoiding adverse impacts to existing communications systems, and as such, is committed to resolving the potential interference with turbine 37. The Applicant has proposed that the location for turbine 37 be shifted slightly, or eliminated, to avoid interference and that an in-depth analysis be conducted to determine positive interference amounts, if any.

#### *Cellular / PCS Telephone Analysis*

The Applicant states and Staff concurs that the telephone communications in the cellular and PCS frequency bands should be unaffected by wind turbine presence and operation. Signal blockage caused by the wind turbines would not degrade the telephone network because of the way these systems are designed to operate; that is, if the signal cannot reach one cell, the network design allows it to be able to reach one or more cells in the system. As such, local obstacles are not normally an issue for these telephone systems.

#### **Local and Long Range Radar Interference**

Wind turbines can interfere with civilian and military radar in some scenarios. The potential interference occurs when wind turbines reflect radar waves and cause ghosting (*false readings*) or shadowing (*dead zones*) on receiving monitors. Radar interference thus raises national security and safety concerns.

A July 10, 2006, joint DOD-DHS memo to the Federal Aviation Administration (FAA) called for a case-by-case evaluation of the potential impact of wind projects on radar systems. The DOD impacts report concluded that wind farms located within air defense radar line of sight have the potential to degrade the ability of that radar to perform its intended function.

It also noted that currently proven mitigation options to completely prevent any degradation in primary radar performance of air defense radars are limited to methods that avoid locating wind turbines within their radar line of sight. DOD has initiated research efforts to develop additional mitigation approaches that in the future could

enable wind turbines to be placed within the line of sight for air defense radar without impacting the radar systems' performance.

The FAA has oversight over any object that could have an impact on communications in navigable airspace, whether commercial or military. DOD participates in the FAA review and evaluation of applications for potential impacts to DOD's ability to defend the nation.

The FAA requires that a *Notice of Proposed Construction or Alteration* be filed for any project that would extend more than 200 feet above ground level (or less in certain circumstances).

Although there exist limited options to "completely prevent" the degradation of any performance of air defense radar systems, the DOD believes that practical solutions to radar interference are achievable. In the majority of cases, the DOD finds that the interference is either not present, is not deemed significant, or can be mitigated to at least a large degree. Potential interference is highly site specific and depends on local features, type of radar, and wind plant characteristics. In most cases, radar interference can be corrected with software that deletes radar signals from stationary targets.

The Applicant submitted written notification to the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce on February 13, 2008. Upon receipt of the notification, the NTIA presents the construction plans to member agencies represented in the Interdepartment Radio Advisory Committee (IRAC). IRAC member agencies include the Department of Defense, the Department of Education, the Department of Justice and the Federal Aviation Administration. The NTIA then identifies any facility-related concerns detected by the IRAC during the review period. If the facility had the potential to interfere with military radar systems, this conflict would be identified during IRAC review. As previously mentioned, the notification letter was sent to NTIA on February 13, 2008. The Applicant received a response letter from NTIA on July 24, 2008. No concerns regarding blockage of communication systems were identified by the NTIA, however the need to coordinate with the FAA (i.e. file FAA Form 7460-1 "*Notice of Proposed Construction or Alteration*") was prescribed.

The Applicant has filed FAA Form 7460-1 "*Notice of Proposed Construction or Alteration*", and the associated federal agency distribution process has begun. The FAA coordinates with the Department of Defense and other federal agencies to address possible radar interference and will issue a group determination. This process is very similar to the aforementioned NTIA process and the desired end result (identifying potential hazards



to airspace and systems) is the same. As of the date of preparation of this report, the Applicant is awaiting FAA determinations of presumed hazard, or no hazard to aviation and as to whether radar interference is expected to be an issue. However, it is noteworthy to again mention that the NTIA has determined that radar interference will not be an issue.

## **Traffic/Transportation**

The project area is accessible through numerous highways, state and local roads. These roads will experience a temporary increase in truck traffic due to the delivery of turbine components, concrete, gravel and heavy equipment to each turbine site. A designated experienced transportation provider, to be determined, will obtain all necessary permits from the Ohio Department of Transportation and the Champaign County engineer prior to construction.

Temporary turn-outs as well as reinforcement to bridges and/or culverts will be completed prior to the movement of heavy equipment. Gravel access roads will be constructed prior to the delivery of heavy equipment and afterward will be repaired if damaged. Construction signs and flagmen will be coordinated with the Ohio Department of Transportation and the corresponding townships.

In order to limit transportation impacts, the Applicant will identify areas in need of improvement prior to the transporting of heavy equipment and wind turbine components. The areas of interest include: vertical clearance of utility lines and poles, poor pavement conditions, insufficient cover over drainage structures and inadequate bridge capacity.

The project area is accessible through a myriad of interstates, state and county highways and local roads. Interstate 70 and U.S. Route 33 will be the primary roads used to access the project area. As a result of the numerous alternate routes within the project area, any temporary road closures should not cause significant impacts to the transportation network and to the limited number of nearby residents.

The project area has a number of rail lines that would be used in transporting some of the heavier turbine components. CSX has three lines that run in the vicinity of the project. The first CSX line runs north of the site through Marysville towards Columbus, providing transit and freight service to and from various regional locations. The second CSX line runs south of the site from Columbus through Springfield and Dayton. The final CSX line runs between Bellefontaine and Urbana. The construction and operation of the facility is not expected to create any significant impact to the rail network.

## Landowner Leases

The Applicant indicates that voluntary lease agreements will accommodate the majority of the project facilities, with the possible exception of portions of the collection system constructed within public right-of-ways. The lease agreements would last for 20 years from the initial date of commercial operation, with a bilateral option for a 20 year extension. Per the application, the lease amounts would total approximately \$1.5 to \$2 million per year initially. Exact payments would be based on annual generation production levels and power purchase agreements. The lease payments would be distributed among participating landowners that host a wind turbine.

## Decommissioning

Per researched wind project applications and industry data, megawatt-scale wind turbine generators typically have a life expectancy of 20-25 years. The current trend has been to upgrade older equipment (i.e. turbines) with more efficient turbines, while retaining existing tower structures. If not upgraded, towers go into a period of non-operation (where no expectation of re-operation exists) and are generally decommissioned at such time.

Decommissioning is generally a reversal of previous construction actions and includes:

*The dismantling and removal of all towers, turbine generators, transformers, and overhead cables; removal of underground cables; removal of foundations, buildings, and ancillary equipment and removal of surface road material and restoration of the roads and turbine sites to the same physical condition that existed immediately before construction of the commercial wind energy conversion facility. The site must also be restored and reclaimed to the same general topography that existed just prior to the beginning of the construction of the commercial wind energy conversion facility with topsoil re-spread over the disturbed areas at a depth similar to that in existence prior to the disturbance. Areas disturbed by the construction of the facility and decommissioning activities must be graded, top soiled, and reseeded according to natural resource conservation service technical guide recommendations and other agency recommendations.*

Such a project requires financial assurance for decommissioning. Staff researched approaches in other states (Minnesota, North Dakota, Pennsylvania, Texas, West Virginia and Wyoming) and found that all require a performance bond, surety bond, letter of credit, escrow account, corporate guarantee, or other form of financial assurance that is acceptable to the applicable regulatory agency to cover the anticipated

costs of decommissioning the commercial wind energy conversion facility. This financial assurance is not always required to be in place at the onset of construction. Some states allow five to ten years of operation before a bond or other financial assurance must be secured for decommissioning; others require it initially. All states require a third party engineer, free from financial gain of said projects, to survey and assess decommissioning costs. These engineers are also required to re-assess decommissioning costs at five year, or similar, intervals. Based on the engineer's report, the company is then required to adjust bond / security amounts accordingly.

All states researched have a set time limit on non-operation. After said time has elapsed, the company is then required to begin decommissioning. This time limit varies state to state, but is generally 12 – 18 months. If the commercial wind energy conversion facility owner or operator does not initiate decommissioning, the state may take necessary action to begin decommissioning, including requiring forfeiture of the bond. Pennsylvania included a clause that requires the state to approve decommissioning and land reclamation prior to bond release.

The Applicant has proposed dismantling and removal of all facility improvements and other above ground property / infrastructure owned by Buckeye Wind. Underground structures are proposed to be removed to a depth of 36 inches and include interconnection lines and foundations. Per the submitted decommissioning plan, the Applicant would then re-grade slopes and contours to match their original grade.

At the 5 year anniversary of the commercial operation date of the proposed wind-powered electric generating facility, the Applicant proposes to provide a surety bond, letter of credit, or other security in a form reasonably acceptable to landowner, and in an amount sufficient to cover the costs of removal and disposal of the facility improvements, net of salvage value, and costs of restoration. The Applicant provides that this assurance amount will be prescribed through a study conducted by a certified engineer. Said estimate has been proposed to be re-evaluated every five years to allow necessary adjustment of assurance amounts.

### **Recommended Findings**

The Staff recommends that the Board find that the proposed facility will serve the public interest, convenience and necessity provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this Report entitled Recommended Conditions of Certificate.

## **Considerations for ORC Section 4906.10(A)(7)**

### **Agricultural Districts**

Classification as Agricultural District land is achieved through an application and approval process that is administered through local county auditor offices. Based upon parcel information obtained from Champaign County Auditor records, the Applicant has stated that 43 Agricultural District parcels are located within the project area. The project facilities will directly impact 25 of the 43 Agricultural District parcels in the project area.

The Staff has also evaluated potential impacts on agricultural production. The Applicant has indicated that the project would disturb 372 acres of agricultural land, of which 303.5 acres would be temporarily disturbed during construction, and the remaining 68.5 acres would be permanently disturbed and taken out of production.

Construction-related activities such as vehicle traffic and materials storage could lead to temporary reductions in farm productivity caused by direct crop damage, soil compaction, broken drainage tiles, and reduction of space available for planting. However, the Applicant has indicated that it intends to take precautionary steps in order to address such potential impacts to farmland, including: repairing or replacing damaged drainage tiles to the landowner's satisfaction, and subsoil de-compaction and rock picking prior to re-spreading of topsoil in disturbed areas. Additionally, the Applicant states that the value of any crops damaged by construction activities or by soil compaction would be reimbursed to the landowner. After construction, only the agricultural land associated with the turbine locations, substation, and access roads would be removed from production.

It is Staff's conclusion that there would be no significant permanent impacts from the construction or maintenance of this proposed electric generation facility on Agricultural Districts. Further, construction and maintenance of the proposed generation facility would not impact the viability as agricultural land of any Agricultural District land as only 68.5 acres would be removed from agricultural production.

### **Recommended Findings**

The Staff recommends that the Board find that the impact of the proposed generation station project on the viability of existing farmlands and Agricultural Districts has been determined, and will be minimal. Further, the Staff recommends that any certificate

issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

## **Considerations for ORC Section 4906.10(A)(8)**

### **Water Conservation Practice**

The Applicant's proposed facility involves the utilization of numerous wind turbines to generate electricity. Wind-powered electric generating facilities do not utilize water in their process of electricity production. Therefore, water consumption associated with the proposed electric generation equipment is not an issue warranting specific conservation efforts.

Potable water will be needed for personal use by employees at the planned Operations and Maintenance Building. However, these needs are expected to be minimal.

### **Recommended Findings**

The Staff recommends that the Board find that the proposed facility will comply with ORC Section 4906.10(A)(8). Further, the Staff recommends that any certificate issued by the Board for the certification of the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

## **VI. RECOMMENDED CONDITIONS OF CERTIFICATE**

Following a review of the application, as supplemented by Buckeye Wind, and the record compiled to date in this proceeding, the Staff recommends that a number of conditions become part of any certificate issued for the proposed facility. These recommended conditions may be modified as a result of public or other input provided subsequent to issuance of this report. At this time the Staff recommends the following conditions:

- (1) That the facility be installed at the Applicant's proposed site as presented in the application filed on April 24, 2009, and as further clarified by the Applicant's supplemental filings.
- (2) That the Applicant shall utilize the equipment and construction practices as described in the application, and as clarified in supplemental filings, replies to data requests, and recommendations Staff has included in this Staff Report of Investigation.
- (3) That the Applicant shall implement the mitigative measures described in the application, any supplemental filings, and recommendations Staff has included in this Staff Report of Investigation.
- (4) That the Applicant shall obtain and comply with all applicable permits and authorizations as required by federal and state entities prior to the commencement of construction and/or operation of the facility, as appropriate.
- (5) That a copy of each permit or authorization, including a copy of the original application (if not already provided) and any associated terms and conditions, shall be provided to the Board Staff within seven days of issuance or receipt by the Applicant.
- (6) That the Applicant operate the facility within the noise parameters as set forth in its noise study and presented in its application.
- (7) That the Applicant shall conduct a pre-construction conference prior to the start of any project work, which Staff shall attend, to discuss how environmental and other concerns will be satisfactorily addressed.

- (8) That at least thirty (30) days prior to the pre-construction conference, the Applicant shall provide the following documents to OPSB Staff for review and acceptance:
- (a) A final equipment delivery route and transportation routing plan;
  - (b) One set of detailed drawings for the proposed project so that the Staff can confirm that the final project design is in compliance with the terms of the certificate;
  - (c) A stream crossing plan including details on specific streams to be crossed, either by construction vehicles and/or facility components (i.e., access roads, electric collection lines), as well as specific discussion of proposed crossing methodology for each stream crossing and post-construction site restoration. The stream crossing plan shall be based on final plans for the access roads and electric collection system;
  - (d) A detailed frac-out contingency plan for stream crossings that are expected to be completed via HDD. Such contingency plan can be incorporated within the stream crossing plan required in (8)(c);
  - (e) A final electric collection system plan, specifically identifying the planned location of all lines, indicating whether the lines will be buried or overhead, describing the types of construction method(s) to be used for installing the lines, showing all construction access points, and explaining how impacts to all sensitive resources (e.g., streams, wetlands, trees, steep slopes, etc) in and along the planned electric collection line routes will be avoided or minimized during construction, operation, and maintenance;
  - (f) A tree clearing plan describing how trees and shrubs around turbines, along access routes, in electric line corridors (buried and overhead), at laydown areas, and in proximity to any other project facilities will be protected from damage during construction, and, where clearing cannot be avoided, how such clearing work will be done so as to minimize removal of woody vegetation. Priority should be given to protecting mature trees throughout the project area, and all woody vegetation in wetlands and riparian areas, both during construction and during subsequent operation and maintenance of all facilities.



- (g) A final access plan, including both temporary (construction) and permanent (operation) access routes for all facilities, as well as the measures to be used for restoring all temporary segments and any long-term stabilization required along permanent access routes;
  - (h) A site-specific geotechnical report and the final turbine foundation design for each turbine location;
  - (i) A fire protection and medical emergency plan developed in consultation with the fire department having jurisdiction over the area;
  - (j) Applicant's completed noise complaint resolution procedure;
- (9) That the Applicant shall properly install and maintain erosion and sedimentation control measures at the project area in accordance with the following requirements:
- (a) During construction of the facility, seed all disturbed soil, except within cultivated agricultural fields that will remain in production following project completion, within seven (7) days of final grading with a seed mixture acceptable to the appropriate County Cooperative Extension Service. Denuded areas, including spoils piles, shall be seeded and stabilized within seven (7) days, if they will be undisturbed for more than twenty-one (21) days. Reseeding shall be done within seven days of emergence of seedlings as necessary until sufficient vegetation in all areas has been established.
  - (b) Inspect and repair all such erosion control measures after each rainfall event of one-half of an inch or greater over a 24 hour period, and maintain controls until permanent vegetative cover has been established on disturbed areas.
  - (c) Obtain NPDES permits for storm water discharges during construction of the facility. A copy of each permit or authorization, including terms and conditions, shall be provided to the Staff within seven (7) days of receipt. Prior to construction, the construction SWPPP and SPCC procedures shall be submitted to the Staff for review and acceptance.
- (10) That the Applicant shall employ the following construction methods in proximity to any watercourses:

- (a) All watercourses, including wetlands, shall be delineated by fencing, flagging, or other prominent means;
  - (b) All construction equipment shall avoid watercourses, including wetlands, except at specific locations where OPSB Staff has approved construction;
  - (c) Storage, stockpiling and/or disposal of equipment and materials in these sensitive areas shall be prohibited;
  - (d) Structures shall be located outside of identified watercourses, including wetlands, except at specific locations where OPSB Staff has approved construction;
  - (e) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.
- (11) That the Applicant shall employ best management practices (BMPs) when working in the vicinity of environmentally-sensitive areas. This includes, but is not limited to, the installation of silt fencing (or similarly effective tool) prior to initiating construction near streams and wetlands. The installation shall be done in accordance with generally accepted construction methods and shall be inspected regularly.
- (12) That the Applicant shall dispose of all contaminated soil and all construction debris in approved landfills in accordance with Ohio EPA regulations.
- (13) That the Applicant shall have an environmental specialist on site at all times that construction (including vegetation clearing) is being performed in or near a sensitive area such as a designated wetland, stream, river or in the vicinity of identified threatened/endangered species or their identified habitat. The environmental specialist shall be familiar with water quality protection issues, and able to field identify potential threatened/endangered species of plants and animals that may be encountered during project construction.
- (14) That Staff, ODNr and/or USFWS be immediately contacted if threatened or endangered species are discovered on-site during construction or operation.

- (15) That the Applicant shall develop and implement a post-construction avian and bat mortality survey plan that is approved by Staff and members of the ODNR's Division of Wildlife.
- (16) That, if applicable, the Applicant shall develop a Habitat Conservation Plan (HCP) and obtain the associated Incidental Take Permit (ITP) from the USFWS regarding the potential take of Indiana bats.
- (17) That, if applicable, all avoidance, minimization, and mitigation measures to protect the Indiana bat that are identified in an HCP and ITP be implemented as described in said documents.
- (18) That the Applicant shall not dispose of gravel or any other construction material during or following construction of the facility by spreading such material on agricultural land unless otherwise agreed to by the landowner. All construction debris shall be promptly removed and properly disposed of after completion of construction activities.
- (19) That the Applicant shall avoid, where possible, or minimize to the maximum extent practicable, any damage to field tile drainage systems and soils resulting from construction, operation, and maintenance of the facility in agricultural areas. Damaged field tile systems shall be promptly repaired to at least original conditions at Applicant's expense. Excavated topsoil will be segregated and restored upon backfilling. Severely compacted soils will be plowed or otherwise de-compacted, if necessary, to restore them to original conditions.
- (20) That prior to construction, the Applicant shall prepare a Phase I cultural resources survey program for archeological work at turbine locations, access roads and auxiliary lines acceptable to Staff. If the resulting survey work discloses a find of cultural or archaeological significance, or a site eligible for inclusion on the National Register of Historic Places, then the Applicant shall submit an amendment, modification, or mitigation plan for Staff's acceptance. Any such mitigation effort, as appropriate, shall be developed in coordination with the Ohio Historic Preservation Office with input from the Champaign County Historical Society and submitted to Staff for review and acceptance.
- (21) That prior to the commencement of construction, the Applicant shall conduct an architectural survey of the project area. The Applicant shall submit to Staff a work program that outlines areas to be studied, with the focus on crossroad towns and villages in Champaign County that are located in the study area

between the city of Urbana and the village of Mechanicsburg. If the architectural survey discloses a find of cultural or architectural significance, or a structure that is eligible for inclusion on the National Register of Historic Places, then the Applicant shall submit an amendment, modification, or mitigation plan for Staff's acceptance. Any such mitigation effort, as appropriate, shall be developed in coordination with the Ohio Historic Preservation Office with input from the Champaign County Historical Society and submitted to Staff for review and acceptance.

- (22) The Applicant shall not commence construction of the facility until it has a signed Interconnection Service Agreement with PJM, which includes construction, operation, and maintenance of system upgrades necessary to reliably and safely integrate the proposed generating facility into the regional transmission system. Applicant shall provide a letter stating that the Agreement has been signed or a copy of the signed Interconnection Service Agreement to the Board Staff.
- (23) That any permanent road closures, road restoration or road improvements necessary for construction and operation of the proposed facility shall be coordinated with the appropriate entities, including but not limited to, the Champaign County Engineer, the Ohio Department of Transportation, local law enforcement, and health/safety officials.
- (24) That, at its expense, the Applicant shall promptly repair all impacted roads and bridges following construction to at least their condition prior to the initiation of construction activities.
- (25) General construction activities shall be limited to daylight hours Monday through Saturday. On Sunday, general construction activities shall be limited to the hours between 8:00 A.M. and 5:00 P.M. Impact pile driving operations shall be limited to the hours between 8:00 A.M. to 5:00 P.M., Monday through Friday. Construction activities that do not involve noise increases above background levels at sensitive receptors are permitted when necessary.
- (26) That no commercial signage or advertisements shall be located on any turbine, tower or related infrastructure.
- (27) That the turbines shall be numbered on two opposing sides consisting of twelve inch block numerals, eight feet up from the tower base. These numerals shall be

painted in silver reflective paint outlined by a one-half inch black painted border to facilitate both night and day visibility.

- (28) That each turbine tower be placarded with a 24 hour emergency telephone number for the Applicant.
- (29) That if vandalism (i.e. spray painted graffiti) should occur, the Applicant shall remove or abate the damage immediately as to preserve the visual aesthetics of the project. Any abatement is subject to approval by the OPSB Staff.
- (30) That the Applicant work with the property owner(s) adjacent to, and the owner of Fairview Cemetery in Mutual, Ohio, to develop a screening plan to be reviewed and accepted by Staff. This screening plan shall, at the least, screen along the West and North sides of the chain link fence that serves as a property boundary between the two parcels.
- (31) That approved turbines are subject to mitigation after construction, up to and including removal, if they exceed 30 hours per year of shadow flicker at any non-participating receptor.
- (32) That all structures be lit in accordance with FAA circular 70/7460-1 K Change 2, *Obstruction Marking and Lighting*, white paint/synchronized red lights- Chapters 4, 12 & 13 (Turbines); or as otherwise prescribed by the FAA. Strobing shall be prohibited unless specifically required by FAA.
- (33) That prior to the pre-construction conference the Applicant shall provide Staff with both the maximum potential distance for a blade shear event from the 3 turbine models under consideration and the formula used to calculate the distance.
- (34) That the Applicant shall conduct appropriate training to instruct construction and maintenance workers on potential hazards of wind turbines, including ice conditions.
- (35) That the Applicant shall provide all local fire and EMS personnel with turbine layout maps, tower diagrams, schematics, turbine safety manuals and an emergency 24 hour toll-free Company phone number.
- (36) That the Applicant must meet all recommended and prescribed FAA and Ohio Aviation Office requirements to construct an object that may affect navigable

airspace. This includes the non-penetration of any FAA *Part 77* surfaces, unless authorized to do so by the FAA. Turbines that do not satisfy FAA and Ohio Aviation Office requirements shall not be constructed.

- (37) That at least 90 days prior to any construction, the Applicant shall notify in writing any airport owner, whether public or private, whose operations, operating thresholds/minimums, landing/approach procedures and/or vectors are altered, or are expected to be altered by the construction, operation, maintenance, or decommissioning of the proposed wind-powered electric generation facility.
- (38) That the Applicant shall meet all recommended and prescribed FCC and federal agency requirements to construct an object that may affect communications; and mitigate any effects or degradation caused by wind turbine operation, up to and including removal of afflicting turbine(s).
- (39) That if the facility's operation results in any impacts to existing off-air television coverage, cellular / PCS, or AM/FM reception, the Applicant shall address and resolve (i.e. mitigate) each individual problem as commercially practicable and that mitigation shall be subject to Staff approval.
- (40) That the Applicant conduct an in-depth vertical Fresnel-Zone analysis to determine if turbine 37 will cause microwave interference. Pursuant to Staff review and approval, the Applicant shall shift the location of, or eliminate, Turbine 37 based on the results of the aforementioned study.
- (41) That the Applicant shall maintain the turbine manufacturer's safety manual onsite at the O&M building, and shall comply with the safety manual.
- (42) That, at the discretion of landowner, the Applicant shall install gates at access roads to prohibit public access. Such gates shall include appropriate warning signs.
- (43) That the Applicant must meet all recommended and prescribed FAA and federal agency requirements to construct an object that may affect local / long-range radar; and mitigate any effects or degradation caused by wind turbine operation, up to and including removal of afflicting turbine(s).
- (44) That if at a later date it is determined that a turbine, or turbine's operation, causes radar interference, the Applicant must immediately notify the OPSB Staff.

In this case, the afflicting turbine would be subject to mitigation up to and including removal.

- (45) That the Applicant shall not construct Turbine 70, as proposed, as it fails to satisfy the minimum setback requirement, per 4906-17, OAC, and it also contributes to shadow flicker at residences that exceeds the Staff's recommended maximum annual flicker exposure level.
- (46) That the Applicant shall propose an adjusted location for Turbine 57 so that it complies with the minimum property line setback, per 4906-17, OAC, or in the alternative, obtains any necessary waiver(s) of the setback.
- (47) That the Applicant shall comply with all setback requirements as prescribed by the Board.
- (48) That the Applicant shall establish, maintain, and manage a toll-free phone number for public contacts regarding the facility's operation. Applicant shall exercise reasonable efforts to inform local communities of the existence of this phone number. Applicant shall further maintain records of contacts and share these records with Staff upon request.
- (49) That the Applicant shall comply with the conditions contained within Appendix 1: Decommissioning Conditions.
- (50) That, prior to construction, the Applicant shall file a letter with the Board that identifies which of the 3 turbine models listed in the application has been selected.
- (51) Within 30 days after completion of construction, the Applicant shall submit to the Staff a copy of the as-built plans and specifications.
- (52) That the Applicant shall provide to the Staff the following information as it becomes known:
  - (a) The date on which construction will begin;
  - (b) The date on which construction was completed;
  - (c) The date on which the facility began commercial operation.

- (53) That the certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five (5) years of the date of journalization of the certificate.



## APPENDIX

## **Appendix 1**

### **Decommissioning Conditions**

- A. The facility owner and operator shall, at its expense, complete decommissioning of the wind-powered electric generating facility, or individual wind turbines, within (12) twelve months after the end of the useful life of the facility or individual wind turbines. If no electricity is generated for a continuous period of twelve (12) months, or if the OPSB deems the facility or turbine to be in a state of disrepair warranting decommissioning, the wind energy facility or individual wind turbine will be presumed to have reached the end of its useful life.
- B. That decommissioning of commercial wind energy facilities shall include the removal of all physical material pertaining to the wind energy facility to a depth of at least thirty-six (36) inches beneath the soil surface and restoration of the disturbed area to substantially the same physical condition that existed immediately before construction. The foundation for each wind turbine shall be removed beyond the aforementioned depth of thirty-six (36) inches to the greater depth of sixty (60) inches. Decommissioning shall include removal of wind turbines, buildings, cabling, electrical components, roads and any other associated facilities.
- C. That the disturbed earth shall be re-graded, re-seeded and restored to substantially the same physical condition that existed immediately before construction.
- D. That if the proposed wind-powered electric generating facility owner does not complete decommissioning within the period prescribed in paragraph (A); the OPSB may take action as necessary to complete decommissioning, including requiring forfeiture of financial securities. The entry into a participating landowner agreement constitutes agreement and consent of the parties to the agreement, their respective heirs, successors and assigns, that the Board may take action that may be necessary to implement the decommissioning plan, including the exercise by the Board, Board staff and contractors of the right of ingress and egress for the purpose of decommissioning the wind-powered electric generating facility.
- E. That the escrow agent shall release the decommissioning funds when the facility owner has demonstrated, and the Board concurs, that decommissioning has been

satisfactorily completed; or upon written approval of the Board in order to implement the decommissioning plan.

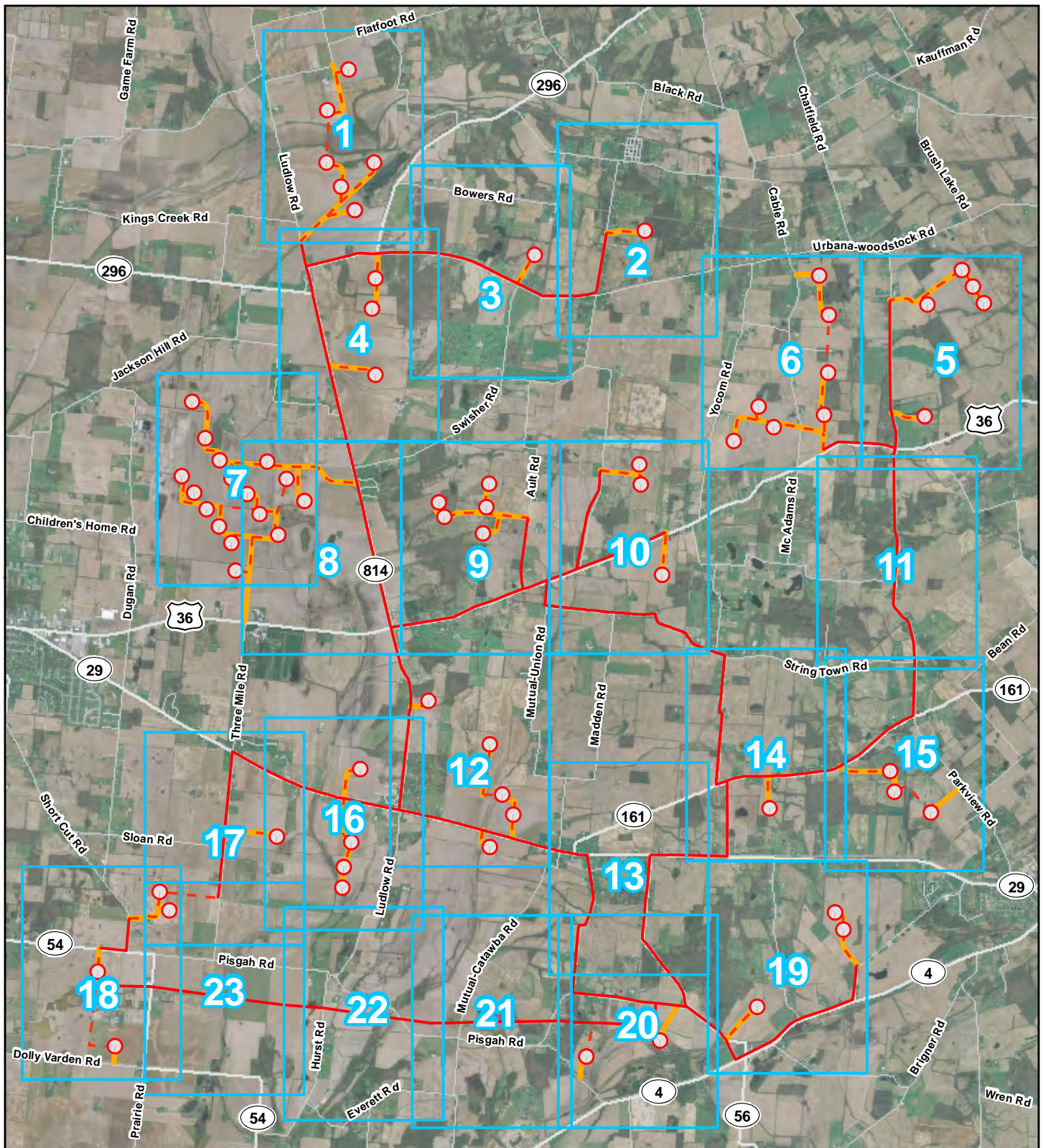
- F. That prior to construction, a determination of the probable hydrologic consequences of the decommissioning and reclamation operations, both on and off the project area, with respect to the hydrologic regime, providing information on the quantity and quality of the water in surface and groundwater systems including the dissolved and suspended solids under seasonal flow conditions and the collection of sufficient data for the site(s) and surrounding areas so that cumulative impacts of all actions in the area upon the hydrology of the area and particularly upon water availability be provided to Staff for review and approval. This determination shall be required in addition to the hydrologic information of the general area prior to construction.
- G. That prior to construction, the Applicant shall identify lands in the application that a reconnaissance inspection suggests may be *Prime Farmlands*, a soil survey shall be made or obtained according to standards established by the Secretary of the United States Department of Agriculture and/or Ohio Department of Agriculture in order to confirm the exact location of the *Prime Farmlands*, if any. The results of this study shall be submitted to Staff for review and approval. Any confirmed *Prime Farmlands* should be reclaimed to such standards after site decommissioning and reclamation.
- H. That prior to construction, the Applicant shall indicate the future use that is proposed to be made of the land following reclamation, including information regarding the utility and capacity of the reclaimed land to support a variety of alternative uses and the relationship of the proposed use to existing land use policies and plans. This shall be submitted for Staff review and approval.
- I. That prior to construction, the Applicant shall provide Staff the engineering techniques proposed to be used in decommissioning and reclamation and a description of the major equipment; a plan for the control of surface water drainage and of water accumulation; a plan, where appropriate, for backfilling, soil stabilization, compacting and grading. This plan shall be subject to review and approval by Staff.
- J. That prior to construction, the Applicant shall provide Staff with a detailed timetable for the accomplishment of each major step in the decommissioning / reclamation plan; the steps to be taken to comply with applicable air and water quality laws and regulations and any applicable health and safety standards; and

a description of the degree to which the decommissioning / reclamation plan is consistent with the local physical, environmental and climatological conditions. This timetable shall be subject to Staff review and approval.

- K. That during construction, operation and decommissioning, all recyclable materials salvaged and non-salvaged shall be recycled to the furthest extent possible. All other non-recyclable waste materials shall be disposed of in accordance with state and federal law.
- L. That the Applicant shall leave intact any improvements made to the electrical infrastructure, pending approval / acceptance by the concerned utility.

## **Appendix 2**

### **Project Maps**



1 inch = 6,500 feet  
1:78,000



0 1 2  
Scale in Miles

NAD 83 SP Ohio South (Feet)

- Turbines
- Interconnect (Overhead)
- Interconnect (Buried)
- Access Roads
- Numbered Maps Only
- Residences
- Participating Parcels
- Non-Participating Parcels

## Map Appendix

08-0666-EL-BGN

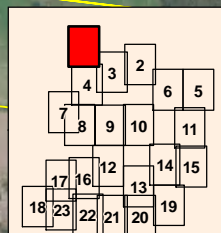
**Buckeye Wind**

Champaign County

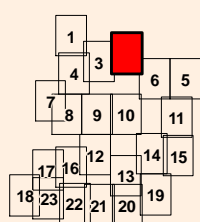
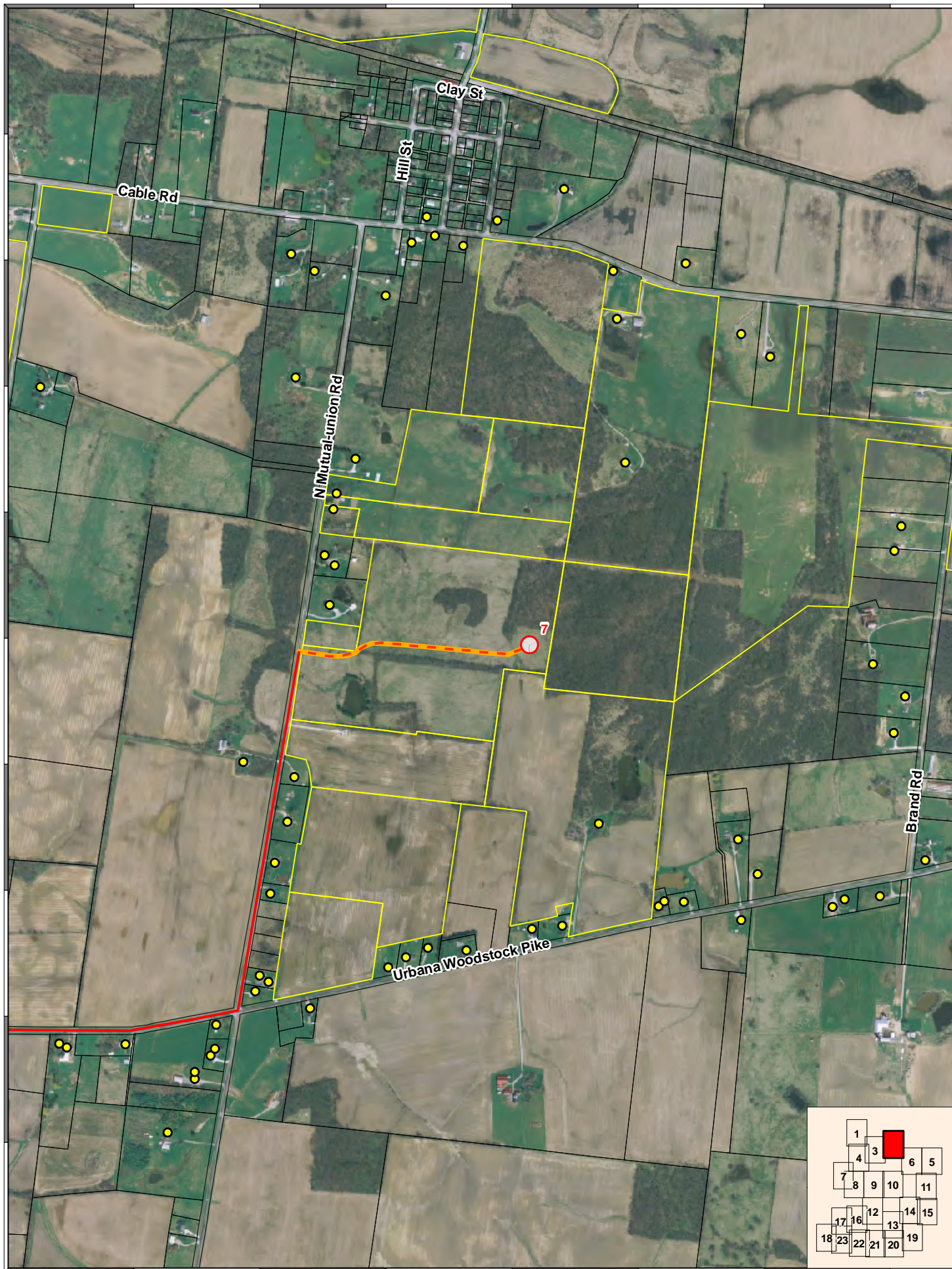
October 12, 2009

*This map is for general reference only*



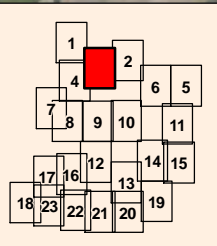
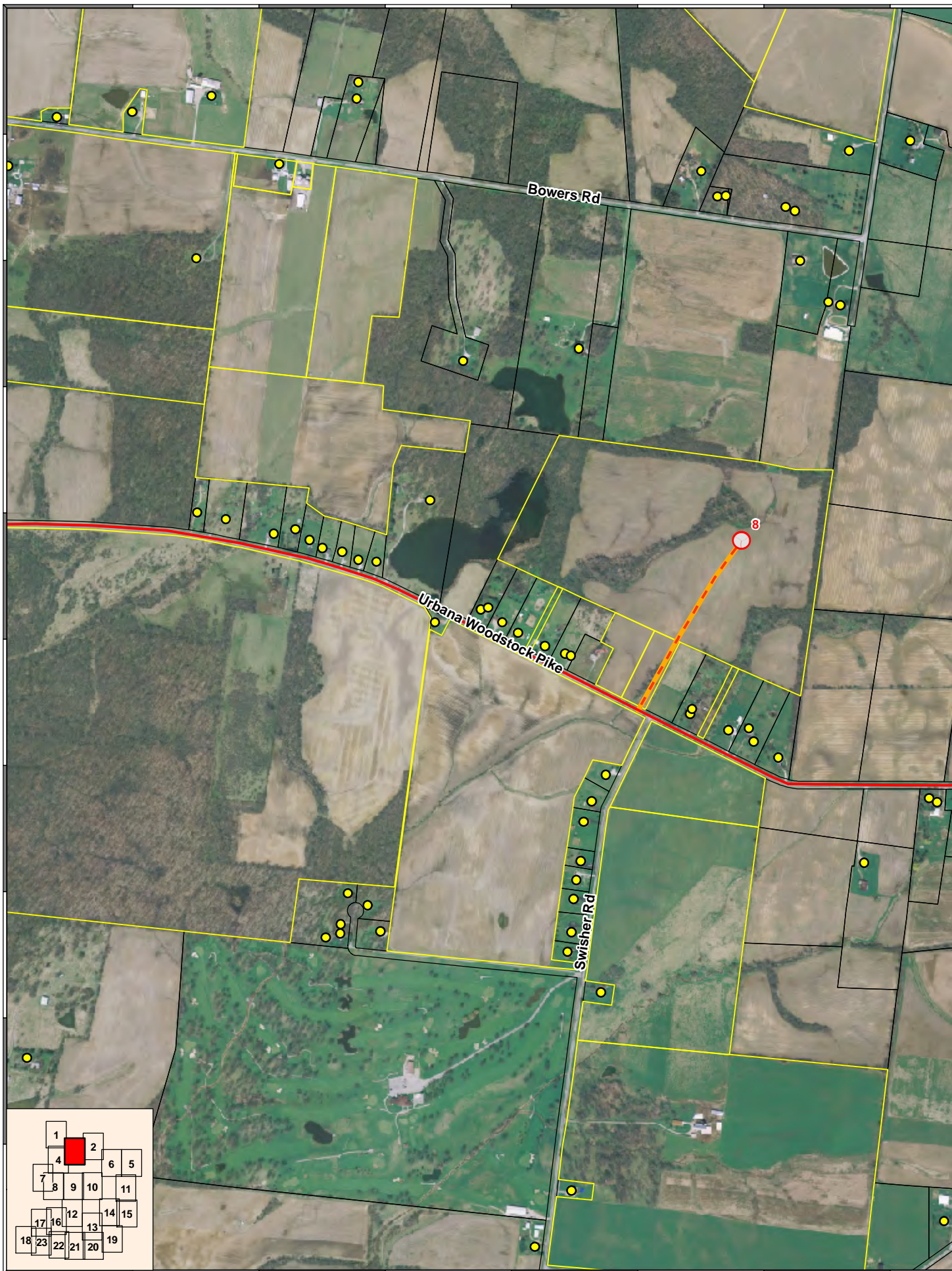




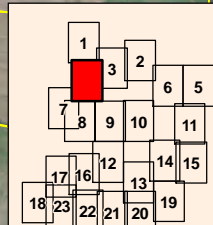
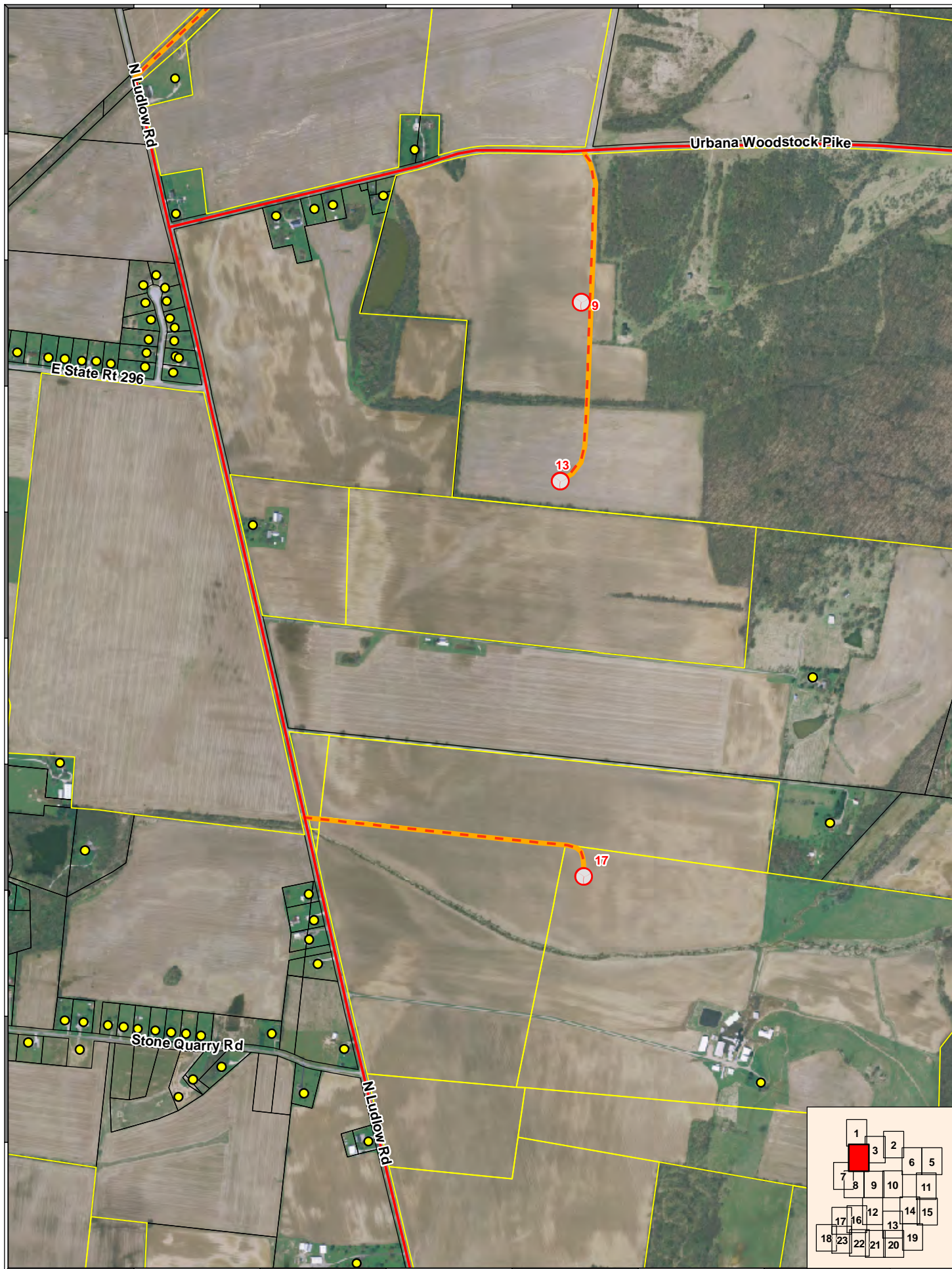


1 inch = 1,000 feet

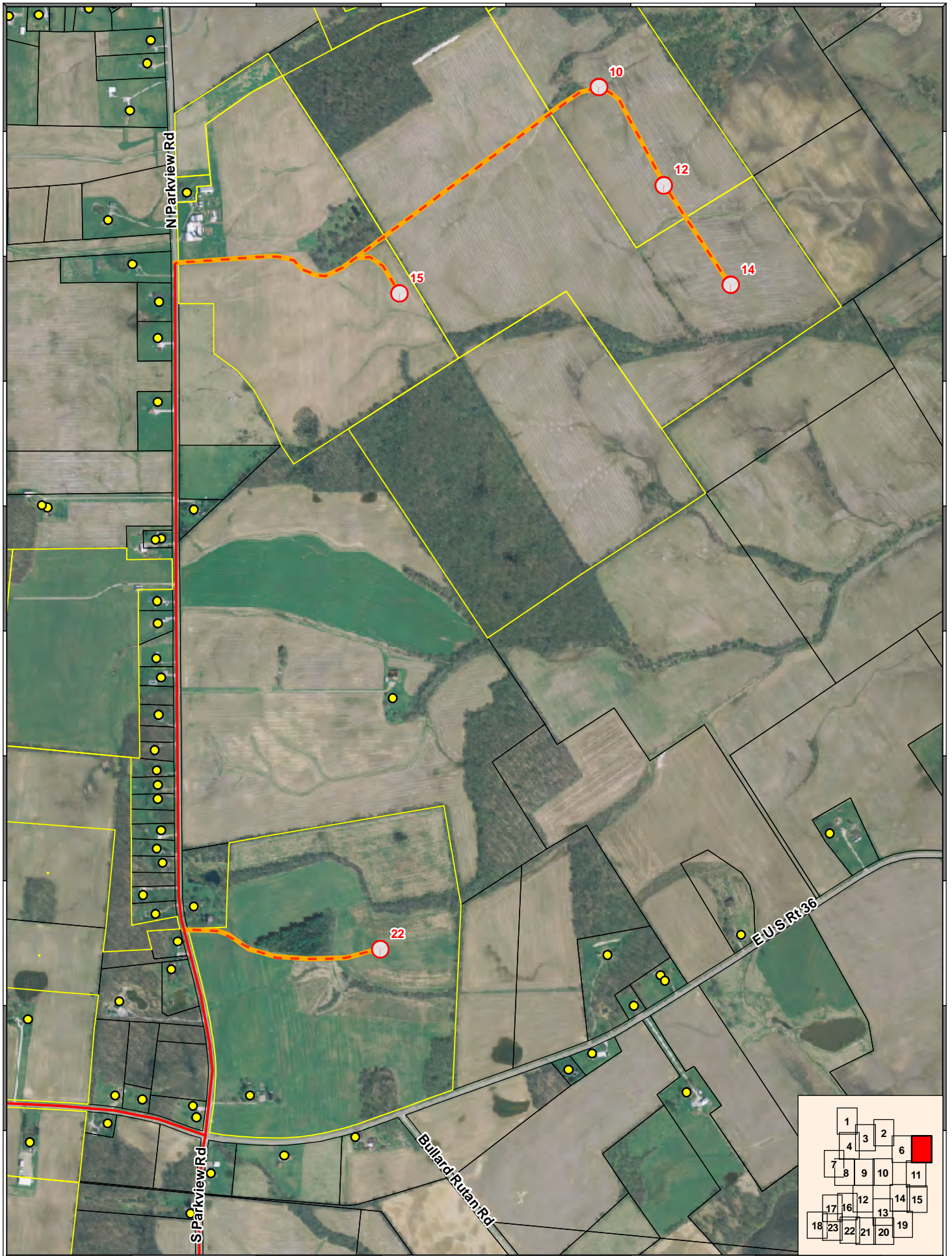




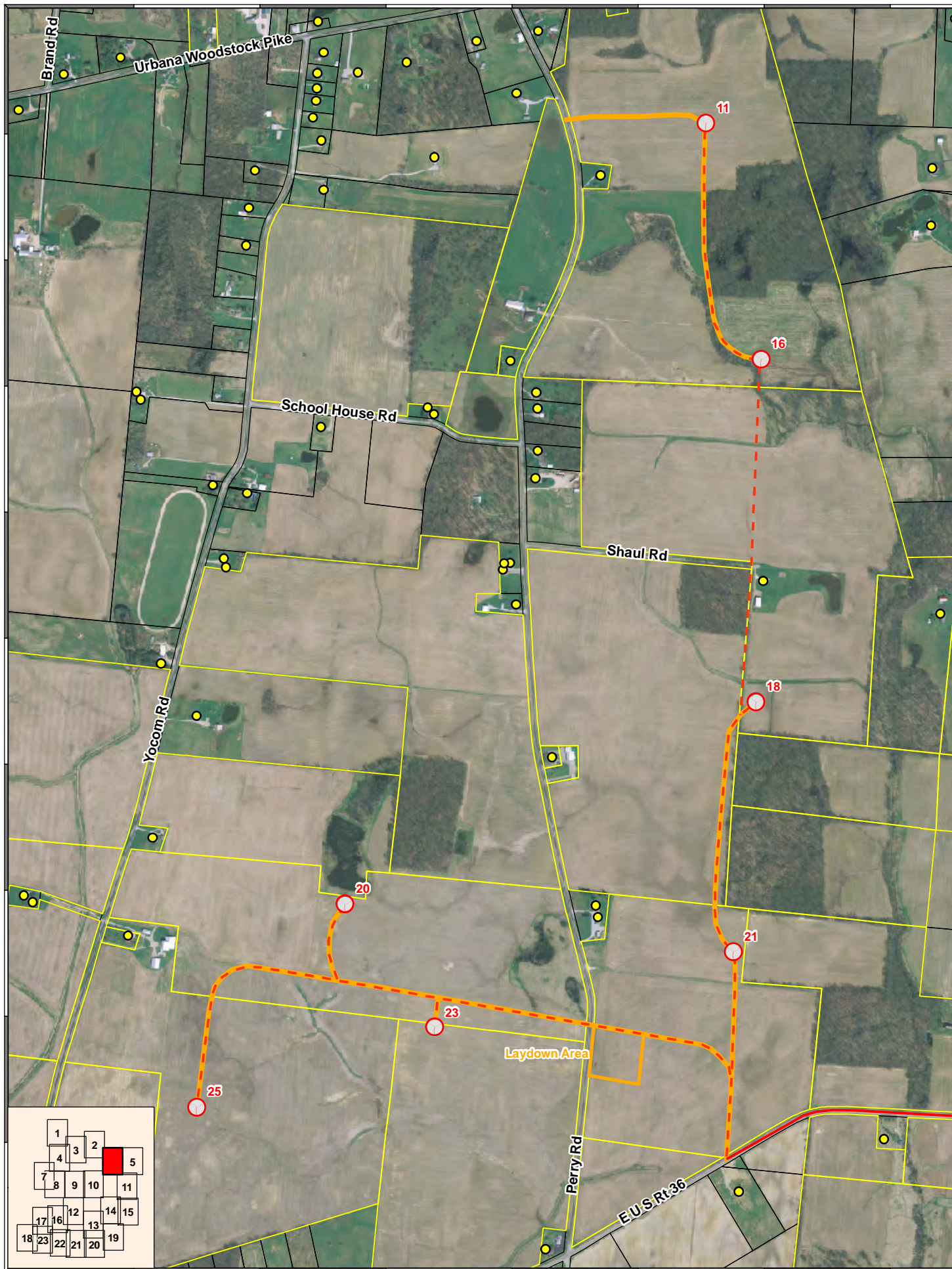






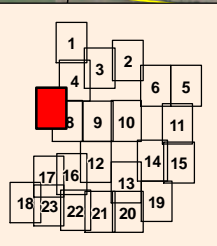
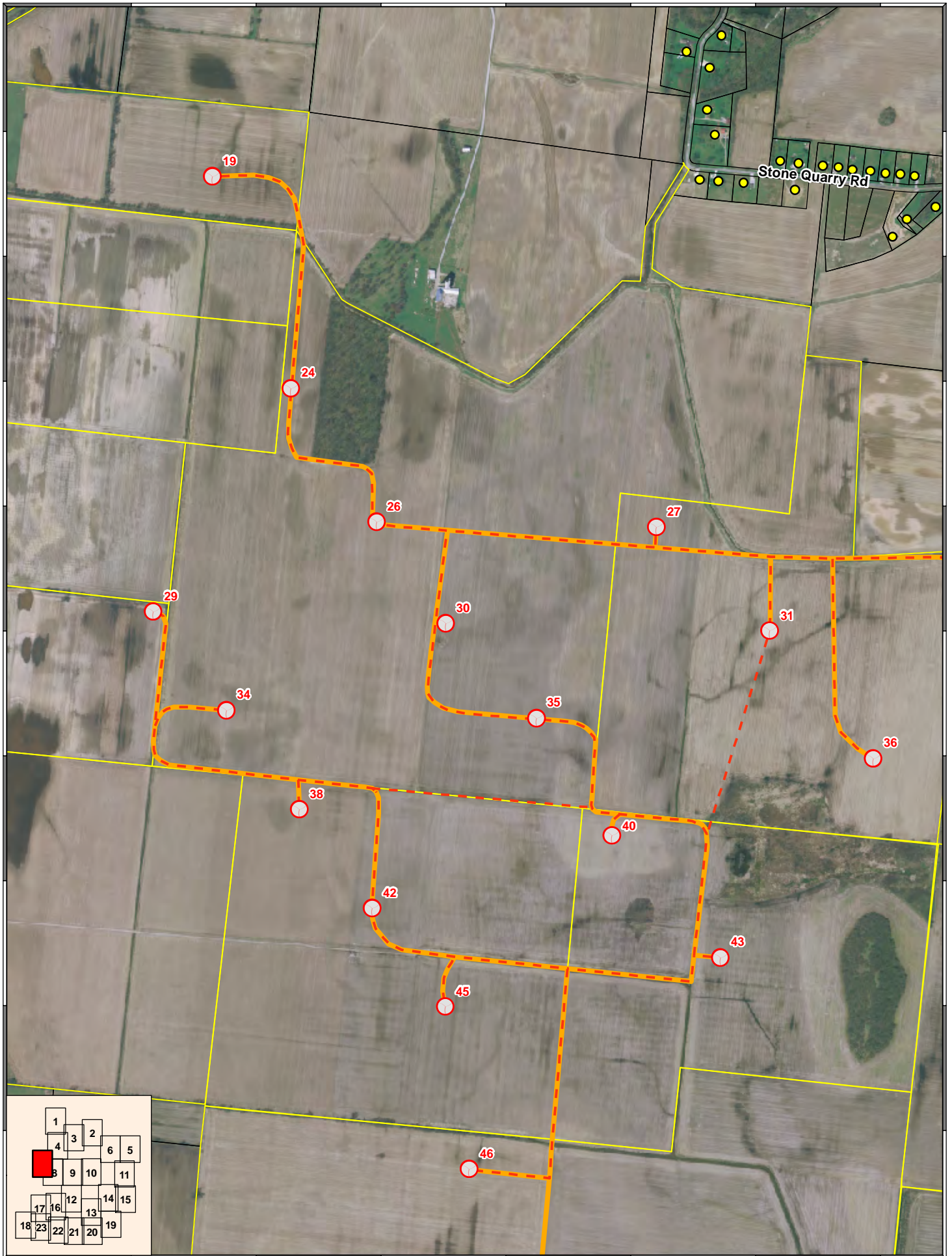






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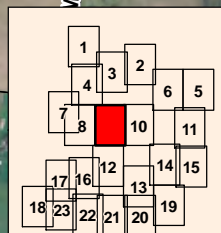
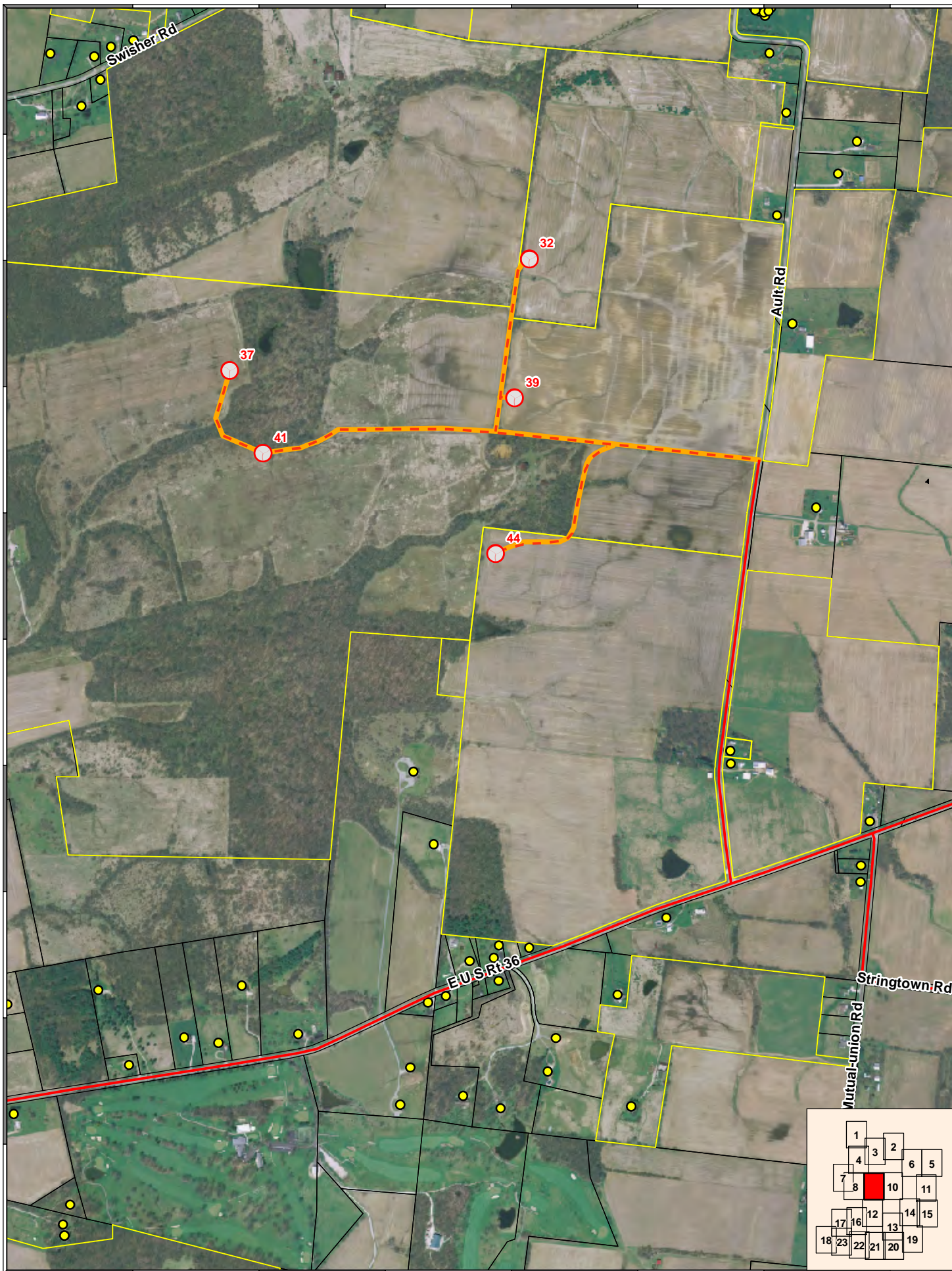






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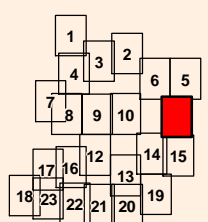
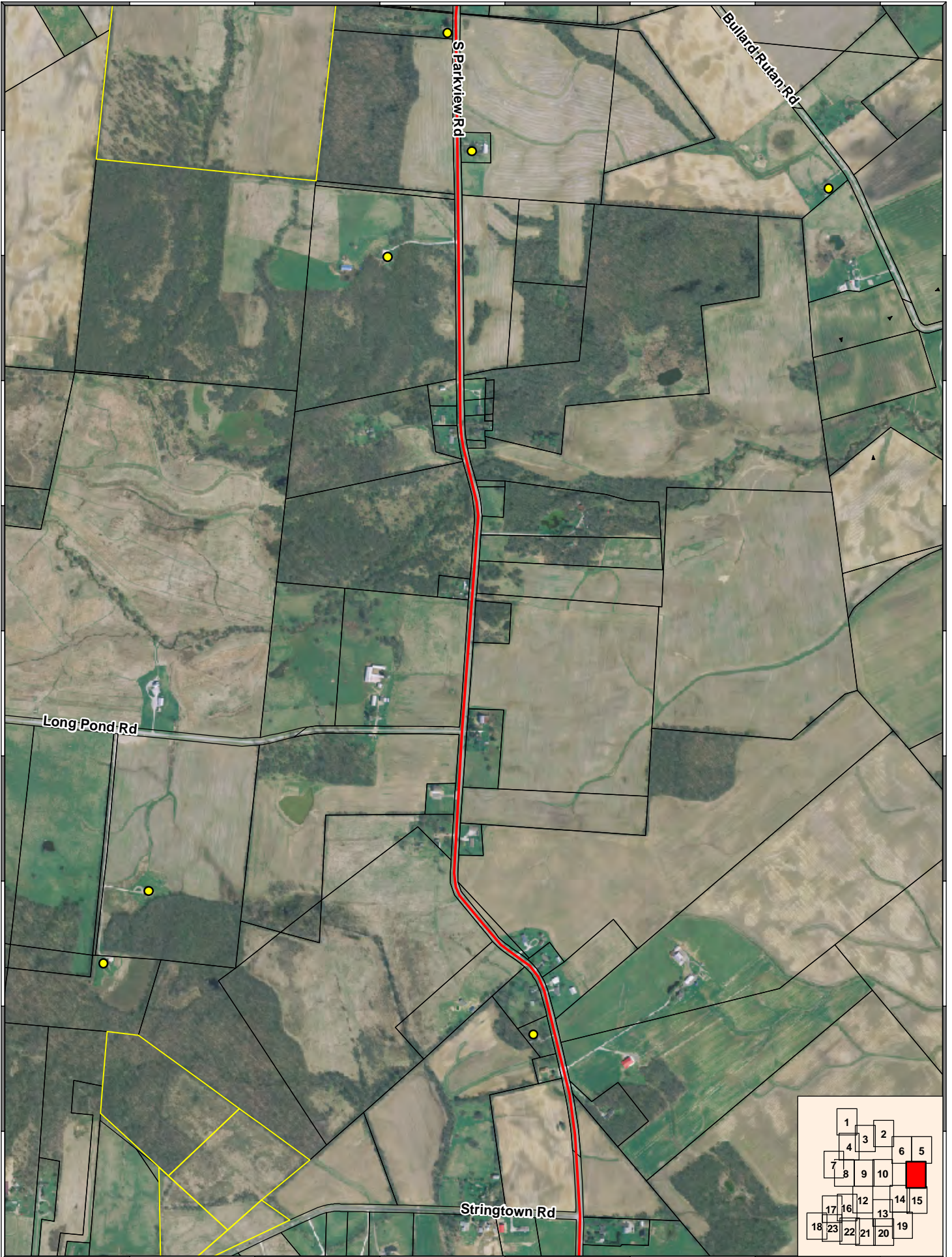






1 inch = 1,000 feet



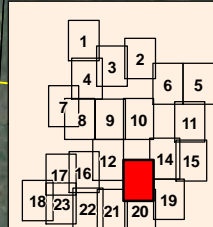
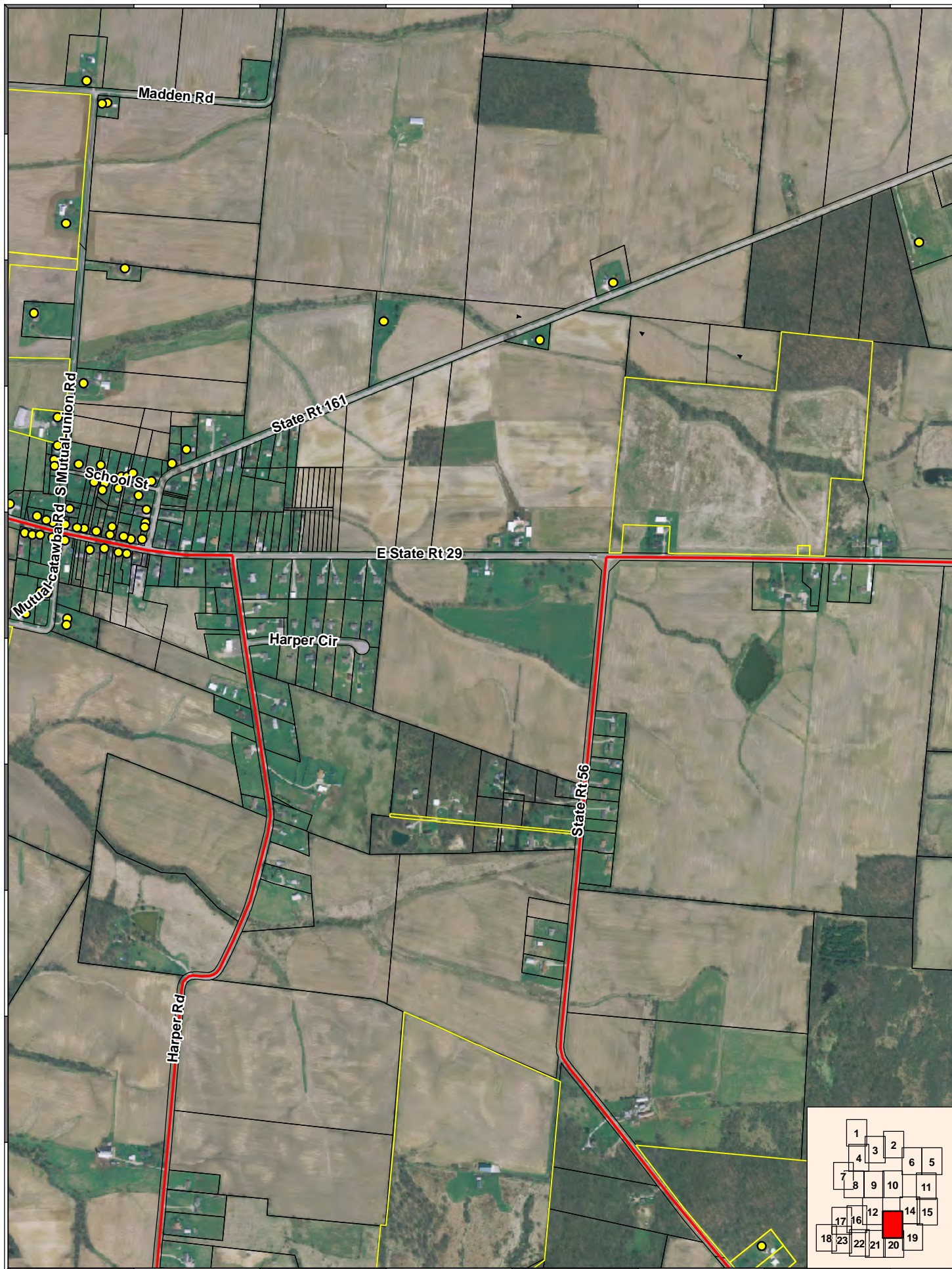






1 inch = 1,000 feet



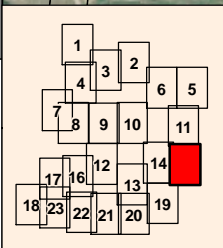






1 inch = 1,000 feet

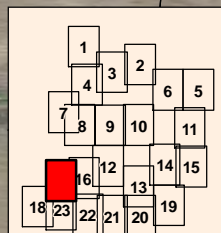




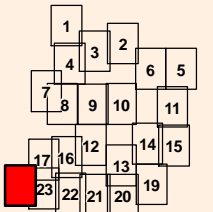
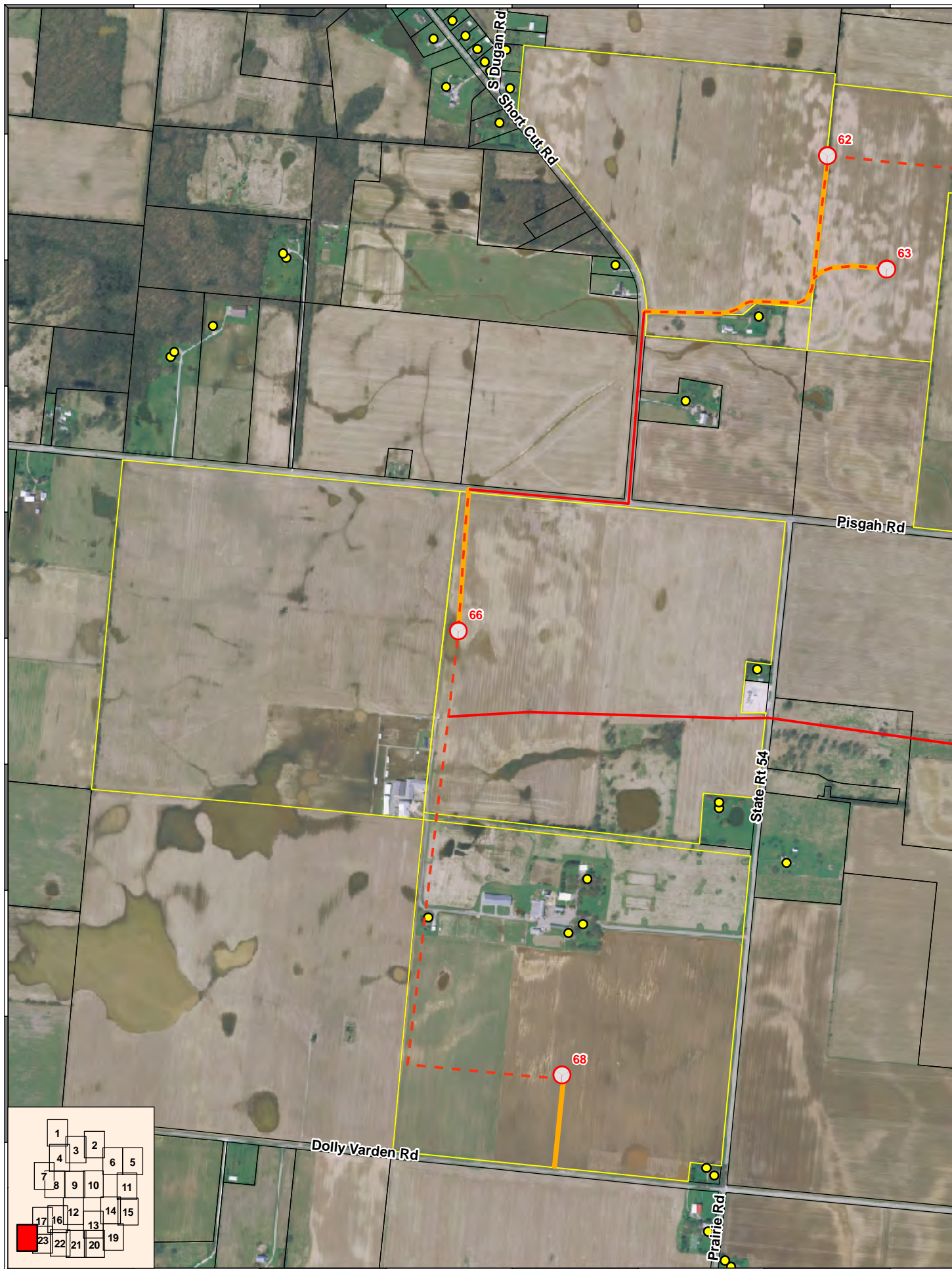






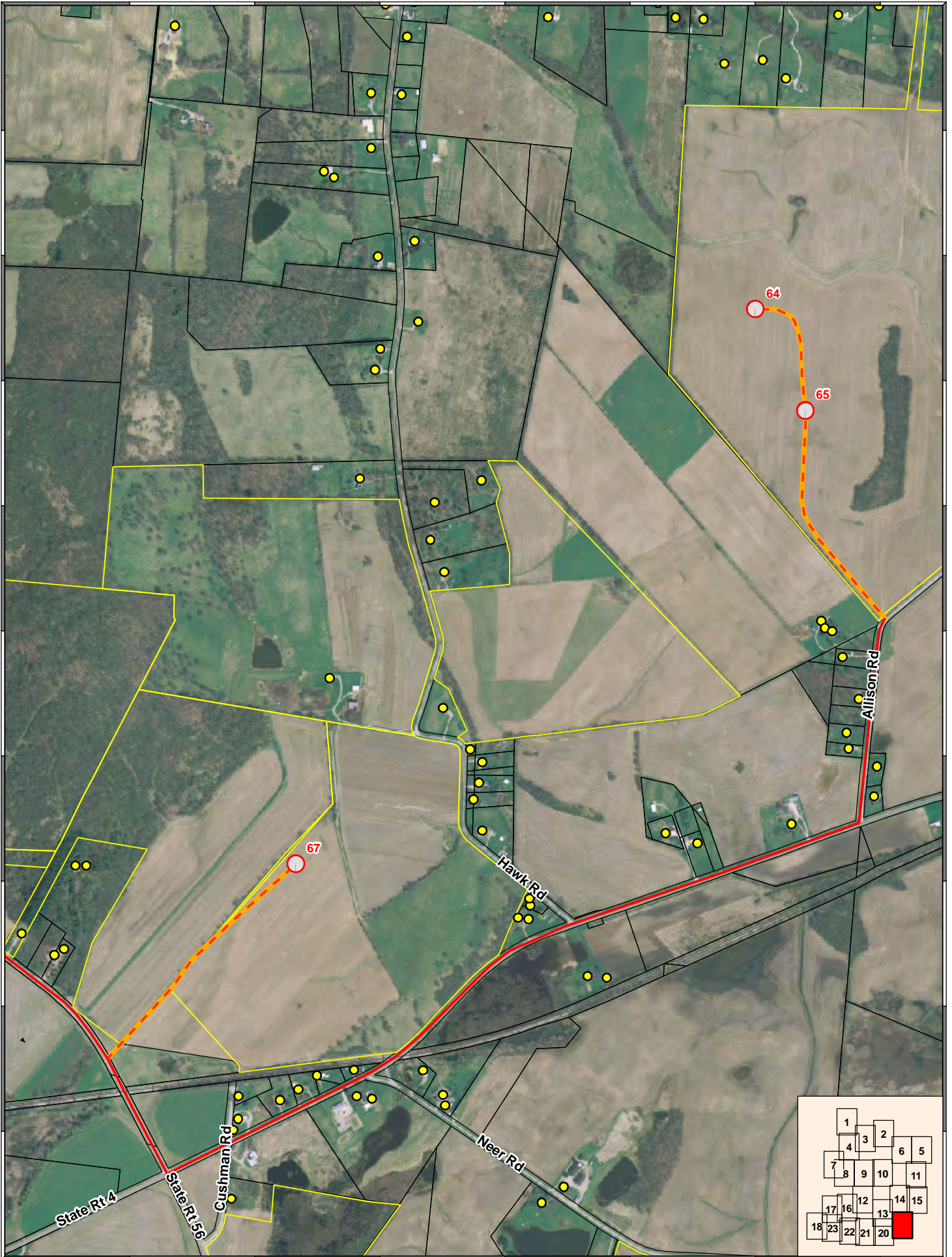






1 inch = 1,000 feet



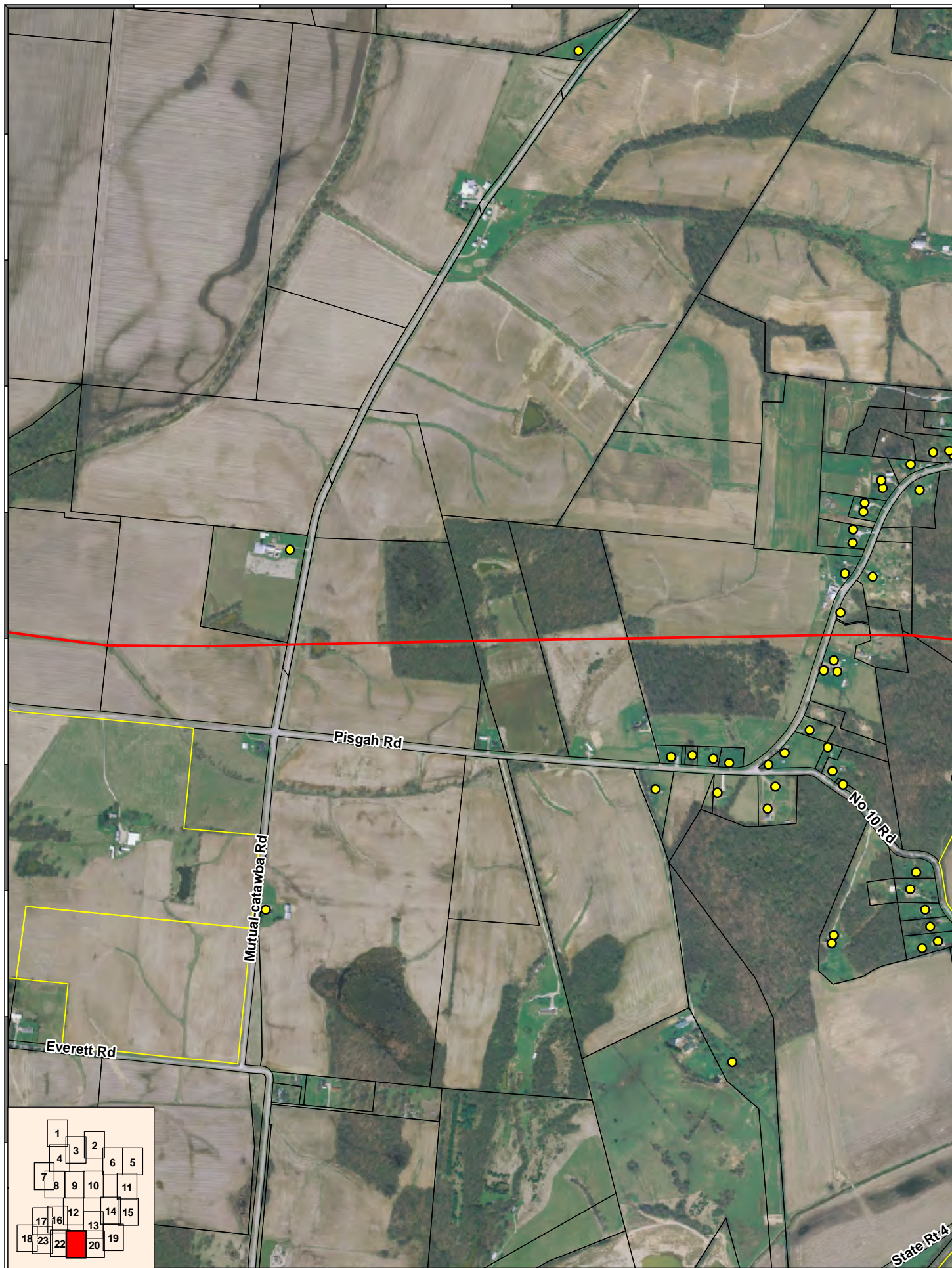






1 inch = 1,000 feet



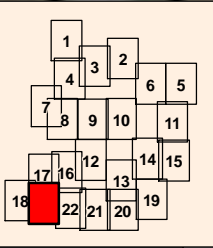
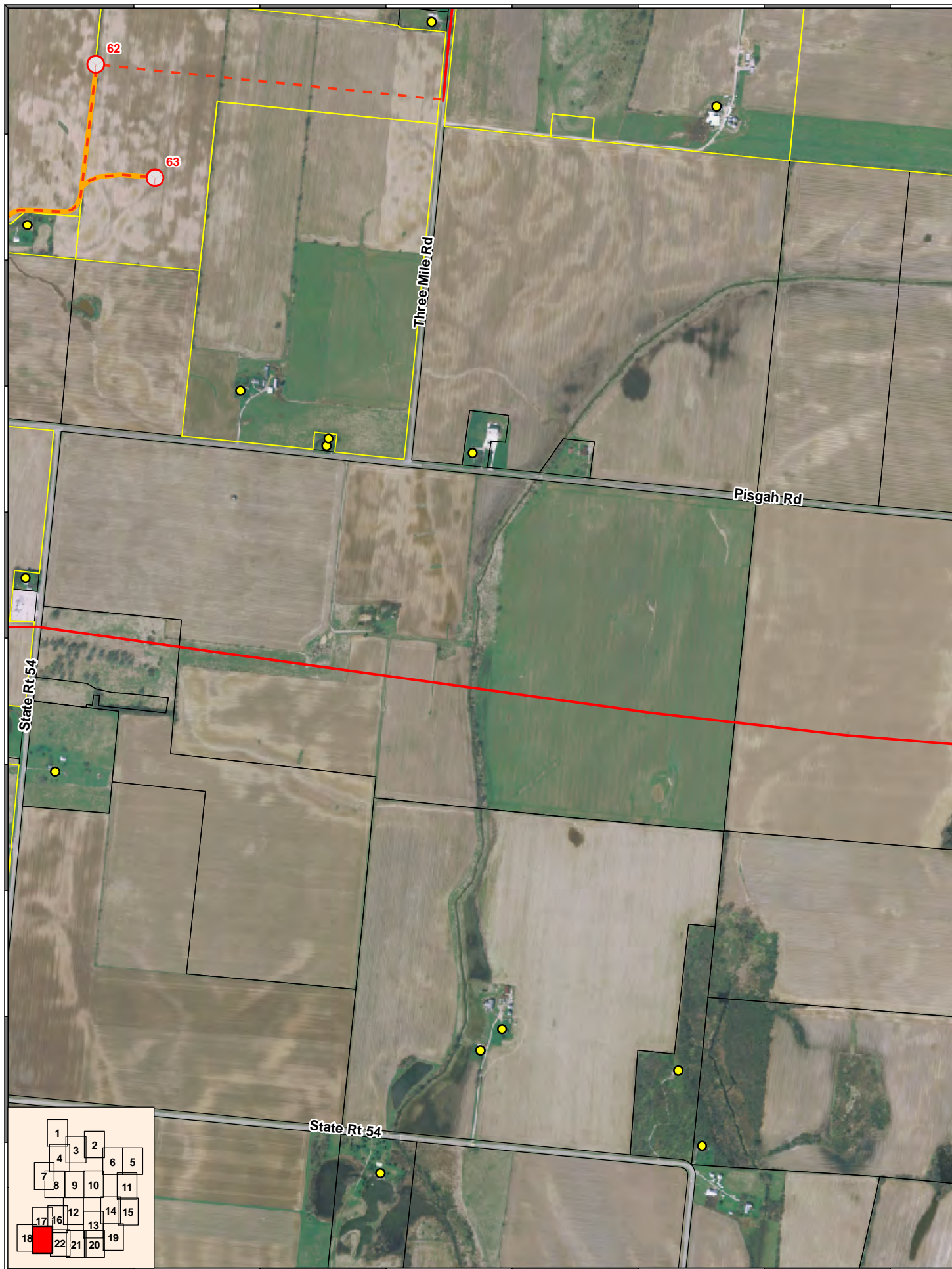






1 inch = 1,000 feet





### Appendix 3 Docketing Record

**CASE NUMBER:** 08-666-EL-BGN

**CASE DESCRIPTION:** Buckeye Wind, LLC

**ATTORNEY EXAMINER:** Greta See

**ATTORNEY GENERAL:** Werner Margard, John Jones

Date Filed	Summary
10/13/2009	Petition of the Piqua Shawnee Tribe to intervene in the adjudicatory hearing concerning this case and the wind farms being constructed in Champaign County Ohio filed by G. Park.
10/13/2009	Motion and memorandum in support of intervenors, Union Neighbors United, Inc., Diane and Robert McConnell. and Julia F. Johnson for ruling on admissibility of deposition of Dr. Michael Nissenbaum and for clarification of directive for written direct testimony filed by C. Walker. (FAX)
10/09/2009	Motion to intervene and memorandum in support filed by C. Flahive on behalf of The Champaign Telephone Company.
10/09/2009	Memorandum of intervenors in opposition to applicant's motion to establish requirement and deadline for written expert testimony filed by G. Weithman on behalf of the City of Urbana.
10/09/2009	Notice of intervention and resolution 2275 filed by G. Weithman on behalf of the City of Urbana, Champaign County, Ohio.
10/09/2009	Response to T. and L. Reid on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to P. Kauffman on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to N. Roberts on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to C. Derr on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to S. Loudon on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to R. Yocom on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to R. and A. Instine on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to R. and L. DeVore on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to J. M. Troyer on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to A. Bean on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to D. Sommers on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to B. Bricker on behalf of the Power Siting Board filed by K. Wissman.
10/09/2009	Response to J. Slemmons on behalf of the Power Siting Board filed by K. Wissman.
10/08/2009	Memorandum of intervenors in opposition to applicant's motion to establish requirement and deadline for written expert testimony and motion of intervenors for prehearing conference filed by C. Walker on behalf of Union Neighbors United, Inc., Diane and Robert McConnell, and Julia F. Johnson.
10/07/2009	Memorandum of intervenors in opposition to applicant's motion to establish requirement and deadline for written expert testimony and motion of intervenors for prehearing conference filed by C. Walker on behalf of Union Neighbors United, Inc., Diane and Robert McConnell and Julia F. Johnson. (FAX)
10/06/2009	Motion to establish requirement and deadline for filing of written expert testimony and memorandum in support filed by S. Howard on behalf of Buckeye Wind LLC.
10/05/2009	Correspondence letter opposing the installation of wind turbines in Champaign County by

	Buckeye Wind, LLC, filed by D. Nicholas, consumer.
10/02/2009	First request for admissions, second set of interrogatories and second request for production of documents to Union Neighbors United, Inc. filed by M. Petricoff on behalf of Buckeye Wind LLC.
10/02/2009	Correspondence letter in support of the proposed Buckeye Wind Project filed by A. Bean, consumer.
10/01/2009	Responses of the Urbana Country Club to Buckeye Wind LLC's first set of interrogatories and request for production of documents filed by D. Brown on behalf of the Urbana Country Club.
10/01/2009	Notice of intervention filed by J. Napier on behalf of the Board of Trustees of Goshen Township, Champaign County, Ohio.
10/01/2009	Notice of intervention filed by J. Napier on behalf of the Board of Trustees of Urbana Township, Champaign County, Ohio.
10/01/2009	Notice of intervention filed by J. Napier on behalf of the Board of Trustees of Wayne Township, Champaign County, Ohio.
10/01/2009	Notice of intervention filed by J. Napier on behalf of the Board of Trustees of Salem Township, Champaign County, Ohio.
10/01/2009	Notice of intervention filed by J. Napier on behalf of the Board of Trustees of Rush Township, Champaign County, Ohio.
10/01/2009	Supplemental memorandum to notice of intervention of Boards of Trustees of Urbana Township and Wayne Township, Champaign County, Ohio filed by J. Napier on behalf of the Board of Trustees of Urbana Township, Champaign County, Ohio.
09/28/2009	Memo from B. Brazell regarding the representation of anticipated acres of conversion for proposed project filed by C. Cunningham on behalf of the Ohio Power Siting Board. (FAX)
09/28/2009	Responses of intervenor Union Neighbors United, Inc. to Buckeye Wind LLC's first set of interrogatories and request for production of documents filed by C. Walker on behalf of Union Neighbors United, Inc.
09/28/2009	Responses of intervenor Robert B. McConnell to Buckeye Wind LLC's first set of interrogatories and request for production of documents filed by C. Walker on behalf of Union Neighbors United.
09/28/2009	Responses of intervenor Diane McConnell to Buckeye Wind LLC's first set of interrogatories and request for production of documents filed by C. Walker on behalf of Union Neighbors United.
09/28/2009	Responses to intervenor Julia F. Johnson to Buckeye Wind LLC's first set of interrogatories and request for production of documents filed by C. Walker on behalf of Union Neighbors United, Inc.
09/28/2009	Correspondence letter responding to consumer letter filed by D. Houghton, consumer.
09/16/2009	Staff's first set of interrogatories and request for production of documents directed to applicant, Buckeye Wind LLC filed by PUCO Staff.
09/11/2009	Proof of publication (Urbana area) filed by S. Howard on behalf of Buckeye Wind, LLC. (Champaign County)
09/02/2009	Service Notice.
09/01/2009	Entry ordering that the Urbana Country Club's, Township Trustees', County Commissioners', Robert and Diane McConnell's and Julia John's requests for intervention be granted; that Buckeye's request for an extension of time to file the additional data pursuant to the July 31, 2009, entry be granted until September 4, 2009; that the hearings in this matter be scheduled at the times and places designated in findings 12 and 13; That Buckeye's request for an extension of time to publish notice of the hearing is granted until September 11, 2009 and notices of the application and hearings be published by Buckeye in accordance with findings 14 and 15. (GS)
09/01/2009	Additional notice of filing information requested by July 31, 2009 entry filed by H. Petricoff on behalf of Buckeye Wind LLC.



09/01/2009	Confidential document: Response to Finding (24) of the July 21, 2009 Entry filed by H. Petricoff on behalf of Buckeye Wind, LLC. (3 PAGES)
08/28/2009	Notice of filing information requested by July 31, 2009 entry filed by H. Petricoff on behalf of Buckeye Wind LLC.
08/26/2009	First set of interrogatories and request for production of documents to The Urbana Country Club filed by M. Settineri on behalf of Buckeye Wind LLC.
08/26/2009	First set of interrogatories and request for production of documents to Union Neighbors United, Inc. filed by M. Settineri on behalf of Buckeye Wind LLC.
08/26/2009	First set of interrogatories and request for production of documents to Diane McConnell filed by M. Settineri on behalf of Buckeye Wind LLC.
08/26/2009	First set of interrogatories and request for production of documents to Robert McConnell filed by M. Settineri on behalf of Buckeye Wind LLC.
08/26/2009	First set of interrogatories and request for production of documents to Julia F. Johnson filed by M. Settineri on behalf of Buckeye Wind LLC.
08/24/2009	Response of intervenor, The Urbana Country Club, to motion for extension of time filed by D. Brown.
08/21/2009	Reply to the response of intervenors Union Neighbors United, Julia Johnson and Robert and Diane McConnell to motion for extension of time filed by M. Settineri on behalf of Buckeye Wind LLC.
08/17/2009	Response of intervenors Union Neighbors United, Julia Johnson, and Robert and Diane McConnell to motion for extension of time filed by C. Walker.
08/14/2009	Response of Intervenor Union Neighbors United, Julia Johnson, and Robert and Diane McConnell to motion for extension of time filed by C. Walker. (FAX)
08/12/2009	Motion and memorandum in support for extension of time of three weeks for the filing of information mandated by the July 31, 2009 entry filed on behalf of Buckeye Wind LLC by S. Howard.
08/07/2009	Notice of intervention of Board of Trustees of Union Township, Champaign County, Ohio filed by J. Napier.
08/07/2009	Notice of intervention of Board of Commissioners of Champaign County, Ohio filed by J. Napier.
07/31/2009	Service Notice.
07/31/2009	Entry ordering that UNU's and the Farm Federation's requests for intervention be granted; that Buckeye's motion for a protective order be granted as discussed in finding 10; that Buckeye's request for waivers be granted or denied as discussed; that a local public hearing be scheduled for October 8, 2009 at 6:00 p.m., at the Triad High School Auditoria, 8099 Brush Lake Road, North Lewisburg, OH 43060; that the adjudicatory hearing commence on October 13, 2009 at 10:00 a.m. in Hearing Room 11-F at the office of the Public Utilities Commission of Ohio, 180 East Broad Street, Columbus, OH 43215-3793; and that notices of the application and hearings be published by Buckeye in accordance with findings 33 and 34. (GS)
07/30/2009	Response letter from Kim Wissman, Ohio Power Siting Board, to Linda Hughes, consumer.
07/22/2009	Petition for leave to intervene and memorandum in support of the Urbana Country Club filed by D. Brown.
07/20/2009	Memorandum detailing Staff positions regarding specific waiver requests by Buckeye Wind LLC filed by K. Lambeck.
07/20/2009	First request for production of documents by intervenors Union Neighbors United, Robert McConnell, Diane McConnell, and Julia Johnson to applicant Buckeye Wind, LLC filed by C. Walker.
07/20/2009	First set of interrogatories from intervenors Union Neighbors United, Robert McConnell, Diane McConnell, and Julia Johnson to applicant Buckeye Wind, LLC filed by C. Walker.



07/17/2009	Supplemental certificate of service filed by M. Petricoff on behalf of Buckeye Wind, LLC.
07/07/2009	Correspondence stating a check for \$87,500.00 has been filed on behalf of Buckeye Wind LLC by H. Petricoff.
07/07/2009	Certificate of Service filed on behalf of Buckeye Wind LLC by M. Settineri.
06/23/2009	Response letter sent to: Mr. James Spencer filed by A. Schriber on behalf of OPSB.
06/17/2009	Memorandum contra to motion of intervenors Union Neighbors United, Robert and Diane McConnell and Julia Johnson for leave to file a response to applicant's reply memorandum regarding motion for waiver filed by M. Settineri on behalf of Buckeye Wind LLC.
06/03/2009	Motion of intervenors Union Neighbors United, Robert and Diane McConnell, and Julia Johnson for leave to file response to applicant's reply memorandum regarding motion for waiver filed by C. Walker.
06/03/2009	Response of intervenors Union Neighbors United, Robert and Diane McConnell and Julia Johnson to applicant's reply concerning motion for waiver filed by C. Walker.
06/02/2009	Response of intervenors Union Neighbors United, Robert and Diane McConnell and Julia Johnson to applicant's reply concerning motion for waiver filed by C. Walker. (FAX)
06/02/2009	Motion of intervenors Union Neighbors United, Robert and Diane McConnell and Julia Johnson for leave to file response to applicant's reply memorandum regarding motion for waiver file by C. Walker. (FAX)
05/20/2009	Motion to intervene and memorandum in support filed on behalf of the Ohio Farm Bureau Federation by L. Gearhardt.
05/15/2009	Reply memorandum in response to Intervenor's memorandum contra motion for protective order filed on behalf of Buckeye Wind LLC by M. Settineri.
05/15/2009	Reply in response to Intervenor's memorandum contra to motion for waiver filed on behalf of Buckeye Wind LLC. by M. Settineri.
05/11/2009	Memorandum contra motion for protective order filed on behalf of Union Neighbors United by C. Walker.
05/11/2009	Memorandum contra motion for waiver filed on behalf of Union Neighbors United by C. Walker.
05/11/2009	Petition for leave to intervene and memorandum in support filed on behalf of Union Neighbors United by C. Walker.
05/08/2009	Petition for leave to intervene and memorandum in support of Union Neighbors United, Robert McConnell, Diane McConnell, and Julia Johnson filed by C. Walker, (FAX)
05/08/2009	Memorandum contra motion for waiver and motion for protective order filed by C. Walker on behalf of Union Neighbors United, Diane and Robert McConnell, and Julia Johnson. (FAX)
04/30/2009	Memorandum of applicant in response to April 28, 2009 notice of Union Neighbors United, Robert McConnell, Diane McConnell and Julia F. Johnson filed by M. Petricoff on behalf of Buckeye Wind LLC.
04/28/2009	Notice of Union Neighbors United, Robert McConnell, Diane McConnell, and Julia F. Johnson of intent to file memoranda contra applicant's motion for waiver and motion for protective order filed by C. Walker. (FAX)
04/24/2009	Application Continued. (Part 7 of 7)
04/24/2009	Application Continued. (Part 6 of 7)
04/24/2009	Application continued. (Part 5 of 7)
04/24/2009	Application Continued. (Part 4 of 7)
04/24/2009	Application continued. (Part 3 of 7)
04/24/2009	Application Continued. (Part 2 of 7)
04/24/2009	Application for a certificate of environmental compatibility and public need for the Buckeye Wind Project in the Townships of Goshen, Rush, Salem, Union, Urbana, and Wayne, Champaign County, Ohio by H. Petricoff. (Part 1 of 7)

04/24/2009	Motion for waiver and memorandum in support filed by M. Settineri on behalf of Buckeye Wind LLC.
04/24/2009	Confidential document target: Exhibit "R" filed by M. Petricoff on behalf of Buckeye Wind, LLC. (26 pages)
04/24/2009	Motion for protective order and memorandum in support filed by M. H. Petricoff on behalf of Buckeye Wind, LLC.
08/05/2008	Letter supporting application filed by B. and S. McCarty, consumers.
08/05/2008	Letter supporting application filed by D. Hayden, consumer.
07/29/2008	Letter stating that the information session given to residents of Union Township, Champaign County, within the area of the proposed Buckeye Wind LLC wind generation facility was inadequate and vague filed on behalf of concerned consumers, James and Anita Bartlett.
06/30/2008	Correspondence stating that the information session given to residents of Union Township, Champaign County, within the area of the proposed Buckeye Wind LLC wind generation facility was inadequate and vague filed on behalf of concerned consumers, Robert and Diane McConnell and Julia Johnson filed by C. Walker.
06/04/2008	In the matter of the application of Buckeye Wind LLC for a certificate to install numerous electricity generating wind turbines in Champaign County to be collected at an electric substation in Union Township, Champaign County,

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

**Commission of Ohio Docketing Information System on**

**10/14/2009 7:51:08 AM**

**in**

**Case No(s). 08-0666-EL-BGN**

Summary: Staff Report Filed (Word document does not contain Map Appendix - included in PDF), electronically filed by Tim Burgener on behalf of Staff of the Ohio Power Siting Board and Mr. Stuart Siegfried