Visual Impact Assessment

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

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December 2018

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1.0 Introduction

On behalf of Republic Wind LLC, Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR) prepared this Visual Impact Assessment (VIA) for the proposed Republic Wind Project (Project). The proposed Project is a 200-megawatt (MW) wind energy generating facility located in the Counties of Sandusky and Seneca, Ohio (Figure 1). The purpose of this VIA is to:

- Describe the appearance of the visible components of the proposed Project.
- Describe the visual character of the Project study area.
- Inventory and evaluate existing visual resources and viewer groups.
- Evaluate potential Project visibility within the study area.
- Identify key views for visual assessment.
- Assess the visual impacts associated with the proposed action.

This VIA was prepared by, and with oversight from, professionals experienced in developing visual impact assessments. It is consistent with the policies, procedures, and guidelines contained in established visual impact assessment methodologies and satisfies the requirements of Ohio Administrative Code Chapter 4906-04-08(D)(4) for the Ohio Power Siting Board.

2.0 Project Description

A description of the proposed Project site and the visible components of Republic Wind Project is presented below.

2.1 Project Site

The Project Site consists of approximately 24,000 acres of private land in Adams, Pleasant, Reed, Scipio, and Thompson Townships in Seneca County, and York Township in Sandusky County (Figure 2). As measured from the municipal boundary to the municipal border to the nearest proposed turbine, the Project is approximately 0.2 mile southwest of the City of Bellevue, 3.0 miles southeast of the City of Clyde, 7.8 miles southeast of the City of Fremont, 6.5 miles northeast of the City of Tiffin, 9.7 miles west of the City of Norwalk, 10.0 miles from the City of Willard, 6.0 miles northwest of the Village of Attica, 9.7 miles southeast of the Village of Burgoon, 8.4 miles southeast of the Village of Bettsville, 5.8 miles northeast of the Village of Bloomville, 2.3 miles southwest of the Village of Green Springs, 6.8 miles west of the Village of Monroeville, 10 miles southwest of the Village of Castalia, and 2.2 miles northeast of the Village of Republic. The Project Site is bounded on the northeast by Interstate Route 80, on the east by State Route 99, on the south by U.S. Route 224 (Benjamin Franklin Highway), and on the west by the Sandusky River and State Route 53.

2.2 Proposed Project

The proposed Project evaluated in this VIA is a wind-powered electric generating facility, consisting of up to 50 wind turbine generators, each with a nameplate capacity rating of 4.2 to 4.5 MW (depending on the final turbine model selected), and a total generating capacity not to exceed 200 MW. Depending on the model of turbine selected, the actual number of turbines constructed could range from 44 to 47. Along with the turbines, the Project includes associated support facilities including roads, buried electrical collection cables, two meteorological (met) towers, a collection substation, up to two temporary laydown yards, and an operations and maintenance (O&M) building. Project configuration/layout is illustrated in Figure 2. The dimensions and visual appearance of the major components of the proposed Project are described below:

2.2.1 Wind Turbines

The turbines are the largest and most visible components of the proposed Project, and therefore are the focus of this VIA. Each wind turbine consists of three major components: the tower, the nacelle, and the rotor. The nacelle sits atop the tower, and the rotor hub is mounted to the front of the nacelle. Of the turbine models under consideration for

this Project, the Acciona/Nordex 149, has the greatest maximum turbine height (i.e., the height at the highest blade tip position) at 602 feet (183.5 meters). Therefore, this turbine is the model evaluated in this study. Descriptions of each of the turbine components are provided below, and a computer model illustrating the appearance of the turbine used in this assessment is shown in Figure 3.

Tower: The towers used for commercial turbines are tubular conical steel structures manufactured in multiple sections and mounted on a concrete foundation that is essentially flush with the ground surface. For the purposes of this study, the tower is assumed to have a base diameter of 18.0 feet and a top diameter of 10.0 feet at a height of 357 feet. Each tower will have an access door in the base section and be painted white, in accordance with Federal Aviation Administration (FAA) regulations.

Nacelle: The main mechanical components of the wind turbine are housed in the nacelle. These components include the drive train, gearbox, and generator. The nacelle is approximately 36.1 feet long, 13.1. feet tall (including cooling equipment), and 13.3 feet wide, and white in color. The nacelle is equipped with an external anemometer and a wind vane that signals wind speed and direction information to an electronic controller. Attached to the top of the nacelles, per specifications of the FAA, will be two, aviation warning lights. These lights are anticipated to be flashing, medium-intensity red strobes (L-864) that operate only at night. For the purposes of this study it is assumed that the nacelles will include no obvious lettering, logo, or other exterior marking.

Rotor: A rotor assembly is mounted to the nacelle to operate upwind of the tower. Each rotor consists of three composite blades that will be up to 244.5. feet (74.5 meters) in length, with a maximum rotor diameter of up to 489 feet (149 meters). The rotor attaches to the drive train at the front of the nacelle. Rotor speed will typically be in the range of 5.6 to 15.3 revolutions per minute (RPM).

2.2.2 Electrical System

The proposed Project will have an electrical system consisting of two parts: (1) a system of 34.5 kV shielded and insulated cables that will collect power from each wind turbine, and (2) a collector substation ("Project substation") that will step up voltage prior to connection with the electric power grid. Each of these electrical system components is described below.

Collection System: A transformer at each turbine will raise the voltage of electricity produced by the turbine generator up to the 34.5 kV voltage level of the collection system. From the transformer, cables will join the collection circuit and turbine communication cables to form the electrical collection system. Collection cables will be buried to a minimum depth of 36 inches below the ground surface. Appendix G illustrates typical underground collection system trenching and cable installation during construction. The location of the proposed collection system is depicted on Figure 2. This 34.5 kV collection system will connect the individual turbines to the collection substation. The total length of the buried 34.5 kV collection lines carrying electricity to the Project substation will be approximately 83 miles. A cleared corridor approximately 20 feet wide[1] is typically required for installation of the buried cables. Restoration of these disturbed areas will be completed through seeding and mulching of all exposed soils, or by resumption of farming activities in active agricultural fields. While the cables themselves will not be visible, any clearing associated with the installation of the buried collection lines is shown in the simulations prepared for this VIA.

Collection Substation: The collection substation will be located south of Hoppes Road and west of Town Highway 175 in Adams Township, Seneca County. The substation will step up voltage from 34.5 kV to 138 kV, so electricity generated by the Project can be delivered to the existing power grid. The substation will include dead-end structures, circuit breakers, air break switches, metering units, communication equipment, and a control house. The collection substation will be approximately 467 by 467 feet in size and enclosed by a chain link fence. Lightning masts will be the tallest component of the substation, at approximately 60 feet tall. The station will be accessed via a 0.1-mile gravel-surfaced access road from Town Highway 175. At the time of VIA preparation details regarding the final design of the substation were not available. Therefore, this component of the Project was not evaluated as part of this VIA.

2.2.3 Access Roads

The Project will require the construction of new or improved private roads to provide access to the proposed turbines. Wherever feasible, existing farm drives will be upgraded for use as Project access roads, in order to minimize impacts. The proposed location of Project access roads is shown on Figure 2. The total length of access roads required to service all proposed wind turbine locations is approximately 19.9 miles. During construction, turbine installation could require temporary road widths up to 36 feet. Once construction is complete, temporarily disturbed areas will be restored

[1] Some sections of buried electrical cable will be wider than 20 feet because of the number of collection strings that need to convene (run parallel) neat the Project substation. However, in many other locations the disturbance will be substantially less than 20 feet, resulting in an overall average disturbance width of 20 feet across the Project Site.

to their approximate pre-construction contours. For the purposes of this study and the accompanying visual simulations, the access roads are assumed to be gravel-surfaced with a finished width of 16 feet.

2.2.4 Meteorological Towers

Two 295-foot (90-meter) permanent wind measurement (met) towers will be installed to collect wind data and support performance testing of the Project. These towers will be galvanized steel structures equipped with wind velocity directional measuring instruments at three different elevations and a red aviation warning lighting mounted at the top. Each tower will be self-supporting (i.e., they will be un-guyed, free standing structures). Four possible locations for the met towers have been identified, all of which are on agricultural land (see Figure 2). For the purposes of this study met towers are shown in any of the simulations that include one or more of the six possible sites (although no more than the two closest towers are shown in any simulation).

2.2.5 Operations and Maintenance Facility

An O&M building and associated storage yard will be required to house operations personnel, equipment, and materials, and to provide operations staff parking. It is anticipated that an existing structure in the vicinity of the Project will be purchased or leased and refurbished for O&M activities. If a new building is needed, it is not expected to exceed 6,000 square feet or permanently disturb an area of greater than 3 acres. Because the O&M building is anticipated to utilize an existing structure or be similar in size and design to existing agricultural buildings in the area, it is not addressed in this study, nor represented in the visual simulations.

2.2.6 Laydown Yards

Project construction will require the development of a temporary laydown yard for construction staging, to be located on leased private lands. The laydown yard will accommodate material and equipment storage, parking for construction workers, and construction management trailers. The area of the laydown yards will not exceed approximately 12 acres. No lighting of the laydown areas is currently proposed, but may be added as needed (e.g., to resolve safety issues due to poor visibility or if other problems such as vandalism arise). Six possible locations for the laydown yard have been identified, all of which are on agricultural land (see Figure 2). Because the laydown yards are temporary and will be removed/restored at the end of construction, they are not represented in the visual simulations or evaluated as part of this study.

3.0 Visual Study Area

Chapter 4906-17 of the Ohio Administrative Code (OAC), Application Filing Requirements for Wind-Powered Electrical Generation Facilities, section (D)(1), indicates that a 10-mile radius is the appropriate study area for the identification of scenic and historic resources (OPSB, 2009). The 10-mile radius visual study area (study area) for the Republic Wind Project encompasses approximately 728 square miles, and includes portions of Crawford, Erie, Huron, Sandusky, and Seneca Counties. Municipalities that occur within 10 miles of the proposed Project include the entirety of three cities (Bellevue, in Erie, Sandusky, and Huron Counties, Clyde in Sandusky County, and Tiffin in Seneca County); portions of three cities (Fremont in Sandusky County, Norwalk in Huron County, and Willard in Huron County), the entirety of seven villages (Attica, Bettsville, Bloomville, and Republic in Seneca County, Burgoon in Sandusky County, Monroeville in Huron County and Green Springs in Sandusky and Seneca), and a portion of one village (Castalia in Erie County); and portions of 36 townships (Chatfield and Lykens in Crawford County, Groton, Margaretta, Oxford and Perkins in Erie County, Greenfield, Lyme, New Haven, Norwich, Peru, Richmond, Ridgefield, and Sherman in Huron County, Ballville, Green Creek, Jackson, Riley, Sandusky, Scott, Townsend, Washington, and York in Sandusky County and Adams, Bloom, Clinton, Eden, Hopewell, Jackson, Liberty, Pleasant, Reed, Scipio, Seneca, Thompson and Venice in Seneca County). The location and extent of the visual study area is illustrated in Figure 4.

3.1 Physiographic/Visual Setting

3.1.1 Landform and Vegetation

The visual study area occurs within the Huron-Erie Lake Plains Section of the Central Lowland Physiographic Province in Ohio. The majority of the study area lies within the Bellevue-Castalia Karst Plains, which is characterized as a hummocky plain of rock knobs and numerous sinkholes, large solution features, springs and caves, thinly mantled by glacial drift. Surface elevations in this region range from 570 feet to 825 feet above mean sea level (amsl). The northwestern portion of the study area occurs within the Maumee Lake Plains Region and is characterized as a flat-lying Ice-Age lake basin containing beach ridges, bars, dunes, deltas, and clay flats. The region formerly contained the Black Swamp, which was a regional wetland extending southwest from present-day western Lake Erie through northwest Ohio into extreme northeastern Indiana. The Black Swamp consisted of extensive swamps and marshes, with some higher dry ground interspersed. Low physiographic relief (generally less than 5 feet) is present in the region, which has been slightly dissected by modern streams. Surface elevations in the Maumee Lake Plain Region range from approximately 570 to 800 feet amsl (Hull, 2017).

Vegetation in the study area is dominated by active agricultural land (crop fields), followed by maintained/open space (residences/yards), and some deciduous forest areas (woodlots). Many of the fields and roadsides are bordered by ditches and narrow waste areas characterized by unmowed herbaceous vegetation. Forested areas are limited to isolated woodlots between crop fields and along some roads. The woodlots are comprised primarily of native deciduous trees, including maples (*Acer* spp.), oaks (*Quercus* spp.), American elm (*Ulmus americana*), American beech (*Fagus grandifolia*), and shagbark hickory (*Carya ovata*).

3.1.2 Land Use

Land use within the visual study area is dominated by agricultural land, farms, and rural and suburban residential development. Farms in the area are typically large, with soybeans and corn being the primary agricultural crops grown. Rural residential development occurs at a very low density throughout the study area. Hamlets occur as relatively small pockets of development within a primarily rural/agricultural landscape. Higher density residential and commercial development is concentrated in the Cities of Bellevue, Clyde, and Tiffin, and the Villages of Green Springs and Republic. The cities and villages are generally characterized by a main street business district, surrounded by traditional residential neighborhoods, with some commercial frontage development along the outskirts. Some suburban residential and commercial development occurs around the periphery of the cities and villages in the study area. Commercial/industrial uses within the study area also occur on the outskirts of the cities and villages, and along certain portions of state and county highways in the area. These include automobile dealerships, restaurants, retail/convenience stores, farm suppliers, and equipment yards.

3.1.3 Water Features

The entire study area is located within the Lake Erie Drainage Basin. Surface water bodies present within the study area include several small creeks, ditches, ponds, and man-made reservoirs. The creeks generally flow from the southeast to the northwest. Most of the surface water within the study area flows into Emerson Creek and Royer Ditch, located in the north-central portion of the study area. These water bodies connect to Beaver Creek, which flows into Green Creek, which discharges into Lake Erie. Several small un-named tributaries in the southwestern portion of the study area connect to the Sandusky River, which parallels the western border of the study area before discharging into Lake Erie. The majority of the water features within the study area are small streams and ponds that occur on private land, and therefore receive limited recreational use. These water bodies are also not major visual components of the landscape, and typically can only be seen at, or in proximity to, public road crossings.

Multiple municipal reservoirs are also present within the visual study area, which often allow access to the general public. Such reservoirs are dominant in the landscape due to their elevated earthen embankments and the larger expanse of open water. The Sandusky River corridor, including the river itself and the shoreline vegetation, follows a serpentine path in the western portion of the visual study area, flowing from the south through the City of Tiffin, to the north through the City of Fremont, and eventually ending up in Sandusky Bay.

3.2 Landscape Similarity Zones

The definition of landscape character types found in the study area provides a useful framework for the analysis of available visual resources and viewer circumstances. These landscape character types, referred to in this report as Landscape Similarity Zones (LSZs), are defined based on the similarity of landscape features such as landform, vegetation, water, and land use patterns, as well as characteristics that affect visual sensitivity, such as the availability of open views, scenic quality and user activity. These generally homogeneous character zones were identified in accordance with established visual assessment methodologies (Smardon et al., 1988; USDA Forest Service, 1995; USDOT Federal Highway Administration, 1981; USDOI Bureau of Land Management, 1980). The U.S. Geological Survey (USGS) National Land Cover Dataset (NLCD) used to help define the location of these zones is illustrated in Figure 5. The four identified LSZs that occur within the visual study area include the following:

- Rural Residential/Agricultural Zone
- City/Village Zone
- Suburban Residential Zone
- Transportation Corridor Zone

The USGS Land Cover Data used to help define the location of these zones is illustrated in Figure 5. The general landscape character, use, and potential views to the proposed Project within each of the LSZs that occur within the study area are described below.

3.2.1 Zone 1: Rural Residential/Agricultural Zone

Inset 1. Representative Photograph of the interaction between Agriculture and Residential uses as viewed from the Rural Residential/Agricultural Landscape Similarity Zone.
State Route 412, west of County Road 306 (Teems Road), Township of Townsend, Ohio (Viewpoint 15).

The Rural Residential/Agricultural LSZ is the dominant landscape type that occurs throughout the study area and is visually recognizable by its working landscape characteristics. The landscape in this zone is characterized by uniformly level topography with a mix of farms and associated crop fields, rural residences, hedgerows, small woodlots, and occasional water features. The dominant land use is crop farming (primarily soybeans and corn), along with small amounts of pasture. Due to the presence of open fields, views within this LSZ are more open and longer in distance than those available in other zones within the study area. These views typically include a level foreground field, with bands of woodland vegetation in the background or crossing the view. Views in the Rural Residential/Agricultural LSZ typically include widely scattered homes, barns and silos, with working farm equipment often seen in the fields. Scenic quality generally ranges from low to moderate depending on the variety and arrangement of landscape features in the view. Due to the abundance of open fields, and the proposed location of turbines exclusively within this zone, open foreground (0-0.5 mile), middle ground (0.5-3.5 miles), and background (>3.5 miles) views of the proposed Project will

be available from many areas within the Rural Residential/Agricultural LSZ. In some areas of this LSZ water is present in the form of a river, creeks, small ponds, and larger reservoirs. Views toward the Project site from water resources are most likely to be available from the reservoirs, due to their elevated earthen embankments and the larger expanse of open water. Open views from the Sandusky River are extremely rare, due to shoreline vegetation that effectively screens outward views.

Inset 2. Representative Photographs of the Rural Residential/Agricultural Landscape Similarity Zone.
Top Left: State Route 510 (North Main Street), north of the City of Clyde at Crossing of Buck Creek, Township of St Greek Creek, Ohio (Viewpoint 66);
Top Right: County Road 138 (East Township Road 138, at the Miller Conservation Farm, Township of Adams, Ohio (Viewpoint 72);
Bottom Left: Clinton Nature Preserve, Sandusky Scenic River Access, Township of Adams, Ohio (Viewpoint 73);
Bottom Right: Beaver Creek Reservoir, Boat launch, Township of Adams, Ohio (Viewpoint 52);

3.2.2 Zone 2. City/Village Zone

Inset 3. Representative Photographs of the City/Village/Hamlet Zone.
Top Left: Intersection of Center Street and Washington Street, Village of Republic, Ohio (Viewpoint 81);
Top Right: U.S. Route 20 (West State Street), City of Fremont, Ohio (Viewpoint 62);
Bottom Left: State Route 53 (South Sandusky Street), City of Tiffin, Ohio (Viewpoint 75);
Bottom Right: State Route 162 (East Jefferson Street), at East Street, Township of Scipio, Ohio (Viewpoint 80);

This LSZ includes the downtown portion of the Cities of Bellevue, Clyde, Fremont, and Tiffin; and the center of the Villages of Attica, Burgoon, Bettsville, Bloomville, Green Springs, Monroeville, and Republic. This zone is characterized by high to moderate-density residential and commercial development. Vegetation and landform contribute to visual character in the cities and villages, but within the majority of this zone, buildings (typically 2-3 stories tall) and other man-made features dominate the landscape. These features are highly variable in their size, architectural style, and arrangement, but are typically dominated by masonry or wood-sided buildings fronting on an organized grid of local streets. Scenic quality is generally moderate and influenced largely by the arrangement and condition of built structures in the view. The majority of the visually sensitive resources identified in the study area, including one of the historic

sites identified specifically for its setting or scenic qualities (the National Orphans Home/Junior Order United American Mechanics grounds), fall within the City/Village LSZ. Activities within this zone are primarily associated with local business and residential uses, as well as local travel. Views within this zone are typically focused on the roadways and adjacent structures. However, outward views across yards and adjacent fields are available at the outskirts of the cities and villages, where structures, and vegetation density decrease, and therefore screening is reduced. Views of the Project from within the City/Village LSZ will generally be screened by structures, but could occasionally be available along the periphery or from open road corridors oriented toward the Project site.

3.2.3 Zone 3. Suburban Residential Zone

Inset 4. Representative Photographs of the Suburban Residential Landscape Similarity Zone.
Left: State Route 18 (North Greenfield Road), at intersection with North Township Road 15, Township of Clinton, Ohio (Viewpoint 77);
Right: State Route 269, South of the Village of Castalia, Ohio (Viewpoint 12);

This zone is dominated by low to medium-density residential neighborhood development that typically occurs on the outskirts of the Cities of Bellevue, Clyde, Fremont, and Tiffin; the small portions of the Cities of Norwalk and Willard; and the Villages of Attica, Burgoon, Bettsville, Bloomville, Castalia, Green Springs, Monroeville, and Republic. Buildings tend to be of more recent vintage, 1-2 stories in height, and more spread out than in a village setting. Scenic quality is unremarkable, although homes and yards generally appear neat and well maintained. Open views to the surrounding landscape are generally more restricted than in open agricultural areas, but more available than in the cities and villages due to the wider spacing of the homes and yards. The effect of vegetation on visibility is highly variable in this LSZ, with adjacent agricultural fields offering open views in some areas, and hedgerows, woodlots and yard trees significantly blocking views in others. Land use in this zone is almost exclusively residential.

3.2.4 Zone 4. Transportation Corridor Zone

Inset 5. Representative Photographs of the Transportation Landscape Similarity Zone.
Left: State Route 238 (Gibbs Road) at Interstate 80/90 overpass, Township of Townsend, Ohio (Viewpoint 19);
Right: State Route 53, at intersection with Sean Street, City of Fremont, Ohio (Viewpoint 57);

The Transportation Corridor LSZ includes divided, multi-lane highways with limited access and heavily used state highways. These include Interstate Route 80/90, U.S. Route 20, and State Routes 19 and 53. Views along these transportation corridors are dominated by automobiles, pavement, guard rails, and signs in the foreground. Surrounding land use is variable, ranging from high density commercial development to open agricultural land and farms, with intermittent forest stands in the background. Scenic quality is largely defined by the surrounding landscape but is generally compromised by the abundance of transportation infrastructure in the view.

3.3 Viewer/User Groups

Three categories of viewer/user groups were identified within the visual study area. These include the following:

3.3.1 Local Residents

Local residents include those who live and work within the visual study area. They generally view the landscape from their yards, homes, local roads and places of employment. Residents are concentrated in and around the Cities of Bellevue, Clyde, Fremont, Tiffin, Norwalk and Willard; and the Villages of Attica, Burgoon, Bettsville, Bloomville, Castalia, Green Springs, Monroeville, and Republic. However, rural residents occur throughout the visual study area. Except when involved in local travel, residents are likely to be stationary and have frequent or prolonged views of the landscape. Local residents may view the landscape from ground level or elevated viewpoints (typically upper

floors/stories of homes). Residents' sensitivity to visual quality is variable, however, it is assumed that residents will be sensitive to changes in particular views that are important to them.

3.3.2 Through Travelers/Commuters

Commuters and travelers passing through the area view the landscape from motor vehicles on their way to work or other destinations. Commuters and through travelers are typically moving, have a relatively narrow field of view, and are destination-oriented. Drivers on major roads in the area (e.g., Interstate Route 80/90, U.S. Routes 6 and 20, and State Routes 4, 12, 18, 19, 53;) will generally be focused on the road and traffic conditions, but do have the opportunity to observe roadside scenery. Passengers in moving vehicles will have greater opportunities for prolonged off-road views than will drivers.

3.3.3 Tourists/Recreational Users

Recreational users and tourists include local residents and out-of-town visitors involved in cultural and recreational activities at parks, recreational facilities, and historic sites, as well as in undeveloped natural settings. These viewers are concentrated in the recreational facilities/cultural sites located within and adjacent to the visual study area, including the various state wildlife management areas, the Sandusky County Park System, the Sandusky River and a variety of local parks, golf courses, and historic sites. Members of this group may view the landscape from area highways while on their way to these destinations, or from the sites themselves. This group includes bicyclists, hikers, recreational boaters, hunters, fishermen and those involved in more passive recreational activities (e.g., picnicking, sightseeing, or walking). Recreational users and tourists will often have continuous views of landscape features over relatively long periods of time and will typically only view the surrounding landscape from ground-level vantage points. Depending on the individual activity, users will have a range of sensitivity to changes in the landscape.

3.4 Visually Sensitive Resources

There are no National Parks, National Forests, National Wildlife Refuges, National Natural Landmarks, State Nature Preserves, State Parks, State Forests, federally-designated trails or federally-designated wild, scenic, or recreational rivers within the visual study area. However, the study area includes several sites that could be considered scenic resources of statewide significance. These include historic sites, state wildlife management areas, county parks, and two state multi-use trails. Descriptions of these resources are presented below.

3.4.1 Historic Sites

The study area includes 51 sites listed on the National Register of Historic Places (NRHP), one of which (Spiegel Grove) is a national historic landmark, and five NRHP-listed historic districts. These historic sites include 16 residences, four farms, 12 Heidelberg College buildings, one school, four churches, one jail, one bridge, one parkway, two mills, and nine commercial businesses within the City of Tiffin. There are four residential historic districts (Fort Ball Historic District, Hunts Corners Historic District, North Sandusky Street Historic District, and Northeast Tiffin Historic District) and one commercial historic district (Downtown Tiffin Historic District). Other historic resources within the visual study area include 23 sites determined to be eligible for listing on the NRHP and 11 state historic markers. In addition, the Cultural Resources Records Review prepared for the Project identified 390 Ohio Historic Inventory (OHI) properties and 698 Ohio Archaeological Inventory (OAI) properties within 5 miles of the Project Site (EDR, 2017).

NRHP-listed sites and districts most likely to experience views of the Project are those located within 5 miles of the Project. These include the Henny Barn, Heter Farm, Tremont House, Pleasant Ridge United Methodist Church and Cemetery, Omar Chapel, Umsted Farm, John Wright Mansion, Major General James B McPherson House, Junior Order of the United American Mechanics National Orphans' Home, and Hunts Corners Historic District. Eight of the 10 listed sites do not warrant visual impact analysis, as their listing is based on aspects and features associated with the property that do not include the setting or surrounding views. However, for two of the sites; the Pleasant Ridge United Methodist Church and Cemetery, and the Junior Order of the United American Mechanics National Orphans' Home, the setting and views are mentioned as reasons for their listing on the NRHP. Descriptions of these two sites are presented below.

Pleasant Ridge United Methodist Church and Cemetery (93000880): Pleasant Ridge United Methodist Church and Cemetery, located 2.1 miles from the nearest proposed turbine, are excellent examples of a nineteenth century rural or country church and associated burial ground. The complex also symbolized the transition of ecclesiastical architecture during the nineteenth century, from simple meeting houses to complex, stylistic buildings dictated by the increasing denominational pluralism of protestants and the growing availability of standardized church plans. The complex is located at the crest of a prehistoric sand or beach ridge, for which the church was named. Built in 1890, the church was built in the neo-Gothic style, of red brick, and sits on a rusticated stone foundation (Harper, 1993).

This site is located in the Rural Residential/Agricultural LSZ, and a medium-sized parking area is located adjacent to State Route 101 (Portland Road) and serves the church and associated grounds. To the north and west, expansive open views are available across open agricultural land that is bordered by mature hedgerows in the background. To

the east and south, intervening mature vegetation immediately adjacent to the site screens any views into the middle ground and background.

Inset 6. Representative Photograph from the Junior Order of the United American Mechanics National Orphans' Home campus. Huss Street and internal circulation road, City of Tiffin, Ohio (Viewpoint 74).

Junior Order of the United American Mechanics National Orphans' Home (90001499): The Junior Order of the United American National Orphans' Home (the Junior Home), located 4.5 miles from the nearest proposed turbine on a broad plain, which rises from the Sandusky River. The complex consists of 648 acres, including a central campus, farmland and woods. The central campus, approximately 200 acres in size, is characterized by brick buildings along curving roadways. The Junior Home was established in 1896, with the purchase of 117 acres, then known as Bretz-Kellar farm. It was meant to serve as a self-sufficient residential community with residence cottages, a chapel, gymnasium, grade and high schools, trade school, hospital, dining hall, nursery, library, laundry, cannery, general store, band building, greenhouse, power plant, and administration building. The complex is significant in American history as an example of the self-contained residential institution and meets National Register Criteria A as a place that is associated with events that have made a significant contribution to the broad patterns of American history and Criteria C as a place that embodies the distinctive characteristics of a type, period, or method of construction. In addition, the complex is laid out as a cottage plan, rather than a single residential building. The cottage plan allowed for creating a family life by housing orphans in separate units overseen by couples that served as surrogate parents, rather than the former single residential building that was institutional and did not provide individualized care (Ligibel and Valentine, 1990).

Located in the City/Village/Hamlet LSZ, potential open views from the living quarters are screened by intervening buildings and vegetation, as is typical within this LSZ. However, because this site is a large parcel that includes open grounds, the potential for long distance views is greater than typically found in the cities and villages within the study area.

3.4.2 Wildlife Management Areas

The following state wildlife management areas are located within 5 miles of the Project Site and have the greatest potential for views of the proposed Project.

Knobbys Prairie Wildlife Area, located 2.4 mile from the nearest proposed turbine, is a 47-acre wildlife management area primarily consisting of grassland with a small portion of brushland (ODNR, 2017a). A small informal parking area is located at the wildlife area off of County Route 15, which provides access to a few informal trailheads. Located in the Rural Residential /Agricultural LSZ, open views are available from this area where foreground vegetation remains relatively low.

Sugar Creek Wildlife Area, located 2.85 miles from the nearest proposed turbine, is a 125-acre wildlife management area with a mix of grassland and brushland (ODNR, 2017a). A designated parking area for 7-10 cars is located at the intersection of North Township Road 157 and Township Road 148 (Dunkard Church Road). Informal trails lead from the parking area into a forested area. This site is located in the Rural Residential /Agricultural LSZ but is dominated by a combination of mature forest and successional scrubland. Open outward views are not available from forested portions of the property and are partially screened by 10-15-foot vegetation in the scrub areas.

In addition, three wildlife production areas are located within 5 miles of the Project site. These include, Wildlife Production Area 62 (1.3 mile from the nearest proposed turbine), Wildlife Production Area 47 (0.7 mile from the nearest proposed turbine), and Wildlife Production Area 31 (3.3 miles from the nearest proposed turbine). All of these areas are characterized by successional old fields and small woodlots. Designated parking areas and access points are not provided at the wildlife production areas, which limits public use. Located in the Rural Residential/Agricultural LSZ, open outward views are available from portions of these areas.

3.4.3 County Parks

Inset 7. Representative Photograph of the Blue Heron Reserve, Sandusky County Park District.
Boardwalk from main parking area, Blue Heron Reserve, Township of Riley, Ohio (Viewpoint 07).

The Sandusky County Park District has facilities that cover approximately 2,500 acres spread out across Sandusky County. Those occurring within the visual study area include the Blue Heron Reserve, Countryside Park, Creek Bend Farm, Mull Covered Bridge, and North Coast Inland Trail. The District presents over 300 programs and presentations annually, and total park attendance is approximately 150,000 visitors. These resources are located primarily within the Rural Residential/Agricultural LSZ, however open views are generally limited due to intervening mature vegetation in the form of forest stands and hedgerows. Scenic quality and viewer sensitivity in these areas are relatively high due to their natural character and the recreational use they receive.

The Seneca County Park District has 10 park facilities that cover approximately 650 acres surrounding the City of Tiffin. Within the study area, these include the Bowen, Clinton, Mercy Community, Steyer, Tiffin University and Zimmerman Nature Preserves and Opportunity Park. Over 180 nature programs for all ages are conducted year-round at the District sites, with attendance exceeding 4,000 annually. These sites are located primarily within the Rural Residential /Agricultural LSZ, however, similar the Sandusky County Park District facilities, open views are generally limited due

to intervening mature vegetation. Scenic quality and viewer sensitivity in these areas are considered to be relatively high.

3.4.4 Scenic Rivers

The Sandusky River was designated as an Ohio Scenic River in 1970. The river is Ohio's longest river within the Lake Erie watershed, and offers several public access sites that are open for kayaking and canoeing, with fishing opportunities available along most of its length. The Seneca and Wyandot Indians lived along the river, and the Sandusky River Valley played an important role in Ohio's history. Four forts were located along the river's banks including Fort Stephenson, where the Americans won a decisive victory during the War of 1812 (ODNR, 2017b).

The Sandusky River occurs primarily within the Rural Residential/Agricultural LSZ, however it courses through the City/Village zone as well. At its closest point to the Project the river is approximately 3.1 miles from a proposed turbine. However, opportunities for open outward views are generally limited due to the presence of earthen berms and/or mature trees along the shoreline. These features also serve to screen views from the numerous designated river access points. The river and its immediate environs represent one of the most scenic portions in the study area. Features that contribute to its scenic quality include the moving water, rock ledges and mature shoreline vegetation.

3.4.5 Bike Routes and Trails

The North Coast Inland Trail occurs within the visual study area. The multi-use route traverses the northern portion of the visual study area and comes within approximately 1.2 miles of a proposed turbine at its closest point. The multi-use trail is currently 71.8 miles, but when completed will extend approximately 105 miles, from Lorain, Ohio to Toledo, Ohio (Ohio Bikeways, 2017).

Inset 8. Representative Photograph of the North Coast Inland Trail, Sandusky County Park District.
Recreational Path, Township of Riley, Ohio (Viewpoint 29).

The Buckeye Trail was first proposed by Merrill Gilfillan in 1958. It was originally planned to be a 500-mile path from the Ohio River to Lake Erie, but evolved into the nation's longest loop trail, winding 1,444 miles around Ohio. The trail includes scenic wetlands and forests, historic towns, canal towpaths, and abandoned rail grades. There are 26 sections of the trail, each named for a town or feature within that section. Portions of two sections, Pemberville and Norwalk, pass through the central portion of the visual study area (Buckeye Trail Association, 2017). The closest trail segment is located approximately 0.2 mile from a proposed turbine.

The above two resources travel through all of the listed LSZs as they traverse the study area. Views available along these trails will be highly variable. At many locations open long-distance views will be available, while in other places views will be entirely screened by intervening vegetation and buildings. The dominant visual character is defined by the working landscape of the Rural Residential/Agricultural LSZ.

Beyond the scenic resources of statewide significance described above, the study area also includes areas that could also be considered regionally or locally significant/sensitive due to the type or intensity of land use they receive.

All inventoried visually sensitive resources are listed in Appendix B. The location of identified visually sensitive resources within the study area is illustrated in Figure 6.

4.0 Visual Impact Assessment Methodology

The VIA procedures used for this study comply with the requirements of Ohio Administrative Code Chapter 4906-04-08(D)(4) for the Ohio Power Siting Board, and are consistent with methodologies developed by the U.S. Department of the Interior, Bureau of Land Management (1980), U.S. Department of Agriculture, National Forest Service (1974), U.S. Department of Transportation, Federal Highway Administration (1981), and other state and federal agencies. They are widely accepted as standard visual impact methodology for wind energy projects (CEIWEP, 2007). The specific techniques used to assess potential project visibility and visual impacts are described in the following section.

4.1 Project Visibility

An analysis of potential turbine visibility was undertaken to identify those locations within the visual study area where there is potential for the proposed wind turbines to be seen from ground-level vantage points. This analysis included identifying potentially visible areas on viewshed maps and verifying potential visibility in the field. The methodology employed for each of these assessment techniques is described below.

4.1.1 Viewshed Analysis

Viewshed analyses were conducted based on the Ohio Statewide Imagery Program's 2007 light detection and ranging (lidar) data for Erie, Huron, Sandusky, and Seneca Counties. Lidar is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the earth to generate precise, three-dimensional information about the shape of the earth and its surface characteristics (NOAA, 2017). It is important to note that the lidar data used in this analysis are from 2007, which raises the concern that the resulting analysis may not reflect landscape conditions as they currently exist. However, based on review of current aerial photography and field review, it does not appear that significant changes have occurred since that time.

Viewshed Analysis – Topography Only

To determine if certain geographic areas or sensitive resources within the study area would definitely be screened from view of the Project, topographic viewshed maps for the Project were prepared using a lidar-derived bare earth digital terrain model (DTM); the location and height of all proposed turbines (see Figures 2 and 3); an assumed viewer height of 6 feet; and ESRI ArcGIS® software with the Spatial Analyst extension. The topographic viewshed analysis is based upon the existence of a direct, unobstructed line of sight to a proposed turbine from various observation points throughout the study area based on the screening provided by topography only. The resulting topographic viewshed maps define the maximum area from which any turbine could potentially be seen within the study area. Because

topographic viewshed maps assume that no trees exist, they are very accurate in predicting where visibility will not occur due to topographic interference. However, they are less accurate in identifying areas from which the Project would actually be visible. Vegetation and structures will limit or eliminate visibility in many areas indicated as having potential Project visibility in the topographic viewshed analysis.

Two 10-mile radius topographic viewsheds were mapped; one to illustrate "worst case" daytime visibility (based on topography only and a maximum blade tip height of 602 feet above existing grade) and the other to illustrate "worst case" visibility of turbine lights (based on a FAA warning light height of 367.5 feet above existing grade). The FAA warning light (i.e., nacelle height) viewshed analysis was based on the assumption that all turbines would be lit, in conformance with FAA lighting guidelines for turbines that exceed a maximum height of 500 feet (FAA, 2016).

Viewshed Analysis – Topography, Structures and Vegetation

To provide a more accurate analysis of potential Project visibility within the study area, a second-level viewshed analysis was completed to incorporate the screening effect of structures and vegetation, as captured in the previously referenced 2007 lidar data. A digital surface model (DSM) of the study area was created from the lidar data, which includes the elevations of buildings, trees, and other objects large enough to be measured by the lidar technology. The DSM was then used as a base layer for the viewshed analysis, as described above. Once the viewshed analysis was completed, a conditional statement was used to set Project visibility to zero in locations where the DSM elevation exceeded the bare earth elevation by 6 feet or more. This was done for two reasons; 1) because in locations where trees or structures are present in the DSM, the viewshed would reflect visibility from the vantage point of standing on the tree top or building roof, which is not the intent of this analysis and 2) to reflect the fact that ground-level vantage points within buildings or areas of vegetation exceeding 6 feet in height will generally be screened from views of the Project.

Because it accounts for the screening provided by structures and trees, this second-level analysis is a more accurate representation of potential Project visibility. However, it is worth noting that because characteristics of the proposed turbines that influence visibility (color, narrow profile, distance from viewer, etc.) cannot be taken into consideration in the viewshed analyses, being located within the viewshed does not necessarily equate to actual Project visibility. The viewshed analyses help define those areas with the greatest potential for Project visibility within the study area. Field review is required to confirm the accuracy of the viewshed.

4.1.2 Field Verification

Visibility of the proposed Project was also evaluated in the field during a two-day site visit conducted on July 19-20, 2017. The purpose of this site visit was to verify potential turbine visibility in the field and to obtain photographs for subsequent use in the development of visual simulations. Weather conditions were variable, ranging from clear to partly cloudy, to overcast, thus providing photographs that collectively depict a representative variety of sky/lighting conditions. The photographs depict the study area during summer conditions when the aesthetic quality of the landscape (i.e., with vegetation on the ground and trees with foliage) and outdoor activity by viewers are generally the highest.

During field verification, public roads were driven and public vantage points were visited within the study area to document points from which the turbines would likely be visible, partially screened, or fully screened. The determination of Project visibility at a specific location was made based on the visibility of existing structures located in proximity to the proposed turbine sites (communication towers, silos, roads, etc.), which served as locational and scale references. Photos were taken from 97 representative viewpoints within the study area. All photos were obtained using a Nikon D7100 digital SLR camera with a focal length between 28 and 35 mm (equivalent to between 45 and 55 mm on a standard 35 mm film camera). This focal length is the standard used in visual impact assessment because it most closely approximates normal human perception of spatial relationships and scale in the landscape. Viewpoint locations were determined using hand-held global positioning system (GPS) units and high-resolution aerial photographs (digital ortho quarter quadrangles). The time and location of each photo were documented on all electronic equipment (camera, GPS unit, etc.) and noted on field maps and data sheets. Viewpoints photographed during field review generally represented the most open, unobstructed available views toward the Project from the various LSZs, distances, directions, visually sensitive resources, and areas of high public use throughout the visual study area. Locations of the viewpoints documented during field review are indicated in Figure 10. A photo log, including a representative photograph toward the Project site from each viewpoint, is included as Appendix C.

4.2 Project Visual Impact

Beyond evaluating potential Project visibility, the VIA also examined the visual impact of the proposed wind turbines, and any associated clearing, on the aesthetic resources and viewers within the visual study area. This assessment involved creating computer models of the proposed Project turbines and layout, selecting representative viewpoints within the study area, and preparing computer-assisted visual simulations of the proposed Project. These simulations were then used to characterize the type and extent of visual impact resulting from Project construction. Details of the visual impact assessment procedures are described below.

4.2.1 Viewpoint Selection

From the photo documentation conducted during field verification on July 19 and 20, 2017, EDR selected a total of 10 viewpoints for development of visual simulations. These viewpoints were selected based upon the following criteria:

1. They provide clear, unobstructed views of the Project (as determined through field review and follow-up verification).
2. They illustrate Project visibility from sensitive sites/resources with the visual study area where open views are available.
3. They illustrate typical views from landscape similarity zones where views of the Project will be available.
4. They illustrate typical views of the proposed Project that will be available to representative viewer/user groups within the visual study area.
5. They illustrate typical views of different numbers of turbines, from a variety of viewer distances, and under different lighting conditions, to illustrate the range of visual change that will occur with the Project in place.

Location of the selected viewpoints is indicated in Figure 10. Locational details and the criteria for selection of each simulation viewpoint are summarized in Table 1, below:

Table 1. Viewpoints Selected for Simulation and Evaluation

Viewpoint Number	Location and/or Visually Sensitive Resource	LSZ Represented	Viewer Group Represented	Viewing Distance[1]	View Orientation[2]
047	Knobby's Prairie Wildlife Area – Parking Area off of North County Road 15, Township of Pleasant	Rural Residential/Agricultural Zone	Tourists/Recreational Users	2.7	E
049	East County Road 44, east of Township Road 75 (Jopp Road), Township of Pleasant	Rural Residential/Agricultural Zone	Local Residents	2.1	ESE
050	East State Route 19, west of East County Road 32, Township of Adams	Transportation Corridor Zone	Local Residents	1.4	S
053	Beaver Creek Reservoir – North Parking Area off East County Road 34, Township of Adams	Rural Residential/Agricultural Zone	Tourists/Recreational Users	2.7	S

Viewpoint Number	Location and/or Visually Sensitive Resource	LSZ Represented	Viewer Group Represented	Viewing Distance[1]	View Orientation[2]
071	East Township Road 148 (Hoppes Road) east of North County Road 43, Township of Adams	Rural Residential/Agricultural Zone	Local Residents	0.75	SE
088 Panorama	East State Route 162, west of North Township Road 81 (Center Heights Road 81) Township of Reed	Rural Residential/Agricultural Zone	Local Residents	2.7	W to N
088 West	East State Route 162, west of North Township Road 81 (Center Heights Road 81) Township of Reed	Rural Residential/Agricultural Zone	Local Residents	3.3	WNW
088 Northwest	East State Route 162, west of North Township Road 81 (Center Heights Road 81) Township of Reed	Rural Residential/Agricultural Zone	Local Residents	2.7	NW
088 North	East State Route 162, west of North Township Road 81 (Center Heights Road 81) Township of Reed	Rural Residential/Agricultural Zone	Local Residents	3.0	N
091 West	East County Road 46 at intersection with State Route 269 (Huron-Seneca County Line Road), Township of Thompson	Suburban Residential Zone	Local Residents	3.8	W
091 Northwest	East County Road 46 at intersection with State Route 269 (Huron-Seneca County Line Road), Township of Thompson	Suburban Residential Zone	Local Residents	4.7	WNW
094	County Road 29 (Main Street), Township of Thompson	Suburban Residential Zone	Local Residents	0.4	E
095	East County Road 62 (Seneca County Line Road	Rural Residential/Agricultural Zone	Local Residents	0.45	SW

[1]Distance from viewpoint to nearest visible turbine (in miles)
[2]N = North, S = South, E = East, W = West

4.2.2 Visual Simulations

To show anticipated visual changes associated with the proposed Project, high-resolution computer-enhanced image processing was used to create 13 realistic photographic simulations from nine selected viewpoints. The photographic simulations were developed by using Autodesk 3ds Max Design® to create a simulated perspective (camera view) to match the location, bearing, and focal length of each existing conditions photograph. Existing elements in the view (e.g., topography, buildings, roads, existing communications towers) were modeled based on aerial photographs and DSM data in AutoCAD Civil 3D®. A three dimensional (3-D) topographic mesh of the landform (based on DSM data) was then brought into the 3-D model space. At this point minor adjustments were made to camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (e.g., the proposed turbines) will be shown in proportion, perspective, and proper relation to the existing landscape elements in the view. Consequently, the alignment, elevations, dimensions and locations of the proposed Project structures will be accurate and true in their relationship to other landscape elements in the photograph.

Computer models of the proposed turbine layout were prepared based on specifications and data provided by the Applicant. For the purposes of this analysis, it was assumed that all new turbines would be Acciona/Nordex 149 machines. All turbine rotors were modeled facing into the prevailing wind (i.e., oriented to the southwest). Using the camera view as guidance, the visible portions of the modeled Project components were imported to the landscape model space described above, and set at the proper coordinates. Coordinates for proposed turbines, were provided to EDR by the Applicant.

Once the proposed Project was accurately aligned within the camera view, a lighting system was created based on the actual time, date, and location of the photograph. Using the Arnold® rendering engine within the Autodesk 3ds Max Design® software, light reflection, highlights, color casting, and shadows were accurately rendered on the modeled turbines, based on actual environmental conditions represented in each photograph. The rendered Project was then superimposed over the photograph in Adobe Photoshop® and portions of the Project components that fell behind vegetation, structures or topography were masked out. Photoshop was also used to take out any vegetation proposed to be removed as part of the Project. Once the turbines were added to the photo, any shadows cast on the ground by the proposed structures were also included by rendering a separate “shadow pass” over the DSM model in Autodesk 3ds Max Design® and then overlaying the shadows on the simulated view with the proper fall-off and transparency using Adobe Photoshop®. Simulation methodology and accuracy is outlined in Figure 7 and the computer model used in this VIA is shown in Figure 3.

5.0 Visual Impact Assessment Results

5.1 Project Visibility

5.1.1 Viewshed Analysis

The topographic viewshed analysis, indicates that areas where there is no possibility of seeing the Project are extremely limited, consisting of a few topographic depressions, such as quarries and portions of river and creek valleys. Based on the screening effect of topography alone, none of the visually sensitive sites within the visual study area are fully screened by just topography.

Factoring vegetation and structures into the viewshed analysis, through use of the lidar-derived DSM, provides a more accurate reflection of what the actual extent of Project visibility is likely to be (Figure 8). The blade tip viewshed analysis indicates that approximately 54.8% of the study area could have potentially views of some portion of a wind turbine. Visibility will be eliminated in small areas throughout the study area where blocks of forest vegetation occur, along forested stream corridors, and is drastically reduced or eliminated in cities and villages due to screening provided by trees and structures. In general, areas of screened views increase in size with distance from the Project. Sizable areas of no or limited turbine visibility due to intervening topography, vegetation and structures, include the Cities of Tiffin, Fremont, Clyde, and Bellevue; the Sandusky River, Huron River, Wolf Creek, Honey Creek, and Silver Creek corridors; and the northeastern portion of the study area. The blade tip viewshed analysis indicates that views of the Project will be fully screened from 178 of the inventoried visually sensitive resources within the 10-mile radius study area. These include 48 NRHP-listed resources, 16 NRHP-eligible resources, nine state historic markers, the Village of Castalia, and 104 other identified resources (see Appendix B). Only 17 of the inventoried visually sensitive resources are indicated as having fully unobstructed open views of the Project, including one reservoir and 16 cemeteries. The remaining 232 identified resources, including the two NRHP-listed sites that are significant due to their setting and views, are indicated as having at least partially screened views, depending on the exact location of the viewer within the resources mapped boundary.

The results of the FAA warning light viewshed analysis are very similar to those of the blade tip analysis, except it shows nighttime Project visibility covering a somewhat smaller geographic area. Considering the screening of topography, vegetation, and structures, potential nighttime turbine visibility is indicated within 42.6% of the visual study area.

Table 2. Ten-Mile-Radius Study Area Viewshed Results Summary

Number of Turbines Visible	Blade Tip – Structures and Vegetation		FAA Warning Light[1] – Structures and Vegetation	
	Square Miles[2]	% of Study Area	Square Miles	% of Study Area
0	354.0	45.2	449.7	57.4
1-10	179.1	22.9	208.2	26.6
11-20	106.7	13.6	79.6	10.2
21-30	75.4	9.6	35.7	4.6
31-40	51.9	6.6	9.3	1.2
41-50	16.0	2.0	0.5	0.1
Total Visible	**429.1**	**54.8**	**333.4**	**42.6**

[1]The FAA warning light viewshed is based on the assumption that all 50 turbines will be lit.
[2]The 10-mile radius study area is approximately 728.3 square miles in size.

5.1.2 Field Review Results

Field review suggested that portions of the Project will be visible throughout most of the study area due to the flat topography and the abundance of open agricultural land. However, field review also confirmed a general lack of open views toward the Project site from developed areas with an abundance of structures and street/yard trees, particularly in the Cities of Bellevue, Clyde, Fremont, Tiffin, Norwalk and Willard; and the various villages within the study area (including Attica, Burgoon, Bettsville, Bloomville, Castalia, Green Springs, Monroeville, and Republic). Consequently, views of the Project from the majority of residences and historic sites within these areas are anticipated to be fully or partially screened. In general, only on the outskirts of these developed areas were open views available in the direction of the Project site. In some cases, views of the Project may be available to viewers from interior portions of the cities and villages when looking along open road corridors oriented toward the Project site, but these opportunities will be very limited, and would include only a limited number of turbines. A "wire frame" simulation was created from the City of Clyde to demonstrate the screening associated with the cities and villages (see Appendix F).

Views of Project turbines will be most available from the more rural/agricultural portions of the study area. Some screening will be provided by wood lots, hedgerows, farm buildings, rural residences and yard trees. Long distance views are likely to be unavailable where homes and roads are surrounded by vegetation, as the lack of topography allows the foreground and middle ground vegetation to screen the view. Field review also confirmed that the Project will be visible from most of the transportation corridors that traverse the study area. However, because of the large

distance, lack of topography and intervening vegetation the Interstate 80/90 corridor will have very limited Project visibility.

The majority of visually sensitive resources within the study area occur within the cities and villages. Field review of these areas, confirmed that visibility from the majority of sensitive sites will be partially to fully screened by the surrounding built environment.

Of the two NHRP-listed sites where visual setting contributed to their listing, field review confirmed that open views toward the Project are available in places. At the Junior Order of the United American Mechanics National Orphans' Home, large mature street trees and 2-3 story buildings screen outward views in all directions (including toward the Project site) from most of the serpentine road system and areas of viewer concentration. However, as one travels east and enters the agrarian portion of campus, open fields allow for potential views toward the Project site, over 5 miles away.

Field review of the Pleasant Ridge United Methodist Church and Cemetery revealed that open views to the north could include a small portion of the Project (four turbines), but that the adjacent hedgerow located to the north and east will screen the remaining turbines. The distance to the closest visible turbine is approximately 3.2 miles with a mature hedgerow located at a distance from 1.5 – 1.75 miles. Potential Project visibility under these conditions will be similar to the views represented in simulations from Viewpoints 53 and 91 (see Section 5.2).

Both the Knobbys Prairie and Sugar Creek Wildlife Management Areas were visited and photographed during the site visit. Field review confirmed that views of the Project are likely to be available from the parking area and informal trails located at Knobbys Prairie and from the entrance drive and portions of the parking area at Sugar Creek. During the site visit personnel drove the roadways adjacent to the three wildlife production areas and it was confirmed that no public access, designated or informal, was present. Therefore, potential views towards the Project from these sites were not documented or evaluated.

Portions of the Sandusky County Park System were visited and photographed, including the Blue Heron Reserve and Nature Trails, Countryside Park, and the North Coast Inland Trail. At both the Blue Heron Reserve and Countryside Park, field review could not rule out that the possibility of open views of Project turbines. To further evaluate Project visibility from these two resources camera alignments within the 3D model were created, which confirmed that views would be completely screened. The open views associated with the loop path and gazebo at Countryside Park are not aligned with the Project, and intervening structures and vegetation will screen the proposed turbines from view. The

distance of this site from the proposed Project (over 9 miles), in combination with the foreground and middle ground vegetation, will screen potential views to the Project.

Sites that are part of the Seneca County Park District were also visited and photographed, including the Clinton, and Steyer Nature Preserves. Field review ruled out visibility from the Clinton Nature Preserve but could not rule out the possibility of open views of Project turbines from the Steyer Nature Preserve. To evaluate potential visibility from this resource a "wire frame" simulation was produced that confirmed views would be completely screened from the main parking area, trail heads and trail network (see Appendix F). Open views with potential turbine visibility were determined to be available from the hunter's parking lot and nearby trails, which are located approximately 3.5 miles from the nearest proposed turbine.

Throughout the field review, stops were made at a variety of designated access points to the Sandusky River. This included the Robert Young Memorial Park and the North Coast Inland Trail (both in the City of Fremont), the Abbotts Bridge Scenic River Access/Steyer Nature Preserve, and the boat access located at the Clinton Nature Preserve/Sandusky Scenic River Access. In addition, roadways adjacent to the river were driven to document any areas where potential views could be available from the river. This review confirmed that, because of the low elevation of the river's surface and abundant shoreline vegetation, open outward views are very limited. Lack of Project visibility was also confirmed through a camera alignment completed for the Clinton Nature Preserve

The North Coast Inland Trail and the Buckeye Trail, pass through every LSZ within the study area. Consequently, field review confirmed potential Project visibility from portions of both these sensitive resources. The visual simulations presented in Section 5.2 represent the range of potential views from these trails.

5.2 Photographic Simulation Analysis of Existing and Proposed Views

To illustrate anticipated visual changes associated with the proposed Project, 13 photographic simulations of the completed Project from each of the nine selected viewpoints indicated in Figure 10 were used to evaluate Project visibility, appearance, and contrast with the existing landscape. Review of these images, along with photos of the existing view, allowed for comparison of the aesthetic character of each view with and without the proposed Project in place. The images used for this analysis are included in the following section and in Appendix D. Results of the evaluation are presented below.

Viewpoint 47 (Appendix D – Sheets 1-3)

Inset 9: Existing view from Knobby's Prairie Wildlife Area – Parking area off of North County Road 15, Township of Pleasant

Existing Conditions

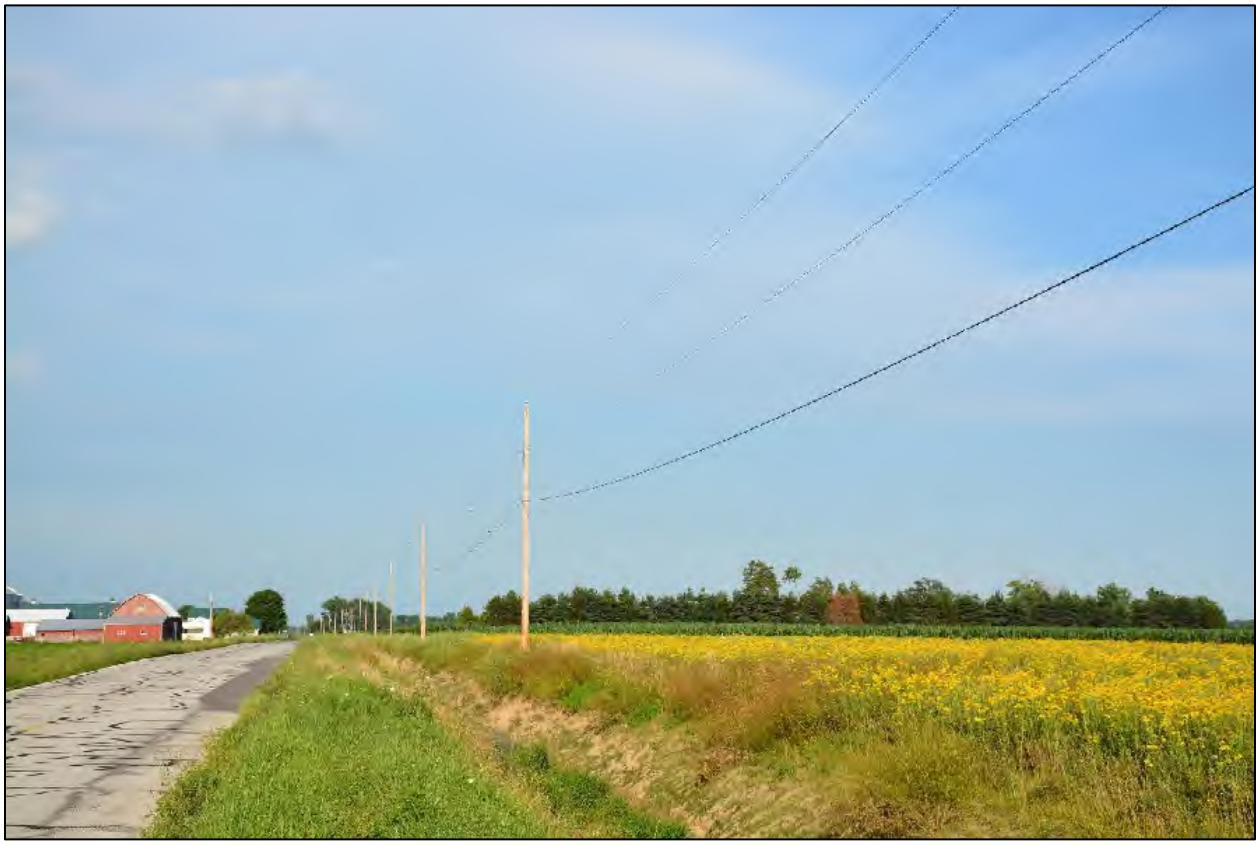
This viewpoint is located at the parking area of the Knobby's Prairie Wildlife Area off North County Route 15 in the Township of Pleasant. This is a visually sensitive resource that offers middle ground views of the Project. The selected viewpoint is approximately 2.7 miles from the nearest proposed turbine. The existing view to the east features a brushy, overgrown field in the foreground, that extends to a band of taller trees in the background. The trees form a level horizon line and block views of more distant landscape features. The horizon line and expanse of open sky is broken by some taller tree saplings within the foreground field. The only man-made features are some distant structures at the base of the tree line (on the far-right side of the view) and some small signs immediately outside the field of view of the selected photo. Due to a lack of focal points or vegetative variability, the scenic quality of this view is considered low to moderate.

Inset 10: Visual simulation of proposed view from Knobby's Prairie Wildlife Area – Parking area off of North County Road 15, Township of Pleasant

Proposed Project

At this selected viewpoint, portions of several turbines can be seen above the background tree line. The turbines are widely spaced, substantially screened by the background vegetation, and blend well with the light-colored sky. The line, color, and form of the turbines contrast with the natural vegetation and level, undeveloped character of the landscape. However, at this distance their scale contrast is reduced, and they do not appear larger than the shrubs and trees in the foreground and middle ground of the view. The density of visible turbines is not overwhelming, and they add an element of interest to the existing view. Although the natural character of the localized view is somewhat altered, the turbines do not reduce the scenic quality or have an adverse effect on visitors to the wildlife area.

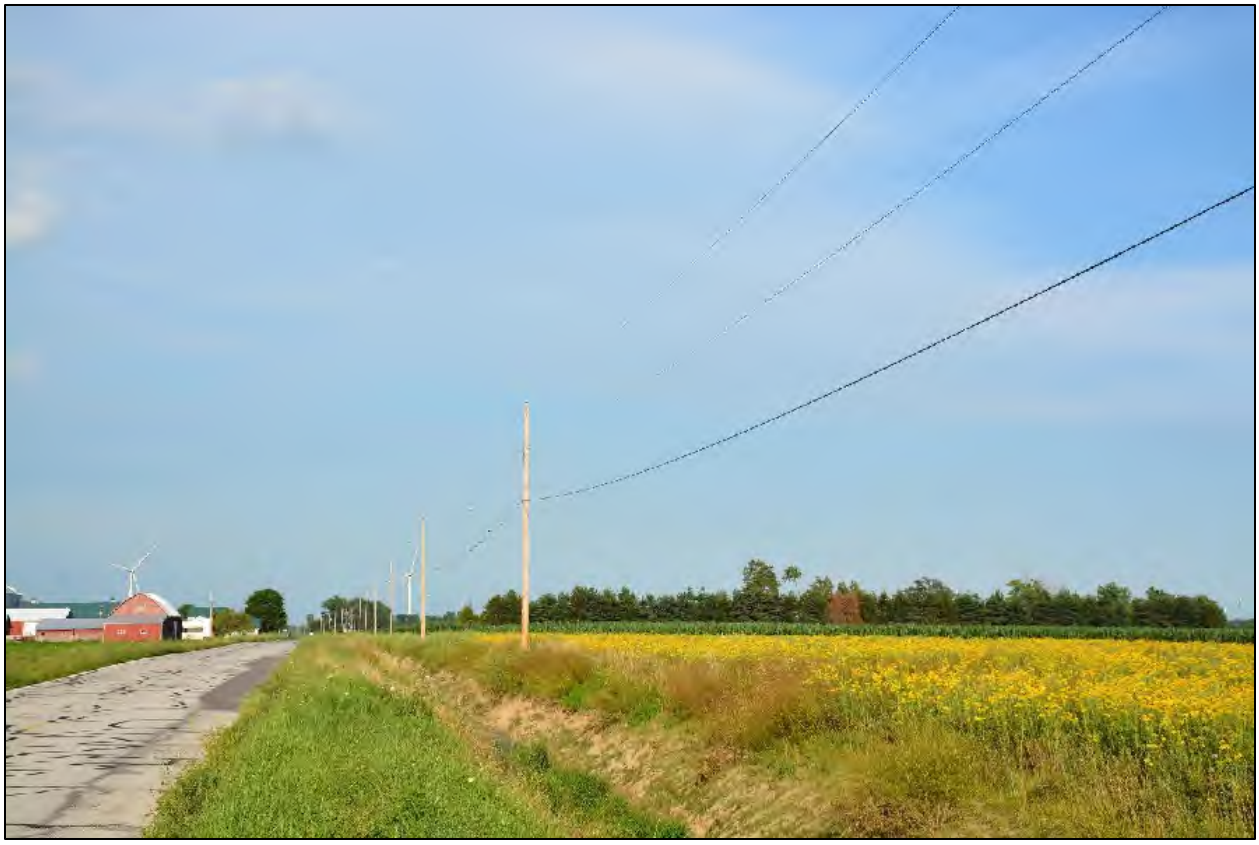
Viewpoint 49 (Appendix D – Sheets 4-6)



Inset 11: Existing view from East County Road 44, east of Township Road 75 (Jopp Road), Township of Pleasant

Existing Conditions

Viewpoint 49 is located on East County Route 44, just east of the intersection with Township Road 75 (Jopp Road) in the Township of Pleasant. This viewpoint is representative of the Rural Residential/Agricultural LSZ, and is located approximately 2.1 miles from the nearest proposed turbine. The existing view to the southeast from this location features the county road and a line of roadside utility poles proceeding away from the viewer into the distance. In the foreground the road is flanked on both sides by roadside ditches and open, level agricultural fields. A farm complex, featuring red barns and steel grain bins, is a prominent focal point on the left side of the road in the middle ground. An irregular line of trees extends across the view behind the farm and blocks views of more distant landscape features. The topography is flat, and the sky appears expansive. The agricultural fields and farm complex give the view a strong rural character and moderate to high scenic quality.



Inset 12: Visual simulation of proposed view from East County Road 44, east of Township Road 75 (Jopp Road), Township of Pleasant

Proposed Project

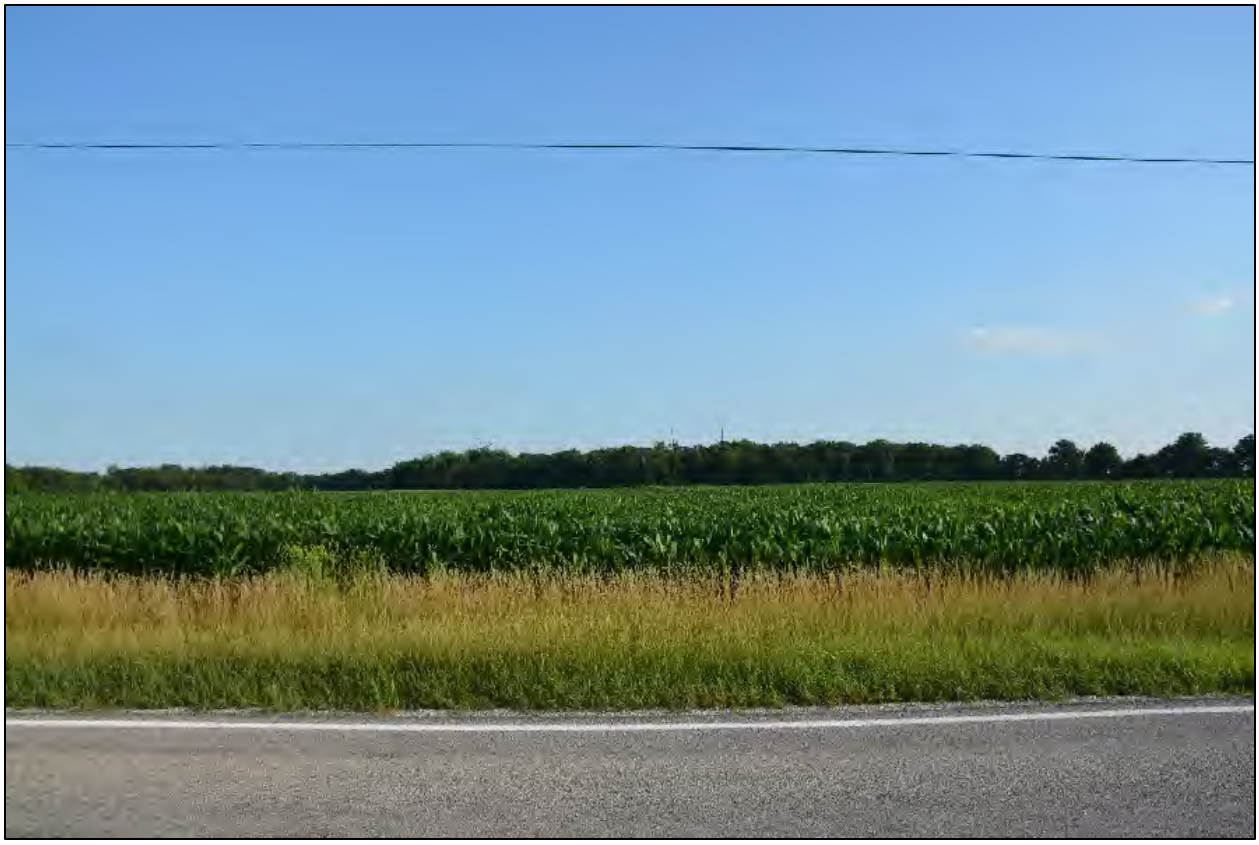
At this selected viewpoint, three turbines and a met tower have been added to the view. The two turbines on the left side of the view are partially obscured by the farm complex and roadside utility line. The turbines appear slightly larger in scale than the existing built features in the landscape but, due their distance from the viewer, are not overwhelming. The remaining turbine on the far-right side of the view appears smaller and less noticeable due to its greater distance from the viewer, and the met tower is difficult to perceive within the hedgerow vegetation. The turbines are clearly visible as they extend into the open sky. However, their line and color are consistent with the existing utility and agricultural structures already present in the view. Although they present a novel form, they appear compatible with the working agricultural character of the Rural Residential/Agricultural LSZ.

Viewpoint 50 (Appendix D – Sheets 7-9)

Inset 13: Existing view from East State Route 19, west of East County Road 32, Township of Adams

Existing Conditions

Viewpoint 50 is located on East State Route 19, west of East County Road 32 in Adams Township. This viewpoint is representative of the Rural Residential/Agricultural LSZ, and is located approximately 1.4 miles from the nearest proposed turbine that would be visible in this view. The existing view to the south from this location includes the edge of Route 19, an unmowed grassy shoulder, and an adjacent cornfield. The cornfield is level and extends back to an irregular band of trees that form the backdrop in this view. A wire from an overhead utility line crosses the sky. This wire, along with the band of trees, roadside vegetation, and edge of pavement, create a series of strong horizontal lines in the landscape. The existing view is neat and orderly, but lack of topographic variability and focal points in the view result in low to moderate scenic quality.



Inset 14 Visual simulation of proposed view from East State Route 19, west of East County Road 32, Township of Adams

Proposed Project

At this selected viewpoint, the upper portions of several distant turbines, one nacelle, and a met tower are visible above the tree line. The towers of the turbines are entirely screened by the mature vegetation, leaving only the turbine blades and the one nacelle visible. While the turbine blades extend above the tree line, they do not present strong contrast with existing features in the landscape. The foreground field remains the dominant, character-defining feature of the view. The turbine blades are visible against the clear blue sky, but under the lighting conditions illustrated in this photo, do not present strong color contrast. Although the partially-screened view of the blades is visually awkward, due to their distance from the viewer and the significant screening provided by the trees, the addition of the turbines does not alter the character or diminish the scenic quality of the existing view.

Viewpoint 53 (Appendix D – Sheets 10-12)

Inset 15: Existing view from the Beaver Creek Reservoir – North Parking Area, off East County Road 34, Township of Adams

Existing Conditions

Viewpoint 53 is located at the north parking area on the Beaver Creek Reservoir in Adams Township. This viewpoint is located at a sensitive site with a visual character that is unique within the study area. It is approximately 2.7 miles from the nearest proposed turbine that would be visible in this view. The existing view to the south is dominated by a broad expanse of open water and an uninterrupted open sky. A continuous band of trees lines the far shoreline of the reservoir, which creates a strong horizontal line and blocks views of more distant landscape features. Man-made features are limited to small glimpses of utility poles and structures within the band of middle ground trees. The presence of the reservoir and lack of obvious development defines the visual character of the viewpoint and adds a sense of serenity to the view. However, the lack of focal points or variably in the vegetation and topography result in only moderate scenic quality.

Inset 16: Visual simulation of proposed view from the Beaver Creek Reservoir – North Parking Area, off East County Road 34, Township of Adams

Proposed Project

At this selected viewpoint, a single turbine can be clearly seen in the center of the view above the vegetation of the far side of the reservoir. Most of the tower is screened from view, but the nacelle and blades are fully visible. The upper portions of several other turbines are also visible above the tree line, but views of these turbines are mostly restricted to portions of the blades. The color of the turbines blends well with the sky, and although taller than the trees, at this distance the turbines do not appear significantly out of scale with other features of the existing landscape. As new man-made features, they become prominent focal points, and their movement will reduce the serenity of the view. The open water of the reservoir remains the dominant character-defining feature of the view, and it is unlikely the turbines would adversely affect viewer activity or enjoyment of the reservoir at this location. It is also worth noting that views of the turbines will be more substantially screened by shoreline vegetation from the surface of the reservoir itself.

Viewpoint 71 (Appendix D – Sheets 13-15)

Inset 17: Existing view from East Township Road 148 (Hoppes Road) east of North County Road 43, Township of Adams

Existing Conditions

Viewpoint 71 is on East Township Road 148 (Hoppes Road) east of North County Road 43 in Adams Township. It is located in the Rural Residential/Agricultural LSZ, approximately 0.8 mile from the nearest proposed turbine that would be visible in views to the southeast. The existing view in this direction features a large, open agricultural field. The field is backed by an irregular band of woodlots and hedgerows interspersed with occasional residential and agricultural structures. The band of middle ground trees separates broad areas of field and sky and creates a strong horizontal line across the view. The topography is flat, and the sky is unbroken by foreground trees or man-made structures. The lack of focal points or variably in the landscape result in relatively low scenic quality.

Inset 18: Visual simulation of proposed view from East Township Road 148 (Hoppes Road) east of North County Road 43, Township of Adams

Proposed Project

At this selected viewpoint, numerous turbines and a single meteorological tower have been added to the near middle ground and background of the view. The turbines present appreciable line, form, and scale contrast with the existing landscape features. The middle ground turbines and met tower extend well into the sky and break up the strong horizontal lines and open space that characterize the existing view. The more distant turbines present far less scale contrast, and their location along the horizon line reinforces the horizontal line created by the existing trees. However, the density of turbines and their arrangement add an element of visual clutter to the view. They introduce strong new focal points, novel forms, and a sense of motion to the view. Although they do not appear entirely out of place in the working landscape the turbines alter the rural character of the view and create a more utilitarian feel.

Viewpoint 88 (Appendix D – Sheets 16-27)

Inset 19: Existing view from East State Route 162, west of North Township Road 81 (Center Heights Road), Township of Reed

Existing Conditions

Viewpoint 88 is located on East State Route 162, west of North Township Road 81 (Center Heights Road), approximately 2.7 miles from the nearest proposed turbine. The existing panoramic view to the north from this location is expansive, and typical of the Rural Residential/Agricultural LSZ. It features a recently harvested grain field in the immediate foreground, with two farm complexes along the far edge of the field (off of East State Route 162 Road) on the left side of the view. These discrete clusters of structures include homes, barns, grain bins, and associated agricultural buildings and machinery. Open fields continue beyond the farms and extend to the north. The fields are backed by woodlots and hedgerows at varying distances from the viewer that define the visible horizon in this view. The upper portions of some utility structures and buildings can be seen in places among and above the background tree line. The two farm complexes represent focal points in the landscape and define the working agricultural character of the view. Scenic quality is considered moderate.

Inset 20: Visual simulation of proposed view from East State Route 162, west of North Township Road 81 (Center Heights Road), Township of Reed

Proposed Project

At this selected viewpoint, several turbines can be seen above the background tree line. The turbines occur across the full field of this panoramic view, and their white color contrasts with the dark forest vegetation and overcast sky. Their novel form and movement will also make them stand out in the landscape. Although clearly taller than other existing landscape elements, at this distance the turbines do not appear significantly out of scale with other natural and built features in the view. Their line and color are also compatible with the existing agricultural structures present in this view. However, due to their abundance, the turbines compete for viewer attention and are now co-dominant as focal points with the agricultural complexes. The turbines are clearly new and different additions to the view, but they reinforce the working agricultural character of the LSZ. They do not substantially affect the scenic quality or viewer enjoyment of this view.

Viewpoint 91- West (Appendix D – Sheets 28-30)

Inset 21: Existing view from East County Road 46 at the intersection with State Route 269 (Huron-Seneca County Line Road), Township of Thompson

Existing Conditions

Viewpoint 91-West is located on East County Road 46 at the intersection with State Route 269 (Heron-Seneca County Line Road) in Thompson Township. This viewpoint is approximately 3.8 miles from the nearest proposed turbine. The existing view to the west from this location features the paved road and a line of roadside utility poles progressing away from the viewer. The road is flanked by open agricultural fields and widely separated residences on both sides. Residential properties include homes, outbuildings, and yard trees. These features serve as focal points, and give the landscape a strong rural residential character. Trees in the yards, hedgerows and woodlots occur at variable distances from the viewer and define the visible horizon. Overall scenic quality is considered moderate.

Inset 22: Visual simulation of proposed view from East County Road 46 at the intersection with State Route 269 (Huron-Seneca County Line Road), Township of Thompson

Proposed Project

At this selected viewpoint, multiple turbines can be seen in the background behind the existing trees and buildings in this view. Most of the towers are partially screened by the background hedgerow, but a relatively complete view of the nacelle and blades is available. While the turbines are clearly taller than the trees, they do not extend significantly into the sky. The color and form of the turbines present contrast with the existing landscape, although this contrast is somewhat mitigated by the dark, overcast sky. Due to their distance from the viewer and intervening screening, the turbines appear well integrated with the existing features of the landscape. They will attract view attention but will not necessarily become new focal points, as the utility poles and residential structure remain dominant features in the view. The addition of the proposed Project to the landscape does not substantially change the existing character or scenic quality of the view.

Viewpoint 91-Northwest (Appendix D – Sheets 31-33)

Inset 23: Existing view from East County Road 46 at the intersection with State Route 269 (Huron-Seneca County Line Road), Township of Thompson

Existing Conditions

Viewpoint 91-Northwest is located on East County Road 46 at the intersection with State Route 269 (Heron-Seneca County Line Road) in Thompson Township. This viewpoint is approximately 4.7 miles from the nearest proposed turbine that would be visible from this location. The existing view to the northwest from this location features a broad expanse of active soybean fields which continue to the distant horizon. The field is characterized by gently rolling topography that rises to the horizon. The roof of a building is visible behind the gentle crest of the field. The field is backed by broken hedgerows and woodlots at varying distances from the viewer, some of which are partially screened by the undulating topography at this location. The view feels open and expansive but is not particularly dynamic and lacks focal points. Overall scenic quality is considered moderate.

Inset 24: Visual simulation of proposed view from East County Road 46 at the intersection with State Route 269 (Huron-Seneca County Line Road), Township of Thompson

Proposed Project

At this selected viewpoint, multiple turbines can be seen in the background behind the existing trees in this view. The turbines appear as thin, gray lines that offer minimal contrast against the overcast sky. While the turbines are clearly taller than the trees preceding them along the horizon, they do not present significant scale contrast with other features within the view. From this location, the rotors are angled away from the viewer and so the viewer is not afforded a full-frontal view of the blades. Under the atmospheric conditions illustrated in this photo, and due to their distance from the viewer, the turbines are not prominent features of the landscape. They do not become focal points in the view, and or subordinate to the soybean field, which dominates the foreground. Furthermore, the turbines appear compatible with the working agricultural landscape. The addition of the turbines to the existing view does not change the existing character of scenic quality of the view.

Viewpoint 94 (Appendix D – Sheets 34-36)

Inset 25: Existing view from North County Route 29 (Main Street), south of the Village of Flat Rock, Township of Thompson

Existing Conditions

Viewpoint 94 is located on North County Route 29 south of the residential area of Flat Rock in Thompson Township. This viewpoint is approximately 0.4 mile from the nearest proposed turbine. The existing view to the east from this location features a long, paved driveway proceeding away from the viewer to a cluster of low buildings that are the focal point in this view. The driveway is surrounded by a mowed lawn dotted with occasional small trees. Light posts, utility poles, and a water tower extend into the sky and add vertical lines to the landscape. The land rises gently, and the edge of an agricultural field can be seen beyond the mowed lawn and structures in the foreground. The field and structures are backed by a woodlot that forms the visible horizon. Overall scenic quality is considered low.

Inset 26: Visual simulation of proposed view from North County Route 29 (Main Street), south of the Village of Flat Rock, Township of Thompson

Proposed Project

At this selected viewpoint, a turbine has been added to the field behind the buildings with a partial blade visible from an additional turbine above the building on the left side of the photograph. The dominant turbine rises prominently in the center of the view and is completely unscreened. It extends well into the sky, accentuating its scale contrast with the surrounding vegetation and structures. The line, color, and form of the turbine contrasts with the natural vegetation but is compatible with other vertical elements present in the view. However, due to its novel form and proximity to the viewer the turbine becomes a distinctive new focal point within the view. The impact of the turbine is somewhat diminished by the presence of existing utility structures within the view, and to some the turbine may present an element of interest in an otherwise unremarkable view. Overall impact on scenic quality is moderate.

Viewpoint 95 (Appendix D – Sheets 37-39)

Inset 27: Existing view from the intersection of County Route 113 and North County Route 29, Township of York

Existing Conditions

Viewpoint 95 is located at the intersection of County Route 113 and North County Route 29 in York Township. This viewpoint is approximately 0.45 mile from the nearest proposed turbine. The existing view to the southwest from this location features a working agricultural landscape characterized by a gently rolling crop field. Most of the field is backed by a dense woodlot, which blocks views of more distant landscape features. An open view to the sky is available beyond the crest of the field on the left side of the view. A fenced enclosure can be seen next to the edge of the woodlot, in which cows are visible grazing alongside a shelter. Overall scenic quality at this viewpoint is considered moderate.

Inset 28: Visual simulation of proposed view from the intersection of County Route 113 and North County Route 29, Township of York

Proposed Project

At this selected viewpoint, several foreground turbines are present just beyond the existing trees. While most of the blades and nacelles are fully visible, the towers are partially concealed by the woodlot, which also screens all but the blade tip of a more distant turbine. The turbines are prominent new additions to the landscape and present strong scale, color, line, and form contrast with the existing landscape features. The turbines protrude well into the sky, although their impact is somewhat diminished by the overcast conditions, which reduce their color contrast. However, this contrast will be stronger under different lighting/sky conditions. Addition of the turbines introduces prominent man-made features to the view and changes the perceived land use to a more utilitarian character. While the turbines become dominant new focal points, they add an element of interest to the view. Their overall impact on scenic quality is moderate.

5.3 Nighttime Impacts

Representative nighttime photos of an operating wind farm with the same L-864 flashing red FAA aviation warning lights as proposed for the Project are included in Figure 11. The photos illustrate the appearance of lights in a dark sky, and the typical type of nighttime visual impact associated with these lights. Although representative of the appearance of the FAA warning lights, it should be noted that turbines in excess of 500 feet, such as those proposed for the Republic Wind Project are required to be equipped with two lights per turbine.

As shown in these photos, the contrast of the aviation warning lights with the night sky can be strong in dark, rural settings, and their presence suggests a more commercial/industrial land use. Viewer attention is drawn by the flashing of the lights and they present strong contrast with the night sky. As indicated by the viewshed analysis, views of the FAA warning lights on the Republic turbines will generally be well screened for the cities and villages within the study area. Nighttime visual impact will most likely be experienced by viewers in the rural/agricultural portions of the study area. It is worth noting that the visual study area includes communication towers, grain elevators, quarry equipment and water towers equipped with FAA warning lights. While generally not seen or strongly perceptible from roads and other public viewpoints at night, turbine lighting may be perceived negatively by residents that currently experience dark night skies and who may be able to view these lights from their homes and yards.

5.4 Cumulative Visual Impacts

Per the requirements of Ohio Administrative Code Chapter 4906-04-08(D)(4) for the Ohio Power Siting Board, the potential cumulative visual effect of the Republic Wind Project along with other wind energy projects currently operating or proposed in the surrounding region must be considered. Cumulative impacts are two or more individual visual effects which, when taken together, are significant or that compound or increase other similar visual effects. This section addresses the potential cumulative visual impacts that may arise from interactions between the Republic Wind Project and the proposed Seneca and Emerson Creek Wind Projects. No other wind projects are currently proposed in the area. The Seneca and Emerson Creek Wind Projects fall almost entirely within the visual study area, with the nearest turbines occurring 1.6 and 0.9 miles, respectively, from the Republic Project site (as measured between the nearest turbines in each project).

To evaluate the potential cumulative visual impact of multiple wind power projects within the study area, cumulative viewshed analyses were conducted. The 10-mile radius vegetation viewshed analysis for the Republic Wind Project(based on maximum blade tip height) was overlaid on viewshed analyses prepared for the other two proposed wind farms (Seneca and Emerson Creek). All viewsheds employed the same methodology as described in Section 4.1. Data on turbine locations and dimensions at the other projects were obtained from publicly available information

included in each project's respective OPSB submission or from the developer. The 10-mile radius viewsheds for the existing and proposed projects were then plotted on a base map, and areas of viewshed overlap identified. Results of the cumulative viewshed analysis of the proposed wind projects is presented in Figure 9 and Table 3.

Table 3. Ten-Mile-Radius Study Area Cumulative Viewshed Results Summary

Total Number of Turbines Potentially Visible[1]	Blade Tip – Structures and Vegetation	
	Square Miles[2]	% of Study Area
0	214.8	27.4
1-45	308.3	39.4
46-90	175.8	22.5
91-135	67.9	8.7
136-180	14.9	1.9
181-228	1.4	0.2
Total Visible	**568.3**	**72.6**

[1]1The cumulative viewshed analysis accounts for proposed turbines from the Seneca Wind project (94 turbines with maximum blade tip heights ranging from 453 feet to 649 feet tall) and the proposed Emerson Creek Wind project (84 turbines with a maximum blade tip height of 655 feet) as well as the 50 turbines proposed for the Republic Wind Farm (with a maximum blade tip height of 602 feet).

[2]The cumulative viewshed analysis area (within 10 miles of the Republic Project Area) includes approximately 783.1 square miles, or approximately 501,169 acres.

As shown in Table 3 the cumulative viewshed analysis indicates that approximately 27.4% of the 10-mile visual study area will not have views of any of the proposed wind turbines considered as part of this evaluation, due to screening provided by topography, vegetation, and structures. The remaining 72.6% of the visual study area will potentially have views of turbines from one or more of the proposed projects. The majority of this area of potential visibility (39.4% of the 10-mile visual study area) will potentially have views of between 1 and 45 wind turbines. As visibility goes over 91 turbines, the percentage of the study area with potential visibility drops off quickly. Areas with potential visibility of 91-135 turbines account for 8.7% the study area, areas of potential views of 136-180 turbines account for 1.9% of the study area, and areas with potential views of 181-228 turbines account for only 0.2%. The locations of greatest cumulative visibility are mainly located in the Rural Residential/Agricultural Zone where open fields offer expansive views of the landscape.

As described in Sections 5.2 of this VIA, the visibility and visual effect of wind turbines within the study area will vary based on viewing distance, viewer orientation, and the number of turbines visible, as well as the potential screening effects of topography, vegetation and structures. If turbines from the other existing wind projects are visible from a vantage point within the Republic Project site, they may fall in the foreground, middle ground or background and appear inter spaced with the proposed Republic Wind Project. From longer distances, the proposed wind projects may appear to be a single larger facility. However, as indicated by the fieldwork results and review of the visual simulations, in areas dominated by more concentrated human settlement (such as the City/Village and Suburban Residential Zones) screening provided by vegetation and/or structures generally limit broad open views to the surrounding landscape. Thus, views of multiple turbines within the proposed Project, let alone those that also include turbines from the other proposed wind farms, are anticipated to be rare within these zones.

As indicated by the viewshed analysis, the zone where cumulative project visibility is most likely to occur is the Rural Residential/Agricultural LSZ. Due the abundance of open fields and agricultural land, this LSZ offers the greatest opportunity to see numerous turbines from multiple projects. Many of these turbines will be viewed at significant distances, which reduces their visual impact. In addition, areas where such views would be available generally have relatively few visually sensitive resources and a limited number of viewers. However, in some places a large number of turbines will be visible at various distances and in multiple directions. These instances will be relatively rare and will affect a limited number of resources and receptors. Perceived visual impact resulting from views of multiple wind farms will vary greatly amongst viewers based on personal perception, individual property location, and overall attitude toward wind power projects.

6.0 Conclusions

The VIA for the Republic Wind Project allows the following conclusions to be drawn:

1. Viewshed mapping and field verification indicate that the Project has the potential to be visible from the majority of the study area. In most locations where turbines will be visible, significant portions of the overall Project are also likely to be visible. The greatest potential for unscreened views of the project will be in the open agricultural areas, while in more densely settled residential areas, a significant number of the turbines will be at least partially screened by trees and structures.

2. Field review of the project site confirmed that the lack of elevated topographical features limits the long-distance visibility and further strengthens the screening capabilities of intact hedgerows and forest stands found at the borders of many of the agricultural fields.

3. Views from the defined LSZs vary in quality and availability. The Rural Residential/Agricultural LSZ has the highest potential for open views of the Project, however the visual characteristics of the working landscape and the agrarian vernacular have the least sensitivity to Project-related visual change. Therefore, the Project will generally not have an adverse visual effect on this zone. The City/Village/Hamlet LSZ has the largest concentration of viewers and visually sensitive sites. Consequently, for the majority of viewers in this LSZ, and the sensitive receptors located there, views of the Project will be well screened by intervening structures and vegetation. Because open, long distance views are generally not available from this LSZ, there will not be a significant adverse visual effect on this zone and the sensitive resources that occur there. Project visibility within the Suburban Residential Zone can be vastly different from home to home or viewpoint to viewpoint. One resident may be screened by adjacent structures and suburban yard vegetation, while their neighbor may have open views of multiple turbines. This means that certain viewpoints may experience an adverse visual effect, while others will not. However, the distance of this zone from the proposed turbines will tend to minimize visual impact. The Transportation Corridor LSZ provides for a substantial amount of open long-distance views. However, the lack of sensitive sites within this zone, the abundance of discordant features, and focused viewer activity, limits any adverse visual effect on major transportation corridors within the study area.

4. Sensitive sites identified and evaluated in the study area varied in the availability of open views toward the Project. The two NHRP-listed sites that are significant for their visual setting were evaluated in the field, and it was determined that only the Pleasant Ridge United Methodist Church and Cemetery will have some unobstructed, open views towards a small portion of the Project. The majority of the Project will be screened from view by adjacent mature hedgerows. Because the available open views focus on the adjacent working agricultural

landscape, introduction of the proposed Project will fit within this frame work. Wildlife management areas located at the outskirts of the study area, such as Pickeral Creek and Resthaven, proved to have no significant open views toward the Project site, and viewer activity and scenic quality would not be impacted at these sites. Wildlife management areas in closer proximity to the Project, such as Sugar Creek and Knobby's Prairie, will have views of individual turbines. However, because available views of the Project from these locations tends to be at the parking areas, and not from the trail networks, the effect on scenic quality will be limited. The Sandusky and Seneca County Park System properties proved to have limited Project visibility, with the majority of open views being available from the parking areas rather than the trail networks. This limited Project visibility will reduce the visual impact of the Project on these sites. The Sandusky River will not experience a change in scenic quality as it courses through the study area due to the fairly continuous screening provided by trees along the shoreline. Users of the two bike trails within the study area will experience views of the Project turbines from various distances and landscape settings. However, most of the open views will be available from local roads within the Rural Residential/Agricultural LSZ. The proposed turbines generally appear compatible in this working agricultural landscape, and for some viewers, the turbines will add an element of interest to the existing view. No significant scenic features are designated along either trail through the study area, therefore impact on scenic quality and user enjoyment of these recourses should be minimal.

5. Photographic simulations of the proposed Project, indicate that the visibility and visual impact of the wind turbines will be highly variable, based on landscape setting, the extent of natural screening, the presence of other man-made features in the view, and distance of the viewer from the Project. The simulations confirm that woodlots and hedgerows generally provide a backdrop in views across open fields. This vegetation in combination with the level topography will effectively screen views of more distant turbines in many locations. This limits the number of turbines visible from many locations and limits the perceived density and visual clutter created by the Project. In areas where open views of foreground and middle ground turbines will be available, their line, scale, color and form contrast with existing landscape features can be appreciable. However, where such views are most likely to be available, the turbines appear compatible with the working agricultural character of the landscape.

6. The VIA indicates that the Project's overall contrast with the visual/aesthetic character of the area will also be variable. Insignificant to moderate contrast was noted for viewpoints where existing vegetation provides at least partial screening, or where distance reduces the turbines' perceived line and scale contrast with the landscape. More substantial contrast was noted where unscreened foreground and near middle ground views of turbines are available or where numerous visible turbines result in a perceived change in land use and increased visual clutter. Low to moderate baseline scenic quality, and the working agricultural character of the landscape that makes up the majority of the visual study area also serve to limit the Project's visual impact. Based on experience with

currently operating wind power projects elsewhere, public reaction to the Project is likely to be generally positive, but highly variable based on proximity to the turbines, the affected landscape, and personal attitude of the viewer regarding wind power. As Stanton (1996) notes, although a wind power project is a man-made facility, what it represents "may be seen as a positive addition" to the landscape.

7. Based upon the nighttime photos/observations of existing wind power projects, the red flashing lights on the turbines could result in a potential nighttime visual impact. The actual significance of this impact from a given viewpoint will depend on how many turbines are visible, what other sources of lighting are present in the view, the extent of screening provided by structures and trees, and nighttime viewer activity/sensitivity. However, night lighting could be somewhat distracting and have an adverse effect on rural residents that currently experience dark nighttime skies, as discussed in Section 5.3. It should be noted that nighttime visibility/visual impact will be limited in cities, villages, hamlets, and along highways where existing lights already compromise dark skies and compete for viewer attention.

7.0 Mitigation

Mitigation options are limited, given the nature of the Project and its siting criteria (tall structures typically located in open fields). However, various mitigation measures were considered. These included the following:

A. Screening. Views of the proposed turbines from cities and villages, where the majority of the residents and sensitive historic sites are located, are typically well screened by intervening structures and trees. Middle ground and background views in the more rural portions of the study area, including views from sensitive sites, are generally at least partially screened by hedgerows and woodlots. Due do the height of individual turbines and the geographic extent of the proposed Project, screening of individual turbines with earthen berms, fences, or planted vegetation will generally not be effective in reducing Project visibility or visual impact.

B. Relocation. The proposed turbines will comply with various siting and set-back requirements that help to reduce their visual impact. However, because of the number of individual turbines proposed, and the variety of viewpoints from which they may be visible, additional turbine relocation will generally not significantly alter visual impact. Where visible from sensitive resources within the study area, (e.g., local parks, historic sites, and heavily used roadways), relocation of individual machines would have little effect on overall visual impact. Throughout the study area, available views of the Project include different turbines at different distances from the viewer. Therefore, turbine relocation would generally not be effective in mitigating visual impacts.

C. Camouflage. The white color of wind turbines as mandated by the FAA to eliminate the need for day time lighting minimizes contrast with the sky under most conditions, especially when viewed at distance against the horizon. Consequently, use of this color is an appropriate means of limiting visual impact. The size and movement of the wind turbine blades prevents more extensive camouflage from being a viable mitigation alternative (i.e., they cannot be made to look like anything else). Neilson (1996) notes that efforts to camouflage or hide wind farms generally fail, while Stanton (1996) feels that such efforts are inappropriate. She believes that wind turbine siting "is about honestly portraying a form in direct relation to its function and our culture; by compromising this relationship, a negative image of attempted camouflage can occur."

D. Low Profile. A significant reduction in turbine height is not possible without significantly decreasing power generation. To off-set this decrease, additional turbines would be necessary. There is not adequate land under lease to accommodate a significant number of additional turbines, and a higher number of shorter turbines would not necessarily decrease the Project's visual impact. In fact, several studies have concluded

that people tend to prefer fewer larger turbines to a greater number of smaller ones (Thayer and Freeman, 1987; van de Wardt and Staats, 1988). The VIA evaluated the maximum number of the tallest turbine model under consideration for this Project. The actual Project that is built could include fewer and/or somewhat smaller turbines. The visual impact of the electrical collection system is being minimized by installing the lines underground rather than on above-ground poles.

E. Lighting. Turbine lighting will adhere to FAA regulations. Medium intensity red strobes will be used at night rather than white strobes or steady burning red lights.

F. Maintenance. The turbines and turbine sites will be maintained to ensure that they are clean, orderly, and operating efficiently. Research and anecdotal reports indicate that viewers find wind turbines more appealing when the rotors are turning (Stanton, 1996, Pasqualetti et al., 2002).

G. Offsets. Correction of an existing aesthetic problem within the viewshed is a viable mitigation strategy for wind power projects that result in significant adverse visual impact. Given the results of this study, removal of existing blighted/derelict structures to offset any potential adverse visual impact of the proposed Project does not appear to be warranted.

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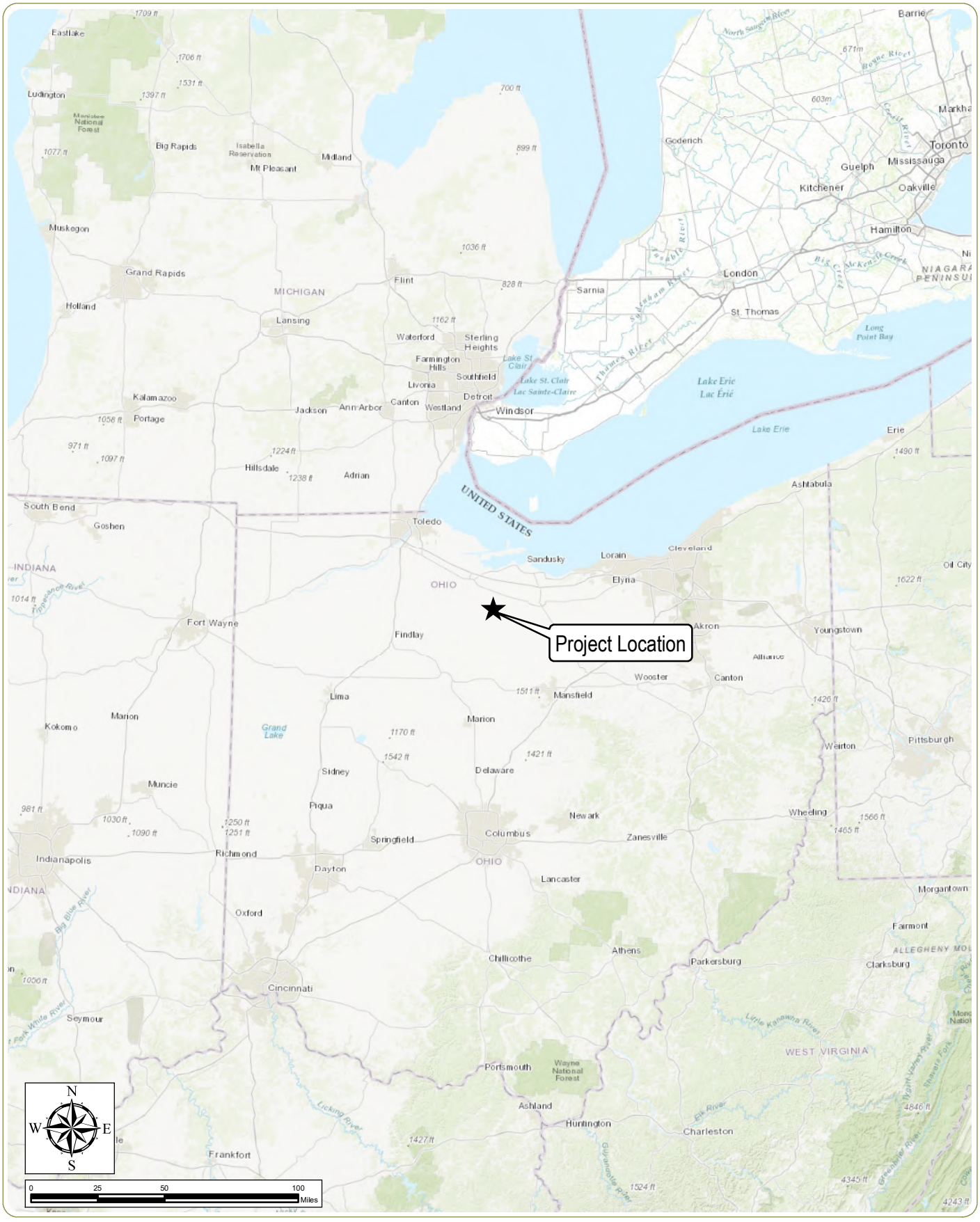
Figure 1

Regional Project Location



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Republic Wind Farm

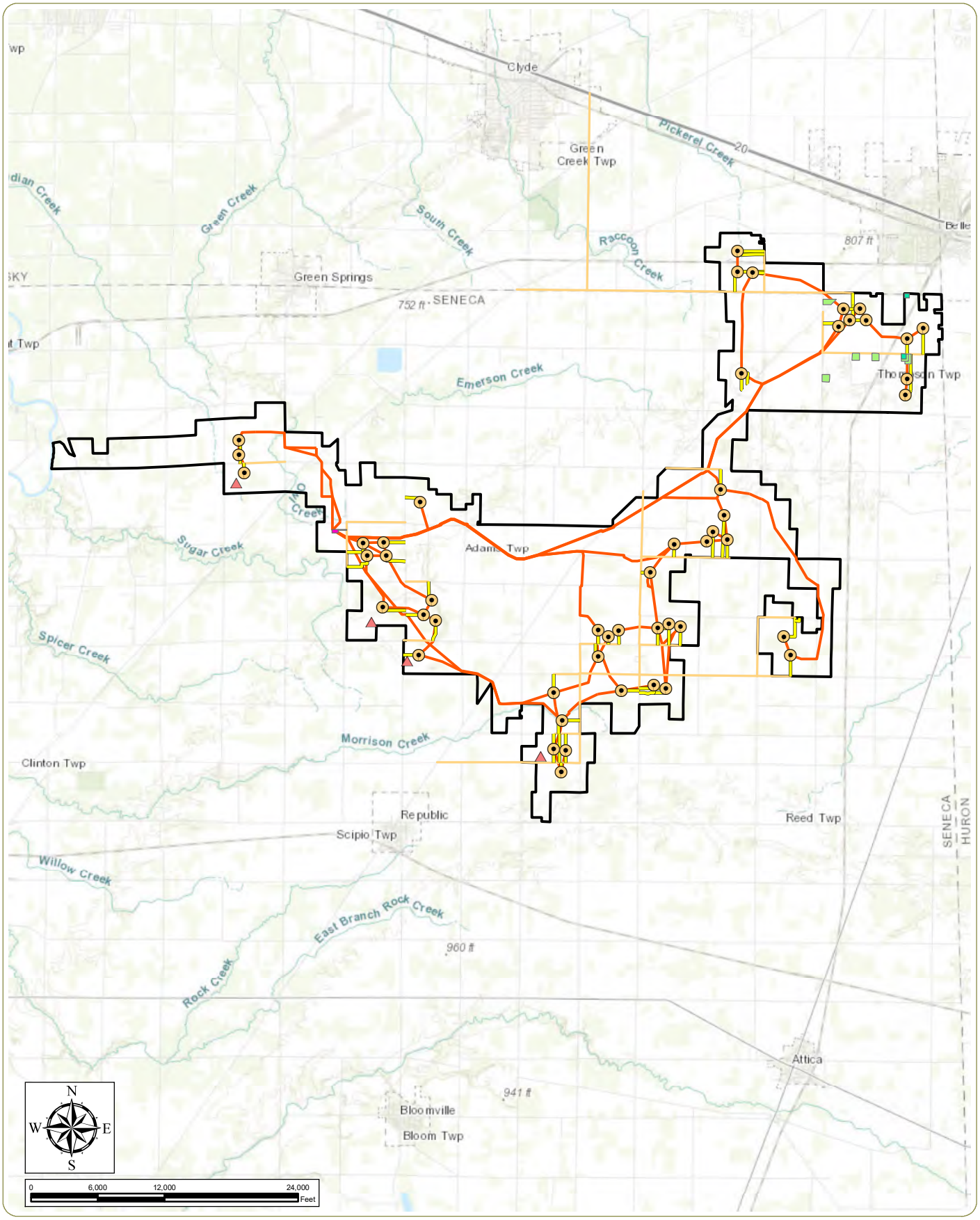
Sandusky and Seneca Counties, Ohio

Figure 1: Regional Project Location

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on January 9, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

Figure 2

Proposed Project Location



J:\15095 Republic Wind Project\Graphics\Figures\VIA - OPSB Amendment\MXD\15095_VIA_Figure 2_Proposed Project Layout.mxd

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 2: Proposed Project Layout

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 13, 2018.
3. Only two met tower sites will be selected in the final design.
4. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Potential Met Tower Site
- Wind Turbine
- Access Road
- Collection Line
- Delivery Route
- Collection Substation
- Laydown Yard Option
- O&M Facility
- Project Boundary

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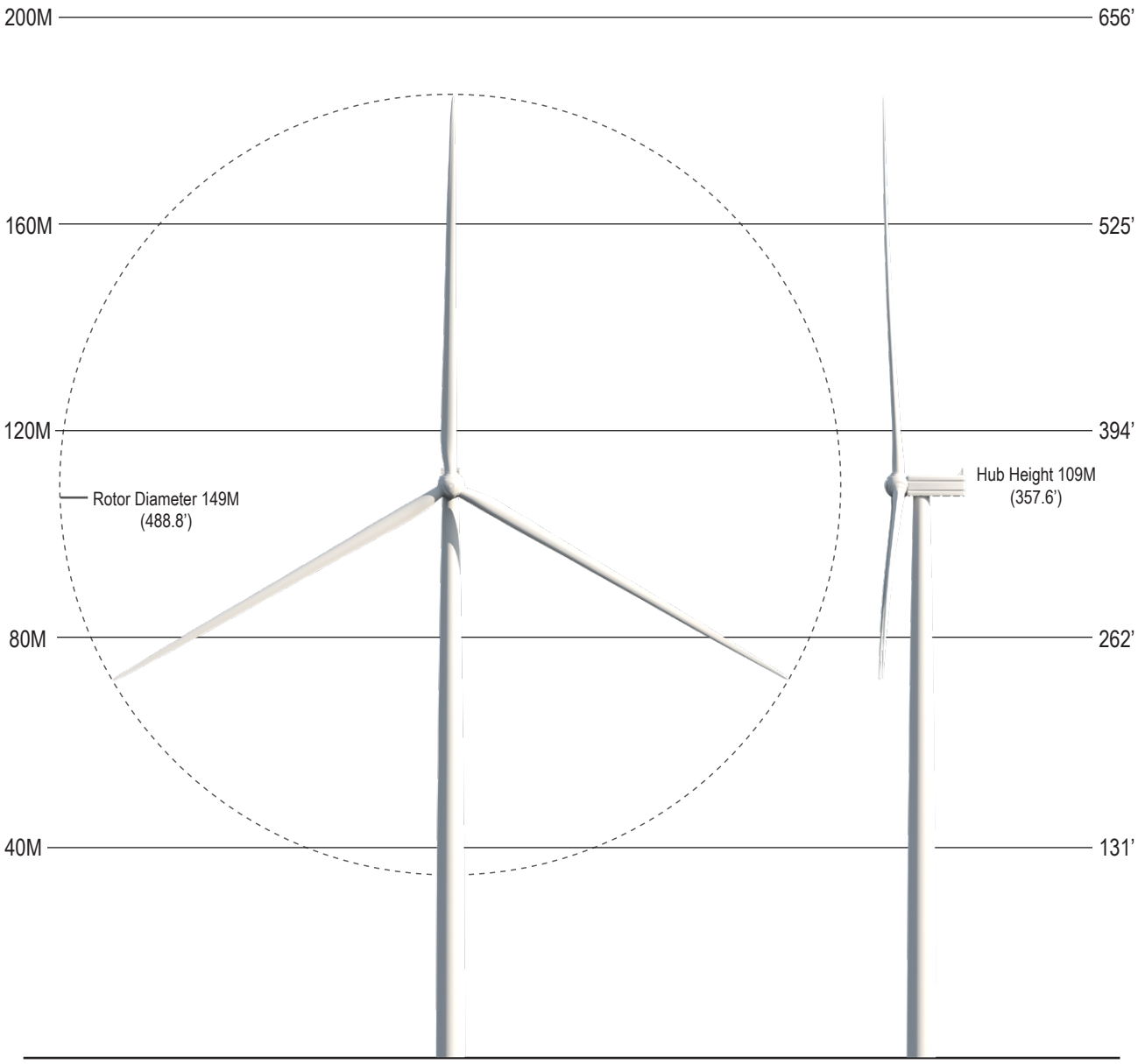
Figure 3

Computer Model of Proposed Turbine



ACCIONE (NORDEX) 149

Front Elevation
Total Height 183.5M (602')

Side Elevation
Total Height 183.5M (602')

J:\15095 Republic Wind Project\Graphics\Figures\VIA\INDD\Figures\15095_VIA_Figure 3_Diagram of Proposed Turbine.indd

Republic Wind Farm
Sandusky and Seneca Counties, Ohio

Figure 3: Computer Model of Proposed Wind Turbine

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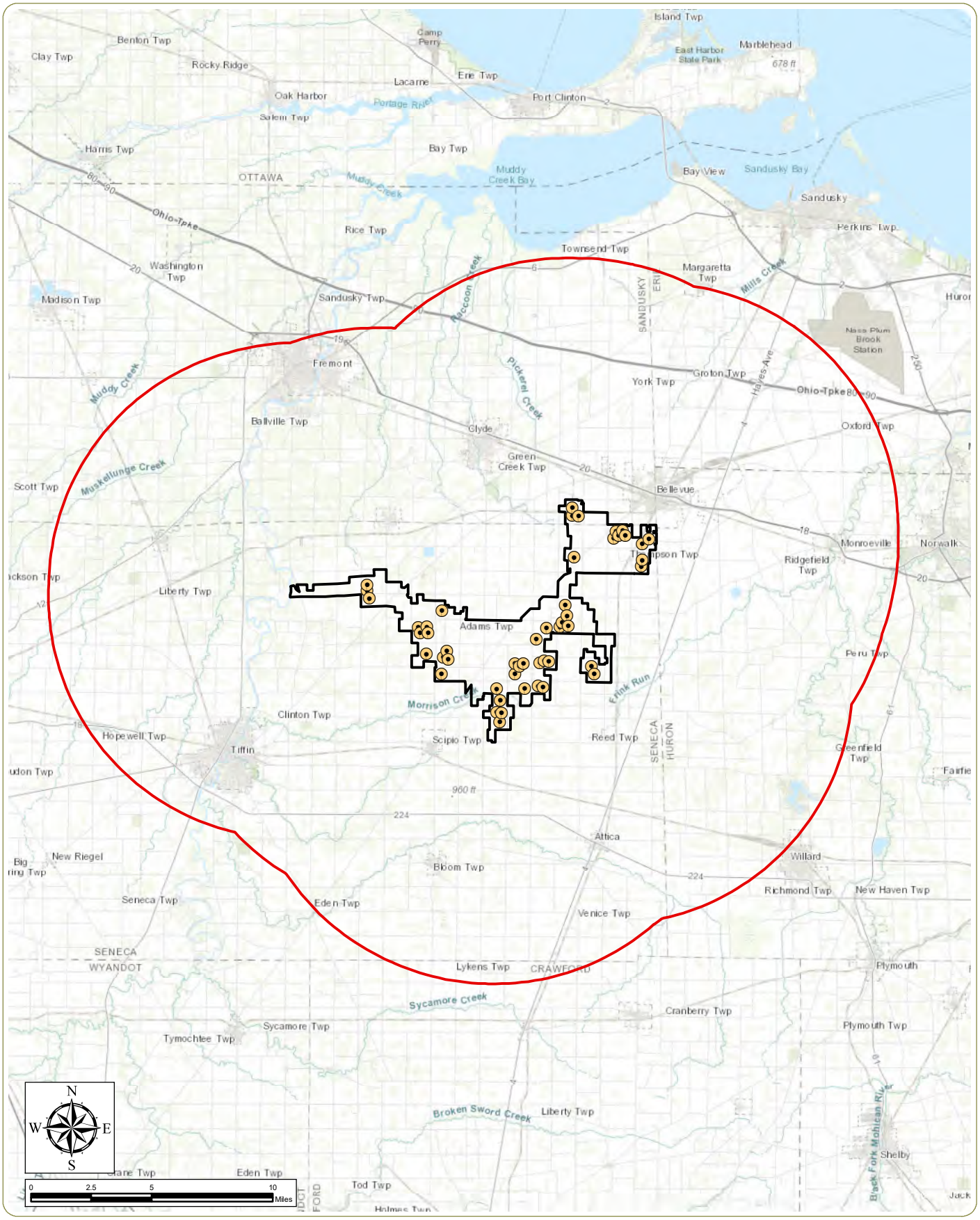
Figure 4

Visual Study Area



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Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 4: Visual Study Area

- Wind Turbine
- 10-Mile Study Area
- Project Boundary

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 13, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

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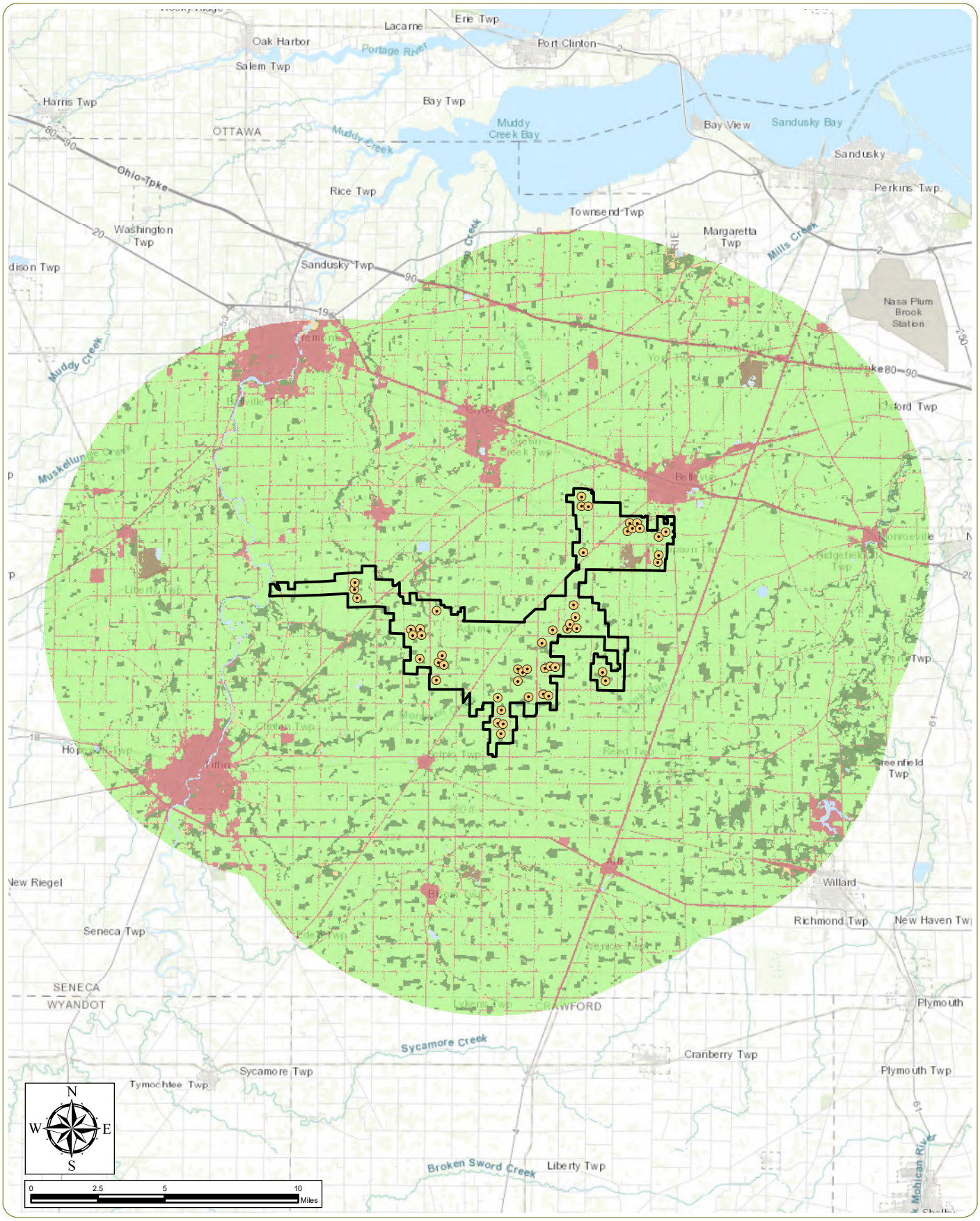
Figure 5

Land Use



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Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 5: Land Use

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. Land cover derived from 2011 USGS NLCD data.
3. This map was generated in ArcMap on December 19, 2018.
4. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Wind Turbine
- Project Boundary
- Agricultural Land
- Disturbed/Developed Land
- Forestland
- Grassland/Shrubland/ Wetland
- Open Water
- Quarry/Barren Land

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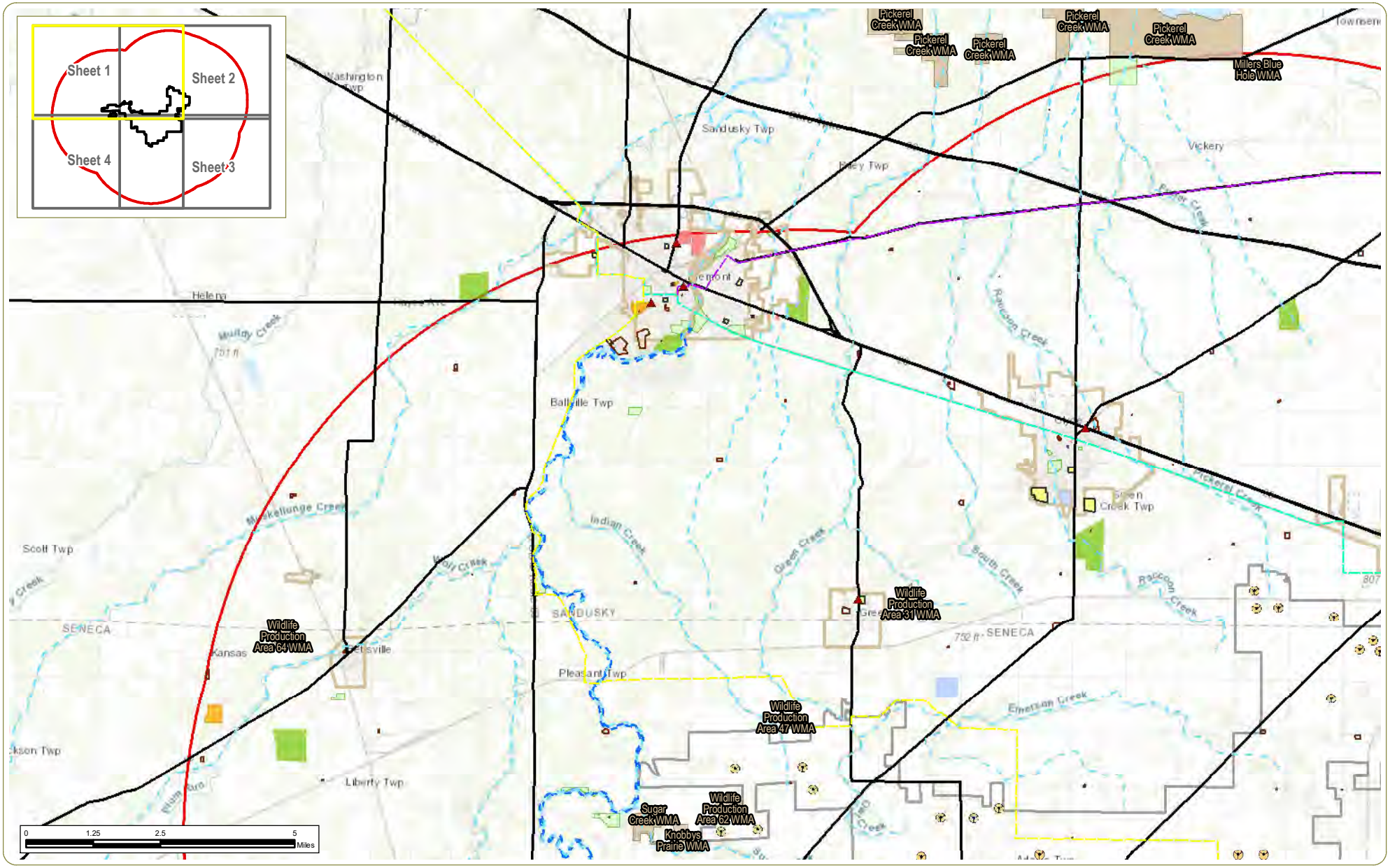
Figure 6

Visually Sensitive Resources



Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 6: Visually Sensitive Resources - Sheet 1 of 4

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on January 24, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- State Historic Marker
- Wind Turbine
- Buckeye Trail
- Local Bike Route
- State Bike Route
- River & Stream
- Wild & Scenic River
- Major Road
- Cemetery
- City or Village
- Golf Course
- Library
- Local Park
- NRHP-Eligible Site
- NRHP District
- NRHP-Listed
- State Wildlife Management Area
- School
- Water Body
- 10-Mile Study Area
- Project Boundary

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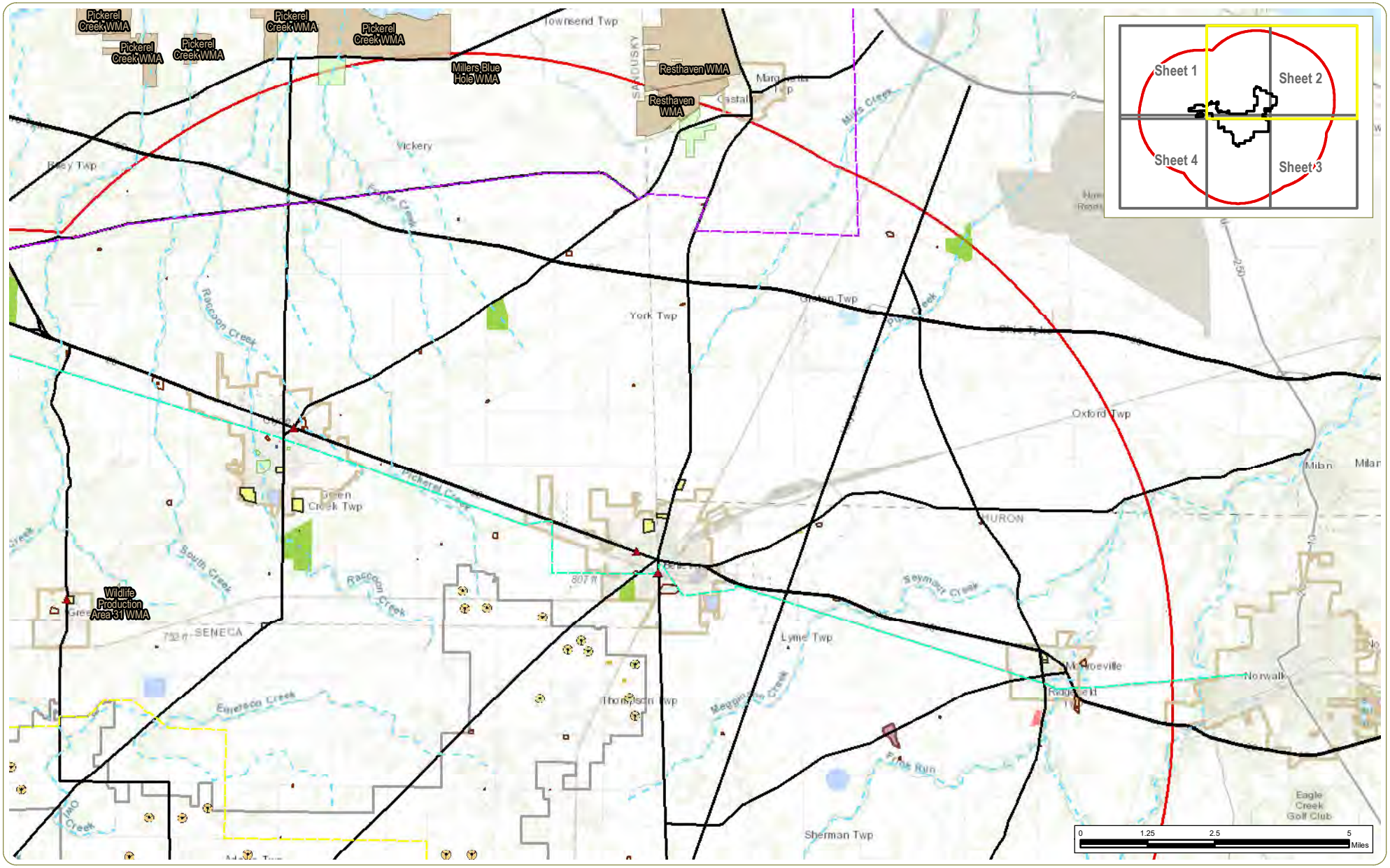

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 6: Visually Sensitive Resources - Sheet 2 of 4

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on January 24, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- State Historic Marker
- Wind Turbine
- Buckeye Trail
- Local Bike Route
- State Bike Route
- River & Stream
- Wild & Scenic River
- Major Road
- Cemetery
- City or Village
- Golf Course
- Library
- Local Park
- NRHP-Eligible Site
- NRHP District
- NRHP-Listed
- State Wildlife Management Area
- School
- Water Body
- 10-Mile Study Area
- Project Boundary

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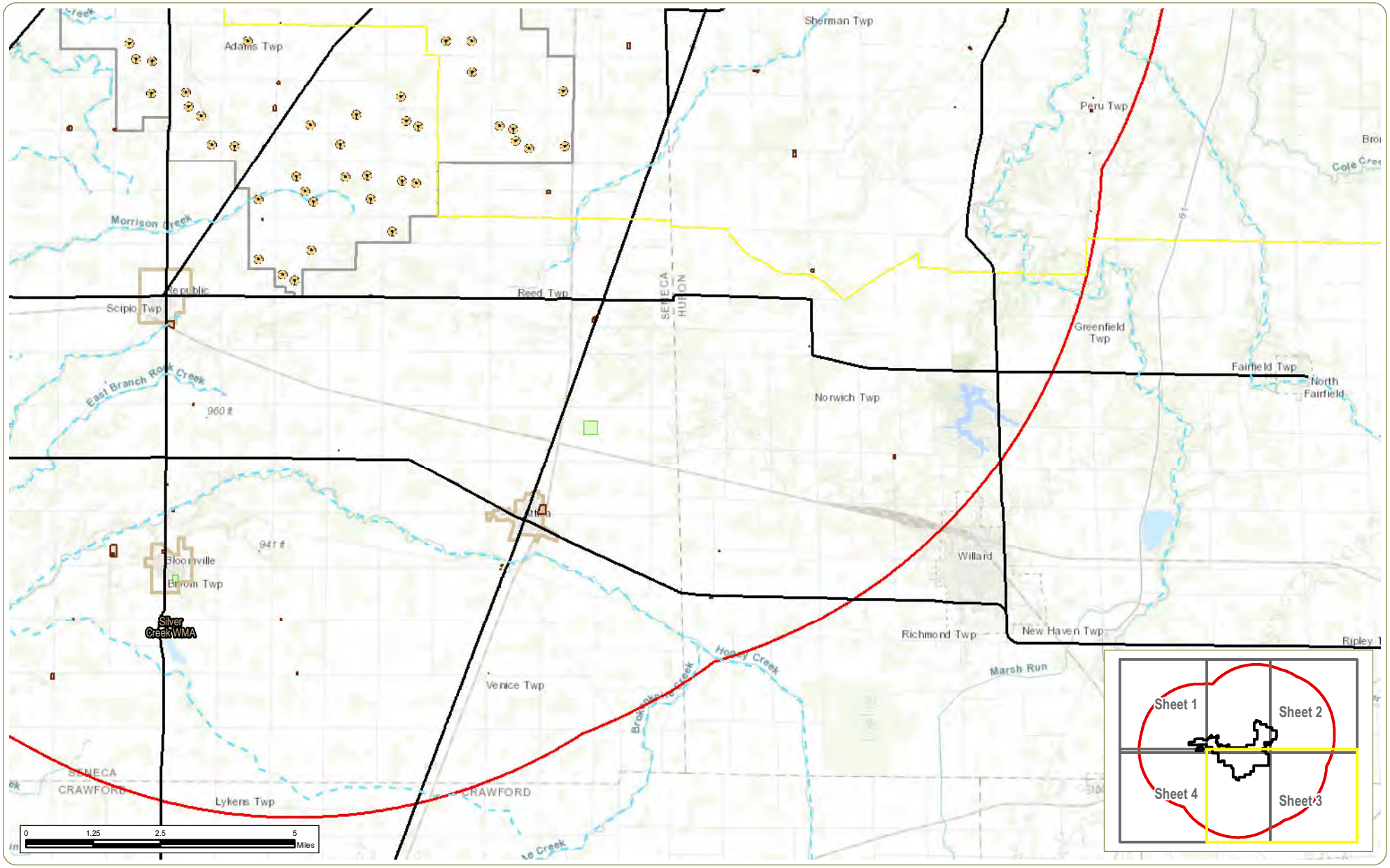

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 6: Visually Sensitive Resources - Sheet 3 of 4

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on January 24, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- State Historic Marker
- Wind Turbine
- Buckeye Trail
- Local Bike Route
- State Bike Route
- River & Stream
- Wild & Scenic River
- Major Road
- Cemetery
- City or Village
- Golf Course
- Library
- Local Park
- NRHP-Eligible Site
- NRHP District
- NRHP-Listed
- State Wildlife Management Area
- School
- Water Body
- 10-Mile Study Area
- Project Boundary

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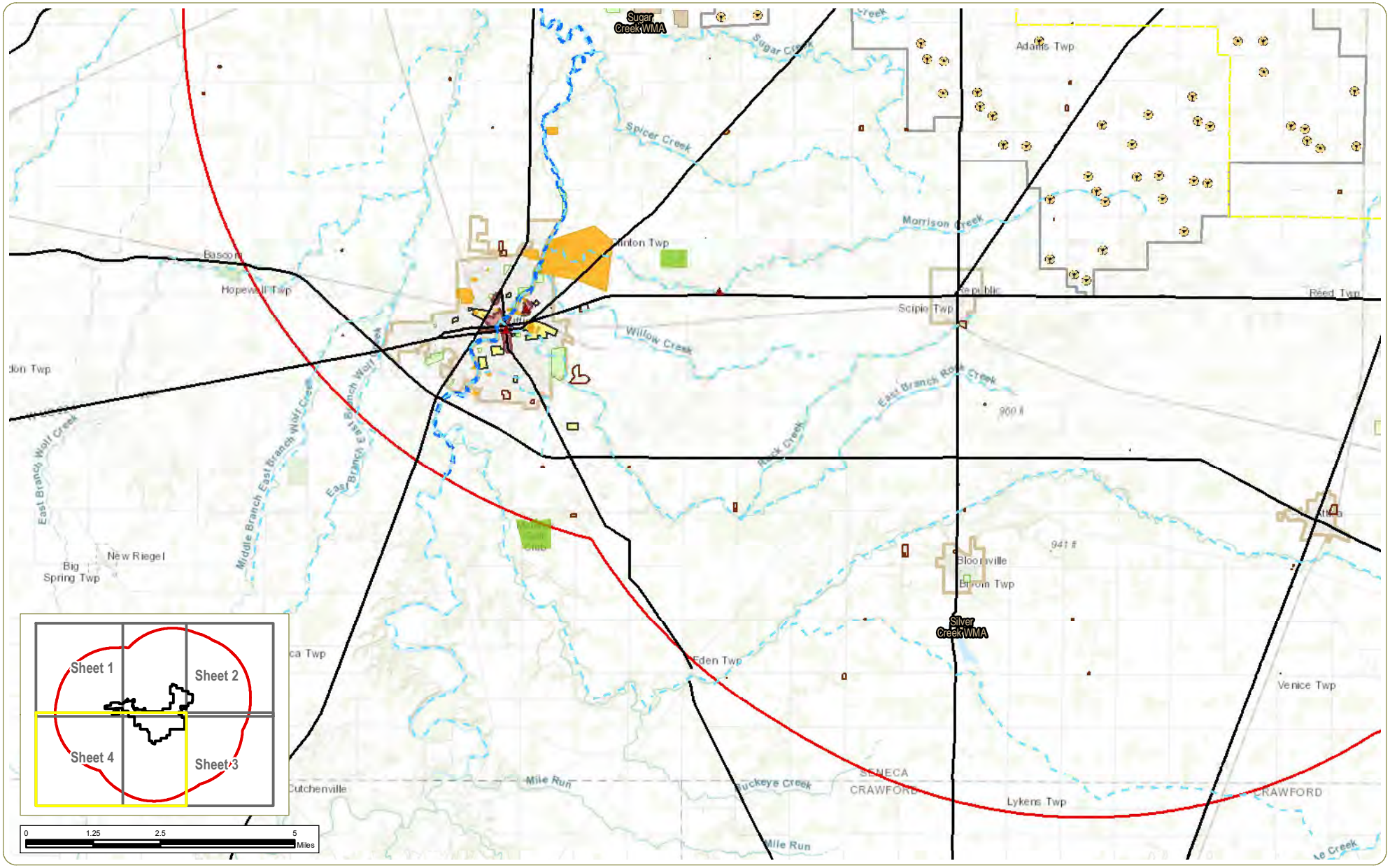

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 6: Visually Sensitive Resources - Sheet 4 of 4

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on January 24, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- State Historic Marker
- Wind Turbine
- Buckeye Trail
- Local Bike Route
- State Bike Route
- River & Stream
- Wild & Scenic River
- Major Road
- Cemetery
- City or Village
- Golf Course
- Library
- Local Park
- NRHP-Eligible Site
- NRHP District
- NRHP-Listed
- State Wildlife Management Area
- School
- Water Body
- 10-Mile Study Area
- Project Boundary

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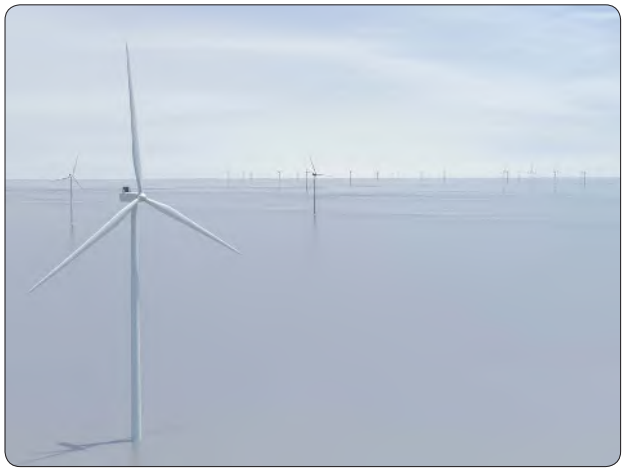
Figure 7

Visual Simulation Methodology

Photos are selected to illustrate typical views of the proposed project that will be available to representative viewers/user groups from the major landscape similarity zones and sensitive sites within the study area.



A three-dimensional computer model of the project is built based on proposed turbine specifications and tower site coordinates.

Aerial imagery and GPS data collected in the field are used to create an AutoCAD Civil 3D drawing.

These data are superimposed over photographs from each of the viewpoints, and minor camera changes are made to align all known reference points within the view.

A digital terrain model representing the existing topography is also overlaid on the existing photograph to refine camera alignment, and target elevation.

The proposed exterior color/finish of the turbines was then added to the model and the appropriate sun angle is simulated based on the specific date, time and location (latitude and longitude) at which each photo was taken.

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 7: Visual Simulation Methodology

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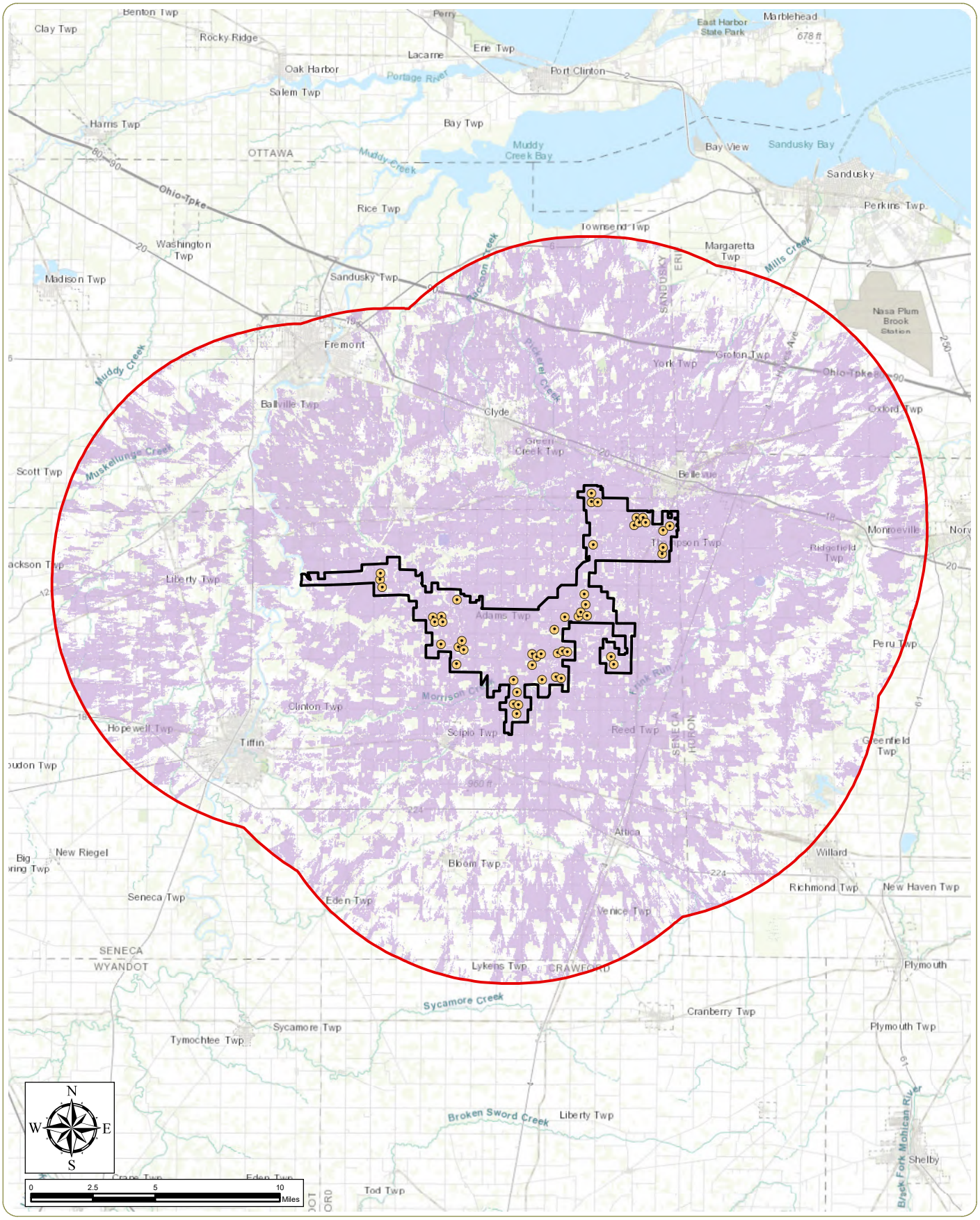
Figure 8

Viewshed Analyses



J:\15095 Republic Wind Project\Graphics\Figures\VIA - OPSB Amendment\MXD\15095_VIA_Figure 8_Turbine-Blade Visibility Based on Topography and Vegetation - Sheet 1.mxd

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 8: Turbine Viewshed - Sheet 1 of 2

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 19, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Wind Turbine
- 10-Mile Study Area
- Project Boundary
- Wind Turbine Blade Tip Visibility Based on Topography and Vegetation

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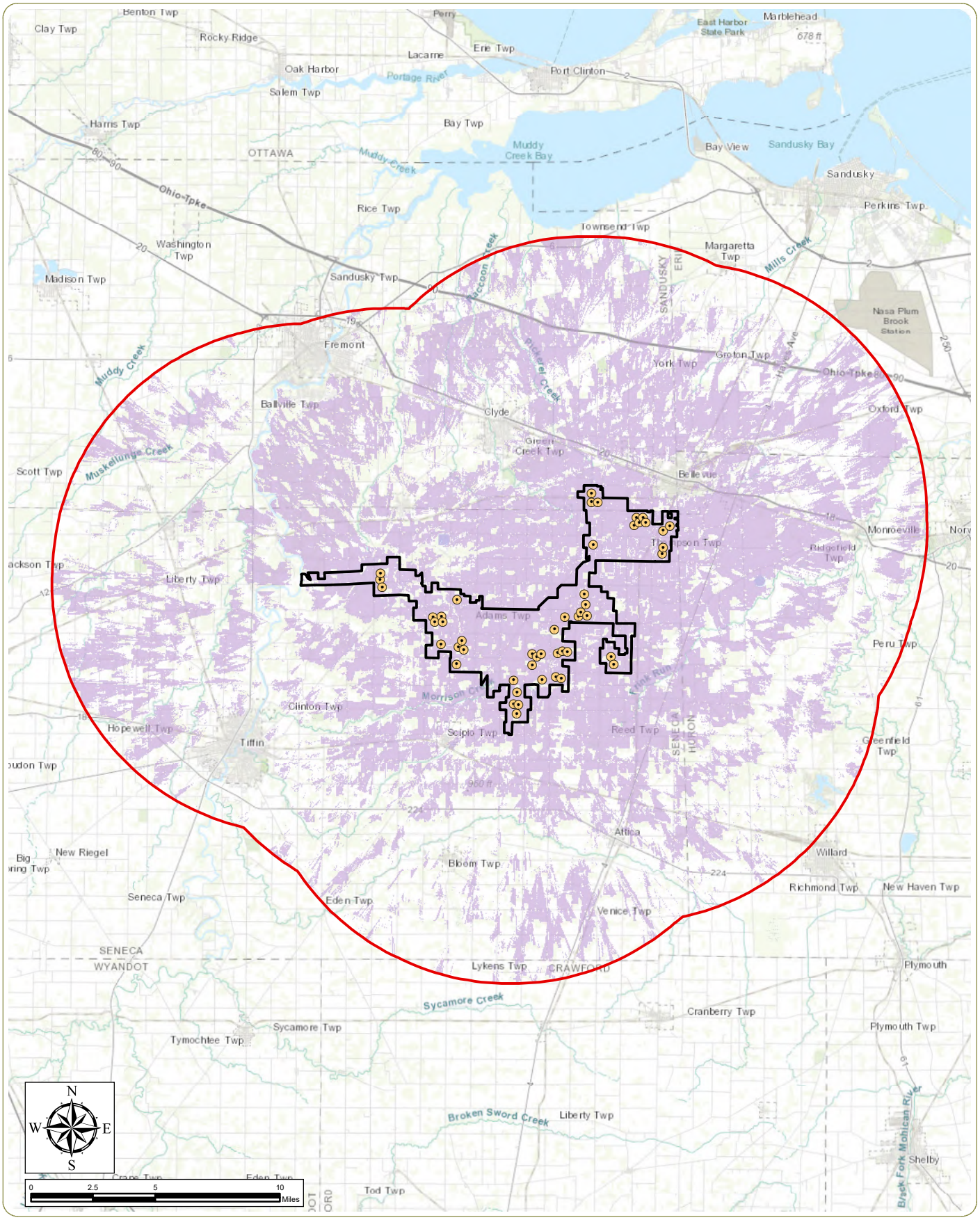

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Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 8: FAA Light Viewshed - Sheet 2 of 2

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 19, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Wind Turbine
- 10-Mile Study Area
- Project Boundary
- Wind Turbine FAA Warning Light Visibility Based onTopography and Vegetation

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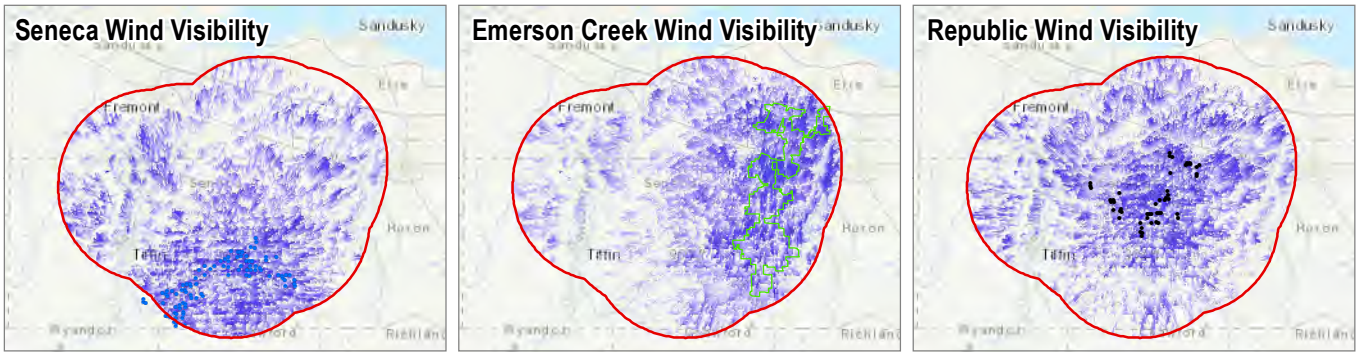
Figure 9

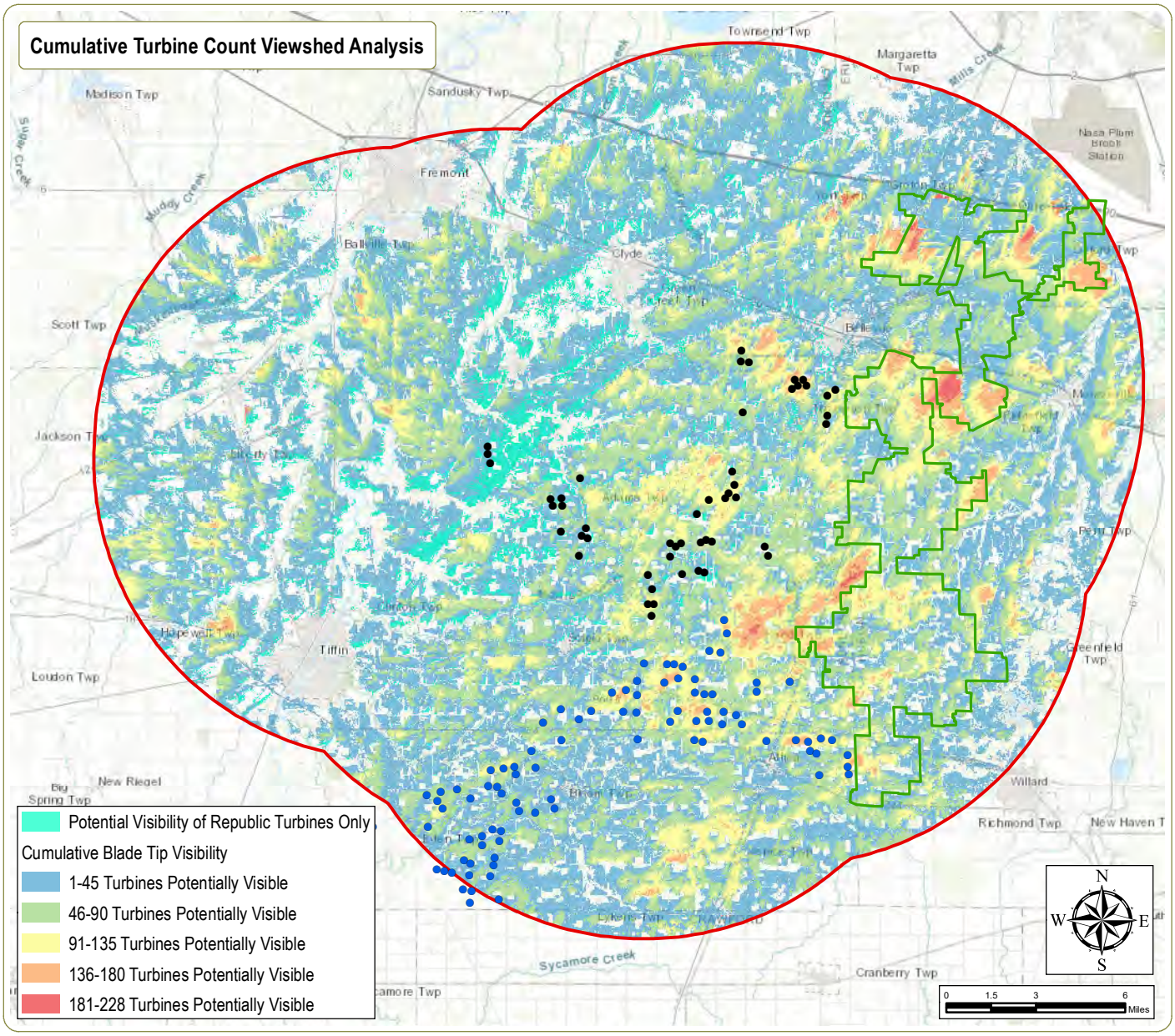
Cumulative Viewshed Analysis

Individual Project Visibility within the Republic Visual Study Area

Blade Tip Visibility Based on Topography, Structures, and Vegetation
Many Turbines Potentially Visible
Few Turbines Potentially Visible
0 5 10 20 Miles



Cumulative Turbine Count Viewshed Analysis



Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 9: Cumulative Viewshed Analysis

- Republic Wind Turbine (50 Turbines)
- Seneca Wind Turbine (94 Turbines)
- Emerson Creek Project Area (up to 84 Turbines)
- 10-Mile Study Area

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 13, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

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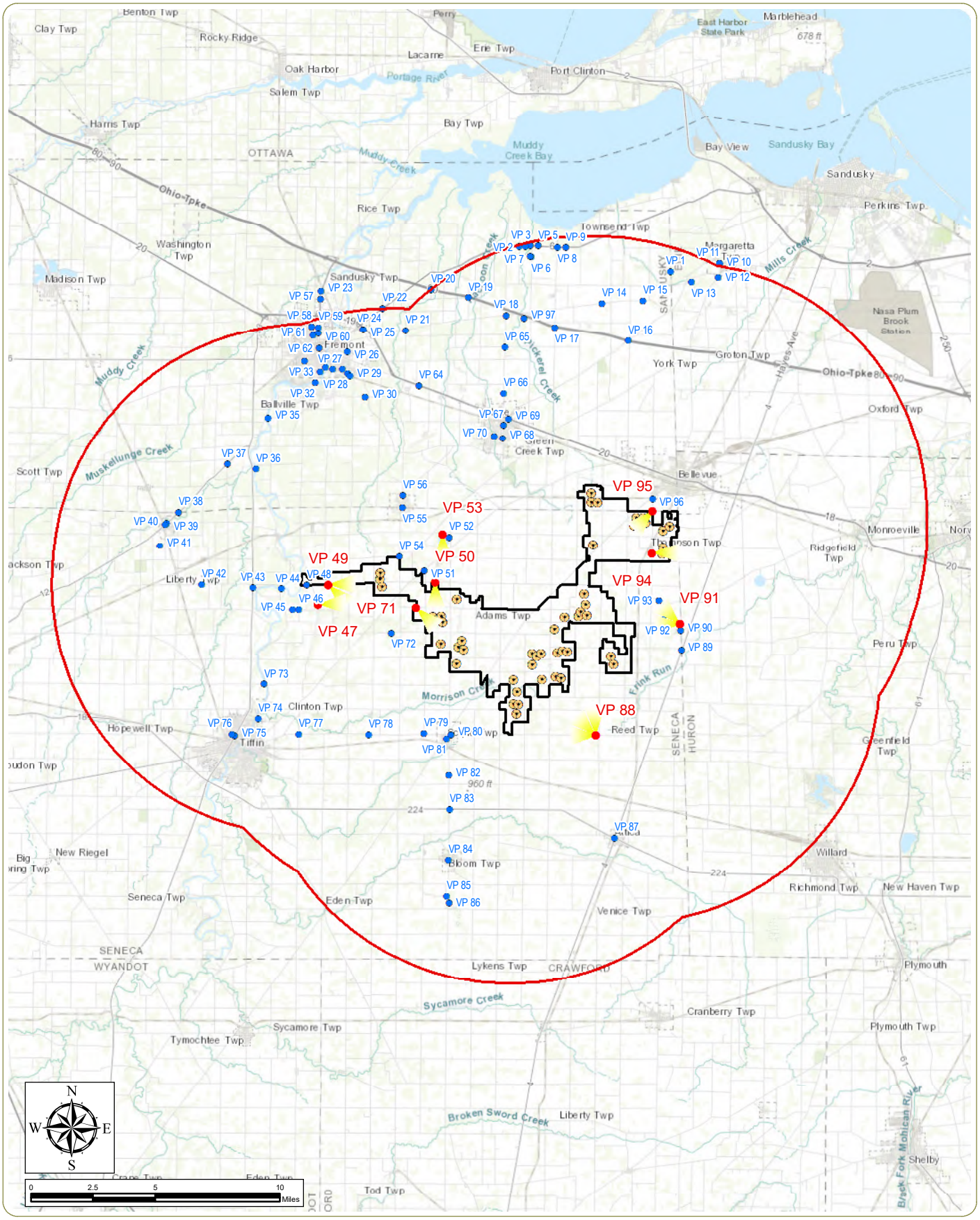
Figure 10

Viewpoint Location Map



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Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Figure 10: Viewpoint Locations

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 19, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Wind Turbine
- Simulated Viewpoint Location
- Viewpoint Location
- Project Boundary
- 10-Mile Study Area

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Figure 11

Representative Evening/Nighttime Photos

Republic Wind Farm
Sandusky and Seneca Counties, Ohio

Figure 11: Representative Evening/Nighttime Photos

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Appendix A

Composite Map

Republic Wind Farm

Sandusky and Seneca Counties, Ohio

Appendix A: Composite Map

- Simulated Viewpoint Location
- Viewpoint Location
- Wind Turbine
- State Historic Marker
- Buckeye Trail
- Local Bike Route
- State Bike Route
- River & Stream
- Wild & Scenic River
- Major Road
- Airport
- Cemetery
- City or Village
- Golf Course
- Library
- Local Park
- NRHP-Eligible Site
- NRHP District
- NRHP-Listed
- State Wildlife Management Area
- School
- Water Body
- 10-Mile Study Area
- Potential Turbine/Blade Visibility
- Project Boundary

Notes:

1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.
2. This map was generated in ArcMap on December 19, 2018.
3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

0 1.75 3.5 7 Miles

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Appendix B

Visually Sensitive Resources Table

Visually Sensitive Resource	Location: Town	Location: County	VP Number[1]	Distance[2]: Miles from Nearest Turbine	Distance Zone: ● Foreground ● Midground ● Background	Project Visibility: + Visible - Not Visible +/- Partially Visible: DTM (Topography)	Project Visibility: DSM (Topography, Vegetation & Structures)
Properties and Districts listed in the National or State Register of Historic Places							
Henny Barn	Thompson	Seneca		0.2	●	+	+/-
Heter Farm	Thompson	Seneca		0.3	●	+	+/-
Tremont House	Lyne	Huron		1.9	●	+	-
Pleasant Ridge United Methodist Church and Cemetery	Pleasant, Clinton	Seneca		3.2	●	+	+/-
Omar Chapel	Reed	Seneca		3.6	•	+	+/-
Wright, John, Mansion	Lyne	Huron		3.7	•	+	-
McPherson, Maj. Gen James B, House	Green Creek	Sandusky	69	4.5	•	+	-
Hunts Corners Historic District	Lyne	Huron		4.6	•	+	+/-
Umsted Farm	Pleasant	Seneca		5.5	•	+/-	+/-
National Orphans' Home Junior Order United American Mechanics	Clinton	Seneca	74	6.2	•	+/-	+/-
Mull Covered Bridge	Ballville	Sandusky		6.7	•	+	-
National Home, Daughters of America	Clinton	Seneca		7.2	•	+	-
Zion Episcopal Church	Ridgefield	Huron		7.4	•	+	-
Brown, Seth, House	Ridgefield	Huron		7.8	•	+	-
Hosford, John, House	Ridgefield	Huron		7.8	•	+/-	-
Northeast Tiffin Historic District	Clinton	Seneca		8.0	•	+	+/-
Hedges-Hunter-Keller-Bacon Gristmill	Clinton	Seneca		8.0	•	+	-
Hunter, William, House	Clinton	Seneca		8.0	•	+	-
Beatty Glass Company	Clinton	Seneca		8.1	•	+	-
Bowman's Distillery	Clinton	Seneca		8.1	•	+	-
North Sandusky Street Historic District	Clinton	Seneca	75	8.3	•	+	-
Founders Hall, Heidelberg College	Clinton	Seneca		8.3	•	+	-
France Hall	Clinton	Seneca		8.3	•	+	-
Mueller Brewery	Clinton	Seneca		8.3	•	+	-
College Hall	Clinton	Seneca		8.3	•	+	-
President's House	Clinton	Seneca		8.3	•	+	-
Octagon, The	Clinton	Seneca		8.3	•	+	-
Williard Hall	Clinton	Seneca		8.3	•	+/-	-
Gerhart-Rust Residence	Clinton	Seneca		8.3	•	+	-
Tiffin Agricultural Works	Clinton	Seneca		8.3	•	+	-
Mueller, Christ, House	Clinton	Seneca		8.3	•	+	-
Laird Hall	Clinton	Seneca		8.3	•	+	-
Aigler Alumni Building	Clinton	Seneca		8.4	•	+	-
Great Hall	Clinton	Seneca		8.4	•	+/-	-

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Pfleiderer Center for Religion and the Humanities	Clinton	Seneca		8.4	•	+/-	-
Tiffin Art Metal Company	Clinton	Seneca		8.4	•	+	-
Black Student Union Center	Clinton	Seneca		8.4	•	+/-	-
Social Science House	Clinton	Seneca		8.5	•	-	-
Downtown Tiffin Historic District	Clinton	Seneca		8.5	•	+/-	-
Fort Ball Railroad Historic District	Clinton	Seneca		8.5	•	+/-	-
Ohio Lantern Company	Clinton	Seneca		8.5	•	+	-
Webster Manufacturing	Hopewell, Clinton	Seneca		8.6	•	+/-	-
Miami Street Grade School	Clinton	Seneca		8.8	•	+	-
Hanson Machinery Company	Clinton	Seneca		8.8	•	+	-
Soldiers Memorial Parkway and McKinley Memorial Parkway	Sandusky, Ballville	Sandusky		8.9	•	+	-
Hayes, Rutherford B, House (Spiegel Grove) (NHL)	Ballville	Sandusky	63	8.9	•	+	-
Wagner Brothers Bottling Works	Clinton	Seneca		9.0	•	+	-
Buckland, Ralph P., House	Sandusky	Sandusky		9.0	•	+	-
Bartlett, Joseph and Rachel, House	Sandusky	Sandusky		9.1	•	+	-
Fabing, Frederick, House	Sandusky	Sandusky		9.1	•	+	-
Sandusky County Jail and Sheriff's House	Sandusky	Sandusky		9.2	•	+	-
St Paul's Episcopal Church	Sandusky	Sandusky		9.2	•	+	-
Springdale	Clinton	Seneca		9.5	•	+/-	-
Tiffin Waterworks	Clinton	Seneca		9.6	•	+/-	-
Bagby--Hossler House	Clinton	Seneca		9.9	•	+/-	-
Michaels Farm	Liberty	Seneca		11.0	•	+	-
Properties eligible for inclusion in the National or State Register of Historic Places							
.05 mile south of SR 18	Thompson	Seneca		1.0	●	+	+/-
1212-1214 W Main St	York	Sandusky		2.0	●	+	+/-
131 W Buckeye St	Green Creek	Sandusky		4.5	•	+	-
1567 SR 67	Scipio	Seneca		4.5	•	+	+/-
56 East Haven St.	Bloom	Seneca		6.3	•	+	-
21 Jefferson St	Bloom	Seneca		6.5	•	+	-
22 Jefferson St	Bloom	Seneca		6.5	•	+	-
3309 SR 99	Ridgefield	Huron		7.3	•	+	+/-
River Rd.	Clinton	Seneca		7.4	•	-	-
Huss St., Willow Creek	Clinton	Seneca		7.4	•	+/-	-
2027 E State St	Ballville	Sandusky		8.2	•	+	+/-
2209 E State St	Ballville	Sandusky		8.2	•	+/-	+/-
172-174 S Jefferson St	Clinton	Seneca		8.7	•	+	-

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Cor S Washington & Main Sts	Clinton	Seneca		8.8	●	+	-
14 Madison St	Clinton	Seneca		8.9	●	+	-
181 South Monroe Street	Clinton	Seneca		8.9	●	+	-
514 Birchard Ave	Sandusky	Sandusky		9.0	●	+	-
US 20 (State Street Bridge)	Sandusky	Sandusky		9.1	●	+/-	-
416 W State St	Sandusky	Sandusky		9.2	●	+	-
1101 N. Front Street	Sandusky	Sandusky		9.6	●	+/-	-
Sandusky County Fairground	Sandusky	Sandusky	60	9.9	●	+/-	+/-
Rawson Ave & Haynes St	Sandusky	Sandusky		9.9	●	+	-
Rawson Ave & Haynes St	Sandusky	Sandusky		9.9	●	+	-
State Parks							
None in Study Area							
National Heritage Areas							
None in Study Area							
National Wildlife Refuges, State Game Refuges and State Wildlife Management Areas							
Wildlife Production Area 47 WMA	Pleasant	Seneca		0.7	●	+	+/-
Wildlife Production Area 62 WMA	Pleasant	Seneca		1.3	●	+	+/-
Knobbys Prairie WMA	Pleasant	Seneca	47	2.4	●	+/-	+/-
Sugar Creek WMA	Pleasant	Seneca	46	2.8	●	+/-	+/-
Wildlife Production Area 31 WMA	Green Creek	Sandusky		3.3	●	+	+/-
Silver Creek WMA	Bloom	Seneca		7.3	●	+/-	+/-
Resthaven WMA	Margaretta, Townsend	Sandusky, Erie	1	9.0	●	+	+/-
Millers Blue Hole WMA	Townsend	Sandusky		9.6	●	+	+/-
Pickerel Creek WMA	Riley, Townsend	Sandusky	2, 3, 4, 5, 8, 9	9.9	●	+/-	+/-
Wildlife Production Area 64 WMA	Jackson, Liberty	Seneca		9.9	●	+	+/-
National Natural Landmarks							
None in Study Area							
National Parks, Recreation Areas, Seashores and/or Forests							
None in Study Area							
National or State Designated Wild, Scenic, or Recreational Rivers							
Sandusky River	Ballville, Pleasant, Hopewell, Clinton, Seneca	Sandusky, Seneca	36, 73	3.1	●	+/-	+/-
Sites, Areas, Lakes, Reservoirs or Highways Designated or Eligible as Scenic							
None in Study Area							
State and Federally Designated Trails							
Buckeye Trail	Washington, Sandusky, Ballville, Pleasant, Adams, Thompson, Sherman, Peru, Reed, Norwich, Greenfield	Sandusky, Huron, Seneca	36, 54	0.2	●	+/-	+/-
North Coast Inland Trail	Sandusky, Ballville, Green Creek, York, Lyne, Ridgefield	Sandusky, Huron	29, 31	1.3	●	+/-	+/-
State Nature and Historic Preserve Areas							
None in Study Area							
State Historic Markers							
5-39 Henry Morrison Flagler (1830-1913)	York, Lyne	Sandusky, Huron		1.6	●	+	-

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5-72 Bishop John Seybert	York	Sandusky		1.9	●	+	-
7-72 Seneca Indian Reservation at Green Springs	Green Creek	Sandusky		3.1	●	+	-
9-721 General James Birdseye McPherson	Green Creek	Sandusky	69	4.5	•	+	-
2-74 Fort Seneca	Clinton	Seneca		5.4	•	+	-
8-74 Camp Noble	Clinton	Seneca		8.2	•	+	-
10-74 State's First Female Lawyer	Clinton	Seneca		8.7	•	+	-
8-72 Spiegel Grove	Sandusky, Ballville	Sandusky		9.0	•	+	-
1-72 Fort Stephenson	Sandusky	Sandusky		9.1	•	+/-	-
2-72 Sandusky County Fairgrounds	Sandusky	Sandusky	60	10.0	•	+	+/-
Locally Important Resources							
Areas of Intensive Land Use (City, Village, Hamlet)							
City of Bellevue	Groton, York, Lyne, Thompson	Sandusky, Erie, Huron	96	0.6	●	+/-	+/-
Village of Green Springs	Green Creek, Adams	Sandusky, Seneca	55, 56	2.1	●	+/-	+/-
Village of Republic	Scipio	Seneca	80, 81	2.3	●	+/-	+/-
City of Clyde	Green Creek, York	Sandusky	67, 68, 69, 70	3.0	●	+/-	+/-
Village of Bloomville	Bloom	Seneca	84	5.8	•	+/-	+/-
Village of Attica	Venice	Seneca	87	5.9	•	+/-	+/-
City of Tiffin	Hopewell, Clinton	Seneca	74, 75, 76	6.5	•	+/-	+/-
Village of Monroeville	Ridgefield	Huron		6.8	•	+/-	+/-
City of Fremont	Sandusky, Ballville	Sandusky	24, 25, 26, 27, 28, 29, 31, 33, 34, 57, 58, 59, 60, 61, 62, 63	7.9	•	+/-	+/-
Village of Bettsville	Liberty	Seneca	39, 40	8.4	•	+/-	+/-
Village of Burgoon	Jackson	Sandusky		9.7	•	+	+/-
City of Norwalk	Ridgefield	Huron		9.8	•	+/-	+/-
Village of Castalia	Margaretta	Erie	10, 11	10.0	•	+/-	-
Transportation Corridors							
SR 18	York, Adams, Thompson, Hopewell, Clinton, Scipio	Sandusky, Seneca	77, 78	0.2	⬤	+/-	+/-
SR 19	Sandusky, Green Creek, Adams, Scipio, Bloom, Lykens	Sandusky, Seneca, Crawford	50, 54, 55, 56, 82, 84, 85	0.2	⬤	+/-	+/-
SR 269	Margaretta, Groton, Lyne, Thompson, Sherman	Sandusky, Erie, Huron, Seneca	11, 12, 89, 90	0.3	⬤	+/-	+/-
SR 101	Margaretta, Townsend, Green Creek, York, Pleasant, Adams, Clinton	Sandusky, Erie, Seneca	10, 11, 16, 51, 67, 68, 69	0.7	●	+/-	+/-
SR 162	Scipio, Reed, Norwich, Greenfield	Huron, Seneca	80, 88	0.8	●	+/-	+/-
US 20	Washington, Riley, Sandusky, Green Creek, York, Lyne, Ridgefield	Sandusky, Huron	64, 69	1.7	●	+/-	+/-
SR 4	Margaretta, Perkins, Groton, Lyne, Thompson, Sherman, Reed, Venice, Chatfield	Erie, Huron, Seneca, Crawford	87, 89	2.0	●	+/-	+/-
SR 547	Lyne, Ridgefield, Thompson, Sherman	Huron, Seneca		2.0	●	+/-	+/-
SR 113	Groton, Oxford, Lyne, Ridgefield	Erie, Huron		2.1	●	+/-	+/-
US 224	Hopewell, Clinton, Scipio, Reed, Eden, Bloom, Venice, Richmond, New Haven	Huron, Seneca	83, 87	3.8	•	+/-	+/-

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SR 510	Riley, Green Creek	Sandusky	65, 66	4.5	•	+/-	+/-
SR 53	Sandusky, Ballville, Pleasant, Hopewell, Clinton, Seneca	Sandusky, Seneca	23, 43, 57, 60, 75	5.1	•	+/-	+/-
I 80	Washington, Riley, Townsend, Sandusky, Groton, Oxford	Sandusky, Erie	16, 17, 19, 20	6.3	•	+/-	+/-
SR 99	Groton, Oxford, Ridgefield, Peru, Greenfield, New Haven	Erie, Huron		6.8	•	+/-	+/-
SR 12	Jackson, Ballville, Liberty	Sandusky, Seneca	37, 38, 39, 40	7.3	•	+/-	+/-
SR 412	Riley, Townsend, Sandusky	Sandusky	14, 15, 18, 21	7.5	•	+/-	+/-
US 20 Bus	Sandusky, Ballville, Green Creek	Sandusky	62	7.9	•	+/-	+/-
SR 100	Clinton, Eden, Lykens	Seneca, Crawford		8.2	•	+/-	+/-
SR 590	Washington, Jackson, Liberty	Sandusky, Seneca	39	8.8	•	+/-	+/-
US 6	Margaretta, Washington, Riley, Townsend, Sandusky, Jackson, Ballville	Sandusky, Erie	2, 3, 4, 8, 9, 22	9.9	•	+/-	+/-
Recreation Resources							
Local Parks and Playgrounds							
Seneca County Park District Conservation Easement	Pleasant	Seneca		3.6	•	+/-	-
Sandusky Abbotts Bridge Scenic River Access	Pleasant	Seneca	44	4.0	•	+/-	+/-
Cherry Street Park	Green Creek	Sandusky		4.3	•	+	-
Clyde Community Park	Green Creek	Sandusky	70	4.4	•	+/-	+/-
Paden Park	Green Creek	Sandusky		4.5	•	+/-	-
Gus Wolf Park	Green Creek	Sandusky		4.7	•	+/-	-
Wickwire-Shade Preserve	Reed	Seneca		5.3	•	+/-	+/-
Sandusky Wolf Creek Scenic River Access	Ballville	Sandusky	36	5.8	•	+/-	-
Sandusky Izaak Walton Scenic River Access	Clinton	Seneca	73	6.1	•	+/-	-
Kimball Park	Bloom	Seneca		6.5	•	+	-
Conner Park	Ballville	Sandusky		7.2	•	+	+/-
Junior Home Park	Clinton	Seneca		7.4	•	+/-	-
Kernan Park	Clinton	Seneca		7.5	•	+/-	-
Nature Trails Park	Clinton	Seneca		7.5	•	+/-	-
Oakley Park	Clinton	Seneca		7.8	•	+	-
East Side Park	Ballville	Sandusky	28, 29	8.0	•	+/-	+/-
Robert L Walsh Memorial Park	Ballville	Sandusky	31	8.2	•	+/-	+/-
Roger Young Memorial Park	Ballville	Sandusky	33	8.3	•	+/-	-
Hedges-Boyer Park	Clinton	Seneca		8.3	•	+/-	-
Apple-Jack Park	Clinton	Seneca	76	8.4	•	+	-
Hedges Park	Clinton	Seneca		8.6	•	+/-	-
Ells Park	Liberty	Seneca		8.7	•	+/-	-
Swartzlander-Rotary Park	Sandusky, Ballville	Sandusky		8.8	•	+/-	-
Castalia Quarry Reserve	Margaretta	Erie	13	9.0	•	+/-	+/-

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Richard D. Maier Park	Sandusky	Sandusky		9.1	•	+	-
Tschumy Corner	Sandusky	Sandusky		9.2	•	+	-
Birchard Park	Sandusky	Sandusky		9.2	•	+	-
Legion Park	Clinton	Seneca		9.3	•	+	-
Darr-Root Fishing Access	Sandusky	Sandusky		9.5	•	+/-	-
Beechwood Park	Hopewell	Seneca		9.5	•	+	-
Blue Heron Reserve	Riley, Townsend	Sandusky	2, 4, 6, 7	9.7	•	+/-	+/-
Countryside Park	Sandusky	Sandusky	24, 25	9.8	•	+	+/-
County Fairgrounds	Hopewell	Seneca		9.8	•	+	-
Riverview Park	Hopewell	Seneca		10.0	•	+	-
Trails and Bike Routes							
Highway 30A Bike Route	Margaretta, Riley, Townsend, Sandusky, Groton	Sandusky, Erie	14, 15, 18, 21	7.5	•	+/-	+/-
Water Resources							
Pickerel Creek	Riley, Townsend, York	Sandusky		0.1	●	+/-	+/-
Morrison Creek	Clinton, Scipio, Reed	Seneca		0.1	●	+/-	+/-
Indian Creek	Ballville, Pleasant	Sandusky, Seneca		0.4	●	+/-	+/-
Sugar Creek	Pleasant, Adams, Scipio	Seneca		0.5	●	+/-	+/-
Owl Creek	Adams	Seneca		0.5	●	+/-	+/-
Raccoon Creek	Riley, Green Creek, York, Thompson	Sandusky, Seneca		0.8	●	+/-	+/-
Albright Ditch	Adams, Thompson	Seneca		0.9	●	+/-	+/-
Emerson Creek	Adams, Thompson	Seneca		0.9	●	+/-	+/-
Beaver Creek	Pleasant, Adams	Seneca	54	1.0	●	+/-	+/-
Megginsett Creek	Lyne, Thompson, Sherman	Huron, Seneca		1.2	●	+/-	+/-
Green Creek	Riley, Ballville, Green Creek, Pleasant	Sandusky, Seneca		1.3	●	+/-	+/-
Bellevue Reservoir Number Four	Lyne	Huron		1.5	●	+	+/-
Frink Run	Lyne, Ridgefield, Thompson, Sherman, Peru, Reed	Huron, Seneca		1.5	●	+/-	+/-
Bellevue Upground Reservoir Number One	Lyne	Huron		1.7	●	+	+/-
Spicer Creek	Pleasant, Clinton, Scipio	Seneca		1.8	●	+/-	+/-
Bellevue Upground Reservoir Number Three	Lyne	Huron		1.8	●	+	+
Beaver Creek Upground Reservoir	Adams	Seneca	52, 53	2.3	●	+	+/-
Rock Creek	Clinton, Scipio, Eden	Seneca		2.7	●	+/-	+/-
East Branch Rock Creek	Scipio, Eden, Bloom	Seneca		3.1	●	+/-	+/-
Sandusky River	Riley, Sandusky, Ballville, Pleasant, Hopewell, Clinton, Seneca, Eden	Sandusky, Seneca	34, 36	3.1	●	+/-	+/-
Bark Creek	Riley, Sandusky, Ballville, Pleasant	Sandusky, Seneca	25	3.2	●	+/-	+/-
Flag Run	Green Creek	Sandusky		3.7	•	+/-	+/-
Bellevue Reservoir	Lyne, Sherman	Huron		3.9	•	+/-	+/-
Raccoon Creek Upground Reservoir	Green Creek	Sandusky		3.9	•	+	+/-

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Honey Creek	Hopewell, Clinton, Eden, Bloom, Venice, Richmond	Huron, Seneca, Crawford		4.1	●	+/-	+/-
South Creek	Riley, Green Creek	Sandusky		4.1	●	+/-	+/-
Fuller Creek	Riley, Townsend, York	Sandusky		4.2	●	+/-	+/-
Seymour Creek	Lyne, Ridgefield	Huron		4.4	●	+/-	+/-
Strong Creek	Riley, Townsend, York	Sandusky		4.5	●	+/-	+/-
Ferguson Ditch	Sandusky, Ballville	Sandusky	30	4.5	●	+/-	+/-
Willow Creek	Clinton, Scipio	Seneca		4.9	●	+/-	+/-
Mills Creek	Margaretta, Perkins, Groton	Erie		5.4	●	+/-	+/-
Little Raccoon Creek	Riley, Green Creek	Sandusky	18, 65	5.4	●	+/-	+/-
East Branch Wolf Creek	Ballville, Liberty, Pleasant, Hopewell, Seneca	Sandusky, Seneca		5.5	●	+/-	+/-
Snuff Creek	Liberty, Hopewell	Seneca		6.6	●	+/-	+/-
Wolf Creek	Jackson, Ballville, Liberty	Sandusky, Seneca		6.7	●	+/-	+/-
Pipe Creek	Perkins, Groton, Oxford	Erie		6.8	●	+/-	+/-
Huron River	Oxford, Ridgefield, Peru, Greenfield, New Haven	Erie, Huron		7.6	●	+/-	+/-
Silver Creek	Eden, Bloom, Chatfield	Seneca, Crawford		8.0	●	+/-	+/-
East Branch East Branch Wolf Creek	Hopewell, Seneca	Seneca		8.2	●	+/-	+/-
Gibson Creek	Clinton	Seneca		9.1	●	+/-	+/-
Bass Lake	Norwich, Greenfield	Huron		9.3	●	+/-	-
Muskellange Creek	Washington, Sandusky, Jackson	Sandusky, Seneca		9.4	●	+/-	+/-
East Branch Huron River	Ridgefield, Peru	Erie, Huron		9.5	●	+/-	+/-
Middle Branch Wolf Creek	Hopewell, Seneca	Seneca		9.8	●	+/-	+/-
Brokenknife Creek	Venice, Richmond, Chatfield	Huron, Seneca, Crawford		9.9	●	+/-	+/-
Golf Courses							
Twin Lake Golf Course	York	Sandusky		1.0	●	+	+/-
Green HIlls Golf Course	Green Creek	Sandusky		3.0	●	+/-	+/-
Sleepy Hollow Golf Course	Townsend, York	Sandusky		4.8	●	+/-	+/-
Clinton Heights Golf Course	Clinton	Seneca		5.5	●	+/-	+/-
River Cliff Golf Course	Ballville	Sandusky	32	8.1	●	+/-	-
Fremont Country Club	Sandusky, Ballville	Sandusky		8.1	●	+/-	+/-
Nature Trails Golf Course	Liberty	Seneca		9.4	●	+/-	+/-
Woussickett Golf Course	Perkins, Oxford	Erie		9.5	●	+/-	+/-
Mohawk Golf Club	Eden	Seneca		10.5	●	+/-	-
Sycamore Hills Golf Course	Washington, Sandusky, Ballville	Sandusky		10.5	●	+/-	+/-
Schools and Colleges							
Bellevue High School	York	Sandusky		2.3	●	+	+/-
Bellevue Middle School	Lyne	Huron		2.6	●	+	+/-
Green Springs Elementary School	Green Creek	Sandusky		3.1	●	+	+/-
Bellevue Elementary School	Groton	Erie		3.2	●	+	+/-
McPherson Middle School	Green Creek	Sandusky		3.5	●	+	+/-
Clyde Elementary School	Green Creek	Sandusky	68	4.1	●	+	-
Clyde High School	Green Creek	Sandusky		4.4	●	+	+/-

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Monroe Jr./Sr. High School	Ridgefield	Huron		7.4	•	+/-	+/-
Monroe Elementary School	Ridgefield	Huron		7.4	•	+/-	-
Lincoln Elementary School	Clinton	Seneca		7.9	•	+	-
Heidelberg University	Clinton	Seneca		8.1	•	+/-	+/-
Noble Elementary School	Clinton	Seneca		8.1	•	+	-
Atkinson Elementary School	Ballville	Sandusky	27	8.3	•	+	-
Sacred Heart Elementary School	Ballville	Sandusky		8.3	•	+	-
Lutz Elementary School	Ballville	Sandusky		8.6	•	+	-
Calvert High School	Clinton	Seneca		8.7	•	+	-
Tiffin University	Hopewell, Clinton	Seneca		8.7	•	+/-	+/-
Croghan Elementary School	Sandusky	Sandusky	26	8.9	•	+	-
Hayes Elementary School	Sandusky, Ballville	Sandusky		8.9	•	+	-
Columbian High School	Clinton	Seneca		9.0	•	+/-	-
Sentinel Vocational Center	Clinton	Seneca		9.0	•	+	+/-
Washington Elementary School	Hopewell	Seneca		9.2	•	+	-
St Joseph Central Catholic High School	Sandusky	Sandusky		9.2	•	+	-
St Joseph Elementary School	Sandusky	Sandusky		9.2	•	+	-
Krout Elementary School	Clinton	Seneca		9.2	•	+/-	-
Clinton Middle School	Clinton	Seneca		9.3	•	+/-	-
St Ann School	Sandusky	Sandusky		9.5	•	+	-
Stamm Elementary School	Sandusky	Sandusky	61	9.9	•	+	-
Otis Elementary School	Sandusky	Sandusky		10.2	•	+	-
Libraries							
Bellevue Publc Library	Lyne	Huron		1.8	●	+	+/-
Green Springs Memorial Library	Green Creek	Sandusky		2.9	●	+	-
Clyde Public Library	Green Creek	Sandusky		4.5	•	+	-
Seneca East Public Library	Venice	Seneca		6.3	•	+	-
Bliss Memorial Public Library	Bloom	Seneca	84	6.5	•	+	-
Monroeville Public Library	Ridgefield	Huron		7.8	•	+	-
Tiffin-Seneca Public Library	Clinton	Seneca		8.6	•	+	-
Bettsville Public Library	Liberty	Seneca	40	8.9	•	+	-
Birchard Public Library	Sandusky	Sandusky		9.1	•	+/-	-
Airports							
Sandusky County Regional Airport	Green Creek	Sandusky		5.1	•	+	+/-
Fremont Airport	Ballville	Sandusky		9.0	•	+/-	+/-
Seneca County Airport	Hopewell	Seneca		10.5	•	+/-	+/-
Hospitals							

Visually Sensitive Resource	Location: Town	Location: County	Location: VP Number[1]	Distance[2]: Miles from Nearest Turbine	Distance Zone: ● Foreground ● Midground ● Background	Project Visibility: + Visible - Not Visible +/- Partially Visible: DTM (Topography)	Project Visibility: DSM (Topography, Vegetation & Structures)
Bellevue Hospital	York	Sandusky		1.8	●	+	+/-
Memorial Hospital	Ballville	Sandusky		8.9	•	+	-
Cemeteries							
Bunker Hill Cemetery	Pleasant	Seneca		0.4	●	+	+/-
Thompson Cemetery	Thompson	Seneca		0.6	●	+	+/-
Fireside Cemetery	Thompson	Seneca		0.6	●	+	+/-
Coffman Cemetery	Adams	Seneca		0.8	●	+	+/-
Clay-Grosocost Cemetery	Scipio	Seneca		0.8	●	+	+/-
Reformed Church Cemetery (1)	Scipio	Seneca		1.0	●	+	+/-
Assumption Cemetery	Reed	Seneca		1.0	●	+	+/-
Gilbert Cemetery	York	Sandusky		1.0	●	+	+/-
York Free Chapel Cemetery	York	Sandusky		1.0	●	+	+/-
Lowell Cemetery	Adams	Seneca		1.1	●	+	+/-
Flat Rock Cemetery	Thompson	Seneca		1.1	●	+	+/-
Gerhardstein-Golden Hill Cemetery	York	Sandusky		1.2	●	+	+/-
Bellevue Cemetery	Lyne	Huron		1.2	●	+/-	+/-
Block Cemetery	Adams	Seneca		1.3	●	+	+/-
Armstrong Cemetery	Reed	Seneca		1.3	●	+	+/-
Adams Lutheran-Zion Lutheran Cemetery	Adams	Seneca		1.4	●	+	+/-
Saint Jacobs Cemetery	Adams	Seneca		1.5	●	+	+/-
Saint Paul United Church of Christ Cemetery	York	Sandusky		1.5	●	+	+/-
Underhill Cemetery	Thompson	Seneca		1.7	●	+	+
Saint Pauls Cemetery	Lyne	Huron		1.8	●	+	+/-
Payne Cemetery	Adams	Seneca		1.8	●	+	+
Union Cemetery	Adams	Seneca		2.1	●	+	+/-
McKeen-Watson Cemetery	Pleasant	Seneca		2.4	●	+	-
Saint Michaels Cemetery	Thompson	Seneca	92	2.5	●	+	+/-
Sparrow Farm Cemetery	Lyne	Huron		2.7	●	+	+
Green Springs Cemetery	Green Creek	Sandusky		2.8	●	+	+/-
Birdseye Cemetery	York	Sandusky		2.9	●	+	+/-
Farewell Retreat Cemetery	Scipio	Seneca		2.9	●	+	+/-
Raymond Cemetery	Adams	Seneca		3.2	●	+	+/-
Egbert-Pleasant Ridge Cemetery	Pleasant, Clinton	Seneca		3.2	●	+	+/-
Tuttle Cemetery	Green Creek	Sandusky		3.4	●	+	-
Wales Corners Cemetery	York	Sandusky		3.5	●	+	+/-
Omar Cemetery	Reed	Seneca		3.5	●	+	+/-
Scipio Township Cemetery	Scipio	Seneca		3.6	•	+	+/-
Trinity Episcopal Cemetery	Lyne	Huron		3.7	•	+	+/-
Meyer-Zimmerman Cemetery	Reed	Seneca		3.7	•	+	+
Pleasant Union Cemetery	Pleasant	Seneca		3.8	•	+/-	+/-
Claggett Cemetery	Pleasant	Seneca		3.8	•	+	-
Colwell Cemetery	Green Creek	Sandusky		3.8	•	+	-

Visually Sensitive Resource	Location			Distance[2]	Distance Zone	Project Visibility +Visible - Not Visible +/- Partially Visible	
	Town	County	VP Number[1]	Miles from Nearest Turbine	● Foreground ● Midground ● Background	DTM (Topography)	DSM (Topography, Vegetation & Structures)
Lay Cemetery	Green Creek, Adams	Sandusky, Seneca		3.8	•	+	+/-
Jones-Sherman Farm Cemetery	Sherman	Huron		3.8	•	+	+/-
Strongs Ridge-Lymes Grange Cemetery	Lyne	Huron		4.1	•	+	+/-
Ames Cemetery	York	Sandusky		4.1	•	+	+
McPherson Cemetery	Green Creek	Sandusky	69	4.3	•	+/-	+/-
Ellsworth Cemetery	York	Sandusky		4.5	•	+	+/-
Decker Cemetery	Ballville	Sandusky		4.6	•	+	+/-
Kleinoeder Family Cemetery	York	Sandusky		4.6	•	+	+
Seneca John Monument Cemetery	Green Creek	Sandusky		4.6	•	+	-
Saint Marys Catholic Cemetery	Green Creek	Sandusky		4.7	•	+	-
Avery-Wickwire Cemetery	York	Sandusky		4.8	•	+	+/-
Saint Sebastian Catholic Cemetery	Sherman	Huron		5.0	•	+	+/-
Clinton Heights Golf Course Cemetery	Clinton	Seneca		5.1	•	+	+/-
Heyman-Hunts Corners-Sutton Cemetery	Lyne	Huron		5.1	•	+	+/-
Dunkard Cemetery	Bloom	Seneca		5.1	•	+	+/-
Bloomville Cemetery	Bloom	Seneca		5.4	•	+	-
Bakertown Cemetery	Green Creek	Sandusky		5.5	•	+	+/-
Lyme Cemetery	Lyne, Ridgefield	Huron		5.6	•	+	+
McGormley Cemetery	Ballville	Sandusky		5.8	•	+	+/-
Boughton Cemetery	Norwich	Huron		5.9	•	+	+/-
Hill Cemetery	Ballville	Sandusky		5.9	•	+	-
Reformed Church Cemetery (2)	Bloom	Seneca		6.2	•	+/-	+/-
Saint Peter and Paul Cemetery	Venice	Seneca		6.4	•	+	+/-
Parkhurst Cemetery	Townsend	Sandusky		6.4	•	+	+/-
Deyo Cemetery	Groton	Erie		6.5	•	+/-	+/-
Wurts Cemetery	Norwich	Huron		6.5	•	+	+
Woodlawn Cemetery	Bloom	Seneca		6.6	•	+/-	+/-
Fravel Cemetery	Pleasant	Seneca		6.6	•	+	+/-
Mount Lebanon Cemetery	Ballville	Sandusky		6.7	•	+	+
North Monroeville Cemetery	Ridgefield	Huron		6.7	•	+	-
Caroline Lutheran Cemetery	Venice	Seneca		6.8	•	+	-
Mennonite Cemetery	Bloom	Seneca		6.9	•	+	+/-
Greenlawn Memory Gardens	Green Creek	Sandusky		6.9	•	+	+/-
East Caroline Reformed Cemetery	Venice	Seneca		6.9	•	+	-
Fuller Cemetery	Townsend	Sandusky		6.9	•	+	-
Pontiac-Saint Peters Lutheran Cemetery	Peru	Huron		6.9	•	+	+/-
Shiloh Cemetery	Liberty	Seneca		7.0	•	+	-
Littlefield Farm Cemetery	Ridgefield	Huron		7.0	•	+	-
Unidentified Cemetery #1	Venice	Seneca		7.1	•	+	+/-
Wilson Cemetery	Peru	Huron		7.1	•	+	-
Hite-Wolf Creek-Hite Town Cemetery	Jackson	Sandusky		7.2	•	+	-

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Saint Marys Cemetery (2)	Clinton	Seneca		7.4	•	+	+/-
Halters Cemetery	Ballville	Sandusky		7.4	•	+	-
Tew Cemetery	Townsend	Sandusky		7.5	•	+/-	+/-
Old Saint Joseph Catholic Cemetery	Ridgefield	Huron		7.6	•	+	-
Fairmont Cemetery	Clinton	Seneca		7.6	•	+	+/-
Dana Cemetery Sandusky	Green Creek	Sandusky		7.6	•	+	-
Riley Cemetery	Riley	Sandusky		7.6	•	+	+
Saint Stephens Cemetery	Bloom	Seneca		7.8	•	+	-
State Hospital Cemetery	Clinton	Seneca		7.8	•	+	-
Rock Creek Cemetery (2)	Eden	Seneca		8.0	•	+/-	-
Crissa Cemetery	Liberty	Seneca		8.0	•	+	-
Riverside Cemetery	Ridgefield	Huron		8.0	•	+/-	-
Beeler Cemetery	Riley	Sandusky		8.1	•	+	+/-
Saint Joseph Cemetery	Ridgefield	Huron		8.1	•	+	-
Bloom Township Cemetery	Bloom	Seneca		8.1	•	+	-
St. Joseph's Cemetery	Ballville	Sandusky		8.3	•	+/-	-
Our Lady of the Pines Cemetery	Ballville	Sandusky		8.3	•	+	-
Graves Cemetery	Margaretta	Erie		8.3	•	+/-	-
Oakwood Cemetery	Ballville	Sandusky		8.3	•	+/-	-
Greenlawn Cemetery	Clinton	Seneca		8.3	•	+/-	+/-
Higley Farm Cemetery	Richmond	Huron		8.4	•	+	+
Smith Cemetery (2)	Venice	Seneca		8.5	•	+	+
Rock Creek Cemetery (1)	Eden	Seneca		8.8	•	+/-	+/-
Whittlesey Cemetery	Ballville	Sandusky		8.8	•	+	-
Liberty Township-Bettsville Cemetery	Liberty	Seneca		8.9	•	+	-
Hayes Cemetery	Ballville	Sandusky		9.0	•	+	-
Lower Sandusky First-Old French Cemetery	Sandusky	Sandusky		9.0	•	+	-
Centerton Cemetery	Norwich	Huron		9.0	•	+/-	-
Feaselburg Cemetery	Liberty	Seneca		9.0	•	+	+
Sandhill Cemetery	Margaretta	Erie		9.1	•	+/-	+/-
Bethel-Richmond Township Cemetery	Richmond	Huron		9.1	•	+	+/-
British Graves Site 1	Sandusky	Sandusky		9.1	•	+	-
Major George Croghan Cemetery	Sandusky	Sandusky		9.1	•	+	-
Page Farm Cemetery	Ridgefield	Huron		9.2	•	+	+
British Graves Site 2	Sandusky	Sandusky		9.2	•	+	-
Pleasant View-Primitive Baptist Cemetery	Bloom	Seneca		9.2	•	+	+/-
Schook-Weiker Cemetery	Riley	Sandusky		9.4	•	+/-	+/-
Vantine Cemetery	Peru	Huron		9.4	•	+	-

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Saint Francis Cemetery	Clinton	Seneca		9.4	•	+	-
Pipe Creek Cemetery	Oxford	Erie		9.4	•	+	-
Peru Center-School House Cemetery	Peru	Huron		9.4	•	+	+/-
Saint Josephs Cemetery	Clinton	Seneca		9.6	•	+	-
Adams Farm Cemetery	Peru	Huron		9.8	•	+/-	+/-
Webb Cemetery	Ridgefield	Huron		9.8	•	+	-
Daniels-McCreery Farm-Tuttle-Minier Cemetery	Riley	Sandusky		9.8	•	+	-
Ludwig Cemetery	Jackson	Sandusky		9.8	•	+	+/-
Contreras Cemetery	Riley	Sandusky		9.8	•	+	+
Saint Marys Cemetery (1)	Jackson	Sandusky		9.8	•	+/-	+/-
County Home Cemetery	Sandusky	Sandusky		9.8	•	+	+/-
Burgan Cemetery	Riley	Sandusky		9.8	•	+	+
County Home Cemetery	Eden	Seneca		10.0	•	+	+/-
Randall Cemetery	Eden	Seneca		10.1	•	+/-	-
Hopewell Cemetery	Hopewell	Seneca		10.1	•	+	+/-
West Farm Burying Ground-Old Alonzo West Cemetery	Peru	Huron		10.3	•	+	-
White Chapel Cemetery	Eden	Seneca		10.6	•	+	-
Smith Cemetery (1)	Jackson	Sandusky		10.7	•	+	+/-
Creeger Cemetery	Hopewell	Seneca		11.0	•	+	-
Null Cemetery	Liberty	Seneca		11.1	•	+	+/-
Liberty Cemetery	Liberty	Seneca		11.3	•	+	+/-
Kansas Cemetery	Liberty	Seneca		11.3	•	+	+/-
Saint Andrews Cemetery	Liberty	Seneca		11.5	•	+	+/-

[1] If no viewpoint (VP) number is indicated, no photo was obtained during fieldwork.

[2] For large areas and linear sites, approximate distance to the nearest turbine was measured from the respective area's closest point.

Appendix C

Photo Log

Viewpoint 1

View from Resthaven Wildlife Area - Parking Area

looking South/Southwest

Township of Townsend

Viewpoint 2

View from Pickeral Creek Wildlife Area - Main Entrance

looking South/Southwest

Township of Riley

Viewpoint 3

View from Pickeral Creek - Water Access

looking South

Township of Riley

Viewpoint 4

View from Blue Heron Reserve Gateway Sign - Not in Direction of Project

looking West

Township of Riley

Viewpoint 5

View from Pickeral Creek Wildlife Area, Donald Thompson Wetland - Viewing Platform

looking South/Southeast

Township of Townsend

Viewpoint 6

View from Blue Heron Reserve Nature Trails - Parking Area

looking South

Township of Riley

Viewpoint 7

View from Blue Heron Reserve Nature Trails - Boardwalk

looking South/Southeast

Township of Riley

Viewpoint 8

View from Pickeral Creek Wildlife Area - Parking, West

looking South

Township of Townsend

Viewpoint 9

View from Pickeral Creek Wildlife Area - Parking East

looking South/Southwest

Township of Townsend

Viewpoint 10

View from Village of Castalia, SR 269 at Cold Creek Crossing

looking Southwest

Township of Margaretta

Viewpoint 11

View from Village of Castalia, Intersection of SR 269 and SR 101 - Not in Direction of Project

looking East

Township of Margaretta

Viewpoint 12

View from SR 269 South of Village of Castalia

looking Southwest

Township of Margaretta

Viewpoint 13

View from Castalia Quarry Reserve - Loop Trail

looking Southwest

Township of Margaretta

Viewpoint 14

View from SR 412 - Scherz Ditch

looking South/Southeast

Township of Townsend

Viewpoint 15

View from SR 412 - East of SR 302

looking South

Township of Townsend

Viewpoint 16

View from SR 101 at I80 and I90 Overpass

looking South/Southwest

Township of Townsend

Viewpoint 17

View from SR 268/Vickery Rd at I80 and I90 Overpass

looking South/Southwest

Township of Townsend

Viewpoint 18

View from SR 412 at Little Raccoon Creek

looking Southwest

Township of Riley

Viewpoint 19

View from SR 238/Gibbs Road at I80 and I90 Overpass

looking South

Township of Riley

Viewpoint 20

View from SR 222/Shiets Road at I80 and I90 Overpass

looking South

Township of Riley

Viewpoint 21

View from SR 412 at North Shock Road

looking South/Southwest

Township of Riley

Viewpoint 22

View from US 6 and NO CO Rd 198

looking South/Southwest

Township of Riley

Viewpoint 23

View from SR 53 - North of Fremont

looking South/Southeast

Township of Sandusky

Viewpoint 24

View from Countryside Park - Trail Network

looking East

Township of Sandusky

Viewpoint 25

View from Countryside Park - Gazebo

looking East

Township of Sandusky

Viewpoint 26

View from Croghan Elementary School - Parking Lot

looking East

Township of Sandusky

Viewpoint 27

View from Atkinson Elementary School - Recreational Area

looking South/Southeast

Township of Ballville

Viewpoint 28

View from Fremont Community Recreation Complex

looking South

Township of Ballville

Viewpoint 29

View from Biggs-Kettner Memorial East Side Park/ North Coast Inland Trail

looking Southeast

Township of Ballville

Viewpoint 30

View from SR 221 at Ferguson Ditch

looking Southeast

Township of Ballville

Viewpoint 31

View from Robert L. Walsh Memorial Park, Entrance to North Coast Inland Trail

looking South/Southeast

Township of Ballville

Viewpoint 32

View from River Cliff Golf Course - Parking Lot Side Club House

looking South/Southeast

Township of Ballville

Viewpoint 33

View from Roger Young Memorial Park - Base Ball/ Soft Ball Parking Area

looking South/Southeast

Township of Ballville

Viewpoint 34

View from Roger Young Memorial Park, Rotary Way, Entrance to North Coast Inland Trail

looking South/Southeast

Township of Ballville

Viewpoint 35

View from SR 209 at Sandusky Scenic River Access

looking South/Southeast

Township of Ballville

Viewpoint 36

View from Sandusky Scenic River Access at Wolf Creek Park

looking Southeast

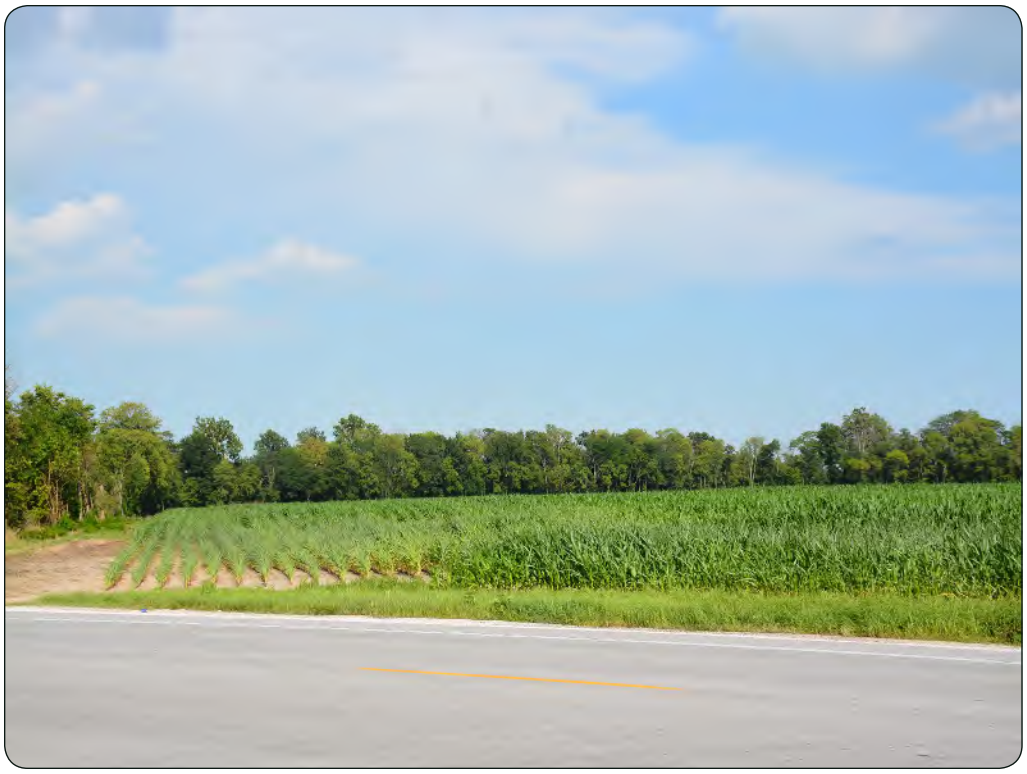
Township of Ballville

Viewpoint 37

View from SR 12/State Street at Intersection with Township Line Road

looking Southeast

Township of Ballville



Viewpoint 38

View from SR 12/State Street at Intersection with Seneca County Line Road

looking East/Southeast

Township of Liberty

Viewpoint 39

View from Bettsville Center at Intersection of SR 12/State Street and Union Street

looking East

Township of Liberty

Viewpoint 40

View from Front Sidewalk at Bettsville Public Library

looking Northeast

Township of Liberty

Viewpoint 41

View from Ells Park - Parking Area

looking East/Southeast

Township of Liberty

Viewpoint 42

View from View of Industrial Facility on West County Road 30 - No Sim

looking East/Southeast

Township of Liberty

Viewpoint 43

View from SR 53 at Fort Seneca Historic Marker

looking East/Southeast

Township of Pleasant

Viewpoint 44

View from Abbotts Bridge Scenic River Access/Steyer Nature Preserve

looking East

Township of Pleasant

Viewpoint 45

View from Steyer Nature Preserve - Parking Area off SR 148

looking North/Northeast

Township of Pleasant

Viewpoint 46

View from Sugar Creek Wildlife Area - Parking Area off SR 148

looking East

Township of Pleasant

Viewpoint 47

View from Knobbys Praire Wildlife Area - Parking Area off SR 15

looking East

Township of Pleasant

Viewpoint 48

View from E County Rd 44 at POI Sub Station

looking North Northwest

Township of Pleasant

Viewpoint 49

View from CR 44 East of SR 75

looking East Northeast

Township of Pleasant

Viewpoint 50

View from SR 19 West of SR 32

looking South/Southwest

Township of Adams

Viewpoint 51

View from SR 101 at Trail 0175

looking South/Southeast

Township of Adams

Viewpoint 52

View from Beaver Creek Upground Resevoir - Main Parking Area

looking South/Southwest

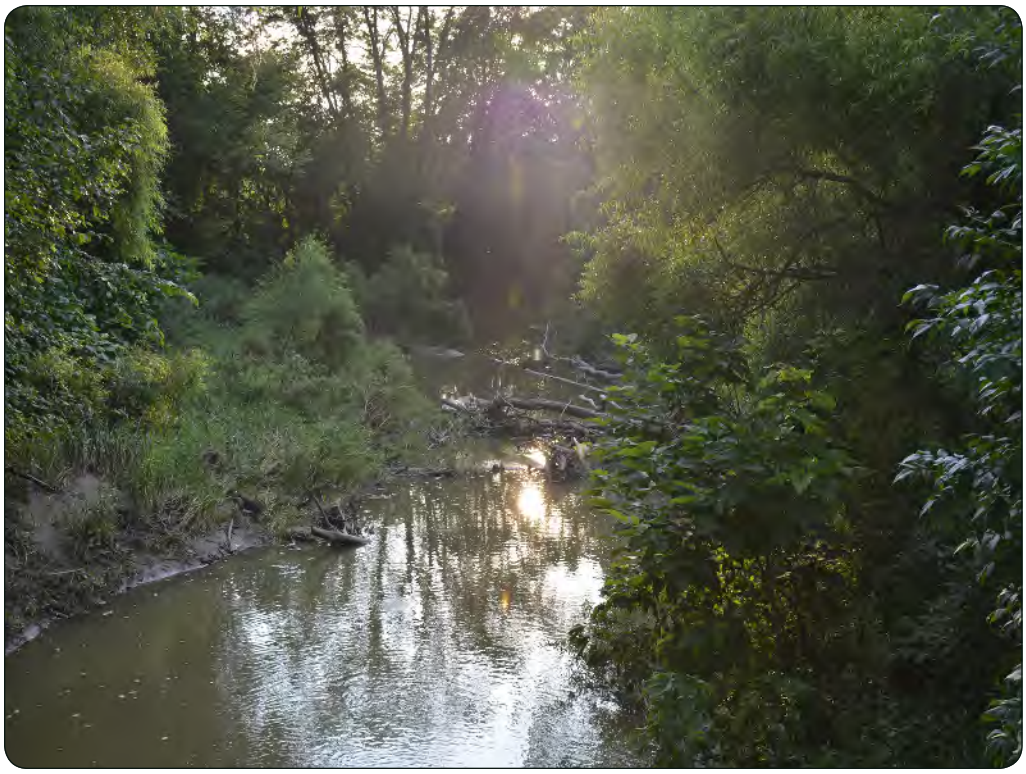
Township of Adams

Viewpoint 53

View from Beaver Creek Upground Resevoir - North Parking Area

looking South/Southwest

Township of Adams



Viewpoint 54

View from Beaver Creek from SR 19

looking Southeast

Township of Adams

Viewpoint 55

View from Village of Green Springs at Intersection of East Adams Street and North Broadway Street

looking East

Township of Adams

Viewpoint 56

View from Green Spring Sulphur Mine Historic Marker

looking South Southeast

Township of Greek Creek

Viewpoint 57

View from SR 53 North of Fremont - No Simulation

looking South

Township of Sandusky

Viewpoint 58

View from Fremont Middle School - Parking Lot

looking South Southeast

Township of Sandusky

Viewpoint 59

View from North Street at SR 53

looking South Southeast

Township of Sandusky

Viewpoint 60

View from Sandusky County Fairgrounds - South Entrance

looking East Northeast

Township of Sandusky

Viewpoint 61

View from Stamm Elementary School/Harmon Field

looking Southeast

Township of Sandusky

Viewpoint 62

View from US 20 - Downtown Fremont

looking Southeast

Township of Sandusky

Viewpoint 63

View from Rutherford B. Hayes Presidential Library & Museums at Spiegel Grove

looking Southeast

Township of Ballville

Viewpoint 64

View from US 20, East of SR 214

looking South Southeast

Township of Greek Creek

Viewpoint 65

View from SR 510 at SR 231/ Stokes Road

looking South Southeast

Township of Riley

Viewpoint 66

View from SR 510 North of Clyde at Buck Creek

looking Southeast

Township of Greek Creek

Viewpoint 67

View from Intersection of Main Street and West Buckeye Street, Clyde

looking South

Township of Greek Creek

Viewpoint 68

View from Clyde Elementary School

looking Southeast

Township of Greek Creek

Viewpoint 69

View from Maj. Gen. James B. McPherson House

looking South/Southwest

Township of Greek Creek

Viewpoint 70

View from Clyde Community Park

looking Southeast

Township of Greek Creek

Viewpoint 71

View from Hoppes Rd of Collection Substation

looking Southeast

Township of Adams

Viewpoint 72

View from Miller Conservation Farm

looking North/Northeast

Township of Adams

Viewpoint 73

View from Clinton Nature Preserve, Sandusky Scenic River Access

looking East

Township of Clinton

Viewpoint 74

View from National Orphan's Home Junior Order United American Mechanics - No Sim

looking Northeast

Township of Clinton

Viewpoint 75

View from North Sandusky Street Historic District, Tiffin

looking Northeast

Township of Clinton

Viewpoint 76

View from Apple-Jack Park, Tiffin

looking North/Northeast

Township of Clinton

Viewpoint 77

View from SR 18/North Greenfield Road and North Township Road 15

looking East

Township of Clinton

Viewpoint 78

View from SR 18/North Greenfield Road

looking East

Township of Clinton

Viewpoint 79

View from TR 175 -West of Village of Republic

looking Northeast

Township of Scipio

Viewpoint 80

View from SR 18/East Jefferson Street - East of Village of Republic

looking East/Northeast

Township of Scipio

Viewpoint 81

View from Intersection of Center and Washington Streets - Village of Republic

looking North

Township of Scipio

Viewpoint 82

View from SR 19 at Rock Creek

looking Northeast

Township of Scipio

Viewpoint 83

View from US 224 at Intersection with SR 19

looking Northeast

Township of Bloom

Viewpoint 84

View from SR 19 - Village of Bloomville

looking North

Township of Bloom

Viewpoint 85

View from Seneca Co. Park District Equestrian Parking & Trails

looking North Northwest

Township of Bloom

Viewpoint 86

View from Garlo Heritage Nature Preserve

looking North Northeast

Township of Bloom

Viewpoint 87

View from Intersection of US 224 and SR 4 - Village of Attica

looking West Northwest

Township of Venice

Viewpoint 88

View from SR 162 West of Center Heights Road

looking Northwest

Township of Reed

Viewpoint 89

View from SR 4 at SR 269/ Huron-Seneca County Line Road

looking West

Township of Thompson

Viewpoint 90

View from SR 269/Huron-Seneca County Line Rd at Sorrowful Mother Shrine

looking West Northwest

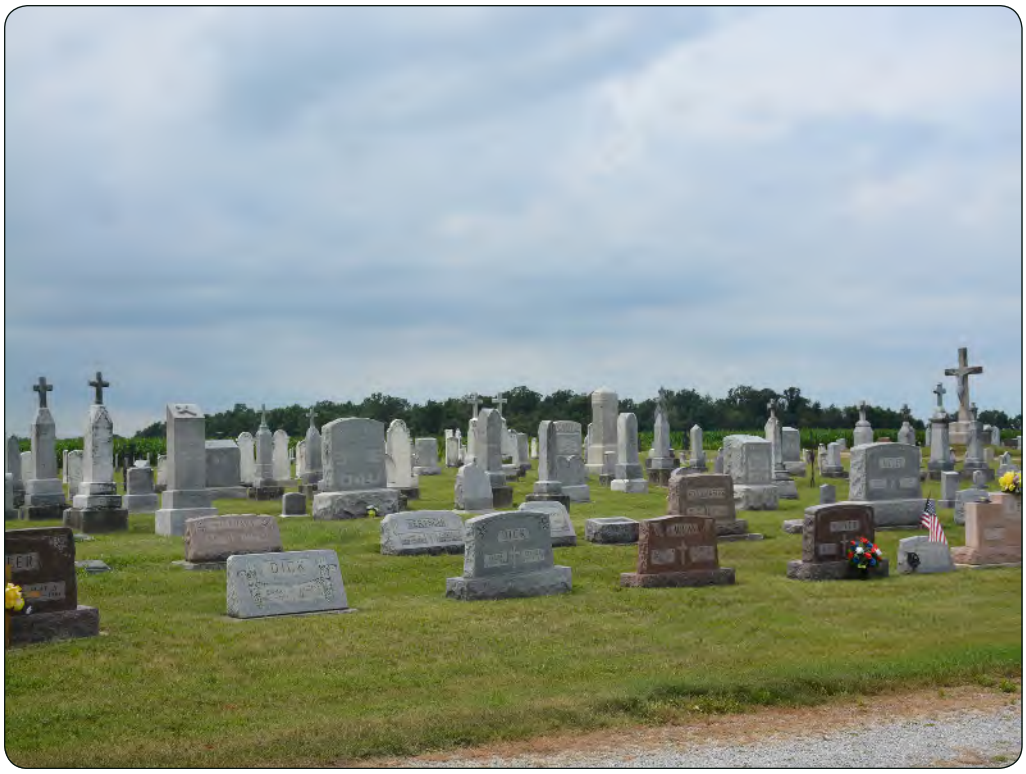
Township of Thompson

Viewpoint 91

View from SR 269/Huron-Seneca County Line Rd at SR 46

looking Northwest

Township of Thompson



Viewpoint 92

View from St. Michael's Catholic Cemetery off of SR 46

looking Northwest

Township of Thompson

Viewpoint 93

View from East Township Road 186 - Seneca County Park District Conservation Easement

looking Northwest

Township of Thompson

Viewpoint 94

View from Main Street - South of the Village of Flat Rock

looking West

Township of Thompson

Viewpoint 95

View from Intersection of East County Road 62 and CR 308/ Flat Rock Road

looking Southwest

Township of York

Viewpoint 96

View from Flat Rock Rd at Rail Road Crossing

looking Southwest

Township of York

Viewpoint 97

View from I80 and I90 - Commodore Perry Service Plaza

looking

Township of Riley

Appendix D

Visual Simulations

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

12/27/2018 9:21:08 AM

in

Case No(s). 17-2295-EL-BGN

Summary: Application Exhibit AA Part 1 of 2 electronically filed by Teresa Orahood on behalf of Dylan F. Borchers