The specifications of the Special Hauling Permit depend on the characteristics of the vehicle, its cargo, and the duration of the delivery schedule. Nacelles can weigh up to 200,000 pounds, and when combined with the transport vehicle, the total weight can exceed 380,000 pounds. If any vehicle exceeds 120,000 pounds, 14 feet wide, or 14.5 feet in height, a permit via the "super load" process is required. Table 4 presents the criteria for Special Hauling Permits as well as the approximate dimensions for the project delivery vehicles.

TABLE 4
DIMENSIONAL CRITERIA FOR SPECIAL HAULING PERMITS

Vehicle Characteristic	State Highway Limit	State Highway Limit with Special Hauling Permit	Approximate Dimension of Component to be Transported, Inclusive of Vehicle		
			Blade	Nacelle	Tower Sections
Width of vehicle, inclusive of load	8.5 Feet	None	9.0 '	11.5'	14.1'
Height of vehicle, inclusive of load	13.5 Feet	None	13.5'	15.2'	15.2'
Length of vehicle, inclusive of load and bumpers	85 Feet	None	210'	115'	135'
Total Weight of vehicle with 3 or more axels	80,000 Pounds	None	78,000 lbs	380,000 lbs	255,000 lbs

2.4 Conclusions for Secondary Roads

The purpose of this evaluation is to identify probable secondary travel routes; identify constraints for height, width, turning radii, and weight along the routes; and determine potential improvements required for delivery of major wind turbine components during the construction of the project. No height or width constraints other than overhead cables were identified, but special hauling permits will be required for many components. Special hauling permits will also be required due to the weight of the components; however, specialized transport vehicles with numerous axels will be used to distribute the weight, minimize the effects to the roadway, and comply with the special hauling permit requirements. The only identifiable improvements were the widening of intersections and sharp curves, which is a relatively simple procedure that will require authorization from the right-of-way owner (ODOT, County, or Township) and the property owner (if the improvements extend into private property).

3.0 PRELIMINARY ASSESSMENT OF TERTIARY ROADS

3.1 Visual Observation Results

The following tertiary roads were investigated on a preliminary basis, and a general summary of the results is presented next to each road. Stringtown Road, S. Mutual-Union Road, N. Mutual-Union Road, Bullard Rutan Road, N. Parkview Road, and Urbana Woodstock Pike are likely tertiary roads for the delivery of construction components to the turbine sites. These and other county roads will be further evaluated in coordination with an experienced transportation provider and/or turbine manufacturer as part of Stage 2.

1. Stringtown Road from S. Mutual-Union Road to Access Road Leading to Turbine 112
    - 19.5-foot pavement width
    - Asphalt in good condition
    - Probable turning constraints (See Figure 17)
    - 2% approximate maximum slope – possible grade issues depending on trailer overhang from axles
    - Minimum 15.5' overhead clearance
    - Speed limit 55 mph
    - Probable bridge and/or culvert load constraints

2. N. Mutual Union from US Route 36 to Access Road Leading to Turbine 106
    - 20-foot pavement width
    - Asphalt in good condition
    - Probable turning constraints (See Figure 15)
    - 2% approximate maximum slope – possible grade issues depending on trailer overhang from axles
    - Minimum 15.5' overhead clearance
    - Speed limit 55 mph
    - Probable bridge and/or culvert load constraints

3. S. Mutual-Union from US Route 36 to Stringtown Road
    - 19-foot pavement width
    - Asphalt in good condition
    - Probable turning constraints (See Figures 16 & 17)
    - 8% approximate maximum slope – possible grade issues depending on trailer overhang from axles
    - Minimum 15.5' overhead clearance
    - Speed limit 55 mph
    - Probable bridge and/or culvert load constraints

4. Bullard Rutan Road from US Route 36 to Access Road Leading to Turbine 101

   - 13-foot pavement width
   - Asphalt in good condition
   - Probable turning constraints (See Figure 12)
   - 8% approximate maximum slope – possible grade issues depending on trailer overhang from axles
   - Minimum 15.5' overhead clearance
   - Speed limit 55 mph
   - Probable bridge and/or culvert load constraints

5. N. Parkview Road from US Route 36 to Urbana Woodstock Pike

   - 24-foot pavement width
   - Asphalt in good condition
   - Probable turning constraints (See Figures 13 & 14)
   - 3% approximate maximum slope – possible grade issues depending on trailer overhang from axles
   - Minimum 15.5' overhead clearance
   - Speed limit 55 mph
   - Probable bridge and/or culvert load constraints

6. Urbana Woodstock Pike from Parkview Road to Access Road Leading to Turbine 12

   - 20-foot pavement width
   - Asphalt in good condition
   - Probable turning constraints (See Figure 14)
   - 2% approximate maximum slope – possible grade issues depending on trailer overhang from axles
   - Minimum 15.5' overhead clearance
   - Speed limit 55 mph
   - Probable bridge and/or culvert load constraints

4.0 POTENTIAL IMPACTS TO ROADWAYS

The development of a wind-powered, electric generating facility has the potential to create transportation impacts as a result of short-term construction activities. The following sections estimate the trip generation for construction vehicles during the project and outline steps for mitigating the impacts to roadways.

4.1 Construction Traffic

The project area is served by state and local roadways. To deliver the turbine components, concrete, gravel, equipment, and construction workers to each turbine site during the construction of the facility, these roads will experience increased truck traffic. The exact construction vehicles have not yet been determined, but the following provides an order-of-magnitude estimate for the trip generation for each truck type:

- Gravel trucks with capacity of approximately 10 cubic yards (CY) per truck and an estimated gross weight of 75,000 pounds (lbs), for access road construction (estimated total of 2,800 trips throughout construction).
- Concrete trucks for construction of tower foundations with capacity of approximately 8-10 CY per truck and an estimated gross weight of 75,000 lbs (estimated total of approximately 3,200 trips throughout construction).
- Flatbed trucks (multiple axels to distribute loads) for transporting turbine components. These trucks can have gross weights up to 380,000 lbs; lengths (inclusive of tractor) up to 210 feet; widths up to 14.1 feet; and heights up to 15.2 feet. The estimated trips for each turbine components are as follows:

TABLE 5
ESTIMATED TRIPS FOR TURBINE COMPONENTS

Turbine Component	Assumption	Trips
Blades	1 blade per truck	171
Towers	4 to 6 tower sections per turbine	285
Nacelle and Hub	7 truck trips per tower (3 oversized trucks and 4 standard trucks)	399

- Pickup trucks for equipment and tools.
- Trucks and cars for transporting construction workers.

A final delivery route has not yet been finalized, but it is likely that delivery of turbine components to the Project Area will be from the southeast by way of Interstate-70 to State

Route 56 or from the northeast by way of US Route 33 to US Route 36, State Route 4, and State Route 161. Starting from the west side of Columbus, the travel distance to the center of the Project Area is approximately 40 miles via I-70 and SR-56 and 44 miles via US-33 and US-36. However, SR-56 has more sharp curves and intersections than US-36. Within the Project Area, State Route 29, State Route 56, US Route 36, State Route 4, and State Route 161 along with Perry Road, Urbana Woodstock Pike, Ludlow Road, Stringtown Road, S. Mutual Union Road, N. Mutual Union Road, Bullard Rutan Road, and Parkview Road (county roads) and new gravel access roads will likely be used to deliver components to each turbine site. Once finalized, the transportation routing plan (Stage 2) will address such factors as highway limitations, planned work schedules for state and local roadways, road widening, utility re-locations, and bridge/culvert reinforcement.

Oversized construction vehicles could cause minor delays on public roads in the vicinity of the project, but these are unlikely to be significant given the relatively low traffic volume through the area. Most of the impacts will be to transportation infrastructure due to roadway improvements for oversized vehicles. Temporary turn-outs may be installed to allow uninterrupted flow of traffic, and spot radii widening may be used to accommodate the turning radius of over-length vehicles. Overhead utility line re-location projects will be needed in some areas to accommodate over-height vehicles. Culvert and/or bridge reinforcement projects are also likely along main delivery routes for heavy vehicles.

4.2 Proposed Mitigation

Prior to construction, the turbine component transportation provider will obtain all necessary permits from ODOT and the Champaign County Engineer's Office. The Champaign County Engineer's Office has oversight over township roads, so permits from individual townships will not be necessary. Permits will likely be required for oversized loads; new access points, improving existing roadways, and crossing highways with buried electrical interconnects. The final transportation routing plan will be provided to the government agencies prior to the start of Facility Construction, or will be included in the road use agreement.

This report evaluates and describes the anticipated impact to Study Area roads associated with construction vehicles and equipment delivery. All public upgrades that may be required to accommodate construction vehicles will be confirmed as part of the final transportation routing plan, based on the routes selected. The following mitigation techniques will be utilized to avoid or minimize transportation-related impacts and/or to provide long-term improvement to the local road system:

4.2.1 Insufficient Roadway Width

- Widening roadway width to accommodate construction vehicles.
- Rerouting over-width vehicles to wider roadways.

4.2.2 Insufficient Vertical Clearance

- Temporarily relocating overhead utility lines and poles.
- Permanently relocating overhead utility lines and poles.
- Rerouting over-height vehicles to roadways with sufficient vertical clearance.

4.2.3 Poor Pavement Condition or Insufficient Pavement Durability

- Replacing pavement prior to construction.
- Replacing pavement during or after construction if damaged by construction traffic.
- Rerouting heavy-loaded vehicles to avoid insufficient pavement.

4.2.4 Insufficient Cover over Drainage Structures

- Adding temporary gravel and/or asphalt cover over structures.
- Reinforcing structures with bracing.
- Using bridge jumpers to clear structures.
- Replacing structures prior to construction.
- Replacing structures during or after construction if damaged by construction traffic.
- Rerouting heavy-loaded vehicles to avoid structures.

4.2.5 Poor Structure Condition

- Replacing structure prior to construction.
- Replacing structure during or after construction if damaged by construction traffic.

- Using bridge jumpers to clear structures.
- Rerouting heavy-loaded vehicles to avoid structures.

4.2.6 Inadequate Bridge Capacity

- Using bridge jumpers to clear bridges.
- Reinforcing bridge with additional longitudinal or lateral support beams
- Replacing bridge components that provide insufficient capacity.
- Rerouting heavy-loaded vehicles to avoid bridges.

4.2.7 Insufficient Roadway Geometry

- Constructing appropriate turning radii at intersections where construction traffic is anticipated. This includes clearing and grubbing of existing vegetation; grading of the terrain to accommodate the improvement; extension of existing drainage pipes and/or culverts; re-locating utility poles if necessary; re-establishment of ditch line if necessary; and construction of a suitable roadway surface to carry the construction traffic, based on the existing geotechnical conditions.
- Rerouting over-sized vehicles to avoid insufficient roadway geometry.
- Profile adjustments to roadways with insufficient vertical geometry.

The selected roadways will also be video-documented to establish existing conditions. Upon completion of the project, Champaign Wind LLC will, at a minimum, return all roadways to their pre-construction conditions. The process of documenting roadway conditions and restoring impacted roads after the project will be performed in conjunction with state and local road use agreements.

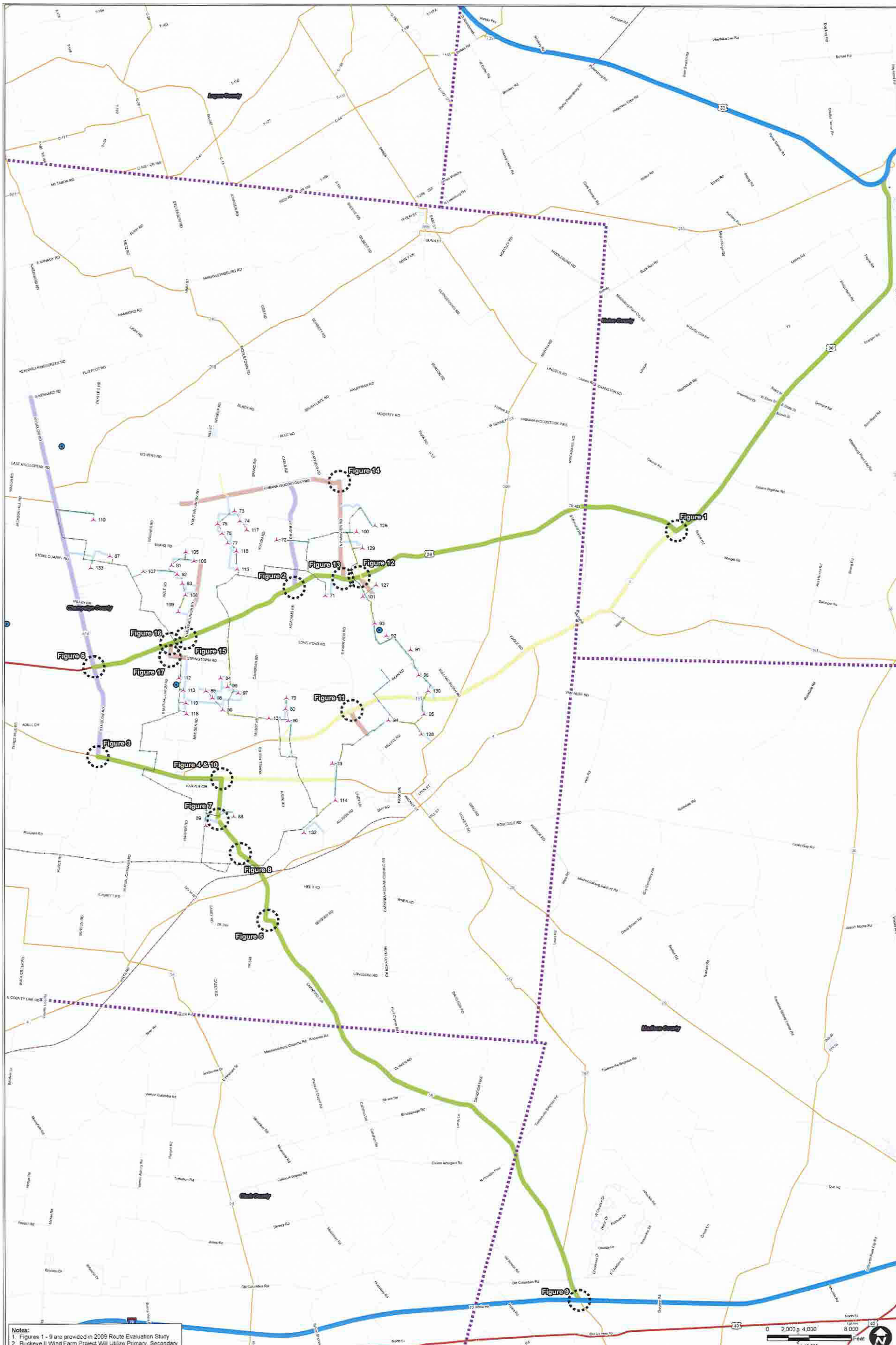
5.0 CONCLUSIONS

Based on research with national wind turbine transportation companies and information available from ODOT including their experience with wind projects recently constructed in Ohio, sufficient infrastructure exists via primary and secondary roads to transport the turbine components. A number of intersection and sharp curve radii improvements will be required. Specialized transport vehicles are available to offset vertical clearance limitations at overpasses and bridges along the probable primary routes, such as Interstate-70 and US Route-33. These vehicles are also capable of distributing the weights of loads to acceptable levels along the probable routes.

A transportation provider experienced with oversized loads will be engaged in the final route study (Stage 2) including all primary, secondary, and tertiary roads. The route study will be performed in conjunction with the special hauling permit process for ODOT (and other state DOT's for out-of-state deliveries).

APPENDIX 1

Route Location Map with Locations of Conceptual Improvements



Notes:
1. Figures 1 - 9 are provided in 2009 Route Evaluation Study
2. Buckeye II Wind Farm Project Will Utilize Primary, Secondary and Tertiary Roads identified in the 2009 Route Evaluation

everpower

Prepared By: Hull & Associates, Inc.

Buckeye II Wind Farm Route Evaluation Study Appendix - 1

Buckeye II Wind Farm
- Proposed Buckeye II Wind Farm Turbine Locations
- Proposed Buckeye II Wind Farm Buried Interconnect
- Buckeye II Wind Farm Alternate Buried Interconnect
- Proposed Buckeye II Wind Farm Access Roads
- Buckeye II Wind Farm Alternate Access Roads
- Proposed Buckeye II Wind Farm Crane Paths
- Proposed Buckeye II Wind Farm Overhead Interconnect

Construction Delivery Roads
- Primary
- 2009 Secondary
- 2009 Tertiary
- Buckeye II Wind Farm Secondary
- Buckeye II Wind Farm Tertiary

- Figure Locations
- Counties
- Local Roads
- Major Roads
- Highways
- Limited Access
- Railroads
- Proposed Met Masts

Date: February 2012

Project Number: EVP010

Geodatabase: EVP010.mdb

File: EVP010_14_Fig01_BuckeyeIIPlan.mxd

Appendix: 1

APPENDIX 2

Phase I Route Evaluation Study.
Prepared for Everpower Wind Holdings Inc.
by Hull & Associates, Inc., 2009.

PHASE I
ROUTE EVALUATION STUDY

EVERPOWER WIND HOLDINGS INC.

engineers | geologists | scientists | planners

Hull & associates, inc.

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1.0 INTRODUCTION AND EVALUATION CRITERIA

1.1 Project Description and Purpose

Buckeye Wind LLC, a wholly owned subsidy of EverPower Wind Holdings, Inc. ("Buckeye ") is planning development of a wind-powered, electric generating facility in west central Ohio. The proposed facility will consist of approximately 70 wind turbine generators, each with a nameplate capacity of 1.8 to 2.5 megawatts (MW), plus all associated structures including access roads, substations, and an electric distribution system. The facility is located in Champaign County within the townships of Salem, Wayne, Rush, Urbana, Union, and Goshen (hereafter referred to as the Facility Area). This area of Ohio has been demonstrated to have one of the highest potentials in the state for wind power development because of its elevation, orientation, and other geographic and weather-related features.

The turbines will be located at various locations across the Facility Area, and access to the proposed turbine sites for construction and operation will be from county roads and, where necessary, new gravel access roads. Construction of the project will cause temporary increases in truck traffic on area roadways due to the delivery of materials and equipment. The purpose of this evaluation is to identify probable equipment delivery routes; investigate current roadway infrastructure limits; and identify preliminary constraints that would require roadway improvements. This evaluation also describes the types of road impacts that are typical for the development of a wind turbine facility.

1.2 Methodology

This evaluation is designed to progressively identify and analyze feasible routes for construction traffic. It is divided into two phases; Phase I and Phase II. The evaluation identifies three Road Types:

1. Primary Road – Interstate and 4-lane divided State highways;
2. Secondary Road – 2-lane State highways; and
3. Tertiary Road – 2-lane county and township roads.

The evaluation is based on both Interstate-70 and US Route-33 being used as primary roads to the Facility Area. Therefore, the Phase I evaluation will originate at interchanges from these roadways (see Appendix 1). Based on the Facility Area shown on Appendix 1, approximately

30 different locations or "access nodes" from public roads will be necessary to allow access to the proposed turbines for construction. The secondary roads will be Ohio Department of Transportation (ODOT) roadways originating from intersections with the primary roads. The next evaluation (Phase II) will investigate the tertiary roads such as local county and township roads to provide routes to each access node where necessary. Potential gravel access roads to each turbine location are also shown on Appendix 1.

The Phase I evaluation includes on-site visual assessment of the probable routes and documentation of roadway limitations for load, pavement width, pavement condition, height, grades, intersection radii, and sharp curve radii. The evaluation identifies locations where improvements to the road are likely needed to accommodate the size of the delivery and construction vehicles, and figures are included that graphically show these conceptual improvements. Research for state permits that are necessary for hauling the materials and equipment is also included in the evaluation. Research of local permits will be completed as part of Phase II.

1.3 Vehicle Types

The size and types of vehicles needed to deliver the turbine equipment depend on the specific project and the model and manufacturer of the turbine being hauled. Turbine components can be classified as follows:

1.3.1 Wind Turbine Equipment

- Blade Sections – Blades are transported on trailers with one to three blades per vehicle. Blades typically control the length of the design vehicle, and the radii of the curves along the travel route to the site. Specialized transport vehicles are designed with articulating (manual or self-steering) rear axles to allow maneuverability through curves.

- Tower Sections – Towers are typically transported in four to six sections depending on the supplier. Towers generally do not control design vehicle length but may control design vehicle height and/or width.

- Nacelle and Hub – The turbine nacelle, hub, and related elements are typically the heaviest components transported. Generally, the nacelle and hub are transported separately, and the nacelle is the heaviest component.

- Escort Vehicles – Light trucks with signs and banners that travel immediately in front or behind oversized loads to provide warning to motorists of the oversized vehicle.

1.3.2 Construction Equipment and Materials

- Construction of Site Access Roads – Conventional trucks carrying stone, gravel and miscellaneous construction equipment.
- Crane – For assembly of the wind turbine towers, cranes are transported in sections over numerous trips to the site.
- Concrete trucks for tower foundations.
- Vehicles transporting construction staff and other incidental truck trips.

1.4 Design Vehicle Characteristics

Transportation of turbine components and associated construction material involves numerous conventional and specialized transportation vehicles. Wind turbine components (such as the tower sections, blade, and nacelle) are transported separately. The actual dimensions and specifications of the design vehicles may vary, depending on the specific wind turbine supplier and components. At the direction of Buckeye, a 180-foot blade (which represents a worst-case scenario) is to be used for the purpose of this route evaluation. Therefore, a worst-case design vehicle was developed for the evaluation which has a 180-foot trailer component and total length of 210 feet.

Approximate vehicle dimensions for other construction components are also listed in Table 1. An experienced transportation provider will be used for the delivery of materials and turbine elements. For the purpose of this investigation, low-profile flatbed or open-bottom (Schnabel) truck trailers will be used to offset overhead clearance limitations. Also, multi-axle trailers will be used to distribute oversized loads to acceptable levels, as stipulated by state special hauling permits.

Table 1 – Design Vehicle Characteristics

Vehicle Characteristic	Approximate Dimension of Component to be Transported, Inclusive of Vehicle			
	Blade	**Nacelle**	**Tower Sections**	**Crane**
Width of vehicle, inclusive of load	9.0'	11.5'	14.1'	Unknown
Height of vehicle, inclusive of load	13.5'	15.2'	15.2'	Unknown
Length, inclusive of load and bumpers	210'	115'	135'	Unknown
Total Weight of vehicle with 3 or more axels	78,000 lbs	380,000 lbs	255,000 lbs	Unknown
Weight Per Axel, for 2-axel group	Unknown	Unknown	Unknown	Unknown

2.0 PROBABLE ROUTE EVALUATION

2.1 Probable Routes

An evaluation and visual assessment of the probable secondary transportation roads was conducted by traveling the roadways listed below (see Appendix 1 for location of roads). Table 2 summarizes the existing conditions of the roadways.

Table 2 – Road Characteristics

Road	From	To	2-Lane Width	Pavement Condition	Surface Type	Speed Limit
US Route 36	US Route 33	State Route 814	20'	Good	Asphalt	Varies 55-35
State Route 56	Interstate 70	State Route 29	20' to 22'	Good	Asphalt	55

2.2 Constraints and Conceptual Improvements

Each of the secondary roads in Table 2 has constraining features, particularly intersection and sharp curve radii. Possible constraining points were investigated in the field, and existing conditions were photo-documented. The path of the worst-case design vehicle was evaluated along each of the potential travel routes to identify conceptual intersection (and sharp curve) improvements that may be required. Appendix 1 shows the locations of the constraining intersections and sharp curves. Individual diagrams were developed to show potential improvement areas for each of the constraints along the potential travel routes (see Figures 1 through 9).

The approximate right-of-way shown on the figures was obtained from County Geographic Information System (GIS) and tax map files. The final limit of improvements for each point of constraint is expected to be within the limits shown on the figures. These limits will be confirmed when final information is obtained from the final wind turbine supplier and transportation provider. Table 3 shows a summary of the conceptual widening improvements and roadway limitations.

The secondary roads were also investigated for height limitations. Permanent structures that cross over the road and restrict the clearance for oversized loads (such as bridges and overpasses) were not found along the secondary roads. For overhead cables, the national standard for minimum clearance over roads is 15.5 feet, and cables cross over the studied roadways in numerous locations. In the areas of likely intersection improvements (see Figures 1 through 9); cables and poles running parallel to the road will be in conflict with the travel routes. However, electric providers can (for a fee) temporarily or permanently raise the cables and/or move the poles. Therefore, cables should not be a limiting feature for the roads.

Table 3 – Limitations of Roads and Conceptual Improvements

Road	From	To	Figures Showing Road Widening Improvements	Weight Limit if Super Load Permit is Obtained	Minimum Clearance of Overhead Obstructions	Average Grade of Road
US Route 36	US Route 33	State Route 814	Nos. 1,2,6	None	15.5' Min.	0.10%
State Route 56	Interstate 70	State Route 29	Nos. 3,4,5,7,8,9	None	15.5' Min.	0.28%

2.3 Loads and Permits

Special hauling permits are required when loads exceed legal dimensions or weights. Table 4 summarizes these maximum legal dimensions for State of Ohio highways. Transportation of the blades, nacelles, tower sections, and cranes will require Special Hauling Permits for a variety of criteria. Each vehicle must receive an individual Special Hauling Permit from the ODOT Central Office. Permits are issued by ODOT for various vehicle criteria, but all permits have the name "Special Hauling Permit," unlike some other state departments of transportation.

The specifications of the Special Hauling Permit depend on the characteristics of the vehicle, its cargo, and the duration of the delivery schedule. Nacelles can weigh up to 200,000 pounds, and when combined with the transport vehicle, the total weight can exceed 380,000 pounds. If any vehicle exceeds 120,000 pounds, 14 feet wide, or 14.5 feet in height, a permit via the "super load" process is required. Table 4 presents the criteria for Special Hauling Permits as well as the approximate dimensions for the project delivery vehicles.

Table 4 – Dimensional Criteria for Special Hauling Permits

Vehicle Characteristic	State Highway Limit	State Highway Limit with Special Hauling Permit	Approximate Dimension of Component to be Transported, Inclusive of Vehicle			
			Blade	Nacelle	Tower Sections	Crane Sections
Width of vehicle, inclusive of load	8.5 Feet	None	9.0 '	11.5'	14.1'	Unknown*
Height of vehicle, inclusive of load	13.5 Feet	None	13.5'	15.2'	15.2'	Unknown*
Length of vehicle, inclusive of load and bumpers	85 Feet	None	210'	115'	135'	Unknown*
Total Weight of vehicle with 3 or more axels	80,000 Pounds	None	78,000 lbs	380,000 lbs	255,000 lbs	Unknown*
Weight Per Axel, for 2-axel group	34,000 Pounds	Usually 46,000 Pounds	Unknown	Unknown	Unknown	Unknown*

* Crane sections are typically designed to be disassembled and transported without Super Load Permits

2.4 Conclusions for Secondary Roads

The purpose of this Phase 1 evaluation is to identify probable secondary travel routes; identify constraints for height, width, turning radii, and weight along the routes; and determine potential improvements required for delivery of major wind turbine components during the construction of the project. No height or width constraints other than overhead cables were identified, but special hauling permits will be required for many components. Special hauling permits will also be required due to the weight of the components; however, specialized transport vehicles with numerous axels will be used to distribute the weight, minimize the effects to the roadway, and comply with the special hauling permit requirements. The only identifiable improvements were the widening of intersections and sharp curves.

3.0 PRELIMINARY ASSESSMENT OF TERTIARY ROADS

3.1 Visual Observation Results

The following roads were investigated on a preliminary basis, and a general summary of the results is presented next to each road. Ludlow Road and Perry Road are likely tertiary roads for the delivery of construction components to the turbine sites. These and other county roads will be further evaluated in coordination with an experienced transportation provider and/or turbine manufacturer as part of Phase II.

1. Ludlow Road (SR 814) from SR 29 north to Kennard Kings Creek Road – 16-foot pavement width; asphalt in good condition with berm; probable turning constraints; possible grade issues depending on trailer overhang from axles. No bridges/overpasses observed.

2. Perry Road from SR 36 north to Urbana Woodstock Road – 16-foot pavement width; asphalt in good condition; no berm; possible pavement composition change; probable turning constraints. No bridges/overpasses observed.

4.0 POTENTIAL IMPACTS TO ROADWAYS

The development of a wind-powered, electric generating facility has the potential to create transportation impacts as a result of short-term construction activities. The following sections estimate the trip generation for construction vehicles during the project and outline steps for mitigating the impacts to roadways.

4.1 Construction Traffic

The project area is served by state and local roadways. To deliver the turbine components, concrete, gravel, equipment, and construction workers to each turbine site during the construction of the facility, these roads will experience increased truck traffic. The exact construction vehicles have not yet been determined, but the following provides an order-of-magnitude estimate for the trip generation for each truck type:

- Gravel trucks with capacity of approximately 10 cubic yards (CY) per truck and an estimated gross weight of 75,000 pounds (lbs), for access road construction (estimated total of 3,500 trips throughout construction).
- Concrete trucks for construction of tower foundations with capacity of approximately 8 CY per truck and an estimated gross weight of 75,000 lbs (estimated total of approximately 4,000 trips throughout construction).
- Flatbed trucks (multiple axels to distribute loads) for transporting turbine components. These trucks can have gross weights up to 380,000 lbs; lengths (inclusive of tractor) up to 210 feet; widths up to 14.1 feet; and heights up to 15.2 feet. The estimated trips for each turbine components are as follows:

Turbine Component	Assumption	Trips
Blades	1 blade per truck	210
Towers	4 to 6 tower sections per turbine	350
Nacelle and Hub	7 truck trips per tower (3 oversized trucks and 4 standard trucks)	490

- Pickup trucks for equipment and tools.
- Trucks and cars for transporting construction workers.

A final delivery route has not yet been finalized, but it is likely that delivery of turbine components to the Project Area will be from the southeast by way of Interstate-70 to State Route 56 or from the northeast by way of US Route 33 to US Route 36. Starting from the west side of Columbus, the travel distance to the center of the Project Area is approximately 40 miles via I-70 and SR-56 and 44 miles via US-33 and US-36. However, SR-56 has more sharp curves and intersections than US-36. Within the Project Area, State Route 29, State Route 56 and US Route 36 along with Perry Road, Urbana Woodstock Road, and Ludlow Road (county roads) and new gravel access roads will likely be used to deliver components to each turbine site. Once finalized, the transportation routing plan (Phase II) will address such factors as highway limitations, planned work schedules for state and local roadways, road widening, utility re-locations, and bridge/culvert reinforcement.

Oversized construction vehicles could cause minor delays on public roads in the vicinity of the project, but these are unlikely to be significant given the relatively low traffic volume through the area. Most of the impacts will be to transportation infrastructure due to roadway improvements for oversized vehicles. Temporary turn-outs may be installed to allow uninterrupted flow of traffic, and spot radii widening may be used to accommodate the turning radius of over-length vehicles. Overhead utility line re-location projects will be needed in some areas to accommodate over-height vehicles. Culvert and/or bridge reinforcement projects are also likely along main delivery routes for heavy vehicles.

4.2 Proposed Mitigation

Prior to construction, the turbine component transportation provider will obtain all necessary permits from ODOT and the Champaign County engineer. The Champaign County engineer has oversight over township roads, so permits from individual townships will not be necessary. Permits will likely be required for oversized loads; new access points, improving existing roadways, and crossing highways with buried electrical interconnects. The final transportation routing plan will be provided to the government agencies prior to the start of the project.

All public upgrades that may be required to accommodate construction vehicles will be identified as part of the final transportation routing plan, based on the routes selected. The following mitigation techniques will be utilized to avoid or minimize transportation-related impacts and/or to provide long-term improvement to the local road system:

4.2.1 Insufficient Roadway Width

- Widening roadway width to accommodate construction vehicles.
- Rerouting over-width vehicles to wider roadways.

4.2.2 Insufficient Vertical Clearance

- Temporarily relocating overhead utility lines and poles.
- Permanently relocating overhead utility lines and poles.
- Rerouting over-height vehicles to roadways with sufficient vertical clearance.

4.2.3 Poor Pavement Condition or Insufficient Pavement Durability

- Replacing pavement prior to construction.
- Replacing pavement during or after construction if damaged by construction traffic.
- Rerouting heavy-loaded vehicles to avoid insufficient pavement.

4.2.4 Insufficient Cover over Drainage Structures

- Adding temporary gravel and/or asphalt cover over structures.
- Reinforcing structures with bracing.
- Using bridge jumpers to clear structures.
- Replacing structures prior to construction.
- Replacing structures during or after construction if damaged by construction traffic.
- Rerouting heavy-loaded vehicles to avoid structures.

4.2.5 Poor Structure Condition

- Replacing structure prior to construction.
- Replacing structure during or after construction if damaged by construction traffic.
- Using bridge jumpers to clear structures.
- Rerouting heavy-loaded vehicles to avoid structures.

4.2.6 Inadequate Bridge Capacity

- Using bridge jumpers to clear bridges.
- Reinforcing bridge with additional longitudinal or lateral support beams
- Replacing bridge components that provide insufficient capacity.

- Rerouting heavy-loaded vehicles to avoid bridges.

4.2.7 Insufficient Roadway Geometry

- Constructing appropriate turning radii at intersections where construction traffic is anticipated. This includes clearing and grubbing of existing vegetation; grading of the terrain to accommodate the improvement; extension of existing drainage pipes and/or culverts; re-locating utility poles if necessary; re-establishment of ditch line if necessary; and construction of a suitable roadway surface to carry the construction traffic, based on the existing geotechnical conditions.

- Rerouting over-sized vehicles to avoid insufficient roadway geometry.

- Profile adjustments to roadways with insufficient vertical geometry.

The selected roadways will also be video-documented to establish existing conditions. Upon completion of the project, Buckeye will, at a minimum, return all roadways to their pre-construction conditions. The process of documenting roadway conditions and restoring impacted roads after the project will be performed in conjunction with state and local permitting.

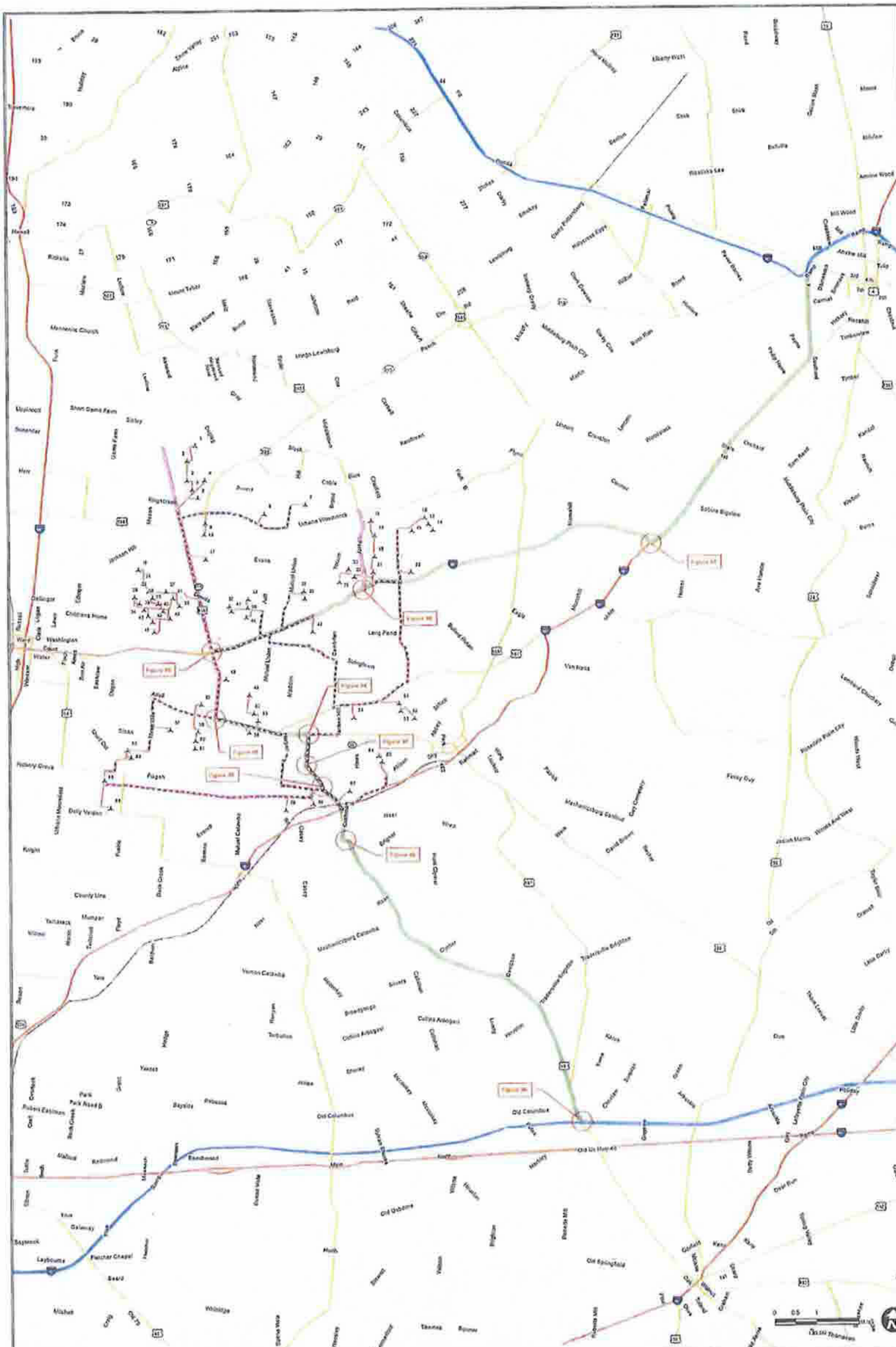
5.0 CONCLUSIONS

Based on research with national wind turbine transportation companies and information available from ODOT, sufficient infrastructure exists via primary and secondary roads to transport the turbine components. A number of intersection and sharp curve radii improvements will be required. Specialized transport vehicles are available to offset vertical clearance limitations at overpasses and bridges along the probable routes, such as Interstate-70 and US Route-33. These vehicles are also capable of distributing the weights of loads to acceptable levels along the probable routes.

A transportation provider experienced with oversized loads will be engaged in the final route study (Phase II) including all primary, secondary, and tertiary roads. The route study will be performed in conjunction with the special hauling permit process for the Ohio Department of Transportation (and other state DOT's for out-of-state deliveries). Confirmation of improvements, construction details, traffic control plans, escort vehicles, scheduling, etc. will be necessary.

APPENDIX 1

Route Location Map with Locations of Conceptual Improvements

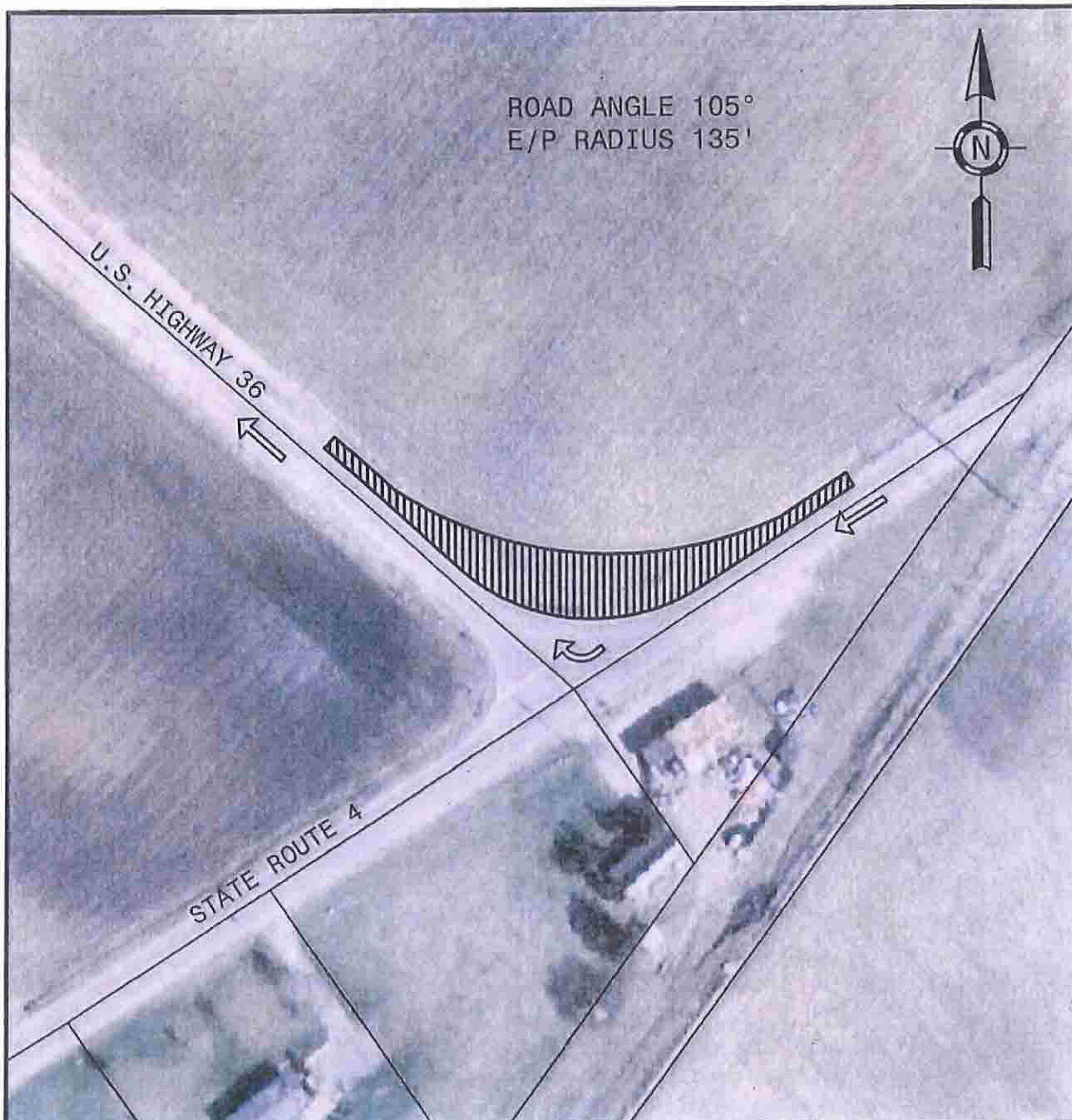


Buckeye Wind Power Project Area Transportation Plan

Date	March 2009
Project Number	EVP001
Appendix	1

FIGURES 1 through 9

Exhibits for Conceptual Improvements



(PHOTOS 1 AND 2)

0 50 100 200

SCALE IN FEET

LEGEND

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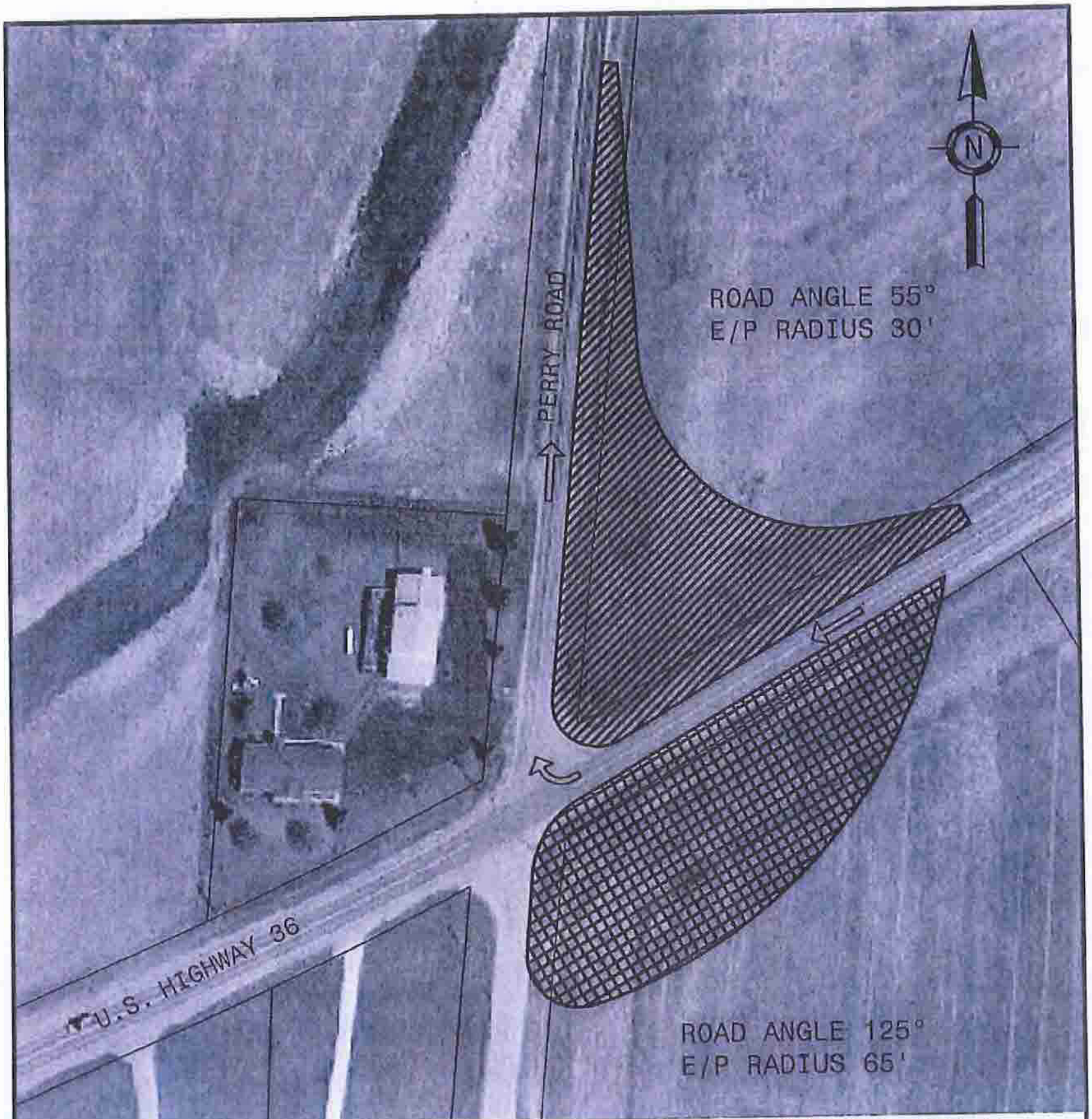
PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT
CONSTRAINTS MAP, FIGURE 1
INTERSECTION S.R.4 & U.S.36
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXH1INTSR36-SR4UNIONCO	PLOT DATE: JANUARY-29-09



(PHOTOS 3 AND 4)

0 50 100 200

SCALE IN FEET

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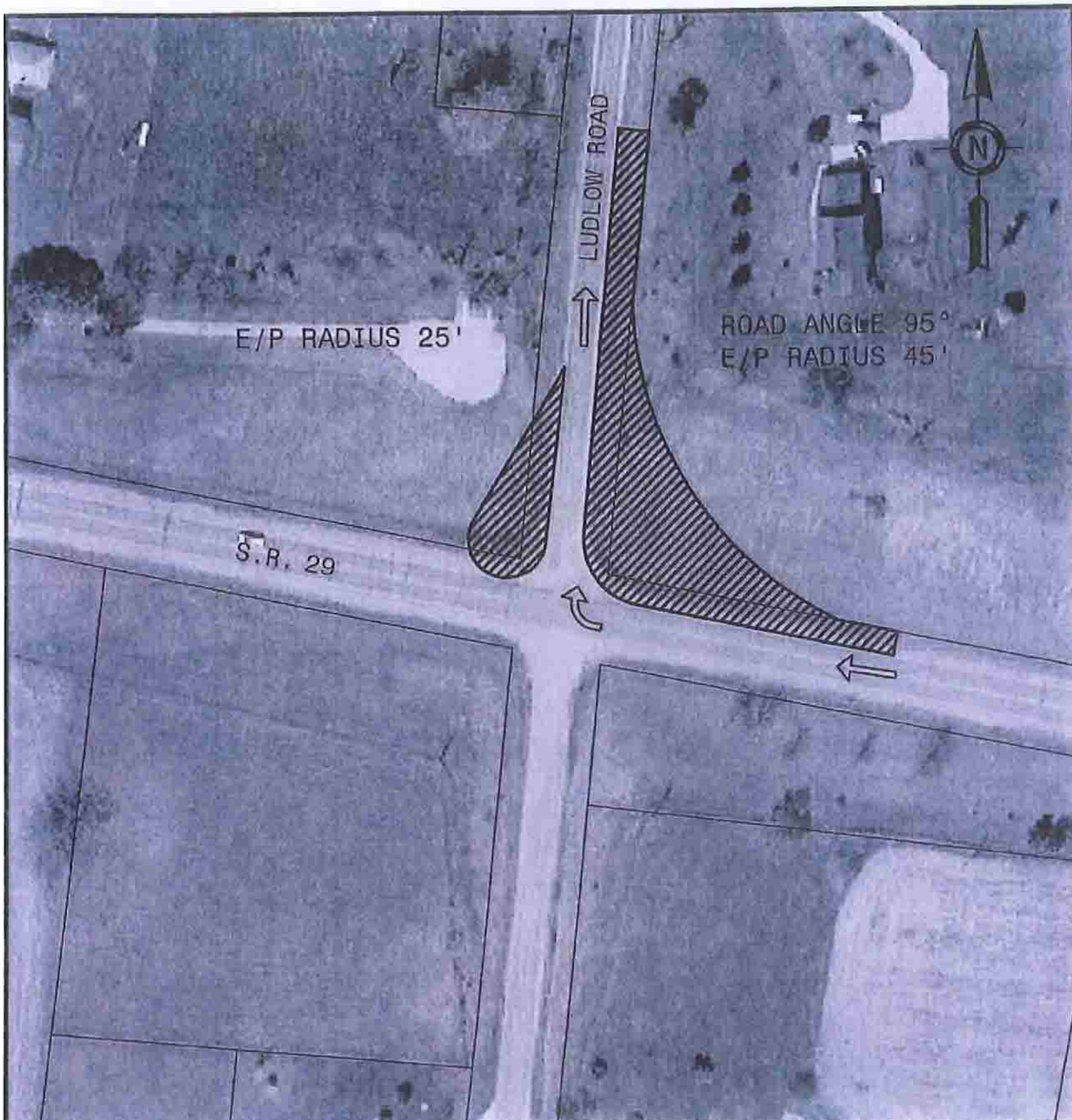
BUCKEYE WIND PROJECT

CONSTRAINTS MAP, FIGURE 2
INTERSECTION U.S.36 & PERRY
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXH2INTSR36-PERRYCHAMPAIGNCO	PLOT DATE: JANUARY-29-09



(PHOTOS 5 AND 6)

0 50 100 200

SCALE IN FEET

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PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT
CONSTRAINTS MAP, FIGURE 3
INTERSECTION S.R.29 & LUDLOW RD
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXH3INTSR29-SR814CHAMPAIGNCO	PLOT DATE: JANUARY-29-09

(PHOTOS 7 AND 8)

0 50 100 200

SCALE IN FEET

LEGEND

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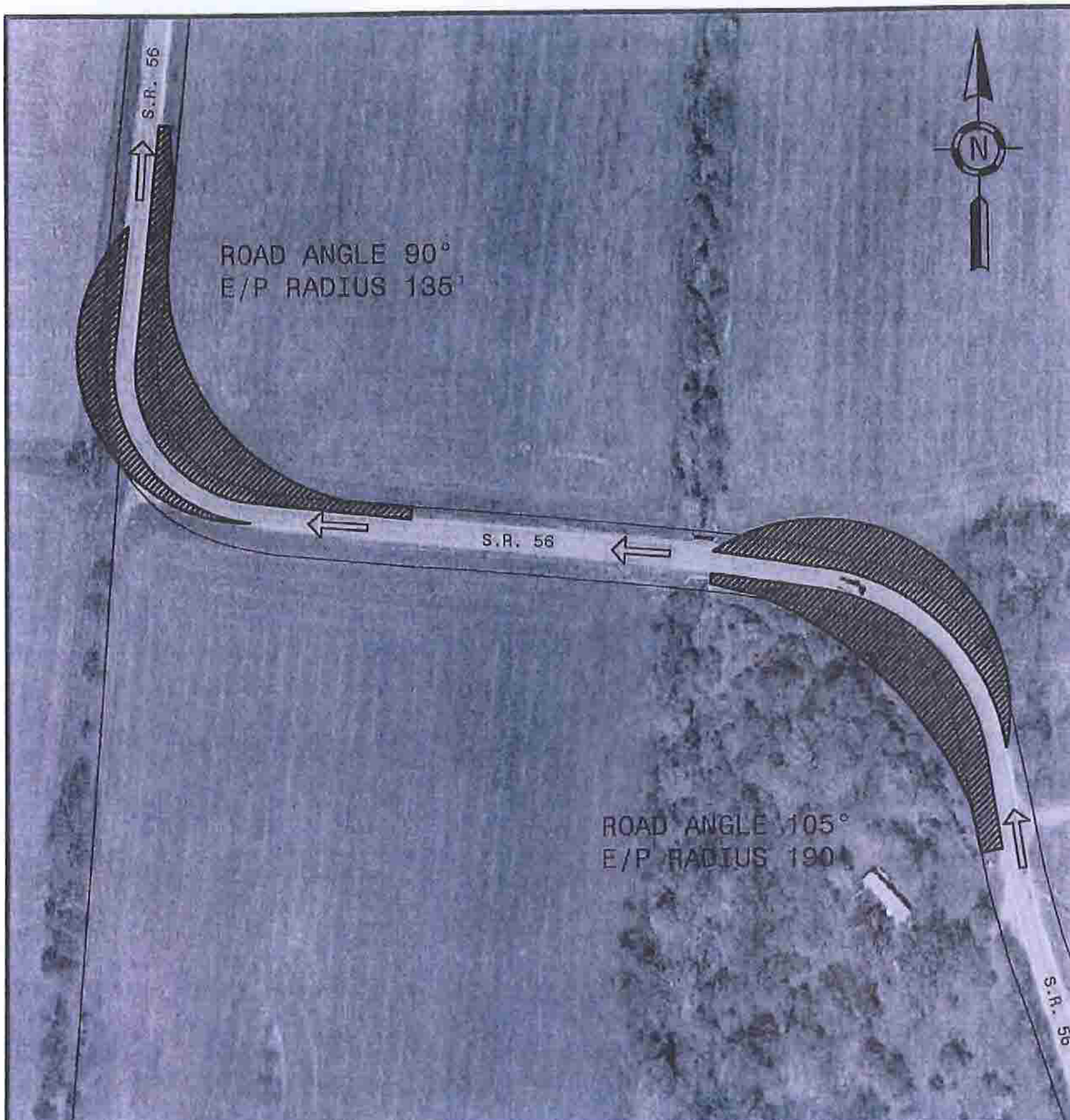
PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT
CONSTRAINTS MAP, FIGURE 4
INTERSECTION S.R.56 & S.R.29
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002

CAD DWG FILE: EXH4INTSR56-SR29CHAMPAIGNCO

PLOT DATE: JANUARY-29-09



(PHOTOS 9, 10, 11 AND 12)

0 75 150 300

SCALE IN FEET

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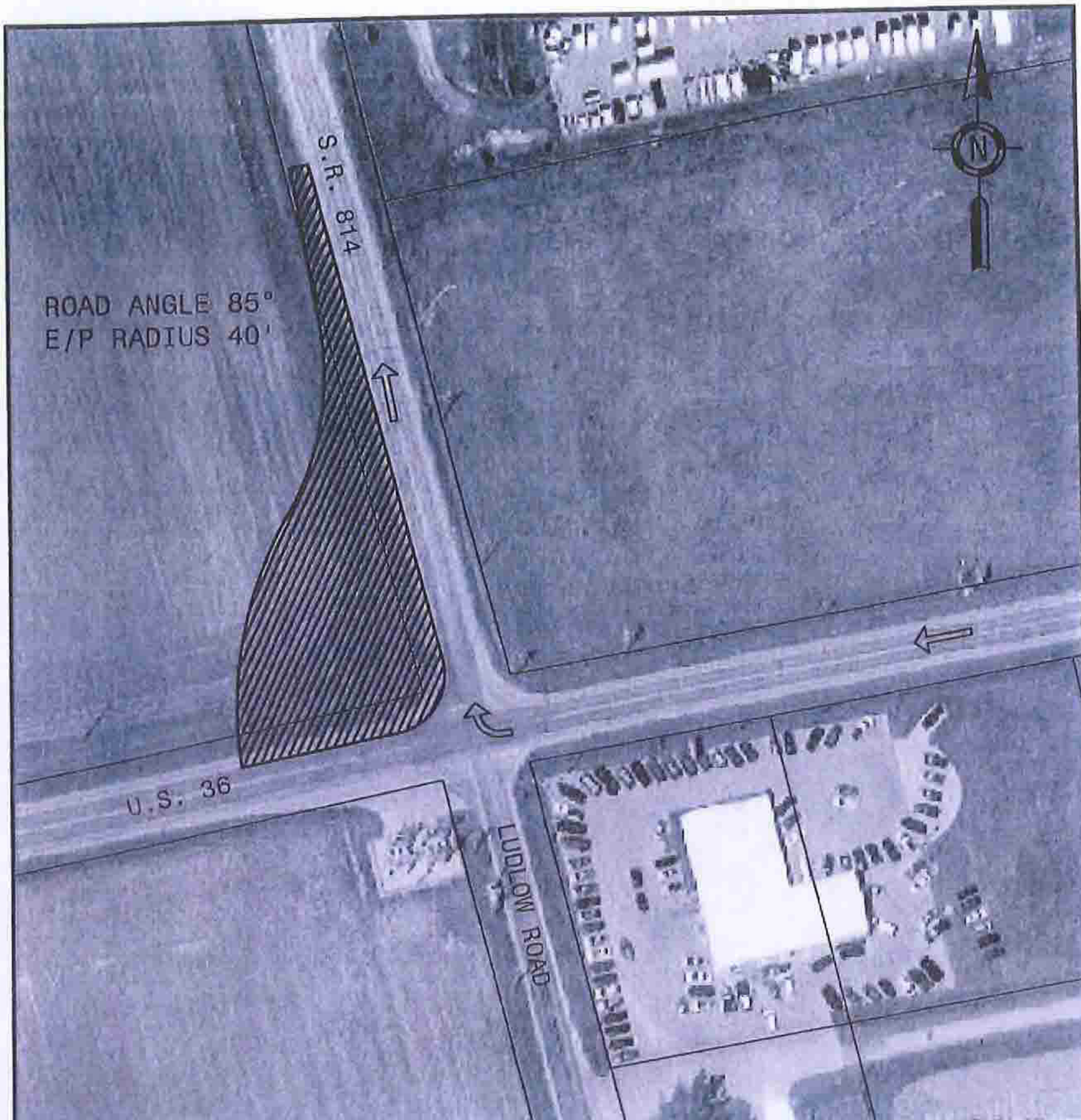
PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT
CONSTRAINTS MAP, FIGURE 5
S.R.56
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXHSINTSR56S-CURVECHAMPAIGNCO	PLOT DATE: JANUARY-29-09



(PHOTOS 13 AND 14)

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SCALE IN FEET

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PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT
CONSTRAINTS MAP, FIGURE 6
INTERSECTION U.S.36 & S.R.814
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXH6INTSR36-SR814CHAMPAIGNCO	PLOT DATE: JANUARY-29-09

(PHOTOS 15 AND 16)

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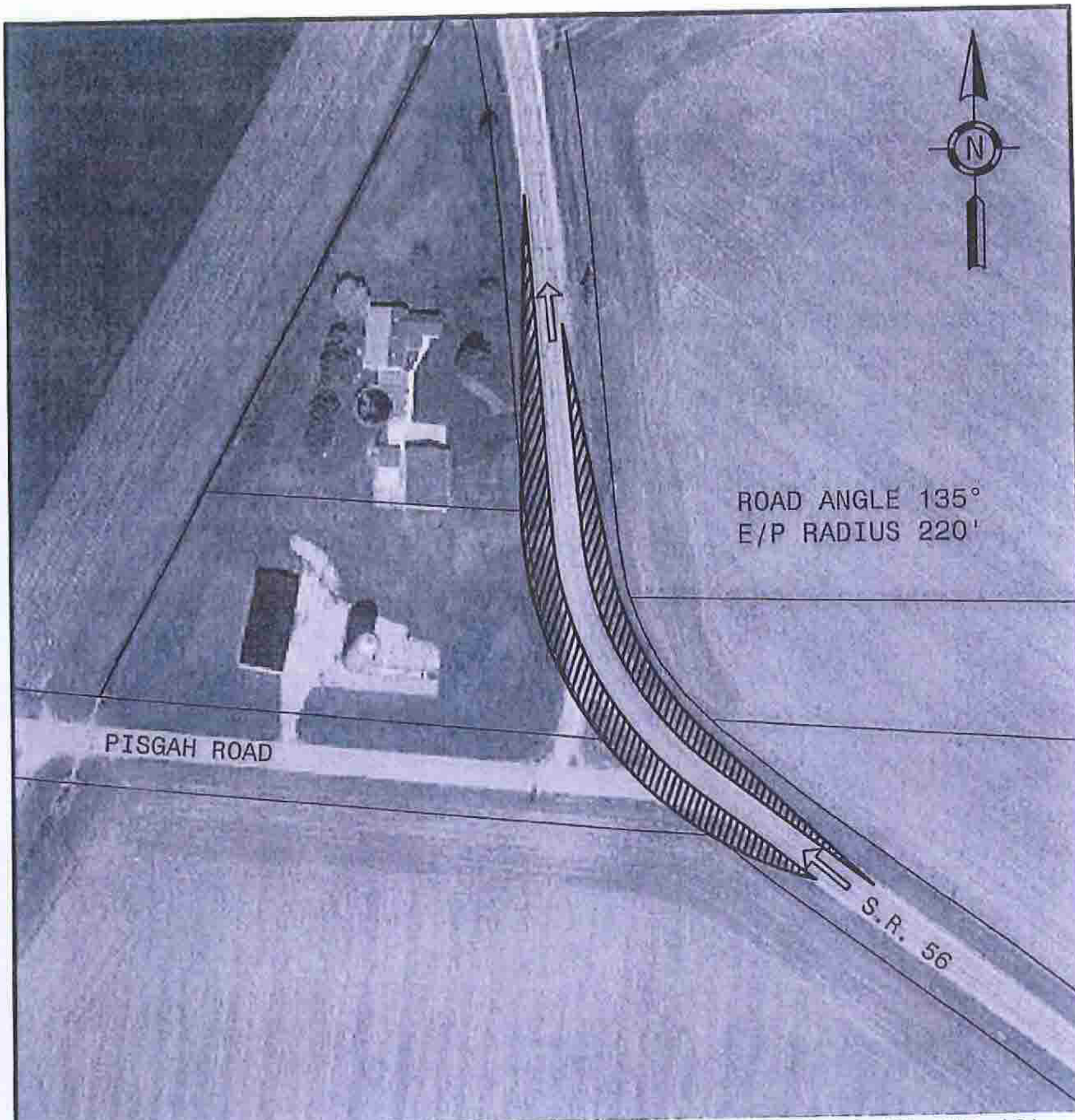
PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT

CONSTRAINTS MAP, FIGURE 7

S.R.56

CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXH7INTSR56NORTHCHAMPAIGNCO	PLOT DATE: JANUARY-29-09



(PHOTOS 17 AND 18)

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SCALE IN FEET

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PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT
CONSTRAINTS MAP, FIGURE 8
S.R.56
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: EXH8INTSR56-PISGAHCHAMPAIGNCO	PLOT DATE: JANUARY-29-09

0 50 100 200

SCALE IN FEET

LEGEND

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PHASE I ROUTE EVALUATION STUDY
BUCKEYE WIND PROJECT

CONSTRAINTS MAP, FIGURE 9

US ROUTE 70 & S.R. 56 INTERCHANGE

CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP002	
CAD DWG FILE: USR70-SR56INTERCHMADISONCO	PLOT DATE: JANUARY-29-09

PHOTOS 1 through 18

Existing Conditions for Conceptual Improvement Areas

Photo 1 – Supplement to Figure 1: Intersection S.R.4 & U.S. 36 (Facing Northeast)

Photo 2 – Supplement to Figure 1: Intersection S.R.4 & U.S. 36 (Facing Southwest)

Photo 3 – Supplement to Figure 2: Intersection U.S. 36 & Perry Road (Facing Northeast)

Photo 4 – Supplement to Figure 2: Intersection U.S. 36 & Perry Road (Facing Southeast)

Photo 5 – Supplement to Figure 3: Intersection S.R.29 & Ludlow Rd. (Facing North)

Photo 6 – Supplement to Figure 3: Intersection S.R.29 & Ludlow Rd. (Facing East)

Photo 7 – Supplement to Figure 4: Intersection S.R.56 & S.R.29 (Facing West)

Photo 8 – Supplement to Figure 4: Intersection S.R.56 & S.R.29 (Facing South)

Photo 9 – Supplement to Figure 5, East Curve: S.R. 56 (Facing Northwest)

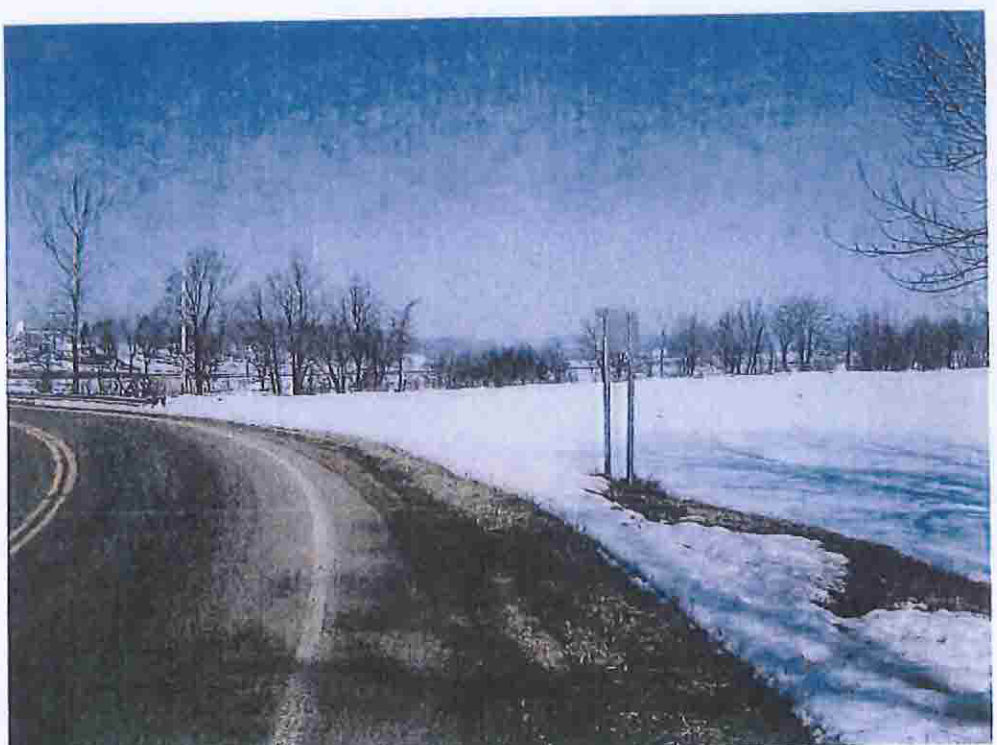

Photo 10 – Supplement to Figure 5, East Curve: S.R. 56 (Facing Northwest)

Photo 11– Supplement to Figure 5, West Curve: S.R. 56 (Facing North)

Photo 12 – Supplement to Figure 5, West Curve: S.R. 56 (Facing Northeast)

Photo 13 – Supplement to Figure 6: Intersection U.S. 36 & S.R. 814 (Facing North)

Photo 14 – Supplement to Figure 6: Intersection U.S. 36 & SR. 814 (Facing West)

Photo 15 – Supplement to Figure 7: Curve on S.R.56 (Facing South)

Photo 16 – Supplement to Figure 7: Curve on S.R.56 (Facing Northwest)

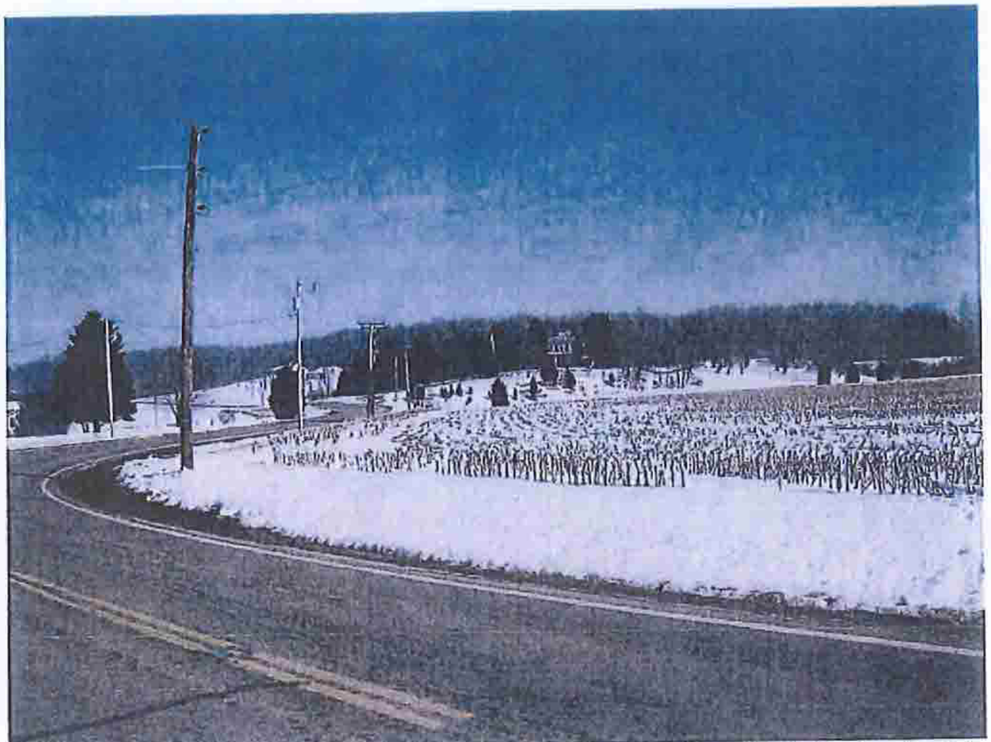

Photo 17 – Supplement to Figure 8: Intersection S.R.56 & Pisgah Rd. (Facing North)

Photo 18 – Supplement to Figure 8: Intersection S.R.56 & Pisgah Rd. (Facing South)

FIGURES 10-17

Exhibits for Conceptual Improvements

(PHOTOS 19, 20 AND 21)

0 50 100 200

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ROUTE EVALUATION STUDY
BUCKEYE II WIND FARM
CONSTRAINTS MAP, FIGURE 10
S.R.56 & S.R.29
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP010	
CAD DWG FILE: FIG 10	PLOT DATE: FEBRUARY-29-12

(PHOTOS 22 AND 23)

0 50 100 200

SCALE IN FEET

LEGEND

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ROUTE EVALUATION STUDY
BUCKEYE II WIND FARM
CONSTRAINTS MAP, FIGURE 11
S.R.161 & S. PARKVIEW RD
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP010	
CAD DWG FILE: FIG 11	PLOT DATE: FEBRUARY-29-12

(PHOTOS 24 AND 25)

0 50 100 200

SCALE IN FEET

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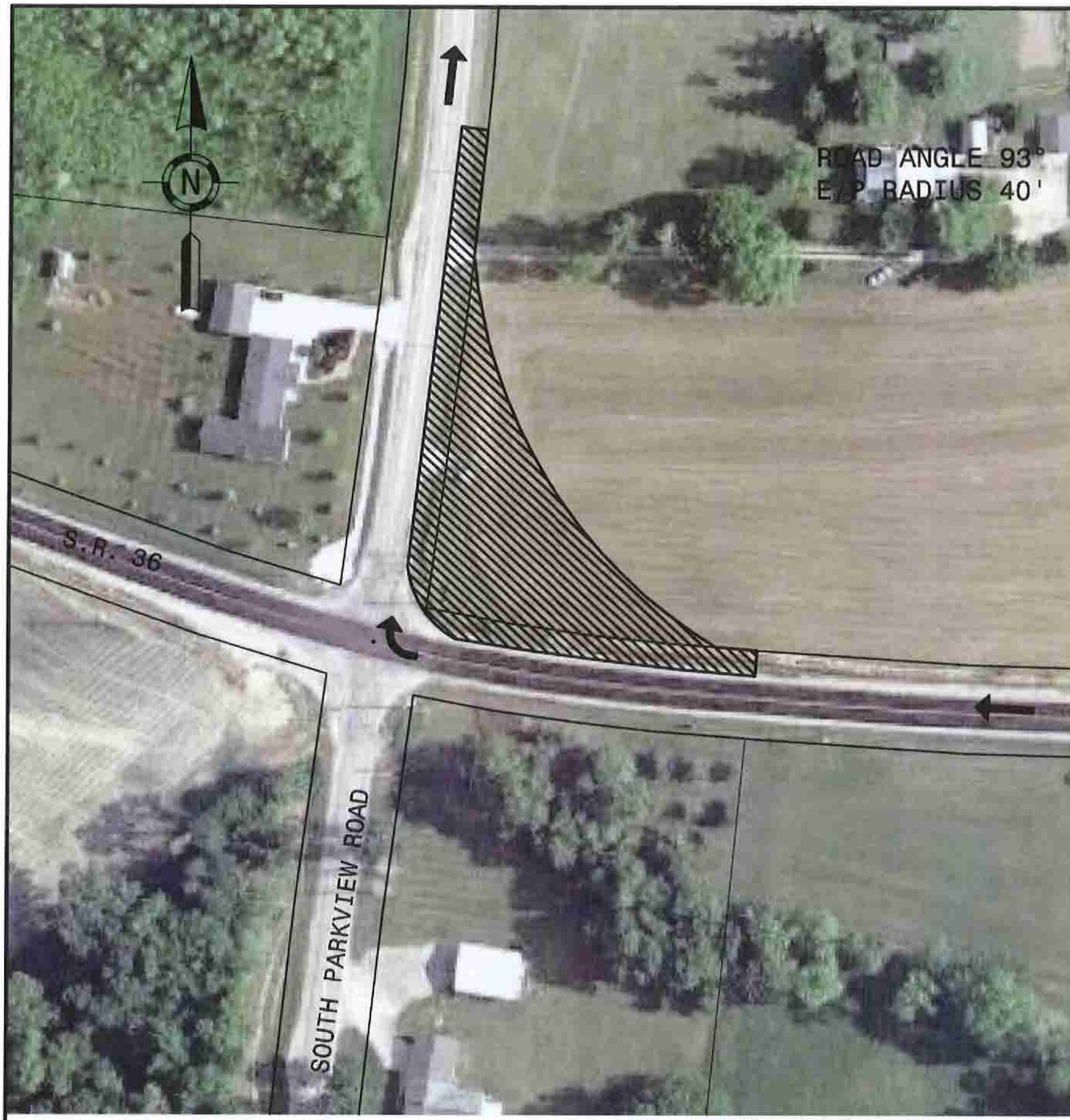
ROUTE EVALUATION STUDY
BUCKEYE II WIND FARM

CONSTRAINTS MAP, FIGURE 12
S.R.36 & BULLARD RUTAN RD
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP010	
CAD DWG FILE: FIG 12	PLOT DATE: FEBRUARY-29-12



(PHOTOS 26 AND 27)

0 50 100 200

SCALE IN FEET

LEGEND

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ROUTE EVALUATION STUDY
BUCKEYE II WIND FARM
CONSTRAINTS MAP, FIGURE 13
S.R.36 & N. PARKVIEW RD
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP010	
CAD DWG FILE: FIG 13	PLOT DATE: FEBRUARY-29-12

(PHOTOS 28, 29, 30 AND 31)

0 50 100 200

SCALE IN FEET

LEGEND

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ROUTE EVALUATION STUDY
BUCKEYE II WIND FARM
CONSTRAINTS MAP, FIGURE 14
N. PARKVIEW RD & URBANA WOODSTOCK PK
CHAMPAIGN COUNTY, OHIO

PROJECT NO.: EVP010	
CAD DWG FILE: FIG 14	PLOT DATE: FEBRUARY-29-12