

January 10, 2017

Ms. Barcy F. McNeal, Secretary  
Ohio Power Siting Board  
Docketing Division  
180 East Broad Street, 11th Floor  
Columbus, Ohio 43215

**Re: Case Nos. 09-479-EL-BGN, 11-3446-EL-BGA, 16-469-EL-BGA, and 16-2404-EL-BGA**  
In the Matter of the Application of Hardin Wind Energy LLC for a Certificate of  
Environmental Compatibility and Public Need for the Hardin Wind Farm.  
**Notice of Compliance with Certificate Condition #51(b)—Full Decommissioning  
Plan**

Dear Ms. McNeal:

Hardin Wind Energy LLC (“Applicant”) is certified to construct a wind-powered electric generation facility in Hardin County, Ohio, in accordance with the orders issued by the Ohio Power Siting Board (“OPSB”) in the above-referenced cases.

The Applicant is providing this letter to notify the OPSB that the Applicant is supplementing its response regarding Condition 51(b), which was initially filed on October 18, 2016, and included the Applicant’s decommissioning plan covering the eight-turbine 2016 phase of construction. This supplement includes the full decommissioning plan for the entire project, and is attached hereto.

We are available to answer any questions you may have.

Respectfully submitted,

/s/William V. Vorys  
William V. Vorys (0093479)  
Christine M.T. Pirik (0029759)  
Dickinson Wright PLLC  
150 East Gay Street, Suite 2400  
Columbus, Ohio 43215  
Phone: (614) 744-2936  
Email: [wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)  
[cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)

*Attorneys for Hardin Wind Energy LLC*

Enclosures  
COLUMBUS 39579-20 82141v1

**Decommissioning Plan  
Hardin Wind Energy Project  
Hardin County, Ohio**



Prepared for:  
Hardin Wind Energy LLC  
One South Wacker Drive  
Suite 1800  
Chicago, Illinois 60606

Prepared by:  
Stantec Consulting Services Inc.  
1165 Scheuring Road  
De Pere, Wisconsin 54115

Project No: 193704779  
December 8, 2016

## DECOMMISSIONING PLAN

### HARDIN WIND ENERGY PROJECT, HARDIN COUNTY, OHIO

This document entitled Decommissioning Plan Hardin Wind Energy Project, Hardin County, Ohio was prepared by Stantec Consulting Services Inc. ("Stantec") for the use of Hardin Wind Energy LLC (the "Client"), and the applicable regulatory agencies. Any reliance on this document by any other third party is strictly prohibited. The material in this document reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in this document are based on conditions and information existing at the time this document was published and do not take into account any subsequent changes.

Prepared by JoAnne J. Blank

STANTEC CONSULTING SERVICES INC.

Technical Review by Allen D. Robinson  
Allen D. Robinson, P.E.

Independent Review by Dave Rautmann  
Dave Rautmann, P.E.

#### PE CERTIFICATION

NAME: Allen D. Robinson

TITLE: Senior Construction Manager

COMPANY: Stantec Consulting Services Inc.

REGISTRATION NO: E-51460

STATE: Ohio



**DECOMMISSIONING PLAN**  
**HARDIN WIND ENERGY PROJECT, HARDIN COUNTY, OHIO**

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## **1.0 Introduction**

Hardin Wind Energy LLC (Hardin Wind), a subsidiary of Invenergy Wind Development North America LLC (Invenergy), is proposing to construct the Hardin Wind Energy Center in Hardin County, Ohio. The proposed Phase 1 of the Hardin Wind Energy Center (the Project) is to be located within the townships of Marion, Cessna, Roundhead, McDonald and Lynn, near the Village of McGuffey, Ohio (Figure 1). The Project will consist of up to 76, 2.3-megawatt (MW) wind turbine generators (WTG or turbine) manufactured by General Electric (GE). Alternatively, Hardin Wind may use up to 70, 2.5 MW GE WTGs. The proposed Project has a maximum nameplate generating capacity of up to 175 MW (the Project).

This Decommissioning Plan (Plan) report provides a description of the decommissioning and restoration of the Project. A limited start-of-construction was proposed to begin in late 2016 through early 2017, with the remaining construction of the Project to be constructed in 2017 and 2018. The projected Commercial Operation Date will be late 2018. The Project will consist of the installation of turbines, step-up transformers, access roads, and an underground collection system (Figure 2).

This Plan includes a list of the primary wind farm components to be installed in the Project; dismantling and removal activities; and disposed of, or recycled materials. A summary of estimated costs associated with decommissioning the Project is also included. Summary statistics and estimated costs are provided for a 70-turbine (GE 2.5-115) and a 76-turbine (GE 2.3-116) design option.

### **1.1 WIND FARM COMPONENTS**

The main components of the proposed Project include:

- Turbines (tower, nacelle, hub, rotor and three rotor blades per WTG)
- Turbine foundations
- Step-up transformers
- Access roads
- Crane pads
- Underground electrical collection system

### **1.2 EXPECTED LIFETIME AND TRIGGERING EVENTS**

If properly maintained, the expected lifetime of the GE utility-scale wind turbine is approximately 20 years. Depending on market conditions and Project viability, the turbines may be re-fitted with updated components, such as nacelles, towers and/or blades to extend the life of the Project. In the event that the turbines are not retrofitted, or at the end of the Project's useful life, the turbines and associated components will be decommissioned and removed from the site.

Turbine components that have resale value may be sold in the wholesale market. Components with no wholesale value will be salvaged and sold as scrap for recycling or disposed of at an offsite

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licensed solid waste disposal facility (e.g., landfill). Decommissioning activities will include removal of the turbines and associated components as listed in Section 1.1 and described in Section 2.

#### **1.3 DECOMMISSIONING SEQUENCE**

Decommissioning activities are anticipated to be completed in a six to twelve-month timeframe. Monitoring and site restoration may extend beyond this time period to ensure successful revegetation and rehabilitation. The anticipated sequence of decommissioning and removal is described below; however, overlap of activities is expected.

- Reinforce access roads (e.g., turning radii) and prepare site
- De-energize turbines and “make safe”
- Dismantle and remove rotors and turbines
- Remove towers and internal components
- Remove step-up transformers
- Remove collection system less than five feet (60 inches) below the surface
- Remove portions of wind turbine foundations less than 54 inches below the surface and backfill sites
- Remove crane pads and grade turbine sites
- Remove access roads (unless retained at discretion of host landowner)
- De-compact subsoils and pick rocks larger than four inches in diameter from surface of subsoil
- Restoration and revegetation of disturbed land to pre-construction conditions to the extent practicable

## **2.0 Decommissioning Components and Activities**

The wind farm components and decommissioning activities necessary to restore the Project area, as near as practicable, to pre-construction conditions are described within this section. Access roads may be left in place if requested and/or agreed to by the landowner. Concrete and other components of wind turbines deeper than 54 inches and underground electric collection system located more than five feet below the soil surface, will be abandoned in place. Estimated quantities of materials to be removed and salvaged or disposed of are included in this section. Public roads damaged or modified during the decommissioning and reclamation process shall be repaired upon completion of the decommissioning.

#### **2.1 WIND FARM SYSTEM OVERVIEW**

The final Project will use up to 76 GE 2.3-116 turbines or 70 GE 2.5-116 turbines, with a total nameplate generating capacity of up to 175 MW. The decommissioning estimate provided in this report assumes the dismantling and removal of turbines with 116-meter-diameter blades and 94-

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meter towers (GE 2.3-116) or 90-meter towers (GE 2.5-116). To be conservative, the estimate assumes that access roads will be completely removed.

Table 1 presents a summary of the primary components of the turbines included in this decommissioning plan.

**Table 1 Primary Components of Wind Farm to be Decommissioned**

Component	Quantity (GE 2.3-116)	Quantity (GE 2.5-116)	Unit of Measure
Wind Turbines (including 1 tower, 1 nacelle, 1 hub and 1 rotor with 3 rotor blades, per turbine)	76 (228 rotors)	70 (210 rotors)	Each
Step-up Transformers	76	70	Each
Wind Turbine Foundations	76	70	Each
Crane Pads or Mats	76	70	Each
Access Roads (estimated)	115,300	112,600	Lineal Foot (estimated)

## 2.2 WIND TURBINE GENERATORS

Both the GE 2.3-116 and GE 2.5-116 model wind turbine generators are primarily comprised of a modular steel tower, nacelle, and rotor with three rotor blades attached to a hub. The hub height of the turbines will be 94 meters (308.4 feet) for the GE 2.3-116 model and 90 meters (229.7 feet) for the GE 2.5-116 model turbine. A 116-meter (380.6-foot) rotor diameter will be utilized for both turbine models. The combined above-ground height (tip-height) of the GE 2.3-116 model turbine tower and rotor is 152 meters (498.7 feet). The tip-height of the GE 2.5-116 model turbine tower and rotor is 148 meters (485.6 feet). The tower components for both models are modular in design, allowing for ease of construction, replacement and disassembly during decommissioning. Turbine components in working condition may be refurbished and sold in a secondary market yielding greater revenue than selling as salvage material. For purposes of this report, no estimated recovery or salvage values were considered, as directed in the final order from the Ohio Power Siting Board (OPSB) for the Project (09-0479-EL-BGN and 11-3446-EL-BGA).

**Turbine Tower** – The turbine towers are painted modular monopole steel structures comprised of four sections for the GE 2.3 model turbine and three sections for the GE 2.5 model. The GE 2.3 tower is approximately 94 meters (308.4 feet) long and weighs, in total, approximately 206 tons. The GE 2.5 model utilizes a 90-meter (229.7-foot) tower weighing approximately 178 tons. It is conservatively estimated that the tower sections will be transported off-site for recycling although they may be cut into pieces on site for salvage. The towers contain more than 80 percent salvageable materials which can be sold to provide revenue to offset the decommissioning costs. As stated earlier, the revenue generated from salvageable equipment has not been included in the decommissioning estimate.

**Nacelle** – The nacelle sits at the top of the turbine tower and has an overall weight of approximately 75 tons. The nacelle is comprised of approximately 80% salvageable steel along



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with other non-salvageable materials. Non-salvageable material within the nacelle will be disposed of in a landfill.

**Hub, Rotor, and Rotor Blades** – The hub assembly (without blades) has a total weight of approximately 32.5 tons. It is mainly comprised of steel that will be salvaged along with the tower and nacelle. The rotor blades are constructed of non-metallic materials such as fiberglass, carbon fibers and epoxies. These materials will likely have no salvage value (at this time) and thus will be properly disposed of in a licensed solid waste facility.

**Other Turbine Components** – In addition to the main components previously described, each WTG contains other items such as anchor bolts and internal electrical wiring that will have additional salvage value. The down-tower cabling contains copper which will be salvageable.

**Decommissioning Activity** – The wind turbines will be deactivated from the surrounding electrical system and made safe for disassembly. Improvements to access roads and crane pads will be completed to allow crane access to turbines for removal of components. Liquid wastes, including gear box oil and hydraulic fluids will be removed and properly disposed of or recycled according to regulations current at the time of decommissioning. Control cabinets, electronic components and internal electrical wiring will be removed and salvaged. The hub and rotors will be lowered to the ground as a unit for disassembly. The nacelle and turbine sections will be disassembled and removed in the reverse order of assembly.

## 2.3 STEP-UP TRANSFORMERS

Step-up transformers generally sit on small concrete footings at the base of each turbine, occupying an approximate six-foot-square footprint. The electrical transformer is housed in a protective structure. After deactivation, oil will be drained and recycled or disposed of at an approved solid waste management facility. The transformer will then be disassembled and removed. Depending on condition, the transformers may be sold for refurbishment and re-use. If not re-used, the transformer will be salvaged from the site for a fee. The concrete footings will be removed.

## 2.4 WIND TURBINE FOUNDATION EXCAVATION

The octagonal spread foot foundations utilized for the Project turbines will be predominantly located underground. The foundation design consists of a solid, reinforced circular concrete pedestal, approximately 54 inches (4.5 feet) high and 18 feet in diameter. Below the pedestal is the foundation base, an octagonal-shaped concrete structure approximately 63 feet across and 9 to 10.0 feet deep. The entire foundation sits on supporting sub-grade approximately 10 feet below the ground surface. A typical spread foot foundation design is shown in Figure 3.

Concrete demolition will be completed on the upper 54 inches of the pedestal. This will include the anchor bolts, rebar, conduits, cables and concrete to the required depth. The site will be back-filled with clean fill and graded and the land contours restored as near as practicable to preconstruction conditions. Topsoil will be placed on the disturbed area and revegetated. Excavated materials will be hauled off-site for recycling or disposal, as required by the lease



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agreement between Hardin Wind and the host landowners. The cost estimate for the excavation and removal of turbine foundations is conservatively based on the previously described design parameters and assumes no resale or salvage value.

#### **2.5 COLLECTION SYSTEM**

The Project's electrical collection system will be located in cable trenches buried at a depth of five feet (60 inches) below the ground surface. The system voltage is 34.5 kV and will run from the individual turbine step-up transformers to an electrical substation. The approximate length of the Project collection system cable is estimated at approximately 355,000 to 360,000 linear feet (67.2 to 68.2 miles) depending on the number of turbines built. The length of the collection system given is a preliminary estimate and is subject to change with the final Project design.

The Project collection system will not interfere with farming activities because it will be placed 60 inches or more below ground surface. Hence, complete cable removal is not required at decommissioning to restore the wind farm site to its former use. Cables five feet (60 inches) or more below ground surface will be completely deactivated and abandoned in place. Minimal decommissioning costs are associated with the collection system and are included in the turbine decommissioning estimate. If, at the time of decommissioning, the salvage value of the underground cable exceeds the cost of extraction and restoration, the cables may be removed and salvaged.

#### **2.6 CRANE PADS**

Crane pads will be located at the base of each turbine to support the large cranes necessary for assembly and disassembly of the turbines. Pads will be approximately 40 feet by 60 feet and consist of compacted native soils and approximately one foot of base fill. Alternately wooden crane mats may be used to reduce the volume of compacted fill needed; however, the more conservative (higher cost) option of gravel pads has been used in this cost estimate. After decommissioning activities are completed the crane pad aggregate will be removed and the areas filled with native soil, as necessary. If used, wooden mats will be recycled from turbine to turbine so only several will be required. Land will be graded and pre-construction contours restored to the extent practicable. Restoration will likely be performed in conjunction with the turbine foundation and/or access road restoration. Soils compacted during de-construction activities will be de-compacted (ripped to 18 inches), as necessary, to restore the land to pre-construction land use. Labor for trucking and equipment is the primary expense for the crane pad removal.

#### **2.7 ACCESS ROADS**

Access roads will be located at each turbine providing access from public roads to the turbine site. The final width of the roads is approximately 16 feet, widening near the turbine base. The total length of the Project access roads is estimated at 112,600 linear feet (21.3 miles) to 115,300 linear feet (21.8 miles), depending on the number of turbines built. The total length of access roads constructed is given as a preliminary estimate and is subject to change with the final Project design.

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During installation of the access roads subgrade conditions may be stabilized by either the placement of Geogrid reinforced granular fills over soft ground; chemical stabilization by the application of lime (quicklime, hydrated lime, or lime slurry); or cement stabilization. The appropriate use of chemical stabilization is typically site specific and dependent upon soils characteristics in order to determine the correct mix ratio and rate of application. Geogrid and granular materials are typically easier to work with and install, maintain during use, and remove at decommissioning. Once the Geogrid system is in place, depending on the soils strength, a fill of up to 8 inches of granular materials (No. 2 stone) may be placed followed by compacted granular backfill to seal off the surface. The estimated quantity of these materials is provided in Table 2. During the construction phase of the wind farm, the existing soils will be graded to match the typical contour of the adjacent land and compacted. A typical access road cross-section is shown in Figure 4.

**Table 2 Typical Access Road Construction Materials**

Item	Quantity (GE 2.3-116)	Quantity (GE 2.5-116)	Unit
Geogrid	204,978	200,178	Square Yards
No. 2 stone, 8" thick	45,550	44,484	Cubic Yards
Compacted granular backfill, 4" thick	22,775	22,242	Cubic Yards

Access roads will be removed from the Project area during the decommissioning phase, unless written communication is received from the host landowner requesting that the road be retained. Hardin Wind anticipates that most landowners will retain the access roads; however, we have conservatively assumed that they will be removed and restored to preconstruction conditions. Decommissioning activities include the removal and stockpiling of aggregate materials onsite for salvage preparation. Local townships or farmers may accept the material prior to processing for use on local roads or field access roads; however, it is conservatively assumed that all materials will be removed from the Project area and hauled up to five miles from the site.

The underlying Geogrid will be removed during the decommissioning of the access roads. Geogrid that is easily separated from the aggregate during excavation will be disposed of in a solid waste disposal facility. Geogrid that remains with the aggregate will be sorted out at the processing site and properly disposed of. Following removal of aggregate and Geogrid, the access road areas will be graded, de-compacted with deep ripper or chisel plow (ripped to 18 inches), back-filled with native subsoil and topsoil, as needed, and land contours restored as near as practicable to preconstruction conditions.

## 2.8 SOILS AND PRIME FARMLAND

The proposed turbines sites and access roads are predominantly located in agricultural land. Many of the sites lay within former marsh land created by a glacial lake basin, resulting in approximately 2 to 10 feet of peat overlying the underlying lacustrine clay. The marsh land has been drained to support the current agricultural land use. Natural and man-made drainage waterways are located in low-lying areas of the site.

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Soils at the proposed turbine locations include: Blount silt loam (BLG1A1, Blg1B1 Ble1A1, and Ble1B1); Carlisle Muck (Ca); Colwood loam (Co); Del Ray silt loam (DeA); Fulton silt loam (FuA); Glynwood silt loam (Gwe1B1); Haskins silt loam (HkA); Kibbie loam (KbA); Linwood Muck (Ln); McGuffey muck (Mc); Milford silty clay loam (Mf); Minister silty clay loams (MNs3A and Mny3A); Pewamo silty clay loam (PkA); Pewamo varian muck (Po); Roundhead muck (Ro); and Westland clay loam (We). All of the proposed sites are located in soils classified as prime farm land; prime farm land, if drained or farmland of local importance. In general, Project area is drained by a system of natural and man-made drainage features; therefore, the land to be utilized for the wind farm facilities can be considered prime farmland (Figure 5).

Areas of the Project that were previously utilized for agricultural purposes will be restored to their preconstruction condition and land use. Topsoil reserved from the installation of the access roads and crane pads will be used if available, and supplemented with comparable soils. Restored areas will be revegetated in consultation with the current landowner.

## **2.9 RESTORATION AND REVEGETATION**

Project sites that have been excavated and back-filled will be graded as previously described to restore land contours as near as practicable to preconstruction conditions. Topsoil will be placed on disturbed areas and seeded with appropriate vegetation to reintegrate it with the surrounding environment. Soils compacted during de-construction activities will be de-compacted, as necessary, to restore the land to pre-construction land use. Drain tiles that have been damaged will be repaired or replaced to at least pre-construction condition. Work will be completed to comply with the conditions agreed upon by Hardin Wind Energy LLC and the Ohio Power Siting Board or as directed by regulations in affect at the time of decommissioning.

## **2.10 SURFACE WATER DRAINAGE AND CONTROL**

As previously described, the proposed turbines sites are predominantly located in actively drained agricultural fields. The access roads and turbine sites are being planned to avoid wetlands, waterways and drainage ditches (Figure 6). The collection system will be installed with a combination of trenching and horizontal direction drilling (HDD). HDD methods will be utilized to avoid impacting wetlands and waterways. The terrain is relatively flat and comprised of agricultural fields. Several ditches are protected by grassy buffers and berms along the edges. The existing site conditions and proposed best management practices (BMPs) to protect surface water features are described in the Stormwater Pollution Prevention Plan (SWP3) currently being prepared for the Project construction.

Surface water conditions at the site will be reassessed prior to the decommissioning phase. Hardin Wind will obtain the required water quality permits from the Ohio Environmental Protection Agency (OEPA) and the U.S. Army Corp of Engineers (USACE), if needed, before decommissioning of the Project. Construction storm water permits would also be obtained and a SWP3 prepared describing the protection needed to reflect conditions present at the time of decommissioning. BMPs may include: construction entrances, temporary seeding, permanent seeding, mulching (in non-agricultural areas), erosion control matting, silt fence, filter berms, and filter socks.

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#### **2.11 MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING**

The activities involved in the Project include removal of the above ground components of the wind turbines; the foundation, down to 54 inches below the surface; transformers; access roads (if land owner requests); collection system components located less than five feet below the surface; back-filling of turbine foundation sites; de-compaction of subsoils; grading of surfaces to pre-construction land contours and restoration of the disturbed areas. Material removed from the access roads or crane pads will be stockpiled and sold for alternate use or offered to land owners.

The equipment needed for the decommissioning activities are similar to what is necessary to construct a wind farm and include: specialized heavy-lift crawler cranes, small cranes, boom truck, low ground pressure (LGP) track mounted excavators, backhoes, LGP track bulldozers, LGP off-road end-dump trucks, front-end loaders, deep rippers, water trucks, disc plows and tractors to restore subgrade conditions, and ancillary equipment. If the material is to be removed from the site and hauled for disposal, over-the-road dump trucks will also be required.

### **3.0 Decommissioning Cost Estimate Summary**

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report approximate mid-2015 to early-2016 average market values were used to estimate labor expenses. Fluctuation and inflation of the labor costs were not factored into the estimates.

#### **3.1 DECOMMISSIONING EXPENSES**

Project decommissioning will incur costs associated with the backfilling, grading and restoration of the proposed wind turbine sites and access roads as described in Section 2. Table 3 summarizes the estimates for activities associated with the major components of the Project.

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**Table 3a Estimated Decommissioning Expenses – GE 2.3-116 Wind Turbine Layout**

Activity	Unit	Number	Cost per Unit	Total
Overhead and management (includes estimated permitting required)	Lump Sum		\$350,000	\$350,000
Mobilization and demobilization	Lump Sum		\$125,000	\$125,000
Local public road repairs	Lump Sum		\$370,000	\$370,000
Turbine and step-up transformer disassembly and removal from site <ul style="list-style-type: none"> <li>• Crane and disassembly of turbine</li> <li>• Deconstruction into salvageable pieces</li> <li>• Transport of materials to recycler <ul style="list-style-type: none"> <li>– Steel transport</li> <li>– Copper transport</li> </ul> </li> <li>• Demolition, transport and dumping for rotors (3) and nacelle cover</li> <li>• Transformer (load only, refurbisher will haul)</li> </ul>	Each	76	\$55,000 \$41,000 \$9,500 \$3,800 \$2,500 \$1,200	\$4,180,000 \$3,116,000 \$722,000 \$288,800 \$190,000 \$91,200
Crane pad installation, excavation, removal and transportation (conservatively assumes 76)	Each	76	\$2,500	\$190,000
Wind turbine foundation <ul style="list-style-type: none"> <li>• Concrete demolition for 54” depth of pedestal</li> <li>• Disposal and backfill</li> </ul>	Each	76	\$14,000 \$5,500	\$1,064,000 \$418,000
Access road excavation and removal	Lump Sum		\$458,000	\$458,000
Remove and dispose of Geogrid	Lump Sum		\$225,480	\$225,480
Topsoil replacement and rehabilitation of site	Lump Sum		\$555,000	\$555,000
<b>Total estimated decommissioning cost</b>				<b>\$12,343,480</b>

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**Table 4b Estimated Decommissioning Expenses – GE 2.5-116 Wind Turbine Layout**

Activity	Unit	Number	Cost per Unit	Total
Overhead and management (includes estimated permitting required)	Lump Sum		\$350,000	\$350,000
Mobilization and demobilization	Lump Sum		\$125,000	\$125,000
Local public road repairs	Lump Sum		\$350,000	\$350,000
Turbine and step-up transformer disassembly and removal from site <ul style="list-style-type: none"> <li>• Crane and disassembly of turbine</li> <li>• Deconstruction into salvageable pieces</li> <li>• Transport of materials to recycler <ul style="list-style-type: none"> <li>– Steel transport</li> <li>– Copper transport</li> </ul> </li> <li>• Demolition, transport and dumping for rotors (3) and nacelle cover</li> <li>• Transformer (load only, refurbisher will haul)</li> </ul>	Each	70	\$53,000 \$39,000 \$7,600 \$3,300 \$2,500 \$1,200	\$3,710,000 \$2,730,000 \$532,000 \$231,000 \$175,000 \$84,000
Crane pad installation, excavation, removal and transportation (conservatively assumes 70)	Each	70	\$2,500	\$175,000
Wind turbine foundation <ul style="list-style-type: none"> <li>• Concrete demolition for 54" depth of pedestal</li> <li>• Disposal and backfill</li> </ul>	Each	70	\$14,000 \$5,500	\$980,000 \$385,000
Access road excavation and removal	Lump Sum		\$450,000	\$450,000
Remove and dispose of Geogrid	Lump Sum		\$220,200	\$220,200
Topsoil replacement and rehabilitation of site	Lump Sum		\$530,000	\$530,000
<b>Total estimated decommissioning cost</b>				<b>\$11,027,200</b>

### 3.2 DECOMMISSIONING REVENUES

Revenue from decommissioning the Project will be realized through the sale of wind farm components and construction materials. Turbines and other components will likely be sold within a secondary market or as salvage. For purposes of this report, no estimated recovery or salvage values were considered, as directed in the final order from the Ohio Power Siting Board (OPSB) for the Project (09-0479-EL-BGN and 11-3446-EL-BGA).

### 3.3 DECOMMISSIONING COST SUMMARY

The estimated cost to decommission the Project, using the information detailed in this report are based on 2015-2016 prices, with no market fluctuations or inflation considered. The total cost to decommission the 76 turbine sites and facilities for the GE 2.3-116 turbine layout is \$12,343,480 (\$162,414 per turbine). The total cost to decommission the 70 turbine and facilities for the GE 2.5-116 turbine layout is \$11,027,200 (\$157,531 per turbine).

**DECOMMISSIONING PLAN**  
**HARDIN WIND ENERGY PROJECT, HARDIN COUNTY, OHIO**

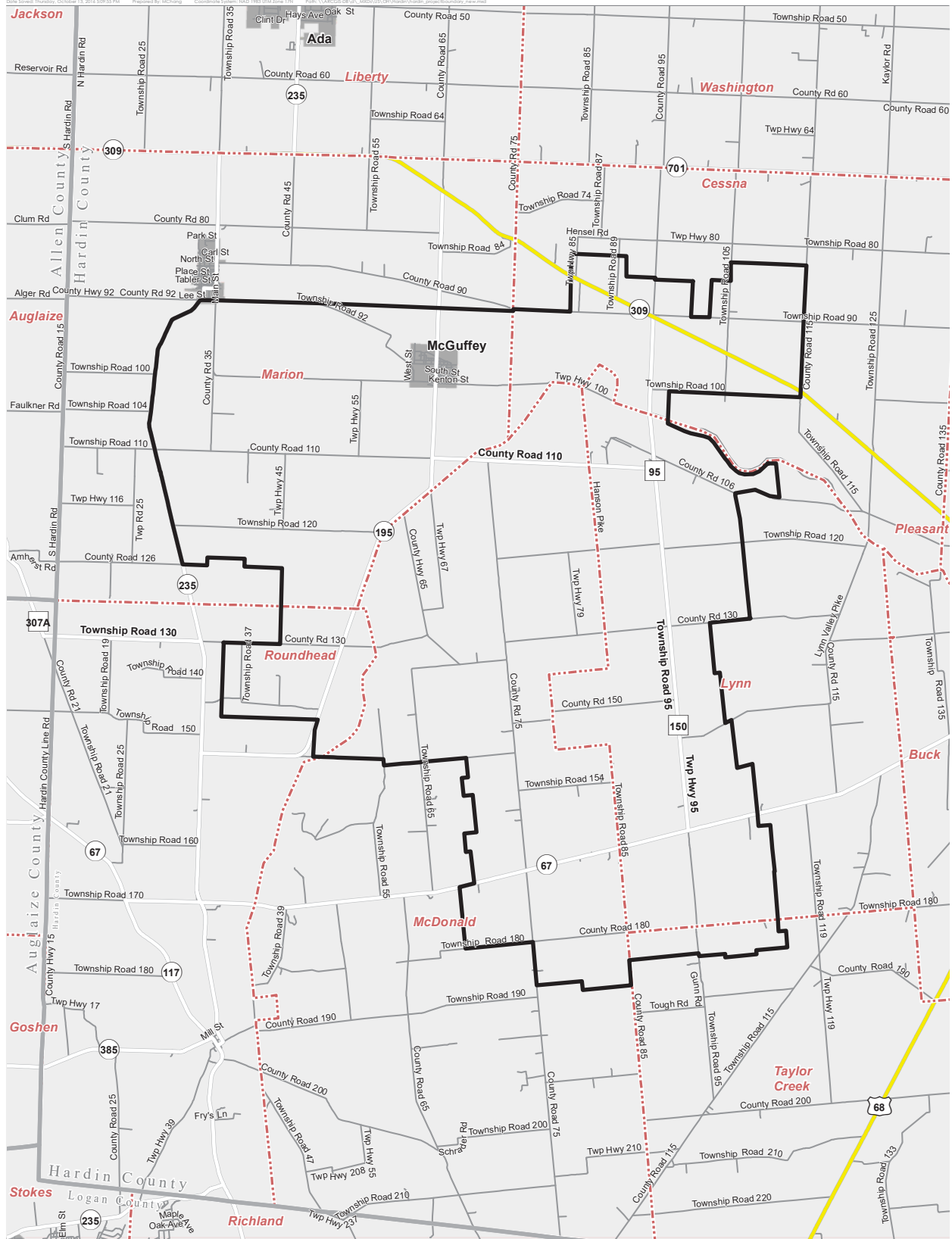
**3.4 FINANCIAL ASSURANCE**

Hardin Wind will post decommissioning funds in the form of a performance bond prior to the preconstruction conference to cover the cost of the turbines to be constructed.



## FIGURES

**Figure 1 Project Location**



#### Legend

- Hardin Project Boundary
- Municipal Boundary
- Political Township
- County Boundary
- Primary Road
- Secondary Road
- Local Road



4,000 0 4,000  
Feet

## Hardin County Wind Project Location

Hardin Wind Energy Project | Hardin County, Ohio

Rev. 00  
October 13, 2016



**Figure 2 Proposed 76 Turbine Phase I Locations – GE 2.3-116**

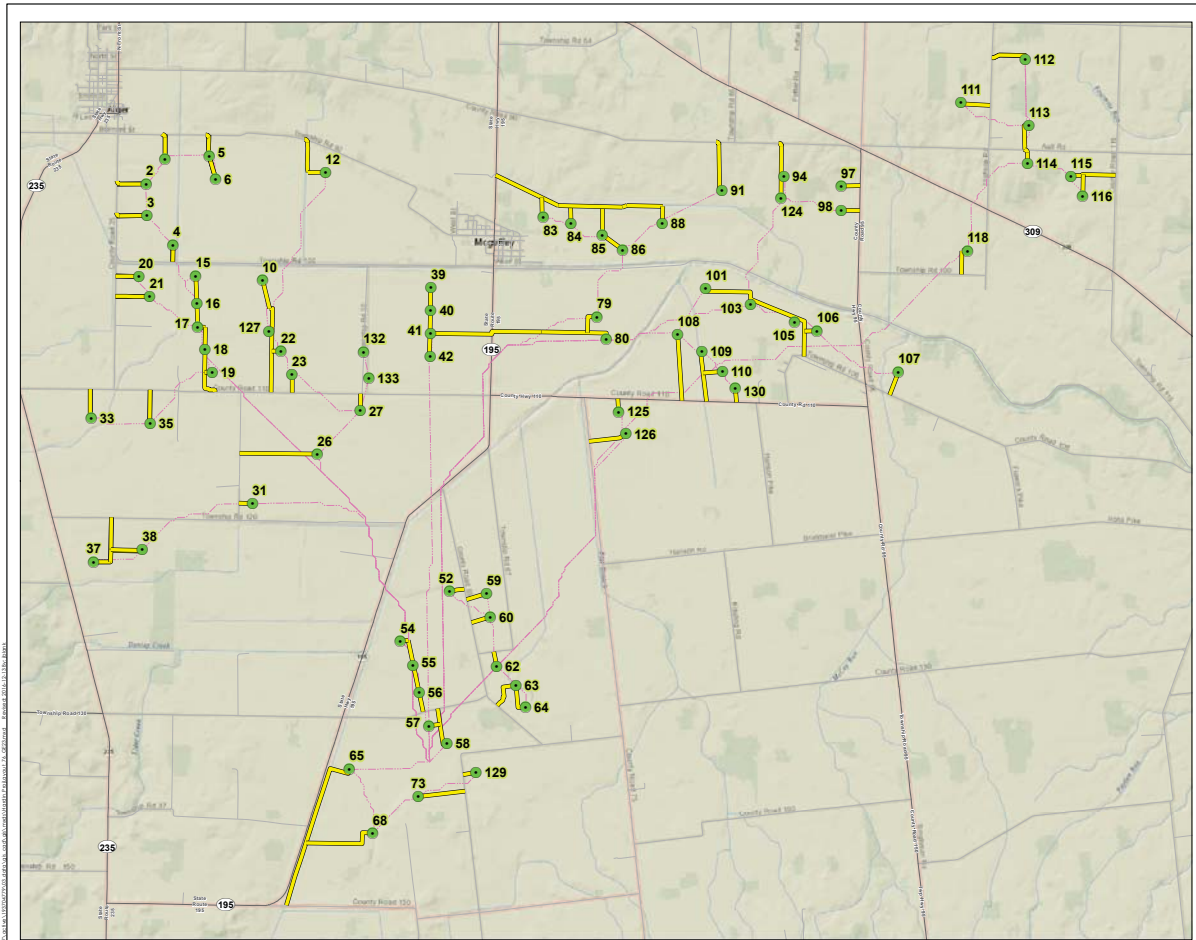


Figure No.  
**2 - 76 GE 2.3 WTGs**  
Title  
**Project Layout**

Client/Project  
Invenergy, LLC  
Hardin Wind Energy Center - 2016 Phase

Project Location  
Morton Township  
Hardin Co., OH  
193704779  
Prepared by MCF on 2016-12-13  
Technical Review by JLB on 2016-12-13  
Independent Review by AB on 2016-12-13



- Legend**
- Potential GE2.3-116 Turbine
  - Potential Access Road
  - Potential Collection Line



- Notes**
- Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
  - Data Sources include: Stantec, USFWS, USGS, NAD83
  - Base map: National Geographic Service



**Figure 2 Proposed 70 Turbine Phase I Locations – GE 2.5-116**

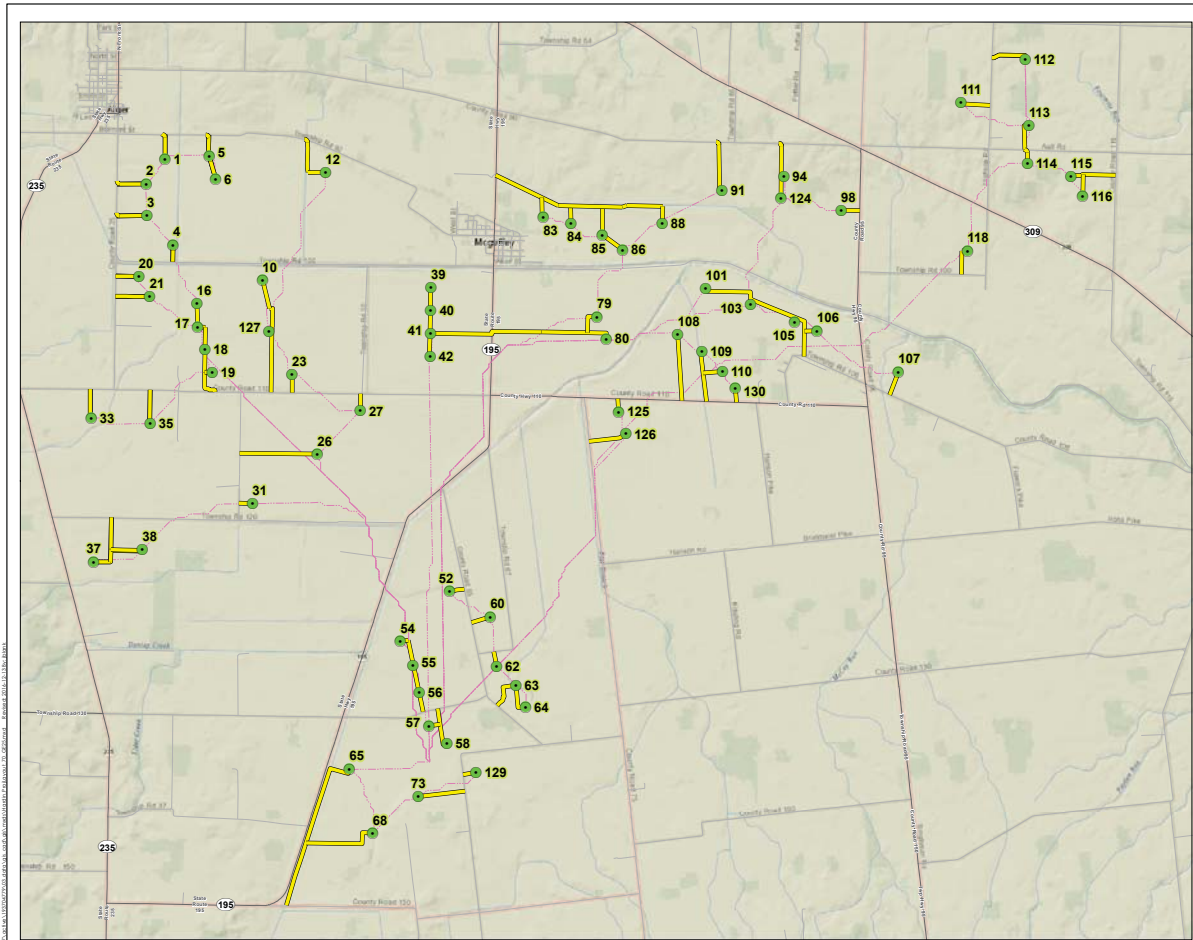


Figure No.  
**2 - 70 GE 2.5 WTGs**

**Project Layout**

Client/Project  
 Invenery, LLC  
 Hardin Wind Energy Center - 2016 Phase

Project Location  
 Marion Township  
 Hardin Co., OH

193704779  
 Prepared by MCF on 2016-12-13  
 Technical Review by JLB on 2016-12-13  
 Independent Review by AB on 2016-12-13

0 2000 4000 Feet  
 1:48,000 (At original document size of 11x17)



**Legend**

- Potential GE2.5-116 Turbine
- Potential Access Road
- Potential Collection Line



**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources include: Stantec, USFWS, USGS, NAD83  
 3. Basemap: National Geographic Service





Figure 3 Foundation Detail

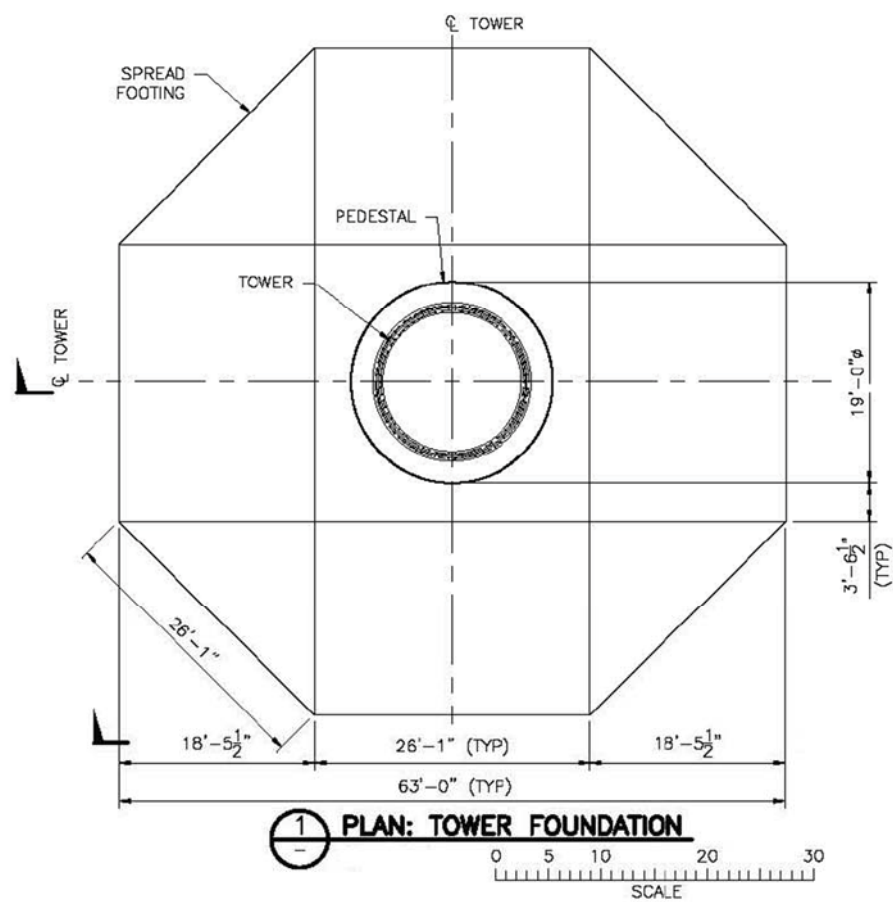
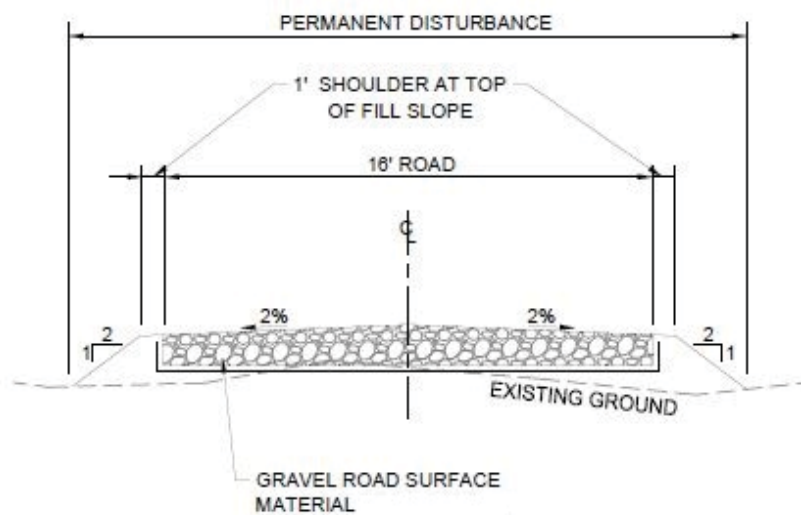


Figure 4 Access Road Detail



**Figure 5 Prime Farmland – Proposed 76 Turbine Phase I Locations – GE 2.3-116**



**Figure 5 Prime Farmland – Proposed 70 Turbine Phase I Locations – GE 2.5-116**

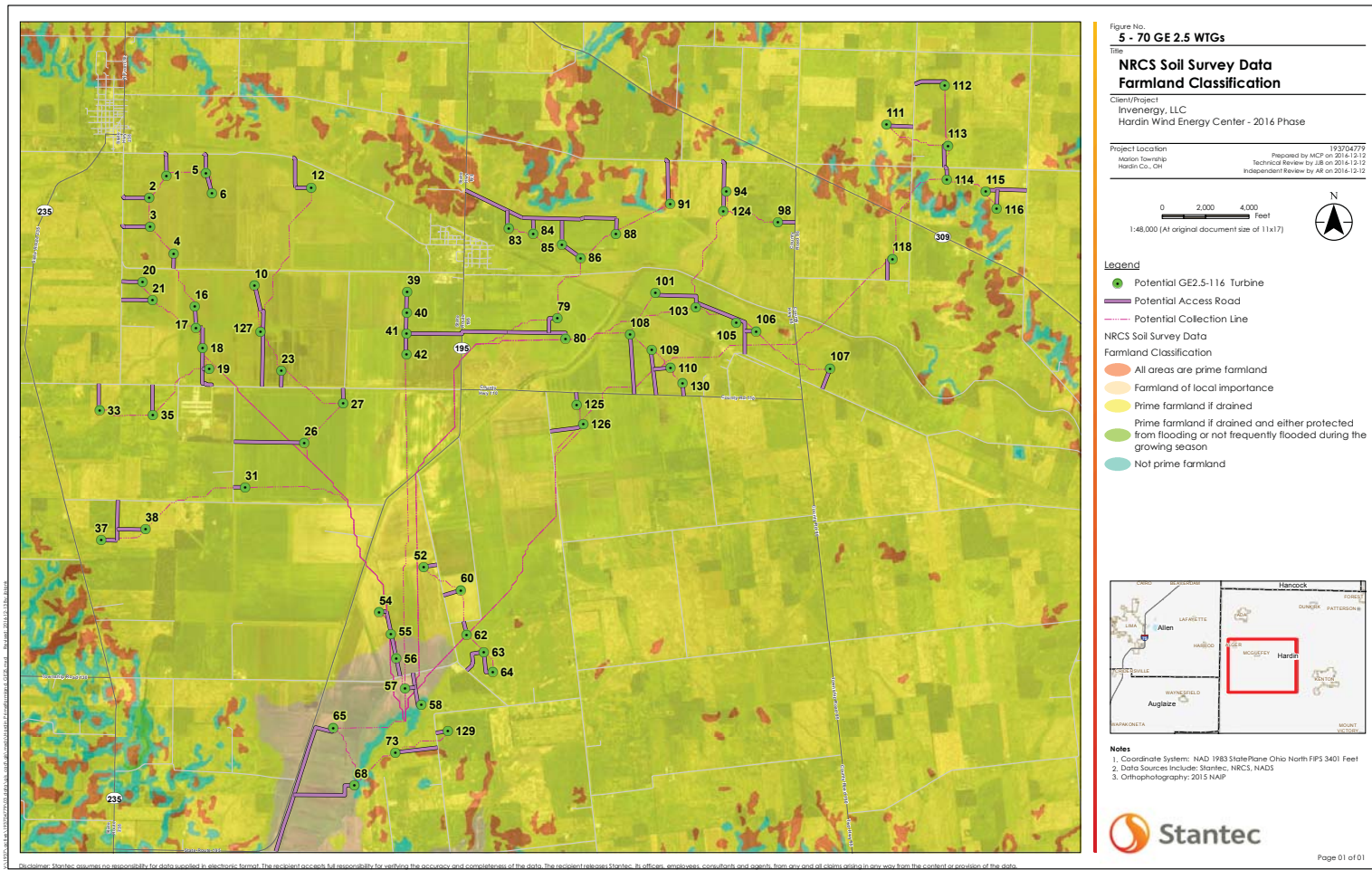


Figure No.  
**5 - 70 GE 2.5 WTGs**

Title  
**NRCS Soil Survey Data  
 Farmland Classification**

Client/Project  
 Invenergy, LLC  
 Hardin Wind Energy Center - 2016 Phase

Project Location  
 Marion Township  
 Hardin Co., OH

193704779  
 Prepared by MCF on 2016-12-12  
 Technical Review by JLB on 2016-12-12  
 Independent Review by AB on 2016-12-12



- Legend**
- Potential GE2.5-116 Turbine
  - Potential Access Road
  - Potential Collection Line
- NRCS Soil Survey Data**
- Farmland Classification**
- All areas are prime farmland
  - Farmland of local importance
  - Prime farmland if drained
  - Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
  - Not prime farmland



**Notes**

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources include: Stantec, NRCS, NAD83
3. Orthophotography: 2015 NAIP



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**Figure 6 Wetlands and Waterways - Proposed 76 Turbine Phase I Locations – GE 2.3-116**



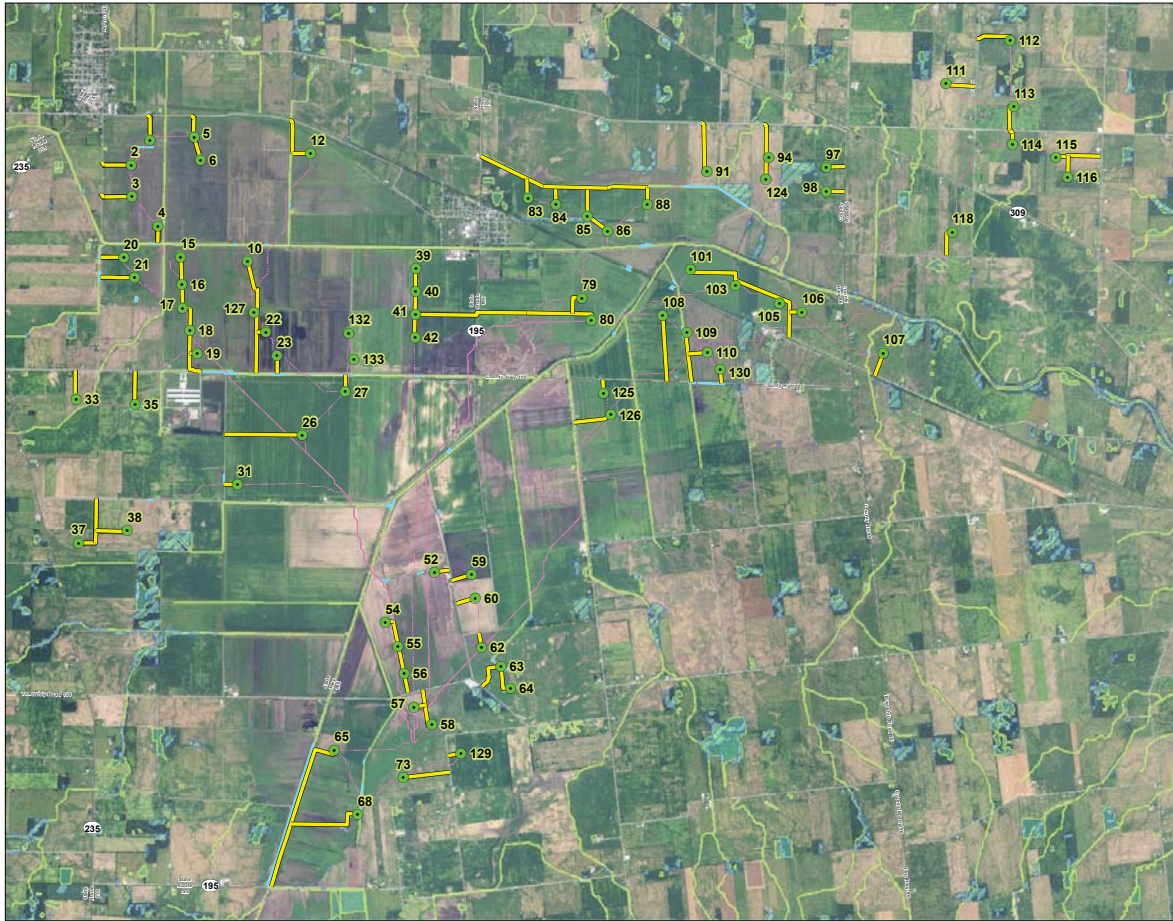


Figure No.  
**6 - 76 GE 2.3 WTGs**

## Wetlands and Waterway Data

Client/Project  
Invenery, LLC  
Hardin Wind Energy Center - 2016 Phase

Project Location  
Morton Township  
Hardin Co., OH

193704779

Prepared by MCF on 2016-12-13  
Technical Review by JLB on 2016-12-13  
Independent Review by AB on 2016-12-13

0 2,000 4,000 Feet  
1:48,000 (At original document size of 11x17)



### Legend

- Potential GE2.3-116 Turbine
- Potential Access Road
- Potential Collection Line
- Field Delineated Waterway
- Hardin County Wetland
- National Wetlands Inventory



- Notes**
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
  2. Data Sources include: Stantec, USFWS, USGS, NAD83
  3. Orthophotography: 2015 NAIP





**Figure 6 Wetlands and Waterways -Proposed 70 Turbine Phase I Locations – GE 2.5-116**

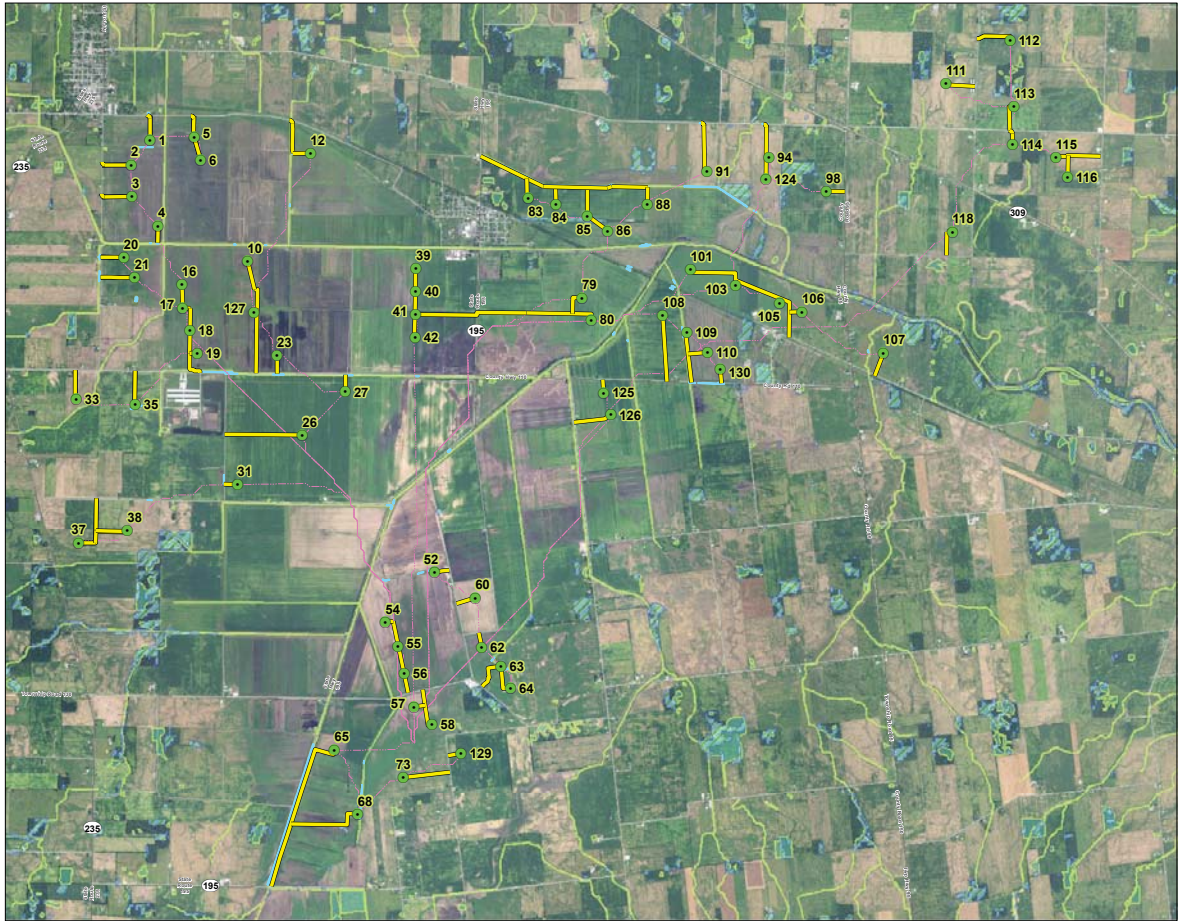


Figure No. 2 - 70 GE 2.5 WTGs  
Title  
Wetlands and Waterways  
Client/Project Invenergy, LLC  
Hardin Wind Energy Center - 2016 Phase  
Project Location Marion Township  
Hardin Co., OH  
193704779  
Prepared by MCF on 2016-12-13  
Technical Review by JLB on 2016-12-13  
Independent Review by AB on 2016-12-13



- Legend
- Potential GE2.5-116 Turbine
  - Potential Access Road
  - Potential Collection Line
  - Field Delineated Waterway
  - Hardin County Wetland
  - National Wetlands Inventory



- Notes
- Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
  - Data Sources include: Stantec, USFWS, USGS, NAD83
  - Orthophotography: 2015 NAIP



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**in**

**Case No(s). 09-0479-EL-BGN, 11-3446-EL-BGA, 16-0469-EL-BGA, 16-2404-EL-BGA**

Summary: Notice of Compliance with Certificate Condition #51(b)—Full Decommissioning Plan electronically filed by Mr. William V Vorys on behalf of Hardin Wind Energy LLC