4906-17-07 Environmental Data

(A) GENERAL

This section provides environmental data regarding air, water, and solid waste in terms of site conditions, potential impacts from the Facility and proposed mitigation measures. Unlike traditional power plants that combust fossil fuel to generate electricity, the proposed Facility will not emit air pollutants, require water for cooling purposes, or require process wastewater to be discharged from the Facility. In addition, the Facility will not produce any solid combustion wastes as a by-product of its energy production process. Therefore, the Applicant's proposed Facility will avoid major impacts associated with decreased air quality, water consumption, thermal pollution and ash landfills.

As part of the Facility, the Applicant is evaluating the option of constructing a temporary concrete batch plant for producing concrete required during construction. The temporary batch plant would be located in the southern portion of the Project area, adjacent to the O&M building.

(B) AIR

This Facility will generate renewable energy with wind turbines in Van Wert and Paulding counties in northwest Ohio. The Facility will work by converting the kinetic energy in wind to electricity; thereby helping to meet electrical demand without the air pollutants associated with power generated by burning fossil fuels. Coal-fired or natural gas-fired power plants use fossil fuels for combustion to drive the turbine-generators, producing air pollutant emissions. Section 4906-17-07(B)(3), *Operation*, provides a summary of air emissions avoided by operation of this renewable energy Facility.

A temporary central ready mix concrete batch plant might be installed at the Facility to be used during the construction of the foundations for the wind turbines. The batch plant will be dedicated for use during the Facility's construction period, with a 25-month anticipated construction duration. The potential emissions associated with the concrete batch plant and its associated unpaved roadways have also been considered as part of this Application.

(1) Preconstruction

(a) Ambient Air Quality

Both Paulding County and Van Wert County are in attainment for all criteria pollutants regulated by USEPA's National Ambient Air Quality Standards (NAAQS) (OEPA, 2009b). There are no Mandatory Federal Class I Areas in Ohio or in the neighboring state of Indiana (USEPA, 2009b).

Ambient air monitoring data is not available for Paulding County or Van Wert County. Table 7-1 provides 2008 ambient air monitoring data for the Ohio counties closest to the Facility.

TABLE 7-1
Ambient Air Monitoring Data near Van Wert and Paulding Counties

Pollutant	Averaging Period	NAAQS Value	Highest Monitoring Value Reported	Reference County
PM_{10}	Annual (µg/m3)	Not applicable	19	Allen
	24-hour (µg/m3)	150	30	
$PM_{2.5}$	Annual (µg/m3)	15.0	12.3	Lucas
	24-Hour (µg/m3)	35	32.3	
Sulfur Dioxide (SO_2)	Annual (ppm)	0.03	0.002	Allen
	24-Hour (ppm)	0.14	0.008	
	3-Hour (ppm)	0.5	0.021	
Carbon Monoxide (CO)	8-Hour (ppm)	9	1.5	Montgomery
	1-Hour (ppm)	35	2.3	
Nitrogen oxide (NO_2)	Annual (ppm)	0.053	0.016	Hamilton
Ozone (O_3)	1-Hour (ppm)	0.12	0.078	Allen
	8-Hour (ppm)	0.075	0.067	

Source: OEPA, 2009c.
PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in aerodynamic diameter
ppm = parts per million
µg/m^3 = micrograms per cubic meter

As indicated in Table 7-1, NAAQS standards in the area surrounding Van Wert County and Paulding County were not exceeded in 2008.

(b) Applicable State/Federal Air Quality Regulations

The wind turbines are not a source of air emissions, and therefore there are no applicable federal and/or Ohio new source performance standards, applicable air quality limitations, applicable national ambient air quality standards, or applicable prevention of significant deterioration (PSD) increments.

The temporary concrete batch plant and its associated unpaved roads will be subject to General Permit requirements, as described below. The temporary concrete batch plant that will be installed at the Facility will be a source of particulate matter (PM), also referred to as particulate emissions (PE), and an OEPA *General Permit for a Central Mix Ready Mix Concrete Batch Plant 4.2*) (General Permit for concrete batch plant) will be obtained for this source. The emission limits required by this General Permit are listed in Table 7-2. Additional control, monitoring and recordkeeping requirements are listed in the General Permit, and those requirements are described in the Compliance Plan (below).

TABLE 7-2
Emission Limits Required by General Permit 4.2 for Central Ready Mix Concrete Batch Plants

Process	Emission Limit Required
Transfer of Sand and Aggregate to Elevated Bins	PE will not exceed 3.42 tpy.
	Visible emissions of fugitive dust will not exceed 10 percent opacity as a 3-minute average.
Portland Cement, Fly Ash, and Slag Storage	PE will not exceed 0.21 tpy.
	Each fabric filter(s) serving a silo will achieve an outlet emission rate of not greater than 0.030 grain of PE/SCF of exhaust gases or there will be no visible PE from the outlet.
Weigh Hopper Loading of Cement, Fly Ash, Slag, and possibly Sand and Aggregate	PE will not exceed 1.22 tpy.
	The fabric filter serving the weigh hopper will achieve an outlet emission rate of not greater than 0.030 grain of PE/SCF of exhaust gases or there will be no visible PE from the outlet.
Truck Loading of Aggregate, Sand, Cement and Cement Supplement	PE will not exceed 0.46 tpy.
	The fabric filter serving the central mix drum will achieve an outlet emission rate of not greater than 0.030 grain of PE/SCF of exhaust gases or there will be no visible PE from the outlet.

tpy = tons per year

Emission estimates were made for the concrete batch plant using the plant design and the emission factors required by section 1) f) of the General Permit. These predicted emissions are all equal to or less than the General Permit limits specified above.

There are no additional applicable federal or Ohio new source performance standards for the planned concrete batch plant. Based on the emission estimates, the plant will be a minor source (potential emissions less than major source levels); therefore, PSD requirements are not applicable. Through the establishment of the General Permit process, OEPA has demonstrated that sources that meet the qualifying criteria of the General Permit have acceptable air quality impact and will not cause a violation of the NAAQS.

The unpaved roadways associated with the concrete batch plant will also be a source of PE and an OEPA *General Permit for Unpaved Roadways and Parking Areas, with a maximum of 120,000 Vehicle Miles Traveled per Year 5.1* (General Permit for Unpaved Roads) will be obtained for this source. The emission limits required by this General Permit for Unpaved Roads are listed in Table 7-3. Additional control, monitoring and recordkeeping requirements are listed in the General Permit for Unpaved Roads, and those requirements are described in the Compliance Plan (section d below).

TABLE 7-3
Emission Limits Required by General Permit 5.1 for Unpaved Roadways

Process	Emission Limit Required
Unpaved Roadways and Parking Areas	PM_{10} will not exceed 7.4 tpy
	PE will not exceed 25.2 tpy
	No visible PE except for 3 minutes during any 60-minute period.

Emission estimates were made for the unpaved roadways using the batch plant design and the emission equation required by section 1)f)(1) of the General Permit for Unpaved Roads. These emission predictions were all equal to or less than the General Permit for Unpaved Roads limits specified above.

There are no additional applicable federal or Ohio new source performance standards for the unpaved roadways and parking areas. Based on the emission estimates, the batch plant will be a minor source, and the PSD requirements are not applicable. Through the establishment of the General Permit process, OEPA has demonstrated that sources that meet the qualifying criteria of the General Permit have acceptable air quality impact and will not cause a violation of the NAAQS.

(c) List of Required Permits

OEPA General Permits will be obtained for both the concrete batch plant and associated unpaved roadways. The concrete batch plant meets the requirements to qualify for the OEPA *General Permit for a Central Mix Ready Mix Concrete Batch Plant (General Permit 4.2*). The unpaved roadways and parking areas meet the requirements to qualify for the OEPA *General Permit for Unpaved Roadways and Parking Areas, with a Maximum of 120,000 Vehicle Miles Traveled per Year (General Permit 5.1*).

(d) Compliance Plans

The Facility will achieve compliance with the air requirements for the permits listed above by following the compliance requirements of the General Permits for the concrete batch plant and the unpaved roads and parking areas, as described below.

(i) (d)(1) Concrete Batch Plant Compliance

The General Permit for the concrete batch plant establishes three general areas of compliance requirements: operating restrictions, emission limits and visible emission restrictions. Compliance with these requirements will be achieved by a combination of plant design, air pollution control equipment, and operating procedures to reduce fugitive emissions.

a) Operational Restrictions

(1) The maximum hourly production rate for this central mix concrete facility will not exceed 300 cubic yards of concrete (600 tons) per hour.

(2) The maximum annual production rate for this central mix concrete facility will not exceed 300,000 cubic yards of concrete (600,000 tons) per year.

b) Compliance with Operational Restrictions- Plant Design

(1) The plant capacity is 300 cubic yards of concrete (600 tons) per hour. The plant is planned to typically operate at an average of 90 percent of design capacity, or 270 yards of concrete (540 tons) per hour. This will yield sufficient concrete to meet or exceed the planned construction schedule.

(2) Based on the wind farm design, the Facility will need approximately 122,500 cubic yards of concrete (245,000 tons), which will be produced over an estimated 25-month period. The planned plant operation will be less than the half of the annual permit limit of 300,000 cubic yards (600,000 tons) per year. The Applicant will maintain annual records of the cubic yards or tons of concrete produced at this facility to demonstrate compliance with the annual limit.

c) Emission Limits

(Transfer of Sand and Aggregate to Elevated Bins) - PE will not exceed 3.42 tons/year.

(Portland Cement, Fly Ash and Slag Silos) - PE will not exceed 0.21 ton/year.

(Weigh Hopper Loading of Cement, Fly Ash, Slag, and possibly Sand and Aggregate) - PE will not exceed 1.22 tons/year.

(Central Mix Drum Loading of Aggregate, Sand, Cement and Cement Supplement) - PE will not exceed 0.46 ton/year.

Emission Limit for all controlled sources - The fabric filters serving these sources will achieve an outlet emission rate of not greater than 0.030 grain of PE per dry standard cubic foot of exhaust gases.

d) Compliance with Emission Limits – Plant Design and Air Pollution Control Equipment

The emission limits above are based on a standard plant design and source emission factors included in the General Permit. As indicated above, the plant will be operated within the design production capacity, with the control equipment required by the General Permit. As such, source emissions will be less than or equal to the limits specified above. The Applicant will calculate emissions using the standard emission factors in the General Permit to demonstrate compliance with the annual limit.

If required, the Applicant will demonstrate compliance with the grain loading limit by emission testing in accordance with the procedures specified in 40 CFR Part 60, Appendix A, Methods 1 through 5 and the procedures specified in Ohio Administrative Code (OAC) Rule 3745-17-03(B)(10).

e) Visible Emissions Requirements

During the transfer of sand and aggregate to the elevated bins, visible emissions of fugitive dust will not exceed 10 percent opacity as a 3-minute average.

The pneumatic system used to transfer cement and cement supplement to the cement and cement supplement silos will be adequately enclosed so as to minimize or eliminate visible emissions of fugitive dust at all times.

The transfer of cement, cement supplement, sand, and/or aggregate to the concrete batching weigh hoppers and the weight hoppers will be enclosed and vented to a fabric filter. The enclosure will be sufficient to minimize or eliminate visible emissions of fugitive dust at all times.

The central mix drum will be adequately enclosed and vented to a fabric filter. The enclosure will be sufficient to minimize or eliminate visible emissions of fugitive dust at all times.

There will be no visible PE from the outlets of the fabric filters serving these sources.

f) Compliance with Visible Emission Requirements – Plant Design and Operating Procedures

At all times during the transfer of sand and aggregate, the drop height of the front-end bucket will be minimized to the extent possible. Sand and aggregate loaded into the elevated bins will, at all times, have inherent moisture content sufficient to minimize or eliminate visible emissions of fugitive dust.

Cement and cement supplement will be transferred pneumatically to the cement and cement supplement silos. Any visible emissions of cement and/or cement supplement dust emanating from the delivery vehicle during transfer will be cause for the immediate halt of the unloading process and the refusal of the cement and/or cement supplement load until the situation is corrected.

The weigh hoppers will be sufficiently enclosed to minimize or eliminate at all times visible emissions of fugitive dust. The transfer of cement, cement supplement, sand, and/or aggregate to the concrete batching weigh hoppers will be enclosed and vented to a fabric filter.

The central mix drum will be adequately enclosed and vented to a fabric filter.

g) Compliance Monitoring and Testing

When the emissions unit is in operation, and when the weather conditions allow, the Applicant will perform weekly checks for any visible PE from the fabric filters serving these emissions units. No inspections are required on days the material handling operations are not in operation. The presence or absence of any visible PE will be recorded electronically or in an operations log.

If visible PE is observed, the Applicant will note the following in the operations log:

- Whether the emissions are representative of normal operations;
- If the emissions are not representative of normal operations, the cause of the visible emissions;
- The total duration of any visible emission incident; and
- Any corrective actions taken to eliminate the visible emissions.

The information above will be kept separately for each fabric filter serving these sources.

If required, compliance with the visible emission limitation for the material handling operation(s) identified above will be determined

in accordance with Test Method 22 set forth in "Appendix on Test methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources"), as such appendix existed on July 1, 1997.

(e) Batch Plant Monitoring, Recordkeeping, and Reporting

The Applicant will maintain the following recordkeeping and reporting pursuant to the requirements of the General Permit for the batch plant:

- Annual records of cubic yards or tone of concrete produced;
- Records of weekly visible emissions inspections (when weather conditions allow) for fabric filters;
- Records of weekly visible emissions inspections (when weather conditions allow) for sand/aggregate transfer points; and
- Completion of Annual Permit Evaluation Report (PER) as requested by OEPA.

(i) (d)(2) Unpaved Roadways and Parking Areas Compliance

The General permit for the unpaved roadways and parking areas establishes two general compliance requirements: emission limits and visible emission restrictions. Compliance with these requirements will be achieved by operating procedures to reduce fugitive emissions.

a) Emission Limits

Emissions will not exceed 25.2 tons/yr of PE, and 7.4 tons per year of particulate matter less than 10 micrometers in aerodynamic diameter (PM_{10}).

b) Compliance with Emission Limits – Plant Design

The emission limits above are based on anticipated vehicle miles traveled (VMT) of 120,000 miles per year as specified in the

qualifications for the General Permit. Based on the wind farm design, the Applicant has estimated less than 10,000 VMT per year during construction. As such, source emissions will be less than the limits specified above. The Applicant will calculate emissions using the standard emission factors in the General Permit to demonstrate compliance with the annual limit.

c) Visible Emissions Requirements

There will be no visible PE except for 3 minutes during any 60-minute period.

d) Compliance with Visible Emission Requirements – Operating Procedures

The Applicant will treat the unpaved roadways and parking areas by application of chemical stabilization/dust suppressants and/or watering at sufficient treatment frequencies to maintain compliance. The needed frequencies of implementation of the control measures will be determined by the inspections discussed below.

Implementation of the control measures will not be necessary for unpaved roadways and parking areas that are covered with snow and/or ice or if precipitation has occurred that is sufficient for that day to maintain compliance with the above-mentioned applicable requirements. Implementation of any control measure may be suspended if unsafe or hazardous driving conditions would be created by its use.

The Applicant will remove in a timely manner earth and/or other material from paved streets onto which such material has been deposited by its trucking or earth-moving equipment or Facility-related erosion by water or other means.

Open-bodied vehicles transporting materials likely to become airborne will cover such materials if the control measure is necessary for the type of material being transported. This requirement does not apply to the cement trucks.

Implementation of the above-mentioned control measures in accordance with the terms and conditions of the General Permit are appropriate and sufficient to satisfy the best available technology requirements of OAC rule 3745-31-05.

e) Compliance Monitoring and Testing

Except as otherwise provided in this section, the Applicant will perform inspections of each of the roadway segments and parking areas on a daily basis.

The purpose of the inspections is to determine the need for implementing the above mentioned control measures. The inspections will be performed only on days the concrete batch plant is in operation, and during representative, normal traffic conditions. No inspection will be necessary for a roadway or parking area that is covered with snow and/or ice or if precipitation has occurred that is sufficient for that day to maintain compliance with the applicable requirements. Any required inspection that is not performed due to any of the above-identified events will be performed as soon as such event(s) has (have) ended.

If required, compliance with the visible emission limitation for the unpaved roadways identified above will be determined in accordance with Test Method 22 (Visual Determination of Fugitive Emissions From Material Sources and Smoke Emissions From Flares) set forth in 40 CFR, Part 60 (Standards of Performance for New Stationary Sources).

(ii) Unpaved Roads Monitoring, Recordkeeping, and Reporting

The Applicant will perform the following monitoring, recordkeeping, and reporting pursuant to the requirements of the General Permit for unpaved roads:

- Daily inspections of unpaved roads and parking areas, unless not required because of snow/ice cover or precipitation that served as control measure;
- Records of inspection and dates control measures implemented, and summary on calendar quarter basis of total number of days control measures implemented and total days snow/ice cover or precipitation served as control measures; and
- Completion of Annual PER as requested by OEPA.

(2) Construction

In addition to the emissions discussed above, temporary emissions from construction activities may result in minor air quality impacts. These impacts are expected to occur from vehicle exhaust and fugitive dust from earth moving activities. The increase in PE is not expected to be of a magnitude or duration to significantly impact local air quality.

Best management practices (BMPs), including those required by the General Permit for unpaved roadways, will be implemented during construction activities to reduce fugitive PE. Some of these BMPs include watering unpaved roadways and open soil surfaces during periods of dry and/or warm weather periodic clean up of tracked dirt onto paved roadways, and placing covers on soil piles to prevent erosion during high wind events. Finally, vehicle speeds will be controlled to further reduce fugitive dust emissions from unpaved roadways.

(3) Operation

Federal and state laws exist to reduce air pollution to levels that research has shown will protect human health and reduce overall impacts to ecosystems. The implementation of these laws begins with the setting of air quality standards, which are used to describe the existing air environment in a particular area. The USEPA currently sets NAAQS to regulate the emissions of six "criteria" air pollutants: carbon monoxide (CO), nitrogen oxide (NO_2), ozone (O_3), lead, particulates (PM_{10} and $PM_{2.5}$) and sulfur dioxide (SO_2). These criteria pollutants are regulated because they have been found to have the most adverse impact on public health and the environment. By controlling or eliminating these pollutants, while also producing the electric power that is needed, the overall environment is benefitted.

CO, NO_2, and SO_2 are common products of combustion of fossil fuels, such as coal. Particulates can be emitted by combustion or created by chemical processes in the atmosphere after emission. SO_2 and nitrogen oxides (NOx) can combine to form fine particulates. They can also combine with moisture in the atmosphere and return to the earth as acidic precipitation, commonly called "acid rain." NOx and volatile organic compounds (VOCs) can combine in sunlight to form O3. In addition, fossil fuel combustion processes can emit pollutants classified as "hazardous air pollutants" such as inorganic acid-gases (like hydrochloric acid), inorganic solids (like arsenic), or metallic compounds (like compounds of mercury). They also emit greenhouse gases (GHGs), such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which contribute to global warming and climate change. CH_4 is also a component of natural gas, which can be released in the course of production, transportation, and use of that fuel.

An estimate of the air emissions avoided (annually and over a 20-year period) from operation of the Facility rather than a 350 MW power plant in the general Ohio generation fleet (with a similar capacity factor) is presented in Table 7-4. These air emissions are based on the eGRIDweb database (USEPA, 2009c) for the existing generation fleet in Ohio, and for pollutants not included in the eGRIDweb database, on AP-42 emission factors.

TABLE 7-4
Air Emissions Potentially Avoided by Operation of the Facility (assuming Ohio existing generation fleet)[A]

Pollutant	Tons Per Year (Range)[B]	Tons per 20 Years Operation [C, D]
SO_2	14 - 7185	135,900
NO_x	429 - 1964	32,600
PM_{10}	27 - 3973	40,000
VOC	2 - 9	100
CO	62 - 86	1,500
CO_2e (Metric Tonnes)	469,512 - 1,068,649	17,267,300

A To provide a reasonable worst case estimate of the emissions avoided, it was assumed that a power plant in Ohio would be taken off-line when the Facility began operation. Emission factors derived from AP-42 (AP-42, Fifth Edition, Volume 1, January 1995) were used in this analysis.

B 1 ton = 2,000 lbs

C Tons per 20 years of operation have been calculated by using the mean of the ton per year range for each pollutant.

D Numbers have been rounded to the nearest hundred.

An estimate of the air emissions avoided (annually and over a 20-year period) from operation of the Facility rather than a 350 MW coal -fired power plant in Ohio (with a similar capacity factor) is presented in Table 7-5. These air emissions are based on the eGRID (eGRID2007 V1.1) database for the existing generation fleet in Ohio, and for pollutants not included in the eGRIDweb database, on AP-42 emission factors.

TABLE 7-5
Air Emissions Potentially Avoided by Operation of the Facility (assuming coal-fired power generation)[A]

Pollutant	Tons Per Year[B]	Tons per 20 Years Operation[C]
SO_2	7,919	158,380
NO_x	1,965	39,300
PM_{10} (filter)	3,973	79,460
VOC	2	40
CO	86	1,720
CO_2e (metric tonnes)	1,068,600	21,372,000

A To provide a reasonable worst case estimate of the emissions avoided, it was assumed that a coal-fired plant would be taken off-line when the Facility began operation. Emission factors derived from AP-42 (AP-42, Fifth Edition, Volume 1, January 1995) were used in this analysis.

B 1 ton = 2,000 lbs

C Numbers have been rounded.

An estimate of the air emissions avoided (annually and over a 20-year period) from operation of the Facility rather than a 350 MW natural gas-fired power plant in Ohio (with a similar capacity factor) is presented in Table 7-6. These air emissions are based on the eGRID (eGRID2007 V1.1) database for the existing generation fleet in Ohio, and for pollutants not included in the eGRIDweb database, on AP-42 emission factors.

TABLE 7-6
Air Emissions Potentially Avoided by Operation of the Facility (assuming natural gas-fired power generation)[A]

Pollutant	Tons Per Year[B]	Tons per 20 Years Operation[C]
SO_2	14	280
NO_x	429	8,580
PM_{10} (total)	27	540
VOC	9	180
CO	62	1,240
CO_2e (metric tonnes)	469,500	9,390,000

A To provide a reasonable worst case estimate of the emissions avoided, it was assumed that a natural gas-fired plant would be taken off-line when the Facility began operation. Emission factors derived from AP-42 (AP-42, Fifth Edition, Volume 1, January 1995) were used in this analysis.

B 1 ton = 2,000 lbs

C Numbers have been rounded.

A more detailed breakdown of the Applicant's highly proprietary and trade secret estimated air emissions avoided will be made available at the offices of Bricker & Eckler, LLP for inspection by OPSB staff.

(C) WATER

This section discusses environmental impacts to both surface and ground water and provides an overview of existing Facility site conditions as an introduction prior to preconstruction, construction and operation discussions. The Facility would provide electricity without the consumption of cooling and process water that is typically required for coal-fired or natural gas-fired power plants. Section 4906-17-07(C)(5), *Operation*, provides a brief discussion of the water savings anticipated as a result of the operation of this renewable energy Facility.

(1) Surface Water

The Project area is located just north of the Lake Erie-Ohio River drainage divide and is situated within the Maumee River Drainage Basin (HUC 04100007) (ODNR, 2001, ODNR 2009n). The Maumee River is designated as a traditional navigable water (TNW) by the USACE from the mouth of the river near Toledo, Ohio at Lake Erie, to Hosey Dam near Fort Wayne, Indiana. The Project area is within the Auglaize River Watershed (HUC 04100007-080). The Auglaize River, a tributary to the Maumee River, is approximately 102 miles in length and drains approximately 2,435 square miles (ODNR, 2001, ODNR 2009n).

Neither the Auglaize River, the Maumee River, nor any other navigable waterway is located within the Project area; however, several named tributaries to the Auglaize River are present (Geology.com, 2009; TerraServer-USA, 2009). The USGS-mapped streams within the Project area include Blue Creek, Dry Creek, Hagerman Creek, Hoaglin Creek, Hog Run, Maddox Creek, Pottawatomie Creek, Prairie Creek, Middle Creek, Town Creek, and Upper Prairie Creek. These tributaries flow into the Auglaize River approximately 9 miles northeast of the Project area.

None of the streams within the Project area, as listed above, is designated as "high quality waters" by the OAC, Chapter 3745-1 *Water Quality Standards*. The reach of the Auglaize River receiving flow from the Project area is designated a "state resource water" per the *Water Quality Standards* (OAC, 2009). The reach of the Maumee River receiving flow from the Auglaize River is designated "outstanding state water" based on recreational values.

According to the *Ohio 2008 Integrated Water Quality Monitoring and Assessment Report* (Integrated Report), none of the streams within the Project area is listed on the impaired waters list under Sections 303(d), 305(b), and 314 of the Federal Clean Water Act (OEPA, 2008).

Average annual precipitation near the Facility for the period of 1931 to 1980 ranges from 33 to 37 inches (ODNR, 1992). No surface water gauges are located within the Project

area. However, a USGS gauge (04191500) is installed on the Auglaize River near Defiance, Ohio, and downstream of the Project area. The period of record is from 1915 to 2008. The annual 7-day minimum flow between water years 1915 and 2008 is 1.1 cfs. The annual mean flow between water years 1915 and 2008 is 1,855 cfs (USGS, 2009c).

(2) Groundwater

In western Ohio, groundwater is available from two water-bearing units: unconsolidated glacial drift deposits, and bedrock. In the Project area, unconsolidated deposits generally consist of glacial drift that ranges from 0 to 50 feet (Ohio Division of Geological Survey, 2003). Yields from wells in these deposits typically range from less than 5 gpm to 25 gpm (ODNR, 1980; ODNR, 1985, ODNR, 1982; ODNR, 1986; ODNR, 2009d; ODNR, 2009e).

Beneath these unconsolidated deposits, Silurian and Devonian age bedrock consisting of the Salina and Detroit Groups is present. The Salina Group is present under most of the Project area, except the northwest portion, and is predominantly dolomite with lesser amounts of anhydrite, gypsum, salt, and shale (Figure 5-5). The Detroit River Group, situated just to the northwest of the Project area, consists of dolomite, sandstone, and shale. Silurian bedrock can reach a total thickness of 300 to 600 feet and is capable of yielding up to 750 gpm of water (ODNR, 1980; ODNR, 1985; ODNR 1982).

(3) Preconstruction

Table 7-7 shows the permits that the Applicant would obtain before beginning construction of the Facility. Preconstruction activities for the Facility (including construction of a temporary batch plant) are not expected to cause measurable impacts on the water supply and water quality within the Project area. The Applicant will design the Facility to avoid wetland and waterbody impacts to the greatest extent possible.

TABLE 7-7
Water-Related Permits to be Obtained

Name of Permit	Issuing Agency	Comments
Ohio National Pollutant Discharge Elimination System Permit for Stormwater Discharges Associated with Construction Activities (Permit Number OHC000003)	Ohio Environmental Protection Agency	Covers discharges composed entirely of stormwater discharges associated with construction activity that enter surface waters of Ohio or a storm drain leading to surface waters of Ohio.
Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers – District	Obtain as applicable. Required to discharge dredged or fill material into Waters of the U.S. (jurisdictional wetland and waterbody sites)
Clean Water Act Section 401 Water Quality Certification	Ohio Environmental Protection Agency	Obtain as applicable. Required, before issuance of the Section 404 Permit, to discharge dredged or fill material into Waters of the U.S. (jurisdictional wetland and waterbody sites)
Isolated Wetland Permit	Ohio Environmental Protection Agency	Obtain as applicable. Required to discharge dredged or fill material into an isolated wetland site that is not connected to other surface waters
Onsite Sewage Treatment System (OSTS) Permit		Obtain as applicable. A Permit to Install (PTI) is needed for any installation or modification of wastewater treatment, conveyance or disposal system, except as exempted by rule. OSTS permit approval would be needed for the O&M building.

(4) Construction

Construction of the Facility includes site preparation activities (e.g., clearing and grading within construction areas and installing erosion control measures), followed by (not necessarily in chronological order) the installation of access roads, collection and transmission systems, foundations, and turbines. Post-construction activities involve site restoration and reclamation.

(a) Permits

A NPDES Permit for Stormwater Discharges from Construction Activities will be obtained for Facility construction. The NPDES Permit is required for sites where greater than one acre would be disturbed in order to maintain compliance with the

Federal Water Pollution Control Act (as amended), and the Ohio Water Pollution Control Act. The USEPA has designated to OEPA the authority to issue NPDES permits.

A complete and accurate Notice of Intent to discharge will be submitted to the OEPA at least 21 days before beginning Construction Activities, as specified in Section II.A of Permit Number OHC000003. A Draft SWPPP has been developed as part of this application to demonstrate the BMPs that would be implemented during construction to minimize impacts to surface waters. Appendix M provides the Applicant's draft SWPP. A final version will be provided to OPSB staff when it is submitted to OEPA.

The Applicant is evaluating the option of constructing a temporary concrete batch plant in the Project area to produce concrete required for construction. Water discharge from the batch plant would be handled by one of three methods that include the following:

- Reuse in concrete production with no discharge;
- Discharge to a holding tank for subsequent transport and disposal as an approved discharge to a publicly owned treatment works (POTW); and
- Discharge to a local surface water body under an OEPA NPDES approved discharge permit.

The options for reuse and discharge to a POTW are preferred. The use of a holding tank and discharge to a POTW would require the POTW approval for receipt of the wastewater under the POTW NPDES permit. If a discharge to a local surface waterbody is selected, a general NPDES permit for industrial wastewater will be required. Details on the use of a batch plant and the preferred option for handling wastewater will be provided by April 1, 2010.

(b) Aquatic Discharges

As stated in the previous section, BMPs will be implemented during construction to minimize impacts to surface waters from erosion and sedimentation. During construction, approximately 793 acres will be disturbed in the total 40,500-acre Project area. Minimizing the amount of exposed soils will reduce erosion and provide for filtration of potentially sediment-laden water before any discharges offsite.

Construction of the Facility would slightly increase the amount of impervious surface within the Project area; however, this increase is not anticipated to alter the quantity or quality of surface water discharges from the Facility. When constructed, approximately 237 acres of impervious surface will be covered by the Facility, including turbine foundations, access roads, substations, and an O&M building footprint.

Temporary impacts to aquatic resources may occur during construction to complete trench dewatering activities or complete drainage swale or ditch embankment clearing and grading for access road installation. Temporary impacts potentially include increased turbidity and sedimentation within waterbodies, introduction of nutrients or chemicals into the water column, and elevated water temperatures due to decreased shade.

Construction of the Facility may increase the possibility of introducing groundwater contamination if oil spills or other chemical spills occur during transportation and construction activities. Spill prevention measures during construction are discussed in the following section.

A temporary concrete batch plant is being evaluated for Facility construction. It is anticipated that the wastewater discharge would be minimal and be handled via reuse in the concrete production process; stored in a onsite holding tank for disposal at a POTW; or discharged to a local surface waterway under an OEPA NPDES approved discharge permit. Any permitted discharge to a surface

waterbody would be compliant with water quality standards for the protection of aquatic life as defined by OAC Chapter 3745-1 (2009).

(c) Mitigation Plans

While aquatic discharges during Facility construction are not expected to be significant, the Applicant will implement several mitigation measures to ensure surface water quality.

Wetland and waterbody sites will be avoided to the greatest extent practicable. Furthermore, existing crossings will be utilized wherever possible to minimize impacts to aquatic resources. Waterbody crossings will be selected in a location where minimal clearing of riparian corridors would be required and where the crossing angle would be perpendicular to the stream channel. These measures would assist in stabilizing banks, thereby minimizing impacts to aquatic resources.

In accordance with the General NPDES Permit for Stormwater Discharges from Construction Activities, a draft SWPPP has been developed, and will be finalized for implementation during construction based on the detailed engineering design. A final version will be provided to OPSB staff when it is filed with the OEPA. The SWPPP will outline the BMPs to implement both temporarily during construction and permanently after construction to reduce potential impacts to water quality in the Project area. The SWPPP will also cover preventive measures to reduce discharges to wetlands, surface waters, and ground water sources, including such techniques as prohibiting the refueling and storage of hazardous materials within 200 feet of all private wells, and employing a 100-foot setback from wetland or waterbody sites for storage of hazardous waste materials, chemicals, fuels, and lubricating oils

Midway through construction, the Applicant will develop and implement a Spill Prevention, Control, and Countermeasures Plan (SPCC) for operation of the Facility and will provide it to OPSB Staff. The SPCC plan identifies preventative

measures to be used to minimize a potential release of hazardous materials that could affect surface water and/or groundwater resources. Preventive measures during operation would be similar to during construction. Spills would be reported in accordance with Federal and OEPA regulations.

To mitigate any soil compaction that may result in the Project area due to the movement of construction equipment, the Applicant will de-compact and remove topsoil. These mitigation measures would minimize the impact from soil compaction that could potentially reduce water infiltration through the soil and groundwater recharge in the Project area. These mitigation activities will minimize impacts to water resources during construction to the greatest extent possible.

(d) Changes in Flow Patterns and Erosion

The Facility would not significantly alter flow patterns or erosion. The topography in the Project area is relatively flat, and major drainage improvements would not be required for the Facility to operate effectively.

With only a slight increase in impervious surface within the Facility, no modifications in the direction, quantity, or flow rates of stormwater run-off are anticipated.

(5) Operation

The Facility would provide power without the consumption of cooling and process water. During operation, the Facility would use small amounts of water for operation and maintenance activities. This is in profound contrast with the water needs of combined-cycle coal-fired power plants and natural gas-fired power plants that use or consume millions of gallons per day. Because the Facility would not use water for steam production or cooling purposes, no cooling tower evaporation or operational process wastewater discharges would occur. Therefore, impacts to water resources in Ohio would be avoided to the extent that the Facility provides electricity that would otherwise be generated by combusting fossil fuels.

The United States Department of Energy (USDOE) estimates that the annual water savings for 350 megawatts of wind power in Ohio would be approximately 470 million gallons (USDOE, 2008). This is equivalent to a water savings of over 46,000 gallons per year for each resident of the City of Van Wert (2008 estimated population). One of the many benefits of the Facility will be that only minimal water associated with maintenance and the O&M building would be required for operation.

(a) Quantitative Flow Diagram

The Facility would discharge small amounts of sanitary wastewater from the O&M building to a permitted on-site septic system during its operation. Impervious surfaces will be constructed as part of the Facility; however, these areas will be insignificant in comparison to the overall site. No increase in stormwater discharge from the Project area is anticipated from operation of the Facility.

(b) Conservation Practices

The Facility will not consume significant amounts of water, as wind turbines do not require water for their operation. Water will be consumed as part of the regular potable water use for the O&M building and is estimated to be 1,000 gpd based on 20 full-time employees and an average per capita use of 50 gpd. Therefore, implementation of water conservation measures is not anticipated to deliver much reduction in water use.

(D) SOLID WASTE

This section describes the solid waste impacts anticipated during preconstruction, construction and operation of the Facility. The Applicant will not generate solid combustion waste from the production of electricity.

(1) Preconstruction

(a) Debris and Solid Waste

The Applicant is not aware of any solid waste or other debris within the Project area that would require removal for Facility development.

(2) Construction

(a) Debris and Solid Waste Generated

Facility construction would generate some solid waste, primarily consisting of packaging materials (i.e., plastic shrink wrap, wooden pallets, cardboard, and metal packing), construction scrap (i.e., reinforcement bar scraps, excess concrete from washout stations, cable spools, and excess electrical cable), and general refuse (i.e., trailer office materials and debris from employees). The waste anticipated to be generated during construction is estimated to be 1,550 cubic yards based on similar-sized projects previously constructed. The debris and solid waste generated would be collected from turbine sites and other Facility work areas and disposed of in dumpsters located at the construction staging area(s). A private contractor would then empty the dumpsters on an as-needed basis, and dispose of the refuse at a licensed solid waste disposal facility.

In addition, Facility construction would require clearing or disturbance of 793.2 acres of vegetation, 4.7 acres of which is forested. Trees cleared from the Project area would be cut into logs and either left for the landowner or removed. Limbs and brush will be buried, chipped, or otherwise disposed of as directed by the landowner and as required under federal, state, and local regulations.

(b) Storage and Disposal Methods

The Facility will recycle or reuse wooden pallets and cable spools, as well as office paper, leftover electrical or copper cable, rebar scraps, and other materials typically considered for recycling. Other wastes will be disposed of in a dumpster

and transported to a licensed solid waste disposal facility operated by a licensed contractor.

(3) Operations

The Facility will not generate solid combustion waste from the production of electricity. The Facility would avoid the impacts of ash and flue gas desulfurization ("scrubber") waste production that coal-fired power plants produce. It would also avoid the smaller amounts of solid waste production at natural gas-fired plants as part of the water intake purification processes. Avoiding production of the wastes also precludes siting new landfills and long-term operation and maintenance costs.

(a) Solid Wastes Generated

During operation it is anticipated that the Facility would generate only small, even negligible, quantities of debris or solid waste. The majority of the solid waste generation would be from the O&M building, and would be the type and quantity similar to that generated by a small business office. O&M staff members would monitor generation of solid waste and would likely coordinate the waste removal and disposal with local waste disposal services, as necessary.

In addition, some used oils/lubricants from the wind turbines will be generated along with packaging for replacement parts. The Applicant will dispose of these wastes at a licensed solid waste disposal facility.

(b) Treatment, Transport, and Disposal

Waste generated during Facility operation will likely be disposed of utilizing local solid waste disposal services. No storage, treatment, transportation, and disposal of hazardous wastes will occur.

(4) Licenses and Permits

Facility operation would not require the Applicant to acquire licenses or permits for the generation, storage, treatment, transportation, and/or disposal of waste.