

180 E. BROAD STREET, 34^{TH} FLOOR COLUMBUS, OH 43215-3192 TELEPHONE: (614) 591-5461 http://www.dickinsonwright.com

CHRISTINE M.T. PIRIK CPirik@dickinsonwright.com

November 1, 2022

Ms. Tanowa Troupe, Secretary Ohio Power Siting Board Docketing Division 180 East Broad Street, 11th Floor Columbus, Ohio 43215-3797

Re: Case Nos. 19-1881-EL-BGN and 21-508-EL-BGA - In the Matter of the Application of Madison Fields Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Madison County, Ohio.

Certificate Compliance Condition 1 – Stormwater Pollution Prevention Plan

Dear Ms. Troupe:

Madison Fields Solar Project, LLC's ("Applicant") is certified to construct a solar-powered electric generation facility in Madison County, Ohio, in accordance with the orders issued by the Ohio Power Siting Board ("OPSB") in Case Nos. 19-1881-EL-BGN and 21-508-EL-BGA on January 21, 2021, and October 21, 2021, respectively.

At this time, the Applicant is filing the attached Stormwater Pollution Prevention Plan in compliance with Condition 1 of the Joint Stipulation and Recommendation approved by the OPSB's January 21, 2021 order in Case No. 19-1881-EL-BGN (Page 41 of the Application Narrative). This information was provided to the Staff of the OPSB on November 1, 2022.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik Christine M.T. Pirik (0029759) Matthew C. McDonnell (0090164) Dickinson Wright PLLC 180 East Broad Street, Suite 3400 Columbus, Ohio 43215 (614) 591-5461 cpirik@dickinsonwright.com mmcdonnell@dickinsonwright.com

Attorneys for Madison Fields Solar Project, LLC

Cc: Matt Butler

4872-7908-8641 v1 [88534-2]

Stormwater Pollution Prevention Plan

For Construction Activities At:

Madison Fields Solar Project Address TBD Madison County, Ohio 43029

SWPPP Prepared For:

Madison Fields Solar Project, LLC Savion, LLC 422 Admiral Blvd. Kansas City, MO 64106 888-609-7166

SWPPP Prepared By:

Kiewit Engineering Group, Inc. Sarah Miles 8900 Renner Boulevard Lenexa, Kansas 66219 913-689-4819 Sarah.Miles@kiewit.com

SWPPP Preparation Date:

10/14/2022

Estimated Project Dates:

Project Start Date: December 2022 Project Completion Date: December 2023



Savion LLC, Madison Fields Solar Project Kiewit Project No. 20036602 i

88.15.77.006.02/0/Issued for Construction

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SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 Project/Site Information

Project/Site Name: Madison Fields Solar Project, L	LC
Project Street/Location: TBD	
City: Rosedale	State: <u>OH</u> ZIP Code: <u>43029</u>
County or Similar Subdivision: Madison County	
Latitude:	Longitude:
40.088802 N	83.475345 W
(decimal degrees)	(decimal degrees)
Method for determining latitude/longitude:	
USGS topographic map (specify scale:	\square EPA Web site \square GPS
Other (please specify):	
Is the project located in Indian country? Yes	🖾 No
If yes, name of Reservation, or if not part of a Reserv	vation, indicate "not applicable."
Not Applicable	
Is this project considered a federal facility?	Yes Xo
NPDES project or permit tracking number*: TBD	
*(This is the unique identifying number assigned to your project	et by your permitting authority after you have applied

*(This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the appropriate National Pollutant Discharge Elimination System (NPDES) construction general permit.)

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1.2 Contact Information/Responsible Parties

Operator(s):

Kiewit Power Constructors Co. Field Representative- Nick Schiegner 813-410-4172 8900 Renner Boulevard Lenexa, Kansas 66219

Field Representative email Nick.Schiegner@kiewit.com

Burns & McDonnell Bernardo Jordan 9450 Ward Pkwy Kansas City, MO 64114 816-782-6677 bjordan@burnsmcd.com

Project Manager(s) or Site Supervisor(s):

Kiewit Engineering Group, Inc. *TBD* 8900 Renner Boulevard Lenexa, Kansas 66219 TBD TBD@kiewit.com

SWPPP Engineer of Record:

Kiewit Engineering Group, Inc. John Tucker, PE 8900 Renner Boulevard Lenexa, Kansas 66219 913-689-4919 John.TuckerOka@kiewit.com

Subcontractor(s):

R&L Development Company Mike Cessna 511 Forest Dr Circleville, OH 43113 (724) 787-7880 <u>mcessna@rldevco.com</u>

Chemsteel TBD 150 Technology Dr, Canonsburg, PA 15317

Emergency 24-Hour Contact:

Nick Schiegner 813-410-4172 <u>Nick.Schiegner@kiewit.com</u>

Ryan Jones 540-855-7749 Ryan.Jones5@kiewit.com

Madison Fields Solar Project Kiewit Project No. 20036602

1.3 Nature and Sequence of Construction Activity

Savion, LLC Madison Fields Solar Project involves the engineering, procurement, construction, and start-up for a nominal 234 MWdc/180 MWac Photovoltaic solar facility. The new solar power generating station will be located in Madison County, Ohio. The plant will be powered by a system of solar modules installed on a system of single axis tracking tables connected electrically with DC cabling and combiner boxes, routed to power conversion stations (PCS), and an AC medium voltage (MV) collection system routed to the project substation. The project also includes an on-site medium voltage substation and an adjacent high voltage switchyard.

The site work includes all necessary soil excavation and backfill, site dewatering, site stormwater drainage; permanent and temporary compacted gravel roads; initial and finish site grading. Also included is development of temporary construction laydown areas; erosion and sediment control during construction; permanent and temporary woven wire agricultural fencing. Lastly, area surface stabilization using chemical stabilization or geotextile fabrics, crushed stone surface, and grass seeding; and any other work necessary for a complete and finished installation is part of the site work.

The switching station component consists of building a new 138 kilovolt (kV) three position ring bus switching station in Madison County, Ohio. The switching station will be located in a cultivated field adjacent to an existing high voltage transmission line, located approximately at latitude 40.082697° and longitude -83.481590. The switching station will be situated on a site that is approximately 6.0 acres in size, and include a stone pad, fenced area, pole dead-end structures, breakers, buses, and switches, along with a stormwater infiltration area and two temporary construction laydown areas. In addition, an approximate one-mile long 20-foot wide crushed rock access road from Irwin Road to the switching station will be constructed

What is the funct	ion of the construct	ion activity?		
Residential	Commercial	\boxtimes Industrial	Road Construction	Linear Utility
Other (please	specify):			
Estimated Project	t Start Date:	Decemb	per 2022	
Estimated Project Completion Date:		Decemb	ber 2023	

The implementation schedule below describes the general flow of construction, and the erosion and sediment controls that will be initiated as the stages progress.

• (December 2022-January 2023) On-site construction sequence shall start with the minimum amount of clearing required to install initial erosion control measures,

permanent access road surfaces, construction facilities, parking areas, and equipment storage and laydown areas as shown on plan.

- (January-February 2023) Clear brush and grub areas identified on the plans. Wood waste will be mulched and reused where possible or taken off-site and disposed of accordingly. Initial grading of sediment basins, cut and fill areas onsite and cable plowing will begin during this time.
- (February-April 2023) As final grade has been met in each block, temporary stabilization measures will be immediately followed with seeding and crimped straw or other mulching to establish an initial stabilization effort.
- (February-May 2023) Minimize the amount of disturbance at any one time by staging construction as much as practical for efficient construction of the facility. Natural vegetative buffers or strips should be left in place where feasible to aid in sediment retention and reduce erosion potential. Drill seeding shall be used for permanent seeding to reestablish soil permeability after construction activities.
- (April-May 2023) Once grading of the substation is complete, seeding will be implemented to allow for temporary stabilization while foundations begin to be installed. Posts will be driven after seeding is able to begin an initial growth in each array and an effort will be made to minimize disturbance of the revegetated area during these operations.
- (May-October 2023) Upon post install completion, and racking follows this modules and electrical wiring follow this up. Maintain all temporary erosion controls and sediment barriers until vegetation has been sufficiently established. Reseed with final seed upon completion of major disturbance in these areas, and ensure entire area begins working toward final stabilization.
- (December 2023) Remove all erosion and sediment control structures after final acceptance. If stabilization does not occur (including due to seasonal conditions) in all areas before contractor has satisfied all other conditions to final acceptance, contractor shall provide a plan (including appropriate performance assurance) to the engineer to remove such erosion control measures after stabilization (and allowing contractor to achieve final acceptance), for acceptance in the sole and absolute discretion by the engineer or owner. During this time all erosion and sedimentation control structures shall be maintained in proper working order.

1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

Soil type(s): The soils for the site consist of Hydrologic Soil Groups B/D, C, and C/D. The soil types are mostly silty loams with some silty clay loams. The following table summarizes the soil

types for the site according to the United States Department of Agriculture Web Soil Survey.

Son Types Summary Table for Madison Fields Solar Troject			
Soil Name	Percent Slopes	Approximate area (acres)	
Crosby-Lewisburg Silt Loams	0-2%	611.6	
Crosby-Lewisburg Silt Loams	2-6%	71.9	
Kokomo Silty Clay Loam	0-2%	708.1	
Lewisburg-Celina Silt Loams	2-6%	11.3	
Lippincott Silty Clay Loam	0-2%	19.0	
Odell-Lewisburg Complex	0-2%	13.5	
Patton Silty Clay Loam	0 - 2%	70.2	

Soil Types Summary Table for Madison Fields Solar Project

Slopes: Existing slopes are relatively flat across the site. Portions of the site will remain relatively flat. Roadside swales will have side-slopes as steep as 3:1. These features are detailed on the CG (Grading, Stormwater, & Erosion Control) Series of drawings included in Appendix K. The Hydrologic Soil Group Map and summary are also included in Appendix K.

Drainage Patterns: The site primarily drains towards a couple offsite channels/streams that discharge to the Little Darby Creek. The majority of the site contains a large drain tile system with two large mains that discharge to an open channel at the northeast of the site. Within the site, there are also several low points which will pond water before infiltrating into the ground and through the drain tile system. The majority of the project site to the north flows to the linear wetland that collects the drain tiles and ultimately crosses Rosedale-Milford Center Road. To the south, there is another linear wetland on the west side of the site that discharges water to the northwest under Hwy 26 via an irrigation channel. This also collects the western area on the south. The eastern portion of the south half generally flows west overland towards culverts that pass the water under Rosedale-Milford Center Road. This project is not located within a MS4.

Vegetation: Current land cover is agricultural, specifically, row crops. Final vegetation will be primarily native grasses and forbs beneath the arrays. Some Pollinator Refuge areas will also be developed and will incorporate native species. Permanent roads will have aggregate surfaces.

See documents in Appendix L for differences in pervious vs. impervious surfaces for pre- and post-construction for the substation and substation access road managed by Burns & McDonnell. We also included pre- and post- development runoff calculations for the detention pond. The

access road underdrains that tie into the existing drain tiles are assumed to match existing flow rates and volumes.

1.5 Construction Site Estimates

The following are estimates of the construction site.

Total project area:	1,505 acres
Construction site area to be disturbed:	105 acres
Percentage impervious area before construction:	0%
Runoff coefficient before construction:	0.46
Percentage impervious area after construction:	3.35%
Runoff coefficient after construction:	0.36

As shown in the above table, the runoff will decrease based on the changed land use. The Hydrologic Soil Group is 94% Rating C based on the soil map provided in Appendix K. From the 2012 Storm Drainage Manual for the City of Columbus, Table 2-5 for Typical Land Uses is also attached with the Soil Maps. The current land use is classified as Cultivated land with conservation treatment (runoff coefficient = 0.46). In addition, after discussions with the Darby Creek Association, a seed mix was developed with their input and recommendations. This mix would now give us a land use classification of Meadow (runoff coefficient = 0.34) for the pervious areas. Accounting for the approximate 3.35% impervious area after construction, the weighted runoff coefficient would become 0.36 as shown in the table above.

1.6 Receiving Waters

Description of receiving waters:

Spring Fork, Barron Creek and Little Darby Creek are receiving waters of the project drainage areas. Both Barron Creek and Spring Fork are both small streams which ultimately flow to a confluence with Little Darby creek a few miles southeast of the project site. The project site is in the 05060001210-050 delineated Big Darby Creek watershed (see attached map next page).

The Little Darby Creek watershed is a tributary to the Darby Creek System in Central Ohio. Upper and Lower Darby Creek was designated as a State Scenic River in 1984. In 1994, it was added to the National Wild and Scenic River Systems. Per USGS, the creek carries about 187.6cfs which flows in a southeasterly manor from Champaign County to its confluence with Big Darby Creek in Madison County. Little Darby Creek is esteemed as being of utmost biological quality where over 100 recorded fish and 44 mussel species have been found and recorded. Of these, 37 species are endangered or rare. Offsite flows running to the Big Darby watershed are therefore held to a higher standard by the Ohio EPA.

Description of impaired waters or waters subject to TMDLs: TMDL reports from Ohio EPA are in preparation per epa.ohio.gov for the Little Darby Creek

and Spring Fork watershed.

Utilizing the Ohio EPA Water Quality: Assessment Unit Summaries (2022) Map, the Headwaters of Little Darby Creek Watershed and Spring Fork Watershed are both impaired by Escherichia Coli (E. Coli).

Compliance with the Big Darby Creek Watershed, Appendix A requirements: In addition to meeting the increased sediment settling pond storage capacity of 134 cubic yards per acre of drainage, the project will maintain sediment settlings and remove sediment when capacity by 40% has been achieved. Silt fence and other sediment barriers such as straw waddles will not be a primary sediment control onsite.

Sampling for Total Suspended Solids (TSS) will occur at the outfall of each sediment settling pond during rainfall events of 0.25-inches to a 0.75-inch event in a 24 hour period. Sampling will be conducted in accordance with 40 CFR 136. Initial grab sampling will begin within 14 days (or after the first applicable rainfall event) once the upslope disturbance in each area has initiated and will continue to be conducted on a quarterly basis.

In the event a sample results in a value greater than 45 mg/l TSS, this plan will be modified, and additional controls will be installed within 10 days to lower the TSS value. Within 3 days following this improvement, or after the first 0.25 inch or greater rainfall, the outfall will be resampled.

The Darby Creek watershed also requires specific groundwater recharge calculations, these can be seen in Appendix K.



1.7 Site Features and Sensitive Areas to be Protected

Description of unique features that are to be preserved:

There are two Category 1 (Palustrine emergency) wetlands located on-site, as described below and shown in Appendix K. In addition, there is a series of underground drain tile throughout the project site. These confluence to county mapped CMP pipes and discharge to the east.

Describe measures to protect these features:

Wetland areas will not be disturbed on this project. Construction disturbance areas will be as noted in the Erosion Control Plans which will avoid wetlands and provide a 40' buffers for the First Energy Access Road and a 120' buffer for Barron Creek on the northeast to meet the guidelines set forth in the Ohio Department of Natural Resources Recommended Requirements for Proposed Solar Energy Facilities in Ohio (4/7/22). See the Construction Documents for specific buffer widths, wetland locations, and associated BMPs. Specific BMP's such as silt fence and fiber rolls will surround wetlands to eliminate potential impacts to the designated wetlands. Wetlands will be delineated with orange snow fencing to eliminate any impacts to the wetlands. The areas of tree conservation are outside the limits of disturbance to be preserved.

A ground penetrating radar survey was completed of the project site to locate underground drain tile. The areas with the 24" CMP have been avoided altogether per county request. Lateral pipes connecting to them are avoided, but due to the number of steel piles and underground conduit being installed and the quantity of drain tiles, some interferences are anticipated. As a result, a repair detail has been developed in the project plans and immediate drain tile repair shall be performed where conflicts arise to ensure drainage is not interrupted. Appendix K also includes a plan of the drain tile as obtained from the survey.

A meeting was held with Bryan Dhume, PE, Madison County Engineer on October 6, 2022 at the county offices. The importance of not damaging the existing drain tile at the site, minimizing the land disturbance and maintaining existing drainage patterns was discussed. The design matches these requests as well. The drain tile functions very well and will be used to the project's benefit. The topography is very flat across the site. Across the middle of the site, it goes from a 1017 ridge elevation (near block D29) down to the northeast to elevation 1006 (block E45). This is over 5600 feet yielding a slope of approximately 0.20%. To be expected, there are many low depressions within and around the site that will contain stormwater and allow infiltration rather than runoff. We have incorporated these depressions and used that for our required dewatering volume. In some locations, a berm is used to provide a well-defined pond volume. A drainage area map is included in Appendix A To summarize, not only will minimizing land disturbance help with respect to sediment runoff and maintaining drainage patterns, but it will also prevent damage to the drain tile system.

The substation access road proposes about 1330 LF of solid wall 12" HDPE pipe to outfall out to the linear wetland west of the access road. See attached documents for outfall, drawing O-1246-04-05 in Appendix L. The bank of the outfall will be armored with Class D Ohio DOT rip rap to

prevent the outfall embankment from erosion and scouring. In the event of the linear wetland water level rising above the outfall, surcharge prevention measures were made to prevent irrigation water from backing up into the outfall. The outfall includes an inline check valve that will allow flow to leave the outfall, but also prevents linear wetland flow from entering the pipe and backing up the system.

1.8 Potential Sources of Pollution

Potential sources of sediment to stormwater runoff:

Potential sources of sediment to stormwater runoff may include excavation of rock and soil, trenching, backfilling, and dewatering. Also includes any grading activities, including transportation and stockpiling of topsoil.

Potential pollutants and sources, other than sediment, to stormwater runoff:

Other potential pollutant sources may include oils from vehicles or heavy equipment; spills from chemical storage, vehicles, or equipment; permanent and temporary asphaltic pavements; pouring concrete for foundations and any subsequent washouts; Volatile Organic Compounds (VOC's); and Metals.

The following table is included to be filled out in the field, if any additional sources of pollutants are discovered. The Kiewit Field Representative and/or Engineer should be notified immediately of any such pollutants so a remediation plan can be developed and implemented.

Trade Name Material	Stormwater Pollutants	Location

1.9 Endangered Species Certification

Are endangered or threatened species and critical habitats on or near the project area?

 \boxtimes Yes \Box No

Describe how this determination was made:

This determination was made through 2 documents provided by the Owner. The first, a May 15, 2020 Ecology and Environment, inc. Memo "Re: Threatened and Endangered Species Habitat Survey Report for the Madison Fields Solar Project, Madison County, Ohio". The second, a September 27, 2021 Stantec Memo "Reference: Madison Fields Solar Project Threatened and Endangered Species Summary". Both memos are included in Appendix K. It is important to note that listing on the table is not indicative of the presence in the project area.

COMMON NAME	SCIENTIFIC NAME	STATUS
King Rail	Rallus elegans	SE
Northern Harrier	Circus hudsonius	SE
Upland Sandpiper	Bartramia longicauda	SE
Scioto Madtom	Noturus trautmani	FE, SE
Spotted Darter	Etheostoma maculatum	SE
Tippecanoe Darter	Etheostoma Tippecanoe	ST
Indiana Bat	Myotis sodalis	FE, SE
Northern Long-eared Bat	Myotis septentrionalis	FT, SE
Clubshell	Pleurobema clava	FE, SE
Elephant-ear	Elliptio crassidens crassidens	SE
Northern Riffleshell	Epioblasma torulosa rangiana	FE, SE
Rabbitsfoot	Quadrula cylindrica cylindrica	FT, SE
Rayed Bean	Villosa fabalis	FE, SE
Snuffbox Mussel	Epioblasma triquetra	FE, SE
Southern Wild Rice	Zizania aquatica	ST

Key:

FE – Federal Endangered

FT – Federal Threatened

SE – State Endangered

ST - State Threatened

If yes, describe or refer to documentation that determines the likelihood of an impact on identified species and/or habitat and the steps taken to address that impact.

The project is not anticipated to impact any of the listed species as reported in the Madison Fields Solar Project Threatened and Endangered Species Summary Memo prepared by Stantec Consulting Services, Inc September 27, 2021. The site was observed to have favorable habitat conditions for the following:

Northern Harrier Indiana Bat Northern Long-eared Bat

Below find why these species are anticipated on the Project site and how the Project intends not to impact them.

- Northern Harrier: Potentially suitable nesting habitat (i.e., wetland and grassland) was observed within the Project area. Madison Fields Solar intends to avoid the nesting habitat so it is not anticipated that the Project will result in adverse impacts to this species.
- Indiana Bat: Suitable summer foraging and roosting habitat was observed in the Project area. Madison Fields Solar intends to clear any trees between October 1-March31. Therefore, no adverse effects to this species are anticipated.
- Northern Long-eared Bat: Suitable summer foraging and roosting habitat was observed in the Project area. Madison Fields Solar intends to clear any trees between October 1-March 31. Therefore, no adverse effects to this species are anticipated.

1.10 Historic Preservation

Are there any historic sites on or near the construction site? \boxtimes Yes \square No

There is a small cemetery near 10955 Co Hwy 11 on the east side of the project. Steps have been taken to avoid this area with the project design. It is nearest to Block E36. The Project has accounted for a buffer and at minimum our fence is 100' away from the cemetery boundary. In addition, access will be maintained to the cemetery during construction and operation.

1.11 Applicable Federal, Tribal, State or Local Programs

In addition to SWPPP and NPDES permit requirements, all work shall be in accordance with the following, with the most stringent guidelines ruling in instances of contradictory requirements:

- United States Environmental Protection Agency
- Ohio Environmental Protection Agency
 - o Guidance on Post-Construction Stormwater Management for Solar Panel Fields
 - Big Darby Creek Watershed Groundwater Recharge Calculator
 - o Big Darby Creek Watershed Sediment Basin Sizing and Dewatering
- International Building Code, 2015
- American Association of State Highway and Transportation Officials (AASHTO)
- ASTM International

The project site is located in the Big Darby Creek watershed and Appendix A of the general permit, OHC000005, details special conditions for construction activity within the watershed. Groundwater recharge is one of the key factors of these additional requirements. The current groundcover is row crops, currently soybeans, and immediately after harvest fall of 2022, winter wheat will be planted in its place.

The site has been carefully designed to minimize earthwork and subsequent topsoil clearing. OEPA Guidance on Post-Construction Stormwater Management for Solar Panel Fields Fact Sheet has also been utilized to ensure the developed array area will be classified as pervious area. At project completion, the developed conditions will be a Land Use of meadow per Table A-3 of the guidelines. This designation was chosen due to the special seed mix containing a large ratio of grasses specified for the project. The seed mix is contained in the construction documents. Using Table A-1 (attached in Appendix K), the groundwater recharge is calculated to be 633.3 acre-ft over the project site. This is based on the area inside the fence being converted from the row crop land use to a meadow. FirstEnergy will be the owner/operator of the switchyard and access road and they will be responsible for generating a Post-Construction Stormwater Management Plan

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

Areas not to be disturbed shall be protected at a minimum from disturbed areas by a silt fence barrier. Existing topsoil shall be stockpiled and replaced upon completion of backfilling and mass grading. All wetlands within site boundaries shall be delineated by perimeter control silt fence to prevent disturbance or sediment from entering the wetlands as shown on attached Erosion and Sediment Control Plans.

2.2 Control Stormwater Flowing onto and through the Project

BMP Description: Level spreaders shall be installed as required on-site for outflow control. Each device shall be installed in accordance with the Erosion Control Plans.

Installation Schedule:	Where indicated, level spreaders should be graded and seeded before grading commences.
Maintenance and Inspection:	Level spreaders shall be inspected no less than once every week and within 24 hours after a $\frac{1}{2}$ " rainfall event during construction to check for damage. If ponding or erosion channels develop, area shall be regraded.

BMP Description: CMP Culverts shall be installed as required onsite for water flow near driveways on site. Each culvert shall be installed in accordance with the Erosion Control Plans.

Installation Schedule:	Driveways will be built at the beginning of the project. Installation shall occur anywhere concentrated flow will occur near driveways and access roads on the project.
Maintenance and Inspection:	All culverts shall be inspected no less than once every week and within 24 hours after a ¹ / ₂ " rainfall event during construction to ensure they are free from trash, debris, and/or other material(s) that may inhibit the flow of water across the roadway

BMP Description: Swales shall be installed in accordance with the Rough Grading Plans, to drain water through culverts and promote positive drainage. Rock check or fiber roll dams shall be installed in channels and swales as necessary in accordance with the Erosion Control Plans.

Installation Schedule:	Swales shall be installed during mass grading activities. Swales will primarily be roadside. Roadside swales will be built simultaneously with access roads.
Maintenance and Inspection:	All swales, and their associated check dams shall be inspected no less than once every week and within 24 hours after a ¹ / ₂ " rain event during construction for slope erosion and sediment buildup.

Appropriate safety features and devices shall be installed to protect
people and animals from accidents such as falling or drowning.

BMP Description: Low-water crossings shall be installed as required on-site for flow control. Each crossing shall be installed in accordance with the Erosion Control Plans.

Installation Schedule:	Access roads are the first component of the site to be built. Low water crossings will be installed as access road construction reaches low water crossing locations.
Maintenance and Inspection:	All crossings shall be inspected no less than once every week and within 24 hours after a $\frac{1}{2}$ " rainfall event during construction to ensure they are free from trash, debris, and/or other material(s) that may inhibit the flow of water across the roadway. Prevent sediment from building up to the point of flowing out of the basins. Refer to Section 5.1 for further instruction on related maintenance and inspection.

2.3 Stabilize Soils

In addition to the criteria on the next page, reference Table 1: Permanent Stabilization and Table 2: Temporary Stabilization from Part II-B. Non-Numeric Effluent Limitations – Soil Stabilization Section of the Ohio OHC000005 General Permit (below).

B. Soil Stabilization. Stabilization of disturbed areas shall, at a minimum, be initiated in accordance with the time frames specified in the following tables.

Table 1: Permanent Stabilization

Area requiring permanent stabilization	Time frame to apply erosion controls
Any areas that will lie dormant for one year or more	Within seven days of the most recent disturbance
Any areas within 50 feet of a surface water of the state and at final grade	Within two days of reaching final grade
Other areas at final grade	Within seven days of reaching final grade within that area

Table 2: Temporary Stabilization

Area requiring temporary stabilization	Time frame to apply erosion controls
Any disturbed areas within 50 feet of a surface water of the state and not at final grade	Within two days of the most recent disturbance if the area will remain idle for more than 14 days
Any disturbed areas that will be dormant for more than 14 days but less than one year, and not within 50 feet of a surface water of the state	Within seven days of the most recent disturbance within the area For residential subdivisions, disturbed areas must be stabilized at least seven days prior to transfer of permit coverage for the individual lot(s).
Disturbed areas that will be idle over winter	Prior to the onset of winter weather

Where vegetative stabilization techniques may cause structural instability or are otherwise unobtainable, alternative stabilization techniques must be employed. Permanent and temporary stabilization are defined in Part VII.

BMP Description: Native Vegetation		
Installation Schedule:	During design, and initial grading existing vegetation will be preserved as much as possible to maintain the pre-existing infiltration. Preservation of trees in and around the project area will help these efforts as well.	
Maintenance and Inspection:	Refer to Section 7: Final Stabilization.	

BMP Description: Topsoil Preservation

🛛 Permanent	Temporary
Installation Schedule:	Topsoil shall be replaced and permanently seeded immediately upon completion of building and grading activities.
Maintenance and Inspection:	Topsoil is integral to the reestablishment of overall site vegetation, and the preservation of existing topsoil will be important initially to maintain its nutrient and quality. Topsoil will be replaced and permanently seeded upon completion of grading activities in accordance with the attached Erosion Control Plans. Take care to avoid excessive mixing of topsoil into the subsoil. Permanently stabilize the site following appropriate practice standards as quickly as practicable, but no later than 14 days after completion of grading activities. Periodically inspect the site until permanent stabilization is achieved. Make necessary repairs to eroded areas or areas of light vegetative cover.

BMP Description: Dust Control

Permanent	⊠ Temporary
Installation Schedule:	As needed.
Maintenance and Inspection:	When temporary dust control measures are used, dust palliative or construction water shall be applied as need to accomplish control.

BMP Description: Crimped straw

Permanent	⊠ Temporary
Installation Schedule:	Following final grade achievement throughout areas onsite, and as needed as grass grows/weather changes onsite. Straw will be installed onto temporary seeding mix and followed up by compaction/crimping of the straw material. Straw must be installed at a rate of 2 tons per acre or 90 lbs/1,000 sq. ft. (2-3 bales).
Maintenance and Inspection:	Additional application of straw may be needed as weather, wind and due to equipment operation. Straw and overall stabilization will be monitored during weekly stormwater inspections.

BMP Description: Mulch	
Permanent	⊠ Temporary
Installation Schedule:	Chipped site vegetation may be used as a temporary stabilization measure when final grade has been met or are will be undisturbed for 14 days or more. Wood chips/mulch will be applied at 6 tons per acre if used, or in similar capacity throughout the entire site.
Maintenance and Inspection:	Mulch wood chips/other method will be monitored and inspected during inspections and will be reapplied at the same rate as needed. As weather occurs, mulch may migrate or shift onsite and may need to be maintained by removing migrated material.

BMP Description: Winter stabilization measures

Permanent	⊠ Temporary
Installation Schedule:	Following final grade achievement throughout areas onsite, and as needed as grass grows/weather changes onsite.
Maintenance and Inspection:	Seeding and winter stabilization measures will occur as soon as possible following achievement of final grade of arrays, sediment basins, etc. onsite and will be accompanied by additional soil stabilization BMP to hold the seed in place. Additional seed may need to applied on steep slopes that may encounter higher velocities.
Dormant Seed Mix	The seeding during dormant periods should be increased by 50%, and will include a 50-50 mixture of temporary (annual) and permanent seed mixes.

BMP Description: Temporary stabilization measures **Permanent Temporary Installation Schedule:** Following final grade achievement throughout areas onsite, and as needed as grass grows/weather changes onsite. Maintenance and Seeding will occur as soon as possible following achievement of final grade of arrays, sediment basins, etc. onsite and will be accompanied Inspection: by additional soil stabilization BMP to hold the seed in place. **Temporary Seed Mix** Lbs/1000 **Genus Species** Common Lbs/Acre Name Sqft Avena sativa Seed Oats 3 128 2 Lolium multiflorum Annual 80 Rygrass

BMP Description: Permanent Seed	ling
🛛 Permanent	Temporary

Installation Schedule:	Upon final construction completion, the permanent seeding will applied in arrays to achieve final stabilization. This seed mix will be installed in accordance with the seed mix and rate described below.			
Maintenance and Inspection:	During site inspections, the vegetation will be evaluated			1
Permanent Seed Mix	Genus Species	Common Name	Ounces/Acre	Seeds/Sqft
	Agrostis Perennans	Upland Bent	2	22.95
	Agrostis Stolonifera	Creeping bent	1	8.80
	Carex Vulpinoideo	Brown Fox Sedge	0.08	0.15
	Festuca Rubra	Red Fescue	32	21
	Pascopyrum Smithii	Western Wheatgrass	8	1.26
	POA Palustris	Fowl Bluegrass	16	47.75
	POA Pratensis	Bluegrass (Old Varieties)	64	126.35
	POA Trivialis	Rough Bluegrass	24	86.08

2.4 Protect Storm Drain Inlets

BMP Description: The Log Type Inlet Protection shall be utilized on all storm inlets in accordance with the attached Erosion Control Plans.

Installation Schedule:	Immediately after installation of inlets.
Maintenance and Inspection:	Each inlet protection practice or device shall be inspected no less than once every week and within 24 hours after a ¹ / ₂ " rain event during construction, and in accordance with Section 5.1. Accumulated sediment shall be removed regularly, but a minimum occurrence of when the capacity for sediment storage has been reduced by half. Sediment that has been removed shall be placed such that it will not re-enter the storm drain system. Repairs or replacement of failing or poorly functioning inlet protection devices shall be made immediately. For devices to be kept in place in the winter season, areas shall be cleared of any sediment accumulation and prepared or protected for snow removal operations. The locations of inlet protection practices are denoted on the attached Erosion Control Plans. Inlet protection practices shall be removed upon job completion.

2.5 Establish Perimeter Controls and Sediment Barriers

BMP Description: Silt Fence shall be installed around the perimeter of disturbed areas on-site. Additional J-hooks or deeper stakes may be installed as necessary in areas with greater concentrated flow.

Installation Schedule:	Prior to site disturbance activities.		
<i>Maintenance and Inspection:</i>	Silt fence shall be removed once upslope areas have been permanently stabilized. Silt fence shall be inspected no less than once every week and within 24 hours after a ½" rainfall event during construction. Should any part of the silt fence installation (fabric, posts, backfill seal, etc.) become ineffective prior to the required duration of its use, the individual part, or the entire system shall be replaced promptly. Sediment deposits shall be removed when the level of deposition reaches no greater than one-half the height of the silt fence. Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform to the existing		
	grade and seeded.		

2.6 Sediment Traps

BMP Description: Sediment traps shall be utilized downstream of soil disturbed for array grading.

Installation Schedule:	Sediment traps shall be installed prior to grading activities for any given area of the site and reclaimed at the end of the project.	
Maintenance and Inspection:	Sediment shall be removed, and the sediment basin restored to its original dimensions when the sediment has filled one-half the pond's original depth or as indicated on the plans. Sediment removed from the basin shall be placed so that it will not erode. Filter socks filtrating outlets shall be inspected after a ¹ / ₂ " rainfall event and shall be maintained as according to product manuals and guidelines.	

2.7 Sediment Basins

BMP Description: Sediment basins shall be utilized as shown on the plans to ensure catchment of sediment. The majority of these ponds utilize the existing topography to provide the necessary dewatering volume for the drainage area. The approximate depth on most natural depressions is 1.5'. Overflow weirs composed of rip rap or filter socks have been sighted in a manner that will match the existing location of the natural overflow pathway. The design approach minimizes land disturbance with the intent to allow the water to infiltrate into the soil and drain tile as it does currently.

Installation Schedule:	Sediment basins will be the first components installed on the project.	
Maintenance and Inspection:	At minimum, weekly inspection and maintenance of sediment basin is essential for their continued effectiveness. In addition, after each storm event, staff should inspect the basins to identify possible repairs needed and remove any trash and debris. Embankments and overflow weirs shall be inspected and repaired immediately if any deficiencies are found. Sediment accumulation shall be removed when it exceeds the sediment storage zone. This depth shall be marked on a stake inside the basin. At the conclusion of the project sediment basins shall be regraded to existing conditions. All temporary structures shall be removed and the area seeded and or mulched and stabilized as necessary.	

2.8 Retain Sediment Onsite

BMP Description: Silt fences shall be utilized as necessary to ensure catchment of sediment. Additional J-hooks may be installed as necessary in areas with greater concentrated flow.

Installation Schedule:	Silt fences shall be installed prior to grading activities for any given area of the site. Silt fences shall be removed as one of the final stabilization steps.	
Maintenance and Inspection:	Silt fence shall be removed once upslope areas have been permanently stabilized. Silt fence shall be inspected no less than once every week and within 24 hours after a ¹ / ₂ " rainfall event during construction. Should any part of the silt fence installation (fabric, posts, backfill seal, etc.) become ineffective prior to the required	

duration of its use, the individual part, or the entire system shall be
replaced promptly. Sediment deposits shall be removed when the
level of deposition reaches no greater than one-half the height of the
silt fence. Any sediment deposits remaining in place after the silt
fence is no longer required shall be dressed to conform to the existing
grade and seeded.

2.9 Establish Stabilized Construction Exits

BMP Description: Temporary Stabilized Construction Entrances			
Installation Schedule:	Prior to site disturbance activities.		
Maintenance and Inspection:	The entrance shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed by the end of the same business day in which the track-out		
	occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S is prohibited. Periodic inspection and needed maintenance shall be provided after each rain in accordance with Section 5.1.		

2.10 Additional BMPs

BMP Description: Soil Stockpile Management			
Installation Schedule:	Prior to stockpile development.		
Maintenance and Inspection:	All stockpiles shall have silt fence installed along all sides except for the up-gradient side. Silt fence shall be inspected and maintained as previously noted. Soil stockpiles shall be temporarily seeded once established. Repair, clean out, or replace perimeter controls, area inlet protection, and stabilization methods per the Ohio General Permit OHC000005 specifications. Repair rills and gullies as needed. Once the stockpile is removed, restore and/or stabilize the area where the stockpile was located. Hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S. is prohibited		

SECTION 3: GOOD HOUSEKEEPING BMPS

3.1 Material Handling and Waste Management

The primary goal of BMP's for on-site storage of potential pollutants is to minimize the opportunity for them to come into contact with storm water. Hazardous materials, plasters, solvents, paints, and other compounds must be properly handled and stored in order to reduce the risk of pollution or contamination. There shall be designated areas and flammable liquid cabinets for all hazardous materials storage, and for any filling or dispensing activity. These areas shall be located away from drainage paths and shall not be directly on the ground (use plastic liners or containment pallets below). The storage areas shall be provided with permanent containments and fixed covers, or at a minimum, the hazardous materials shall be placed within a covered construction tool bin or storage container. Consideration shall be given to keep only the minimum amount of hazardous materials on-site. Manufacturer's instructions on storage and use of materials shall be followed. If any product should come into contact with the soil, that soil shall be removed immediately, characterized, and disposed of properly. Spill cleanup materials shall be stored near potential spill areas. Non-hazardous waste materials, including wood products, metals, concrete, cardboard, paper, plastic products, and office waste, shall be recycled whenever possible.

Specific waste collection areas shall be designated on-site. Trash hauling dumpsters and trash containers shall be appropriately located. Hazardous waste, concrete waste, and sanitary wastes shall be disposed of in the appropriate manner. Sanitary waste facilities shall be conveniently located, well maintained, and located away from storm drains and channels. Maintenance and service shall be prearranged with a licensed hauler and conducted on a regular basis.

Sufficiently sized waste containers shall be provided on-site to contain construction and domestic wastes (e.g. dumpsters and trash receptacles). Keep waste container lids closed when not in use and close lids at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either (1) cover such as a tarp, plastic sheeting, or temporary roof to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants such as secondary containment. On business days, clean up and dispose of waste in designated waste containers. Clean up immediately if containers overflow.

Hazardous waste shall be stored and handled in separate collection and containment areas in accordance with state and federal standards. Hazardous waste can be generated from equipment maintenance and refueling activities (anti-freeze, hydraulic fluids, gasoline, diesel fuel, waste oil, etc.). Other potentially hazardous wastes include: paints, cleaners, epoxies, and sandblast grit. Hazardous waste shall be stored in covered, labeled containers. Secondary containment shall be provided for liquid hazardous wastes. Different types of hazardous wastes shall not be mixed in order to promote recycling and prevent undesirable chemical reactions.

3.2 Establish Proper Building Material Staging Areas

All construction materials shall be delivered to and stored in the designated warehouse and laydown areas. The main loading, unloading, and access areas shall be located away from storm drain inlets. Materials being stored which could release pollutants by wind or water to storm water systems or receiving waters shall additionally be protected by overhead cover, secondary containment, or other methods. Chemicals on-site shall be stored in leak-proof containers in flammable liquid cabinets and Conex shipping containers. All secondary containments for hazardous materials that are exposed to rainfall shall be drained after every storm event. Material safety data sheets, a material inventory, and emergency contact numbers shall be maintained in the office trailer.

All generated hazardous material shall be stored in designated areas and have adequate secondary containment to contain the contents of the material in the event of a release. Liquid hazardous waste, if generated, shall be placed in appropriate drums or containers. Liquid hazardous waste containers shall be placed within secondary containment. Hazardous wastes shall be labeled and closed when in storage. Hazardous wastes shall be transported off-site in appropriate and clearly marked containers and segregated form other non-waste materials.

3.3 Designate Washout Areas

Wash water for these applications shall be directed into the designated Concrete Washout onsite. See the attached Erosion Control Plans for washout details and location. Concrete washouts shall be located on the site in the most optimal locations as determined by the Contractor. Signs directing contractors to the concrete washout locations shall be posted throughout the construction site. Signs identifying concrete washouts shall also be posted. Remove and dispose of wastes in a manner consistent with state and federal regulations as well as any manufacturer specifications.

Direct wash water into a leak-proof container or leak-proof and lined pit designated so that no overflows can occur due to inadequate sizing or precipitation. Handle washout or cleanout wastes as follows:

- Do not dump liquid wastes in storm sewers or waters of the U.S.
- Dispose of liquid wastes in accordance with applicable requirements.
- Remove and dispose of hardened concrete waste consistent with handling of other construction wastes.
- Locate any washout or cleanout activities as far away as possible from waters of the U.S. and stormwater inlets or conveyances, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

Vehicles and equipment may pose a threat to storm water quality if their fluids come into contact with storm water runoff. Vehicles and equipment shall be inspected regularly to minimize leaks

and drips. Equipment with chronic leakage problems shall be repaired prior to continuing its use at the site. Refueling and vehicle maintenance at the construction site will be conducted only when absolutely necessary. When maintenance and repair of vehicles or equipment is required, every effort shall be made to prevent any motor related fluids or wastes from leaving the designated repair area, which shall be located in designated areas away from storm drains and drainage areas. When vehicles or equipment are immobilized and need repair, drip pans and oilabsorbing mats should be placed beneath the vehicle in order to capture spilled fluids. Absorbent materials and other wastes (used oil filters, oily rags, etc.) shall be disposed of properly.

- Prevent oil, grease, or fuel from leaking into the ground, storm drains, and surface waters.
- Place all equipment or vehicles which are to be fueled, maintained, and stored in a designated area fitted with appropriate BMP's.
- Clean leaks immediately and dispose of leaked materials properly.

3.5 Control Equipment/Vehicle Washing

The washing of equipment and vehicles shall only be conducted on an impermeable concrete wash pad. The concrete wash pad will be sloped from all edges to a sump in the center in order to contain all wash water. If the wash water contains any chemicals or detergents, the collected wash water will be pumped to a washout container and either be allowed to evaporate or be collected with a vacuum truck and hauled off-site for appropriate disposal. Wash water that does not include detergents or chemicals may be discharged.

3.6 Spill Prevention and Control Plan

Leaks and spills from construction machinery generally contain petroleum products and heavy metals. Drip pans or another suitable impermeable material shall be placed under equipment that has been known to leak when such equipment is stored outdoors and not in use until it can be repaired. Spills of any type will be cleaned up immediately. Drip pans shall be cleaned as necessary to maintain their effectiveness. If absorbent is used for spills, it must be removed promptly and in a proper manner. Spill debris will be collected in an appropriate covered container until it can be disposed of at an approved off-site facility.

- Fuel products, lubricating fluids, grease, or other products and/or waste released by the Contractor's vehicles, equipment, or construction methods shall be collected and disposed of in accordance with state, federal, and local laws. Spills of 25 gallons greater on or adjacent to a public roadway must be reported immediately to the Ohio EPA Spill Hotline.
- Materials used on the site shall be used in accordance with the manufacturer's directions and/or the project specifications. Methods for cleanup and storm water pollution prevention shall be in place for all activities with the potential to impact water quality.
- Equipment and materials for cleanup of spills shall be available on-site. Specific spill response personnel shall be trained to clean up spills and leaks immediately and dispose of waste properly.

3.7 Any Additional BMPs

BMP Description: Dewatering Practices			
Installation Schedule:	As needed.		
Maintenance and Inspection:	As needed.The frequency of inspections shall depend on the dewatering method, amount of discharge, potential damage, and quality of the receiving bodies of water. The frequency of inspections, responsible party, and specific tasks shall be identified. Inspections shall be conducted to 		
Responsible Staff:	TBD		

• ,•

3.8 Allowable Non-Stormwater Discharge Management

The following are allowable non-stormwater discharges:

- Firefighting activities
- Fire hydrant flushings
- Water used to wash vehicles where detergents are not used and to control dust
- Potable water sources including uncontaminated waterline flushings
- Landscape irrigation drainages
- Routine external building washdown which does not use detergents
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials have been removed) and where detergents have not been used.
- Uncontaminated air conditioning condensate
- Springs and Irrigation channels
- Uncontaminated ground water
- Foundation or footing drains where flows are not contaminated with process materials such as solvents.

Refer to BMP's listed in Section 2 for management of non-stormwater discharge.

SECTION 4: INTENTIONALLY BLANK SECTION 5: INSPECTIONS

5.1 Inspections

1. Inspection Personnel:

Personnel responsible for inspections shall be identified prior to commencement of construction activities. All personnel conducting inspections must be considered a "qualified person." A "qualified person" is a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

2. Inspection Schedule and Procedures:

Inspections shall be conducted in accordance with all NPDES requirements. Inspections shall occur at least once every seven calendar days and within 24 hours or by the end of the following workday of the end of a rain event that is 0.5 inches or greater. Frequency may decrease to once per month when construction has temporarily ceased due to frozen conditions. All inspections shall include the following:

- Any area used for storage of materials or disturbed due to construction that are open to precipitation shall be inspected for pollutants.
- All BMP's or other erosion and sediment control measures shall be checked for proper installation and operation.
- All discharge points shall be evaluated for impact on receiving waters to ensure erosion control measures are acting effectively.
- Site entrances and exits shall be inspected for sediment tracking.
- All non-storm water discharge sources, such as pumps, shall also be inspected.

3. General Procedures for Correcting Identified Problems:

Corrective action must be taken to address any of the following conditions identified on site:

- A stormwater control needs repair or replacement.
- A stormwater control necessary to comply with the requirements of the permit was never installed or was installed incorrectly.
- Site discharges are causing an exceedance of applicable water quality standards.
- A prohibited discharge has occurred.

Corrective Actions shall be completed as soon as possible and documented within 3 days (10 days for sediment ponds) in an Inspection Report or report of noncompliance. All inspections will be performed under the direction of the Kiewit appointed Environmental Coordinator. If it is

26 88.15.77.006.02/0/Issued for Construction

infeasible to complete the installation or repair within 3 calendar days (or 10 for sediment ponds), the reasons for why it is infeasible to complete the installation or repair within the 3-day timeframe must be documented and recorded. A schedule for installing the stormwater control(s) to an operational point as soon as feasible after the 3-day time frame must also be recorded. Potential pollutant sources and pollution prevention measures shall be revised in the SWPPP as soon as possible upon completion of the inspection. The appropriate agency shall be notified by email, telephone, or fax of any violation or non-compliance with this SWPPP within 24 hours of observation. An "Incidence of Non-Compliance" report shall be completed and submitted for any SWPPP violation within 5 days of observation. A summary report shall be provided for each inspection that includes all inspected areas of site, any findings from the inspection as pertains to the SWPPP, names and qualifications of those making the inspection, inspection date, and any corrective action taken as a result of the inspection.

A copy of the inspection report is attached in Appendix D.

5.2 Delegation of Authority

Duly Authorized Representative(s) or Position(s):

Field Representative TBD Insert Company or Organization Name Insert Name Insert Position Insert Address Insert City, State, Zip Code Insert Telephone Number Insert Fax/Email

A copy of the Delegation of Authority Form is attached in Appendix J.

5.3 Corrective Action Log

Corrective Action Log: A copy of the corrective action log is attached in Appendix E.

SECTION 6: RECORDKEEPING AND TRAINING

6.1 Recordkeeping

Records of the following shall be retained for a minimum period of at least 3 years after the permit is terminated:

- Dates of grading, construction activity, and stabilization.
- A copy of the construction general permit.
- The signed and certified NOI form or permit application form.
- A copy of the letter from EPA or the state notifying the Contractor of their receipt of the complete NOI/application.
- Inspection reports.
- Records relating to endangered species and historic preservation.
- Any additional records required by SWPPP or NPDES permit.

Date(s) when major grading activities occur: A copy of the grading activities log is attached in Appendix H.

Date(s) when construction activities temporarily or permanently cease on a portion of the site: A copy of the grading activities log is attached in Appendix H.

Date(s) when an area is either temporarily or permanently stabilized: A copy of the stabilization log is attached in Appendix H.

6.2 Log of Changes to the SWPPP

Log of changes and updates to the SWPPP:

A copy of the SWPPP amendment log is attached in Appendix F.

6.3 Training

Individual(s) Responsible for Training: Project Environmental Coordinator or other designated trainers.

A copy of the SWPPP training log is attached in Appendix I.

Describe Training Conducted:

- General stormwater and BMP awareness training for staff and subcontractors.
- Detailed training for staff and subcontractors with specific stormwater responsibilities.

SECTION 7: FINAL STABILIZATION

Dim Description. I cilliancia	<i>m</i> . Termanent Seeding			
Installation Schedule:	After grading activities are completed and no future disturbance is anticipated.			
Maintenance and Inspection:	High and low maintenance areas vegetation cannot be expected to provide erosion control cover and prevent soil slippage on a soil that is not stable due to its structure, water movement, or excessive slope. The operation of equipment is restricted and may be unsafe on slopes steeper than 3:1. Where steepness prohibits the use of farm machinery, seedbed preparation, fertilization, and seeding or planting may need to be done by hand. Moisture is essential for seed germination and seedling establishment. Supplemental irrigation can be very helpful in assuring adequate stands in dry seasons or to speed development of full cover. Protect the planted area from human, animal, and vehicular traffic until the stand is adequately established. Inspect all planted areas for failures and make necessary repairs, replacements, reseedings, and re-mulching within the planting season, if possible. If a stand has less than 70% ground cover, reevaluate the choice of plant materials, quantities of lime and fertilizer, seeding or planting methods, time of seeding or planting, and available light and moisture. Re-establish the stand with modifications based on the evaluation. After initial planting and/or seeding, irrigate to keep the seedbed moist (not wet) for at least 7 to 10 days after seeding depending on conditions. This may require watering daily the first week, especially during hot weather, and less frequently thereafter. Inadequate or excessive amounts of water can be more harmful than no supplemental water. Irrigation is seldom needed for low-maintenance seeding made at the appropriate time of the year. Herbicides may also be used for weed control. Apply all herbicides according to rates specified on the label.			
Responsible Staff:	TBD			

BMP Description: Permanent Seeding

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Title:	
Signature:	Date	

Repeat as needed for multiple construction operators at the site

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – General Location Map and Erosion and Sediment Control Drawings, Overall Drainage Area Map

- Appendix B Construction General Permit
- Appendix C NOI and Acknowledgement Letter from EPA/State
- Appendix D Inspection Reports
- Appendix E Corrective Action Log
- Appendix F SWPPP Amendment Log
- Appendix G Subcontractor Certifications/Agreements
- Appendix H Grading and Stabilization Activities Log

Appendix I – Training Log

Appendix J – Delegation of Authority

Appendix K – Additional Information (i.e., Endangered Species and Historic Preservation Documentation)

Appendix L – First Energy Specifications

APPENDIX A – General Location Map and Erosion and Sediment Control Drawings
APPENDIX A – GENERAL LOCATION MAP

Madison Fields Site Map



SURVEY NOTES:

- 1. PLANIMETRIC FEATURES SHOWN HEREON ARE BASED UPON A FIELD SURVEY PERFORMED BY SURVEYING AND MAPPING, LLC DURING JUNE & JULY, 2022 AND WILL NOT REFLECT ANY CHANGES TO THE PHYSICAL SITE THROUGH MANMADE OR NATURAL OCCURRENCES BEYOND SAID DATE.
- 2. THE LOCATION OF UTILITY LINES SHOWN HEREON ARE BASED UPON FIELD LOCATION OF PHYSICAL STRUCTURES OR BY PLANS PROVIDED BY UTILITY COMPANIES. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST.
- 3. NO EXCAVATIONS WERE MADE TO VERIFY UNDERGROUND UTILITY LOCATIONS. UNDERGROUND EXCAVATION WILL NEED TO BE COORDINATED WITH OUPS - "OHIO ONE CALL SYSTEM" AT THE TIME OF EXCAVATION.
- 4. ANY USE OF THIS DRAWING BY PARTIES NOT CONTRACTED DIRECTLY WITH SAM, LLC OR CERTIFIED TO ON THIS DRAWING IS PROHIBITED WITHOUT PRIOR WRITTEN PERMISSION.
- 5. ALL DISTANCES SHOWN HEREON ARE HORIZONTAL AND EXPRESSED IN U.S. SURVEY FOOT AND DECIMALS THEREOF.
- 6. ELEVATIONS ARE BASED ON NAVD88, DERIVED FROM GEOID MODEL 12B.
- 7. HORIZONTAL LOCATION WAS DERIVED FROM GNSS OBSERVATIONS AND ADJUSTED FROM THE OHIO STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 1983 (2011) GRID COORDINATES TO GROUND COORDINATES BY MULTIPLYING THE PLANE COORDINATE BY THE COMBINED ADJUSTMENT FACTOR OF 1.0000323315 AT CP100.
- 8. DRAINAGE FIELD TILES WERE TAKEN FROM COUNTY AVAILABLE IMAGERY, PLANS PROVIDED BY CLIENT, AND LIMITED FIELD VERIFICATION, DUE TO CROPS IN THE FIELDS.
- 9. PROPERTY LINES SHOWN PER COUNTY AVAILABLE GIS ONLY. SAM DID NOT VERIFY LOCATION OR OWNERSHIP OF PROPERTIES SHOWN.

<u>INDEX</u>

TITLE PAGE PLANVIEW 2.....

<u>LEGEND</u>

CONCRETE MONUMENT SET \oslash REBAR W/ CAP SET

SUBJECT PARCEL COUNTY PARCEL LINES

Call Before You Dig!

811

(1-800-362-2764)



ALL THE IMPROVEMENTS & FACILITIES AND UTILITIES, ABOVE GROUND AND UNDERGROUND SHOWN HEREIN WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NONEXISTENCE. ELEVATION, SIZE, TYPE, NUMBER OR LOCATION OF THESE OR OTHER IMPROVEMENTS, FACILITIES, OR UTILITIES. THE GENERAL CONTRACTOR AND/OR OWNER SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION & ELEVATION OF ALL IMPROVEMENTS, FACILITIES, & UTILITIES, SHOWN OR NOT SHOWN, AND SAID IMPROVEMENTS, FACILITIES, & UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION OR CONSTRUCTION OF ANY IMPROVEMENTS.

CALL OHIO ONE-CALL, 811 OR 1-800-362-2764 TICKET NOS. B218700204-00B, B218700220-00B, B218700225-00B, B218700250-00B, B218700262-00B, B218700274-00B, B218700301-00B, B218700325-00B, B218700336-00B

DOINT NAME	BOINT DESCRIPTION	OHIO STATE PLANE SOUTH ZON	NAVD 88 DATUM	
POINT NAME	FOINT DESCRIPTION	NORTHING	EASTING	ELEVATION
CP501*	5/8" REBAR WITH CAP	761489.703	1695397.195	1014.869
CP100	NGS CLASS B	759868.203	1692379.558	1012.566
CP101	NGS CLASS B	757235.67	1693751.191	1016.96
CP102	NGS CLASS B	755424.006	1696608.656	1020.257
CP103	NGS CLASS B	757717.766	1697567.105	1016.562
CP104	NGS CLASS B	760376.396	1698558.238	1007.303
CP105	NGS CLASS B	762531.103	1698943.618	1006.107
CP106	NGS CLASS B	764655.755	1697423.925	1011.464
CP107	NGS CLASS B	769281.682	1693847.418	1005.497
CP108	NGS CLASS B	768546.85	1691221.596	1015.228
CP109	NGS CLASS B	765999.472	1691021.996	1015.954
CP110	NGS CLASS B	762158.918	1690506.451	1011.12
CP111	NGS CLASS B	759964.795	1689196.448	1021.53

KIEWIT - MADISON FIELDS SOLAR PROJECT COORDINATE TRANSFORMATION PARAMETERS		POINT OF ROTATION		Rotation Angle	
FROM	то	NORTHING	EASTING	(DD.MMSS)	
OHIO SOUTH NAD 83(2011) (GRID)	OHIO SOUTH NAD 83(2011) (GROUND)	761489.703	1695397.195	00°00'00.00"	
////					•







(1022068970\100\SURVEY\02BASE\68970 - KIEWIT- MADISON FIELDS SOLAR - DRAINAGE.DW









	STORMWATER RUNOFF AND SEDIMENT STORAGE CALCULATIONS										
WATERSHED	DRAINAGE	DISTURBANCE	REQ SEDIMENT	TOTAL REQ	TOTAL STORAGE						
LABEL	AREA [AC]	[AC] (5%)	VOLUME [CY]	VOLUME [CY]	VOLUME [CY]	PROVIDED [CY]					
OFF 01	16	0.8	2144	27	2171	16300					
OFF 02	23	1.15	3082	39	3121	5800					
OFF 03	39	1.95	5226	66	5292	10500					
OFF 04	110	5.5	14740	187	14927	16500					
OFF 05	22	1.1	2948	37	2985	8000					
OFF 06	91	4.55	12194	155	12349	13700					
OFF 07	48	2.4	6432	82	6514	6800					
OFF 08	35	1.75	4690	60	4750	6400					
OFF 09	42	2.1	5628	71	5699	6000					
OFF 10	93	4.65	12462	158	12620	19800					
OFF 11	31	1.55	4154	53	4207	12600					
OFF 12	43	2.15	5762	73	5835	9300					
ON 01	68	3.4	9112	116	9228	9000					
ON 02	248	12.4	33232	422	33654	39590					
ON 03	261	13.05	34974	444	35418	48700					
ON 04	158	7.9	21172	269	21441	21700					

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- PRELIMINARY -NOT FOR CONSTRUCTION

D

0	ISSUED FOR INFORM	ATION			E	
0	P. GREEN	N. BE	ECHER	10-14-22		
REV	DESIGN BY	CHEC	KED BY	DATE		
			SOLAR P	roject DEN	4	
					F	
OVERALL DRAINAGE AREA MAP						
ENG	ineer/design Ginator P. G	REEN	DRAV	VING NUMBER		
LEAD ENG PRO	DENG J. TU MGR T. B	JCKER EST EST	20036	602-SKC-100		

1200



A BASE

	CUT ELEVATIONS TABLE								
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.				
1	-0.83	0.00		4.47	2,141.57				
	FI	LL ELEVATIONS TABLE							
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.				
1	0.00	0.83		4.35	1,883.24				

Total Disturbed Area = 2141+1883=4,024 SF = 0.0924 Acres

B-C BASE

	CUT ELEVATIONS TABLE								
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.				
1	-0.83	0.00		3,489.11	557,195.2				
2	-1.67	-0.83		39.76	6,329.63				

	FILL ELEVATIONS TABLE									
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.					
1	0.00	0.83		2,324.37	416,831.00					
2	0.83	1.67		26.34	4,420.02					

Total Disturbed Area = 557195+416831= 974,026 SF = 22.36 Acres

D BASE

CUT ELEVATIONS TABLE										
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.					
1	-0.83	0.00		338.51	72,910.95					

FILL ELEVATIONS TABLE									
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.				
1	0.00	0.83		168.41	52,058.04				

Total Disturbed Area = 72910+52058=124,968 SF = 2.869 Acres

E BASE

CUT ELEVATIONS TABLE									
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.				
1	-0.83	0.00		4,732.28	667,837.9				
2	-1.67	-0.83		200.35	15,724.15				
3	-2.50	-1.67		16.94	1,460.34				
4	-3.33	-2.50		0.34	71.39				

	FILL ELEVATIONS TABLE									
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR	CU. YD.	SQ. FT.					
1	0.00	0.83		2,527.71	535,535.6					
2	0.83	1.67		0.90	426.08					

Total Disturbed Area = 667838+535536=1,203,374 SF = 27.626 Acres

					This is the erec	
Datum Surface Tolerance	6"	+/-			analyzed, it is N disturbed area to	OT the otals
Sub	Cut		Fill		Total	
Block	Quantity		Quantity	6	Area	
TOTALS:	8,822	Cu. Yd.	5,052	Cu. Yd.	44,766,750	Sq. Ft.
A	4	Cu. Yd.	4	Cu. Yd.	734,476	Sq. Ft.
B-C	3,529	Cu. Yd.	2,351	Cu. Yd.	16,675,730	Sq. Ft.
D	339	Cu. Yd.	168	Cu. Yd.	3,397,801	Sq. Ft.
E	4,950	Cu. Yd.	2,529	Cu. Yd.	23,958,744	Sq. Ft.



OPEN

D



DEMOLITION / CLEAR & GRUB GENERAL NOTES

1. SITE CLEARING OF TREES WITH 3" OR GREATER CALIPER SHALL ONLY BE PERFORMED BETWEEN THE DATES OF OCTOBER 1 -MARCH 31.

2. NO CLEARING OR MOWING SHALL BE PERMITTED OUTSIDE OF THE PROJECT BOUNDARIES. PRIOR TO ANY CLEARING ACTIVITIES, ALL TREE CLEARING SHALL BE APPROVED BY ONSITE ENVIRONMENTAL SPECIALIST.

3. SITE PREPARATION:

3.1. THE CONTRACTOR SHALL BE REQUIRED TO CLEAR AND GRUB AREAS DESIGNATED ON THE PLANS REMOVING ALL TREES, STUMPS, BRUSH AND DEBRIS. TREES AND BRUSH LOCATED OUTSIDE OF THE PROJECT BOUNDARY SHALL NOT BE DISTURBED.

3.2. AREAS TO BE MOWED SHALL HAVE EXISTING VEGETATION MOWED TO A MAXIMUM HEIGHT OF 3 INCHES. AREAS SHALL BE MOWED ONCE PRIOR TO BEGINNING OF CONSTRUCTION. TIMING TO BE COORDINATED WITH PROJECT ENGINEER.

3.3. THE CONTRACTOR SHALL PRESERVE OTHER EXISTING VEGETATION TO THE MAXIMUM EXTENT PRACTICABLE. THE CONTRACTOR IS TO RETAIN VEGETATION DESIGNATED BY THE OWNERS REPRESENTATIVE AND SHALL EXERCISE EXTREME CARE AROUND EXISTING VEGETATION TO BE SAVED. CONSTRUCTION FENCING MAY BE INSTALLED TO PROTECT AREAS THAT ARE NOT TO BE DISTURBED.

4. NO BURNING OF DEBRIS IS ALLOWED. ALL ORGANIC MATERIAL DEBRIS SHALL BE CHIPPED.

5. EXISTING FENCE WITHIN THE PROJECT BOUNDARY SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH LOCAL REGULATIONS.

6. EXISTING FIELD ROADS CAN REMAIN THROUGHOUT CONSTRUCTION. AT THE END OF CONSTRUCTION THEY ARE TO BE SCARIFIED AND SEEDED.

7. CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE IN STRICT ACCORDANCE WITH LOCAL CODES AND ORDINANCES.

8. KIEWIT SURVEY CREW WILL WORK WITH MOWING SUBCONTRACTOR TO ESTABLISH THE LIMITS OF MOWING BY STAKING.

9. DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL REQUIREMENTS. SUBCONTRACTOR IS RESPONSIBLE WITH REMOVAL OF DEBRIS FROM PROJECT SITE AND DISPOSAL IN CONFORMANCE WITH ALL FEDERAL, STATE, AND LOCAL **REGULATIONS**.



DEMOLITION / CLEAR & GRUB LEGEND _____ \sim w

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394	EXISTING CONTOUR MINOR	4
HWY 86	EXISTING ROADWAY	
XX	EXISTING FENCE	
	APPROXIMATE PROJECT BOUNDARY	
	DELINEATED WETLAND	
	AREA TO BE MOWED	
	AREA OF TREE REMOVAL	E
×	INDIVIDUAL TREE REMOVAL	
	DELINEATED WATERBODY W/ BUFFER	
	DRAIN TILE ALIGNMENT - 24" CMP	
000	TEMPORARY SILT FENCE	
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	TEMPORARY CONSTRUCTION ENTRANCE	

1 ADDED STORMWATER PONDS P. GREEN N. BEECHER 10-14-22 0 P. GREEN N. BEECHER 09-29-22 REV DESIGN BY CHECKED BY DATE MADISON FIELDS SOLAR PROJECT Image: Solar project						
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PROJECT COORDINATE SYSTEM

PROJECT COORDINATE SYSTEM IS NAD83 OHIO STATE PLANE, SOUTH ZONE, US FOOT.









SCALE: 1" = 300'

SCALE IN FEET

600

1	ADDED STORM	WATER PONDS		
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002 -004 003 ┍*╾╾╾<mark>┈┶┾┽┥┙</mark>╾┿╸*╸╸ KEY MAP NTS

NOTES:

- 1. SEE DRAWING 20036602-CM-002 FOR GENERAL NOTES, ABBREVIATIONS AND GENERAL LEGEND.
- 2. SEE DRAWING 20036602-CM-201 FOR KEY PLAN AND REFERENCE NOTES.
- 3. ACCESS TO CLEARING AREAS SHALL BE RESTRICTED TO FUTURE ACCESS ROAD LOCATIONS.
- 4. CONTRACTOR SHALL ONLY USE LOW GROUND PRESSURE EQUIPMENT FOR TREE REMOVAL, SITE CLEARING, AND MOWING ACTIVITIES.

ADDED STORMWATER PONDS P. GREEN N. BEECHER 10-14-22 0 ISSUED FOR CONSTRUCTION 0 P. GREEN N. BEECHER 09-29-22 REV DESIGN BY CHECKED BY DATE MADISON FIELDS SOLAR PROJECT WWWENTER PONDS NATE SYSTEM NATE SYSTEM IS NAD83 OHIO UTH ZONE, US FOOT. SOU 600 CLEAR, GRUB, & ENGINEER/DESIGN ORIGINATOR P. GREEN CLEAR, GRUB, & ENGINEER/DESIGN ORIGINATOR P. GREEN DRAWING NUMBER IEAD ENG J. TUCKER ENG MGR T. BEST 20036602-CM-205		r			
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APPENDIX B – CONSTRUCTION GENERAL PERMIT

Page 1 of 60 Ohio EPA Permit No.: OHC000005

Issuance Date: April 23, 2018 Effective Date: April 23, 2018 Expiration Date: April 22, 2023

> Chio EPG APR 23/18 Entered Directors Journal

OHIO ENVIRONMENTAL PROTECTION AGENCY

GENERAL PERMIT AUTHORIZATION FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the federal Water Pollution Control Act, as amended (33 U.S.C. Section 1251 et. seq. hereafter referred to as "the Act") and the Ohio Water Pollution Control Act [Ohio Revised Code ("ORC") Chapter 6111], dischargers of storm water from sites where construction activity is being conducted, as defined in Part I.B of this permit, are authorized by the Ohio Environmental Protection Agency, hereafter referred to as "Ohio EPA," to discharge from the outfalls at the sites and to the receiving surface waters of the state identified in their Notice of Intent ("NOI") application form on file with Ohio EPA in accordance with the conditions specified in Parts I through VII of this permit.

It has been determined that a lowering of water quality of various waters of the state associated with granting coverage under this permit is necessary to accommodate important social and economic development in the state of Ohio. In accordance with OAC 3745-1-05, this decision was reached only after examining a series of technical alternatives, reviewing social and economic issues related to the degradation, and considering all public and intergovernmental comments received concerning the proposal.

This permit is conditioned upon payment of applicable fees, submittal of a complete NOI application form, development (and submittal, if applicable) of a complete Storm Water Pollution Prevention Plan (SWP3) and written approval of coverage from the director of Ohio EPA in accordance with Ohio Administrative Code ("OAC") Rule 3745-38-02.

Craig-W. Butler Director

Total Pages: 60

I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

Date: 4-23-18

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- E. Duty to provide information
- F. Other information
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- J. Property rights
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- U. Reporting Requirements

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- B. Portions of the Olentangy Watershed
- C. Intensity for Calculation of Water Quality Flow (WQF)

PART I. COVERAGE UNDER THIS PERMIT

A. Permit Area.

This permit covers the entire State of Ohio. Appendices A and B of this permit contain additional watershed specific requirements for construction activities located partially or fully within the Big Darby Creek Watershed and portions of the Olentangy River Watershed. Projects within portions of the Olentangy River watershed shall seek coverage under this permit following the expiration of OHCO00002 (May 31, 2019).

B. Eligibility.

1. <u>Construction activities covered</u>. Except for storm water discharges identified under Part I.B.2, this permit may cover all new and existing discharges composed entirely of storm water discharges associated with construction activity that enter surface waters of the state or a storm drain leading to surface waters of the state.

For the purposes of this permit, construction activities include any clearing, grading, excavating, grubbing and/or filling activities that disturb one or more acres. Discharges from trench dewatering are also covered by this permit as long as the dewatering activity is carried out in accordance with the practices outlined in Part III.G.2.g.iv of this permit.

Construction activities disturbing one or more acres of total land or will disturb less than one acre of land but are part of a larger common plan of development or sale that will ultimately disturb one or more acres of land are eligible for coverage under this permit. The threshold acreage includes the entire area disturbed in the larger common plan of development or sale.

This permit also authorizes storm water discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

- a. The support activity is directly related to a construction site that is required to have NPDES permit coverage for discharges of storm water associated with construction activity;
- b. The support activity is not a commercial operation serving multiple unrelated construction projects and does not operate beyond the completion of the construction activity at the site it supports;
- c. Appropriate controls and measures are identified in a storm water pollution prevention plan (SWP3) covering the discharges from the support activity; and
- d. The support activity is on or contiguous with the property defined in the NOI (offsite borrow pits and soil disposal areas, which serve only one project, do not have to be contiguous with the construction site).
- 2. <u>Limitations on coverage</u>. The following storm water discharges associated with construction activity are not covered by this permit:

- Storm water discharges that originate from the site after construction activities have ceased, including any temporary support activity, and the site has achieved final stabilization. Industrial post-construction storm water discharges may need to be covered by an NPDES permit;
- Storm water discharges associated with construction activity that the director has shown to be or may reasonably expect to be contributing to a violation of a water quality standard; and
- c. Storm water discharges authorized by an individual NPDES permit or another NPDES general permit.
- 3. <u>Waivers</u>. After March 10, 2003, sites whose larger common plan of development or sale have at least one, but less than five acres of land disturbance, which would otherwise require permit coverage for storm water discharges associated with construction activities, may request that the director waive their permit requirement. Entities wishing to request such a waiver must certify in writing that the construction activity meets one of the two waiver conditions:
 - a. <u>Rainfall Erosivity Waiver</u>. For a construction site to qualify for the rainfall erosivity waiver, the cumulative rainfall erosivity over the project duration must be five or less and the site must be stabilized with a least a 70 percent vegetative cover or other permanent, non-erosive cover. The rainfall erosivity must be calculated according to the method in U.S. EPA Fact Sheet 3.1 <u>Construction Rainfall Erosivity Waiver</u> dated January 2001 and be found at: http://epa.ohio.gov/portals/35/permits/USEPAfact3-1_s.pdf. If it is determined that a construction activity will take place during a time period where the rainfall erosivity factor is less than five, a written waiver certification must be submitted to Ohio EPA at least 21 days before construction activity is scheduled to begin. If the construction activity will extend beyond the dates specified in the waiver certification, the operator must either: (a) recalculate the waiver using the original start date with the new ending date (if the R factor is still less than five, a new waiver certification must be submitted) or (b) submit an NOI application form and fee for coverage under this general permit at least seven days prior to the end of the waiver period; or
 - b. <u>TMDL (Total Maximum Daily Load) Waiver.</u> Storm water controls are not needed based on a TMDL approved or established by U.S. EPA that addresses the pollutant(s) of concern or, for non-impaired waters that do not require TMDLs, and equivalent analysis that determines allocations for small construction sites for the pollutant(s) of concern or that determines that such allocations are not needed to protect water quality based on consideration of existing in-stream concentrations, expected growth in pollutant contributions from all sources, and a margin of safety. The pollutant(s) of concern include sediment or a parameter that addresses sediment (such as total suspended solids, turbidity or siltation) and any other pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from the construction activity. The operator must certify to the director of Ohio EPA that the construction activity will take place, and storm water discharges will occur, within the drainage area addressed by the TMDL or equivalent analysis. A written waiver certification must be submitted to Ohio EPA at least 21 days before the construction activity is scheduled to begin.

4. <u>Prohibition on non-storm water discharges</u>. All discharges covered by this permit must be composed entirely of storm water with the exception of the following: discharges from firefighting activities; fire hydrant flushings; potable water sources including waterline flushings; irrigation drainage; lawn watering; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; uncontaminated ground water from trench or well point dewatering and foundation or footing drains where flows are not contaminated with process materials such as solvents. Dewatering activities must be done in compliance with Part II.C and Part III.G.2.g.iv of this permit. Discharges of material other than storm water or the authorized non-storm water discharges listed above must comply with an individual NPDES permit or an alternative NPDES general permit issued for the discharge.

Except for flows from firefighting activities, sources of non-storm water listed above that are combined with storm water discharges associated with construction activity must be identified in the SWP3. The SWP3 must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

5. <u>Spills and unintended releases</u> (Releases in excess of Reportable Quantities). This permit does not relieve the permittee of the reporting requirements of Title 40 of the Code of Federal Regulations ("CFR") Part 117 and 40 CFR Part 302. In the event of a spill or other unintended release, the discharge of hazardous substances in the storm water discharge(s) from a construction site must be minimized in accordance with the applicable storm water pollution prevention plan for the construction activity and in no case, during any 24-hour period, may the discharge(s) contain a hazardous substance equal to or in excess of reportable quantities.

40 CFR Part 117 sets forth a determination of the reportable quantity for each substance designated as hazardous in 40 CFR Part 116. The regulation applies to quantities of designated substances equal to or greater than the reportable quantities, when discharged to surface waters of the state. 40 CFR Part 302 designates under section 102(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, those substances in the statutes referred to in section 101(14), identifies reportable quantities for these substances and sets forth the notification requirements for releases of these substances. This regulation also sets forth reportable quantities for hazardous substances designated under section 311(b)(2)(A) of the Clean Water Act (CWA).

C. Requiring an individual NPDES permit or an alternative NPDES general permit.

1. <u>The director may require an alternative permit</u>. The director may require any operator eligible for this permit to apply for and obtain either an individual NPDES permit or coverage under an alternative NPDES general permit in accordance with OAC Rule 3745-38-02. Any interested person may petition the director to take action under this paragraph.

The director will send written notification that an alternative NPDES permit is required. This notice shall include a brief statement of the reasons for this decision, an application form and a statement setting a deadline for the operator to file the application. If an operator fails to submit an application in a timely manner as required by the director under this paragraph, then coverage, if in effect, under this permit is automatically terminated at the end of the day specified for application submittal.

- 2. <u>Operators may request an individual NPDES permit</u>. Any owner or operator eligible for this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request to the director in accordance with the requirements of 40 CFR 122.26. If the reasons adequately support the request, the director shall grant it by issuing an individual NPDES permit.
- 3. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be.

D. Permit requirements when portions of a site are sold

If an operator obtains a permit for a development, and then the operator (permittee) sells off lots or parcels within that development, permit coverage must be continued on those lots until a Notice of Termination (NOT) in accordance with Part IV.B is submitted. For developments which require the use of centralized sediment and erosion controls (i.e., controls that address storm water runoff from one or more lots) for which the current permittee intends to terminate responsibilities under this permit for a lot after sale of the lot to a new owner and such termination will either prevent or impair the implementation of the controls and therefore jeopardize compliance with the terms and conditions of this permit, the permittee will be required to maintain responsibility for the implementation of those controls. For developments where this is not the case, it is the permittee's responsibility to temporarily stabilize all lots sold to individual lot owners unless an exception is approved in accordance with Part III.G.4. In cases where permit responsibilities for individual lot(s) will be terminated after sale of the lot, the permittee shall inform the individual lot owner of the obligations under this permit and ensure that the Individual Lot NOI application is submitted to Ohio EPA.

E. Authorization

1. <u>Obtaining authorization to discharge</u>. Operators that discharge storm water associated with construction activity must submit an NOI application form and Storm Water Pollution Prevention Plan (SWP3) if located within the Big Darby Creek watershed or portions of the Olentangy watershed in accordance with the requirements of Part I.F of this permit to obtain authorization to discharge under this general permit. As required under OAC Rule 3745-38-06(E), the director, in response to the NOI submission, will notify the applicant in writing that he/she has or has not been granted general permit coverage to discharge storm water associated with construction activity under the terms and conditions of this permit or that the applicant must apply for an individual NPDES permit or coverage under an alternate general NPDES permit as described in Part I.C.1.

2. <u>No release from other requirements</u>. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations. Other permit requirements commonly associated with construction activities include, but are not limited to, section 401 water quality certifications, isolated wetland permits, permits to install sanitary sewers or other devices that discharge or convey polluted water, permits to install drinking water lines, single lot sanitary system permits and disturbance of land which was used to operate a solid or hazardous waste facility (i.e., coverage under this NPDES general permit does not satisfy the requirements of OAC Rule 3745-27-13 or ORC Section 3734.02(H)). The issuance of this permit is subject to resolution of an antidegradation review. This permit does not relieve the permittee of other responsibilities associated with construction activities such as contacting the Ohio Department of Natural Resources, Division of Water, to ensure proper well installation and abandonment of wells.

F. Notice of Intent Requirements

- 1. Deadlines for notification.
 - a. <u>Initial coverage</u>: Operators who intend to obtain initial coverage for a storm water discharge associated with construction activity under this general permit must submit a complete and accurate NOI application form, a completed Storm Water Pollution Prevention Plan (SWP3) for projects within the Big Darby Creek and portions of the Olentangy river watersheds and appropriate fee at least 21 days (or 45 days in the Big Darby Creek watershed and portions of the Olentangy watershed) prior to the commencement of construction activity. If more than one operator, as defined in Part VII of this general permit, will be engaged at a site, each operator shall seek coverage under this permit is not effective until an approval letter granting coverage from the director of Ohio EPA is received by the applicant. Where one operator has already submitted an NOI prior to other operator(s) being identified, the additional operator shall request modification of coverage to become a co-permittee. In such instances, the co-permittees shall be covered under the same facility permit number. No additional permit fee is required.
 - b. <u>Individual lot transfer of coverage</u>: Operators must each submit an individual lot notice of intent (Individual Lot NOI) application form (no fee required) to Ohio EPA at least seven days prior to the date that they intend to accept responsibility for permit requirements for their portion of the original permitted development from the previous permittee. Transfer of permit coverage is not granted until an approval letter from the director of Ohio EPA is received by the applicant.
- 2. <u>Failure to notify</u>. Operators who fail to notify the director of their intent to be covered and who discharge pollutants to surface waters of the state without an NPDES permit are in violation of ORC Chapter 6111. In such instances, Ohio EPA may bring an enforcement action for any discharges of storm water associated with construction activity.
- 3. <u>How to submit an NOI</u>. Operators seeking coverage under this permit must submit a complete and accurate Notice of Intent (NOI) application using Ohio EPA's electronic application form which is available through the Ohio EPA eBusiness Center at: <u>https://ebiz.epa.ohio.gov/</u>. Submission through the Ohio EPA eBusiness Center will

require establishing an Ohio EPA eBusiness Center account and obtaining a unique Personal Identification Number (PIN) for final submission of the NOI. Existing eBusiness Center account holders can access the NOI form through their existing account and submit using their existing PIN. Please see the following link for guidance: <u>http://epa.ohio.gov/dsw/ebs.aspx#170669803-streams-guidance</u>. Alternatively, if you are unable to access the NOI form through the agency eBusiness Center due to a demonstrated hardship, the NOI may be submitted on a paper NOI form provided by Ohio EPA. NOI information shall be typed on the form. Please contact Ohio EPA, Division of Surface Water at (614) 644-2001 if you wish to receive a paper NOI form.

- 4. <u>Additional notification</u>. NOIs and SWP3s are considered public documents and shall be made available to the public in accordance with Part III.C.2. The permittee shall make NOIs and SWP3s available upon request of the director of Ohio EPA, local agencies approving sediment and erosion control plans, grading plans or storm water management plans, local governmental officials, or operators of municipal separate storm sewer systems (MS4s) receiving drainage from the permitted site. Each operator that discharges to an NPDES permitted MS4 shall provide a copy of its Ohio EPA NOI submission to the MS4 in accordance with the MS4's requirements, if applicable.
- 5. <u>Re-notification</u>. Existing permittees having coverage under the previous generations of this general permit shall have continuing coverage under OHC000005 with the submittal of a timely renewal application. Within 180 days from the effective date of this permit, existing permittees shall submit the completed renewal application expressing their intent for continued coverage. In accordance with Ohio Administrative Code (OAC) 3745-38-02(E)(2)(a)(i), a renewal application fee will only apply to existing permittees having general permit coverage for 5 or more years as of the effective date of this general permit. Permit coverage will be terminated if Ohio EPA does not receive the renewal application within this 180-day period.

Part II. NON-NUMERIC EFFLUENT LIMITATIONS

You shall comply with the following non-numeric effluent limitations for discharges from your site and/or from construction support activities. Part III of this permit contains the specific design criteria to meet the objectives of the following non-numeric effluent limitations. You shall develop and implement the SWP3 in accordance with Part III of this permit to satisfy these non-numeric effluent limitations.

- A. Erosion and Sediment Controls. You shall design, install and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, such controls shall be designed, installed and maintained to:
- 1. Control storm water volume and velocity within the site to minimize soil and stream erosion;
- 2. Control storm water discharges, including both peak flowrates and total storm water volume, to minimize erosion at outlets and to minimize downstream channel and streambank erosion;
- 3. Minimize the amount of soil exposed during construction activity;

- 4. Minimize the disturbance of steep slopes;
- 5. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls shall address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting storm water runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;
- 6. If feasible, provide and maintain a 50-foot undisturbed natural buffer around surface waters of the state, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration. If it is infeasible to provide and maintain an undisturbed 50-foot natural buffer, you shall comply with the stabilization requirements found in Part II.B for areas within 50 feet of a surface water; and
- 7. Minimize soil compaction and, unless infeasible, preserve topsoil.
- **B. Soil Stabilization**. Stabilization of disturbed areas shall, at a minimum, be initiated in accordance with the time frames specified in the following tables.

Table 1: Permanent Stabilization

Area requiring permanent stabilization	Time frame to apply erosion controls
Any areas that will lie dormant for one year or	Within seven days of the most recent
more	disturbance
Any areas within 50 feet of a surface water of	Within two days of reaching final grade
the state and at final grade	
Other areas at final grade	Within seven days of reaching final grade
	within that area

Table 2: Temporary Stabilization

Area requiring temporary stabilization	Time frame to apply erosion controls
Any disturbed areas within 50 feet of a surface water of the state and not at final	Within two days of the most recent
grade	more than 14 days
Any disturbed areas that will be dormant for	Within seven days of the most recent
and not within 50 feet of a surface water of	disturbance within the area
the state	For residential subdivisions, disturbed areas
	must be stabilized at least seven days prior to
	lot(s).
Disturbed and set that will be falls as sensitives	Driver to the encode of uninter succether

Disturbed areas that will be idle over winter Prior to the onset of winter weather

Where vegetative stabilization techniques may cause structural instability or are otherwise unobtainable, alternative stabilization techniques must be employed. Permanent and temporary stabilization are defined in Part VII.

- **C. Dewatering.** Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls.
- **D. Pollution Prevention Measures.** Design, install, implement and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:
- 1. Minimize the discharge of pollutants from equipment and vehicle washing, wheel washwater, and other washwaters. Washwaters shall be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- 2. Minimize the exposure of construction materials, products, and wastes; landscape materials, fertilizers, pesticides, and herbicides; detergents, sanitary waste and other materials present on the site to precipitation and to storm water; and
- 3. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.
- E. **Prohibited Discharges.** The following discharges are prohibited:
- 1. Wastewater from washout of concrete, unless managed by an appropriate control;
- 2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
- 3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
- 4. Soaps or solvents used in vehicle and equipment washing or all other waste water streams which could be subject to an individual NPDES permit (Part III.G.2.g).
- F. Surface Outlets. When discharging from sediment basins utilize outlet structures that withdraw water from the surface, unless infeasible. (Note: Ohio EPA believes that the circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include time periods with extended cold weather during winter months. If you have determined that it is infeasible to meet this requirement, you shall provide documentation in your SWP3 to support your determination.)
- **G. Post-Construction Storm Water Management Controls**. So that receiving stream's physical, chemical and biological characteristics are protected, and stream functions are maintained, post-construction storm water practices shall provide long-term management of runoff quality and quantity.

PART III. STORM WATER POLLUTION PREVENTION PLAN (SWP3)

A. Storm Water Pollution Prevention Plans.

A SWP3 shall be developed for each site covered by this permit. For a multi-phase construction project, a separate NOI shall be submitted when a separate SWP3 will be prepared for

subsequent phases. SWP3s shall be prepared in accordance with sound engineering and/or conservation practices by a professional experienced in the design and implementation of standard erosion and sediment controls and storm water management practices addressing all phases of construction. The SWP3 shall clearly identify all activities which are required to be authorized under Section 401 and subject to an antidegradation review. The SWP3 shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with construction activities. The SWP3 shall be a comprehensive, stand-alone document, which is not complete unless it contains the information required by Part III.G of this permit. In addition, the SWP3 shall describe and ensure the implementation of best management practices (BMPs) that reduce the pollutants and impact of storm water discharges during construction and pollutants associated with the post-construction land use to ensure compliance with ORC Section 6111.04, OAC Chapter 3745-1 and the terms and conditions of this permit.

B. Timing.

An acceptable SWP3 shall be completed and submitted to the applicable regulated MS4 entity (for projects constructed entirely within a regulated MS4 area) prior to the timely submittal of an NOI. Projects within the Big Darby Creek and portions of the Olentangy watersheds must submit a SWP3 with the NOI. The SWP3 shall be updated in accordance with Part III.D. Submission of a SWP3 does not constitute review and approval on the part of Ohio EPA. Upon request and good cause shown, the director may waive the requirement to have a SWP3 completed at the time of NOI submission. If a waiver has been granted, the SWP3 must be completed prior to the initiation of construction activities. The SWP3 must be implemented upon initiation of construction activities.

In order to continue coverage from the previous generations of this permit, the permittee shall review and update the SWP3 to ensure that this permit's requirements are addressed within 180 days after the effective date of this permit. If it is infeasible for you to comply with a specific requirement in this permit because (1) the provision was not part of the permit you were previously covered under, and (2) because you are prevented from compliance due to the nature or location of earth disturbances that commenced prior to the effective date of this permit, you shall include documentation within your SWP3 of the reasons why it is infeasible for you to meet the specific requirement.

Examples of OHC000005 permit conditions that would be infeasible for permittees renewing coverage to comply with include:

- OHC000005 post-construction requirements, for projects that obtained NPDES construction storm water coverage and started construction activities prior to the effective date of this permit;
- OHC000005 post-construction requirements, for multi-phase development projects with an existing regional post-construction BMP issued under previous NPDES post-construction requirements. This only applies to construction sites authorized under Ohio EPA's Construction Storm Water Permits issued after April 20, 2003;
- OHC000005 post-construction requirements, for renewing or initial coverage and you have a SWP3 approved locally and you will start construction within 180 days of the effective date of this permit;

- Sediment settling pond design requirements, if the general permit coverage was obtained prior to April 21, 2013 and the sediment settling pond has been installed; or
- Case-by-case situations approved by the Director.

C. SWP3 Signature and Review.

1. <u>Plan Signature and Retention On-Site</u>. The SWP3 shall include the certification in Part V.H, be signed in accordance with Part V.G., and be retained on site during working hours.

2. Plan Availability

- a. On-site: The plan shall be made available immediately upon request of the director or his authorized representative and MS4 operators or their authorized representative during working hours. A copy of the NOI and letter granting permit coverage under this general permit also shall be made available at the site.
- b. By written request: The permittee must provide the most recent copy of the SWP3 within 7 days upon written request by any of the following:
 - i. The director or the director's authorized representative;
 - ii. A local agency approving sediment and erosion plans, grading plans or storm water management plans; or
 - iii. In the case of a storm water discharge associated with construction activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the operator of the system.
- c. To the public: All NOIs, general permit approval for coverage letters, and SWP3s are considered reports that shall be available to the public in accordance with the Ohio Public Records law. The permittee shall make documents available to the public upon request or provide a copy at public expense, at cost, in a timely manner. However, the permittee may claim to Ohio EPA any portion of an SWP3 as confidential in accordance with Ohio law.
- 3. <u>Plan Revision</u>. The director or authorized representative may notify the permittee at any time that the SWP3 does not meet one or more of the minimum requirements of this part. Within 10 days after such notification from the director or authorized representative (or as otherwise provided in the notification), the permittee shall make the required changes to the SWP3 and shall submit to Ohio EPA the revised SWP3 or a written certification that the requested changes have been made.

D. Amendments.

The permittee shall amend the SWP3 whenever there is a change in design, construction, operation or maintenance, which has a significant effect on the potential for the discharge of pollutants to surface waters of the state or if the SWP3 proves to be ineffective in achieving the

general objectives of controlling pollutants in storm water discharges associated with construction activity. Amendments to the SWP3 may be reviewed by Ohio EPA in the same manner as Part III.C.

E. Duty to inform contractors and subcontractors.

The permittee shall inform all contractors and subcontractors not otherwise defined as "operators" in Part VII of this general permit who will be involved in the implementation of the SWP3 of the terms and conditions of this general permit. The permittee shall maintain a written document containing the signatures of all contractors and subcontractors involved in the implementation of the SWP3 as proof acknowledging that they reviewed and understand the conditions and responsibilities of the SWP3. The written document shall be created, and signatures shall be obtained prior to commencement of earth disturbing activity on the construction site.

F. Total Maximum Daily Load (TMDL) allocations.

If a TMDL is approved for any waterbody into which the permittee's site discharges and requires specific BMPs for construction sites, the director may require the permittee to revise his/her SWP3. Specific conditions have been provided in Appendix A (for the Big Darby Creek Watershed) and Appendix B (for portions of the Olentangy river watershed).

G. SWP3 Requirements.

Operations that discharge storm water from construction activities are subject to the following requirements and the SWP3 shall include the following items:

- 1. <u>Site description</u>. Each SWP3 shall provide:
 - a. A description of the nature and type of the construction activity (e.g., low density residential, shopping mall, highway, etc.);
 - Total area of the site and the area of the site that is expected to be disturbed (i.e., grubbing, clearing, excavation, filling or grading, including off-site borrow areas);
 - c. A measure of the impervious area and percent imperviousness created by the construction activity (existing, new and total impervious area after construction);
 - d. Storm water calculations, including the volumetric runoff coefficients for both the pre-construction and post- construction site conditions, and resulting water quality volume; design details for post-construction storm water facilities and pretreatment practices such as contributing drainage areas, capacities, elevations, outlet details and drain times shall be included in the SWP3; and if applicable, explanation of the use of existing post-construction facilities. Ohio EPA recommends the use of data sheets (see Ohio's Rainwater and Land Development manual and Ohio EPA resources for examples);
 - e. Existing data describing the soil and, if available, the quality of any discharge from the site;

- f. A description of prior land uses at the site;
- g. A description of the condition of any on-site streams (e.g. prior channelization, bed instability or headcuts, channels on public maintenance, or natural channels);
- h. An implementation schedule which describes the sequence of major construction operations (i.e., designation of vegetative preservation areas, grubbing, excavating, grading, utilities, infrastructure installation and others) and the implementation of erosion, sediment and storm water management practices or facilities to be employed during each operation of the sequence;
- i. The name and/or location of the immediate receiving stream or surface water(s) and the first subsequent named receiving water(s) and the areal extent and description of wetlands or other special aquatic sites at or near the site which will be disturbed, or which will receive discharges from disturbed areas of the project. For discharges to an MS4, the point of discharge to the MS4 and the location where the MS4 ultimately discharges to a stream or surface water of the state shall be indicated;
- j. For subdivided developments, a detail drawing of individual parcels with their erosion, sediment or storm water control practices and/or a typical individual lot showing standard individual lot erosion and sediment control practices.

A typical individual lot drawing does not remove the responsibility to designate specific erosion and sediment control practices in the SWP3 for critical areas such as steep slopes, stream banks, drainage ways and riparian zones;

- Location and description of any storm water discharges associated with dedicated asphalt and dedicated concrete plants covered by this permit and the best management practices to address pollutants in these storm water discharges;
- I. A cover page or title identifying the name and location of the site, the name and contact information of all construction site operators, the name and contact information for the person responsible for authorizing and amending the SWP3, preparation date, and the estimated dates that construction will start and be complete;
- m. A log documenting grading and stabilization activities as well as amendments to the SWP3, which occur after construction activities commence; and
- n. Site map showing:
 - i. Limits of earth-disturbing activity of the site including associated off-site borrow or spoil areas that are not addressed by a separate NOI and associated SWP3;
 - ii. Soils types for all areas of the site, including locations of unstable or highly erodible and/or known contaminated soils;

- iii. Existing and proposed contours. A delineation of drainage watersheds expected during and after major grading activities as well as the size of each drainage watershed, in acres;
- iv. The location of any delineated boundary for required riparian setbacks;
- v. Conservation easements or areas designated as open space, preserved vegetation or otherwise protected from earth disturbing activities. A description of any associated temporary or permanent fencing or signage;
- vi. Surface water locations including springs, wetlands, streams, lakes, water wells, etc., on or within 200 feet of the site, including the boundaries of wetlands or stream channels and first subsequent named receiving water(s) the permittee intends to fill or relocate for which the permittee is seeking approval from the Army Corps of Engineers and/or Ohio EPA;
- vii. Existing and planned locations of buildings, roads, parking facilities and utilities;
- viii. The location of all erosion and sediment control practices, including the location of areas likely to require temporary stabilization during site development;
- ix. Sediment traps and basins noting their sediment storage and dewatering (detention) volume and contributing drainage area. Ohio EPA recommends the use of data sheets (see Ohio EPA's Rainwater and Land Development manual and website for examples) to provide data for all sediment traps and basins noting important inputs to design and resulting parameters such as their contributing drainage area, disturbed area, detention volume, sediment storage volume, practice surface area, dewatering time, outlet type and dimensions;
- x. The location of permanent storm water management practices (new and existing) including pretreatment practices to be used to control pollutants in storm water after construction operations have been completed along with the location of existing and planned drainage features including catch basins, culverts, ditches, swales, surface inlets and outlet structures;
- xi. Areas designated for the storage or disposal of solid, sanitary and toxic wastes, including dumpster areas, areas designated for cement truck washout, and vehicle fueling;
- xii. The location of designated construction entrances where the vehicles will access the construction site; and
- xiii. The location of any areas of proposed floodplain fill, floodplain excavation, stream restoration or known temporary or permanent stream crossings.

2. <u>Controls</u>. In accordance with Part II.A, the SWP3 shall contain a description of the controls appropriate for each construction operation covered by this permit and the operator(s) shall implement such controls. The SWP3 shall clearly describe for each major construction activity identified in Part III.G.1.h: (a) appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented; and (b) which contractor is responsible for implementation (e.g., contractor A will clear land and install perimeter controls and contractor B will maintain perimeter controls until final stabilization). The SWP3 shall identify the subcontractors engaged in activities that could impact storm water runoff. The SWP3 shall contain signatures from all of the identified subcontractors indicating that they have been informed and understand their roles and responsibilities in complying with the SWP3. Ohio EPA recommends that the primary site operator review the SWP3 with the primary contractor prior to commencement of construction activities and keep a SWP3 training log to demonstrate that this review has occurred.

Ohio EPA recommends that the erosion, sediment, and storm water management practices used to satisfy the conditions of this permit should meet the standards and specifications in the most current edition of Ohio's <u>Rainwater and Land Development</u> (see definitions) manual or other standards acceptable to Ohio EPA. The controls shall include the following minimum components:

- a. <u>Preservation Methods.</u> The SWP3 shall make use of practices which preserve the existing natural condition as much as feasible. Such practices may include: preserving existing vegetation, vegetative buffer strips, and existing soil profile and topsoil; phasing of construction operations to minimize the amount of disturbed land at any one time; and designation of tree preservation areas or other protective clearing or grubbing practices. For all construction activities immediately adjacent to surface waters of the state, the permittee shall comply with the buffer non-numeric effluent limitation in Part II.A.6, as measured from the ordinary high water mark of the surface water.
- b. <u>Erosion Control Practices.</u> The SWP3 shall make use of erosion controls that provide cover over disturbed soils unless an exception is approved in accordance with Part III.G.4. A description of control practices designed to re-establish vegetation or suitable cover on disturbed areas after grading shall be included in the SWP3. The SWP3 shall provide specifications for stabilization of all disturbed areas of the site and provide guidance as to which method of stabilization will be employed for any time of the year. Such practices may include: temporary seeding, permanent seeding, mulching, matting, sod stabilization, vegetative buffer strips, phasing of construction operations, use of construction entrances and the use of alternative ground cover.
 - i. **Stabilization.** Disturbed areas shall be stabilized in accordance with Table 1 (Permanent Stabilization) and Table 2 (Temporary Stabilization) in Part II.B of this permit.
 - ii. **Permanent stabilization of conveyance channels**. Operators shall undertake special measures to stabilize channels and outfalls and prevent erosive flows. Measures may include seeding, dormant seeding (as defined in the most current edition of the <u>Rainwater and Land</u>

<u>Development</u> manual), mulching, erosion control matting, sodding, riprap, natural channel design with bioengineering techniques or rock check dams.

- c. <u>Runoff Control Practices.</u> The SWP3 shall incorporate measures which control the flow of runoff from disturbed areas so as to prevent erosion from occurring. Such practices may include rock check dams, pipe slope drains, diversions to direct flow away from exposed soils and protective grading practices. These practices shall divert runoff away from disturbed areas and steep slopes where practicable. Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel to provide non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.
- d. <u>Sediment Control Practices.</u> The plan shall include a description of structural practices that shall store runoff allowing sediments to settle and/or divert flows away from exposed soils or otherwise limit runoff from exposed areas. Structural practices shall be used to control erosion and trap sediment from a site remaining disturbed for more than 14 days. Such practices may include, among others: sediment settling ponds, sediment barriers, earth diversion dikes or channels which direct runoff to a sediment settling pond and storm drain inlet protection. All sediment control practices must be capable of ponding runoff in order to be considered functional. Earth diversion dikes or channels alone are not considered a sediment control practice unless those are used in conjunction with a sediment settling pond.

The SWP3 shall contain detail drawings for all structural practices.

- i. **Timing.** Sediment control structures shall be functional throughout the course of earth disturbing activity. Sediment basins and perimeter sediment barriers shall be implemented prior to grading and within seven days from the start of grubbing. They shall continue to function until the upslope development area is stabilized with permanent cover. As construction progresses and the topography is altered, appropriate controls shall be constructed, or existing controls altered to address the changing drainage patterns.
- ii. **Sediment settling ponds.** A sediment settling pond is required for any one of the following conditions:
 - Concentrated or collected storm water runoff (e.g., storm sewer or ditch);
 - Runoff from drainage areas, which exceed the design capacity of silt fence or other sediment barriers; or
 - Runoff from drainage areas that exceed the design capacity of inlet protection.

The permittee may request approval from Ohio EPA to use alternative controls if the permittee can demonstrate the alternative controls are equivalent in effectiveness to a sediment settling pond.

In accordance with Part II.F, if feasible, sediment settling ponds shall be dewatered at the pond surface using a skimmer or equivalent device. The sediment settling pond volume consists of both a dewatering zone and a sediment storage zone. The volume of the dewatering zone shall be a minimum of 1800 cubic feet (ft³) per acre of drainage (67 yd³/acre) with a minimum 48-hour drain time. The volume of the sediment storage zone shall be calculated by one of the following methods:

Method 1: The volume of the sediment storage zone shall be 1000 ft^3 per disturbed acre within the watershed of the basin. OR

Method 2: The volume of the sediment storage zone shall be the volume necessary to store the sediment as calculated with RUSLE or a similar generally accepted erosion prediction model.

Accumulated sediment shall be removed from the sediment storage zone once it exceeds 50 percent of the minimum required sediment storage design capacity and prior to the conversion to the post-construction practice unless suitable storage is demonstrated based upon over-design. When determining the total contributing drainage area, off-site areas and areas which remain undisturbed by construction activity shall be included unless runoff from these areas is diverted away from the sediment settling pond and is not co-mingled with sediment-laden runoff. The depth of the dewatering zone shall be less than or equal to five feet. The configuration between inlets and the outlet of the basin shall provide at least two units of length for each one unit of width ($\geq 2:1$ length:width ratio); however, a length to width ratio of 4:1 is recommended. When designing sediment settling ponds, the permittee shall consider public safety, especially as it relates to children, as a design factor for the sediment basin and alternative sediment controls shall be used where site limitations would preclude a safe design. Combining multiple sediment and erosion control measures in order to maximize pollutant removal is encouraged.

iii. **Sediment Barriers and Diversions.** Sheet flow runoff from denuded areas shall be intercepted by sediment barriers or diversions to protect adjacent properties and water resources from sediment transported via sheet flow. Where intended to provide sediment control, silt fence shall be placed on a level contour downslope of the disturbed area. For most applications, standard silt fence may be substituted with a 12-inch diameter sediment barrier. The relationship between the maximum drainage area to sediment barrier for a particular slope range is shown in the following table:

Maximum drainage area (in acres) to 100 linear feet of sediment barrier	Range of slope for a particular drainage area (in percent)
0.5	< 2%
0.25	<u>></u> 2% but < 20%
0.125	<u>></u> 20% but < 50%

Table 3 Sediment Barrier Maximum Drainage Area Based on Slope

Placing sediment barriers in a parallel series does not extend the size of the drainage area. Storm water diversion practices shall be used to keep runoff away from disturbed areas and steep slopes where practicable. Diversion practices, which include swales, dikes or berms, may receive storm water runoff from areas up to 10 acres.

- iv. **Inlet Protection.** Other erosion and sediment control practices shall minimize sediment laden water entering active storm drain systems. All inlets receiving runoff from drainage areas of one or more acres will require a sediment settling pond.
- v. **Surface Waters of the State Protection.** If construction activities disturb areas adjacent to surface waters of the state, structural practices shall be designed and implemented on site to protect all adjacent surface waters of the state from the impacts of sediment runoff. No structural sediment controls (e.g., the installation of silt fence or a sediment settling pond) shall be used in a surface water of the state. For all construction activities immediately adjacent to surface waters of the state, the permittee shall comply with the buffer non-numeric effluent limitation in Part II.A.6, as measured from the ordinary high water mark of the surface water. Where impacts within this buffer area are unavoidable, due to the nature of the construction (e.g., stream crossings for roads or utilities), the project shall be designed such that the number of stream crossings and the width of the disturbance within the buffer area are minimized.
- vi. **Modifying Controls**. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee shall replace or modify the control for site conditions.
- e. <u>Post-Construction Storm Water Management Requirements.</u> So that receiving stream's physical, chemical and biological characteristics are protected, and stream functions are maintained, post-construction storm water practices shall provide long-term management of runoff quality and quantity. To meet the post-construction requirements of this permit, the SWP3 shall contain a description of the post-construction BMPs that will be installed during construction for the site and the rationale for their selection. The rationale shall address the anticipated impacts on the channel and floodplain morphology, hydrology, and water quality. Post-construction BMPs cannot be installed within a surface water of the state (e.g., wetland or stream) unless it is authorized by a CWA 401 water quality certification, CWA 404 permit, or Ohio EPA non-jurisdictional wetland/stream program approval. Note: local jurisdictions may have more stringent post-construction requirements.

Detail drawings and maintenance plans shall be provided for all post-construction BMPs in the SWP3. Maintenance plans shall be provided by the permittee to the post-construction operator of the site (including homeowner associations) upon completion of construction activities (prior to termination of permit coverage). Maintenance plans shall ensure that pollutants collected within structural postconstruction practices are disposed of in accordance with local, state, and federal regulations. To ensure that storm water management systems function as designed and constructed, the post-construction operation and maintenance plan shall be a stand-alone document which contains: (1) a designated entity for storm water inspection and maintenance responsibilities; (2) the routine and nonroutine maintenance tasks to be undertaken; (3) a schedule for inspection and maintenance: (4) any necessary legally binding maintenance easements and agreements; (5) construction drawings or excerpts showing the plan view, profile and details of the outlet(s); (6) a map showing all access and maintenance easements; and (7) for table 4a/4b practices, provide relevant elevations and associated volumes that dictate when removal of accumulated sediments must occur. Permittees are responsible for assuring all post-construction practices meet plan specifications and intended post-construction conditions have been met (e.g., sediment removed from, and sediment storage restored to, permanent pools, sediment control outlets removed and replaced with permanent postconstruction discharge structures, and all slopes and drainageways permanently stabilized), but are not responsible under this permit for operation and maintenance of post-construction practices once coverage under this permit is terminated.

Post-construction storm water BMPs that discharge pollutants from point sources once construction is completed may in themselves need authorization under a separate NPDES permit (one example is storm water discharges from regulated industrial sites).

Construction activities that do not include the installation of any impervious surface (e.g., park lands), abandoned mine land reclamation activities regulated by the Ohio Department of Natural Resources, stream and wetland restoration activities, and wetland mitigation activities are not required to comply with the conditions of Part III.G.2.e of this permit. Linear construction projects (e.g., pipeline or utility line installation) which do not result in the installation of additional impervious surface are not required to comply with the conditions of Part III.G.2.e of this permit. However, linear construction projects shall be designed to minimize the number of stream crossings and the width of disturbance, and to achieve final stabilization of the disturbed area as defined in Part VII.M.1.

For all construction activities that will disturb two or more acres of land or will disturb less than two acres that are part of a larger common plan of development or sale which will disturb two or more acres of land, the post construction BMP(s) chosen shall be able to manage storm water runoff for protection of stream channels, stream stability, and water quality. The BMP(s) chosen must be compatible with site and soil conditions. Structural post-construction storm water treatment practices shall be incorporated into the permanent drainage system for the site. The BMP(s) chosen must be sized to treat the water quality volume (WQ_v) and ensure compliance with Ohio's Water Quality Standards in OAC Chapter 3745-1. The WQ_v shall be equivalent to the volume of runoff from a 0.90-inch rainfall and shall be determined using the following equations:

$$WQ_v = Rv * P * A / 12$$
 (Equation 1)

where:

 WQ_v = water quality volume in acre-feet

- Rv = the volumetric runoff coefficient calculated using equation 2
- P = 0.90 inch precipitation depth
- A = area draining into the BMP in acres

$$Rv = 0.05 + 0.9i$$
 (Equation 2)

where i = fraction of post-construction impervious surface

An additional volume equal to 20 percent of the WQ_v shall be incorporated into the BMP for sediment storage. Ohio EPA recommends BMPs be designed according to the methodology described in the most current edition of the <u>Rainwater and Land Development</u> manual or in another design manual acceptable for use by Ohio EPA.

The BMPs listed in Tables 4a and 4b below are considered standard BMPs approved for general use. However, communities with a regulated MS4 may limit the use of some of these BMPs. BMPs shall be designed such that the drain time is long enough to provide treatment but short enough to provide storage for successive rainfall events and avoid the creation of nuisance conditions. The outlet structure for the post-construction BMP shall not discharge more than the first half of the WQv in less than one-third of the drain time. The WQv is the volume of storm water runoff that must be detained by a post-construction practice as specified by the most recent edition of the Rainwater and Land Development manual.

Post-construction practices shall be sized to treat 100% of the WQv associated with their contributing drainage area. If there is an existing post-construction BMP that treats runoff from the disturbed area and the BMP meets the post-construction requirements of this permit, no additional post-construction BMP will be required. A regional storm water BMP may be used to meet the post-construction requirement if: (1) the BMP meets the design requirements for treating the WQv; and (2) a legal agreement is established through which the regional BMP owner or operator agrees to provide this service in the long term. Design information for such facilities such as contributing drainage areas, capacities, elevations, outlet details and drain times shall be included in the SWP3.

Extended Detention Practices	Minimum Drain Time of WQv		
Wet Extended Detention Basin ^{1,2}	24 hours		
Constructed Extended Detention Wetland ^{1,2}	24 hours		
Dry Extended Detention Basin ^{1,3}	48 hours		
Permeable Pavement – Extended Detention ¹	24 hours		
Underground Storage – Extended Detention ^{1,4}	24 hours		
Sand & Other Media Filtration - Extended Detention ^{1, 5}	24 hours		

Table 4a Extended Detention Post-Construction Practices with Minimum Drain Times

Notes:

1. The outlet structure shall not discharge more than the first half of the WQv in less than one-third of the drain time.

2. Provide a permanent pool with a minimum volume equal to the WQv and an extended detention volume above the permanent pool equal to 1.0 x WQv.

3. Dry basins must include a forebay and a micropool each sized at a minimum of 0.1 x WQv and a protected outlet, or include acceptable pretreatment and a protected outlet. 4. Underground storage must have pretreatment for removal of suspended sediments included in the design and documented in the SWP3. This pretreatment shall concentrate sediment in a location where it can be readily removed. For non-infiltrating, underground extended detention systems, pretreatment shall be 50% effective at capturing total suspended solids according to the testing protocol established in the Alternative Post-Construction BMP Testing Protocol.

5. The WQv ponding area shall completely empty between 24 and 72 hours.

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Infiltration Practices	Maximum Drain Time of WQv		
Bioretention Area/Cell ^{1,2}	24 hours		
Infiltration Basin ²	24 hours		
Infiltration Trench ³	48 hours		
Permeable Pavement – Infiltration ³	48 hours		
Underground Storage – Infiltration ^{3,4}	48 hours		

Table 4b Infiltration Post-Construction Practices with Maximum Drain Times

Notes:

1. Bioretention soil media shall have a permeability of approximately 1 - 4 in/hr. Meeting the soil media specifications in the Rainwater and Land Development manual is considered compliant with this requirement. Bioretention cells must have underdrains unless in-situ conditions allow for the WQv (surface ponding) plus the bioretention soil (to a depth of 24 inches) to drain completely within 48 hours.

2. Infiltrating practices with the WQv stored aboveground (bioretention, infiltration basin) shall fully drain the WQv within 24 hours to minimize nuisance effects of standing water and to promote vigorous communities of appropriate vegetation.

3. Subsurface practices designed to fully infiltrate the WQv (infiltration trench, permeable pavement with infiltration, underground storage with infiltration) shall empty within 48 hours to recover storage for subsequent storm events.

4. Underground storage systems with infiltration must have adequate pretreatment of suspended sediments included in the design and documented in the SWP3 in order to minimize clogging of the infiltrating surface. Pretreatment shall concentrate sediment in a location where it can be readily removed. Examples include media filters situated upstream of the storage or other suitable alternative approved by Ohio EPA. For infiltrating underground systems, pretreatment shall be 80% effective at capturing total suspended solids according to the testing protocol established in the Alternative Post-Construction BMP Testing Protocol.

<u>Small Construction Activities.</u> For all construction activities authorized under this permit which result in a disturbance less than 2 acres, a post-construction practice shall be used to treat storm water runoff for pollutants and to reduce adverse impacts on receiving waters. The applicant must provide a justification in the SWP3 why the use of table 4a and 4b practices are not feasible. The justification must address limiting factors which would prohibit the project going forward should table 4a and 4b practices be required. Please note that additional practices selected will require approval from the regulated MS4. The use of green infrastructure BMPs such as runoff reducing practices is also encouraged.

<u>Transportation Projects</u>. The construction of new roads and roadway improvement projects by public entities (i.e., the state, counties, townships, cities, or villages) may implement post-construction BMPs in compliance with the current version (as of the effective date of this permit) of the Ohio Department of Transportation's "Location and Design Manual, Volume Two Drainage Design" that has been accepted by Ohio EPA as an alternative to the conditions of this permit.

<u>Offsite Mitigation of Post-Construction</u>. Ohio EPA may authorize the offsite mitigation of the post-construction requirements of Part III.G.2.e of this permit on a case by case basis provided the permittee clearly demonstrates the BMPs listed in Tables 4a and 4b are not feasible and the following criteria are met: (1) a maintenance agreement or policy is established to ensure operations and treatment long-term; (2) the offsite location discharges to the same HUC-12 watershed unit; and (3) the mitigation ratio of the WQv is 1.5 to 1 or the WQv at the point of retrofit, whichever is greater. Requests for offsite mitigation must be received prior to receipt of the NOI application.

<u>Previously Developed Areas</u> - Ohio EPA encourages the redevelopment of previously graded, paved or built upon sites through a reduction of the WQv treatment requirement. For a previously developed area, one or a combination of the following two conditions shall be met:

- A 20 percent net reduction of the site's volumetric runoff coefficient through impervious area reduction with soil restoration or replacing impervious roof area with green roof area (for these purposes green roofs shall be considered pervious surface) or
- Treatment of 20 percent of the WQv for the previously developed area using a practice meeting Table 4a/4b criteria.

Where there is a combination of redeveloped areas and new development, a weighted approached shall be used with the following equation:

$$WQv = P * A * [(Rv_1*0.2) + (Rv_2 - Rv_1)] / 12$$
 (Equation 3)

where

P = 0.90 inches

A = area draining into the BMP in acres

- Rv₁ = volumetric runoff coefficient for existing conditions (current site impervious area)
- Rv₂ = volumetric runoff coefficient for proposed conditions (postconstruction site impervious area)

Post-construction practices shall be located to treat impervious areas most likely to generate the highest pollutant load, such as parking lots or roadways, rather than areas predicted to be cleaner such as rooftops.

<u>Runoff Reduction Practices</u>. The size of structural post-construction practices used to capture and treat the WQv can be reduced by incorporating runoff

reducing practices into the design of the site's drainage system. The approach to calculate and document runoff reduction is detailed in the Rainwater and Land Development Manual. BMP-specific runoff reduction volumes are set by specifications in the Rainwater and Land Development Manual for the following practices:

- Impervious surface disconnection
- Rainwater harvesting
- Bioretention
- Infiltration basin
- Infiltration trench
- Permeable pavement with infiltration
- Underground storage with infiltration
- Grass swale
- Sheet flow to filter strip
- Sheet flow to conservation area

A runoff reduction approach may be used to meet the groundwater recharge requirements in the Big Darby Creek Watershed. The runoff reduction practices used for groundwater recharge may be used to reduce the WQv requirement, see appendix A for details on groundwater recharge requirements.

In order to promote the implementation of green infrastructure, the Director may consider the use of runoff reducing practices to demonstrate compliance with Part III.G.2.e of this permit for areas of the site not draining into a common drainage system of the site, e.g., sheet flow from perimeter areas such as the rear yards of residential lots, low density development scenarios, or where the permittee can demonstrate that the intent of pollutant removal and stream protection, as required in Part III.G.2.e of this permit is being addressed through non-structural post-construction BMPs based upon review and approval by Ohio EPA.

<u>Use of Alternative Post-Construction BMPs.</u> This permit does not preclude the use of innovative or experimental post-construction storm water management technologies. Alternative post-construction BMPs shall previously have been tested to confirm storm water treatment efficacy equivalent to those BMPs listed in Tables 4a and 4b using the protocol described in this section. BMP testing may include laboratory testing, field testing, or both.

Permittees shall request approval from Ohio EPA to use alternative postconstruction BMPs on a case-by-case basis. To use an alternative postconstruction BMP, the permittee must demonstrate that use of a BMP listed in Tables 4a and 4b is not feasible and the proposed alternative post-construction BMP meets the minimum treatment criteria as described in this section. The permittee shall submit an application to Ohio EPA for any proposed alternative post-construction BMP. Where the development project is located within a regulated municipal separate storm sewer system (MS4) community, the use of an alternative practice requires pre-approval by the MS4 before submittal of the Ohio EPA permit application. Ohio EPA requires that approvals for alternative post-construction BMPs are finalized before permittees submit an NOI for permit coverage.

In addition to meeting sediment removal criteria, the discharge rate from the proposed alternative practice shall be reduced to prevent stream bed erosion and protect the physical and biological stream integrity unless there will be negligible hydrological impact to the receiving surface water of the state. Discharge rate is considered to have a negligible impact if the permittee can demonstrate that one of the following three conditions exist:

- i. The entire WQv is recharged to groundwater;
- ii. The larger common plan of development or sale will create less than one acre of impervious surface;
- iii. The storm water drainage system of the development discharges directly into a large river with drainage area equal to 100 square miles or larger upstream of the development site or to a lake where the development area is less than 5 percent of the watershed area, unless a TMDL has identified water quality problems into the receiving surface waters of the state.

If the conditions above that minimize the potential for hydrological impact to the receiving surface water of the state do not exist, then the alternative post-construction BMP must prevent stream erosion by reducing the flow rate from the WQ_V. In such cases, discharge of the WQ_V must be controlled. A second storm water BMP that provides extended detention of the WQv may be needed to meet the post-construction criteria.

<u>Alternative Post-Construction BMP Testing Protocol.</u> For laboratory testing, the alternative BMP shall be tested using sediment with a specific gravity of 2.65, a particle size distribution closely matching the distribution shown in Table 5, and total suspended sediment (TSS) concentrations within 10% of 200 mg/L (180 mg/L – 220 mg/L TSS). For an alternative BMP to be acceptable, the test results must demonstrate that the minimum treatment rate is 80% TSS removal at the design flow rate for the tested BMP.

Particle Size (microns)	Percent Finer (%)
1,000	100
500	95
250	90
150	75
100	60
75	50
50	45
20	35
8	20
5	10
2	5

Table 5 Particle Size Distribution for Testing Alternative Post-Construction BMPs

• For field testing, the alternative BMP shall be tested using storm water runoff
from the field, not altered by adding aggregate or subjecting to unusually high sediment loads such as those from unstabilized construction disturbance. The storm water runoff used for field testing shall be representative of runoff from the proposed installation site for the alternative BMP after all construction activities have ceased and the ground has been stabilized. The influent and effluent TSS concentrations of storm water runoff must be collected in the field. For an alternative BMP to be acceptable, the test results must demonstrate the minimum treatment rate is 80% TSS removal for influent concentrations of used alternative BMP is less than 100 mg/L TSS in the field, then the BMP must achieve an average effluent concentration less than or equal to 20 mg/L TSS.

- Testing of alternative post-construction BMPs shall be performed or overseen by a qualified independent, third-party testing organization;
- Testing shall demonstrate the maximum flow rate at which the alternative post-construction BMP can achieve the necessary treatment efficacy, including consideration for the potential of sediment resuspension;
- Testing shall demonstrate the maximum volume of sediment and floatables that can be collected in the alternative post-construction BMP before pollutants must be removed to maintain 80% treatment efficacy;
- Testing shall indicate the recommended maintenance frequency and maintenance protocol to ensure ongoing performance of the alternative post-construction BMP.

The alternative post-construction BMP testing protocol described in this section is similar to testing requirements specified by the New Jersey Department of Environmental Protection (NJDEP) for storm water Manufactured Treatment Devices (MTD) and therefore testing results certified by NJDEP shall be accepted by Ohio EPA. For examples of BMPs that have been tested using New Jersey Department of Environmental Protection's procedures, see the website: www.njstormwater.org.

Another nationally recognized storm water product testing procedure is the Technology Assessment Protocol – Ecology (TAPE) administered by the State of Washington, Department of Ecology. The TAPE testing procedure describes testing to achieve 80% TSS removal using a sediment mix with a particle size distribution with approximately 75% of the mass of the aggregate with particle diameters less than 45 microns. Overall, this particle size distribution is finer than the distribution in Table 5. Therefore, if TAPE testing results are available for a proposed alternative post-construction BMP, those results shall be accepted by Ohio EPA. The State of Washington, Department of Ecology website is https://ecology.wa.gov/.

Alternative BMPs that utilize treatment processes such as filtering or centrifugal separation, rather than a detention and settling volume, must be designed to ensure treatment of 90 percent of the average annual runoff volume. For the design of these BMPs, the water quality flow rate (WQF) considered equivalent to the Water Quality Volume (WQv) shall be determined utilizing the Rational Method (Equation 4) with an intensity (i) appropriate for the water quality precipitation event. This intensity shall be calculated using the table given in Appendix C.

$$WQF = C * i * A$$
 (Equation 4)

Where

WQF = water quality flow rate in cubic feet per second (cfs)
C = rational method runoff coefficient
i = intensity (in/hr)
A = area draining to the BMP (acres)

Alternative post-construction BMPs may include, but are not limited to: vegetated swales, vegetated filter strips, hydrodynamic separators, high-flow media filters, cartridge filters, membrane filters, subsurface flow wetlands, multi-chamber treatment trains, road shoulder media filter drains, wetland channels, rain barrels, green roofs, and rain gardens. The Director may also consider non-structural post-construction approaches.

f. Surface Water Protection. If the project site contains any streams, rivers, lakes, wetlands or other surface waters, certain construction activities at the site may be regulated under the CWA and/or state isolated wetland permit requirements. Sections 404 and 401 of the Act regulate the discharge of dredged or fill material into surface waters and the impacts of such activities on water quality, respectively. Construction activities in surface waters which may be subject to CWA regulation and/or state isolated wetland permit requirements include, but are not limited to: sewer line crossings, grading, backfilling or culverting streams, filling wetlands, road and utility line construction, bridge installation and installation of flow control structures. If the project contains streams, rivers, lakes or wetlands or possible wetlands, the permittee shall contact the appropriate U.S. Army Corps of Engineers District Office. (CAUTION: Any area of seasonally wet hydric soil is a potential wetland - please consult the Soil Survey and list of hydric soils for your County, available at your county's Soil and Water Conservation District. If you have any questions about Section 401 water quality certification, please contact the Ohio Environmental Protection Agency, Section 401 Coordinator.)

U.S. Army Corps of Engineers (Section 404 regulation):

- Huntington, WV District (304) 399-5210 (Muskingum River, Hocking River, Scioto River, Little Miami River, and Great Miami River Basins)
- Buffalo, NY District (716) 879-4330 (Lake Erie Basin)
- Pittsburgh, PA District (412) 395-7155 (Mahoning River Basin)
- Louisville, KY District (502) 315-6686 (Ohio River)

Ohio EPA 401/404 and non-jurisdictional stream/wetland coordinator can be contacted at (614) 644-2001 (all of Ohio)

Concentrated storm water runoff from BMPs to natural wetlands shall be converted to diffuse flow before the runoff enters the wetlands. The flow should be released such that no erosion occurs downslope. Level spreaders may need to be placed in series, particularly on steep sloped sites, to ensure non-erosive velocities. Other structural BMPs may be used between storm water features and natural wetlands, in order to protect the natural hydrology, hydroperiod, and wetland flora. If the applicant proposes to discharge to natural wetlands, a hydrologic analysis shall be performed. The applicant shall attempt to match the pre-development hydroperiods and hydrodynamics that support the wetland. The applicant shall assess whether their construction activity will adversely impact the hydrologic flora and fauna of the wetland. Practices such as vegetative buffers, infiltration basins, conservation of forest cover, and the preservation of intermittent streams, depressions, and drainage corridors may be used to maintain wetland hydrology.

g. Other controls.

- i. Non-Sediment Pollutant Controls. In accordance with Part II.E. no solid (other than sediment) or liquid waste, including building materials, shall be discharged in storm water runoff. The permittee must implement all necessary BMPs to prevent the discharge of non-sediment pollutants to the drainage system of the site or surface waters of the state or an MS4. Under no circumstance shall wastewater from the washout of concrete trucks, stucco, paint, form release oils, curing compounds, and other construction materials be discharged directly into a drainage channel, storm sewer or surface waters of the state. Also, no pollutants from vehicle fuel, oils, or other vehicle fluids can be discharged to surface waters of the state. No exposure of storm water to waste materials is recommended. The SWP3 must include methods to minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, and sanitary waste to precipitation, storm water runoff, and snow melt. In accordance with Part II.D.3, the SWP3 shall include measures to prevent and respond to chemical spills and leaks. You may also reference the existence of other plans (i.e., Spill Prevention Control and Countermeasure (SPCC) plans, spill control programs, Safety Response Plans, etc.) provided that such plan addresses conditions of this permit condition and a copy of such plan is maintained on site.
- ii. Off-site traffic. Off-site vehicle tracking of sediments and dust generation shall be minimized. In accordance with Part II.D.1, the SWP3 shall include methods to minimize the discharge of pollutants from equipment and vehicle washing, wheel washwater, and other washwaters. No detergents may be used to wash vehicles. Washwaters shall be treated in a sediment basin or alternative control that provides equivalent treatment prior to discharge.
- iii. **Compliance with other requirements.** The SWP3 shall be consistent with applicable State and/or local waste disposal, sanitary sewer or septic system regulations, including provisions prohibiting waste disposal by

open burning and shall provide for the proper disposal of contaminated soils to the extent these are located within the permitted area.

- iv. Trench and ground water control. In accordance with Part II.C, there shall be no turbid discharges to surface waters of the state resulting from dewatering activities. If trench or ground water contains sediment, it shall pass through a sediment settling pond or other equally effective sediment control device, prior to being discharged from the construction site. Alternatively, sediment may be removed by settling in place or by dewatering into a sump pit, filter bag or comparable practice. Ground water which does not contain sediment or other pollutants is not required to be treated prior to discharge. However, care must be taken when discharging ground water to ensure that it does not become pollutant-laden by traversing over disturbed soils or other pollutant sources.
- v. **Contaminated Sediment.** Where construction activities are to occur on sites with contamination from previous activities, operators shall be aware that concentrations of materials that meet other criteria (is not considered a Hazardous Waste, meeting VAP standards, etc.) may still result in storm water discharges in excess of Ohio Water Quality Standards. Such discharges are not authorized by this permit. Appropriate BMPs include, but are not limited to:
 - The use of berms, trenches, and pits to collect contaminated runoff and prevent discharges;
 - Pumping runoff into a sanitary sewer (with prior approval of the sanitary sewer operator) or into a container for transport to an appropriate treatment/disposal facility; and
 - Covering areas of contamination with tarps or other methods that prevent storm water from coming into contact with the material.

Operators should consult with Ohio EPA Division of Surface Water prior to seeking permit coverage.

- h. <u>Maintenance.</u> All temporary and permanent control practices shall be maintained and repaired as needed to ensure continued performance of their intended function. All sediment control practices must be maintained in a functional condition until all up-slope areas they control are permanently stabilized. The SWP3 shall be designed to minimize maintenance requirements. The applicant shall provide a description of maintenance procedures needed to ensure the continued performance of control practices.
- i. <u>Inspections.</u> The permittee shall assign "qualified inspection personnel" to conduct inspections to ensure that the control practices are functional and to evaluate whether the SWP3 is adequate and properly implemented in accordance with the schedule proposed in Part III.G.1.h of this permit or whether additional control measures are required. At a minimum, procedures in a SWP3 shall provide that all controls on the site are inspected:

- after any storm event greater than one-half inch of rain per 24-hour period by the end of the next calendar day, excluding weekends and holidays unless work is scheduled; and
- once every seven calendar days.

The inspection frequency may be reduced to at least once every month for dormant sites if:

- the entire site is temporarily stabilized or
- runoff is unlikely due to weather conditions for extended periods of time (e.g., site is covered with snow, ice, or the ground is frozen).

The beginning and ending dates of any reduced inspection frequency shall be documented in the SWP3.

Once a definable area has achieved final stabilization, the area may be marked on the SWP3 and no further inspection requirements shall apply to that portion of the site.

Following each inspection, a checklist must be completed and signed by the qualified inspection personnel representative. At a minimum, the inspection report shall include:

- i. the inspection date;
- ii. names, titles, and qualifications of personnel making the inspection;
- weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;
- iv. weather information and a description of any discharges occurring at the time of the inspection;
- v. location(s) of discharges of sediment or other pollutants from the site;
- vi. location(s) of BMPs that need to be maintained;
- vii. location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
- viii. location(s) where additional BMPs are needed that did not exist at the time of inspection; and
- ix. corrective action required including any changes to the SWP3 necessary and implementation dates.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of or the potential for pollutants entering the drainage system. Erosion and sediment control measures identified in the SWP3 shall be observed to ensure that those are operating correctly. Discharge locations shall be inspected to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to the receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site vehicle tracking.

The permittee shall maintain for three years following the submittal of a notice of termination form, a record summarizing the results of the inspection, names(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the SWP3 and a certification as to whether the facility is in compliance with the SWP3 and the permit and identify any incidents of non-compliance. The record and certification shall be signed in accordance with Part V.G. of this permit.

- i. When practices require repair or maintenance. If the inspection reveals that a control practice is in need of repair or maintenance, with the exception of a sediment settling pond, it shall be repaired or maintained within 3 days of the inspection. Sediment settling ponds shall be repaired or maintained within 10 days of the inspection.
- ii. When practices fail to provide their intended function. If the inspection reveals that a control practice fails to perform its intended function and that another, more appropriate control practice is required, the SWP3 shall be amended and the new control practice shall be installed within 10 days of the inspection.
- iii. When practices depicted on the SWP3 are not installed. If the inspection reveals that a control practice has not been implemented in accordance with the schedule contained in Part III.G.1.h of this permit, the control practice shall be implemented within 10 days from the date of the inspection. If the inspection reveals that the planned control practice is not needed, the record shall contain a statement of explanation as to why the control practice is not needed.
- 3. <u>Approved State or local plans.</u> All dischargers regulated under this general permit must comply, except those exempted under state law, with the lawful requirements of municipalities, counties and other local agencies regarding discharges of storm water from construction activities. All erosion and sediment control plans and storm water management plans approved by local officials shall be retained with the SWP3 prepared in accordance with this permit. Applicable requirements for erosion and sediment control and storm water management approved by local officials are, upon submittal of a NOI form, incorporated by reference and enforceable under this permit even if they are not specifically included in an SWP3 required under this permit. When the project is located within the jurisdiction of a regulated municipal separate storm sewer system (MS4), the permittee shall certify that the SWP3 complies with the requirements of the storm water management program of the MS4 operator.
- 4. <u>Exceptions.</u> If specific site conditions prohibit the implementation of any of the erosion and sediment control practices contained in this permit or site-specific conditions are such that implementation of any erosion and sediment control practices contained in this permit will result in no environmental benefit, then the permittee shall provide justification for rejecting each practice based on site conditions. Exceptions from implementing the erosion and sediment control standards contained in this permit will be approved or denied on a case-by-case basis.

The permittee may request approval from Ohio EPA to use alternative methods to satisfy conditions in this permit if the permittee can demonstrate that the alternative methods are sufficient to protect the overall integrity of receiving streams and the watershed. Alternative methods will be approved or denied on a case-by-case basis.

PART IV. NOTICE OF TERMINATION REQUIREMENTS

A. Failure to notify.

The terms and conditions of this permit shall remain in effect until a signed Notice of Termination (NOT) form is submitted. Failure to submit an NOT constitutes a violation of this permit and may affect the ability of the permittee to obtain general permit coverage in the future.

B. When to submit an NOT.

- 1. Permittees wishing to terminate coverage under this permit shall submit an NOT form in accordance with Part V.G. of this permit. Compliance with this permit is required until an NOT form is submitted. The permittee's authorization to discharge under this permit terminates at midnight of the day the NOT form is submitted. Prior to submitting the NOT form, the permittee shall conduct a site inspection in accordance with Part III.G.2.i of this permit and have a maintenance plan in place to ensure all post-construction BMPs will be maintained in perpetuity.
- 2. All permittees shall submit an NOT form within 45 days of completing all permit requirements. Enforcement actions may be taken if a permittee submits an NOT form without meeting one or more of the following conditions:
 - a. Final stabilization (see definition in Part VII) has been achieved on all portions of the site for which the permittee is responsible (including, if applicable, returning agricultural land to its pre-construction agricultural use);
 - b. Another operator(s) has assumed control over all areas of the site that have not been finally stabilized;
 - c. A maintenance plan is in place to ensure all post construction BMPs are adequately maintained in the long-term;
 - d. For non-residential developments, all elements of the storm water pollution prevention plan have been completed, the disturbed soil at the identified facility have been stabilized and temporary erosion and sediment control measures have been removed at the appropriate time, or all storm water discharges associated with construction activity from the identified facility that are authorized by the above referenced NPDES general permit have otherwise been eliminated. (i)For residential developments only, temporary stabilization has been completed and the lot, which includes a home, has been transferred to the homeowner; (ii) final stabilization has been completed and the lot, which does not include a home, has been transferred to the property owner; (iii) no stabilization has been implemented on a lot, which includes a home, and the lot has been transferred to the homeowner; or

e. An exception has been granted under Part III.G.4.

C. How to submit an NOT.

To terminate permit coverage, the permitee shall submit a complete and accurate Notice of Termination (NOT) form using Ohio EPA's electronic application form which is available through the Ohio EPA eBusiness Center at: https://ebiz.epa.ohio.gov/. Submission through the Ohio EPA eBusiness Center will require establishing an Ohio EPA eBusiness Center account and obtaining a unique Personal Identification Number (PIN) for final submission of the NOT. Existing eBusiness Center account holders can access the NOT form through their existing account and submit using their existing PIN. Please see the following link for guidance: http://epa.ohio.gov/dsw/ebs.aspx#170669803-streams-guidance. Alternatively, if you are unable to access the NOT form through the agency eBusiness Center due to a demonstrated hardship, the NOT may be submitted on paper NOT forms provided by Ohio EPA. NOT information shall be typed on the form. Please contact Ohio EPA, Division of Surface Water at (614) 644-2001 if you wish to receive a paper NOT form.

PART V. STANDARD PERMIT CONDITIONS.

A. Duty to comply.

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of ORC Chapter 6111 and is grounds for enforcement action.

Ohio law imposes penalties and fines for persons who knowingly make false statements or knowingly swear or affirm the truth of a false statement previously made.

B. Continuation of an expired general permit.

An expired general permit continues in force and effect until a new general permit is issued.

C. Need to halt or reduce activity not a defense.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to mitigate.

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Duty to provide information.

The permittee shall furnish to the director, within 10 days of written request, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee

shall also furnish to the director upon request copies of records required to be kept by this permit.

F. Other information.

When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the NOI, SWP3, NOT or in any other report to the director, he or she shall promptly submit such facts or information.

G. Signatory requirements.

All NOIs, NOTs, SWP3s, reports, certifications or information either submitted to the director or that this permit requires to be maintained by the permittee, shall be signed.

- 1. These items shall be signed as follows:
 - a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - i. A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function or any other person who performs similar policy or decision-making functions for the corporation; or
 - ii. The manager of one or more manufacturing, production or operating facilities, provided, the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA).
- 2. All reports required by the permits and other information requested by the director shall be signed by a person described in Part V.G.1 of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- a. The authorization is made in writing by a person described in Part V.G.1 of this permit and submitted to the director;
- b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator of a well or well field, superintendent, position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- c. The written authorization is submitted to the director.
- 3. Changes to authorization. If an authorization under Part V.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part V.G.2 of this permit must be submitted to the director prior to or together with any reports, information or applications to be signed by an authorized representative.

H. Certification.

Any person signing documents under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Oil and hazardous substance liability.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under section 311 of the CWA or 40 CFR Part 112. 40 CFR Part 112 establishes procedures, methods and equipment and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable surface waters of the state or adjoining shorelines.

J. Property rights.

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

K. Severability.

The provisions of this permit are severable and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

L. Transfers.

Ohio NPDES general permit coverage is transferable. Ohio EPA must be notified in writing sixty days prior to any proposed transfer of coverage under an Ohio NPDES general permit. The transferee must inform Ohio EPA it will assume the responsibilities of the original permittee transferor.

M. Environmental laws.

No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

N. Proper operation and maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of SWP3s. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

O. Inspection and entry.

The permittee shall allow the director or an authorized representative of Ohio EPA, upon the presentation of credentials and other documents as may be required by law, to:

- 1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
- 2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;
- 3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment); and
- 4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

P. Duty to Reapply.

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

Q. Permit Actions.

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

R. Bypass.

The provisions of 40 CFR Section 122.41(m), relating to "Bypass," are specifically incorporated herein by reference in their entirety. For definition of "Bypass," see Part VII.C.

S. Upset.

The provisions of 40 CFR Section 122.41(n), relating to "Upset," are specifically incorporated herein by reference in their entirety. For definition of "Upset," see Part VII.GG.

T. Monitoring and Records.

The provisions of 40 CFR Section 122.41(j), relating to "Monitoring and Records," are specifically incorporated herein by reference in their entirety.

U. Reporting Requirements.

The provisions of 40 CFR Section 122.41(I), relating to "Reporting Requirements," are specifically incorporated herein by reference in their entirety.

PART VI. REOPENER CLAUSE

If there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with construction activity covered by this permit, the permittee of such discharge may be required to obtain coverage under an individual permit or an alternative general permit in accordance with Part I.C of this permit or the permit may be modified to include different limitations and/or requirements.

Permit modification or revocation will be conducted according to ORC Chapter 6111.

PART VII. DEFINITIONS

- A. <u>"Act"</u> means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, Pub. L. 97-117 and Pub. L. 100-4, 33 U.S.C. 1251 et. seq.
- B. <u>"Bankfull channel"</u> means a channel flowing at channel capacity and conveying the bankfull discharge. Delineated by the highest water level that has been maintained for a sufficient period of time to leave evidence on the landscape, such as the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial or

the point at which the clearly scoured substrate of the stream ends and terrestrial vegetation begins.

- C. <u>"Bankfull discharge"</u> means the streamflow that fills the main channel and just begins to spill onto the floodplain; it is the discharge most effective at moving sediment and forming the channel.
- D. <u>"Best management practices (BMPs)"</u> means schedules of activities, prohibitions of practices, maintenance procedures and other management practices (both structural and non-structural) to prevent or reduce the pollution of surface waters of the state. BMP's also include treatment requirements, operating procedures and practices to control plant and/or construction site runoff, spillage or leaks, sludge or waste disposal or drainage from raw material storage.
- E. <u>"Bypass"</u> means the intentional diversion of waste streams from any portion of a treatment facility.
- F. <u>"Channelized stream"</u> means the definition set forth in Section 6111.01 (M) of the ORC.
- G. <u>"Commencement of construction"</u> means the initial disturbance of soils associated with clearing, grubbing, grading, placement of fill, or excavating activities or other construction activities.
- H. <u>"Concentrated storm water runoff</u>" means any storm water runoff which flows through a drainage pipe, ditch, diversion or other discrete conveyance channel.
- I. <u>"Director"</u> means the director of the Ohio Environmental Protection Agency.
- J. <u>"Discharge"</u> means the addition of any pollutant to the surface waters of the state from a point source.
- K. <u>"Disturbance"</u> means any clearing, grading, excavating, filling, or other alteration of land surface where natural or man-made cover is destroyed in a manner that exposes the underlying soils.
- L. <u>"Drainage watershed"</u> means for purposes of this permit the total contributing drainage area to a BMP, i.e., the "watershed" directed to the practice. This would also include any off-site drainage.
- M. <u>"Final stabilization"</u> means that either:
 - 1. All soil disturbing activities at the site are complete and a uniform perennial vegetative cover (e.g., evenly distributed, without large bare areas) with a density of at least 70 percent cover for the area has been established on all unpaved areas and areas not covered by permanent structures or equivalent stabilization measures (such as the use of mulches, rip-rap, gabions or geotextiles) have been employed. In addition, all temporary erosion and sediment control practices are removed and disposed of and all trapped sediment is permanently stabilized to prevent further erosion; or

- 2. For individual lots in residential construction by either:
 - a. The homebuilder completing final stabilization as specified above or
 - b. The homebuilder establishing temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for and benefits of, final stabilization. (Homeowners typically have an incentive to put in the landscaping functionally equivalent to final stabilization as quick as possible to keep mud out of their homes and off sidewalks and driveways.); or
- 3. For construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its pre-construction agricultural use. Areas disturbed that were previously used for agricultural activities, such as buffer strips immediately adjacent to surface waters of the state and which are not being returned to their pre-construction agricultural use, must meet the final stabilization criteria in (1) or (2) above.
- N. <u>"General contractor"</u> for the purposes of this permit, the primary individual or company solely accountable to perform a contract. The general contractor typically supervises activities, coordinates the use of subcontractors, and is authorized to direct workers at a site to carry out activities required by the permit.
- O. <u>"Individual lot NOI"</u> means a Notice of Intent for an individual lot to be covered by this permit (see Part I of this permit).
- P. <u>"Larger common plan of development or sale"</u>- means a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.
- Q. <u>"MS4"</u> means municipal separate storm sewer system which means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) that are:
 - Owned or operated by the federal government, state, municipality, township, county, district(s) or other public body (created by or pursuant to state or federal law) including special district under state law such as a sewer district, flood control district or drainage districts or similar entity or a designated and approved management agency under section 208 of the act that discharges into surface waters of the state; and
 - 2. Designed or used for collecting or conveying solely storm water,
 - 3. Which is not a combined sewer and
 - 4. Which is not a part of a publicly owned treatment works.
- R. <u>"National Pollutant Discharge Elimination System (NPDES)</u>" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits and enforcing pretreatment requirements, under sections 307, 402, 318 and 405 of the CWA. The term includes an "approved program."

- S. <u>"Natural channel design"</u> means an engineering technique that uses knowledge of the natural process of a stream to create a stable stream that will maintain its form and function over time.
- T. <u>"NOI</u>" means notice of intent to be covered by this permit.
- U. <u>"NOT"</u> means notice of termination.
- V. <u>"Operator"</u> means any party associated with a construction project that meets either of the following two criteria:
 - 1. The party has day-to-day operational control of all activities at a project which are necessary to ensure compliance with a SWP3 for the site and all permit conditions including the ability to authorize modifications to the SWP3, construction plans and site specification to ensure compliance with the General Permit, or
 - 2. Property owner meets the definition of operator should the party which has day to day operational control require additional authorization from the owner for modifications to the SWP3, construction plans, and/or site specification to ensure compliance with the permit or refuses to accept all responsibilities as listed above (Part VII.V.1).

Subcontractors generally are not considered operators for the purposes of this permit. As set forth in Part I.F.1, there can be more than one operator at a site and under these circumstances, the operators shall be co-permittees.

- W. <u>"Ordinary high water mark"</u> means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.
- X. <u>"Owner or operator"</u> means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.
- Y. <u>"Permanent stabilization"</u> means the establishment of permanent vegetation, decorative landscape mulching, matting, sod, rip rap and landscaping techniques to provide permanent erosion control on areas where construction operations are complete or where no further disturbance is expected for at least one year.
- Z. <u>"Percent imperviousness"</u> means the impervious area created divided by the total area of the project site.
- AA. <u>"Point source"</u> means any discernible, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or the floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

- BB. <u>"Qualified inspection personnel"</u> means a person knowledgeable in the principles and practice of erosion and sediment controls, who possesses the skills to assess all conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.
- CC. <u>"Rainwater and Land Development"</u> is a manual describing construction and postconstruction best management practices and associated specifications. A copy of the manual may be obtained by contacting the Ohio Department of Natural Resources, Division of Soil & Water Conservation.
- DD. <u>"Riparian area"</u> means the transition area between flowing water and terrestrial (land) ecosystems composed of trees, shrubs and surrounding vegetation which serve to stabilize erodible soil, improve both surface and ground water quality, increase stream shading and enhance wildlife habitat.
- EE. <u>"Runoff coefficient"</u> means the fraction of total rainfall that will appear at the conveyance as runoff.
- FF. <u>"Sediment settling pond"</u> means a sediment trap, sediment basin or permanent basin that has been temporarily modified for sediment control, as described in the latest edition of the Rainwater and Land Development manual.
- GG. <u>"State isolated wetland permit requirements</u>" means the requirements set forth in Sections 6111.02 through 6111.029 of the ORC.
- HH. <u>"Storm water</u>" means storm water runoff, snow melt and surface runoff and drainage.
- II. <u>"Steep slopes"</u> means slopes that are 15 percent or greater in grade. Where a local government or industry technical manual has defined what is to be considered a "steep slope," this permit's definition automatically adopts that definition.
- JJ. <u>"Stream edge"</u> means the ordinary high water mark.
- KK. <u>"Subcontractor</u>" for the purposes of this permit, an individual or company that takes a portion of a contract from the general contractor or from another subcontractor.
- LL. <u>"Surface waters of the state" or "water bodies"</u> means all streams, lakes, reservoirs, ponds, marshes, wetlands or other waterways which are situated wholly or partially within the boundaries of the state, except those private waters which do not combine or effect a junction with natural surface or underground waters. Waters defined as sewerage systems, treatment works or disposal systems in Section 6111.01 of the ORC are not included.
- MM. <u>"SWP3"</u> means storm water pollution prevention plan.
- NN. <u>"Upset"</u> means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment

facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

- OO. <u>"Temporary stabilization"</u> means the establishment of temporary vegetation, mulching, geotextiles, sod, preservation of existing vegetation and other techniques capable of quickly establishing cover over disturbed areas to provide erosion control between construction operations.
- PP. <u>"Water Quality Volume (WQ_v)"</u> means the volume of storm water runoff which must be captured and treated prior to discharge from the developed site after construction is complete.

Appendix A Big Darby Creek Watershed

CONTENTS OF THIS APPENDIX

- A.1 Permit Area
- A.2 TMDL Conditions
- A.3 Sediment Settling Ponds and Sampling
- A.4 Riparian Setback Requirements
- A.5 Riparian Setback Mitigation
- A.6 Groundwater Recharge Requirements
- A.7 Groundwater Recharge mitigation

Attachment A-A: Big Darby Creek Watershed Map

Attachment A-B: Stream Assessment and Restoration

A.1 Permit Area.

This appendix to Permit OHC00005 applies to the entire Big Darby Creek Watershed located within the State of Ohio. Please see Attachment A for permit area boundaries.

A.2 TMDL Conditions.

This general permit requires control measures/BMPs for construction sites that reflect recommendations set forth in the U.S. EPA approved Big Darby Creek TMDL.

A.3 Sediment Settling Ponds and Sampling

Sediment settling ponds additional conditions. The sediment settling pond shall be sized to provide a minimum sediment storage volume of 134 cubic yards of effective sediment storage per acre of drainage and maintain a target discharge performance standard of 45 mg/I Total Suspended Solids (TSS) up to a 0.75-inch rainfall event within a 24-hour period. Unless infeasible, sediment settling ponds must be dewatered at the pond surface using a skimmer or equivalent device. The depth of the sediment settling pond must be less than or equal to five feet. Sediment must be removed from the sediment settling pond when the design capacity has been reduced by 40 percent (This is typically reached when sediment occupies one-half of the basin depth).

<u>Silt Fence and Diversions</u>. For sites five or more acres in size, the use of sediment barriers as a primary sediment control is prohibited. Centralized sediment basins shall be used for sites 5 or more acres in size. Diversions shall direct all storm water runoff from the disturbed areas to the impoundment intended for sediment control. The sediment basins and associated diversions shall be implemented prior to the major earth disturbing activity.

The permittee shall sample in accordance with sampling procedures outlined in 40 CFR 136. Sampling shall occur as follows:

- i. Occur at the outfall of each sediment settling pond associated with the site. Each associated outfall shall be identified by a three-digit number (001, 002, etc.);
- ii. The applicable rainfall event for sampling to occur shall be a rainfall event of 0.25inch to a 0.75-inch rainfall event to occur within a 24-hour period. Grab sampling shall be initiated at a site within 14 days, or the first applicable rainfall event thereafter, once upslope disturbance of each sampling location is initiated and shall continue on a quarterly basis. Quarterly periods shall be represented as January - March, April - June, July - September and October - December. Sampling results shall be retained on site and available for inspection.

If any sample is greater than the performance standard of 45 mg/I TSS, the permittee shall modify the SWP3 and install/implement new control practice(s) within 10 days to ensure the TSS performance standard is maintained. Within 3 days of improvement(s), or the first applicable rainfall event thereafter, the permittee shall resample to ensure SWP3 modifications maintain the TSS performance standard target.

For each sample taken, the permittee shall record the following information:

- the outfall and date of sampling;
- the person(s) who performed the sampling;
- the date the analyses were performed on those samples;
- the person(s) who performed the analyses;
- the analytical techniques or methods used; and
- the results of all analyses.

Both quarterly and sampling results following a discharge target exceedance shall be retained on site and available for inspection.

A.4 Riparian Setback Requirements.

The SWP3 shall clearly delineate the boundary of required stream setback distances. No construction activity shall occur, without appropriate mitigation, within the delineated setback boundary except activities associated with restoration or recovery of natural floodplain and channel form characteristics as described in Attachment B, storm water conveyances from permanent treatment practices and approvable utility crossings. Such conveyances must be designed to minimize the width of disturbance. If intrusion within the delineated setback boundary is necessary to accomplish the purposes of a project, then mitigation shall be required in accordance with Appendix A.5 of this permit. Streams requiring protection under this section are defined as perennial, intermittent or ephemeral streams with a defined bed, bank or channel. National Resources Conservation Service (NRCS) soil survey maps should be used as one reference and the presence of a stream requiring protection should also be confirmed in the field. Any required setback distances shall be clearly displayed in the field prior to any construction related activity.

Riparian setbacks distance shall be delineated based upon one of the following two methods:

i. The setback distance shall be sized as the greater of the following:

- 1. The regulatory 100-year floodplain based on FEMA mapping;
- 2. A minimum of 100 feet from the top of the streambank on each side; or
- 3. A distance calculated using the following equation:

 $W = 133DA^{0.43}$ (Equation 1, Appendix A)

where: DA = drainage area (mi²) W = total width of riparian setback (ft)

W shall be centered over the meander pattern of the stream such that a line representing the setback width would evenly intersect equal elevation lines on either side of the stream.

If the DA remains relatively constant throughout the stretch of interest, then the DA of the downstream edge of the stretch should be used. Where there is a significant increase in the DA from the upstream edge to The downstream edge of the area of interest, the setback width shall increase accordingly.

ii. <u>Stream Restoration with 100 feet (each side) Riparian Setback</u>. Each stream segment within the proposed site boundaries can be assessed in accordance with Attachment B, Part 1. In the event the stream segment is classified as a "Previously Modified Low Gradient Headwater Stream", the permittee has the option to restore the stream segment in accordance with Attachment B and include a 100-foot water quality setback distance from the top of the streambank on each side. In the event the stream segment exceeds the minimum criteria in Attachment B to be classified as a "Previously Modified Low Gradient Headwater Stream," this Appendix A, Attachment B may be considered on a case-by-case basis.

No structural sediment controls (e.g., the installation of sediment barriers or a sediment settling pond) or structural post-construction controls shall be used in a surface water of the State or the delineated setback corridor.

Previously developed projects (as defined in Part III.G.2.e.) located within the delineated setback boundary are exempt from Riparian Setback Mitigation (A.5) provided the proposed project does not further intrude into the delineated setback boundary.

Linear transportation projects which are caused solely by correcting safety related issues, mandates of modern design requirements and/or resulting from other mitigation activities are exempt from Riparian Setback Mitigation (Appendix A, A.5) if less than one acre of total new right-of-way is associated with the project.

A.5 Riparian Setback Mitigation.

The mitigation required for intrusion into the riparian setback shall be determined by the horizontal distance the intrusion is from the stream. Up to three zones will be used in determining the required mitigation. Zone 1 extends from 0 to 25 feet from the stream edge. Zone 2 extends from 25 to 100 feet from the stream edge, and Zone 3 extends from 100 feet to the outer edge of the setback corridor. Intrusion into these zones will require the following mitigation within the same Watershed Assessment Unit (12-digit HUC scale):

- i. Four times the total area disturbed in the stream and within Zone 1 of the site being developed shall be mitigated within Zone 1 of the mitigation location.
- ii. Three times the area disturbed within Zone 2 of the site being developed shall be mitigated within Zones 1 and/or 2 of the mitigation location.
- iii. Two times the area disturbed within Zone 3 of the site being developed shall be mitigated within any zone of the mitigation location.

In lieu of mitigation ratios found within in this section, linear transportation projects which result in total new right-of-way greater than one acre and less than two acres, which are caused solely by correcting safety related issues, mandates of modern design requirements and/or resulting from other mitigation activities, shall provide Riparian Setback Mitigation at a ratio of 1.5 to 1.

All mitigation shall, at a minimum, include conserved or restored setback zone and should be designed to maximize the ecological function of the mitigation. Including mitigation at the stream edge along with associated setback areas is one way to maximize ecological function. Mitigation shall be protected in perpetuity by binding conservation easements or environmental covenants which must be recorded within 6 months of receiving permit authorization. Granting of binding conservation easements or environmental covenants protected in perpetuity for land outside of disturbed area but within a required riparian setback counts towards required mitigation.

Mitigation may also be satisfied by approved pooled mitigation areas and in-lieu fee sponsored mitigation areas. Mitigation resulting from State or Federal environmental regulations may be adjusted in recognition of these requirements.

A.6 Groundwater Recharge Requirements.

The SWP3 shall ensure that the overall site post-development groundwater recharge equals or exceeds the pre-development groundwater recharge. The SWP3 shall describe the conservation development strategies, BMPs and other practices deemed necessary by the permittee to maintain or improve pre-development rates of groundwater recharge. Pre-development and post-development groundwater recharge shall be calculated using the following equation:

i.
$$Vre_x = A_x * Dre_x / 12$$

(Equation 2, Appendix A)

where:

- X = represents a land use and hydrologic soil group pair
- Vre_x = volume of total annual recharge from land use-soil group X (in acre-ft)
- Dre_x = depth of total annual recharge associated with land use-soil group X from Tables 1 or 2 (in inches)
- A_x = area of land use-soil group X (in acres)

Table A-1 values should be used for land where the underlying geology indicates a potential for downward migration of groundwater. Table A-1 values represent the combined total groundwater recharge potential including groundwater contribution to stream baseflow and to the underlying bedrock aquifer. The potential for downward migration can be determined from a comparison of the potentiometric maps for the glacial and bedrock aquifers. Use Table A-2 when this potential is unlikely to exist. Detailed potentiometric maps for the Franklin county portion of the Darby watershed, and coarse potentiometric maps for the Darby watershed outside of Franklin County and hydrologic soil group data are available at:

http://www.epa.state.oh.us/dsw/permits/GP_ConstructionSiteStormWater_Darby.aspx.

	Density (DU ¹ /acre)	% Impervious	Recharge (inches) by Hydrologic Soil Group2			
Land Use			Α	В	С	D
Woods / Forest	-	-	17.0	16.6	15.6	14.6
Brush	-	-	17.0	16.6	15.6	14.6
Meadow	-	-	17.0	16.5	15.4	14.4
Managed Wood	-	-	16.9	16.0	14.7	13.4
Pasture	-	-	16.5	15.9	14.4	13.0
Row Crop	-	-	15.8	14.2	11.9	8.1
Urban Grasses	-	-	15.7	15.7	14.2	12.7
Low Density Residential	0.5	12%	15.7	15.7	14.2	12.7
Low Density Residential	1	20%	14.8	14.8	13.7	12.2
Medium Density Residential	2	25%	11.5	11.5	11.5	11.5
Medium Density Residential	3	30%	11.2	11.2	11.2	11.2
Medium Density Residential	4	38%	9.6	9.6	9.6	9.6
High Density Residential	≥5	65%	7.3	7.3	7.3	7.3
Commercial & Road Right-of-Way ⁴	-	90%	4.3	4.3	4.3	4.3

Table A-1 (Appendix A) Annual Average Expected Total Groundwater Recharge³

¹ DU = Dwelling Units

² Hydrologic soil group designations of A/D, B/D, and C/D should be considered as D soils for this application.

³ These values apply when recharge of the aquifer is expected; recharge to the bedrock aquifer can be expected when the potentiometric head of the glacial aquifer is greater than the bedrock aquifer.
 ⁴ The 4.3 infiltration value may only be used for an area as a whole (includes impervious and pervious areas) which includes a minimum of 10 percent pervious area. If all land uses (pervious and impervious) are tabulated separately, then impervious areas have 0 inches of recharge.

	Density (DU ¹ /acre)	% Impervious	Recharge (inches) by Hydrologic Soil Group2			
Land Use			Α	В	С	D
Woods / Forest	-	-	11.8	11.4	10.7	9.9
Brush	-	-	11.7	11.4	10.7	99
Meadow	-	-	11.8	11.3	10.6	9.8
Managed Wood	-	-	11.7	11.0	10.0	9.1
Pasture	-	-	11.3	11.0	9.9	8.9
Row Crop	-	-	11.1	10.1	9.0	6.2
Urban Grasses	-	-	11.2	11.2	10.3	9.3
Low Density Residential	0.5	12%	11.2	11.2	10.3	9.3
Low Density Residential	1	20%	9.5	9.5	9.0	8.6
Medium Density Residential	2	25%	7.8	7.8	7.8	7.8
Medium Density Residential	3	30%	7.6	7.6	7.6	7.6
Medium Density Residential	4	38%	6.5	6.5	6.5	6.5
High Density Residential	≥5	65%	5.0	5.0	5.0	5.0
Commercial & Road Right-of-Way ⁴	-	90%	2.9	2.9	2.9	2.9

Table A-2 (Appendix A) Annual Average Expected Baseflow Recharge³

¹ DU = Dwelling Units

² Hydrologic soil group designations of A/D, B/D, and C/D should be considered as D soils for this application.

³ These values apply when no recharge of the aquifer is expected.

⁴ The 2.9 infiltration value may only be used for an area as a whole (includes impervious and pervious areas) which includes a minimum of 10 percent pervious area. If all land uses (pervious and impervious) are tabulated separately, then impervious areas have 0 inches of recharge.

Land Use	Definition
Woods / Forest	Areas dominated by trees. Woods are protected from grazing and litter and brush adequately cover the soil.
Brush	Brush, weeds, grass mixture where brush is the major element and more than 75% of the ground is covered.
Meadow	Continuous grass, protected from grazing, generally mowed for hay.
Managed Wood	Orchards, tree farms, and other areas planted or maintained for the production of fruits, nuts, berries, or ornamentals.
Pasture	Pasture, grassland, or range where at least 50% of the ground is covered and the area is not heavily grazed.
Row Crop	Areas used to produce crops, such as corn, soybeans, vegetables, tobacco, and cotton.
Urban Grasses	Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Examples include parks, lawns, golf courses, airport grasses, and industrial site grasses.
Residential	Areas with a mixture of constructed materials and vegetation; the average % imperviousness and number of dwelling units per acre to determine the appropriate density is specified.
Commercial	Includes infrastructure (e.g. roads, railroads, etc.) and all highly developed areas not classified as High Intensity Residential.

Table A-3 (Appendix A) Land Use Definitions

ii. The pre-development ground water recharge volume shall be calculated by determining the area of each land use-soil type pairing on the site of interest. The recharge associated with each such pairing multiplied by the area will give the pre-development volume of total groundwater recharge. The same shall be done for the post-development land use-soil type pairings.

Any activity that is expected to produce storm water runoff with elevated concentrations of carcinogens, hydrocarbons, metals, or toxics is prohibited from infiltrating untreated storm water from the area affected by the activity. The groundwater recharge mitigation requirement for areas affected by such activities must be met by methods which do not present a risk of groundwater contamination. The following land uses and activities are typically deemed storm water hotspots:

Vehicle salvage yards and recycling facilities

- vehicle service and maintenance facilities (i.e. truck stops, gas stations)
- fleet storage areas (i.e. bus, truck)
- industrial sites subject to industrial storm water permitting requirements
- bulk terminals
- marinas
- facilities that generate or store hazardous materials
- other land uses and activities as designated by individual review

The following land uses and activities are not normally considered hotspots:

- residential streets and rural highways
- residential development
- institutional development
- commercial and office developments
- non-industrial rooftops
- pervious areas, except golf courses and nurseries

The applicant may use structural BMPs within drinking water source protection areas for community public water systems only to the extent that the structural BMP(s) does not cause contaminants in the recharge waters to impact the ground water quality at levels that would cause an exceedance of the drinking water Maximum Contaminant Levels (OAC Section 3745-81 and 3745-82). To obtain a map of drinking water source protection areas for community public water systems contact Ohio EPA's Division of Drinking and Ground Waters at (614) 644-2752.

Linear transportation projects which are caused solely by correcting safety related issues, mandates of modern design requirements and/or resulting from other mitigation activities are exempt from Groundwater Recharge Mitigation (Appendix B, A.7) if less than one acre of total new right-of-way is associated with the project.

Protection of open space (infiltration areas) shall be by binding conservation easements that identify a third-party management agency, such as a homeowners' association/condominium association, political jurisdiction or thirdparty land trust.

A.7 Groundwater Recharge Mitigation.

If the post-development recharge volume is less than the pre-development recharge volume, then mitigation will be required. Two options are available for most applications:

i. The preferred method is to convert additional land to land use with higher recharge potential. The difference in groundwater recharge between the existing and converted land use recharge is the amount which can be used as recharge credit. Off-site Groundwater Recharge Mitigation shall occur within the same Watershed Assessment Unit (12-digit HUC scale) as the permitted site and preferably up-gradient and within a 2-mile radius.

Mitigation shall be protected in perpetuity by binding conservation easements or environmental covenants which must be recorded within 6 months of receiving permit authorization. Granting of binding conservation easements or environmental covenants protected in perpetuity for land outside of the disturbed area, but within a required riparian setback counts towards required mitigation.

Mitigation may also be satisfied by approved pooled mitigation areas and in-lieu fee sponsored mitigation areas.

ii. On-site structural and non-structural practices may also be used to achieve groundwater mitigation requirements by retaining and infiltrating on-site a minimum volume of storm water runoff based on the area and hydrologic soil groups of disturbed soils. If these infiltrating practices are incorporated upstream of the water quality volume treatment practice, the volume of groundwater being infiltrated may be subtracted from the water quality volume for the purpose of meeting post-construction requirements. The on-site retention requirement is determined by the following formula:

 $V_{retention} = A_{HSG-A}*0.90 \text{ in } + A_{HSG-B}*0.75 \text{ in } + A_{HSG-C}*0.50 \text{ in } + A_{HSG-D}*0.25 \text{ in}$ (Equation 3, Appendix A)

Where,

 $V_{\text{retention}}$ = volume of runoff retained onsite using an approved infiltration practice $A_{\text{HSG-x}}$ = area of each hydrologic soil group within the disturbed area

Table A-4: Hydrologic Soli Groups and On-site Retention Depth per Acre						
Hydrologic Soil Group	HSG A	HSG B	HSG C	HSG D		
Retention Depth (inches)	0.90	0.75	0.50	0.25		

Table A_1. Hy	udrologic Soil G	roune and On-sita	Retention Denth	nor Acro
		oups and on-site	Netention Depti	

Retention volume (V_{retention}) provided by selected practices shall be determined using the runoff reduction method criteria as outlined in Part III.G.2.e, Ohio EPA's Runoff Reduction spreadsheet and supporting documentation in the Rainwater and Land Development manual. Hydrologic soil group (HSG) areas are to be determined by using the current version of SURRGO or Web Soil Survey soils information.



Appendix A Attachment A: Big Darby Creek Watershed

A more detailed map can be viewed at: http://www.epa.state.oh.us/dsw/permits/GP ConstructionSiteStormWater Darby.aspx

Appendix A Attachment B

Part 1 Stream Assessment

This assessment will determine if a stream is considered a previously channelized, low-gradient headwater stream (a drainage ditch) which would be applicable for stream restoration in lieu of protecting a setback as per Appendix A. A.4.i and ii.

In the event the assessment of the stream, meets all the criteria listed below, restoration (provided 401/404 permits are authorized) as depicted in Part 2 of this attachment, may be a means of reducing the setback distance required by A.4.i. (Appendix A).

Previously Channelized Low-Gradient Headwater Streams (drainage ditches) shall for the purposes of this permit be defined as having all of the following characteristics:

- Less than 10 square miles of drainage area
- Low gradient and low stream power such that despite their straightened and entrenched condition incision (down-cutting) is not evident
- Entrenched, entrenchment ratio < 2.2
- Straight, sinuosity of the bankfull channel < 1.02

Part 2 Restoration

Restoration shall be accomplished by any natural channel design approach that will lead to a selfmaintaining reach able to provide both local habitat and watershed services (e.g. self-purification and valley floodwater storage).

- a. Construction of a floodplain, channel and habitat via natural channel design;
- b. Floodplain excavation necessary to promote interaction between stream and floodplain;
- c. Include a water quality setback of 100 feet from top of the streambank on each side.

The primary target regardless of design approach shall be the frequently flooded width, which shall be maximized, at 10 times the channel's self-forming width. Five times the self-forming channel width may still be acceptable particularly on portions of the site if greater widths are achieved elsewhere.

Appendix B Olentangy River Watershed

CONTENTS OF THIS APPENDIX

- B.1 Permit Area
- B.2 TMDL Conditions
- B.3 Riparian Setback Requirements
- B.4 Riparian Setback Mitigation

Attachment B-A: Area of Applicability for the Olentangy Watershed (Map)

Attachment B-B: Stream Assessment and Restoration

B.1 Permit Area.

This appendix to Permit OHC00005 applies to specific portions of the Olentangy River Watershed located within the State of Ohio. The permit area includes the following 12-digit Hydrologic Unit Codes (HUC-12) within the Olentangy River Watershed:

12-Digit Hydrologic Unit Codes

12-Digit Hydrologic Unit Codes (HUC)	Narrative Description of Sub-Watershed
05060001 09 01	Shaw Creek
05060001 09 02	Headwaters Whetstone Creek
05060001 09 03	Claypool Run-Whetstone Creek
05060001 10 07	Delaware Run-Olentangy River
05060001 11 01	Deep Run-Olentangy River
05060001 11 02 (Only portion as depicted in	Rush Run-Olentangy River
Attachment A)	

Please see Attachment A (Appendix B) for permit area boundaries. An electronic version of Attachment A can be viewed at

http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx

B.2 TMDL Conditions.

This general permit requires control measures/BMPs for construction sites that reflect recommendations set forth in the U.S. EPA approved Olentangy TMDL.

B.3 Riparian Setback Requirements.

The permittee shall comply with the riparian setback requirements of this permit or alternative riparian setback requirements established by a regulated MS4 and approved by Ohio EPA. The SWP3 shall clearly delineate the boundary of required stream setback distances. The stream setback shall consist of a streamside buffer and an outer buffer. No construction activity shall occur, without appropriate mitigation, within the streamside buffer except activities associated with storm water conveyances from permanent treatment practices, approvable utility crossings and restoration or recovery of floodplain and channel form characteristics as described in Attachment B. Storm water conveyances must be designed to minimize the width of disturbance.

Construction activities requiring mitigation for intrusions within the outer buffer for the Olentangy River mainstem and perennial streams are described in Appendix B.4.

If intrusion within the delineated setback boundary is necessary to accomplish the purposes of a project, then mitigation shall be required in accordance with Appendix B.3. of this permit. Streams requiring protection under this section have a defined bed and bank or channel and are defined as follows:

- The Olentangy River mainstem;
- Perennial streams have continuous flow on either the surface of the stream bed or under the surface of the stream bed;
- Intermittent streams flow for extended periods of time seasonally of a typical climate year; and
- Ephemeral streams are normally dry and only flow during and after precipitation runoff (episodic flow).

National Resources Conservation Service (NRCS) soil survey maps should be used as one reference and the presence of a stream requiring protection should also be confirmed in the field. Any required setback distances shall be clearly displayed in the field prior to any construction related activity.

Riparian setbacks shall be delineated based upon one of the following two methods:

i. The required setback distances shall vary with stream type as follows:

a. The setback distances associated with the mainstem of the Olentangy River shall consist of:

- (1) A streamside buffer width of 100 feet as measured horizontally from the ordinary high water mark per side; and
- (2) An outer buffer width sized to the regulatory 100-year floodplain based on FEMA mapping. No impervious surfaces shall be constructed without appropriate mitigation and moderate to substantial fill activities with no impervious surface may require appropriate mitigation pending an individual approval by Ohio EPA.

b. The setback distance associated with perennial streams, other than the Olentangy mainstem, shall consist of:

- (1) A streamside buffer width of 80 feet per side measured horizontally from the ordinary high water mark; and
- (2) An outer buffer width sized to the regulatory 100-year floodplain based on FEMA mapping. In the event the regulatory 100-year floodplain is not established, the outer buffer width shall be calculated using the following equation and measured horizontally from the ordinary high water mark. No impervious surfaces, structure, fill, or activity that would impair the floodplain or stream stabilizing ability of the outer buffer shall occur without appropriate mitigation:

 $W = 143DA^{0.41}$

(Equation 1 Appendix B)

where: DA = drainage area (mi²) W = total width of riparian setback (ft)

W shall be centered over the meander pattern of the stream such that a line representing the setback width would evenly intersect equal elevation lines on either side of the stream.

If the DA remains relatively constant throughout the stretch of interest, then the DA of the downstream edge of the stretch should be used. Where there is a significant increase in the DA from the upstream edge to the downstream edge of the area of interest, the setback width shall increase accordingly.

c. The setback distance associated with intermittent streams and ephemeral streams shall be a streamside buffer width of 30 feet per side measured horizontally from the centerline of the stream. No outer buffer is required for intermittent and ephemeral streams.

ii. Stream Restoration with 100 feet (each side) Riparian Setback. Each stream segment within the proposed site boundaries can be assessed in accordance with Attachment B. In the event the stream segment is classified as a "Previously Modified Low Gradient Headwater Stream", the permittee has the option to restore the stream segment in accordance with Attachment B and include a 100 feet water quality setback distance from the top of the streambank on each side. In the event the stream segment exceeds the minimum criteria in Attachment B to be classified as a "Previously Modified Low Gradient Headwater Stream", this may be considered on a case-by-case basis.

No structural sediment controls (e.g., the installation of sediment barriers or a sediment settling pond) or structural post-construction controls shall be used in a stream or the streamside buffer. Activities and controls that would not impair the floodplain or stream stabilizing ability of the outer buffer can be considered.

Redevelopment projects (i.e., developments on previously developed property) located within the delineated setback boundary is exempt from Riparian Setback Mitigation (B.3) provided the proposed project does not further intrude the delineated setback boundary.

B.4 Riparian Setback Mitigation.

The mitigation required for intrusion into the riparian setback of the **Olentangy River mainstem or perennial streams** shall be determined by the horizontal distance the intrusion is from the stream. Up to three zones will be used in determining the required mitigation. Zone 1 extends from 0 to 30 feet from the stream edge. Zone 2 extends from 30 feet to the outer edge of the streamside buffer. Zone 3 extends from the outer edge of the streamside buffer to the outer edge of the outer buffer. Intrusion into these zones will require the following mitigation within the same Watershed Assessment Unit (12-digit HUC scale). Alternative mitigation, within the permit area, may be considered on a case-by-case basis:

- 1. Four (4) times the total area disturbed in the stream within Zone 1 of the site being developed shall be mitigated; or, two (2) times the total area disturbed in the stream within Zone 1 shall be mitigated within the watershed of the immediate receiving stream, and the entire required setback of the site shall be protected by binding conservation easements or environmental covenants.
- 2. Three (3) times the area disturbed within Zone 2 of the site being developed shall be mitigated within Zones 1 and/or 2 of the mitigation location; or, one and one-half (1.5) times the total area disturbed within Zone 2 shall be mitigated within the watershed of the immediate receiving stream, and the entire required setback of the site shall be protected in perpetuity by binding conservation easements or environmental covenants.
- 3. Two (2) times the area to be mitigated within Zone 3 of the site being developed shall be mitigated within any Zone of the mitigation location; or, one (1) times the total area to be mitigated within any zone shall be mitigated within the watershed of the immediate receiving stream, and the entire required setback of the site shall be protected in perpetuity by binding conservation easements or environmental covenants.

The mitigation required for intrusion into the riparian setback of an **intermittent stream** shall be four (4) times the total area disturbed within the riparian setback of the site being developed shall be mitigated; or two (2) times the total area disturbed within the riparian setback shall be mitigated within the watershed of the immediate receiving stream, and the entire required setback of the site shall be protected in perpetuity by binding conservation easements or environmental covenants.

The mitigation required for intrusion into the streamside buffer of an **ephemeral stream** shall be two (2) times the total area disturbed within the riparian setback of the site being developed shall be mitigated; or one (1) times the total area disturbed within the riparian setback shall be mitigated within the watershed of the immediate receiving stream, and the entire required setback of the site shall be protected in perpetuity by binding conservation easements or environmental covenants.

All mitigation shall, at a minimum, include conserved or restored setback zone, and should be designed to maximize the ecological function of the mitigation. Including mitigation at the stream edge along with associated setback areas is one way to maximize ecological function. Mitigation shall be protected in perpetuity by binding conservation easements or environmental covenants which must be recorded within 6 months of permit authorization. Granting of binding conservation easements or environmental covenants which must be recorded within a required riparian setback counts towards required mitigation.

Mitigation may also be satisfied by approved pooled mitigation areas and in-lieu fee sponsored mitigation areas. Mitigation resulting from State or Federal environmental regulations may be adjusted in recognition of these requirements.





A more detailed map can be viewed at: http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx

Appendix B Attachment B

Part 1 Stream Assessment

This assessment will determine if a stream is considered a previously channelized, low-gradient headwater stream (a drainage ditch) which would be applicable for stream restoration in lieu of protecting an outer 'no build' setback as per Appendix B B.2i. and ii.

In the event the assessment of the stream meets all the criteria listed below, restoration as depicted in Part 2 of this attachment or natural channel design could be performed, provided 401/404 permits are authorized, and may be a means of reducing the setback distance required by B.2.i. (Appendix B).

Previously Modified, Low-Gradient Headwater Streams shall, for the purposes of this permit, be defined as having all of the following characteristics:

- Less than 10 square miles of drainage area;
- Low gradient and low stream power such that incision (down-cutting) is not evident;
- Entrenched such that the ratio of the frequently flooded width to the bankfull width is less than 2.2; and
- Straight with little or no sinuosity present such that the ratio of the bankfull channel length to the straight-line distance between two points is less than 1.02.

Part 2 Restoration

Restoration shall be accomplished by any natural channel design approach that will lead to a self-maintaining reach able to provide both local habitat and watershed services (e.g. self-purification and valley floodwater storage).

- a. Construction of a floodplain, channel and habitat via natural channel design;
- b. Floodplain excavation necessary to promote interaction between stream and floodplain;
- c. Include a water quality setback of 100 feet from top of the streambank on each side.

The primary target shall be a frequently flooded width of 10 times the channel's self-forming width. Five times the self-forming channel width may be acceptable if sufficient elements of natural channel design are included in the restoration project.

DURATION t _c (minutes)	WATER QUALITY INTENSITY [iwq] (inches/hour)	DURATION t _c (minutes)	WATER QUALITY INTENSITY [i _{wq}] (inches/hour)
5	2.37	33	0.95
6	2.26	34	0.93
7	2.15	35	0.92
8	2.04	36	0.90
9	1.94	37	0.88
10	1.85	38	0.86
11	1.76	39	0.85
12	1.68	40	0.83
13	1.62	41	0.82
14	1.56	42	0.80
15	1.51	43	0.78
16	1.46	44	0.77
17	1.41	45	0.76
18	1.37	46	0.75
19	1.33	47	0.74
20	1.29	48	0.73
21	1.26	49	0.72
22	1.22	50	0.71
23	1.19	51	0.69
24	1.16	52	0.68
25	1.13	53	0.67
26	1.10	54	0.66
27	1.07	55	0.66
28	1.05	56	0.65
29	1.03	57	0.64
30	1.01	58	0.64
31	0.99	59	0.63
32	0.97	60	0.62

Appendix C Rainfall Intensity for Calculation of Water Quality Flow (WQF)

Note: For $t_c < 5$ minutes, use i = 2.37 in/hr; for $t_c > 60$ minutes, use i = 0.62 in/hr. For all other t_c , use the appropriate value from this table.

APPENDIX C - NOI AND ACKNOWLEDGEMENT LETTERS
APPENDIX D – INSPECTION REPORTS



Construction Site Inspection Checklist for OHC000005

By making use of some simple Best Management Practices (BMPs) a construction site operator can do his or her share to protect Ohio's water resources from the harmful effects of sediment. The topography of the site and the extent of the construction activities will determine which of these practices are applicable to any given site, but the BMPs listed here are applicable to most construction sites. For details on the installation and maintenance of these BMPs, please refer to the current Rainwater and Land Development. Ohio EPA's Standards for Storm Water Management Land Development and Urban Stream Protection. The manual is available at http://epa.ohio.gov/dsw/storm/technical_guidance.

Temporary Stabilization

This is the most effective BMP. All disturbed areas that will lie dormant for over 14 days must be stabilized within 7 days of the date the area becomes inactive. The goal of temporary stabilization is to provide cover, quickly. Areas within 50 feet of a stream must be stabilized within 2 days of inactivity. This is accomplished by seeding with fast-growing grasses then covering with straw mulch. Apply only mulch between November 1 and March 31. To minimize your costs of temporary stabilization, leave natural cover in place for as long as possible. Only disturb areas you intend to work within the next 14 days.

Construction Entrances

Construction entrances are installed to minimize off-site tracking of sediments. A stone access drive should be installed at every point where vehicles enter or exit the site. Every individual lot should also have its own drive once construction on the lot begins.

Sediment Ponds

Sediment ponds are required for construction areas with concentrated runoff or when the design capacity of silt fence or inlet protection is exceeded. There are two types of sediment ponds: sediment basins and sediment traps. A sediment trap is appropriate where the contributing drainage area is 5 acres or less. The outlet is an earthen embankment with a simple stone spillway. A sediment basin is appropriate for drainage areas larger than 10 acres. The outlet is an engineered riser pipe with a skimmer or similar device used to dewater the pond at the surface. Often a permanent storm water management pond, such as a retention or detention basin, can be modified to act as a sediment basin during construction. All sediment ponds must be installed within 7 days of first grubbing the area they control, provide a minimum dewatering zone of 67 cubic yards per acre of total contributing drainage area and a sediment settling zone of 34 cubic yards per disturbed acre below the level of the outlet. Sediment basins must be designed to drain the dewatering zone over a 48-hour period.

Sediment Barriers

This is typically used at the perimeter of a disturbed area. It's only for small drainage areas on relatively flat slopes or around small soil storage piles. Not suitable where runoff is concentrated in a ditch, pipe or through streams. For large drainage areas where flow is concentrated, collect runoff in diversion berms or channels and pass it through a sediment pond prior to discharging it from the site. Combination barriers constructed of silt fence supported by straw bales or silt fence embedded within rock check dams may be effective within small channels. As with all sediment controls, sediment barriers must be capable of pooling runoff so that sediment can settle out of suspension. Sediment barriers must be installed within 7 days of first grubbing the area it controls.

Inlet Protection

This must be installed on all yard drains and curb drains when these inlets do not drain to a sediment trap or basin. Even if there is a sediment trap or basin, inlet protection is still recommended, as it will increase the overall sediment removal efficiency. These are best used on roads with little or no traffic. If working properly, inlet protection will cause water to pond. If used on curb inlets, streets will flood temporarily during heavy storms. Check with your municipality before installing curb inlet protection. They may prefer an alternate means of sediment control such as silt fence or ponds.

Permanent Stabilization

All areas at final grade must be permanently stabilized within 7 days of reaching final grade. This is usually accomplished by using seed and mulch, but special measures are sometimes required. This is particularly true in drainage ditches or on steep slopes. These measures include the addition of topsoil, erosion control matting, rock rip-rap or retaining walls. Permanent seeding should be done March 1 to May 31 and August 1 to September 30. Dormant seeding can be done from November 20 to March 15. At all other times of the year, the area should be temporarily stabilized until a permanent seeding can be applied.

Non-Sediment Pollution Control

Although sediment is the pollutant of greatest concern on most construction sites, there are other sources of pollution. Most of these BMPs are easy to implement with a little bit of planning and go a long way toward keeping your site clean and organized. Please be sure to inform all contractors how these BMPs affect their operations on the site, particularly those that will be working near a stream.

Inspection Sheet

INSPECTIONS MUST BE CONDUCTED ONCE EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5" OR GREATER RAINFALL. ALL SEDIMENT CONTROLS MUST BE INSTALLED PRIOR TO GRADING AND WITHIN 7 DAYS OF FIRST GRUBBING

GENERAL INSPECTION INFORMATION

Construction Site Inspection Date: In		Inspector Nam	Inspector Name:		
Inspector Title:		Qualifications/	Qualifications/Certifications:		
	<u>S</u>	Storm Events of the Last 7	Days		
Storm Event Date	Storm Event Time	Storm Event Duration	Total Rainfall Amount	Discharge Occur? (Y/N)	
			(inches)		
	Weathe	r Information at the Time of	of Inspection		
Temperature	_ Climate (Sunny, Clou	dy, Rain)?	Is Storm Water Being [Discharged?	

Sketch or Small Site Map

Along with a narrative inspection log, Ohio EPA recommends the inspector use a sketch or a reduced photocopy of the site plan showing the location of storm water outfalls and storm drain inlets as well as the location and types of control measures. Problems observed at these locations, or at other locations on the construction site, should be highlighted and any corrective measures undertaken should be drawn in and noted in detail on the front side of the sketch. This method will also be helpful as the permittee is required to update the SWP3 to reflect current site conditions.

CONSTRUCTION ENTRANCES

Key things to look for ...

		Yes	No
1.	Has the drive been constructed by placing geotextile fabric under the stone?		
2.	Is the stone 2-inch diameter?		
3.	Has the stone been placed to a depth of 6 inches, with a width of 10 feet and a length of at least 50 feet (30 feet for entrances onto individual sublots)?		
4.	If the drive is placed on a slope, has a diversion berm been constructed across the drive to divert runoff away from the street or water resource?		
5.	If drive is placed across a ditch, was a culvert pipe used to allow runoff to flow across the drive?		
No	ote areas where repairs or maintenance is needed or where this practice needs to be applied:		

SEDIMENT PONDS

Key things to look for ...

		Yes	No
1.	Are concentrated flows of runoff directed to a sediment pond?		
2.	Is sheet-flow runoff from drainage areas that exceed the design capacity of silt fence (generally 0.25 acre or larger) directed to a sediment pond?		
3.	Is runoff being collected and directed to the sediment pond via the storm sewer system or via a network of diversion berms and channels?		
4.	Is the sediment pond dewatering zone appropriately sized (67 cubic yards per acre of total drainage area)?		
5.	Is the sediment pond sediment settling zone appropriately sized (34 cubic yards per acre of disturbed area)?		
6.	Is the sediment basin designed to be dewatered at the surface through the use of a skimmer or another similar surface water dewatering device?		
7.	Is the sediment basin designed so that the dewatering zone will drain in no less time than 48 hours?		
8.	Have the embankments of the sediment pond and the areas that lie downstream of the pond been stabilized?		
9.	For sediment traps, is there geotextile under the stone spillway and is the spillway saddle-shaped?		
10.	For sediment traps, which dewater 100% between storms, is the dewatering pipe end-capped, no larger than 6 inches in diameter, perforated and double-wrapped in geotextile?		
11.	Is the length-to-width ratio between inlet(s) and outlet at least 2:1? NOTE : If not, a baffle should be added to lengthen the distance.		
12.	Is the depth from the bottom of the basin to the top of the primary spillway no more than 3 to 5 feet?		
13.	For a modified storm water pond being used as a sediment pond, is the connection between the riser pipe and the permanent outlet water-tight?		
14.	Was the basin installed prior to grading the site?		
15.	Is it time to clean-out the sediment pond to restore its original capacity? Generally, sediment should be removed from the sediment settling zone once it's half-full. Stabilize the dredged sediments with seed and mulch.		

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

SEDIMENT BARRIERS

Key things to look for ...

- 1. Is the silt fence at least 4" to 6" into the ground?
- 2. Is the silt fence trench backfilled to prevent runoff from cutting underneath the fence?
- 3. Is the silt fence pulled tight so it won't sag when water builds up behind it?
- 4. Are the ends brought upslope of the rest of the silt fence so as to prevent runoff from going around the ends?
- 5. Is the silt fence placed on a level contour? If not, the fence will only act as a diversion.
- 6. Have all the gaps and tears in the silt fence been eliminated.
- 7. Is the sediment barrier controlling an appropriate drainage area? Refer to Chapter 6 of *Rainwater* manual. RULE OF THUMB: Design capacity for 100 linear feet of sediment barrier is 0.5 acres for slopes < 2%, 0.25 acres for slopes 2% to 20%, & 0.125 acres for slopes 20% or more. Generally, no more than 0.25 acres should lie behind 100 feet of sediment barrier at 2% to 20% slope, i.e., the distance between the barrier and the top of the slope behind it should be no more than 125 feet. The allowable distance increases on flatter slopes and decreases for steeper slopes. All non-silt fence sediment barriers must be at least 12-inches in diameter.</p>

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

INLET PROTECTION

Key things to look for ...

	Yes	No
1. Does water pond around the inlet when it rains?		
2. Has the fabric been replaced when it develops tears or sags?		
3. For curb inlet protection, does the fabric cover the entire grate, including the curb window?		
4. For yard inlet protection, does the structure encircle the entire grate?		
5. Is the fabric properly entrenched or anchored so that water passes through it and not under it?		
6. For yard inlet protection, is the fabric properly supported to withstand the weight of water and prevent sagging? The fabric should be supported by a wood frame with cross braces, or straw bales.		
7. Is sediment that has accumulated around the inlet removed on a regular basis?		
Note areas where repairs or maintenance is needed or where this practice needs to be applied:		

No

Yes

TEMPORARY STABILIZATION

Key things to look for ...

		Yes	No
1.	Are there any areas of the site that are disturbed, but will likely lie dormant for over 14 days?		
2.	Have all dormant, disturbed areas been temporarily stabilized in their entireties?		
3.	Have disturbed areas outside the silt fence been seeded or mulched?		
4.	Have soil stockpiles that will sit for over 14 days been stabilized?		
5.	Has seed and mulch been applied at the proper rate? In general, seed is applied at 3 to 5 lbs per 1000 sq ft and straw mulch is applied at 2-3 bales per 1000 sq ft.		
6.	Has seed or mulch blown away? If so, repair.		
Nc	te areas where repairs or maintenance is needed or where this practice needs to be applied:		

PERMANENT STABILIZATION

Key things to look for ...

		Yes	No
1.	Are any areas at final grade?		
2.	Has the soil been properly prepared to accept permanent seeding?		
3.	Has seed and mulch been applied at the appropriate rate (see Chapter 7 of the <i>Rainwater</i> manual)?		
4.	If rainfall has been inadequate, are seeded areas being watered?		
5.	For drainage ditches where flow velocity exceeds 3.5 ft/s from a 10-year, 24-hour storm has matting been applied to the ditch bottom?		
6.	If the flow velocity exceeds 5.0 ft/s, has the ditch bottom been stabilized with rock rip-rap? NOTE : Rock check dams may be needed to slow the flow of runoff.		
7.	Has rock rip-rap been placed under all storm water outfall pipes to prevent scouring in the receiving stream or erosion of the receiving channel?		
8.	For sites with steep slopes or fill areas, is runoff from the top of the site conveyed to the bottom of the slope or fill area in a controlled manner so as not to cause erosion?		
No	ote areas where repairs or maintenance is needed or where this practice needs to be applied:		

NON-SEDIMENT POLLUTION CONTROL

Key things to look for ...

Ň	Yes	No
1. Has an area been designated for washing out concrete trucks? Washings must be contained on site within a bermed area until they harden. The washings should never be directed toward a watercourse, ditch or storm drain.		
2. Is waste and packaging disposed of in a dumpster? Do not burn them on site.		
3. Are fuel tanks and drums of toxic and hazardous materials stored within a diked area or trailer and away from any watercourse, ditch or storm drain?		
4. Are streets swept as often as necessary to keep them clean and free from sediment? NOTE: Sediment should be swept back onto the lot - not down the storm sewers.		
5. Are stockpiles of soil or other materials stored away from any watercourse, ditch or storm drain?		
6. Have stream crossings been constructed entirely of non-erodible material?		
7. If an area of the site is being dewatered, is it being pumped from a sump pit or is the discharge directed to a sediment pond? NOTE : if you must lower ground water, the water may be discharged to the receiving stream as long as the water remains clean. Be sure not to co-mingle the clean ground water with sediment-laden water or to discharge it off-site by passing it over disturbed ground.		
Note areas where repairs or maintenance is needed or where this practice needs to be applied:		

APPENDIX E – CORRECTIVE ACTION LOG

Appendix E – Corrective Action Log

Project Name: SWPPP Contact:

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

Madison Fields Solar Project Kiewit Project No. 20036602

88.15.77.006.02/0/Issued for Construction

APPENDIX F - SWPPP AMMENDMENT LOG

Appendix F – SWPPP Amendment Log

Project Name: SWPPP Contact:

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

APPENDIX G – SUBCONTRACTOR CERTIFICATIONS AND AGREEMENTS

Appendix G – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION STORMWATER POLLUTION PREVENTION PLAN

Project Number:			
Project Title:			
Operator(s):			

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above-named project:

Company: _____

Address: _____

Telephone Number:		

Type of construction service to be provided: _____

Signature:

Title: _____

Date:

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APPENDIX H – GRADING AND STABILIZATION ACTIVITIES LOG

Appendix H – Grading and Stabilization Activities Log

Project Name: SWPPP Contact:

Date Grading Activity Initiated	Description of Grading Activity	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures are Initiated	Description of Stabilization Measure and Location

APPENDIX I – TRAINING LOG

Appendix I – SWPPP Training Log

Proj	Project Name:						
Proj	Project Location:						
Instr	Instructor's Name(s):						
Instr	Instructor's Title(s):						
Cou	rse Location:	Date:					
Cou	rse Length (hours):						
Stor	mwater Training Topic: (check a	s app	propriate)				
	Erosion Control BMPs		Emergency Procedure	es			
	Sediment Control BMPs		Good Housekeeping I	BMPs			
	Non-Stormwater BMPs						
Specific Training Objective:							

Attendee Roster: (attach additional pages as necessary)

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

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APPENDIX J – DELEGATION OF AUTHORITY

Appendix J – Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the

_____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

 (name of person or position)
 (company)
 (address)
 (city, state, zip)
 (phone)
•

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in ______ (Reference State Permit), and that the designee above meets the definition of a "duly authorized representative" as set forth in ______ (Reference State Permit).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	
Company:	
Title:	
Signature:	
Date:	

Madison Fields Solar Project Kiewit Project No. 20036602 APPENDIX K – ADDITIONAL INFORMATION

Table A-1 Annual Average Expected Total Groundwater Recharge

version 1.0 2022-03-18

Instructions: Consult the Table 1 vs 2 Area-of-Applicability Map tab to identify if construction development will take place in the Table A-1 Applicability Area. Consult the Land Use Definitions Tab to confirm the proper identification of existing and proposed land uses on site. Fill out the Pre-Developed and Post-Developed Groundwater Recharge Tables below.

Notes:

1 - DU = Dwelling Units

2 - Hydrologic soil group designations of A/D, B/D, and C/D should be considered as D soils for this application.

3 - These values apply when recharge of the aquifer is expected; recharge to the bedrock aquifer can be expected when the

potentiometric head of the glacial aquifer is greater than the bedrock aquifer

4 - The 4.3 infiltration value may only be used for an area as a whole (includes impervious and pervious areas) which includes a minimum of 10 percent pervious area. If all land uses (pervious and impervious) are tabulated separately, then impervious areas have 0 inches of recharge

Total Pre-Developed Recharge	892.1	acre-ft
Total Post-Developed Recharge	1525.4	acre-ft
Surplus(+)/Deficit(-)	633.3	acre-ft

Consistency Check:

Pre-Developed Total Acres equals	OKAN
Post-Developed Total Acres	UNAT

PRE-DEVELOPED GROUNDWATER RECHARGE ³														
Land Lise	Density	Maximum %	Recharge (Inches) by Hydrologic Soil Group ²			oil Group ²	Area (acres) of Land Use by Hydrologic Soil Group				Recharge Volume (acre-ft)			
Land Ose	(DU ¹ /acre)	Impervious	A	В	C	D	A	В	С	D	A	В	C	D
Woods/Forest	-	-	17.0	16.6	15.6	14.6				8.1	0.0	0.0	0.0	9.9
Brush	-	-	17.0	16.6	15.6	14.6					0.0	0.0	0.0	0.0
Meadow	-	-	17.0	16.5	15.4	14.4					0.0	0.0	0.0	0.0
Managed Wood	-	-	16.9	16.0	14.7	13.4					0.0	0.0	0.0	0.0
Pasture	-	-	16.5	15.9	14.4	13.0					0.0	0.0	0.0	0.0
Row Crop	-	-	15.8	14.2	11.9	8.1				1307.1	0.0	0.0	0.0	882.3
Urban Grasses	-	-	15.7	15.7	14.2	12.7					0.0	0.0	0.0	0.0
Low Density Residential	0.5	12%	15.7	15.7	14.2	12.7					0.0	0.0	0.0	0.0
Low Density Residential	1	20%	14.8	14.8	13.7	12.2					0.0	0.0	0.0	0.0
Medium Density Residential	2	25%	11.5	11.5	11.5	11.5					0.0	0.0	0.0	0.0
Medium Density Residential	3	30%	11.2	11.2	11.2	11.2					0.0	0.0	0.0	0.0
Medium Density Residential	4	38%	9.6	9.6	9.6	9.6					0.0	0.0	0.0	0.0
High Density Residential	≥ 5	65%	7.3	7.3	7.3	7.3					0.0	0.0	0.0	0.0
Commercial & Road ROW ⁴	-	90%	4.3	4.3	4.3	4.3					0.0	0.0	0.0	0.0
Basins	-	100%	0	0	0	0					0.0	0.0	0.0	0.0
Impervious	-	100%	0	0	0	0					0.0	0.0	0.0	0.0
					TO	TALS	0.0	0.0	0.0	1315.2	0.0	0.0	0.0	892.1
					TOTAL	ACRES	13	15.2	TOTAL R	ECHARGE	89	2.1		

POST-DEVELOPED GROUNDWATER RECHARGE ³														
Land Lice	Density	Maximum %	Recharge (Inches) by Hydrologic Soil Gr			ioil Group ²	Area (acres) of Land Use by Hydrologic Soil Group				Recharge Volume (acre-ft)			
Land Ose	(DU ¹ /acre)	Impervious	А	В	C	D	A	В	С	D	Α	В	С	D
Woods/Forest	-	-	17.0	16.6	15.6	14.6					0.0	0.0	0.0	0.0
Brush	-	-	17.0	16.6	15.6	14.6					0.0	0.0	0.0	0.0
Meadow	-	-	17.0	16.5	15.4	14.4				1271.2	0.0	0.0	0.0	1525.4
Managed Wood	-	-	16.9	16.0	14.7	13.4					0.0	0.0	0.0	0.0
Pasture	-	-	16.5	15.9	14.4	13.0					0.0	0.0	0.0	0.0
Row Crop	-	-	15.8	14.2	11.9	8.1					0.0	0.0	0.0	0.0
Urban Grasses	-	-	15.7	15.7	14.2	12.7					0.0	0.0	0.0	0.0
Low Density Residential	0.5	12%	15.7	15.7	14.2	12.7					0.0	0.0	0.0	0.0
Low Density Residential	1	20%	14.8	14.8	13.7	12.2					0.0	0.0	0.0	0.0
Medium Density Residential	2	25%	11.5	11.5	11.5	11.5					0.0	0.0	0.0	0.0
Medium Density Residential	3	30%	11.2	11.2	11.2	11.2					0.0	0.0	0.0	0.0
Medium Density Residential	4	38%	9.6	9.6	9.6	9.6					0.0	0.0	0.0	0.0
High Density Residential	≥ 5	65%	7.3	7.3	7.3	7.3					0.0	0.0	0.0	0.0
Commercial & Road ROW ⁴	-	90%	4.3	4.3	4.3	4.3					0.0	0.0	0.0	0.0
Basins	-	100%	0	0	0	0					0.0	0.0	0.0	0.0
Impervious	-	100%	0	0	0	0				44	0.0	0.0	0.0	0.0
					TO	TALS	0.0	0.0	0.0	1315.2	0.0	0.0	0.0	1525.4
						TOTAL	ACRES	133	15.2	TOTAL R	ECHARGE	15	25.4	



Madison Fields Groundwater Recharge Area Summary (2022	-08-24)			
North H	lalf			
Area Inside Fence	35,777,558	S.F.	821.34	Acres
Laydown Primary (Will be reclaimed as pervious area)			10	Acres
Laydown E35 (Will be reclaimed as pervious area)	1	Acres		
Laydown E36 (Will be reclaimed as pervious area)			1	Acres
Laydown E49 (Will be reclaimed as pervious area)	1	Acres		
Laydown E52 (Will be reclaimed as pervious area)			1	Acres
Laydown E58 (Will be reclaimed as pervious area)			4	Acres
Inverters (20' x 40' Area)	39	Each	0.72	Acres
20' Access Road inside Fence (w/2' Shoulder)	8985	L.F.	4.95	Acres
16' Access Road inside Fence (E52-E63) (w/2' Shoulder)	5259	L.F.	2.41	Acres
16' Access Road inside Fence (F45-F51) (w/2' Shoulder)	5466	L.E.	2.51	Acres
16' Access Road inside Fence (E36-E44) (w/2' Shoulder)	6928	1 F	3 18	Acres
16' Access Road inside Fence (E30-E35) (w/2' Shoulder)	6001	L.F.	2 76	Acres
16' Access Road inside Fence (D29-E30) (w/2' Shoulder)	5089	L.I I F	2.70	Acres
16' Hammerhead Turnaround	1	Each	0.03	Acres
Green and Array Area (Pervious area inside fonce)	<u> </u>	Lacii	0.03 802 4F	Acres
Poads and Inverters (Imponyious Area inside fense)			10 00	Acros
	o Fonco		10.89	ALIES
Area Outside 20' Access Read Outside Conse (FED) (W/D) Should an		<u>і г</u>	0.740	Acros
20 Access Koad Outside Fence (E52) (W/2' Shoulder)	1288	L.F.	0./10	Acres
16 Access Road Outside Fence (E36) (w/2' Shoulder)	1018	L.F.	0.467	Acres
16 Access Road Outside Fence (D29) (w/2' Shoulder)	50	L.F.	0.023	Acres
16 Access Road Outside Fence (E35) (w/2' Shoulder)	112	L.F.	0.051	Acres
16' Access Road Outside Fence (E51) (w/2' Shoulder)	74	L.F.	0.034	Acres
16' Access Road Outside Fence (E63) (w/2' Shoulder)	126	L.F.	0.058	Acres
16' Access Road Outside Fence (to South) (w/2' Shoulder)	171	L.F.	0.079	Acres
Total Area Outside Fence (Impervious)			1.422	Acres
South H	lalf	-		-
Area Inside Fence	21028649	S.F.	482.75	Acres
Laydown C8 (Will be reclaimed as pervious area)			1	Acres
Laydown C14 (Will be reclaimed as pervious area)			1	Acres
Laydown C15 (Will be reclaimed as pervious area)			1	Acres
Laydown C18 (Will be reclaimed as pervious area)			1	Acres
Inverters (20' x 40' Area)	24	Each	0.441	Acres
16' Access Road inside Fence (B2-B8)	8736	L.F.	4.011	Acres
16' Access Road inside Fence (A1-B3)	2106	L.F.	0.967	Acres
16' Access Road inside Fence (B4-B7)	3550	L.F.	1.630	Acres
16' Access Road inside Fence (C8-C14)	4232	L.F.	1.943	Acres
16' Access Road inside Fence (C18-C22)	4119	L.F.	1.891	Acres
20' Access Road inside Fence	5484	L.F.	3.021	Acres
20' Temp Road Inside Fence (C23)	70		0.021	Acres
16' Hammerhead Turnaround	5	Fach	0.000	Acres
Green and Array Area (Pervious Area inside Fence)	<u>ا</u> ک	2001	۸۴۵ ۶۵ ۵۲	Acres
Roads and Inverters (Impervious Area inside fence)			1/1 00	Acres
Area Outeid	e Fence		14.09	110103
Ared Outside 20' Temp Road Outside Fonce (C22) (Realaimed)	1222	1 5	0.72	Acros
20 Temp Road Outside Fence (C23) (Recialitieu)	1322	L.F.	0.73	Acros
20 Access Rudu Outside Feille (Co)	50	L.F.	0.03	Acres
20 FITSLETIERBY ACCESS KOOD OUTSIDE FENCE	5207	L.F.	2.8/	Acres
	294560	3.F.	6.76	Acres
I otal Area Outside Fence (Impervious)			9.67	Acres
Total Area			1,315.18	Acres
				1
Total Developed Impervious Area (Roads and Inverters)			44.07	Acres
Area of Tree Clearing for Existing Conditions				
	250676	S.F.	5.75	Acres
	103876	S.F.	2.38	Acres
Total			8.14	Acres

harge Input

	Table A-3 Land Use Definitions version 1.0 2022-03-18
Land Use	Definition
Woods/Forest	Areas dominated by trees. Woods are protected from grazing and litter and brush adequately cover the soil.
Brush	Brush, weeds, grass mixture where brush is the major element and more than 75% of the ground is covered.
Meadow	Continuous grass, protected from grazing, generally mowed for hay.
Managed Wood	Orchards, tree farms, and other areas planted or maintained for the production of fruits, nuts, berries, or ornamentals.
Pasture	Pasture, grassland, or range where at least 50% of the ground is covered and the area is not heavily grazed.
Row Crop	Areas used to produce crops, such as corn, soybeans, vegetables, tobacco, and cotton.
Urban Grasses	Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Examples include parks, lawns, golf courses, airport grasses, and industrial site grasses.
Residential	Areas with a mixture of constructed materials and vegetation; the average percent imperviousness and number of dwelling units per acre to determine the appropriate density is specified.
Commercial	Includes infrastructure (e.g. roads, railroads, etc.) and all highly developed areas not classified as High Intensity Residential.
Basins	Bodies of water that are permanently or temporarily impounded with standing water. Examples include aesthetic ponds, water quality ponds, and flood control ponds.
Impervious	Any impervious surface that is not already mentioned above, or for use when defining specific sections of a site.



Web Soil Survey National Cooperative Soil Survey



Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CsA	Crosby-Lewisburg silt loams, 0 to 2 percent slopes	C/D	611.6	40.6%
CsB	Crosby-Lewisburg silt loams, 2 to 6 percent slopes	C/D	71.9	4.8%
Ко	Kokomo silty clay loam, 0 to 2 percent slopes	C/D	708.1	47.0%
LeB	Lewisburg-Celina silt loams, 2 to 6 percent slopes	С	11.3	0.8%
Lp	Lippincott silty clay loam, 0 to 2 percent slopes	B/D	19.0	1.3%
OdA	Odell-Lewisburg complex, 0 to 2 percent slopes	C	13.5	0.9%
Pa	Patton silty clay loam, 0 to 2 percent slopes	B/D	70.2	4.7%
Totals for Area of Interest			1,505.7	100.0%



Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher



	Table 2-5	
Runoff Coefficients	"C" for Typical Land	Uses in Columbus

	Average percent	Runoff Coefficient for Hydrologic Soil Group (7)			
Cover Type and Hydrologic Condition	impervious area (5)	А	в	с	D
Fully developed urban areas	(vegetation estat	olished) (1)			
Impervious areas: Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		0.94	0.94	0.94	0.94
Open space (lawns, parks, golf courses, cemeteries, etc)					
Poor condition (grass cover, 50%)		0.29	0.48	0.63	0.70
Fair condition (grass cover 50% to 75%)		0.07	0.30	0.48	0.58
Good condition (grass cover >75%)		NA	0.19	0.39	0.50
Commercial and business (TND – TC) (6)	85	0.70	0.77	0.83	0.85
Industrial	72	0.52	0.67	0.75	0.80
Residential Districts by Average Lot Size (6):	0.0	0.00	0.75	0.00	0.00
Multi-family (TND – NC) $1/12$ to $1/6$ core lots (TND – NC)	80	0.63	0.75	0.80	0.83
1/12 to 1/6 acteriots (TND – NG) 1/8 acro (TND – NE)	75	0.56	0.70	0.77	0.83
1/4 acre	38	0.44	0.00	0.72	0.65
1/2 acre	25	0.10	0.32	0.50	0.60
1 acre	20	0.08	0.29	0.48	0.58
Undeveloped or ag	ricultural lands(1,)			
Cultivated Land:					
Without conservation treatment		0.35	0.52	0.67	0.75
With conservation treatment		0.21	0.34	0.46	0.52
Pasture, grassland, or range – continuous forage for grazing. (2)	Hydrologic condition:				
	Poor	0.29	0.48	0.63	0.70
	Fair	0.07	0.30	0.48	0.58
	Good	NA	0.19	0.39	0.50
Meadow – continuous grass, protected from grazing and generally mowed for hay.		NA	0.16	0.34	0.46
Brush – brush-weed-grass mixture with brush the	Poor	0.06	0.27	0.44	0.56
major element. (3)	Fair	NA	0.13	0.32	0.44
	Good	NA	0.06	0.25	0.37
Woods. (4)	Poor	0.04	0.26	0.44	0.56
	Fair	NA	0.18	0.37	0.48
	Good	NA	0.12	0.32	0.44
Farmsteads – buildings, lanes, driveways, and surrounding lots.		0.17	0.39	0.54	0.63
Notes:					
NA – Method to derive value is not applicable for curve	number values le	ess than 40	-		

(2) Poor: <50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed. Good: >75% ground cover and lightly or only occasionally grazed.

- (3) Poor: <50% ground cover. Fair: 50 to 75% ground cover.
- Good: >75% ground cover.
 (4) Poor: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning. Fair: Woods are grazed but not burned, and some forest litter covers the soil. Good: Woods are protected from grazing, and litter and brush adequately cover the soil.
- The average percent impervious area shown was used to develop the composite CN's which were then used to derive runoff coefficient values. Other assumptions are as follows: impervious areas are (5) directly connected to the drainage system, impervious areas have a runoff coefficient of 0.94 (or CN of
- 98), and pervious areas are considered equivalent to open space in good hydrologic condition. (6) Acronyms for zoning of residential districts are as follows:
 - - TND TC: Traditional Neighborhood Development Town Center TND NC: Traditional Neighborhood Development Neighborhood Center
 - TND NG: Traditional Neighborhood Development Neighborhood General
 - TND NE: Traditional Neighborhood Development Neighborhood Edge
- (7) These runoff coefficients were calculated from CN's drawn from the NRCS (SCS) Peak Discharge Method from TR-55 assuming a 10-year, 24-hour storm. For larger design storms, the runoff
 - coefficients should be increased using the following C value correction factors:
 - 1.0 for the 10-year design storm and less

 - 1.1 for the 25-year design storm 1.2 for the 50-year design storm 1.3 for the 100-year design storm



June 8, 2019

Ms. Emily Truebner Madison Fields Solar Project, LLC Southlake Technology Park 16105 West 113th St, Suite 108 Lenexa, Kansas 66219-2305

Re: Critical Issues Analysis for the Madison Fields Solar Project, Madison County, Ohio

Dear Ms. Truebner:

Ecology and Environment, Inc. (E & E) is pleased to provide this letter report to Madison Fields Solar Project, LLC (Madison Fields) summarizing the results of our critical issues analysis (CIA) for the proposed Madison Fields Solar Project, located in Madison County, Ohio (Project).

INTRODUCTION AND GENERAL SITE DESCRIPTION

As requested by Madison Fields, E & E conducted a CIA for the Project in central Ohio. Madison Fields proposes to develop a commercial solar energy project on private land encompassing approximately 1,625 acres in a rural, agricultural portion of Madison County (see Figure 1).

E & E conducted the desktop CIA review by assessing geographic information system (GIS) datasets and information obtained from publicly available websites. E & E also obtained site-specific information via anonymous telephone communications with local planning departments. E & E's review consisted of a desktop study to determine if there were any obvious development constraints that could potentially impact development and/or operation of the Project.

Land cover for the Project area consists predominately of cultivated crops, which represents approximately 98.9% (1,606.7 acres) of the Project area and is depicted in Figure 2. The remaining land cover types within the Project area include developed areas (open space and low intensity; 16.9 acres; 1.0%), and deciduous forest (1.6 acres; less than 0.1%).

KEY FINDINGS

A color-coded screening matrix summarizing our findings of the desktop study is provided in Table 1. A more detailed discussion of the findings is found within each resource section in the Environmental Review.

Table 1	Initial Screening Matrix for the Madison Fields Solar Project,
	Madison County, Ohio

Resource	Finding
Threatened and Endangered Species and Critical Habitats	The geographic ranges of eight federally listed threatened or endangered (T/E) species and 21 state-listed T/E species (eight of which are also federally listed) overlap with the Project area. Seven federally or state-listed T/E species have the potential to occur in the Project area based on the potential availability of suitable habitat.
Parks and Natural Areas	No parks or natural areas area found within the Project boundary. There are four parks and natural areas within 5 miles of the Project boundary.
Cultural Resources	There are no National Park Service's National Register of Historic Places (NRHP)-listed resources located within the Project area. However, 20 NRHP-listed resources are located within 5 miles of the Project boundary.
Floodplains	The entirety of the Project area is located outside the 100- year and 500-year floodplain.
Wetlands and Streams	There are 0.4 acres of U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) emergent and forested wetlands within the Project area. The U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) shows there are approximately 1.6 miles of rivers/streams within the Project area.
Steep Slopes and Highly Erodible Soils (Slopes > 10%)	No soils within the Project boundary are considered highly erodible or have slopes greater than 10%. Nearly all the Project area soil types are considered prime farmland or prime farmland, if drained (1,614 acres, 99.3%).
Geologic or Seismic Hazards	There has been one recorded earthquakes in the last 30 years within 50 miles of the Project area. The earthquake (2.8 on the Richter scale) occurred approximately 49.7 miles northwest of the Project boundary on September 30, 2008 in McLean Township, Ohio. The Project is located in a low to moderate hazard area with a low probability of a ground-shaking event over a period of 50 years.
Other Notable Encumbrances (Utilities and Buildings)	There are multiple commercial farming buildings, two homes, and one overhead transmission line within the Project boundary. The Project area is partially bordered by roadways on the eastern boundary (State Road 11/ Rosedale-Milford Center Road) and on the western boundary (State Road 26/Irwin Road). An overhead transmission line spans southwest to northeast across the center of the Project area.

Table 1	Initial Screening Matrix for the Madison Fields Solar Project,
	Madison County, Ohio

Resource	Finding
Known Toxic and Hazardous Waste	There are no U.S. Environmental Protection Agency (EPA) Superfund sites with the Project area or Madison County. No Ohio Environmental Protection Agency (OEPA) brownfields are located within the Project boundary or within a mile of the Project boundary.
Airports	There are five airports within 10 miles of the center of the Project, the closest of which is located 4.4 nautical miles south of the Project boundary.
Zoning and Permitting Information	The Ohio Power Siting Board (OPSB) requires a Certificate of Environmental Compatibility and Need for solar facilities 50 megawatts or larger. A Madison County Building Permit (issued by the City of London) may also be required prior to Project construction.
Key:	
No Constraint	
Potential Constraint	

ENVIRONMENTAL REVIEW

Significant Constraint

Threatened or Endangered Species and Critical Habitats

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Construction (IPaC) screening tool was used to evaluate the potential for federal threatened and endangered (T/E) species within the Project area (USFWS 2018). Six federally listed endangered species and two federally listed threatened species were identified during the IPaC review as being potentially present in the Project area (see Table 2). There is no designated critical habitat for federally listed T/E species that occurs within the Project area.

The Ohio Department of Natural Resources (ODNR) reports 10 state-listed endangered species (six of which are also federally listed endangered) and 11 state-listed threatened species (two of which are also federally listed threatened) within Madison County (see Table 2; ODNR 2016a, ODNR 2016b). The ODNR does not have a publicly available state-maintained screening tool for specific project sites; therefore, the list of potential state-listed T/E species within the Project area was generated based on the list for Madison County. Based on species habitat requirements and the habitat in the Project area, Table 2 includes a determination on the likelihood that each of the identified species will be present in the Project area. State-listed T/E species that are also federally listed but were not identified during the IPaC review, were omitted from Table 2.

The presence of the Indiana bat (*Myotis sodalis*; federally listed endangered [FE] and state-listed endangered [SE]) and the northern long-eared bat (*Myotis septentrionalis*; FT and state-listed threatened [FT]) in the Project area is possible based on the species' geographic range and habitat preferences. Indiana and northern long-eared bats utilize caves and/or mines as hibernacula during the winter and roost in trees with suitable features (i.e. exfoliating bark, cracks, crevices, and/or

Ms. Emily Truebner June 8, 2019 Page 4

hollows) during the summer. Summer foraging habitat includes riparian edges of wooded areas and upland forested areas. Potentially suitable summer roosting and foraging habitat for Indiana and northern long-eared bats within the Project area appears to be very limited (2 acres of deciduous forest; less than 0.1% of the total land cover). However, based on land cover data and review of aerial photos the forested areas in the southern and eastern portion of the Project area depicted in Figures 1 and 2 could provide suitable habitat.

The Northern Harrier (*Circus hudsonius*; SE) is found in herbaceous wetlands, grasslands, and agricultural fields. The entirety of the Project area could provide suitable habitat for foraging, with the uncultivated edges of agricultural fields providing habitat for nesting.

The riffle snaketail (*Ophiogomphus carolus*; ST) is found in streams with a fast flow and few pools, with sandy or fine gravel substrates. Similarly, the northern riffleshell (*Epioblasma torulosa rangiana*; FE, SE) is found in streams with packed sandy or gravel substrates. Based on review of aerial photography and the NHD, the streams on the eastern and western edges of the Project area could provide suitable habitat for these species.

The inland rush (*Juncus interior*; ST) is found in moist to dry open areas with sandy soils, meadows, prairies, fallow fields, roadsides, clearings, and upland woods. Utilizing similar habitat, the royal catchfly (*Silene regia*; ST) is found in prairies, roadsides, cemeteries, right of ways, and open woods. Based on review of aerial photography and land cover data, the edges of the Project area along roads could potentially provide suitable habitat for both plants.

The remaining 14 federally and state-listed T/E species are not expected to occur within the Project area due to the lack of suitable habitat.

Implications: Land cover within the Project area largely consists of cultivated crops (98.9%; 1,607 acres), which is incompatible with most of the habitat requirements for the identified T/E species. The remaining land cover present within the Project area that could potentially provide suitable habitat for these species is very limited.

Coordination with the USFWS and ODNR is recommended to determine with greater certainty whether appropriate habitat exists within the Project area for any of the federally and state-listed T/E species identified as potentially occurring within the Project area or Madison County. Depending on the feedback and recommendations received during agency consultation, site-specific biological surveys may be necessary to determine presence or probable absence of the species and the potential impacts to the species from Project development.

Table 2 List of Potential Threatened and Endangered Species Within or Near the Madison Fields Solar Project, Madison County, Ohio

Common Name	Scientific Name	Status	Habitat	Desktop Presence Determination
Birds				-
Northern Harrier	Circus hudsonius	SE	Herbaceous wetlands, grasslands, cropland.	Potential suitable habitat present.
Fish			_	-
Scioto Madtom	Noturus trautmani	FE, SE	High quality, clear streams with moderate current and sandy gravel substrate. Not seen in the wild since 1957.	Potential suitable habitat not present.
Spotted Darter	Etheostoma maculatum	SE	Creeks and rivers with moderate to high gradients with large rocks and boulders near riffles and pools.	Potential suitable habitat not present.
Insects				
Riffle Snaketail	Ophiogomphus carolus	ST	Streams with fast flow and few pools, with fine gravel or sand substrate.	Potential suitable habitat present.
Mammals				
Indiana Bat	Myotis sodalis	FE, SE	Forests, riparian corridors, wetlands for summer roosting and foraging.	Potential suitable habitat present.
Northern Long-eared Bat	Myotis septentrionalis	FT, ST	Forests, riparian corridors, wetlands for summer roosting and foraging.	Potential suitable habitat present.
Mussels				
Clubshell	Pleurobema clava	FE, SE	Medium to small rivers with clean, loose sand and gravel substrate.	Potential suitable habitat not present.
Elephant-ear	Elliptio crassidens crassidens	SE	Creeks, medium to large rivers with low to moderate gradients with sandy, muddy, or rocky substrates.	Potential suitable habitat not present.
Northern Riffleshell	Epioblasma torulosa rangiana	FE, SE	Variety of stream sizes with packed sand or gravel bottoms.	Potential suitable habitat present.
Rabbitsfoot	Quadrula cylindrica cylindrica	FT, ST	Creeks, medium to large rivers with moderate gradients and sand, gravel, or cobble substrate.	Potential suitable habitat not present.
Rayed Bean	Villosa fabalis	FE, SE	Sand, gravel, or cobble substrates in swift small and medium-sized rivers.	Potential suitable habitat not present.
Snuffbox	Epioblasma triquetra	FE, SE	Creeks, medium to large rivers, lakeshores with sand, gravel, or cobble substrate.	Potential suitable habitat not present.

Table 2 List of Potential Threatened and Endangered Species Within or Near the Madison Fields Solar Project, Madison County, Ohio

Common Name	Scientific Name	Status	Habitat	Desktop Presence Determination
Plants				
Bicknell's Sedge	Carex bicknellii	ST	Sandy, dry to moist soils, prairies, dunes.	Potential suitable habitat not present.
Bunchflower	Melanthium virginicum	ST	Wet woods, meadows, swales, savannas, fens.	Potential suitable habitat not present.
Glomerate Dodder	Cuscuta glomerata	SE	Prairies and fens.	Potential suitable habitat not present.
Inland Rush	Juncus interior	ST	Moist to dry, open to semi-open areas with sandy soil; roadsides, prairies, meadows, fallow fields, clearings, and upland woods.	Potential suitable habitat present.
Lake Cress	Rorippa aquatica	ST	Pond shores, slow-moving streams, full sun.	Potential suitable habitat not present.
Leafy Blue Flag	Iris brevicaulis	ST	Swamps, floodplains, swampy stream terraces, edges of rich woods, shores.	Potential suitable habitat not present.
Leiberg's Panic Grass	Dichanthelium leibergii	ST	Sandy loam soils, wet to dry prairies, open woods, meadows, railroad embankments.	Potential suitable habitat not present.
Prairie Dropseed	Sporobolus heterolepis	ST	Calcareous soils in full sun, railroad prairie remnants.	Potential suitable habitat not present.
Royal Catchfly	Silene regia	ST	Prairies, open woods, cemeteries, roadsides, right of ways.	Potential suitable habitat present.

Key:

FE – Federal Endangered

FT – Federal Threatened

SE – State Endangered

ST – State Threatened

Sources: NatureServe 2019; ODNR 2016a; ODNR 2016b; ODNR n.d., USFWS 2018, MDFW 2015.

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Parks and Natural Areas

No parks or natural areas area found within the Project area. However, there are four parks and natural areas within a 5-mile radius of the Project boundary, including: Goshen Memorial Park, Indian Springs Golf Club, Bigelow Cemetery State Nature Preserve, and Milford Center Prairie State Natural Area (see Figure 3).

Implications: No significant Project development implications are expected that would be associated with parks or natural areas.

Cultural Resources

There are no National Park Service's National Register of Historic Places (NRHP)-listed resources located within the Project boundary (NPS 2019). However, there are 20 historic buildings and one historic district within a 5-mile radius of the Project area, primarily located in the village of Mechanicsburg approximately four miles west of the Project (see Table 3, see Figure 3). The NRHP database excludes all features deemed 'restricted' or 'sensitive' by the National Park Service, including archaeological sites. So, it is unknown from publicly available data whether those features exist within the Project area.

Resource Name	Distance from Project Boundary (miles)
NRHP Building	
Elmwood Place	0.70
United Methodist Church	1.75
Church Of Our Savior	2.79
Barr House	3.23
Norvall Hunter Farm	3.31
Hamer's General Store	3.35
Second Baptist Church	3.35
William Culbertson House	3.36
Magruder Building	3.39
Masonic Temple	3.43
Dr. Ninchelser House	3.43
Village Hobby Shop	3.44
Dr. Clark House	3.46
Lowler's Tavern	3.46
Demand-Gest House	3.47
Kimball House	3.50
Henry Burnham House	3.52
St. Michael Catholic Church	3.53
Mechanicsburg Baptist Church	3.53
Maj. John C. Baker House	3.55
NRHP District	
Mechanicsburg Commercial Historic District	3.42

Table 3 List of NRHP Resources Within or Near the Project Area

Source: NPS 2019.
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Implications: No significant project development implications are expected that would be associated with designated historic sites.

Floodplains

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer was reviewed to determine the likelihood of flooding within the Project area. Based on these data, the entirety of the Project area is located outside designated 100-year and 500-year floodplain (see Figure 4; FEMA 2010).

Implications: No significant project development implications are expected that would be associated with designated floodplains.

Wetlands and Streams

There are approximately 0.4 acres of mapped USFWS NWI emergent and forested wetlands within the Project area (USFWS 2019). Additionally, there are approximately 1.6 miles (8,607 linear feet) of U.S. Geological Survey (USGS) NHD rivers/streams that flow across the southwest boundary and through the northeast portions of the Project area (see Figure 5; USGS 2019a).

Implications: Wetlands and waterbodies within the Project boundary that were identified during the desktop assessment will require an Ohio Environmental Protection Agency (OEPA) Clean Water Act (CWA) Section 401 Water Quality Certification, and/or USACE CWA Section 404 permit if Project infrastructure is anticipated to impact any of these features and field wetland delineation surveys confirm their presence. Any work impacting isolated wetlands would also require an OEPA Isolated Wetland Permit. Assuming the Project can be sited to avoid wetland and stream impacts so that the Project qualifies for a Nationwide CWA Section 404 Permit, then the Project is not likely to be significantly affected. If the wetland impacts are expected to exceed 0.5 acres or 300 linear feet (streams), not exceeding more than 0.5 acres cumulatively, then an Individual CWA Section 404 Permit could be necessary and could delay Project development.

Steep Slopes and Highly Erodible Soils (Slopes >10%)

The Project area is composed of seven different soil types, summarized in Table 4 and depicted in Figure 6 (USDA-NRCS 2019). The most prevalent soil type in the Project area is Kokomo silty clay loam, 0 to 2 percent slopes (46.0% of the Project area, 747 acres). None of the soil types in the Project area have slopes greater than 10%. All of the soil types in the Project area are either considered prime farmland (11 acres; 0.7%), or prime farmland ,if drained (1,614 acres, 99.3%).

Table 4 Soli Types within the Project A	lea	
Soil Name	Acres within the Project Boundary	Prime Farmland or Farmland of Statewide Importance
Kokomo silty clay loam, 0 to 2 percent slopes	747	X (if drained)
Crosby-Lewisburg silt loams, 0 to 2 percent slopes	693	X (if drained)
Patton silty clay loam, 0 to 2 percent slopes	79	X (if drained)
Crosby-Lewisburg silt loams, 2 to 6 percent slopes	72	X (if drained)
Odell-Lewisburg complex, 0 to 2 percent slopes	14	X (if drained)
Lewisburg-Celina silt loams, 2 to 6 percent slopes	11	Х
Lippincott silty clay loam	11	X (if drained)

Table 4Soil Types Within the Project Area

Implications: No significant project development implications are expected that would be associated with steep slopes or highly erodible soils. Given the extent of the Project area that has soils designated as prime farmland or farmland of statewide importance, further evaluation during Project design should be considered. Coordination with the Madison County Building and Zoning Department and the City of London is recommended to discuss any prime farmland permitting implications.

Geological or Seismic Hazards

The USGS Earthquake Catalog was queried to examine recorded earthquakes and seismic hazards in the Project area. There has been one recorded earthquake in the past 30 years within approximately 50 miles of the Project area (USGS 2019b). The earthquake (2.8 on the Richter scale) occurred approximately 50 miles northwest of the Project boundary on September 30, 2008 in McLean Township, Ohio. According to the USGS National Seismic Hazard Map, the Project is located in a low hazard area with a low probability of a ground shaking event over a period of 50 years (USGS 2014).

Implications: No significant project development implications are expected that would be associated with earthquakes or seismic activity.

Other Notable Encumbrances (Utilities and Buildings)

There are multiple commercial farming buildings, two homes, and one overhead transmission line within the Project area. The Project area is partially bordered by roadways on the eastern boundary (State Road 11/ Rosedale-Milford Center Road) and on the western boundary (State Road 26/Irwin Road). An overhead transmission line spans southwest to northeast across the center of the Project area. Siting of Project infrastructure should be planned such that appropriate setbacks from homes, transmission lines, and roadways are achieved.

Implications: No significant project development implications from nearby homes or buildings are expected, provided the residents with homes located within the Project area are included in the Project design process and appropriate setbacks are incorporated.

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Known Toxic or Hazardous Waste

The U.S. Environmental Protection Agency (EPA) National Priority List Superfund Sites database was searched to determine the presence of known toxic or hazardous wastes within the Project area. There are no EPA Superfund sites within the Project area or Madison County (EPA 2019). E & E also conducted a search through the OEPA's Brownfield Inventory Database. No OEPA brownfields are located within the Project area or within a mile of the Project boundary (OEPA n.d.).

Implications: No significant project development implications are expected that would be associated with toxic or hazardous waste contamination. However, a full analysis of current and historical contamination, including a Phase I Environmental Site Assessment, may be required for full disclosure of all potential contamination issues.

Airports

There are no airports within the Project area, and five airports within 10 miles of the center of the Project area (AirNav 2019). These airports include: Darby Airport located approximately 4.4 nautical miles northeast of the Project area; FI-Airport located approximately 7.3 nautical miles northeast of the Project area; Madison County Airport located approximately 8.1 nautical miles south of the Project area; Weller Airport located approximately 8.9 nautical miles west of the Project area; and Union County Airport located approximately 9.3 nautical miles northeast of the Project area.

Implications: No significant implications are expected from the construction or operation of the Project regarding impacts to airports. Photovoltaic panels are designed to absorb light rather than reflect it so light and glare from the panels are unlikely to affect pilots or navigational aids.

Zoning and Permitting Information

The OPSB requires that construction of any energy producing facility 50 megawatts or greater must obtain a Certificate of Environmental Compatibility and Need pursuant to the Ohio Revised Code (ORC) Chapter 4906-4. The certificate application requires a detailed project description, project schedule, alternative site locations, technical data, financial data, environmental data, and social/ecological data. The process also involves public informational meetings and public hearings. If the project requires a transmission line over 125 kilovolts, the transmission line will also need to be permitted by the OPSB permitting pursuant to ORC Chapter 4906-5. The facility and transmission line applications can run concurrently and meetings and hearings can be held jointly to satisfy the requirements. The OPSB certificate process typically takes approximately 9 to 12 months, not including the time required to conduct field surveys and prepare the application.

E & E contacted the Madison County Building and Zoning Department Administrator, Mr. David Hughes, on February 8, 2019, to inquire about local zoning and permitting requirements for solar energy development. Mr. Hughes informed E & E that there are no solar-specific zoning provisions within Madison County that would apply to the Project. However, a county building permit, issued by the City of London, would be required if commercial structures other than ground-based PV solar panels are necessary.

E & E contacted Pike Township Trustee, Mr. Michael Boerger, on February 7, 2019, to inquire about

Ms. Emily Truebner June 8, 2019 Page 11

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local zoning and permitting requirements for solar energy development. Mr. Boerger informed E & E that there are no solar-specific zoning provisions within Pike Township that would apply to the Project. Instead, project applicants should coordinate with Madison County.

The permit matrix in Attachment B contains a list of all environmental permits, approvals, and consultations that are likely required for the Project at the federal, state, and local levels.

Implications: A Certificate of Environmental Compatibility and Need from the OPSB will be needed prior to construction of the Project. A Madison County Building Permit (issued by the City of London) may also be required prior to Project construction.

If you have any questions about the contents of the CIA, please contact me at (312) 578-9243 or kbaker@ene.com.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Katio: Baker

Katie Baker Project Manager

Attachment: A – Figures B – Environmental Permit Matrix

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Ms. Emily Truebner

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Attachment A

Figures



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Sourrent Path: MCDRogonTrade, Mild, Energy-Social, 2018. 2018/06164pp/MCDRoportCoAQ - NLC21164 1772018



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Sourient Path: WitchagoTrade, Weit: Energy/Sourt, 2018; 2018/2018/00/Report/CARL: FEMA.incl: 54/2019



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Attachment B

Environmental Permit Matrix

Preliminary List of Environmental Permits and Approvals for Construction and Operation of the Madison Fields Solar Project, Madison County, Ohio

Permit or Approval	Responsible Agency	Regulated Activity	Requirements	Anticipated Agency Review Time
Federal		i de la companya de l		
Clean Water Act (CWA) Section 404 Individual Construction Permit and/or Nationwide Permit (NWP) 12 (Utility Line Activities) and 51 (Land- based Renewable Energy Generation Facilities), Section 10 of the Rivers and Harbor Act	U.S. Army Corps of Engineers (USACE), Huntington District	Projects involving impacts to navigable waterways, including wetlands connected by surface water. If impacts are less than 0.5 acres, NWP may be applicable.	Conduct wetland delineation per USACE 1987 manual and prepare Wetland Delineation Report. Request USACE to make jurisdictional determination on wetland to be impacted. Submit Application for Department of the Army Permit, plan drawings, site area map, and cross-sectional view if Individual Permit is required. If NWP permit is acceptable, then submit Pre-Construction Notification to the Huntington District as required by General Conditions of NWP.	 2 to 4 months for Individual Permit 1 month for NWP
Section 7 or 10 Federal Endangered Species Act Consultation	U.S. Fish and Wildlife Service (USFWS), Ohio Ecological Services Field Office	Section 7: Projects with a federal nexus (e.g. Section 10/404 permit); Section 10: Projects with the potential to adversely affect federally listed threatened and endangered (T/E) species or their habitat.	Project may be cleared with informal USFWS consultation. However, if not, developer must conduct biological surveys and prepare a Biological Assessment for Section 7 compliance. A Habitat Conservation Plan and Incidental Take Permit (ITP) must be prepared for Section 10 compliance and a National Environmental Policy Act (NEPA) document prepared to evaluate the implications of issuance of an ITP.	• 18 to 36 months, including NEPA component.
Bald and Golden Eagle Protection Act, Non- Purposeful Take of Eagles Permit	USFWS, Ohio Ecological Services Field Office	Construction of a solar energy project with predicted take of eagles.	Obtain purposeful eagle take permit if impacts to eagles are anticipated.	• Varies
Migratory Bird Treaty Act	USFWS, Ohio Ecological Services Field Office	Prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests.	No permit or approval is available. Consultation with the USFWS to document avoidance and minimization of impacts recommended.	• Varies

Preliminary List of Environmental Permits and Approvals for Construction and Operation of the Madison Fields Solar Project, Madison County, Ohio

	Deenensible Arenew	Derivleted Activity	Demiremente	Anticipated Agency
Permit or Approval	Responsible Agency	Regulated Activity	Requirements	Review Time
Section 106 of the	Ohio History Connection	Project construction requires review	Requires submission of project summary	• 6 months
National Historic	(Ohio State Historic	of historical and archaeological	form and potential submission of Phase I	
Preservation Act (NHPA)	Preservation Office [SHPO])	resources, if a federal permit or	Archaeology Survey Report and Historic	
		approval is needed.	Structures Report and agency review (5-6	
			months). Additional consultation with the	
			public and/or Indian Tribes also may be	
			needed.	
Ohio				
Certificate of Envi-	Ohio Power Siting Board	Construction of any energy	Obtain a Certificate of Environmental	• 9 to 12 months
ronmental Compatibility	(OPSB)	producing facility 50 megawatts or	Compatibility pursuant to the Ohio Revised	
		larger.	Code Chapter 4906-4. Application for cer-	
			tificate requires a detailed description of the	
			project, project schedule, alternative site	
			locations, technical data, financial data,	
			environmental data, and social/	
			ecological data. The process also involves	
			public informational meetings and public	
			hearings.	
National Pollutant	Ohio Environmental	Construction activities that disturb	Submit application for NPDES permit.	• 1 month
Discharge Elimination	Protection Agency (OEPA),	more than one acre of land.		
System Construction	Division of Surface Water			
Storm Water General				
Permit				
CWA Section 401 Water	OEPA, Division of Surface	Triggered by application to USACE	Submit application for wetland permitting,	• 1 to 4 months
Quality Certification;	Water	for a CWA Section 404 permit.	including drawings of facility, description of	
Ohio Isolated Wetland		Ohio law requires that construction	project, delineation of wetlands, information	
Permitting		affecting isolated wetlands obtain an	on existing environment, mitigation	
		isolated wetland permit.	proposal, and applicable fees.	

Preliminary List of Environmental Permits and Approvals for Construction and Operation of the Madison Fields Solar Project, Madison County, Ohio

Permit or Approval	Responsible Agency	Regulated Activity	Requirements	Anticipated Agency Review Time
Consultation with Ohio Department of Natural Resources (ODNR)	ODNR-Division of Wildlife; Division of Natural Areas and Preserves; and Division of Parks and Recreation	Projects with potential adverse effects on: navigation, State Scenic Rivers, State Nature Preserves, Wildlife Areas, State Parks, and wildlife & their habitat.	Prepare informational documents including: Project description, Project location with maps and photos, description of proposed structures, summary of construction activities, environmental/biological assessment.	• 1 month for environ- mental review
Local				
Building Permit	City of London, Building Department	New commercial building construction in Madison County, not including ground-based PV solar panels.	Submit a Building Permit application, including two sets of plot plans and construction plans, and applicable fees.	• Varies

Note: This table may not be inclusive of all applicable environmental permits necessary for construction and operation of the Project.



DEPARTMENT OF THE ARMY HUNTINGTON DISTRICT, CORPS OF ENGINEERS 502 EIGHTH STREET HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO ATTENTION OF

September 1, 2020

Regulatory Division North Branch LRH-2020-300-SCR

APPROVED JURISDICTIONAL DETERMINATION

Ms. Emily Truebner Madison Fields Solar, LLC 422 Admiral Boulevard Kansas City, Missouri 64106

Dear Ms. Truebner:

I refer to the report titled *Approved Jurisdictional Determination Madison Fields Solar Project, Madison County, Ohio,* dated March 31, 2020 and submitted on your behalf by Ecology and Environment, Inc. You have requested an approved jurisdictional determination (AJD) for the aquatic resources located on the approximate 1,779-acre site. The property is located between State Route 26 and Rosedale Milford Center Road, near Rosedale, Madison County, Ohio (40.0887 latitude, -83.4949 longitude). Your AJD request has been assigned the following file number: LRH-2020-300-SCR. Please reference this number on all future correspondence related to this AJD request.

The United States Army Corps of Engineers' (Corps) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328, including the amendments to 33 FFR 328.3 (85 Federal Register 22250), and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a Department of the Army (DA) permit be obtained prior to discharging dredged and/or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

The Navigable Waters Protection Rule, which became effective on June 22, 2020, was followed in this verification of Section 404 jurisdiction for the features located within the AJD boundary. Based upon a review of the submitted report and additional information available to us, this office has determined that:

• Wetland 1 (1.10 ac) and Wetland 2 (0.060 ac) do not meet the definition of an adjacent wetland and are not considered waters of the United States per 33 CFR 323.8(b)(1).

Wetlands 1-2 are not considered jurisdictional waters of the United States and are not subject to regulation under Section 404. These non-jurisdictional features are depicted on the enclosed map titled "Madison Fields Solar Project" and also listed in the enclosed AJD Table. However,



you should contact the Ohio Environmental Protection Agency, Division of Surface Water, at (614) 664-2001 to determine state permit requirements.

This jurisdictional verification is valid for a period of five (5) years from the date of this letter unless new information warrants revision of the delineation prior to the expiration date. This letter contains an AJD for the subject site within the AJD boundary. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Great Lakes and Ohio River Division Office at the following address:

Appeal Review Officer United States Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Room 10-714 Cincinnati, Ohio 45202-3222 Phone: (513) 684-2699 Fax: (513) 684-2460

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by. It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

This determination has been conducted to identify the limits of the Corps' Section 404 jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are United States Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

A copy of this letter will be provided to the Ohio Environmental Protection Agency at Lazarus Government Building, Post Office Box 1049 Columbus, Ohio 43216-3669 and your agent, Mr. Scott Cooper with Ecology and Environmental Inc. If you have any questions concerning the above, please contact Cecil Cox of the North Branch at 304-399-5274, by mail at the above address, or by email at cecil.m.cox@usace.army.mil.

Sincerely,

Laurie Moore

Laurie A. Moore Regulatory Project Manager North Branch Encls cc: Scott Cooper (via email)



33 West Monroe St., Suite 1410 Chicago, IL 60603 Tel: (312) 578-9243 Fax: (312) 578-9345

May 15, 2020

Ms. Lauren Devine Madison Fields Solar Project, LLC 422 Admiral Boulevard Kansas City, Missouri 64106

Re: Wetland and Waterbody Delineation Report for the Madison Fields Solar Project, Madison County, Ohio

Dear Ms. Devine:

Ecology and Environment, Inc., member of WSP (hereafter referred to as E & E) is pleased to provide this letter report to Madison Fields Solar Project, LLC (Madison Fields Solar) summarizing the results of our wetland and waterbody delineation at the Madison Fields Solar Project, located in Madison County, Ohio (Project).

PROJECT INTRODUCTION AND SURVEY OBJECTIVES

Madison Fields Solar proposes to develop a solar energy project on private agricultural land encompassing approximately 1,932 acres in Madison County, Ohio. As requested by Madison Fields Solar, E & E conducted field surveys to delineate wetlands and waterbodies in the Project area on August 20 and 21, 2019 and April 22 and 23, 2020. Two visits were necessary as a result of modifications to the Project area. The purpose of this survey was to delineate and characterize surface water and wetland resources in the Project area in order to inform Project design and limit the potential impacts on wetlands and/or surface waters.

The vast majority of the Project area is currently agricultural land and was planted with corn and soybeans at the time the survey was conducted. The Project area is located within the Upper Scioto River watershed (U.S. Geological Survey [USGS] 2018).

POTENTIALLY APPLICABLE PERMITS

The Clean Water Act (CWA) was implemented to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA and Section 10 of the Rivers and Harbors Act of 1899 requires that a permit be obtained for the discharge of dredged or fill material into waters of the United States (WOTUS), including wetlands and surface waters. WOTUS are defined under 33 Code of Federal Regulations (C.F.R.), and wetlands are specifically defined under 33 C.F.R. Part 328.3(b). The U.S. Army Corps of Engineers (USACE) is the permitting agency responsible for Section 404 permits and the Section 10 program. This Project is located within the jurisdiction of the USACE Huntington District. Section 401 of the CWA requires state approval for any federally permitted action impacting WOTUS to ensure that the permitted action will not violate the state's water quality standards or impair designated uses. The Ohio Environmental Protection Agency (OEPA) is the entity responsible for administering the Section 401 program in Ohio.

Additionally, OEPA takes jurisdiction of all waters of the state, often referred to as isolated wetlands. In Ohio, there are two isolated wetland permits: a general isolated wetland permit or an individual isolated wetland permit. The general isolated wetland permit is required for isolated wetland impacts that are 0.5 acres or less and impact wetlands classified as Category 1 or Category 2 wetlands. An individual isolated wetland permit is required for any isolated wetlands that are classified as Category 1 or Category 2 and have impacts greater than 0.5 acres. Impacts on all Category 3 wetlands also require an individual isolated wetland permit. OEPA also puts additional restrictions on the issuing of permits under the Section 404 Nationwide Permits Program based on the category of wetland that is impacted. Specifically, temporary or permanent impacts on Category 3 wetlands are prohibited, with the exception of Nationwide Permit 27, which permits Stream and Wetland Restoration Activities (USACE 2017). For this Project, the Central District Office of the OEPA would issue the permits.

SURVEY METHODOLOGY

A desktop review of the Project area for wetlands and waterbodies was completed prior to commencing the field survey. This review helped streamline field survey efforts by utilizing publicly available mapping and databases showing potential hydrologic resources within the Project area, informing E & E wetland scientists of potential site conditions in advance of the survey. The desktop review included current high-resolution aerial photographs of the Project area, topographic maps, Ohio Department of Natural Resources' Ohio Wetland Inventory data, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) data, and USGS National Hydrography Dataset (NHD) data (ODNR 1991; USFWS 1985; USGS 2018). Figure 1 in Attachment A shows NHD surface water and NWI wetland features.

The wetland and waterbody delineation field survey was conducted within the Project area, during the growing season, on August 20 and 21, 2019 and April 22 and 23, 2020. In order to identify potential wetlands and waterbodies that could be WOTUS, E & E wetland biologists followed methodologies established by the USACE, including the following manuals and guidance documents:

- USACE Wetland Delineation Manual (Environmental Laboratory 1987);
- *Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region* (Version 2.0; USACE 2010);
- USACE 2016 National Wetland Plant List (USACE 2016);
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Center (NRCS) *Field Indicators of Hydric Soils in the United States, Version 7.0* (USDA NRCS 2010); and
- USACE Regulatory Guidance Letter No. 05-05 (Ordinary High Water Mark [OHWM] Identification; USACE 2005).

Potential wetlands located within the Project area were assessed to determine if they met the three components of a wetland established by the USACE, including hydric soils, wetland hydrology, and hydrophytic vegetation. Features meeting the definition of a wetland were photographed and mapped using a Global Positioning System (GPS) device with sub-meter accuracy. For wetlands that extended outside of the Project boundary, the full extent of the wetland boundary could not be delineated due to the lack of property access on adjacent parcels. In those instances, GPS points were recorded at the Project boundary and the wetland polygon was noted as continuing beyond the Project boundary. All wetland field indicators were recorded on approved USACE wetland data forms provided in the USACE *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Midwest Region* (Version 2.0;

USACE 2010). Delineated wetlands were classified as palustrine emergent (PEM), palustrine forested (PFO), or palustrine scrub-scrub (PSS), as described in Cowardin et al. (1979). In addition to the USACE wetland delineation form, OEPA requires an evaluation of each impacted wetland using the Ohio Rapid Assessment Method form (ORAM; Mack 2001). The results of the ORAM assessment are used to determine the category (Category 1, 2, or 3) that the wetland falls under and the resulting OEPA permit applicability, as described above. Category 1 wetlands have the lowest ranking in terms of quality, while Category 3 wetlands exhibit the highest quality.

Soils were examined by digging a soil pit to a depth of 18 inches (when possible) and comparing soil characteristics to regionally specific hydric soil indicators detailed in the USACE Regional Supplement (USACE 2010). Soil colors were identified using a Munsell Soil Color Chart and other characteristics, such as the presence of redox features and soil texture, were recorded (Munsell Color 2009). Hydric characteristics, such as organic soil layers, depleted matrices, mottling, and oxidized rhizospheres, were noted where they occurred.

To determine the presence of hydrophytic vegetation, vegetation in each major stratum (tree, sapling/shrub, herbaceous, and woody vine) were identified and a percentage cover for each species was recorded. Each plant species was then assigned a wetland indicator status (obligate wetland [OBL], facultative wetland [FACW], facultative [FAC], facultative upland [FACU], or upland [UPL]) as defined by the USACE National Wetland Plant List (USACE 2016). A prevalence of dominant species that are OBL, FACW, or FAC indicates the presence of hydrophytic vegetation.

In general, the criteria for wetland hydrology are met if the area is inundated or saturated at the soil surface during the growing season for a time sufficient to develop hydric soils and support hydrophytic vegetation. In some instances, it is necessary to use other field characteristics to identify wetland hydrology. These characteristics may include water staining, sediment deposits, drainage patterns, or drift lines. Hydrologic characteristics, as well as the depth of surface water or depth to soil saturation, were recorded for each identified wetland.

Surface waters within the Project area were assessed by their flow characteristics to determine if they meet USACE's definition of a stream. Streams are defined by the presence of physical indicators of flow– bed and banks and OHWM. Each stream was photographed and its centerline was recorded with the GPS unit. Bank height, width, and slope; and OHWM width and depth were recorded. The flow type (ephemeral, intermittent, or perennial) was determined and each stream was classified according to the following USACE classes: traditional navigable waters (TNW), perennial relatively permanent waters (P-RPW), seasonally relatively permanent waters (S-RPW), or non-RPW.

Per OEPA requirements, the stream reaches were also evaluated using the Ohio Qualitative Habitat Evaluation Index (QHEI) and the Ohio Primary Headwater Habitat Evaluation Index (HHEI), depending on stream conditions (OEPA 2006, 2012). In accordance with the HHEI and QHEI manuals, stream reaches with watersheds larger than 1 square mile and streams with natural deep pools greater than 40 centimeters were evaluated using the QHEI. All other stream reaches were evaluated with the HHEI. Physical stream characteristics were documented and scored using established metrics from the applicable index as a means to predict aquatic life use potential and stream quality for that portion of the stream.

WETLAND AND WATERBODY DELINEATION RESULTS

Two wetlands were delineated within the Project area. All delineated features drain into Barron Creek or Little Darby Creek. Barron Creek and Little Darby Creek ultimately flow to the Scioto River, which is located approximately 41 miles southeast of the Project boundary. Figure 2 in Attachment A depicts the location of all delineated features within the Project area. Attachment B provides a photo log showing all wetlands, and general site conditions. Detailed information for each wetland is provided in Attachment C and Wetland Delineation Data Forms for each wetland are provided in Attachment D.

Wetlands

Two PEM wetlands, totaling approximately 1.70 acres, were identified and delineated within the Project area and are summarized in Table 1.

Tubic T Definicate		c i lojcot Alcu		
Wetland ID	Wetland Type	ORAM Score and Rating	Likely Agency Jurisdiction	Total Acreage
W-T01-001	PEM	Score: 24 Category 1	USACE	1.10
W-T01-002	PEM	Score: 23 Category 1	USACE	0.60
			Total	1.70

Table 1 Delineated Wetlands in the Project Area

Key:

ORAM = Ohio Rapid Assessment Method

PEM = Palustrine emergent USACE = U.S. Army Corps of Engineers

USACE = U.S. Army Corps of Engineers

Wetlands W-T01-001 and W-T01-002 are long, linear features located in man-made ditches that are fed by underground agricultural drain tiles. Both PEM wetlands within the Project area are entirely herbaceous and dominated by reed canary grass (*Phalaris arundinacea*). The boundary for both wetlands continues outside the Project area via road culverts that cross under Irwin Road (Wetland W-T01-001) and Rosedale-Milford Center Road (Wetland W-T01-002), and are hydrologically connected to Little Darby Creek. Both wetlands are assumed jurisdictional and regulated by the USACE as they are hydrologically connected to Little Darby Creek (a non-navigable tributary) before ultimately draining to the Scioto River, a TNW.

CONCLUSION AND RECOMMENDATIONS

E & E delineated a total of two wetlands features within the Project area during the field survey conducted on August 20 and 21, 2019 and April 22 and 23, 2020. Wetlands W-T01-001 and W-T01-002 are assumed to be jurisdictional WOTUS and regulated by the USACE due to their hydrologic connection to Barron Creek or Little Darby Creek, and ultimately the Scioto River.

Madison Fields Solar can utilize the information within this report, and associated documentation, to aid in Project design to avoid wetland, stream, and waterbody impacts to the maximum extent practical. If the Project cannot be designed to avoid the delineated wetlands and streams within the Project area, coordination with USACE and OEPA is recommended to determine the jurisdictional status of the features, and to determine if a permit would be needed for anticipated wetland or waterbody impacts prior to construction.

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If you have any questions regarding the contents of this report, please contact me at (312) 578-9243 or <u>scooper@ene.com</u>.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC., MEMBER OF WSP

501 23

Scott Cooper Project Manager

Attachment: A – Figures B – Site Photographs

- C Wetland Feature Summary Table
- D Wetland Delineation Data Forms

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ATTACHMENT A

FIGURES



200441 Path IV Occup/Galor Hadon High WCM opt Weber(1 - IPO WK not 1/3/022)



ATTACHMENT B

SITE PHOTOGRAPHS



Photo Number: PH-01 Date: 08/20/2019 Direction: East Feature: PEM Wetland, W-T01-001



Photo Number: PH-02 Date: 08/20/2019 Direction: West Feature: PEM Wetland, W-T01-002 ATTACHMENT C

WETLAND FEATURE SUMMARY TABLE

Wetland	Cowa Clas	Cowardin Class ¹		Acreage		ORAM Score and	Hydrologic	Commonto
ID	Field Delineated	NWI	PFO	PSS	PEM	Rating ²	Connection to TNW ³	Comments
W-T01-001	PEM	None	-	-	1.10	Score: 24 Category 1	Connected to Little Darby Creek via a road culvert. Little Darby Creek → Big Darby Creek →Scioto River	Narrow, linear wetland located within a man-made drainage ditch used to collect water from surrounding agricultural drain tiles. The wetland extends beyond the Project area via a road culvert under Irwin Road and appears to continue in a northwesterly direction where it connects to Little Darby Creek.
W-T01-002	PEM	None	-	-	0.60	Score: 23 Category 1	Barron Creek → Little Darby Creek → Big Darby Creek → Scioto River	Narrow, linear wetland located within a man-made drainage ditch used to collect water from surrounding agricultural drain tiles. The wetland, associated with Barron Creek, extends beyond the Project area via a road culvert under Rosedale-Milford Center Road and appears to continue in an east-southeasterly direction where it connects to Little Darby Creek.
Г	Total Acreage:		0.0 PFO	0.0 PSS	1.70 PEM			-

Table C-1 Delineated Wetlands within the Madison Fields Solar Project Area

Key:

¹ Cowardin et al. 1979 wetland classifications:

PEM = Palustrine Emergent Wetland

PFO = Palustrine Forested Wetland

PSS = Palustrine Scrub-Shrub Wetland

² Ohio Rapid Assessment Method (ORAM) score and rating calculated in accordance with the ORAM for Wetlands V 5.0 manual (Mack 2001): Scores of 29.9 or below are classified as Category 1.

³ TNW refers to "Traditional Navigable Waters" as defined in 22 C.F.R. Part 329

ATTACHMENT D

WETLAND DELINEATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Madison Fields Solar Project	City/County: Madison Cou	ounty: Madison County		8/20/2019
Applicant/Owner: Madison Fields Solar Project, LLC		State: OH	Sampling Point:	W-T01-001A-1
Investigator(s): E. Sheppard, R. McGinnis	Section, Township, Range:	N/A		
Landform (hillside, terrace, etc.): flat	Local relief (conca	ve, convex, none)	: concave	
Slope (%): 1 Lat: 40.08873487	Long: -83.49490692		Datum: NAD83	
Soil Map Unit Name: Lippincott silty clay loam		NWI class	sification: None	
Are climatic / hydrologic conditions on the site typical for this time of ye	⊭ar? Yes <u>X</u> No	o (If no, e	xplain in Remarks.)	
Are Vegetation, Soil, or Hydrologysignificantly distu	urbed? Are "Normal Circur	nstances" present	? Yes <u>X</u> No	٥ <u> </u>
Are Vegetation, Soil, or Hydrologynaturally problem	natic? (If needed, explain	any answers in R	emarks.)	
SUMMARY OF FINDINGS – Attach site map showing	sampling point location	ons, transects	s, important feat	ures, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No		
Remarks: Linear PEM wetland located in a man-made ditch and fed by drain tiles of surrounding cornfields.							

VEGETATION – Use scientific names of plants.

	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30 feet)	% Cover	Species?	Status	Dominance Test worksheet:
1				Number of Dominant Species That
2.				Are OBL, FACW, or FAC: 1 (A)
3.				Total Number of Dominant Species
4.				Across All Strata: 1 (B)
5.				Percent of Dominant Species That
		=Total Cover		Are OBL, FACW, or FAC: 100.0% (A/B)
Sapling/Shrub Stratum (Plot size: 15 feet)				
1.				Prevalence Index worksheet:
2.				Total % Cover of: Multiply by:
3.				OBL species 0 x 1 = 0
4.				FACW species 90 x 2 = 180
5.				FAC species $0 x 3 = 0$
		=Total Cover		FACU species $0 x 4 = 0$
Herb Stratum (Plot size: 5 feet)				UPL species $0 \times 5 = 0$
1. Phalaris arundinacea	90	Yes	FACW	Column Totals: 90 (A) 180 (B)
2.				Prevalence Index = $B/A = 2.00$
3				
4				Hydrophytic Vegetation Indicators:
5				1 - Rapid Test for Hydrophytic Vegetation
6				X 2 - Dominance Test is >50%
7				X 3 - Prevalence Index is <3.0 ¹
·				A Morphological Adaptations ¹ (Provide supporting
8				data in Remarks or on a separate sheet)
9				Drahlamatia Lludranhutia Maratatian ¹ (Evaluin)
10		Tatal Cause		
	90	= I otal Cover		'Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size: 15 feet)				be present, unless disturbed or problematic.
1				Hydrophytic
2				Vegetation
		=Total Cover		Present? Yes X No
Remarks: (Include photo numbers here or on a separ	ate sheet.)			-
SOIL

Profile Desc	cription: (Describe	to the dep	th needed to doc	ument t	he indica	ator or c	onfirm the absence o	of indicators.)	
Depth	Matrix		Redo	x Featu	res1	. 2	_		
(inches)	Color (moist)	%	Color (moist)	%	Type'	Loc ²	Texture	Remark	S
0-6	2.5YR 5/3	100					Loamy/Clayey	Coarse gra	avel
6-9	5YR 2.5/1	100					Muck	Black organic	muck
9-16	2.5YR 6/1	100					Loamy/Clayey	Densely packed s	sandy clay
		lotion PM	-Poducod Matrix	19-Mac	kod San	- Graine		· DI - Doro Lipipa M-M	otrix
Hydric Soil	Indicators:			10-11103	Keu Gan		Indicator	s for Problematic Hvd	ric Soils ³ :
Histosol	(A1)		Sandv Gle	ved Mat	rix (S4)		Coas	t Prairie Redox (A16)	
Histic Ep	pipedon (A2)		Sandy Red	dox (S5)	()		Iron-N	Vanganese Masses (F1	2)
Black His	stic (A3)		Stripped N	latrix (S	6)		Red I	Parent Material (F21)	,
X Hydroge	n Sulfide (A4)		Dark Surfa		,		Very	Shallow Dark Surface (F	-22)
Stratified	Layers (A5)		Loamy Mu	cky Min	eral (F1)		Other	r (Explain in Remarks)	-
2 cm Mu	ck (A10)		Loamy Gle	yed Ma	trix (F2)				
Depleted	Below Dark Surfac	e (A11)	Depleted N	/latrix (F	3)				
Thick Da	ark Surface (A12)		Redox Dar	k Surfa	ce (F6)		³ Indicator	s of hydrophytic vegetat	ion and
Sandy M	lucky Mineral (S1)		Depleted [Dark Sur	face (F7))	wetla	nd hydrology must be p	resent,
5 cm Mu	cky Peat or Peat (S	3)	Redox Dep	pression	s (F8)		unles	tic.	
Restrictive I	Layer (if observed)								
Type:									
Depth (ir	nches):						Hydric Soil Present	? Yes_X	<u>No</u>
HYDROLO	GY								
Wetland Hy	drology Indicators:								
Primary India	cators (minimum of	one is requi	red; check all that	apply)			Secondar	y Indicators (minimum o	of two required)
X Surface	Water (A1)		Water-Sta	ned Lea	aves (B9)		Surfa	ce Soil Cracks (B6)	
<u>X</u> High Wa	ter Table (A2)		Aquatic Fa	iuna (B1	3)		<u>X</u> Drain	age Patterns (B10)	
X Saturatio	on (A3)		True Aqua	tic Plant	is (B14)		Dry-S	Season Water Table (C2)
Water M	arks (B1)		X Hydrogen	Sulfide	Odor (C1)	Crayf	ish Burrows (C8)	
Sedimen	it Deposits (B2)			hizosph	eres on l	_iving Ro	oots (C3) X Satur	ation Visible on Aerial Ir	magery (C9)
Drift Dep	oosits (B3)		Presence	of Redu	ced Iron (Stunt	ed or Stressed Plants (L	J1)
			Recent Iro	n Reduc		lied Soli	s (C6) <u>X</u> Geon	Norphic Position (D2)	
Iron Dep	USIIS (DD) on Visible on Aerial I	mageny (B			(C7)		<u></u> FAC-	Neutral Test (D5)	
Sparsely	Vegetated Concave	e Surface (I	38) Other (Exc	olain in F	a (DO) Remarks)				
Field Obser	vations:				(ornanio)				
Surface Wat	er Present? Ye	es X	No	Depth (i	nches):	4			
Water Table	Present? Ye	es X	No	Depth (i	nches):	0			
Saturation P	resent? Ye	es X	No	Depth (i	nches):	0	Wetland Hydrolog	gy Present? Yes X	No
(includes car	oillary fringe)								
Describe Re	corded Data (stream	n gauge, mo	onitoring well, aeria	l photos	, previou	s inspec	tions), if available:		
Remarks:									

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Madison Fields Solar Project	City/County:	Madison Cou	unty		Sampling Date:	8/20/2019	
Applicant/Owner: Madison Fields Sola	ar Project, LLC			State:	ОН	Sampling Point:	U-T01-001-1
Investigator(s): E. Sheppard, R. McGinnis	S	Section, Town	ship, Range:	N/A			
Landform (hillside, terrace, etc.): flat		Loca	al relief (conca	ive, conve	x, none):	none	
Slope (%): 10 Lat: 40.08875058		Long: <u>-83.4</u>	9488408			Datum: NAD83	
Soil Map Unit Name: Lippincott silty clay I	oam			N	WI classif	ication: None	
Are climatic / hydrologic conditions on the	site typical for this time of yea	ır? Yes	<u>X</u> N	o	(If no, exp	lain in Remarks.)	
Are Vegetation, Soil, or Hyd	rology significantly distur	bed? Are "	Normal Circur	nstances"	present?	Yes <u>X</u> No)
Are Vegetation, Soil, or Hyd	rologynaturally problema	atic? (If ne	eded, explain	any answ	ers in Rer	narks.)	
SUMMARY OF FINDINGS - Atta	ch site map showing s	ampling p	oint locati	ons, tra	nsects,	important feat	ures, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes	No No No	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>		
Remarks: Upland sample point located between excavated man-made ditch and cornfield.							

VEGETATION – Use scientific names of plants.

	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30 feet)	% Cover	Species?	Status	Dominance Test worksheet:
1				Number of Dominant Species That
2.				Are OBL, FACW, or FAC: 2 (A)
3.				Total Number of Dominant Species
4.				Across All Strata: 2 (B)
5.				Borcont of Dominant Species That
		=Total Cover		Are OBL_FACW_or_FAC: 100.0% (A/B)
Sanling/Shrub Stratum (Plot size: 15 feet)				
				Drevelance in dev worksheet
·				Tetel % Cover of Multiply by
2				Total % Cover of: Multiply by:
3.				OBL species $0 \times 1 = 0$
4				FACW species 21 x 2 = 42
5				FAC species 75 x 3 = 225
		=Total Cover		FACU species $0 x 4 = 0$
Herb Stratum (Plot size: 5 feet)				UPL species 0 x 5 = 0
1. Phalaris arundinacea	20	Yes	FACW	Column Totals: 96 (A) 267 (B)
2. Conium maculatum	1	No	FACW	Prevalence Index = $B/A = 2.78$
3. Poa pratensis	60	Yes	FAC	
4. Persicaria longiseta	15	No	FAC	Hydrophytic Vegetation Indicators:
5				1 - Rapid Test for Hydrophytic Vegetation
6	·			X_2 - Dominance Test is >50%
7				3 - Prevalence Index is <3 0 ¹
··		. <u> </u>		0 = 1 revalence index is ±0.0
o				data in Remarks or on a separate sheet)
9				
10				Problematic Hydrophytic Vegetation (Explain)
	96	=Total Cover		¹ Indicators of hydric soil and wetland hydrology must
<u>Woody Vine Stratum</u> (Plot size: 15 feet)				be present, unless disturbed or problematic.
1				Hydrophytic
2				Vegetation
		=Total Cover		Present? Yes X No
Remarks: (Include photo numbers here or on a separ	ate sheet.)			!

SOIL

Profile Desc	cription: (Describe	to the depth	needed to doo	cument t	he indica	tor or o	confirm the	absence of i	ndicators.)		
Depth	Matrix		Red	ox Featur		. 2	_		_		
(inches)	Color (moist)	%	Color (moist)	%	Туре	Loc	Tex	ture	Re	marks	
0-14	10YR 3/2	100					Loamy/	Clayey			
·											
		<u> </u>									
¹ Type: C=C	oncentration. D=Dep	etion. RM=Re	educed Matrix.	MS=Mas	ked Sand	Grains		² Location: F	PL=Pore Lining.	M=Matrix.	
Hydric Soil	Indicators:	,	, , , , , , , , , , , , , , , , , , , ,					Indicators f	or Problematic	Hydric S	oils ³ :
Histosol	(A1)		Sandy Gl	eyed Mat	rix (S4)			Coast P	rairie Redox (A1	6)	
Histic Ep	pipedon (A2)		Sandy Re	edox (S5)	. ,			Iron-Mai	nganese Masses	, s (F12)	
Black Hi	stic (A3)		Stripped I	Matrix (S	5)			Red Par	ent Material (F2	1)	
Hydroge	n Sulfide (A4)		Dark Surf	ace (S7)	,			Very Sh	allow Dark Surfa	, ace (F22)	
Stratified	Lavers (A5)		Loamv M	uckv Min	eral (F1)			Other (E	xplain in Remar	·ks)	
2 cm Mu	ck (A10)		Loamy Gl	leved Ma	trix (F2)				•	,	
Depleted	Below Dark Surface	e (A11)	X Depleted	Matrix (F	3)						
Thick Da	ark Surface (A12)	()	Redox Da	ark Surfac	ce (F6)			³ Indicators o	f hvdrophvtic ve	detation a	and
Sandv M	luckv Mineral (S1)		Depleted	Dark Sur	face (F7)			wetland	hvdroloav must	be preser	nt.
5 cm Mu	ckv Peat or Peat (S3)	Redox Depressions (F8)			unless disturbed or problematic.					
Bostrictivo	avor (if obsorved):	,		•	()	1			•		
Type	Layer (il Observeu).										
Depth (ir	ches):		-				Hydric Sc	ail Present?	Ve	e Y	No
Deptil (ii			-				Tiyune Se	Shi i resent:	16	s <u> </u>	NO
Remarks:	un in un in a l fun un Mi			Vanian	0.44	مام دامه		d la dia atawa af			0045
Frrata (http:	//www.prcs.usda.gov	/Internet/ESE		Version A	2.0 10 11101 2n2 0512	ude the		u muicators of	Hydric Solis, Ve	ersion 7.0	, 2015
Enata: (http:	//www.inco.uouu.gov			0,11100142	_p2_0012		9				
HYDROLC	GY										
Wetland Hy	drology Indicators:										
Primary Indi	cators (minimum of o	ne is required	d: check all that	(vlage				Secondary I	ndicators (minim	num of two	o required)
Surface	Water (A1)	ine ne required	Water-Sta	ained Lea	ves (B9)			Surface	Soil Cracks (B6)	<u>e requirea/</u>
High Wa	ter Table (A2)		Aquatic F	auna (B1	3)			Drainag	e Patterns (B10))	
Saturatio	on (A3)		True Aqu	atic Plant	s (B14)			Drv-Sea	son Water Table	e (C2)	
Water M	arks (B1)		Hvdrogen	Sulfide (Odor (C1)			Cravfish	Burrows (C8)	- (-)	
Sedimer	t Deposits (B2)		Oxidized	Rhizosph	eres on L	_ivina Re	oots (C3)	Saturatio	on Visible on Ae	rial Image	erv (C9)
Drift Dep	osits (B3)		Presence	of Redu	ced Iron (C4)	~ /	Stunted	or Stressed Pla	nts (D1)	,,,,
Algal Ma	t or Crust (B4)		Recent Ire	on Reduc	tion in Ti	, lled Soil	s (C6)	Geomor	phic Position (D	2)	
Iron Dep	osits (B5)		Thin Muc	k Surface	e (C7)		- ()	X FAC-Ne	utral Test (D5)	,	
Inundatio	on Visible on Aerial Ir	nagery (B7)	Gauge or	Well Dat	a (D9)						
Sparsely	Vegetated Concave	Surface (B8)	Other (Ex	plain in F	Remarks)						
Field Obser	vations:	(=-0)									
Surface Wat	er Present? Ye	s	No X	Denth (i	nches).						
Water Table	Present? Ve	° <u> </u>		Depth (i	nches).						
Saturation P	resent? Ve	s		Depth (i	nches).		Wetland	d Hydrology	Present? Ve	e	No X
(includes co	nillary fringe)			Doptin (i			Trettall	a riyarology i		·	
	corded Data (stream		toring well acri	al nhotos	nrevious	inspec	tions) if our	ailahla			
Describe Re	unden Dala (Sliedill	gauge, morm	toring well, aell		, previous	s inspec	aons, ii dva				
Remarks:											
1											

Background Information

Name: Evan Shep	pard, Ryan McGinnis	
Date: 20 August 2	019	
Affiliation: Ecology a	and Environment, Inc.	
Address: 33 W. Mon	roe Street, Suite 1410, Chicago, IL 60603	
Phone Number: 312.57	8.9243	
e-mail address:	nis@ene.com	
Name of Wetland:	W-T01-001	
Vegetation Communit(ies):	PEM	
HGM Class(es): slope		
Location of Wetland: includ	e map, address, north arrow, landmarks, distances, roads, etc.	
Lat/Long or UTM Coordinate		
USGS Quad Name	40.0836291124; -83.4880488326	
County	Plumwood	
Township	Madison	
Section and Subsection	Pike	
Hydrologia Up3 Code	N/A	
Hydrologic Unit Code	0506000120- Little Darby Creek	
Site Visit	20 August 2019	
National Wetland Inventory M	ap See Wetland and Waterbody Delineation Report	
Ohio Wetland Inventory Map	See Wetland and Waterbody Delineation Report	
Soll Survey	SSURGO, OH097	
Delineation report/map	See Wetland and Waterbody Delineation Report	

VV-101-001		
Wetland Size (acres, hectares): 1.10 acres		
Sketch: Include north arrow, relationship with other surface wa	ters, vegetation zones, etc.	
See Wetland and Waterbody Delineation Re	port	
	No.2011.00	
Comments, Narrative Discussion, Justification of Category Cha	nges:	
Wetland is located in an excavated man-made dtrih used to collect water from field drainage til	. Water collected in this dtoh slowly drains to the west b	eneath Invin Road via a cuiv
Final acoust and	Catagoriu	197

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in property establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	×	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	×	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	×	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	×	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	×	3
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	×	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap.. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	Go to the second
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Kon 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to for 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland	NO Go to
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland	NO Go to Kon 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to to to 7
Z	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Con 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to establish

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of	YES	NO
	deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	Wetland should be evaluated for possible Category 3 status.	Go to to the first
		Go to Ouestion 9a	
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributant to Lake Erie that is accessible to fish?	YES Go to Question Sh	
95	Does the wetland's hydrology result from measures designed to	VES	NO
	prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	Wetland should be evaluated for possible Category 3 status	Go to to the first second
		Go to Question 10	
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation	YES Go to Question 9d	Go to Kon 1
9d	Does the wetland have a predominance of native species within its	YES	NO
	vegetation communities, although non-native or disturbance tolerant native species can also be present?	Wetland is a Category 3 wetland	Go to to 9
		Go to Question 10	
90	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	Go to get 1
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in	YES	NO
	Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the	Wetland is a Category 3 wetland.	Go to Suesti
	gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its guality.	Go to Question 11	
11	Relict Wet Prairies. Is the wetland a relict wet prairie community	YES	NO
	dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, the Marian Statement of the Statement of the Statement of Statemen	Wetland should be evaluated for possible Category 3 status	Compute Quan Rating
	Montgomery, Van Wert etc.).	Rating	

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria Myriophyllum spicatum Najas minor Phalaris arundinacea Phragmites australis Potamogeton crispus Ranunculus ficaria Rhamnus frangula Typha augustifolia Typha sglauca	Zygadenus eleganis var. glaucus Cacalia plantaginea Carex flava Carex sterilis Carex sterilis Carex stricta Deschampsia caespitosa Eleocharis rostellata Eriophorum viridicarinatum Gentianopsis spp. Lobelia kalmii Parnassia glauca Potentilla fruticosa Rhamnus alnifolia Rhynchospora capillacea Salix candida Salix myricoides Salix serissima Solidago ohioensis Tofieldia glutinosa Trifochin maritimum	Calla palustris Carex atlantica var. capillacea Carex echinata Carex oligosperma Carex trisperma Chamaedaphne calyculata Decodon verticillatus Eriophorum virginicum Larix laricina Nemopantinus mucronatus Schechzeria palustris Sphagnum spp Vaccinium macrocarpon Vaccinium nocycoccos Woodwardia virginica Syris difformis	Carex cryptolepts Carex lasiocarpa Carex stricta Cladium mariscoides Calamagrostis stricta Calamagrostis canadensis Quercus palustris	Calamagrostis canadensis Calamogrostis stricta Carex atherodes Carex buxbaumi Carex pellita Carex sartwellit Gentiana andrewsi Helianthus grosse serratus Liatris spicata Lysimachia quadriflora Lysimachia quadriflora Lysimachia quadriflora Systemum virginianum Silphium terebinthinaceum Sorghastrum matau Spartina pectinata Solidago riddellit

End of Narrative Rating. Begin Quantitative Rating on next page.



Date: 20 Aug 2019





Present very small amounts or it more common of marginal quality Present in moderate amounts, but not of highest quality or in small amounts of highest quality Present in moderate or greater amounts and of highest quality

24

End of Quantitative Rating. Complete Categorization Worksheets.

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	17	
	Metric 4. Habitat	8	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-4	
	TOTAL SCORE	24	Category based on score breakpoints 1

ORAM Summary Worksheet

Complete Wetland Categorization Worksheet.

Choices	Circle one		Evaluation of Categorization Result of ORAM		
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	×	Is quantitative rating score less than the Category 2 scoring threshold (excluding gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM		
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	×	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.		
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	×	Is quantitative rating score greater than the Category 2 scoring threshold (including any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM		
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetler Li assign to the appro- cate ory based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.		
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	×	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).		
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to congoined duranted by An	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.		

Wetland Categorization Worksheet



End of Ohio Rapid Assessment Method for Wetlands.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Madiso	Project/Site: Madison Fields Solar Project			City/County:	Madison Co	unty	Sampling Date:	8/20/2019	
Applicant/Owner:	Madisc	on Fields Solar Project,	LLC			State:	OH	Sampling Point:	W-T01-002A-1
Investigator(s): E. St	Section, Township, Range: <u>N/A</u>								
Landform (hillside, te	errace, e	etc.): <u>flat</u>		Loca	al relief (conca	ave, conve	ex, none)	concave	
Slope (%): 0		Long: -83.4	-83.46813986 Datum: NAD83						
Soil Map Unit Name	: Kokom	o silty clay loam, 0 to 2	percent slopes			<u> </u>	WI class	sification: None	
Are climatic / hydrole	ogic con	ditions on the site typic	al for this time of yea	ar? Yes	s <u>X</u> N	o	(If no, e	xplain in Remarks.)	
Are Vegetation	, Soil	, or Hydrology	significantly distu	rbed? Are '	Normal Circur	mstances	" present	? Yes <u>X</u> No	o
Are Vegetation	, Soil	, or Hydrology	naturally problem	atic? (If ne	eded, explain	any answ	vers in Re	emarks.)	
SUMMARY OF	FINDIN	NGS – Attach site	map showing s	ampling p	oint locati	ons, tra	insects	, important feat	tures, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No		
Remarks: Linear PEM wetland located in a man-made ditch and fed by drain tiles of surrounding cornfields.							

VEGETATION – Use scientific names of plants.

	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30 feet)	% Cover	Species?	Status	Dominance Test worksheet:
1. 2.				Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
3.				Total Number of Dominant Species
4				Across All Strata: 1 (B)
5				Percent of Dominant Species That
		=Total Cover		Are OBL, FACW, or FAC: 100.0% (A/B)
Sapling/Shrub Stratum (Plot size: 15 feet)			
1				Prevalence Index worksheet:
2				Total % Cover of: Multiply by:
3				OBL species 0 x 1 = 0
4				FACW species 90 x 2 = 180
5				FAC species x 3 =0
		=Total Cover		FACU species 0 x 4 = 0
Herb Stratum (Plot size: 5 feet)				UPL species 0 x 5 = 0
1. Phalaris arundinacea	90	Yes	FACW	Column Totals: 90 (A) 180 (B)
2.				Prevalence Index = $B/A = 2.00$
3.				
4.				Hydrophytic Vegetation Indicators:
5.				1 - Rapid Test for Hydrophytic Vegetation
6.				X 2 - Dominance Test is >50%
7.				X 3 - Prevalence Index is $\leq 3.0^{1}$
8.				4 - Morphological Adaptations ¹ (Provide supporting
9.				data in Remarks or on a separate sheet)
10.				Problematic Hydrophytic Vegetation ¹ (Explain)
	90	=Total Cover		¹ Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size: 15 feet)			be present, unless disturbed or problematic.
1				Hydrophytic
2				Vegetation
		=Total Cover		Present? Yes X No
Remarks: (Include photo numbers here or on a sepa	rate sheet.)			

SOIL

Profile Desc	cription: (Describe	o the depth	n needed to doci	ument t	he indica	tor or o	confirm the a	bsence of i	ndicators.)		
Deptn (inchos)			Color (moint)	x reatur	turn = 1	1.002	Tauto			Domorto	
(incries)		<u> </u>	Color (moist)	%	Type	LOC	i extu	<u>. </u>		Remarks	
0-6	10YR 4/2	100					Sanc	iy			
6-16	10YR 5/2	100					Sand	ly	Loose	e gravel/silt/s	sand
		·			. <u> </u>						
	oncentration D-Depl	etion RM-E	Peduced Matrix		ked Sand	Grains			PL – Pore Lini	na M-Matri	×
Hydric Soil	Indicators:		Ceduced Matrix, IN	10-11/103	Keu Gand		•	Indicators f	or Problem	atic Hvdric	Soils ³ :
Histosol	(A1)		Sandv Gle	ved Mat	rix (S4)			Coast P	rairie Redox	(A16)	
Histic Er	pipedon (A2)		Sandy Red	dox (S5)			-	Iron-Ma	nganese Ma	sses (F12)	
Black Hi	stic (A3)		Stripped N	latrix (Se	6)		-	Red Par	ent Material	(F21)	
X Hydroge	n Sulfide (A4)		Dark Surfa	ce (S7)	- /		-	Very Sh	allow Dark S	Surface (F22	2)
Stratified	d Layers (A5)		Loamy Mu	cky Min	eral (F1)		-	Other (E	xplain in Re	marks)	
2 cm Mu	ıck (A10)		Loamy Gle	eyed Ma	trix (F2)		-			-	
Depleted	d Below Dark Surface	(A11)	Depleted N	Matrix (F	3)						
Thick Da	ark Surface (A12)		Redox Dar	rk Surfac	ce (F6)		:	³ Indicators c	f hydrophyti	c vegetation	and
Sandy M	lucky Mineral (S1)		Depleted D	Dark Sur	face (F7)			wetland	hydrology m	nust be pres	ent,
5 cm Mu	icky Peat or Peat (S3)	Redox Dep	pression	s (F8)			unless o	listurbed or p	problematic.	
Restrictive	Layer (if observed):										
Type:			_								
Depth (ii	nches):						Hydric Soi	I Present?		Yes X	No
Remarks:											
This data for	rm is revised from Mic	west Regio	nal Supplement \	/ersion 2	2.0 to incl	ude the	NRCS Field	Indicators of	Hydric Soils	s, Version 7	.0, 2015
Errata. (http:	//www.nrcs.usda.gov	Internet/FS	E_DOCUMENTS	/nrcs142	2p2_0512	93.000	x)				
HYDROLC	DGY										
Wetland Hv	drology Indicators:										
Primary Indi	cators (minimum of o	ne is require	d; check all that	apply)				Secondary I	ndicators (m	inimum of ty	wo required)
X Surface	Water (A1)		Water-Sta	ined Lea	aves (B9)			Surface	Soil Cracks	(B6)	
X High Wa	ater Table (A2)		Aquatic Fa	auna (B1	3)			X Drainag	e Patterns (E	310)	
X Saturatio	on (A3)		True Aqua	tic Plant	s (B14)			Dry-Sea	son Water T	Table (C2)	
Water M	larks (B1)		X Hydrogen	Sulfide (Odor (C1)		_	Crayfish	Burrows (C	8)	
Sedimer	nt Deposits (B2)		Oxidized F	Rhizosph	eres on L	iving R	oots (C3)	X Saturati	on Visible or	n Aerial Imag	gery (C9)
Drift Dep	oosits (B3)		Presence	of Redu	ced Iron (C4)	-	Stunted	or Stressed	Plants (D1)	1
Algal Ma	at or Crust (B4)		Recent Iro	n Reduc	tion in Ti	lled Soil	ls (C6)	X Geomor	phic Position	n (D2)	
Iron Dep	oosits (B5)		Thin Muck	Surface	e (C7)		-	X FAC-Ne	utral Test (D	05)	
X Inundation	on Visible on Aerial Ir	nagery (B7)	Gauge or V	Well Dat	ta (D9)						
Sparsely	/ Vegetated Concave	Surface (B8	3)Other (Exp	Diain in F	(emarks)						
Field Obser	vations:	X	NI-	Denth (
Surface Wat	ter Present? Ye	s X		Depth (I	ncnes):	4					
Saturation D	riesent? Ye			Depth (I	nches):	0	Wotland	Hydrology	Drocont?	Voc V	No
(includes car	nillary fringe)	<u> </u>	NO	Deptii (i		0	wetianu	nyurology	Fiesent:		NO
Describe Re	corded Data (stream	daude mon	itoring well aeria	l photos	previous	sinsper	tions), if avail	lable:			
		gaago, mon			, provious	, mopou					
Remarks:											

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Madiso	roject/Site: Madison Fields Solar Project			City/County:	unty: Madison County			Sampling Date:	8/20/2019
Applicant/Owner:	Madison F	Fields Solar Project,	LLC			State:	OH	Sampling Point:	U-T01-002-1
Investigator(s): E. Sh	Section, Towr	nship, Range:	N/A						
Landform (hillside, te	errace, etc.)): <u>flat</u>		Loca	al relief (conca	ave, conve	ex, none):	none	
Slope (%): 5		Long: -83.4	3.46817382 Datum: NAD83						
Soil Map Unit Name	: Kokomo s	silty clay loam, 0 to 2	percent slopes			N	WI class	ification: None	
Are climatic / hydrold	ogic conditi	ons on the site typic	al for this time of yea	ar? Yes	s <u>X</u> N	lo	(If no, ex	plain in Remarks.)	
Are Vegetation	, Soil	, or Hydrology	significantly distu	rbed? Are "	Normal Circu	mstances'	" present	? Yes <u>X</u> No	<u></u>
Are Vegetation	, Soil	, or Hydrology	naturally problem	atic? (If ne	eded, explair	n any answ	vers in Re	emarks.)	
SUMMARY OF	FINDING	S – Attach site	map showing s	ampling p	oint locati	ions, tra	insects	, important feat	ures, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes	No No No	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>		
Remarks: Upland sample point located between excavated man-made ditch and cornfield.							

VEGETATION – Use scientific names of plants.

	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30 feet)	% Cover	Species?	Status	Dominance Test worksheet:
1 2				Number of Dominant Species That Are OBL, FACW, or FAC:1(A)
3. 4.				Total Number of Dominant Species Across All Strata: 1 (B)
5.		=Total Cover		Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)
Sapling/Shrub Stratum (Plot size: 15 feet)			
1 2.				Prevalence Index worksheet: Total % Cover of: Multiply by:
3.				OBL species 0 $x 1 = 0$
4.				FACW species 100 $x 2 = 200$
5.				FAC species $0 \times 3 = 0$
		=Total Cover		FACU species $0 \times 4 = 0$
Herb Stratum (Plot size: 5 feet)				UPL species $0 \times 5 = 0$
1. Phalaris arundinacea	100	Yes	FACW	Column Totals: 100 (A) 200 (B)
2				Prevalence Index = $B/A = 2.00$
3				
4				Hydrophytic Vegetation Indicators:
5				1 Papid Tast for Hydrophytic Vogatation
6				X 2 Dominance Test is >50%
7				$\frac{1}{2}$ - Dominance results > 50%
/				3 - Frevalence index is ≤3.0
o				4 - Morphological Adaptations (Provide supporting
9				Decklose et is the begins of on a separate sheety
10				
Woody Vine Stratum (Plot size: 15 feet) 100	= I otal Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1				Hydrophytic
2.				Vegetation
		=Total Cover		Present? Yes X No
Remarks: (Include photo numbers here or on a sepa	rate sheet.)			

SOIL

Profile Desc	cription: (Describe	to the depth	needed to do	cument t	he indica	tor or c	onfirm the	e absence of indi	icators.)	
Depth	Matrix		Red	ox Featur		. 2	_			
(inches)	Color (moist)	%	Color (moist)	%	Type	LOC	Tex	ture	Remarks	
0-16	10YR 4/2	100					Sa	ndy		
<u> </u>										
		<u> </u>								
¹ Type: C=C	oncentration, D=Dep	etion, RM=R	educed Matrix,	MS=Mas	ked Sand	Grains.		² Location: PL=	Pore Lining, M=Mat	rix.
Hydric Soil	Indicators:							Indicators for I	Problematic Hydri	c Soils ³ :
Histosol	(A1)		Sandy GI	eyed Mat	rix (S4)			Coast Prair	ie Redox (A16)	
Histic Ep	oipedon (A2)		Sandy Re	edox (S5)				Iron-Manga	nese Masses (F12))
Black Hi	stic (A3)		Stripped	Matrix (Se	5)			Red Parent	t Material (F21)	
Hydroge	n Sulfide (A4)		Dark Surf	ace (S7)				Very Shallo	w Dark Surface (F2	22)
Stratified	l Layers (A5)		Loamy M	ucky Min	eral (F1)			Other (Expl	lain in Remarks)	
2 cm Mu	ick (A10)		Loamy G	leyed Ma	trix (F2)					
Depleted	d Below Dark Surface	e (A11)	X Depleted	Matrix (F	3)					
Thick Da	ark Surface (A12)		Redox Da	ark Surfac	ce (F6)			³ Indicators of hy	ydrophytic vegetatic	on and
Sandy M	lucky Mineral (S1)		Depleted	Dark Sur	face (F7)			wetland hyd	drology must be pre	sent,
5 cm Mu	icky Peat or Peat (S3)	Redox De	epression	s (F8)			unless distu	urbed or problemati	с.
Restrictive	Layer (if observed):									
Type:										
Depth (ir	nches):						Hydric S	oil Present?	Yes X	No
Remarks:										
This data for	m is revised from Mi	dwest Region	al Supplement	Version 2	2.0 to incl	ude the	NRCS Fiel	d Indicators of Hy	dric Soils, Version	7.0, 2015
Errata. (http:	//www.nrcs.usda.gov	/Internet/FSE	DOCUMENT	S/nrcs142	2p2_0512	93.docx	()			
HYDROLC	OGY									
Wetland Hy	drology Indicators:									
Primary Indi	cators (minimum of o	ne is required	d; check all that	apply)				Secondary India	cators (minimum of	two required)
Surface	Water (A1)		Water-Sta	ained Lea	aves (B9)			Surface So	il Cracks (B6)	
High Wa	iter Table (A2)		Aquatic F	auna (B1	3)			Drainage P	atterns (B10)	
Saturatio	on (A3)		True Aqu	atic Plant	s (B14)			Dry-Seasor	n Water Table (C2)	
Water M	arks (B1)		Hydroger	Sulfide (Odor (C1))		Crayfish Bu	urrows (C8)	
Sedimer	nt Deposits (B2)		Oxidized	Rhizosph	eres on L	iving Ro	oots (C3)	Saturation	Visible on Aerial Im	agery (C9)
Drift Dep	oosits (B3)		Presence	of Redu	ced Iron (C4)		Stunted or	Stressed Plants (D	1)
Algal Ma	it or Crust (B4)		Recent Ir	on Reduc	tion in Ti	lled Soils	s (C6)	Geomorphi	c Position (D2)	
Iron Dep	osits (B5)		Thin Muc	k Surface	e (C7)			X FAC-Neutra	al Test (D5)	
Inundatio	on Visible on Aerial Ir	nagery (B7)	Gauge or	Well Dat	a (D9)					
Sparsely	Vegetated Concave	Surface (B8)	Other (Ex	plain in F	Remarks)					
Field Obser	vations:									
Surface Wat	er Present? Ye	s	No <u>X</u>	Depth (i	nches):					
Water Table	Present? Ye	s	No <u>X</u>	Depth (i	nches):					
Saturation P	resent? Ye	s	No <u>X</u>	Depth (i	nches):		Wetlan	d Hydrology Pre	esent? Yes	<u>No X</u>
(includes ca	pillary fringe)									
Describe Re	corded Data (stream	gauge, moni	toring well, aeri	al photos	, previous	s inspec	tions), if av	ailable:		
<u> </u>										
Remarks:										

Background Information

Name: Evan Shep	pard, Ryan McGinnis	
Date: 20 August 2	019	
Affiliation: Ecology a	and Environment, Inc.	
Address: 33 W. Mon	roe Street, Suite 1410, Chicago, IL 60603	
Phone Number: 312.57	8.9243	
e-mail address:	nis@ene.com	
Name of Wetland:	M_T01_002	
Vegetation Communit(ies):	DEM	
HGM Class(es):		
SIOPE	e map, address, north arrow, landmarks, distances, roads, etc.	
See Wetland and W	aterbody Delineation Report	
Lat/Long or UTM Coordinate	40.0962161559: -83.4695021704	
USGS Quad Name	Plumwood	
County	Madison	
Township	Pike	
Section and Subsection	N/A	
Hydrologic Unit Code	0506000120- Little Darby Creek	
Site Visit	20 August 2019	
National Wetland Inventory M	ap See Wetland and Waterbody Delineation Report	
Ohio Wetland Inventory Map	See Wetland and Waterbody Delineation Report	
Soli Survey	SSURGO, OH097	
Delineation report/map	See Wetland and Waterbody Delineation Report	

W-T01-002		
Wetland Size (acres, hectares): 0.60 acres		
Sketch: Include north arrow, relationship with other surface wate	rs, vegetation zones, etc.	
See Wetland and Waterbody Delineation Repo	ort	
comments, Narrative Discussion, Justification of Category Char	ges:	
advant is to shell in the power shell in the sector division and to collect water from field descence that Wester collect	and and the state of the structure of the first state of the	Million Carder Dead at a rate
трали и разлира и рестояналися пластичаем мактимам и сонтрытивно таки на народно трал. То вет дол	stand in a second standing of an end of sing states and states and	Provinsi General Praima Praima Salah Galar
Einal score : oo	Category	4

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in property establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	×	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	×	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	×	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	×	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	×	3
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	×	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap.. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	Go to the second
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Kon 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to for 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland	NO Go to
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland	NO Go to Kon 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to to to 7
Z	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Con 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to establish

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of	YES	NO
	deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	Wetland should be evaluated for possible Category 3 status.	Go to to the first
		Go to Ouestion 9a	
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributant to Lake Erie that is accessible to fish?	YES Go to Question Sh	
95	Does the wetland's hydrology result from measures designed to	VES	NO
	prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	Wetland should be evaluated for possible Category 3 status	Go to to the first second
		Go to Question 10	
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation	YES Go to Question 9d	Go to Kon 1
9d	Does the wetland have a predominance of native species within its	YES	NO
	vegetation communities, although non-native or disturbance tolerant native species can also be present?	Wetland is a Category 3 wetland	Go to to 9
		Go to Question 10	
90	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	Go to get 1
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in	YES	NO
	Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the	Wetland is a Category 3 wetland.	Go to Suesti
	gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its guality.	Go to Question 11	
11	Relict Wet Prairies. Is the wetland a relict wet prairie community	YES	NO
	dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, the Marian Statement of the Statement of the Statement of Statemen	Wetland should be evaluated for possible Category 3 status	Compute Quan Rating
	Montgomery, Van Wert etc.).	Rating	

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria Myriophyllum spicatum Najas minor Phalaris arundinacea Phragmites australis Potamogeton crispus Ranunculus ficaria Rhamnus frangula Typha augustifolia Typha sglauca	Zygadenus eleganis var. glaucus Cacalia plantaginea Carex flava Carex sterilis Carex sterilis Carex stricta Deschampsia caespitosa Eleocharis rostellata Eriophorum viridicarinatum Gentianopsis spp. Lobelia kalmii Parnassia glauca Potentilla fruticosa Rhamnus alnifolia Rhynchospora capillacea Salix candida Salix myricoides Salix serissima Solidago ohioensis Tofieldia glutinosa Trifochin maritimum	Calla palustris Carex atlantica var. capillacea Carex echinata Carex oligosperma Carex trisperma Chamaedaphne calyculata Decodon verticillatus Eriophorum virginicum Larix laricina Nemopantinus mucronatus Schechzeria palustris Sphagnum spp Vaccinium macrocarpon Vaccinium nocycoccos Woodwardia virginica Syris difformis	Carex cryptolepts Carex lasiocarpa Carex stricta Cladium mariscoides Calamagrostis stricta Calamagrostis canadensis Quercus palustris	Calamagrostis canadensis Calamogrostis stricta Carex atherodes Carex buxbaumi Carex pellita Carex sartwellit Gentiana andrewsi Helianthus grosse serratus Liatris spicata Lysimachia quadriflora Lysimachia quadriflora Lysimachia quadriflora Systemum virginianum Silphium terebinthinaceum Sorghastrum matau Spartina pectinata Solidago riddellit

End of Narrative Rating. Begin Quantitative Rating on next page.



Date: 20 Aug 2019





23

End of Quantitative Rating. Complete Categorization Worksheets.

2

3

Present in moderate amounts, but not of highest guality or in small amounts of highest guality

Present in moderate or greater amounts

and of highest quality

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	17	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-4	
	TOTAL SCORE	23	Category based on score breakpoints 1

ORAM Summary Worksheet

Complete Wetland Categorization Worksheet.



To:	Lauren Devine	From:	Courtney Dohoney
	Madison Fields Solar Project, LLC		Stantec Consulting Services, Inc.
File:	Madison Fields Solar Project	Date:	September 27, 2021

Reference: Madison Fields Solar Project Threatened and Endangered Species Summary

Madison Fields Solar Project, LLC (Madison Fields Solar) is proposing to construct a 180-megawatt solar energy facility, composed of photovoltaic solar modules mounted on a racking system, inverters, an electrical collection system transferring power from the inverters to a new project substation and switchyard, and internal access roads with a perimeter fence securing the area (the Project). The Project area includes approximately 1,932 acres of existing agriculture, scrub-shrub, oak-hickory successional forest, developed, wetlands, and old field in Madison County. The Project is located between the communities of Rosedale to the east and Mechanicsburg to the west (Figure 1, Attachment A). Stantec Consulting Services Inc. (Stantec) was retained by Madison Fields Solar to support permitting efforts for the Project. Ecology and Environment, Inc. (a member of WSP) was also retained to complete a threatened and endangered (T/E) species assessment and agency consultation with U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR).

The field survey portion of the threatened and endangered species habitat assessment was performed by Ecology and Environment, Inc. on August 20-21, 2019 and April 22-23, 2020. An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate and a response was received May 28, 2020 (Attachment B). A technical assistance request letter was also submitted to the USFWS and the USFWS response letter was received April 13, 2020 (Attachment B).

Species identified in ODNR and USFWS correspondence and the comments provided by the agencies are provided in Table 1. Species preferred habitats or conditions are included in the table for each species. Whether the habitat was found within the Project area during field surveys and an impact analysis for each species based on the proposed layout and avoidance or minimization measures committed to by Madison Fields Solar are also included.

We appreciate the opportunity to support Madison Fields Solar with this project. Please let me know if we can provide further support.

Stantec Consulting Services, Inc.

Courtney Dohoney, PMP Senior Associate, Environmental Services

Phone: 703.485.8554 Email: Courtney.Dohoney@stantec.com

Attachment: Figures Agency Correspondence



Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
Birds	-			1	
Northern Harrier (<i>Circus</i> hudsonis)	SE	This bird hunts over grasslands, lightly grazed meadows, old fields, dry, upland prairies, shrub-steppe, and marshes with low, thick vegetation. Breeding northern harriers are most common in large, undisturbed tracts of wetlands and grasslands with low, thick vegetation. During winter, this species uses a wider range of habitats that also include deserts, coastal dunes, croplands, dry plains, estuaries, and open floodplains (Cornell Lab of Ornithology 2021).	Yes	ODNR DOW: The Project is within range of the northern harrier. Nesting northern harriers are rare in Ohio, although they occasionally breed in large marshes and grasslands. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided during the species nesting period, May 15 – August 1. If this habitat will not be impacted, the Project is not likely to impact this species.	Potentially suitable nesting habitat (i.e., wetland and grassland) was observed within the Project area. Madison Fields Solar intends to avoid the nesting habitat so it is not anticipated that the Project will result in adverse impacts to this species.
King Rail (<i>Rallus</i> elegans)	SE	Habitat includes freshwater marshes, upland-wetland marsh edges, rice fields, or similar flooded farmlands, and shrub swamps (NatureServe 2021). Nests for this species are deep bowls constructed out of grass and usually very well hidden in marsh vegetation (ODNR DOW 2021). Large areas of palustrine emergent wetland and/or palustrine scrub- shrub wetland habitats (≥ 20 acres) that include areas of open water are required to be suitable as king	No	ODNR DOW: The Project is within the range of the king rail. If preferred habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 – August 1. If no wetland habitat will be impacted, the Project is not likely to impact this species.	No nesting habitat is present within the Project area. Therefore, no impacts to this species are anticipated.

Table 1. Summary of Potential Federal and State-Listed Species within the Madison Fields Solar Project Area, Madison County, Ohio.

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Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
		rail nesting habitat (Bull and Farrand 1977, NatureServe 2021, Pickens and Meanley 2015).			
Upland Sandpiper (<i>Bartramia</i> <i>longicauda</i>)	SE	This species nests in native prairie, cropland, pastureland, mountain meadows, dry tundra, and other grassy environments. During migration, this species is often found in cropland areas (Cornell Lab of Ornithology 2021).	No	ODNR DOW: The Project is within range of the upland sandpiper. If preferred habitat will be impacted, construction should be avoided during the nesting period of this bird, April 15 – July 31. If this type of habitat will not be impacted, this Project is not likely to impact the species.	No nesting habitat is present within the Project area. Therefore, no impacts to this species are anticipated.
Mussels					
Snuffbox (<i>Epioblasma triquetra</i>)	FE/SE	Snuffbox is commonly found buried in the substrate. It is found in a wide range of particle sized substrates, however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998, Watters et al. 2009).	No	ODNR DOW: The Project is within range of this species. Due to the location and lack of in-water work in a perennial stream of sufficient size, the Project is unlikely to affect the species.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.

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Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
Clubshell (<i>Pleurobema</i> <i>clava</i>)	FE/SE	Clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	No	ODNR DOW: The Project is within range of this species. Due to the location and lack of in-water work in a perennial stream of sufficient size, the Project is unlikely to affect the species.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Rabbitsfoot (Quadrula (Theliderma) cylindrica)	FT/SE	Typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2021).	No	ODNR DOW: The Project is within range of this species. Due to the location and lack of in-water work in a perennial stream of sufficient size, the Project is unlikely to affect the species.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Rayed Bean (<i>Villosa fabalis</i>)	FE/SE	Habitat includes gravel or sandy substrate, especially in areas with thick roots from aquatic plants that increase substrate stability (Butler 2002, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow.	No	ODNR DOW: The Project is within range of this species. Due to the location and lack of in-water work in a perennial stream of sufficient size, the Project is	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.

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Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
		wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).		unlikely to affect the species.	
Elephant Ear (Elliptio crassidens crassidens)	SE	Creeks, medium to large rivers with low to moderate gradients with sandy, muddy, or rocky substrates.	No	ODNR DOW: The Project is within range of this species. Due to the location and lack of in-water work in a perennial stream of sufficient size, the Project is unlikely to affect the species.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Northern Riffleshell (Epioblasma torulosa rangiana)	FE, SE	Variety of stream sizes with packed sand or gravel bottoms.	No	ODNR DOW: The Project is within range of this species. Due to the location and lack of in-water work in a perennial stream of sufficient size, the Project is unlikely to affect the species.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Fish					

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Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
Scioto Madtom (Noturus trautmani)	FE, SE	High-quality, clear streams with moderate current and sandy gravel substrate. Not seen in the wild since 1957.	No	ODNR DOW : The Project is within the range of the species and it is recommended that no in- water work occur between April 15 th and June 30 th . If no in-water work is proposed, then no impacts are anticipated.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Spotted Darter (<i>Etheostoma</i> <i>maculatum</i>)	SE	Creeks and rivers with moderate to high gradients with large rocks and boulders near riffles and pools.	No	ODNR DOW : The Project is within the range of the species and it is recommended that no in- water work occur between April 15 th and June 30 th . If no in-water work is proposed, then no impacts are anticipated.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Tippecanoe Darter (<i>Etheostoma</i> <i>Tippecanoe</i>)	ST	Medium to large streams with a medium gravel to small cobble bed.	No	ODNR DOW : The Project is within the range of the species and it is recommended that no in- water work occur between April 15 th and June 30 th . If no in-water work is proposed, then no impacts are anticipated.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.

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Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
Indiana Bat (<i>Myotis</i> <i>sodalis</i>)	FE/SE	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007, USFWS 2020b). Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	USFWS: Due to the project type, location, and implementation of seasonal tree cutting (trees ≥3 inches diameter at breast height (dbh), between October 1 and March 31) impacts to the species have been avoided. ODNR DOW: The Project is within the vicinity of records of the Indiana bat. Therefore, the DOW recommends trees be conserved, however if tree cutting is necessary it should only occur from October 1 through March 31.	Suitable summer foraging and roosting habitat was observed in the Project area. Madison Fields Solar intends to clear any trees between October 1- March 31. Therefore, no adverse effects to this species are anticipated.
Northern Long- eared Bat (<i>Myotis</i> septentrionalis)	FT/SE	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al.	Yes	Due to the project type, location, and implementation of seasonal tree cutting (trees ≥3 inches dbh), between October 1 and March 31) impacts to the species have been avoided.	Suitable summer foraging and roosting habitat was observed in the Project area. Madison Fields Solar intends to clear any trees between October 1- March 31. Therefore, no adverse effects to this species are anticipated.

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Species Name	Federal/State ¹ Listing ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments and Recommendations	Impact Assessment
		2010, USFWS 2020a). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).			
Plants					
Southern wild rice (<i>Zizania</i> <i>aquatica</i>)	ST	Slow moving water along muddy shores of rivers.	No	ODNR DOW: Records for this species are documented within 1 mile of the Project.	No stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
¹ FE = federally li	sted endangered;	FT = federally listed threatened; SE=s	tate-listed enda	ngered; ST=state-listed threate	ned



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Design with community in mind

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Reference: Madison Fields Solar Project Threatened and Endangered Species Summary

ATTACHMENT A - FIGURES


Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of the data.



Page 1 of 2



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September 27, 2021 Lauren Devine

Page 11 of 11

Reference: Madison Fields Solar Project Threatened and Endangered Species Summary

ATTACHMENT B - AGENCY CORRESPONDENCE

Ohio Department of Natural Resources

Consultation Letter

Ohio Department of Natural Resources



MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate Paul R. Baldridge, Chief 2045 Morse Road – Bldg. E-2 Columbus, OH 43229 Phone: (614) 265-6649 Fax: (614) 267-4764

May 28, 2020

Katie Baker Environment & Archaeology, LLC 998 East Ridge Drive, Suite M/P Lebanon, Ohio 45036

Re: 20-381; Consultation for the Madison Fields Solar Project

Project: The proposed project involves the construction of photovoltaic solar panels, inverters, collection and generation tie-lines, a substation, a switchyard, an operations and maintenance building, and perimeter access roads on approximately 1,779 acres of private agricultural land.

Location: The proposed project is located near Rosedale, in Pike Township, Madison County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following records at or within a one-mile radius of the project area:

Southern wild rice (Zizania aquatica), T Upland sandpiper (Bartramia longicauda), E Least darter (Etheostoma microperca), SC Clubshell (Pleurobema clava), E, FE Murphy Easement – ODNR Scenic Rivers Program

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that

rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The Division of Wildlife is working closely with our partners at Ohio Pollinator Habitat Initiative (OPHI) to create and enhance pollinator habitat at solar power installations. Attached for your use is the Ohio Solar Site Pollinator Habitat Planning and Assessment Form. This form was developed by the OPHI Solar Pollinator Program Advisory Team. We recommend that the areas between and around the solar panels be planted with legumes and wildflowers (i.e. forbs) that are beneficial to pollinators and other wildlife and reduce use of non-native grass and gravel. The recommended legumes and forbs listed below are low-growing so as not to cast shadows on the solar panels and would only require one to two mowings a year for maintenance, which should minimize maintenance costs. For other areas of the installation where vegetation does not have to be low-growing, alternative pollinator mixes are available with a more diverse array of flowering plants. This perennial vegetation will provide beneficial foraging habitat to songbirds and pollinators while reducing storm water runoff, standing water, and erosion. Please contact the Ohio Pollinator Habitat Initiative <u>http://www.ophi.info/</u>, and specifically Mike Retterer <u>mretterer@pheasantsforever.org</u> for further information on solar power facility pollinator plantings.

Little Bluestem	Schizachyrium scoparium
Sideoats Grama	Bouteloua curtipendula
Alfalfa	Medicago spp.
Alsike Clover	Trifolium hybridum
Brown-eyed Susan	Rudbeckia triloba
Butterfly Milkweed	Asclepias tuberosa
Lanceleaf Coreopsis	Coreopsis lanceolata
Partridge Pea	Chamaecrista fasciculata
Timothy	Phleum pratense
Orchardgrass	Dactylis glomerata
Crimson Clover	Trifolium incarnatum
Ladino or White Clover	Trifolium repens

Recommended low-growing grasses and forbs may include:

The project is within the vicinity of records for the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. Presence of the Indiana bat has been established in the area, and therefore additional summer surveys would not constitute presence/absence in the area. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (Fraxinus pennsylvanica), white ash (Fraxinus americana), shingle oak (Ouercus imbricaria), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus* americana), eastern cottonwood (Populus deltoides), silver maple (Acer saccharinum), sassafras (Sassafras albidum), post oak (Quercus stellata), and white oak (Quercus alba). Indiana bat roost trees consists of trees that include dead and dving trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of for the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel; the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel; the Northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel; the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel; the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel; the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel; and the wavy-rayed lampmussel (*Lampsilis fasciola*), a state species of concern. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, the spotted darter (*Etheostoma maculatum*), a state endangered fish, and the Tippecanoe darter (*Etheostoma Tippecanoe*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, the project is not likely to impact this species.

The project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1. If no wetland habitat will be impacted, the project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1. If this habitat will not be impacted, the project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

Natural Areas and Preserves: The Division of Natural Areas and Preserves, Ohio Scenic Rivers Program has the following comments.

The Ohio Scenic Rivers Program staff appreciate the opportunity to review the proposed Madison Fields Solar Project in Pike Township, Madison County, Ohio. The project is located within the Little Darby Creek State and National Scenic River watershed. Little Darby Creek is one of the most outstanding rives in Ohio. Together with the Big Darby Creek, it provides habitat to the greatest diversity of freshwater mussels of any river of its size in the Midwest, including federally endangered species.

While the Ohio Scenic Rivers Program does not have regulatory authority with regards to the Madison Fields Solar Project, we submit the following non-binding recommendations with the belief that the project presents an opportunity to enhance local ecology and hydrology for the benefit of the river and the surrounding community. Should the applicants choose to implement them, these recommendations should be incorporated into the general notes of the project design and/or plan set. Construction best management practices (BMPs) should be implemented before earthwork commences and be adhered to for the duration of the project.

Native flower and grass planting: The Madison Soil & Water Conservation District previously submitted comments to Savion LLC related to the Ohio Pollinator Habitat Initiative, recommending that Savion strive to meet a score of 85 on the Solar Site Pollinator Habitat Assessment Form. Establishing flowering plants on at least 50% of the site is a primary BMP listed to meet this goal. The Scenic Rivers Program supports this recommendation in that the root systems of such plants will enhance the infiltration of precipitation into the soil. Increased infiltration will reduce runoff and downstream flooding, and will increase the recharge of groundwater, which provides vital flow to Little Darby Creek and tributary streams during dry months.

In addition, the Scenic Rivers Program staff recommend that seed mixes be limited to native species, and that they also incorporate native prairie grasses. The project site is located within an historic warm season prairie region known as the Darby Plains. Incorporating native prairie grasses and flowering plants will enhance Darby Plains restoration efforts already underway by conservation partners, including The Nature Conservancy, Columbus and Franklin County Metro Parks, and ODNR. Many of these native prairie species also have very deep root systems and would further enhance the infiltration of precipitation. Conservation partners can assist in procuring native genotype prairie seed for this project.

Project Siting: The Ohio Scenic Rivers Program staff appreciate that the project will avoid the two wetlands that have been delineated in the project area. Wetlands provide valuable services in absorbing and filtering runoff and allowing precipitation to percolate into groundwater.

Storm Water Pollution Prevention Plan (SWPPP): A Notice of Intent (NOI) must be submitted to obtain coverage under the Ohio EPA General Stormwater Permit for Construction Projects if the project will result in a land disturbance greater than one acre. The NOI must be submitted 21 days prior to construction. Copies of NOI forms and Instructions can be found at

<u>http://epa.ohio.gov/dsw/storm/stormform.asp</u>. A SWPPP must be developed specific for the project to address sediment and erosion controls in compliance with the permit. The SWPPP must be submitted for review to the attention of the appropriate district office's Ohio EPA Storm Water Coordinator prior to construction.

- A. Erosion Controls: A sediment and erosion control plan should be developed for the site and implemented before earthwork commences. Particular attention should be given to any drainage ways, ditches and streams that could convey sediment laden water directly to state scenic rivers. Properly installed (framed and entrenched) sediment fence should be utilized around the work site perimeter and storm water inlets. Appropriately designed rock-check dams and other erosion controls should be utilized in ditches and drainage ways. All controls should be properly maintained until final site stabilization is achieved. All sediment and erosion controls should be removed upon stabilization of the project area with vegetation. Straw bales should not be permitted as a form of erosion control. All denuded areas, including ditches, culverts and river/stream banks should be permanently seeded and mulched (or fiber mat) immediately upon completion of earthwork or temporarily seeded and mulched (or fiber mat) within 7 days if the area is to remain idle for more than 30 days.
- B. **Trench and Groundwater De-watering:** No wastewater of any kind should be directly discharged into any of drainage ways or ditches. Any water pumped from open trenches should be passed through a sediment impoundment structure that provides for complete settling of all suspended solids or pumped onto a vegetated area a sufficient distance from the stream so as to provide for complete infiltration. Adequate outlet protection must be provided for each impoundment. There should be no discharges of turbid water to State Scenic Rivers or their tributaries.

Notification: The Scenic Rivers Program staff would appreciate receiving additional planning information and construction dates for this project. Please contact the Central Ohio Assistant Regional Scenic Rivers Program Manager, Heather Doherty, at (740) 258-0567 or heather.doherty@dnr.state.oh.us.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community %20Contact%20List_8_16.pdf

Geological Survey: The Division of Geological Survey has the following comment.

Physiographic Region

The proposed project area is in Pike Township, Madison County. This area is in the Darby Plain physiographic region. This region is characterized by moderately low relief and few large streams. The region is primarily made up of broadly hummocky ground moraine and includes several indistinct recessional moraines. Loamy till that is Wisconsinan in age with a high lime concentration covers Silurian and Devonian-aged carbonate and shale bedrock (Ohio Department of Natural Resources, Division of Geological Survey, 1998).

Surficial/Glacial Geology

The project area lies within the glaciated margin of the state and includes several Wisconsinanaged glacial features. The area is covered by a ground moraine made up of Late Woodfordian ice deposits. Terrain is flat to undulating (Pavey et al, 1999). Glacial drift throughout most of the study area is between 16 and 165 feet thick. Drift is thinnest in the northeast and gets thicker towards the west and south (Powers and Swinford, 2004).

Bedrock Geology

The uppermost bedrock unit in the project area is the Salina Undifferentiated. This unit is Silurian-aged and consists of a gray to brown dolomite which contains argillaceous partings, brecciated intervals, algal laminations and anhydrite/gypsum zones. This unit covers the northeast portion of the project area. Underlying the Salina Undifferentiated is the Silurian-aged Tymochtee Dolomite. This unit is characterized by an olive gray to yellowish brown dolomite. It frequently contains brownish-black to gray shale laminae. This unit covers the southern and western portions of the project area. It should be noted that bedrock is not exposed at the surface within the boundaries of the project area due to significant glacial drift (Slucher et al, 2006).

Oil, Gas and Mining

ODNR has record of no oil and gas wells within one mile of the proposed project area. The nearest well to the project area is approximately 1.4 miles north of the site. It is listed as a dry hole (Ohio Department of Natural Resources, Division of Oil and Gas, *Ohio Oil and Gas Wells Locator*).

ODNR does not have record of any mining operations within the project area. The nearest mine to the project area is #1336 Mechanicsburg Pit operated by Shelly Materials, Inc. This mine is a sand and gravel quarry in Champaign County, approximately 7 miles from the western boundary of the site (Ohio Department of Natural Resources, Division of Mineral Resources, *Mines of Ohio*).

Seismic Activity

Several small earthquakes have historically been recorded near the site. The three events closest to the site are listed in the chart below (Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Earthquake*

1 ,				
Date	Magnitude	Distance to Site Boundary	County	Township
June 19, 1843	3.5	16.0 miles	Champaign	Urbana
October 4, 1980	2.0	23.5 miles	Clark	Green
January 4, 1873	3.8	25.5 miles	Delaware	Orange

Epicenters)

Karst

There are no known karst features in this area (Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Karst*).

Soils

According to the USDA Web Soil Survey, the project area consists primarily of soils derived from glacial till. Crosby and Kokomo are the most common soil series found within the boundaries of the project area. These soils cover over 92% of the project area. Other soils that are present include Patton (5%) and less than 1% of Lippincott, Odell, Lewisburg and Brookton soils. There is a moderate risk of shrink-swell potential in these soils. Other limiting factors include ponding and other issues associated with poor drainage. Slope remains relatively flat, with slope seldom exceeding a 6% grade (USDA Web Soil Survey).

Groundwater

Groundwater resources are plentiful throughout the project area. Wells developed in bedrock are likely to yield between 5 and 500 gallons per minute. Sustainable yield varies depending on the bedrock unit and thickness. The Ground Water Resources of Madison County map indicated that test wells developed in the bedrock aquifers in Pike Township have yielded in excess of 1,000 gallons per minute (Hallfrisch, 1994 and Ohio Department of Natural Resources, Division of Water, *Bedrock Aquifer Map*, 2000). Wells developed in the unconsolidated sand and gravel lenses interbedded within the till are likely to yield between 5 and 25 gallons per minute. Most of the project area overlies the Prairie Ground Moraine Aquifer. The western and southern borders of the project area overly the Prairie Complex Aquifer (Ohio Department of Natural Resources, Division of Water, *Statewide Unconsolidated Aquifer Map*, 2000).

ODNR has record of 88 water wells drilled within one mile of the study area. These wells range in depth from 30 to 246 feet deep. With an average depth of 217.4 feet. The most common aquifer listed is limestone. While most of the wells are developed in the carbonate aquifers, 19 of these wells were developed in the overlying sand and gravel aquifer. Twenty-five wells contained data on sustainable yield. A sustainable yield of 7 to 500 gallons per minute is expected from wells drilled in this area based on well log records. The average sustainable yield from these records within one mile was 41.5 gallons per minute (Ohio Department of Natural Resources, Division of Water, *Ohio Water Wells*).

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community %20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or <u>Sarah.Tebbe@dnr.state.oh.us</u> if you have questions about these comments or need additional information.

Mike Pettegrew Environmental Services Administrator

References

Hallfrisch, M. (1994). *Groundwater Resources of Madison County*, Ohio Department of Natural Resources, Division of Geological Survey, map, scale 1:62,500.

Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Earthquake Epicenters*, online interactive map, <u>https://gis.ohiodnr.gov/MapViewer/?config=earthquakes</u>

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Ohio Department of Natural Resources, Division of Geological Survey, (1998). *Physiographic Regions of Ohio*. Ohio Department of Natural Resources, Ohio Department of Natural Resources, Division of Geological Survey, map with text, 2 p., scale 1:2,100,000.

Ohio Department of Natural Resources, Division of Oil and Gas, *Ohio Oil and Gas Wells Locator*, online interactive map, <u>https://gis.ohiodnr.gov/MapViewer/?config=oilgaswells</u>.

Ohio Department of Natural Resources, Division of Water, *Ohio Water Wells*, online interactive map, <u>https://gis.ohiodnr.gov/MapViewer/?config=waterwells</u>.

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Pavey, R., Goldthwait, R., Brockman, C.S. Hull, D., Swinford, E.M., and Van Horn, R. (1999). *Quaternary Geology of Ohio*, Ohio Department of Natural Resources, Division of Geological Survey, map, scale 1:500,000.

Powers, D.M., and Swinford, E.M. (2004). *Shaded drift-thickness map of Ohio*, Ohio Department of Natural Resources, Division of Geological Survey, map, scale 1:500,000

Slucher, E., Swinford, E., Larsen, G., Schumacher, G., Shrake, D., Rice, C., Caudill, M., Rea, R. and Powers, D. (2006). *Bedrock Geologic Map of Ohio*, Ohio Department of Natural Resources, Division of Geological Survey, map, scale 1:500,000.

USDA Web Soil Survey, (Last modified 2019). *Web Soil Survey Interactive Map*, United States Department of Agriculture, National Resources Conservation Service, online interactive

map, <u>https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx</u>.

Ohio Solar Site Pollinator Habitat Planning and Assessment Form

8.

ts ts

1. Percent of total site planted with native or beneficial introduced flowering plants.

25-50%	10 points
51-75%	20 points
76-100%	30 noints

2. Flowering plant diversity in site perimeter & buffer area (species with more than 1% cover).

9-12 species	5 points
13-16 species	10 points
17-20 species	15 point
20+ species	20 point
Site specific Milkweed included @2,000 pls/ac minimum	10 point

- * If no boxes were selected in questions 1 or 2 then your site does not meet criteria to be considered as an OPHI Solar Pollinator Habitat. However, OPHI can work with you on ways to increase the pollinator score of your site.
- 3. Flowering plant seed mixes and plantings to be used. Native species local to the site are preferred; otherwise species native to Ohio are encouraged.

Includes only native plant species	15 points
Includes native and beneficial introduced	
plant species	10 points
Includes only beneficial introduced plant	
species	5 points

4. Flowering plant diversity in rows & under solar array.

4-6	5 poin
7+	10 poin
Site specific Milkweed included @2,000 pls/ac minimum	10 poin

5. Seasons with at least 3 blooming species. Check all that apply.

Spring (April – May)	5 points
Summer (June – August)	5 points
Fall (September – October)	5 points

6. Available habitat components within ¼ mile of site. Check all that apply.

Native grasses	2 points
Trees and shrubs	2 points
Forest edge habitat	2 points
Cavity nesting sites	2 points
Clean perennial water sources	2 points

7. Planned vegetative buffers adjacent to the solar site. Check all that apply.

Site has planned buffer adjacent to solar site Buffer is at least 30 feet wide as measured from array fencing or edge of flower plantings Buffer is at least 50 feet wide as measured from array fencing or edge of flower plantings Buffer includes flowering Shrubs/trees and other shrubs/trees that provide food for wildlife Bubitat site preparation prior to implementation.

- Measures taken to control weeds and invasive species prior to seeding/planting.
 Appropriate soil preparation done to reduce erosion And enhance germination/growth
 S points
 None
- 9. Planned management practices for areas designated as part of the pollinator habitat site. Check all that apply.

	Detailed establishment and management plan	
	developed for site	10 points
	Mowing Follows OPHI mowing schedule for	
	monarchs each year	5 points
	Mowing is staggered over a 2 week period	5 points
	Signage indicating site is wildlife & pollinator-friendly	5 points
	Creation of habitat features (e.g. boxes, pass-through	
	tunnels, bee hotels)	5 points
	Long-term monitoring plan developed that includes	
	re-certification as Solar Site Pollinator Habitat	10 points
Inse Com and	ecticide risk. Check if applicable. munication with adjacent landowners about the project possible impacts of their insecticide use is critical	
	Site is adjacent to land (within 120 ft.) where	
	insecticides are used	-20 points
	Planned on-site insecticide use (including	
	pre-treated seeds/plants	-40 points
	Total Points: 0	
vide ets C	s High Quality Pollinator Habitat DPHI Solar Pollinator Habitat Standards	> 85 70-84
Ow	ner/Operator:	- 93
ject	Location:	1
ject	Size (acres):	
nned	Source of Seeds:	
nned	Seeding Date:	
	vide ets Com and	 Detailed establishment and management plan developed for site Mowing Follows OPHI mowing schedule for monarchs each year Mowing is staggered over a 2 week period Signage indicating site is wildlife & pollinator-friendly Creation of habitat features (e.g. boxes, pass-through tunnels, bee hotels) Long-term monitoring plan developed that includes re-certification as Solar Site Pollinator Habitat Insecticide risk. Check if applicable. Communication with adjacent landowners about the project and possible impacts of their insecticide use is critical Site is adjacent to land (within 120 ft.) where insecticides are used Planned on-site insecticide use (including pre-treated seeds/plants vides High Quality Pollinator Habitat Cowner/Operator: ject Location: ject Size (acres): nned Source of Seeds: nned Seeding Date:

Habitat & Vegetation Consultant:

Refer to www.ophi.info for more information regarding solar pollinator habitat development.

Version 1 - March 2018 Developed by the OPHI Solar Pollinator Program Advisory Team





To:	Lauren Devine	From:	Courtney Dohoney
	Madison Fields Solar Project, LLC		Arlington, VA
File:	Madison Fields Solar Project	Date:	July 14, 2020

Reference: Ohio Department of Natural Resources Project Review

As referenced in the email dated March 30, 2020 and included within Exhibit R, Ecology and Environment, Inc. (E&E) submitted a request to Ohio Department of Natural Resources (ODNR) Office of Real Estate on behalf of Madison Fields Solar Project, LLC soliciting feedback on the presence of threatened and endangered species and habitats and any other potential wildlife or environmental concerns regarding the Project. On April 11, 2020 E&E provided an updated Project boundary shapefile to ODNR to reflect a change in Project Area. The shapefile was titled "2020_04_06_Madison_Fields_Project_Boundary.zip" and is depicted in Attachment A of this memo. The total Project Area within the April 11, 2020 update was approximately 2,190 acres and entirely encompasses the 1,932-acre Project Area depicted in the current Ohio Power Siting Board application. Although the larger, more encompassing Project boundary was provided to the ODNR and reviewed within the agency's response letter dated May 28, 2020, the letter incorrectly references the acreage of the initial 1,779-acre Project Area that was submitted.

Stantec Consulting Services, Inc.

Courtney Dohoney, PMP Associate, Project Manager

Phone: 703.485.8554 Fax Number

Attachment: Madison Fields Project Boundary, April 6, 2020





United States Fish and Wildlife Service

Consultation Record

Madison Fields Solar Project, LLC Case Number 19-1881-EL-BGN

Lauren Devine

From: Sent: To: Cc: Subject: Ohio, FW3 <ohio@fws.gov> Monday, April 13, 2020 11:44 AM Baker, Katie Lauren Devine Madison Fields Solar Project, LLC



UNITED STATES DEPARTMENT OF TH U.S. Fish and Wildlife Servic Ecological Services Office 4625 Morse Road, Suite 104 Columbus, Ohio 43230

TAILS# 03E15000-2018-TA-1255

Dear Ms. Baker,

We have received your recent correspondence regarding potential impacts to federally listed species in the vicinity of the above referenced project. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. We recommend that proposed activities minimize water quality impacts, including fill in streams and wetlands. Best management practices should be utilized to minimize erosion and sedimentation.

FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees \geq 3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the federally listed endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), we do not anticipate adverse effects to any federally endangered, threatened, proposed or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the U.S. Fish and Wildlife Service (Service) should be initiated to assess any potential impacts.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the Endangered Species Act (ESA), between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or <u>ohio@fws.gov</u>.

Sincerely,

Patrice Ashfield Ohio Field Office Supervisor

Lauren Devine

From:	Cooper, Scott <scooper@ene.com></scooper@ene.com>
Sent:	Thursday, May 21, 2020 6:11 PM
То:	Lauren Devine
Subject:	FW: [EXTERNAL] RE: Following up - Madison Fields Solar Project

Hi Lauren – See below. Original letter from USFWS is still good.

Scott

From: Okajima, Jennifer Y <jennifer_okajima@fws.gov>
Sent: Thursday, May 21, 2020 12:07 PM
To: Cooper, Scott <SCooper@ene.com>
Subject: Re: [EXTERNAL] RE: Following up - Madison Fields Solar Project

Hi Scott,

Thanks for the update. Given that that additional parcels do not include any additional wetlands or forested areas, the letter you received on April 13 would still be applicable. Let me know if you have any other questions!

Kind regards, ~Jennifer

Jennifer Okajima Fish and Wildlife Biologist U.S. Fish & Wildlife Service 4625 Morse Road, Suite 104 Columbus, Ohio 43230

Phone: (614) 416-8993 Ext. 127

From: Cooper, Scott <<u>SCooper@ene.com</u>>
Sent: Monday, May 18, 2020 10:52 AM
To: Okajima, Jennifer Y <<u>jennifer_okajima@fws.gov</u>>
Subject: FW: [EXTERNAL] RE: Following up - Madison Fields Solar Project

Hi Jennifer - Please allow me to introduce myself. My name is Scott Cooper and I have taken over as E & E's project manager for the Madison Fields Solar Project (TAILS# 03E15000-2018-TA-1255). Katie has decided to step back from work for a bit to care for her young child.

I'm following up the email conversation that you and Katie had prior to her departure in which she requested a review of three additional parcels that were going to be added to the Madison Fields Project area. Since then, only two additional parcels have been added. One in the southwest corner and the other in the southeast corner. The northern most parcel has since been eliminated from consideration.

We conducted the additional wetland and T/E work on April 22 and 23, 2020. No additional wetlands were delineated during the survey and the two additional parcels do not include forested areas. The additional survey area covered 153 acres of agriculture land.

I've attached a KMZ of the project boundary, updated delineated wetland and habitat figures for your review, and included the original letter response for reference.

All wetlands will be avoided during construction of the project and seasonal tree clearing between October 1 and March 31 will be implemented. If this changes, we will initiate consultation with the Service.

Please let me know if there is anything else you need in order to provide review of the project.

Thanks, Scott

SCOTT COOPER Biologist t: 312-578-9243 m: 630-362-4843

Ecology and Environment, Inc. Member of WSP 33 W. Monroe Street, Suite 1410, Chicago, IL 60603

www.ene.com___

From: Okajima, Jennifer Y <<u>jennifer_okajima@fws.gov</u>>
Sent: Wednesday, April 15, 2020 9:37 AM
To: Baker, Katie <<u>KBaker@ene.com</u>>
Subject: Re: [EXTERNAL] RE: Following up - Madison Fields Solar Project

Hi Katie,

That makes sense to me - a summary of the habitat types and acreages, and a map would be great. It would also be helpful if you could describe (acreages, locations) which wetland areas and forested areas would be disturbed or specifically avoided. Thanks!

~Jennifer

Jennifer Okajima Fish and Wildlife Biologist U.S. Fish & Wildlife Service 4625 Morse Road, Suite 104 Columbus, Ohio 43230

Phone: (614) 416-8993 Ext. 127

Cc: Lauren Devine <<u>Idevine@savionenergy.com</u>> Subject: [EXTERNAL] RE: Following up - Madison Fields Solar Project

Hi Jennifer,

Thanks for following up. Excellent questions! We are scheduled to conduct a wetland and T&E habitat survey on the 3 additional land parcels next week. As such, I think it would make more sense for me to send you an updated, complete dataset once those surveys are finished. We also will have a more clear understanding of proposed forested clearing at that time as well. When we do have those data ready, how you would you like to see those numbers presented? Would a few sentences summarizing the delineated wetlands/stream acreage, habitat types acreages, and a map of delineated habitat types suffice?

Best,

KATIE BAKER

Chief Biologist t: 312-578-9243 m: 312-833-2732

Ecology and Environment, Inc. Member of WSP 33 W Monroe St, Ste 1410, Chicago, IL 60603 www.ene.com

From: Okajima, Jennifer Y <<u>jennifer_okajima@fws.gov</u>>
Sent: Tuesday, April 14, 2020 10:12 AM
To: Baker, Katie <<u>KBaker@ene.com</u>>
Subject: Following up - Madison Fields Solar Project

Hi Katie,

My name is Jennifer Okajima, I'm with the US Fish and Wildlife Service and am reviewing the project you submitted (Madison Fields Solar Project TAILS# 03E15000-2018-TA-1255).

I was wondering if you could provide more information on how much total forested area is now within the project boundary (with the additional 3 parcels of land) and an estimate for how much of that would be cleared. Also, are there additional wetlands that would be impacted by this boundary expansion? Thank you!

Kind regards, ~Jennifer

Jennifer Okajima Fish and Wildlife Biologist U.S. Fish & Wildlife Service 4625 Morse Road, Suite 104 Columbus, Ohio 43230

Phone: (614) 416-8993 Ext. 127



33 West Monroe St., Suite 1410 Chicago, IL 60603 Tel: (312) 578-9243 Fax: (312) 578-9345

May 15, 2020

Ms. Lauren Devine Madison Fields Solar Project, LLC 422 Admiral Boulevard Kansas City, Missouri 64106

Re: Threatened and Endangered Species Habitat Survey Report for the Madison Fields Solar Project, Madison County, Ohio

Dear Ms. Devine:

Ecology and Environment, Inc., member of WSP (hereafter referred to as E & E) is pleased to provide this letter report to Madison Fields Solar Project, LLC (Madison Fields Solar) summarizing the results of our threatened and endangered (T/E) species habitat survey at the Madison Fields Solar Project, located in Madison County, Ohio.

INTRODUCTION AND GENERAL SITE DESCRIPTION

Madison Fields Solar is proposing to develop a solar energy project on approximately 1,932 acres of private land in a rural, agricultural region of central Ohio (see Figure 1 in Attachment A). As requested by Madison Fields Solar, E & E conducted a field-based habitat survey August 20 to 21, 2019 and April 22 to 23, 2020 in order to assess potential habitat availability for federally and/or state-listed T/E species in the Project area. Two visits were necessary as a result of modifications to the Project area. The purpose of the survey was to document current land uses within the Project area, as well as to detail the types of vegetative cover, amount, and quality of habitat present. The land use and vegetation information can then be compared to the habitat requirements for T/E species that are known or have the potential to occur in the Project area or Madison County.

The Project area is located in the U.S. Environmental Protection Agency's Level IV Darby Plains Ecoregion, within the larger Level III Eastern Corn Belt Plains Ecoregion (USEPA n.d.). The Darby Plains ecoregion is characterized by flat to rolling topography, historically comprised of wet prairies and mixed oak forests that have since been drained for agriculture and livestock production. Forestland is very limited compared to surrounding ecoregions.

METHODOLOGY

Desktop Review

Prior to the field survey, E & E conducted a desktop review of federally and state-listed T/E species for Madison County to assess their potential occurrence within the Project area. The USFWS Information for Planning and Construction (IPaC) screening tool was used to evaluate federal T/E species that might be potentially present within the Project area (USFWS 2020). The ODNR does not have a state-maintained screening tool for specific project sites; therefore, the list of potential state-listed T/E species within the Project area was generated based on the list for Madison County (ODNR 2020).

Field Survey Effort

During the field survey, E & E biologists delineated habitat types and land uses within the Project area as defined in the ODNR Division of Wildlife's *Ohio State Wildlife Action Plan* (SWAP; ODW 2015). E & E biologists then modified, as necessary, each habitat type identified in the SWAP to best characterize the Project area. The dominant vegetation found in each habitat type within the Project area was recorded and the boundaries of these habitats were field-delineated using a handheld GPS unit with sub-meter accuracy. The six habitat types represented in the Project area are described below.

Agriculture

The Agriculture habitat type includes active fields that are used in producing row crops. These fields are regularly disturbed by activities, such as planting, tilling, and harvesting.

Scrub-Shrub

The Scrub-Shrub habitat types includes areas with early successional vegetation dominated by young sapling trees, woody shrubs, and herbs.

Oak-Hickory Successional Forest

The Oak-Hickory Successional Forest habitat type is a mid-successional forest type dominated by oak and hickory species, and is well-established with mature hardwood trees and understory.

Developed

The Developed habitat type includes areas with residential structures, maintained residential lawns, public roads, and structures associated with agricultural operations, including barns, silos, livestock pens, and parking areas.

Wetlands

The Wetlands habitat type includes all the wetlands delineated by E & E within the Project area during the August 2019 and April 2020 wetland delineation and waterbody survey, as conducted in conjunction with the T/E habitat surveys.

Old Field

Old field is comprised of primarily grassland and herbaceous vegetation existing on previously disturbed land typically used for agricultural. It is characterized by weedy and invasive flora often utilized by opportunistic fauna.

RESULTS

Desktop Review

Six federally listed endangered species and two federally listed threatened species were identified during the IPaC review to be potentially present in the Project area (see Table 1). No designated critical habitat for federally listed T/E species occurs within the Project area. The Ohio Department of Natural Resources (ODNR) reports 12 state-listed endangered species and 12 state-listed threatened species that occur in Madison County (see Table 1).

Based on species habitat requirements and a desktop analysis of the habitat in the Project area, Table 1 includes a determination on the likelihood that the federally and state-listed T/E species will be present in the Project area. State-listed T/E species that are also federally listed, but were not identified during the IPaC review, were omitted from Table 1.

Table 1	List of Potential Threatened and Endangered Species Within or Near the Madison Fields Solar Project, Madison
	County, Ohio

				Desktop Presence
Common Name	Scientific Name	Status	Habitat	Determination
Birds				
Black-crowned Night-	Nycticorax nycticorax	ST	Wetland habitats.	Potential suitable habitat present.
Heron				
King Rail	Rallus elegans	SE	Marshes with open water.	Potential suitable habitat not present.
Loggerhead Shrike	Lanius ludovicianus	SE	Open country with scattered shrubs and trees, cropland, or heavily forested areas.	Potential suitable habitat present.
Northern Harrier	Circus hudsonius	SE	Herbaceous wetlands, grasslands, cropland.	Potential suitable habitat present.
Sandhill Crane	Grus canadensis	ST	Breed in open grasslands, wetlands, and prairies. Roost in open waters.	Potential suitable habitat present.
Upland Sandpiper	Bartramia longicauda	SE	Cropland/hedgerow and grasslands.	Potential suitable habitat present.
Fish				•
Scioto Madtom	Noturus trautmani	FE, SE	High-quality, clear streams with moderate current and sandy gravel substrate. Not seen in the wild since 1957.	Potential suitable habitat not present.
Spotted Darter	Etheostoma maculatum	SE	Creeks and rivers with moderate to high gradients with large rocks and boulders near riffles and pools.	Potential suitable habitat not present.
Tippecanoe Darter	Etheostoma Tippecanoe	ST	Medium to large streams with a medium gravel to small cobble bed.	Potential suitable habitat not present.
Insects	1			1
Riffle Snaketail	Ophiogomphus carolus	ST	Streams with fast flow and few pools, with fine gravel or sand substrate.	Potential suitable habitat present.
Mammals	-			-
Indiana Bat	Myotis sodalis	FE, SE	Forests, riparian corridors, and wetlands for summer roosting and foraging.	Potential suitable habitat present.
Northern Long-eared Bat	Myotis septentrionalis	FT, ST	Forests, riparian corridors, and wetlands for summer roosting and foraging.	Potential suitable habitat present.

Table 1 List of Potential Threatened and Endangered Species Within or Near the Madison Fields Solar Project, Madison County, Ohio

				Desktop Presence
Common Name	Scientific Name	Status	Habitat	Determination
Mussels				
Clubshell	Pleurobema clava	FE, SE	Medium to small rivers with clean, loose sand and gravel substrate.	Potential suitable habitat not present.
Elephant-ear	Elliptio crassidens crassidens	SE	Creeks, medium to large rivers with low to moderate gradients with sandy, muddy, or rocky substrates.	Potential suitable habitat not present.
Northern Riffleshell	Epioblasma torulosa rangiana	FE, SE	Variety of stream sizes with packed sand or gravel bottoms.	Potential suitable habitat present.
Rabbitsfoot	Quadrula cylindrica cylindrica	FT, SE	Creeks, medium to large rivers with moderate gradients and sand, gravel, or cobble substrate.	Potential suitable habitat not present.
Rayed Bean	Villosa fabalis	FE, SE	Sand, gravel, or cobble substrates in swift small and medium-sized rivers.	Potential suitable habitat not present.
Snuffbox Mussel	Epioblasma triquetra	FE, SE	Creeks, medium to large rivers, lakeshores with sand, gravel, or cobble substrate.	Potential suitable habitat not present.
Plants		_	-	-
Bicknell's Sedge	Carex bicknellii	ST	Sandy, dry to moist soils, prairies, dunes.	Potential suitable habitat not present.
Bunchflower	Melanthium virginicum	ST	Wet woods, meadows, swales, savannas, fens.	Potential suitable habitat not present.
Glomerate Dodder	Cuscuta glomerata	SE	Prairies and fens.	Potential suitable habitat not present.
Inland Rush	Juncus interior	ST	Moist to dry, open to semi-open areas with sandy soil; roadsides, prairies, meadows, fallow fields, clearings, and upland woods.	Potential suitable habitat present.
Lake Cress	Rorippa aquatica	ST	Pond shores, slow-moving streams, full sun.	Potential suitable habitat not present.
Leafy Blue Flag	Iris brevicaulis	ST	Swamps, floodplains, swampy stream terraces, edges of rich woods, shores.	Potential suitable habitat not present.

Table 1 List of Potential Threatened and Endangered Species Within or Near the Madison Fields Solar Project, Madison County, Ohio

				Desktop Presence
Common Name	Scientific Name	Status	Habitat	Determination
Leiberg's Panic Grass	Dichanthelium leibergii	ST	Sandy loam soils, wet to dry prairies, open	Potential suitable habitat not
			woods, meadows, railroad embankments.	present.
Prairie Dropseed	Sporobolus heterolepis	ST	Calcareous soils in full sun, railroad prairie	Potential suitable habitat not
			remnants.	present.
Royal Catchfly	Silene regia	ST	Prairies, open woods, cemeteries, roadsides,	Potential suitable habitat present.
			right of ways.	

Key:

FE – Federal Endangered

FT – Federal Threatened

SE – State Endangered

ST – State Threatened

Sources: NatureServe Explorer 2020; ODNR 2016, n.d., 2000, 1984; USFWS 2020; MDFW 2015.

Based on this desktop review, 11 federally or state-listed T/E species have the potential to occur within the Project area including: Black-crowned Night-Heron (*Nycticorax nycticorax*, state-listed threatened [ST]); Loggerhead Shrike (*Lanius ludovicianus*, state-listed endangered [SE]); Northern Harrier (*Circus hudsonius*, SE); Sandhill Crane (*Grus canadensis*, ST); Upland Sandpiper (*Bartramia longicauda*, SE); Indiana bat (*Myotis sodalis*, federally listed endangered [FE] and SE); northern long-eared bat (*Myotis septentrionalis*, federally listed threatened [FT] and ST); inland rush (*Juncus interior*, ST); northern riffleshell (*Epioblasma torulosa rangiana*, FE and SE); riffle snaketail (*Ophiogomphus carolus*, ST); and royal catchfly (*Silene regia*, ST). Due to the lack of potentially suitable habitat identified during the desktop analysis, no other T/E species identified in Table 1 are likely to occur within the Project area.

Field Survey Effort

The T/E species habitat survey was conducted by E & E on August 20 and 21, 2019 and April 22 and 23, 2020. Based on the habitat categories identified and delineated during the survey, the total acreage and percentage for each habitat category, as a portion of the overall Project area, are presented in Table 2. A map depicting the geographic locations of the delineated habitats within the Project area is provided in Figure 2 in Attachment A, while representative photographs of delineated habitats are available in Attachment B.

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Habitat Category	Acres	Land Use (%)				
Agriculture	1,917.7	99.3%				
Scrub-Shrub	4.5	0.2%				
Oak-Hickory Successional Forest	4.3	0.2%				
Developed	2.9	0.2%				
Wetlands	1.7	0.1%				
Old Field	1.2	0.1%				
Total	1,932	100%				

Table 2Habitat Types Identified within the
Madison Fields Solar Project Area

For the six habitat types identified with the Project area, a more detailed description follows, addressing each habitat type, the vegetation present, and its likelihood to support T/E species.

Agriculture

Agricultural areas comprise the vast majority of the Project area, representing over 99% of the habitat in the Project area (1,917.7 acres). These areas are large, contiguous open areas that were planted with corn (*Zea mays*) and soybeans (*Glycine max*) during the habitat survey. These areas appear to be regularly farmed/disturbed based on current practices and review of past aerial photography. There are very few areas of undisturbed land within these large agricultural fields that could offer semi-permanent cover for wildlife and increase the habitat value of the surrounding agricultural lands. A representative photograph of Agriculture habitat within the Project area is included in Attachment B, Photo Location HAB-01.

Scrub-Shrub

The Scrub-Shrub habitat type comprises roughly 0.2% of the Project area (4.5 acres) and is represented by one small undisturbed area between two agricultural fields found in the northern portion of the Project area. Overstory species include white oak (*Quercus alba*) and hackberry (*Celtis occidentalis*) with a sapling-shrub layer dominated by poison hemlock (*Conium maculatum*), multiflora rose (*Rosa multiflora*), black cherry (*Prunus serotine*) and Tatarian honeysuckle (*Lonicera tatarica*). The herbaceous

layer included sticky bedstraw (*Galium aparine*) and garlic mustard (*Alliaria petiolate*) This Scrub-Shrub habitat could offer structure and semi-permanent cover for wildlife and increase the habitat value of the surrounding agricultural lands. A representative photograph of Scrub-Shrub habitat within the Project area is included in Attachment B, Photo Location HAB-02.

Oak-Hickory Successional Forest

Oak-Hickory Successional Forest in the Project area consists of a single 4-acre woodlot in the southeastern corner of the Project area, representing approximately 0.2% of the total Project area. The canopy species are dominated by chestnut oak (*Quercus montana*), burr oak (*Quercus macrocarpa*), shagbark hickory (*Carya ovata*), and pignut hickory (*Carya glabra*). The understory is dominated by slippery elm (*Ulmus rubra*) and white ash (*Fraxinus americana*). This woodlot offers habitat for common, native flora and fauna. However, its relatively small size and isolated nature limit the overall habitat value. A representative photograph of Oak-Hickory Successional Forest habitat within the Project area is included in Attachment B, Photo Location HAB-03.

Developed

Developed areas comprise roughly 0.2% (2.9 acres) of the total Project area. These areas consist of structures, maintained residential lawns, roadways, and farm equipment, which generally do not offer habitat for flora and fauna. Developed areas are generally clustered along public roads within the Project area. A representative photograph of Developed habitat within the Project area is included in Attachment B, Photo Location HAB-04.

Wetlands

Wetlands represent approximately 0.1% of the total Project area (1.7 acres). The Wetlands habitat within the Project area consists of two long, linear palustrine emergent (PEM) wetlands within drainage ditches located within the active agricultural fields. The drainage ditches are man-made and used to collect water drained from surrounding agricultural fields. Wetlands have formed within these drainage ditches as a result of the frequent water inundation. Both wetlands are entirely herbaceous, and dominated by reed canary grass (*Phalaris arundinacea*). These wetlands provide minimal habitat for native flora and fauna. A representative photograph showing PEM wetland W-T01-002 is included in Attachment B, Photo Location HAB-05.

Old Field

Old Field habitat in the Project area consists of a single 1-acre area in the northwestern corner of the Project area, representing approximately 0.1% of the total Project area. Species observed in Old Field habitat included orchard grass (*Dactylis glomerata*), smooth brome (*Bromus inermis*), Queen Anne's lace, (*Daucus carota*), teasel (*Dipsacus fullonum*), slippery elm, Canada goldenrod (*Solidago canadensis*), and ragweed (*Ambrosia artemisiifolia*). These areas are no longer regularly farmed/disturbed and generally offer habitat for smaller native bird and mammal fauna, and disturbance-tolerant flora. A representative photograph of Old Field habitat within the Project area is included in Attachment B, Photo Location HAB-06.

Project Area T/E Species Assessment

As determined through the desktop review, the Black-crowned Night-Heron (ST), Loggerhead Shrike (SE), Northern Harrier (SE); Sandhill Crane (ST), Upland Sandpiper (SE), Indiana bat (FE, SE); northern long-eared bat (FT, ST); inland rush (ST); northern riffleshell (FE, SE); riffle snaketail (ST); and royal catchfly (ST) have the potential to occur within the Project area. The T/E species field habitat survey conducted in August 2019 and April 2020 allowed E & E to make a more accurate assessment of the potential presence of the 11 federally and/or state-listed T/E species identified during the desktop

assessment. The following results are discussed by species.

- Black-Crowned Night-Heron. The Black-crowned Night-Heron prefers wetland habitats including marshes, swamps, wooded streams, and forested or herbaceous wetlands (NatureServe 2020). Wetland W-01 and W-02 are herbaceous wetlands and could provide habitat for the species. However, the Wetland habitat is limited (0.1% of the Project area) and the habitat quality for the Black-crowned Night-Heron is low due to agricultural related human disturbance near the Wetland Habitat. For this reason, it is unlikely that the species is present in the Project area and the Project is not expected to adversely affect the species.
- Loggerhead Shrike. The loggerhead shrike prefers habitats with sufficient perches and low-lying shrubs to nest. The species has been identified in open country with scattered shrubs, in cropland on fence posts and wire fences, and within semi-open forested habitat during colder months (NatureServer 2020). The Agriculture, Scrub-Shrub, and Old Field habitat within the Project area may provide habitat for the Loggerhead Shrike. Scrub-Shrub and Old Field habitat is limited within the Project area (0.2% and 0.1%, respectively) and therefore it is unlikely the Loggerhead Shrike would be present within these habitats. The Agricultural habitat comprises 99.3% of the Project area. The species commonly nests on fence post and on wire fences usually found along the edges of agriculture land. The Project may adversely affect the Loggerhead Shrike, if the species is present, and construction takes place during the species nesting period.
- Sandhill Crane. The Sandhill Crane breeds in open grassland habitat and along marshy edges of lakes and ponds. Nests are built on the ground in shallow water habitats. The species utilizes agricultural habitat to rest and feed (NatureServer 2020). Agriculture habitat comprises 99.3% of the Project area. The Sandhill Crane may utilize the Project area to rest or feed, however substantial agriculture habitat surrounds the Project area. Therefore, the Project may affect, but is unlikely to adversely affect the Sandhill Crane.
- Upland Sandpiper. The Upland Sandpiper breeds in grasslands and is sometimes found in agricultural fields and along road edges (NatureServe 2020). Potential migratory and breeding habitats for the species are found within the Agricultural and Old Field habitats and therefore the upland Sandpiper has the potential to occur within the Project area during spring and fall migration, and the summer breeding period. The Project may adversely affect the Upland Sandpiper, if the species is present, and construction takes place during the species nesting period.

- Indiana Bat and Northern Long-eared Bat. Indiana and northern long-eared bats hibernate during the winter in mines or caves, and otherwise roost in tree crevices, cracks, or under exfoliating bark during the summer. Man-made structures, such as barns, are also occasionally used as summer roosts. Summer foraging habitat includes forested stream corridors and wetlands, upland forest, and field edges (USFWS 2019b). Mines, caves, or other suitable winter hibernacula are not present within the Project area. The USFWS defines "potentially suitable summer habitat" as forested areas that contain trees that have suitable features and are more than or equal to 3 inches diameter at breast height (dbh) for the northern long-eared bat and more than or equal to 5 inches dbh for the Indiana bat (USFWS 2019b). Given this definition, all forested portions of the Project area may offer suitable summer habitat for both the Indiana and northern long-eared bat. Although there have been no recorded occurrences of either species within Madison County, both the Indiana and northern long-eared bat were identified during the IPaC review to be potentially present in the Project area (ODNR 2016; USFWS 2019a). Based on available habitat and the species' ranges, the Indiana and northern long-eared bat have the potential to occur within the Oak-Hickory Successional Forest habitat type in the Project area. Limited tree clearing will likely be necessary within the Project area; however, to minimize any potential impacts to roosting Indiana and northern long-eared bats, clearing will be done outside of the summer maternity season (October 1 to March 31). Based on habitat avoidance and out-ofseason tree clearing, the Project is not expected to adversely affect Indiana and northern long-eared bats.
- Northern Harrier. The Northern Harrier prefers open expansive fields and marshes for hunting and breeding. Nests are built on the ground in dense field grass or wetland vegetation (Audubon 2019). The Agriculture and Wetlands habitats found within the Project area have the potential to provide suitable hunting habitat for the species, but the limited Old Field and Wetland habitat within the Project area provide only marginal nesting areas for this species. The most recent Northern Harrier occurrence recorded within Madison County is from 2005. This species has the potential to occur within the Project area while hunting and may be adversely affected by development of the Project. However, as the Project area is composed largely of the Agriculture habitat type (1,917.7 acres; 99.3% of the Project area), it is unlikely that Norther Harrier nesting habitat would be affected as Old Field and Wetland habitat are very limited within the Project area, representing only 0.2% of the total Project area, collectively (2.9 acres).
- Inland Rush. The inland rush is a disturbance-tolerant plant that occurs in open areas, often in sandy soils. It is known to occur in roadsides, prairies, clearings, and fallow fields, and was most recently observed in Madison County in 2010 (ODNR 1984, 2016). Potentially suitable habitat for the plant is present within the Project area in Old Field habitat; however, none of the Old Field habitat appears to occur in areas with sandy soil types as indicated by U.S. Department of Agriculture soil data (USDA-NRCS 2019). For this reason, it is unlikely that the species is present in the Project area and the construction and operation of the Project is not expected to adversely affect the inland rush.
- Northern Riffleshell and Riffle Snaketail. The northern riffleshell inhabits highly oxygenated streams and rivers with packed sand and gravel substrates (NatureServe Explorer 2019). Similarly, the riffle snaketail prefers clear, fast-flowing streams and rivers with fine sand and gravel substrates (MDFW 2015). As no streams were delineated during field surveys conducted within the Project area in August 2019, no habitat is present and the Project is not expected to adversely affect either species.

Royal Catchfly. The royal catchfly occurs in a variety of habitats including prairies, open woods, cemeteries, railroad and powerline rights-of-way, and roadsides (ODNR 2000). It was most recently observed in Madison County in 2014 (ODNR 2016). The Shrub-Scrub and Old Field habitat types present within the Project boundary could provide potentially suitable habitat for the species (5.7 acres; 0.3% of the Project area). As such, the Project may affect the royal catchfly, if present, and Shrub-Scrub and Old Field habitats are disturbed.

CONCLUSIONS

The Project area is almost exclusively composed of agricultural land (99.3%) that provides either poor or unsuitable habitat for T/E species that may occur in the area. However, the Sandhill Crane utilizes the agricultural land for resting and feeding, the Loggerhead Shrike and Upland Sandpiper can be found in Old Field and Scrub-Shrub habitat and on structures in the Agriculture habitat, while the Northern Harrier utilizes agricultural land to feed and nest in wetlands. The Indiana bat and northern long-eared bat may inhabit or utilize portions of the Oak-Hickory Successional Forest, the royal catchfly could inhabit Old Field and Shrub-Scrub habitat types within the Project area. With implementation of tree-clearing activities outside of the summer maternity season, the Indiana bat and northern long-eared bat will not be adversely affected by Project construction or operation.

If potential T/E species habitat cannot be avoided, then coordination with USFWS and ODNR is recommended to determine with greater certainty whether there are known occurrences and appropriate habitat within the Project area for any of the federally and state-listed species with the potential to be present. Or if tree clearing is needed during the indiana bat and northern long-eared summer maternity season. Depending on the feedback and recommendations received during agency consultation, species-specific biological surveys may be necessary to determine presence or probable absence of the species and the potential impacts to the species from Project development.

If you have any questions about the contents of this report, please contact me at (312) 578-9243 or <u>scooper@ene.com</u>.

Sincerely, ECOLOGY AND ENVIRONMENT, INC., MEMBER OF WSP

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Scott Cooper Project Manager

Attachment: A – Figures B – Site Photographs

REFERENCES

- Massachusetts Division of Fisheries and Wildlife (MDFW). 2015. Riffle Snaketail *Ophiogomphus carolus*. Accessed online on January 2019 at: <u>https://www.mass.gov/files/documents/2016/08/qi/ophiogomphus-carolus.pdf</u>
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Figures





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Diserved Path MichiageSta-turi NadisertiligerWCVReportTH/2 - RadiaLinet A000000


Doarnell Path MichicageSta-turi Nadion/Illige/Michilego/Thilly - Hablat And A000000

Attachment B

Site Photographs



Photo Location: HAB-01 Date: August 21, 2019 Direction: North Feature: Agriculture habitat within the Project area.



Photo Location: HAB-02 Date: April 23, 2020 Direction: Northeast Feature: Scrub-Shrub habitat within the Project area



Photo Location: HAB-03 Date: August 21, 2019 Direction: North Feature: Oak-Hickory Successional Forest habitat within the Project area.



Photo Location: HAB-04 Date: August 21, 2019 Direction: Southeast Feature: Developed habitat within the Project area.



Photo Location: HAB-05 Date: August 21, 2019 Direction: West Feature: Palustrine emergent (PEM) wetland, W-T01-002, within the Project area.



Photo Location: HAB-06 Date: August 21, 2019 Direction: Southeast Feature: Old Field habitat within the Project area.

APPENDIX L – FIRST ENERGY PLANS, SPECIFICATIONS AND CALCULATIONS



Specification

FE-ErosionCtrl-1

Erosion Control

(December 15, 2006)

Prepared by: Allan P. Hooper

Approved by: Alan E. Kollar (Manger, Substation Engineering)

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EROSION CONTROL

1.0 GENERAL.

This article covers the furnishing of materials and equipment, and the performance of all operations in connection with establishing turf as indicated on the drawings.

Soil erosion control work shall include preparation of the soil surface, fertilizing, planting of seed, mulching, watering, and maintenance.

All soil erosion control work shall be performed by a contractor who is experienced and regularly engaged in the type of work specified and whose work is acceptable to the Owner.

The work shall be performed using acceptable equipment manufactured expressly for its intended purpose such as a seed drill equipped with coulter openers and depth bands spaced not more than 12 inches apart, a mulch blower for the application of hay or straw mulch, mulch puncher or straight serrated disc weighted to anchor the mulch into the soil a minimum of 2 inches and a cultipacker.

Mulch, seed, and fertilizer may be applied simultaneously with a hydraulic applicator manufactured specifically for this purpose, provided all other requirements of the Specifications are met. The hydraulic applicator shall be capable of applying the mulch, seed, and fertilizer slurry in the proper proportions under its own power to slopes at least as steep an 2 feet horizontal to 1 foot vertical.

The Contractor shall not start erosion protection or preparatory work until notified by the Owner and until excavation and trenching, backfill, embankments, rough grading, and surfacing are completed in the vicinity of the erosion protection work.

1.1 MATERIALS.

Materials and workmanship shall comply with the appropriate state, Department of Transportation, Construction and Materials Specifications.

1.1.1 Topsoil.

Areas indicated on the drawings to be seeded shall be covered with 4 inches of topsoil (6 inches within public right-of-ways) that has been stockpiled on the site. If additional topsoil is required, it shall be supplied by the Contractor from offsite locations. Topsoil for planting operations shall be fertile, friable, natural loam containing a liberal amount of humus and shall be capable of sustaining vigorous plant growth. Topsoil shall be free of subsoil and shall be reasonably free of stone, lumps, clods of hard earth, plants or their roots, stalks, and other extraneous matter. Lime shall be added and mixed with topsoil in amounts required to raise pH within the range of 6 to 6.5 for a depth of 3 inches.

1.1.2 Lime.

Agricultural limestone or agricultural hydrated lime shall be applied, if required, prior to or during the soil preparation for seeding and shall be incorporated into the soil to a depth of 3 inches.

1.1.3 Commercial Fertilizer.

Fertilizer shall be a commercial mixture containing the following percentages by weight.

- 12 percent nitrogen
- 12 percent phosphorus
- 12 percent potash

Fertilizer shall be uniform in composition, free flowing, and suitable for application with acceptable equipment. Fertilizer shall be delivered to the site in standard size bags indicating weight, analysis, and

name of manufacturer. Fertilizer shall be stored in a weatherproof place in such a manner that it will be kept dry and its effectiveness will not be impaired.

1.1.4 Seed.

All seed shall be fresh clean new crop seed meeting the requirements of these Specifications.

M SPROUTABLE SEE	D AND GERMINA	TION PERIOD
Germination Period	Percent Purity	Percent Sproutable Seed
<u>(Days)</u>		
95	90	
10	95	85.8
28	95	85.5
	<u>M SPROUTABLE SEE</u> <u>Germination Period</u> (Days) 95 10 28	M SPROUTABLE SEED AND GERMINAGermination PeriodPercent Purity(Days)9590109528

The balance of material in an acceptable seed mixture (other than specified pure live seed) shall, for the most part, consist of nonviable seed, chaff, hulls, live seeds of crop plants, and harmless inert matter. The percentage of weed seed shall not exceed 1 percent by weight for the mixture.

Seed shall be furnished in sealed, standard containers unless written exception is granted. Seed that is wet or moldy or that has been otherwise damaged in transit or storage will not be acceptable.

1.1.5 Mulch.

Mulching materials shall conform to the following requirements.

1.1.5.1 Vegetative Mulch.

Vegetative mulch shall consist of chaff free wheat straw free from rot or mold and shall be in a good state of preservation when used. Vegetative mulch shall be primarily long, heavy stemmed material delivered in dry bales and shall be kept dry until applied. Vegetative mulch shall be as free an practicable from weed seed and other deleterious substances.

1.1.5.2 Wood Cellulose or Paver Fiber Mulch.

Wood cellulose or paper fiber mulch, for use with the hydraulic application of grass seed and fertilizer, shall consist of specially prepared wood cellulose or paper fiber, processed to contain no germination prohibiting factors, and dyed an appropriate color to facilitate visual metering of application of the materials. The mulch materials shall be delivered in packages not to exceed 100 pounds in gross weight. Mulch shall contain not in excess of 10 percent moisture, air dry weight basis. Mulch shall be manufactured so that after addition and agitation in slurry tanks with fertilizers, grass seeds, water, and any other acceptable additives, the fibers in the material will become uniformly suspended to form a homogenous slurry. Mulch shall be of such a consistency that when hydraulically sprayed on the ground, the material will form a blotter like ground cover impregnated uniformly with grass seed, which, after application, will allow the absorption of moisture and allow water to reach the underlying soil.

1.2 PREPARATION AND APPLICATION.

The preparation of the soil, the application of seed and mulch shall conform to the following requirements.

1.2.1 Preparation of Soil.

The area to be planted shall be thoroughly tilled to a depth of at least 3 inches by discing, harrowing, or other acceptable methods until the soil is well pulverized. The soil shall be tested for pH by the Contractor. Lime shall be added, if necessary, at a rate to bring the soil pH within a range of 6 to 6.5 for a depth of 3 inches. Lime shall be thoroughly worked into the soil to ensure an even distribution. After completion of the tilling operation the surface shall be cleared of all stones, stumps, or other objects

larger than 1-1/2 inches in thickness or diameter, and of roots, wire, grade stakes, and other objects that might be a hindrance to native grasses shall be left uncultivated and unplanted.

The spreading of topsoil shall be completed over the entire area indicated on the drawings before the beginning of soil preparation.

Any objectionable undulations or irregularities in the surface resulting from tillage or other operations shall be removed before planting operations are begun. Soil preparation shall be performed only during periods when satisfactory results are likely to be obtained. When results are not satisfactory because of drought, excessive moisture, or other causes, the work shall be stopped until such conditions have been corrected to the satisfaction of the Engineer.

1.2.2 Fertilizing.

Commercial fertilizer of the type specified shall be distributed uniformly over the entire planting area at the rate of 875 pounds per acre for areas to be needed. The fertilizer shall be applied with a fertilizer drill before the beginning of the mulching operation as a part of the soil preparation or if a seed drill with a fertilizer attachment is used, fertilizer may be applied with the seeding operation following the mulching.

If seed in to be applied by hydraulic application, the fertilizer may be mixed with the seed and mulch and applied as a slurry as specified in the article titled Wood Cellulose or Paper Fiber Mulch.

1.2.3 Seeding.

Seed shall be applied uniformly at rates specified hereinafter. Drills shall deliver seeds uniformly in each drill furrow so that seeds are covered not to exceed 1/2 inch deep. When drilling seed, provisions shall be made by markers or other acceptable means to assure that successive planted strips will overlap or be separated by a space not greater than the space between rows planted by the equipment being used. If inspection during planting operations, or after there is a show of green, indicates that strips wider than the space between planted rows have been left or other areas skipped, additional seed shall be planted in all such areas.

On slopes too steep for the practical operation of power drawn equipment, grass seed shall be broadcast uniformly by hand methods and raked into the surface.

Seeding and fertilizing shall be performed between the dates of September 1 and October 15 for fall planting and March 1 and May 15 for spring planting unless otherwise acceptable to the Owner. Seeding and fertilizing shall not be done during periods of such severe drought, high winds, or excessive moisture, as determined by the Owner that satisfactory results are not likely to be obtained.

Seed shall be applied at the rate of 150 pounds per acre for the mixture stipulated below.

	<u>Planting</u>
	(Percent by Weight)
Creeping Red Fescue	40
Annual Ryegrass	20
Kentucky Bluegrass	40
	100

1.2.4 Compacting.

Immediately after the seeding operations have been completed, the entire area shall be compacted by means of a cultipacker, roller, or other acceptable equipment weighing 60 to 90 pounds per linear foot of roller. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, a pneumatic roller (not wobble-wheel) shall be used. The pneumatic roller shall have tires of sufficient size so complete coverage of the soil surface is obtained. When a cultipacker or similar equipment is

used, the final rolling shall be at right angles to the existing slopes to prevent water erosion or at right angles to the prevailing wind to prevent wind erosion.

1.2.5 Mulching.

Mulching shall be performed within 24 hours after seeding, but shall not be done during windy or rainy weather or when such weather is imminent. If the seedbed has become crusty, eroded, or disturbed by the Contractor's operations before mulching, the Contractor shall rework the soil and reseed in these areas. Mulching shall be started at the windward side of relatively flat areas or at the upper part of steep slopes and shall continue uniformly until each area is covered.

1.2.5.1 Vegetative Mulch.

Alternate methods of placing vegetative mulching follow. The first method utilizes an emulsified asphalt sprayed simultaneously with the vegetative mulch. The second method physically mixes the vegetative mulch with the soil to hold it in place. Either method is acceptable.

Vegetative mulch of straw or hay may be applied with an asphalt tack in a mixture of 1-1/2 to 2 tons of mulch per acre with 75 to 150 gallons of emulsified asphalt per ton of mulch.

The mulch and asphalt mixture shall be placed with conventional mechanical equipment which will distribute the mulch uniformly by blowing it onto the area.

Baled straw shall be broken up and loosened sufficiently before being fed into the blower hopper to avoid the placing of matted or unbroken clumps. The use of wet straw is prohibited.

The equipment shall be provided with jet nozzles spaced in the muzzle of the blower through which the asphalt is ejected simultaneously with the mulch, coating the mulch uniformly with a spray of asphalt. Small areas may be mulched by hand by spreading the mulch in a loose, fluffy condition and sprayed with emulsified asphalt over the surface of the mulch.

Vegetative mulching material without emulsified asphalt may also be used provided that it is disced or punched into the soil so it is partially covered. Several passes may be required, if a straight disc is used, in order to mix the mulching material with the topsoil sufficiently to ensure protection from erosion by either wind or water. The mulch tilling operation shall be performed parallel to the ground contours.

Under some circumstances, it may become desirable to apply straw mulch and anchor it into the soil on steep slopes to prevent erosion as soon as construction of the slopes is completed an determined by the Owner.

Even though it is not the proper season to plant grass seed, vegetative mulch may be applied first and the seed may then be drilled in on top of the mulch at the proper seeding time. By applying mulch immediately following construction, and anchoring it into the soil, the normal seedbed preparation procedure may not be required, depending on the tilt of the soil, as determined by the Owner. In such cases, the fertilizer shall be applied at the time of seeding.

1.2.5.2 Wood Cellulose or Paver Fiber Mulch.

Wood cellulose or paper fiber mulch, for use with the hydraulic application of grass seed and fertilizer, shall be applied uniformly at the rate of 2,000 pounds per acre. The fiber mulch, fertilizer, and seed mixture shall be mixed with water to form a slurry to be applied under pressure. Hydraulic equipment used for the application of the slurry shall have a built-in agitation system. The slurry distribution lines shall be large enough to-prevent stoppage and shall be equipped with a set of hydraulic spray nozzles that will provide even distribution of the slurry on the slopes to be mulched.

1.3 WATERING.

Watering will be required to promote the establishment of healthy turf. Areas which have been seeded shall be watered such that water will penetrate 4 inches into the soil.

Additional applications of water will be required until the grass is well established after planting.

Water shall be supplied by the Contractor. All pipes, pumps, hoses, sprinklers, and other materials necessary to apply water shall be furnished by the Contractor.

1.4 MAINTENANCE AND PROTECTION.

The Contractor shall maintain and protect all planted areas until final acceptance of the work. Final acceptance will not be made until an acceptable uniform stand of grass is obtained, except portions of the seeding may be accepted at various times. Upon acceptance by the Owner of a planted area, the Owner will assume responsibility for maintenance of that portion.

Any portions of the areas of planting which fail to show a uniform stand of grass shall be replanted as before, except commercial fertilizer shall be applied at one-half the original rate. Planting shall be repeated until an acceptable stand of grass in provided.

Care shall be taken to avoid overwatering on the sloped areas to prevent erosion. Any areas which have become eroded shall be regraded and replanted.

The grass height will be maintained by the Owner.



OVERALL SITE PLAN/ACCESS ROP 0 200' SCALE IN FEET

 BY:
 DJH

 APP:
 ANH

 DATE:
 09/15/22

 ISSUE:
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 Energy Delivery Technical Services
 SCALE:
 1"=20

 SIZE:
 42×30

 THIS DRAWING IS PRELIMINARY AND IS SUBJECT TO CHANGE I

 TO THE FINAL REVISION.

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	DPERATING COMPANY	[DE]			region DH-SD	AREA MARID	N
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1012,36	FIP I/E GUIDER S//JE
1015,43	PIPE 3/4
1015,81	FIP 5/8 GUIDER S 7752
1016.37	FIP 1/2 GUIDER S7752
1017,44	FIP 1/2 GUIDER S7752
1013,18	FIP 1/2 GUIDER S7752
1012,88	FIP 5/8 GUIDER S7752
1017.80	FN MAG
1015,92	FIP 5/8 GUIDER S 7752
1017,66	ZING
1015,56	PIPE 3/4
1012.41	FIP 5/8 GUIDER S 7752
1011.75	FIP 5/8 YELLOW MANGLED
1016,60	FIP 5/8

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OVERALL SITE PLAN/ACCESS ROA SCALE IN FEET

FirstEnergy Energy Delivery Technical Services THIS DRAWING IS PRELIMINARY AND IS SUBJECT TO CHANGE TO THE FINAL REVISION.

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33.29	174	1.83			RF	°CL	ACCE	SS RI)	
54.00	11.	89	101	8.05	12	″HD	PE IN	V		
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36.64	-10),75	101	.8.10	12	″HD	PE IN	V 90	Degree	·EL
36.64	10.	75	101	8.30	12	″HD	PE IN	V 90	Degree	EL
36.64	134	4.18	101	7,82	12	″HD	PE IN	V 90	Degree	EL
36.64	155	5.58	101	7.52	12	″HD	PE IN	V 90	Degree	EL
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	RIP RAP
<u>BOBOBO</u>	CRUSHED ROCK
FS	ACCESS EASEME FILTER SOCK
— Е —	EXISTING TRANS
X	EXISTING FENCE
•	EXISTING TRANS
— P/E —	EXISTING PROPE
-	BENCHMARK
	BASELINE

PDINT TABLE

0.00 | 1018.58 | BASELINE DRGIN

DESCRIPTION

<u>LEGEND:</u>

12″ SOLID WALL HDPE ----- NEW MINDR CONTOUR
 ×
 PERCENT/DIRECTION OF SLOPE
 NSMISSION LINE CE NSMISSION POLE PERTY LINE

	PROPOSED GRADE
	EXISTING GRADE
	CUT/FILL
	SUBGRADE
	CRUSHED ROCK
<u>*/</u> >	SLOPE

- 1. ELEVATIONS INDICATED ARE TO FINISHED GRADE (TOP OF ROCK) 2.SUBSTATION CRUSHED ROCK SURFACING TOP COURSE SHALL BE AASHTO SIZE NO. 57 WASHED LIMESTONE, NOMINAL SIZE 2″ TO NO. 4, 3″ THICK, AS SPECIFIED IN THE FIRSTENERGY CONSTRUCTION SPECIFICATIONS (FE-CONST-1),
- 3. SEDIMENT SHALL BE CLEANED DUT DF DITCHES AND PIPES UPDN COMPLETION DF SUBSTATION CONSTRUCTION.

RENCE 5-04-03 5-04-05 5-04-16 5-04-17 5-04-18	DRAWING SUBS STOR EROS STOR PIPE	<u>SS:</u> TATION GRADING MWATER PLAN ION CONTROL D MWATER DETAIL TRENCH AND S	5 PLAN ETAILS .S AND AC TAGING AF	CESS R REA DE	COAD SEC	TION
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100		EASTING		
101	40.00	-46,50	1017.75	CL DF 5 WIDE BERM
102	43.20	-46,51	1017.75	TED DE SDILLYAY
102	57.20	-46,61	1017.75	SDULLYAY CDEST
10.3	60.20	-46,37	1016.75	SPILLWAY CREST
104	64.20	-46,51	1017.75	TOD OF SPILLMAY
105	07.20	-29.72	1017.75	
100	80.14	190.26	1017.75	CL DE 5' WIDE BERM
107	63.39	206 51	1017.75	CL DE 5' WIDE BERM
100	53.40	206.31	1017.75	CL DE 5' WIDE BERM
10.5	37.15	189.61	1017.75	CL DE 5' WIDE BERM
110	35.11	191.30	1017.75	CL DE 5' WIDE BERM
112	20 02	178 99	1017.75	CL DE 5' WIDE BERM
112	29.90	170.00	1017.75	END DE 2' WIDE DITCH
11.0	51.95	-2019	1013, 70	
114	57.02	-25.11	1014.75	
115	27.02	-24 94	1014.75	
117	71.95	-29.89	1014.75	
117	71.75	_9.07	1014.75	
110	71.00	160.09	1014.75	
11.2	2021 2021	100.02	1014.75	
121	62.57	195.01	1014.75	
122	53.57	194.86	1014.75	
123	4864	189.79	1014.75	
124	49.04	159.79	1014.75	
125	51.65	-10.19	1014.75	
126	56.69	-13.12	1013 75	
127	66.69	-12.97	1013.75	
128	68.72	-14 94	1013 75	
129	68.95	-29.93	1013.75	
130	66.98	-31.96	1013.75	
131	56,98	-32.11	1013.75	
132	54,95	-30.14	1013.75	
133	54,72	-15,15	1013,75	BOTTOM OF MICROPOOL
134	52.00	165,83	1013,75	BOTTOM OF FOREBAY
135	55.05	162.88	1013.75	BOTTOM OF FOREBAY
136	63.05	163.00	1013.75	BOTTOM OF FORFBAY
137	66.00	166.04	1013.75	BOTTOM OF FOREBAY
138	65.64	190.04	1013.75	BOTTOM OF FORFBAY
139	63.61	192.01	1013.75	BOTTOM OF FORFBAY
140	70.54	-33,45	1014.76	PIPE INLET INVERT
141	178 72	-1311 70	1010 00	INVERT AT DUTEAU

<u>REFERENCE</u>	D
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by: DJH app: ANH	FirstEnergy	DIST. CODE:	DPERATING COMPANY DHID EDISON [DE]		region DH-SD	area MARIOI	N
date: 09/15/22 issue: FOR BID	Energy Delivery Technical Services	scale: 1"=30' size: 42×30		FACILITY	I		
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LEGEND:	
680	EXISTING MAJOR CONTOUR
<u> </u>	EXISTING MINDR CONTOUR
x	PROPOSED SUBSTATION FENCE
	TOP OF 5' BERM
_	FLOWLINE
	12″ SOLID WALL HDPE
<u> </u>	NEW MAJOR CONTOUR
	NEW MINOR CONTOUR
/ <u></u>	PERCENT/DIRECTION OF SLOPE
	RIP RAP
8080808	CRUSHED ROCK
	ACCESS EASEMENT
FS	FILTER SOCK
— E ——	EXISTING TRANSMISSION LINE
X	EXISTING FENCE
•	EXISTING TRANSMISSION POLE
— P/E —	EXISTING PROPERTY LINE
	BENCHMARK
	BASELINE

2	A	W	/	Ν	G	S	•

<u>AWINGS:</u>
SUBSTATION GRADING PLAN/EROSION CONTROL
SUBSTATION FENCE PLAN
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 1
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 2
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
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CONTROL SH. 8
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 9
EROSION CONTROL DETAILS
STORMWATER DETAILS/ACCESS ROAD SECTIONS
PIPE TRENCH AND STAGING AREA DETAILS

SPECIFICATIONS FOR FOUNDATIONS OF STANDARD 84 INCH HIGH CHAIN LINK FENCE

- AND GATE STOPS FOR STANDARD 84 INCH HIGH CHAIN LINK FENCE WITH 10 FOOT MAXIMUM POST SPACING.

- 2. CONCRETE SHALL CONSIST OF CEMENT CONFORMING TO ASTM C-150, FINE AND COARSE
- ADDED THAN IS REQUIRED FOR A WORKABLE MIXTURE.
- M INSTALL 7' TALL CHAIN-LINK FENCE PER FE SPECIFICATIONS FE-FENCE-1 AND FE-FENCE-1S T INSTALL HIGH VOLTAGE DANGER SIGNS ON EACH DUTWARD FACING SIDE OF FENCE AND GATE NO GREATER THAN 100' APART. T INSTALL PRIVATE PROPERTY SIGN ON EACH GATE.

by: DJH app: ANH	FirstEnergy	DIST. CODE:	DPERATING COMPAN DHID EDISON	r [DE]	region DH-SD	area MARIDI	N
date: 09/15/22 Issue: FOR BID	Energy Delivery Technical Services	SCALE: $1'' = 10'$ SIZE: 42×30		FACILITY FINLEY			
THIS DRAWING IS P TO THE FINAL REVI	RELIMINARY AND IS SUBJECT ISION.	TO CHANGE PRIOR		SUBSTATION FENCE	E PLAN		
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THIS SPECIFICATION COVERS FOUNDATIONS FOR LINE POSTS, CORNER POSTS, GATE POSTS,

1. CARE SHOULD BE TAKEN DURING EXCAVATION FOR THE FOUNDATIONS TO ASSURE THAT THE TOP DIAMETER DOES NOT EXCEED THE BOTTOM DIAMETER BY AN EXCESSIVE AMOUNT. SMOOTH, CIRCULAR FORMS SHALL BE INSTALLED ON THE TOP 12 INCHES OF EACH FOUNDATION. THIS FORM SHALL BE EXTENDED TO A DEPTH OF 24 INCHES WHEN THE TOP EXCAVATION DIAMETER EXCEEDS THE BOTTOM DIAMETER BY 4 INCHES OR MORE. THE FORM SHALL BE LEFT IN PLACE. POSTS SHALL BE PLUMB AND CENTERED WITHIN THIS FORM. AFTER THE CONCRETE HAS BEEN PLACED AND ALLOWED TO CURE FOR 24 HOURS THE AREA AROUND THE TOP OF THE FOUNDATION SHALL BE BACKFILLED TO ROUGH GRADE AND TAMPED WITH SOIL, EACH FOUNDATION SHALL BE ALLOWED TO CURE FOR 72 HOURS BEFORE FURTHER WORK IS DONE 2. ALL LINE, CORNER, AND GATE POSTS SHALL HAVE A MINIMUM EMBEDMENT IN CONCRETE OF 3. THE FORMED PORTION OF ALL FOUNDATIONS SHALL EXTEND APPROXIMATELY 1 INCH ABOVE FINISHED GRADE AND THE TOP OF ALL FOUNDATIONS SHALL BE CROWNED APPROXIMATELY 1 4. FOR INSTALLATIONS WHERE THE FOUNDATION ELEVATIONS VARY, SEE THE GRADING PLAN, 5. FOUNDATIONS SHALL BE FORMED AS DETAILED ON THIS DWG.

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS AND AN AVERAGE AIR CONTENT OF 4-1/2 PERCENT, PLUS OR MINUS 1 PERCENT.

AGGREGATE CONFORMING TO ASTM C-33 AND WATER WHICH IS FREE OF DELETERIOUS SUBSTANCES, CONCRETE SHALL BE MIXED FOR A MINIMUM OF 2 MINUTES IN A BATCH MIXER. CONCRETE SHALL BE MIXED IN THE VOLUMETRIC PROPORTIONS OF ONE PART CEMENT, TWO PARTS FINE AGGREGATE AND THREE PARTS COARSE AGGREGATE. NO MORE WATER SHALL BE 3. SUBSTATION ROCK TO EXTEND 4'-0" BEYOND SUBSTATION FENCE.

REFERENCE DRAWINGS: D-1246-04-03 SUBSTATION GRADING PLAN AND EROSION CONTROL PLAN

ACCESS ROAD PROFILE STA 0+00 TO 6+00

) 10' 20' VERT SCALE IN FEET

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

) 10' 20' 40 Scale in Feet

ACCESS ROAD PROFILE STA 6+00 TO 12+00

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR TO CONNECT ROAD UNDERDRAINS TO ANY ENCOUNTERED TILE CROSSINGS PER DETAIL4/4-17.

0 10' 20' 4 HORIZ SCALE IN FEET VERT SCALE IN FEET

ACCESS ROAD PROFILE STA 12+00 TO 18+00

40′

	100' VERT. CURVE PVI STA. 14+40 ELEV. 1015.50'				
BVC STA 13+90.00 BVC EL 1015.14		EVC STA 14+90.00 EVC EL 1015.25	Image: section of the sectio		
					-0.50%
				EXISTING GRADE	
12" HDPE UNDERDRAIN INV					
13+80 14+00 14+20	14+40 14+	60 14+80 15	5+00 15+20	15+40 15+60 15+	-80 16+0

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

ACCESS ROAD PROFILE STA 18+00 TO 24+00

0 10' 20' 40' HORIZ SCALE IN FEET

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NOTES: 1. INSTALL CLEANDUTS EVERY 150' DF UNDERDRAIN PIPE AND AT ANY VERTICAL BENDS. CRI <u>REFERENC</u> □-1246-04-□-1246-04-:

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR TO CONNECT ROAD UNDERDRAINS TO ANY ENCOUNTERED TILE CROSSINGS PER DETAIL4/4-17.								
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ACCESS ROAD PROFILE STA 24+00 TO 30+00

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

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ACCESS ROAD PROFILE STA 30+00 TO 36+00

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

ACCESS ROAD PLAN STA 42+00 TO 48+00 0 10' 20' 40' HORIZ SCALE IN FEET

ACCESS ROAD PROFILE STA 42+00 TO 48+00

0 10' 20' 40'

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

ACCESS ROAD PLAN STA 48+00 TO 51+84 0 10' 20' 4 HORIZ SCALE IN FEET

ACCESS ROAD PROFILE STA 48+00 TO 51+84

HORIZ SCALE IN FEET

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2. LOCATION OF EXISTING DRAIN TILES UNKNOWN. CONTRACTOR

- 1. ODOT #2 (1.5 2.5 inch) stone or recycled concrete equivalent shall be placed at a minimum 6-inch
- 3. A geotextile shall be placed over the entire area prior to placing stone. It shall composed of strong
- 4. If needed, a pipe or culvert shall be constructed under the entrance to prevent surface water from 5. If needed, a water bar shall be constructed to prevent surface water from flowing along the length of

- 3. Ensure the ends of the temporary culvert pipe (if utilized) are not blocked and that the pipe is free of
- 2. Pull out all construction entrance material and properly dispose of off-site. Stone can be blended into

INSPECTIONS.

SOURCES,

PERMANENT/TEMPORARY SEEDING, FERTILIZING, AND MULCHING:

- 1. ALL ACTIVITIES, MATERIALS, EQUIPMENT AND PERFORMANCE IN CONNECTION WITH ESTABLISHING TURF SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. 2. PERMANENT SEEDING SPECIES AND RATES SHALL BE IN ACCORDANCE WITH THE SEEDING SPECIFICATION.
- 3. TEMPORARY TOPSOIL STOCKPILE SHALL BE SEEDED AT A RATE OF 150 POUNDS OF PURE LIVE SEED (PLS) PER ACRE IF LEFT UNDISTURBED FOR OVER 7 DAYS. SEEDING RATE SHALL BE 80 LBS/ACRE CEREAL RYE OR WHEAT PLUS 20 LBS/ACRE ANNUAL RYEGRASS.
- 4. ACTIVITIES ASSOCIATED WITH APPLICATION OF LIME, SEED, MULCH, COMPACTING, WATERING, MAINTENANCE AND PROTECTION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
- 5. STABILIZATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLES.

MORE

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NOTE: WHERE VEGETATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR ARE OTHERWISE UNDBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE EMPLOYED. THESE TECHNIQUES MAY INCLUDE MULCHING OR EROSION MATTING.

GENERAL NOTES FOR SEDIMENT POLLUTANT CONTROLS:

1. PERIMETER SEDIMENT CONTROL MEASURES (FILTER SOCK) SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING AND WITHIN SEVEN (7) DAYS FROM THE START OF GRUBBING AND SHALL CONTINUE TO FUNCTION UNTIL UPSLOPE AREAS DRAINING TO THEM ARE PERMANENTLY STABILIZED.

2, NO EROSION AND SEDIMENT CONTROL BMPS SHALL BE REMOVED FROM THE SITE PRIOR TO ADEQUATE PERMANENT STABILIZATION OF THE ASSOCIATED UPLAND DRAINAGE AREAS, ALL BMPS WILL BE MAINTAINED IN ACCORDANCE WITH OHIO EPA GENERAL NPDES PERMIT AUTHORIZATION FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITY. 3. THERE SHALL BE NO SEDIMENT-LADEN OR TURBID DISCHARGES TO WATER RESOURCES OR WETLANDS RESULTING FROM DEWATERING ACTIVITIES. IF TRENCH DR GROUNDWATER CONTAINS SEDIMENT, IT MUST PASS THROUGH A SEDIMENT TRAP DR OTHER EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE, PRIOR TO BEING DISCHARGED FROM THE CONSTRUCTION SITE. ALTERNATIVELY, SEDIMENT MAY BE REMOVED BY SETTLING IN PLACE OR BY DEWATERING INTO A SUMP PIT, FILTER BAG OR COMPARABLE PRACTICE, GROUND WATER DEWATERING WHICH DOES NOT CONTAIN SEDIMENT OR OTHER POLLUTANTS IS NOT

4. STREETS DIRECTLY ADJACENT TO CONSTRUCTION ENTRANCES AND RECEIVING TRAFFIC FROM THE DEVELOPMENT AREA, SHALL BE CLEANED DAILY TO REMOVE SEDIMENT TRACKED OFF-SITE. IF APPLICABLE, THE CATCH BASINS ON THESE STREETS NEAREST TO THE CONSTRUCTION ENTRANCES SHALL ALSO BE CLEANED WEEKLY.

REQUIRED TO BE TREATED PRIOR TO DISCHARGE. HOWEVER, CARE MUST BE TAKEN WHEN DISCHARGING GROUND WATER TO

ENSURE THAT IT DOES NOT BECOME POLLUTANT-LADEN BY TRAVERSING OVER DISTURBED SOILS OR OTHER POLLUTANT

5. IT SHALL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR, OR HIS/HER REPRESENTATIVE, TO INSPECT ALL CONTROLS ON THE SITE AT LEAST DNCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY STORM EVENT GREATER THAN DNE-HALF INCH DF RAIN PER TWENTY-FDUR (24) HDUR PERIDD. WHEN INSPECTIONS REVEAL THE NEED FOR REPAIR, REPLACEMENT, OR INSTALLATION OF EROSION AND SEDIMENT CONTROL BMPS, THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:

A. WHEN PRACTICES REQUIRE REPAIR OR MAINTENANCE: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE IS IN NEED OF REPAIR OR MAINTENANCE, WITH THE EXCEPTION OF A SEDIMENT-SETTLING POND, IT MUST BE REPAIRED OR MAINTAINED WITHIN THREE (3) DAYS OF THE INSPECTION. SEDIMENT-SETTLING PONDS MUST BE REPAIRED OR MAINTAINED WITHIN TEN (10) DAYS OF THE INSPECTION. B. WHEN PRACTICES FAIL TO PROVIDE THEIR INTENDED FUNCTION: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE FAILS TO PERFORM ITS INTENDED FUNCTION AS DETAILED IN THE SWP3 AND THAT ANOTHER, MORE APPROPRIATE CONTROL PRACTICE IS REQUIRED, THE SWP3 MUST BE AMENDED AND THE NEW CONTROL

PRACTICE MUST BE INSTALLED WITHIN TEN (10) DAYS OF THE INSPECTION. C. WHEN PRACTICES DEPICTED ON THE SWPPP ARE NOT INSTALLED: IF AN INTERNAL INSPECTION REVEALS THAT A CONTROL PRACTICE HAS NOT BEEN IMPLEMENTED IN ACCORDANCE WITH THE SCHEDULE, THE CONTROL PRACTICE MUST BE IMPLEMENTED WITHIN TEN (10) DAYS FROM THE DATE OF THE INSPECTION. IF THE INTERNAL INSPECTION REVEALS THAT THE PLANNED CONTROL PRACTICE IS NOT NEEDED, THE RECORD MUST CONTAIN A STATEMENT OF EXPLANATION AS TO WHY THE CONTROL PRACTICE IS NOT NEEDED. 6. THE APPLICANT SHALL MAINTAIN FOR THREE (3) YEARS FOLLOWING FINAL STABILIZATION THE RESULTS OF THESE

INSPECTIONS, THE NAMES AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTIONS, THE DATES OF INSPECTIONS, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SWP3, A CERTIFICATION AS TO WHETHER THE FACILITY IS IN COMPLIANCE WITH THE SWP3, AND INFORMATION ON ANY INCIDENTS OF NON-COMPLIANCE DETERMINED BY THESE

7. ALL EROSION AND SEDIMENT CONTROL PRACTICES SPECIFIED ON THIS PLAN SHALL CONFORM WITH DETAILS AND SPECIFICATIONS DUTLINED IN THE CURRENT VERSION OF THE OHID DEPARTMENT OF NATURAL RESOURCES BOOKLET, "RAINWATER AND LAND DEVELOPMENT" OR OTHER STANDARDS ACCEPTABLE TO OHIO EPA. 8. EROSION AND SEDIMENT CONTROL PRACTICES NOT ALREADY SPECIFIED ON THIS PLAN MAY BE NECESSARY DUE TO UNFORESEEN ENVIRONMENTAL CONDITIONS AND/OR CHANGES IN DRAINAGE PATTERNS CAUSED BY EARTH-MOVING ACTIVITY. 9. NO STRUCTURAL SEDIMENT CONTROLS (E.G. FILTER SOCK, SEDIMENT TRAPS, ETC.) SHALL BE USED IN A WATER RESOURCE OR WETLAND, UNLESS THEIR USE IS SPECIFICALLY PROVIDED FOR WITHIN THE SITE'S APPROVED PLAN. 10. SDIL STOCKPILES, TOPSOIL OR OTHERWISE, SHALL BE SITUATED AWAY FROM STREETS, SWALES, OR OTHER WATERWAYS AND SHALL BE SEEDED AND/OR MULCHED IN ACCORDANCE WITH THE OHIO EPA TIMEFRAME FOR STABILIZATION. 11. DN-SITE PERSONNEL SHALL TAKE ALL NECESSARY MEASURES TO COMPLY WITH APPLICABLE REGULATIONS REGARDING FUGITIVE DUST EMISSIONS. FUGITIVE DUST EMISSIONS SHALL BE CONTROLLED IN ACCORDANCE WITH DAC-3745-17-08. 12. FINAL STABILIZATION REQUIREMENTS SHALL INCLUDE A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF AT LEAST 80% COVER FOR ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES OR EQUIVALENT STABILIZATION MEASURES,

PERMANENT STABILIZATION

TEMPORARY STABILIZATION

TIME FRAME TO APPLY EROSION CONTROLS:

TIME FRAME TO APPLY EROSION CONTROLS:

WITHIN TWO (2) DAYS OF THE MOST RECENT DISTURBANCE IF THAT

AREA WILL REMAIN IDLE FOR MORE THAN FOURTEEN (14) DAYS.

WITHIN SEVEN (7) DAYS OF THE MOST RECENT

PRIOR TO THE ONSET OF WINTER WEATHER/NOVEMBER 1ST.

DISTURBANCE WITHIN THE AREA.

WITHIN SEVEN (7) DAYS OF THE MOST RECENT

DISTURBANCE

WITHIN TWO (2) DAYS OF REACHING FINAL GRADE.

WITHIN SEVEN (7) DAYS OF REACHING FINAL GRADE WITHIN THAT AREA

GENERAL NOTES FOR NON-SEDIMENT POLLUTANT CONTROLS:

- 1. CONCRETE WASH WATER SHALL NOT BE ALLOWED TO FLOW TO STREAMS, DITCHES, STORM DRAINS, OR ANY OTHER WATER CONVEYANCE. A SUMP OR PIT WITH NO POTENTIAL FOR DISCHARGE SHALL BE CONSTRUCTED IF NEEDED TO CONTAIN CONCRETE WASH WATER. FIELD TILE OR OTHER SUBSURFACE DRAINAGE STRUCTURES WITHIN 10 FT. DF THE SUMP SHALL BE CUT AND PLUGGED, FDR SMALL PROJECTS, TRUCK CHUTES MAY BE RINSED AWAY FROM ANY WATER CONVEYANCES.
- 2. CONSTRUCTION MATERIALS THAT POSE A POTENTIAL CONTAMINATION THREAT TO STORM WATER SHALL BE MANAGED TO MINIMIZE EXPOSURE TO STORM WATER, MATERIALS SHALL BE KEPT IN SECURE CONTAINERS AND PROPERLY LABELED. SOLID AND LIQUID WASTE AND OTHER WASTES SHALL BE DISPOSED OF PROPERLY IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL DISPOSAL REQUIREMENTS, DISPOSAL SHALL BE CONSISTENT WITH APPLICABLE STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS AND SHALL PROVIDE FOR THE PROPER DISPOSAL OF CONTAMINATED SOILS TO THE EXTENT THESE ARE LOCATED WITHIN THE PERMITTED AREA.
- 3. HANDLING CONSTRUCTION CHEMICALS. MIXING, PUMPING, TRANSFERRING OR OTHER HANDLING OF CONSTRUCTION CHEMICALS SUCH AS FERTILIZER, LIME, ASPHALT, CONCRETE DRYING COMPOUNDS, AND ALL OTHER POTENTIALLY HAZARDOUS MATERIALS SHALL BE PERFORMED IN AN AREA AWAY FROM ANY WATERCOURSE, DITCH OR STORM DRAIN.
- 4. EQUIPMENT FUELING AND MAINTENANCE, DIL CHANGING, ETC., SHALL BE PERFORMED IN ACCORDANCE WITH THE SITE SPECIFIC SWP3 AND GENERAL PERMIT.
- 5. THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT:
 - A, AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.
 - APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE. C. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE MANUFACTURER'S LABEL. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE
 - MANUFACTURER. D. WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE
 - CONTAINER.
 - F. PROPER USE AND DISPOSAL OF MATERIALS ON SITE SHALL BE IN ACCORDANCE WITH THE SITE
- SPECIFIC SWP3.
- 6. IN ADDITION TO PREVIOUS NOTES, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEAN-UP:
 - A. SPILL CLEAN-UP AND PROCEDURES SHALL BE IN CONFORMANCE WITH THE SITE SPECIFIC SWP3.
 - B. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT READILY AVAILABLE ON THE SITE IN ACCORDANCE WITH THE SITE SPECIFIC SWP3.
 - C. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
 - D, SPILLS OF TOXIC OR HAZARDOUS MATERIALS SHALL BE ADDRESSED AND REPORTED IN CONFORMANCE WITH THE SITE SPECIFIC SWP3.
 - E. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REDCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER DNE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.
 - F. SPILL CONTROL AND CLEANUP AND SITE PERSONNEL AWARENESS SHALL BE IN CONFORMANCE WITH THE SITE SPECIFIC SWP3.

SOIL CLASSIFICATIONS: BKB BERKS CHANNERY SILT LOAM

- 3 TO 8 PERCENT SLOPES GROUP B
- BKC BERKS CHANNERY SILT LOAM
- 8 TO 15 PERCENT SLOPES
- GROUP B BKE BERKS CHANNERY SILT LOAM
- 25 TO 35 PERCENT SLOPES GROUP B
- GnB GILPIN SILT LOAM GROUP C

3 TO 8 PERCENT SLOPES

FirstEnergy

HIS DRAWING IS PRELIMINARY AND IS SUBJECT TO CHANG

TO THE FINAL REVISION.

Energy Delivery Technical Services

GROUP B: SOILS HAVING A MODERATE INFILTRATION RATE WHEN THOROUGHLY WET. THESE CONSIST CHIEFLY OF MODERATELY DEEP OR DEEP, MODERATELY WELL DRAINED OR WELL DRAINED SOILS THAT HAVE MODERATELY FINE TEXTURE TO MODERATELY COARSE TEXTURE. THESE SOILS HAVE A MODERATE RATE OR WATER TRANSMISSION. GROUP C: SOILS HAVING A SLOW INFILTRATION RATE WHEN THOROUGHLY WET. THESE CONSIST CHIEFLY OF SOILS HAVING A LATER THAT IMPEDES THE DOWNWARD MOVEMENT OF WATER OR SOILS OF MODERATELY FINE TEXTURE D

GROUP D: SOILS HAVING A VERY SLOW INFILTRATION RATE (HIGH RUNOFF POTENTIAL) WHEN THOROUGHLY WET.

THESE CONSIST CHIEFLY OF CLAYS THAT HAVE A HIGH SHRINK-SWELL POTENTIAL, SOILS THAT HAVE A HIGH

FINE TEXTURE. THESE SOILS HAVE A SLOW RATE OR WATER TRANSMISSION. WATER TABLE, SDILS THAT HAVE A CLAYPAN OR CLAY LATER AT OR NEAR THE SURFACE, AND SDILS THAT ARE SHALLOW OVER NEARLY IMPERVIOUS MATERIAL. THESE SOILS HAVE A VERY SLOW RATE OF WATER TRANSMISSION.

B. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR

E. THE MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.

PER THE USDA NATURAL RESOURCES CONSERVATION SERVICE, THIS SOIL IS DEFINED AS FOLLOWS:

SEEDING SCHEDULE:	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~	\sim	\sim	\sim	\sim
TYPE 1 MIX - CUT AN	ID EMBANKMENT	FILL AR	eas ((NON-WEI	()/CHANN	IELS
BOTANICAL NAME	COMMON NAME	RATE DF	PURE	LIVE SEED	(PLS) PER	_ACRE:
FESTUCA RUBRA	CREEPING RED FESO	CUE		40 LBS		
LOLIUM MULTIFORUM	ANNUAL RYEGRASS			20 LBS		
PDA PRATENSIS	KENTUCKY BLUEGRA	22		40 LBS		
		\cdots			\cdots	

REFERENCE DRAWINGS 0-1246-04-03 SUBSTATION GRADING PLAN/EROSION CONTROL

0-12	46-04-05	STO	RMWATER PL	_AN			
ΊV.	DIST. CODE:	DPERATING COMPANY	[DE]		REGION DH-EA	AREA MARIDN	١
© rvices	scale: N□NE size: 42×30			FACILITY FINLEY			
BJECT	TO CHANGE PRIOR		EROSION	CONTROL 1	DETAIL	S	
	RevisionNote	sap network nd. 17120959		0-	-1246-	04–16	^{rev.} B

	REFERENCE DR/ 0-1246-04-03 0-1246-04-04 0-1246-04-05	AWINGS: SUBSTA SUBSTA STORMV	TION GRADING PLAN TION CROSS SECTIO /ATER PLAN	I NS		
by: JJS app: CDW date: 09/15/22 issue: EDP BID	FirstEnergy Energy Delivery Technical Services	DIST. CODE: SCALE: N□NE SIZE: 42×30	DPERATING COMPANY DHID EDISON [DE]	facility FTNI FY	region DH-EA	area MARION
THIS DRAWING IS F TO THE FINAL REV	RELIMINARY AND IS SUBJECT ISION.	TO CHANGE PRIOR	STE	IRMWATER DET ESS ROAD SEC	AILS	
		RevisionNoti	sap network nd. 17120959	0-	-1246-	04–17 B

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IDTED	DPERATING COMPANY REGION AREA DHID EDISON [DE] DH-SO MARION
SU PRIOR	PIPE TRENCH AND STAGING AREA DETAILS
RevisionNote	SAP NETVURK NU. DUC. 10 REV. 17120959 []-1246-04-18 B

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REFERENCE DRAWINGS:

D-1246-04-07 THRDUGH 0-1246-04-15 ACCESS RDAD PLAN & PRDFILE SHEETS 6-14 D-1246-04-17 ERDSIDN CONTROL AND ACCESS RDAD TYPICAL SECTIONS

			UNL SL			
	OPERATING COMPANY	[NF]	REGION	AREA MARIN	N	
0		FACILITY				
PRIOR	ACCESS ROAD GRADING SECTIONS SHEET 1 DF 2					
RevisionNote	sap network nd. 17120959	0-	-1246	-04-19	^{rev.}	

-40

by: DJH app: ANH	FirstEnergy	DIST. CODE:	DPERATING COMPANY DHID EDISON	([DE]	REGION DH-EA	AREA MARIDI	N
date: 09/15/22 issue: FOR BID	Energy Delivery Technical Services	SCALE: 1:30 SIZE: 42×30		FACILITY			
THIS DRAWING IS PRELIMINARY AND IS SUBJECT TO CHANGE PRID TO THE FINAL REVISION.		TO CHANGE PRIOR	AC	CCESS ROAD GRADING SHEET 2 DF	SECTII 2	SNC	
		RevisionNote	sap network no. 17120959		1246-0	DDC. 10 14-20	rev. C

D-1246-04-07 THRDUGH 0-1246-04-15 ACCESS RDAD PLAN & PRDFILE SHEETS 6-14 D-1246-04-17 ERDSIDN CONTROL AND ACCESS RDAD TYPICAL SECTIONS

	DPERATING COMPANY REGION DHID EDISON [DE] DH-SO	area MARIDN
) PRIOR	FINLEY TITLE PREDEVELOPED BASIN MAP	
RevisionNote	SAP NETWORK ND. 17120959	DDC. ID REV.

	DPERATING COMPANY		REGION	AREA
, 0 0	UNU UISUN LULJ	FACILITY FINLE TITLE	<u> un-su </u> Ү	
		POST DEVE	LOPED	
RevisionNote	sap network no. 17120959			DOC. ID REV.
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POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	40.00	-46.50	1018.81	CL DF 5' WIDE BERM
101	43.25	-46.51	1017.75	CL OF 5' WIDE BERM
102	57.20	-46.61	1017.75	TOP OF SPILLWAY
103	60.20	-46.57	1016.75	SPILLWAY CREST
104	64.20	-46.51	1016.75	SPILLWAY CREST
105	67,20	-46,46	1017.75	TOP OF SPILLWAY
106	83,45	-29,72	1017.75	CL OF 5' WIDE BERM
107	80.14	190.26	1017.75	CL DF 5' WIDE BERM
108	63.39	206.51	1017.75	CL DF 5' WIDE BERM
109	53.40	206.36	1017.75	CL DF 5' WIDE BERM
110	37.15	189.61	1017.75	CL DF 5' WIDE BERM
111	35.11	181.30	1017.75	CL DF 5' WIDE BERM
112	29,92	178.99	1017.75	CL OF 5' WIDE BERM
113	39.90	170.40	1015.96	END OF 2' WIDE DITC
114	51.95	-30.19	1014.75	BOTTOM OF POND
115	57.02	-35.11	1014.75	BOTTOM OF POND
116	67.02	-34.96	1014.75	BOTTOM OF POND
117	71.95	-29.89	1014.75	BOTTOM OF POND
118	71.65	-9.89	1014.75	BOTTOM OF POND
119	69.09	160.09	1014.75	BOTTOM OF POND
120	68.64	190.09	1014.75	BOTTOM OF POND
121	63.57	195.01	1014.75	BOTTOM OF POND
122	53.57	194.86	1014.75	BOTTOM OF POND
123	48.64	189.79	1014.75	BOTTOM OF POND
124	49.09	159.79	1014.75	BOTTOM OF POND
125	51.65	-10.19	1014.75	BOTTOM OF POND
126	56,69	-13.12	1013.75	BOTTOM OF MICROPOOL
127	66,69	-12.97	1013.75	BOTTOM OF MICROPOOL
128	68.72	-14.94	1013.75	BOTTOM OF MICROPOOL
129	68.95	-29.93	1013.75	BOTTOM OF MICROPOOL
130	66.98	-31.96	1013.75	BOTTOM OF MICROPOOL
131	56,98	-32.11	1013.75	BOTTOM OF MICROPOOL
132	54,95	-30.14	1013.75	BOTTOM OF MICROPOOL
133	54,72	-15.15	1013.75	BOTTOM OF MICROPOOL
134	52.00	165.83	1013.75	BOTTOM OF FOREBAY
135	55.05	162.88	1013.75	BOTTOM OF FOREBAY
136	63.05	163.00	1013.75	BOTTOM OF FOREBAY
137	66.00	166.04	1013.75	BOTTOM OF FOREBAY
138	65,64	190.04	1013.75	BOTTOM OF FOREBAY
139	63.61	192.01	1013.75	BOTTOM OF FOREBAY
140	70.54	-33.45	1014.76	PIPE INLET INVERT
141	178 72	-1311 79	1010.00	

<u>REFERENCE</u>	D
□-1246-04-03 □-1246-04-06 □-1246-04-07	
0-1246-04-08	
0-1246-04-09	
0-1246-04-10	
0-1246-04-11	
0-1246-04-12	
0-1246-04-13	
0-1246-04-14	
0-1246-04-15	
□-1246-04-16 □-1246-04-17 □-1246-04-18	

by: DJH app: ANH	FirstEnergy	DIST. CODE:	DPERATING COMPANY DHIO EDISON (OE)		region DH-SD	area MARID	N
date: 09/15/22 issue: FOR BID	Energy Delivery Technical Services	SCALE: 1"=30' SIZE: 42×30		FACILITY			
THIS DRAWING IS PI TO THE FINAL REVI	RELIMINARY AND IS SUBJECT SIDN.	TO CHANGE PRIOR		STORMWATER PLAN			
		RevisionNote	sap network nd. 17120959	0-	1246-1	04–05	rev. D

LEGEND:	
680	EXISTING MAJOR CONTOUR
<u> </u>	EXISTING MINDR CONTOUR
x	PROPOSED SUBSTATION FENCE
	TOP OF 5' BERM
_	FLOWLINE
	12″ SOLID WALL HDPE
<u> </u>	NEW MAJOR CONTOUR
	NEW MINOR CONTOUR
/ <u></u>	PERCENT/DIRECTION OF SLOPE
	RIP RAP
8080808	CRUSHED ROCK
	ACCESS EASEMENT
FS	FILTER SOCK
— Е ——	EXISTING TRANSMISSION LINE
X	EXISTING FENCE
•	EXISTING TRANSMISSION POLE
— P/E —	EXISTING PROPERTY LINE
	BENCHMARK
	BASELINE

2	A	W	/	Ν	G	S	:

<u>AWINGS:</u>
SUBSTATION GRADING PLAN/EROSION CONTROL
SUBSTATION FENCE PLAN
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 1
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 2
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 3
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 4
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 5
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 6
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 7
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 8
ACCESS ROAD GRADING PLAN & PROFILE - EROSION
CONTROL SH. 9
EROSION CONTROL DETAILS
STORMWATER DETAILS/ACCESS ROAD SECTIONS
PIPE TRENCH AND STAGING AREA DETAILS

Rainfall Event	Pre-Developed Flow (cfs)	Post-Developed Inflow (cfs)	Post- Developed Outflow of 12" Culvert (cfs)	Ponding Elevatior (ft)
WQ	0.99	1.53	0.18	1015.06
1-yr	2.38	3.03	0.63	1015.35
2-yr	9.88	8.31	0.88	1015.47
5-yr (Critical Storm)	4.10	4.76	1.20	1015.64
10-yr	4.92	5.57	1.43	1015.76
25-yr	6.05	6.67	1.66	1015.92
50-yr	6.97	7.57	1.71	1016.06
100-yr	7.92	8.50	1.71	1016.20

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Commission of Ohio Docketing Information System on

11/1/2022 4:11:59 PM

in

Case No(s). 19-1881-EL-BGN, 21-0508-EL-BGA

Summary: Notice - Certificate Compliance Condition 1 – Stormwater Pollution Prevention Plan electronically filed by Christine M.T. Pirik on behalf of Madison Fields Solar Project, LLC