

HULL

Environment / Energy / Infrastructure

September 14, 2021

Mr. Chris Cunningham
Senior Project Manager/Midwest Practice Leader Environmental
Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C.
274 North Goodman Street
Rochester, New York 14607

RE: Geology and Hydrogeology Report, Dixon Run Solar Project in Jackson County, Ohio;
EVD030.0003

Dear Mr. Cunningham:

Hull & Associates, LLC (Hull) is pleased to provide Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR and Client) with this Geology and Hydrogeology Report for the proposed Dixon Run Solar Project located in Jackson County, Ohio (Project). The proposed development is a 140-megawatt AC (MW_{AC}) solar energy facility in an approximate 2,080-acre rural area in east-central Jackson County (Project Area). The proposed Facility (defined below) will include solar panels, along with associated infrastructure such as access roads, electrical collection lines, and a project substation.

The purpose of this report is to provide the appropriate investigation and analysis to support the Client's application to the Ohio Power Siting Board (OPSB) to construct and operate the Project. Specifically, the report provides information relevant to the following two provisions of Ohio Administrative Code (OAC) 4906-4, OPSB's rules for applications for electric generation facilities:

OAC 4906-4-08(A)(4)

Water Impacts. The applicant shall provide information regarding water impacts

- (a) Provide an evaluation of the impact to public and private water supplies due to construction and operation of the facility.
- (b) Provide an evaluation of the impact to public and private water supplies due to pollution control equipment failures.
- (c) Provide existing maps of aquifers, water wells, and drinking water source protection areas that may be directly affected by the proposed facility.
- (d) Describe how construction and operation of the facility will comply with any drinking water source protection plans near the project area.
- (e) Provide an analysis of the prospects of floods for the area, including the probability of occurrences and likely consequences of various flood stages, and describe plans to mitigate any likely adverse consequences.

OAC 4906-4-08(A)(5)

Geological features. The applicant shall provide a map of suitable scale showing the proposed facility, geological features of the proposed facility site, topographic contours, existing oil and gas wells, and injection wells. The applicant shall also:

- (a) Describe the suitability of the site geology and plans to remedy any inadequacies.

- (b) Describe the suitability of soil for grading, compaction, and drainage, and describe plans to remedy any inadequacies and store the soils during post-construction reclamation.
- (c) Describe plans for the test borings, including closure plans for such borings. Plans for the test borings shall contain a timeline for providing the test boring logs and the following information to the board:
 - (i) Subsurface soil properties
 - (ii) Static water level
 - (iii) Rock quality description
 - (iv) Per cent recovery
 - (v) Depth and description of bedrock contact

For this report, the following definitions have been used when describing the Project pursuant to the OPSB's current rules (OAC 4906-1-01):

- **Project Area:** "all land within a contiguous geographic boundary that contains the facility, associated setbacks, and properties under lease or agreement that contain any components of the facility" (OAC 4906-1-01(GG)).
- **Facility:** "the proposed major utility facility and all associated facilities" (OAC 4901-1-01(W)).
- **Study Area:** is defined by Hull to better describe the region outside of the Project Area that was included during database searches of available public information. The Study Area includes all of Jackson County and portions of Gallia, Vinton, Meigs, Lawrence, Scioto and Pike Counties so as to capture all areas whose physical characteristics could globally impact the Project Area (e.g., floodplains, faults, regional geology).

STUDY APPROACH

A literature review of readily available hydrogeological and geotechnical documents was completed to develop a generalized understanding of the suitability of conditions within the Project Area for the construction of the proposed Facility. The information summarized in this report was obtained from available online databases and/or documents maintained or produced by the following federal, state, and local agencies:

1. Federal Emergency Management Agency (FEMA);
2. Ohio Department of Agriculture (ODA);
3. Ohio Department of Natural Resources (ODNR);
4. Ohio Environmental Protection Agency (Ohio EPA);

5. Ohio Department of Transportation District 9 (ODOT);
6. Office of the Jackson County Engineer;
7. United States Department of Agriculture (USDA); and
8. United States Geological Survey (USGS).

No environmental studies or structural evaluations were performed as part of the scope of work for this report, and therefore no information relative to environmental or structural considerations are included in this report. An "Initial Geotechnical Engineering Investigation for the Proposed Dixon Run Solar Project in Jackson County, Ohio: CBC Report No. 23897D-1-0421.02" dated April 21, 2021, was completed by CBC Engineers & Associates, Ltd (CBC Report) for SunEnergy1 (Project Owner). SunEnergy1 provided Hull with a copy of the April 21, 2021, Initial Geotechnical Engineering Investigation performed by CBC.

This study also included a reconnaissance of the Project Area, interviews of certain government agency personnel, and preliminary construction considerations.

PROJECT LOCATION

The Project Area comprises approximately 2,080 acres of rural property in Bloomfield Township, just southeast of the City of Jackson in Jackson County, Ohio. The Project Area is shown on Figure 1 and subsequent figures presented in this report.

DESKTOP INFORMATION REVIEW AND ANALYSIS

The following provides a summary of the information reviewed and its applicability to the proposed Project.

Regional Geology

The Study Area lies within the Ironton Plateau of the Allegheny (Kanawha) Plateaus Section of the Appalachian Plateaus Province of the Appalachian Highlands. The Ironton Plateau consists of an unglaciated, dissected plateau described as having coarse-grained, "economically important" coal bearing rock sequences that are more common than in other regions of the Allegheny Plateau. The surface elevations in the Ironton Plateau range from approximately 515 to 1,060 feet above mean sea level (msl) with moderately high relief (300 feet). (Ohio Division of Geological Survey, 1998).

The surface topography within the Project Area consists primarily of Pleistocene-age colluvium, which is typically composed of loose unconsolidated sediments deposited at the base of hillslopes by various erosional processes. Colluvium is typically composed of heterogeneous range rock types and sediments ranging from silt to rock fragments of various sizes. The colluvium is derived from the local bedrock and includes scattered areas of residuum, weathered material, landslides, and bedrock outcrop (Ohio Division of Geological Survey, 1999). The Project Area also contains localized areas of lacustrine (lake deposited) clays that are remnants of the Teays Valley drainage system. These lacustrine deposits are primarily very fine-grained clay-and silt-size sediments (Ohio Division of Geological Survey, 2005). The surface elevations within the Project Area, as shown on Figure 1, range from approximately 622 to 912 feet above msl with an average of 795 feet above msl (Ohio Georeferenced Information Program - Flown 2018).

The uppermost bedrock unit within the Project Area is the Allegheny and Pottsville Group, undifferentiated (Pap, Middle and Lower Pennsylvanian) and just outside the Project Area to the southeast is the Conemaugh

Group (Pc, Upper Pennsylvanian), as shown on Figure 1. The Allegheny and Pottsville Group consists of shale, siltstone, sandstone, conglomerate, limestone, underclay, coal, and flint in shades of gray to black, and greenish gray in the upper one-third of the unit. The Conemaugh Group consists of shale, siltstone, mudstone, sandstone, limestone, and coal in shades of gray, green, red, purple, and yellow to black (Ohio Division Geological Survey, 2006).

The bedrock topographic surface is shown on Figure 1. According to the ODNR database, the top of bedrock occurs at approximately 700 feet msl across the Project Area. However, the ODNR has multiple areas throughout the Project Area without bedrock elevation data. The ONDR database was last updated on January 1, 2004. CBC conducted an Initial Geotechnical Engineering Investigation by installing 20 soil borings within the Project Area at depths ranging from 14.1 feet to 15.5 feet below ground surface (bgs) and apparent bedrock was not encountered in any of the borings.

An ODNR water well log search was completed within the Project Area and within a 500-foot buffer of the Project Area. There were no water well logs identified within the Project Area. There were five geocoded well records within the 500-foot buffer, however, only three (499816, 363573 and 109073) had well logs available from ONDR. Well log number 499816 is located within the 500-foot buffer close to the north central portion of the Project Area near Keystone Furnace Road. In this well, clay was identified from surface to 30 feet bgs and shale from 30 to 85 feet. Groundwater was encountered at 33 feet bgs during drilling. Well log number 363573 was identified within the 500-foot buffer along State Route 327 north of US Route 35 and identified brown sand and clay from the surface to 46 feet bgs, gray sand from 46 to 71 feet bgs, and a gravel/weathered sandstone formation from 71 to 84 feet bgs where sandstone and shale were encountered. Groundwater was encountered at 76 feet bgs during drilling. Well log number 109073 is located just southwest of well log number 363573 and within the 500-foot buffer. Shale and sandstone were observed from zero to 32 feet bgs, shale from 32 to 68 feet bgs and sandstone from 68 to 110 feet bgs.

Karst Topography

Information obtained from ODNR, Division of Geological Survey, was used to determine if any karst topography was present within or near the Project Area. According to this information, there are no verified or suspect karst areas identified within the Project Area. The nearest karst feature is unverified and located approximately 16.2 miles north of the Project Area in Vinton County (ODNR Web, 2021).

Seismicity

Structural features (e.g., faults, folds) and earthquake epicenters within the Project Area are shown on Figure 2. A review of the geologic and seismic information indicated that no historical earthquake epicenters were located within the Project Area and only one was located within Jackson County. The nearest seismic event, with a magnitude of 2.6, occurred in Gallia County in 2016. The earthquake epicenter for this event was approximately 6.5 miles southeast of the Project Area (ODNR Web, 2021). There are no mapped faults located within the Project Area. The nearest fault is an unnamed fault line located approximately 19 miles southwest of the Project Area.

The design of the facility will follow the Ohio Building Code (OBC) which has provisions for earthquake design data. Based on the proposed construction of the solar farm facility with subsurface components installed to a total depth of 6 to 10 feet and the collection lines typically trenched to a depth of only 3 to 4 feet below ground surface, a future seismic event poses minimal hazard/risk to the constructability and operation of the Project. In addition, the CBC Report indicated that liquefaction, the significant loss of strength of clayey soils underlying the Project Area during seismic events is extremely unlikely.

Hydrology and Hydrogeology

The surface water bodies within the Project Area include several unnamed tributaries which lie within the Dickason Run water shed. Dixon Run, an intermittent stream is just east of the Project Area and flows northeast into Dickason Run. The surface water flow within the Project Area is generally outward of the Project Area. The entire Project Area is located within the Ohio River Drainage Basin.

Figure 3 was prepared using information obtained from the ODNR and FEMA and shows there are 100-year floodplain areas mapped along in the northeast corner of the Project Area along Keystone Furnace Road. A 100-year floodplain is an area where an extreme hydrologic event could result in a flood having a 100-year recurrence interval (i.e., a flood of that magnitude has a 1 percent chance of happening in any given year). The Client has confirmed that the Facility will not be constructed within the 100-year floodplain. All areas within the Project Area outside the 100-year floodplain are designated by FEMA as an Area of Minimal Flood Hazard. Therefore, construction of the Facility should have minimal impact on the surface drainage in the Project Area. Conversely, there should be minimal impact to the Facility as a result of surface water flow in the Project Area.

Several potential wetlands and freshwater pond habitats are mapped by the National Wetlands Inventory and are located within the Project Area as shown in Figure 3. Actual on-site delineations of wetlands have been conducted on behalf of the Client as part of a separate scope of work and report.

Groundwater Resources

The Ground Water Resources of Jackson and Vinton County (Walker, 1985) indicates the principal groundwater sources for the Project Area are bedrock, consisting of layers of sandstone, shale, fireclay, coal and limestone with an average yield for drilled wells of approximately two (2) gallons per minute (gpm). The Ground Water Resource Map identifies a well to the northeast of the Project Area that was drilled to 100 feet into a shale formation with a yield of one (1) gpm. The depth to bedrock at this location was 2 feet. Figure 4 includes the unconsolidated aquifers in the Project Area, the Symmes Creek Alluvial Aquifer is located in just a portion of the southwest corner of the Project Area and the Raccoon Creek Alluvial Aquifer is located in a small portion of the west side of the Project Area. Both aquifers reportedly yield less than five (5) gpm.

As previously noted, no water well records were identified within the Project Area, but five water wells were located within the 500-foot buffer around the Project Area. Notes on the well log and drilling reports indicated that during drilling activities, groundwater was encountered at 33 feet and 76 feet bgs in two of the wells. The lack of water wells within the Project Area was confirmed based on the well survey information provided by property owners within the Project Area and described below. As described in the Regional Geology section above, a well identified just outside the Project Area within the 500-foot buffer (well log number 363573) along State Route 327 encountered groundwater in a gravel/weathered sandstone formation at 76 feet bgs and another well located within the 500-foot buffer close to the north central portion of the Project Area encountered groundwater at 33 feet bgs during drilling. Groundwater was reportedly not encountered in any of the borings completed by CBC during their geotechnical boring program.

Drinking Water Source Protection Area

The presence of Source Water Protection Areas (SWPAs) for public water systems within the Project Area was evaluated. SWPAs are areas defined and approved by the Ohio EPA for the purpose of protecting drinking water resources. The SWPA map provided by Ohio EPA, Division of Drinking and Ground Waters, is included in Attachment A and does not show any SWPAs within the Project Area. The closest SWPA is the City of Jackson community system, surface water, source water area watershed location approximately 6.5

miles northwest of the Project Area. This SWPA was confirmed using the Ohio's Drinking Water Source Protection Areas interactive map. (Ohio EPA Web, 2021).

Environmental regulatory programs of the Ohio EPA, as well as other regulatory agencies such as the Ohio Bureau of Underground Storage Regulations (BUSTR), have adopted regulations that restrict specific activities within SWPAs. These activities include concentrated animal feeding operations, wastewater treatment land application systems, industrial, municipal and residual waste landfills, leaking underground storage tanks (LUSTs), and voluntary action program (VAP) cleanups. The restrictions typically apply to SWPAs relying on groundwater as their drinking water source. Hull has reviewed the range of programs which have adopted rules related to the presence of SWPAs and has concluded that construction of the proposed solar farm facility will not constitute an activity that would be restricted within either a surface water or groundwater SWPA.

Based on the construction and operation of the Facility, there will be no hazardous substances and/or petroleum introduced by or emanating from the Project. All oils used within the electrical substation will be non-polychlorinated biphenyls (PCBs) and a spill control plan will be prepared if applicable. The Ground-Water Resources of Jackson County indicates the principal groundwater source for landowners in the Project Area is bedrock with an average yield for drilled wells of 2 gpm. The unconsolidated aquifers in the Project Area, the Symmes Creek Alluvial Aquifer and the Raccoon Creek Alluvial Aquifer both yield less than 5 gpm. Given the shallow construction depth anticipated with installation of the proposed solar arrays, approximately 8 to 10 feet bgs, groundwater may not be encountered during construction. Therefore, it is highly unlikely that the construction and operation of the Facility will have any negative impact on public and private water supplies. With the methods of construction and operation of the Facility, no pollution control equipment will be required.

Well Survey

Hull mailed a brief well survey to three property owners within the Project Area that were under contract with the Client at the time the hydrogeology review commenced in June/July 2021. A list of names and addresses for the property owners was provided by the Client. The survey included multiple questions regarding the number, depth, installation date, and construction of wells on their properties. Additional information was requested regarding the aquifer type, depth to water, and yield of each well. The survey also requested information regarding any problems experienced by the property owners with their wells.

At the time this Desktop Document Review was completed, all three well surveys were returned to Hull. Two of the well survey responses indicated that potable water was provided by Jackson County Water Company Inc. The third survey response indicated that it was unknown if a well(s) existed on the property and that the source of potable water for the property was also unknown.

Soil Survey

Soil surveys provide maps of surficial soils and general descriptions of the various soil types over the survey area and can be used as a tool to compare the suitability of large areas for general land uses. The USDA Natural Resources Conservation Service of Jackson County (USDA Web, 2021) maps the majority of the surficial soils within the Project Area as Latham-Wharton (LhW1D2), Rigley-Latham (RgLZE1) and Fairpoint (FaD) which cover approximately 21.5, 13.6 and 8.3 percent of the Project Area, respectively. The remainder of the Project Area is covered by various loams, silt loams and sandy loams as shown in the soil types map, Figure 5.

The soil survey information suggests that the Latham-Wharton silt loam soils have 15 to 25 percent slopes and are moderately well drained. The permeability of these soils is generally moderately low to moderately

high (0.06 to 0.60 inches/hour), and the depth to the top of the seasonal high-water table can range from 18 to 36 inches bgs. The Rigley-Latham association, steep have 25 to 50 percent slopes and are well drained. The permeability of these soils is high (2 to 6 in/hr), and the depth to the top of the seasonal high-water table is more than 80 inches bgs. The Fairpoint silty clay loam soils have 8 to 25 percent slopes and are well drained. The permeability of these soils is very low to moderately high (0.00 to 0.01 in/hr), and the depth to the top of the seasonal high-water table can be more than 80 inches bgs. Seventy two percent of the soils within the Project Area are considered highly erodible. Majority of these soils are within forested areas within the Project Area and project infrastructure should be further evaluated within the Project Area prior to construction of the project. In addition, 94% of the soils within the Project Area have a slope greater than 6%. A Custom Soil Resource Report for Jackson County, Ohio is included in Attachment B.

A geotechnical exploration consisting of the advancement of twenty (20) soil borings with field and laboratory testing was completed by CBC for the Project Area. As documented in the CBC Report, the Project Area had previously been surface mined and site soils consisted predominantly of mine spoils. The Project Area is generally overlain by approximately 4 to 7 inches of topsoil. Underlying the topsoil, apparent mine spoils consisting predominantly of silt and/or clay with varying amounts of sand, gravel and rock fragments were encountered to the termination depths of the borings, which ranged from approximately 14.1 to 15.5 feet bgs.

Oil and Gas Wells and Injection Wells

Based on the geocoding of oil and gas wells, one oil and gas well labeled as “Dry Hole”, located just outside the southwest corner of the Project Area but within the 500-foot buffer was plugged and abandoned (ODNR Web, 2021). In addition, one oil and gas well exists within the Project Area with a status of Domestic Well. There was a Casing Ticket within the well permit packet for a Record of Casing, Cementing and Mudding. Therefore, based on correspondence with ODNR, this well was abandoned. The Well Summary and Well Permit is included in Attachment C. Oil and gas well locations are also shown on Figure 4.

Based on the geocoding of active Class II injection wells from ODNR, there are no Class II injection wells within the immediate vicinity of the Project Area. The nearest Class II injection well is approximately 16 miles northeast of the Project Area.

Underground and Surface Mines

Information obtained from the ODNR Division of Mineral Resources (ODNR Web, 2021) indicates that there are several mapped underground and surface mines in the Project Area. As documented in the CBC Report, the Project Area had previously been surface mined and site soils consist predominantly of mine spoils. The majority of the Project Area is covered by inactive or released surface coal mines. A small section located within the Project Area in the northeast corner near Dixon Run Road is identified as an active surface coal mine. All underground coal mines are considered abandoned; all other surface coal mines are either considered inactive or released; and there are unreclaimed historic surface coal mines. The unreclaimed mine areas, with bare or poorly vegetated land are highly susceptible to erosion of sediments. Buildings or foundations constructed on abandoned surface mines may be susceptible to structural problems due to settling. Figures 6a through 6d illustrate the known coal, underground, abandoned, or surface mines that are mapped within the Project Area. Figure 6a illustrates the abandoned underground coal mines within the Project Area. Figure 6b illustrates the surface coal mines (i.e., historic, active, inactive and released) within the Project Area. Figure 6c illustrates the surface industrial mineral mines within the Project Area and Figure 6d illustrates surface affected area within the Project Area.

The CBC Report describes the evaluation of the subsurface conditions at the site based on the historic underground and surface mine activity within the Project Area to determine the appropriate foundation support, foundation designs and suitability of the reclaimed site soils.

Due to the presence of underground and surface mines within the Project Area, there may be the potential for contaminated water from acid mine drainage (AMD) that may seep from underground and sometimes surface mine spoils. Acid mine drainage is typically formed by a chemical reaction between sulfur bearing mineral and iron in residual coal seams and mine spoil. When these minerals get exposed to oxygen and water, they form a diluted solutions of sulfuric acid and other dissolved minerals.

Hull obtained the June 2000 Acid Mine Drainage Abatement and Treatment (AMDAT) Plan for the Little Raccoon Creek Watershed, Jackson County, Ohio from ODNR. The majority of the Project Area lies within the Little Raccoon Creek watershed and more specifically, the Dickason Run sub-watershed. The AMDAT Plan was prepared due to the widespread AMD drainage in the basin, identify sources of AMD and provide abatement and treatment options for prioritized watersheds.

Twenty-three sampling sites were selected within 12 tributaries of Little Raccoon Creek including Dickason Run. Several tributaries showed serious impact by AMD that included Dixon Run (which is a tributary to Dickason Run). Of the 12 tributaries that were studied, six contribute 99% of the total acidity to Little Raccoon Creek. These six priority sub-watersheds do not include the Dickason Run watershed. The AMDAT Plan does recommend that the low priority watersheds be monitored to ensure that acidity loading doesn't change over time due to different hydrological conditions, or as a result of active mining, subsidence or weathering. Based on the fact the Dickason Run watershed is not a priority watershed under this AMDAT Plan, it does not appear that AMD discharges within this watershed are a concern to water quality at this time. It is anticipated that the presence or potential discharge of AMD is less likely in the portions of the Project Area that have been properly reclaimed after operations ceased. The AMDAT Plan for the Little Raccoon Creek is included in Attachment D.

In addition, a "Phase I Environmental Site Assessment for Jeffery S. Watson Trustee Properties, Dixon Run Rd. & Luther Jones Rd., Jackson, Jackson County Oh" dated November 6, 2021, was completed by Terraquest (Phase I Report) for SunEnergy1 (Project Owner). SunEnergy1 provided Hull with a copy of the November 6, 2021, Phase I Report prepared by Terraquest. The recommendation from the Phase I Report concluded that no Recognized Environmental Conditions (RECs) of concern on the subject properties and surrounding properties and no additional investigation of the subject properties soil and groundwater is warranted. Additional information is provided within the Phase I Report regarding the underground and surface mines within the Project Area. See the Phase I Report for this information.

PROJECT AREA RECONNAISSANCE

Hull completed a field reconnaissance of the Project Area on June 29, 2021, from the public right-of-way, to observe site conditions including topography, surface geologic features, and surface water conditions. The areas within and adjoining the Project Area predominantly consist of reclaimed surface mine areas that have been converted to pasture areas and small groups of forested areas with several commercial properties and residential housing. Based on the regional geology, this area of Ohio has the potential for landslides and rockfalls due to loose unconsolidated sediments deposited in unglaciated areas. However, based on a review of the existing topography of the Project Area and the visual observations completed during the field reconnaissance, it is anticipated that the potential for rockfalls and landslides is low due to the moderate relief observed within the Project Area. In general, the Project Area appears to be adequately drained and Hull did not observe sinkholes, depressions, or evidence of karst topography within the Project

Area. Representative photographs which illustrate the general Project Area conditions and a photo location map are presented in Attachment E.

AGENCY INTERVIEWS

Hull contacted the ODOT District 9 and Jackson County Engineer's offices to inquire about their knowledge and experience of previous construction projects, subsurface conditions, and maintenance history within the Project Area. Hull made multiple attempts to contact the ODOT District 9 Office and Melissa Miller, PE, PS at the Jackson County Engineer's Office but were unsuccessful in receiving responses at the time this report was issued. It should be noted that any aboveground or underground collection lines or access roads that may cross open or tiled ditches that are maintained by the County Engineer will likely require crossing permits.

PRELIMINARY CONSTRUCTION CONSIDERATIONS

The CBC Report was completed, in part, to satisfy the requirements of OAC 4906-4-08(A)(5). The CBC Report identified site-specific conditions including soil composition, depth of bedrock (if encountered) and water levels observed during the test borings conducted within the Project Area. Recommendations are included for the type of foundations necessary to support the solar array and the site development, including recommendation for potential site conditions that may be encountered during construction within the Project Area. See the CBC report for this information.

Adequate surface water runoff drainage should be established at each solar array, access paths, and other improvement locations to minimize the potential to increase the moisture content of the subgrade material. Surface water runoff should be properly controlled and drained away from the work areas during construction. Positive drainage should be created by gently sloping the ground surface toward existing or proposed drainage swales. During construction, an Ohio EPA General Permit for Storm Water Associated with Construction Activities will be required. This General permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) that will identify best management practices (BMPs) for stormwater runoff, erosion, and sediment control. Due to the presence of highly erodible soils within the Project Area, it will be important to design appropriate BMPs to manage erosion and sediment control.

Based on a review of the soil survey information and the CBC report, the soils are expected to be suitable for grading, compaction, and drainage when each solar array is prepared. As previously stated, the majority of the Project Area has been surface mined and reclaimed with mine spoils consisting of mixed silty clay with varying amounts of sand, gravel and rock fragments according to the CBC boring logs. Due to the apparent depth of bedrock, it is anticipated that excavation within bedrock will be unlikely within the Project Area. The boring logs from the CBC report indicated split spoon refusal due to rock fragments as shallow as 1.5 feet bgs, but auger refusal was not encountered in any of the borings to the completion of each boring (i.e., 14.1 to 15.5 feet). Furthermore, no karst areas were identified in the Project Area.

SUMMARY

Based on the information reviewed to date and the field reconnaissance, it does not appear that the local geology and/or hydrogeology will be prohibitive regarding construction of the proposed solar modules, access paths, and associated site improvements. Likewise, based on Hull's knowledge of typical solar module foundation construction, it does not appear that the construction of the proposed solar array will have a significant impact on the local geology and/or hydrogeology of the Project Area.

The 100-year floodplain areas mapped within the Study Area and just northeast corner of the Project Area are mostly surrounding Dickason Run which is located north of the Project Area along Keystone Furnace Road. Construction and operation of the Facility is anticipated to necessitate only minor grading that would not result in significant changes to the topography within the Project Area. Therefore, construction and operation of the Facility is not anticipated to result in any significant negative impact to the 100-year floodplain

Based on the construction and operation of this type of Facility, there will be no hazardous substances and/or petroleum introduced as part of the Facility that could be released from the Project Area. With the methods of construction and operation of this type of Facility, no pollution control equipment will be required. Therefore, it is unlikely that the construction and operation of this type of Facility will impact public and private water supplies.

Underground and surface mines are located within the Project Area. Underground coal mines are considered abandoned; all other surface coal mines are either considered inactive or released; and there are unreclaimed historic surface coal mines in the Project Area. In addition, there is potential for AMD that may seep from underground and improperly reclaimed surface mines. Based on the ODNR AMDAT Plan for the Little Raccoon Creek watershed, the Dickason Run watershed is not a priority watershed for abatement and treatment. The AMDAT Plan does recommend that the low priority watersheds be monitored to ensure that acidity loading doesn't change over time due to different hydrological conditions, or as a result of active mining, subsidence or weathering. Based on the fact the Dickason Run watershed is not a priority watershed under this AMDAT Plan, it does not appear that AMD discharges within this watershed are a concern to water quality at this time. It is anticipated that the presence or potential discharge of AMD is less likely in the portions of the Project Area that have been properly reclaimed after operations ceased.

If AMD is present in the Project Area, it will likely form a wetland or small stream and would be identified during a surface water delineation. In most situations, these features should be avoided to minimize the need for surface water permitting. In the event one of these features cannot be avoided, it would need to be permitted with the US Army Corp of Engineers (USACE), Ohio EPA and potentially with ODNR. Given the shallow construction depths anticipated for construction of the solar arrays and ancillary structures, access roads, etc., it is not anticipated that construction of the Facility will result in the generation of AMD. Given that the majority of the Project Area appears to be located within areas that have been properly reclaimed, it is also unlikely that the presence of AMD, if any, will have a negative impact on the construction and operation off the Facility.

As previously discussed, adequate surface water drainage should be established within the Project Area to minimize any increase in the moisture content of the subgrade material. Surface water drainage can be managed by implementing techniques such as surface water swales, drainage berms, etc. During construction, an Ohio EPA General Permit for Storm Water Associated with Construction Activities will be required. This General permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) that will identify best management practices (BMPs) for stormwater runoff, erosion, and sediment control. Due to the presence of highly erodible soils within the Project Area, it will be important to design appropriate BMPs to manage erosion and sediment control. Based on a review of the soil survey information and our experience with earthwork in the Study Area, the soils are expected to be suitable for grading, compaction, and drainage for the solar arrays. During construction, topsoil will be removed and stockpiled from areas where soils are planned to be disturbed. The stockpiled topsoil will be reused during site restoration activities to provide a surficial layer that supports the growth of vegetation.

Except for the results of the site reconnaissance, the conclusions included in this report are based on general summaries available through the resources previously listed. There may be anomalies in the hydrogeology

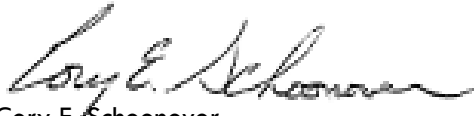
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or geotechnical conditions of the Project Area that cannot be discerned by the scale of the data used in this study. As noted previously, final, site-specific geotechnical information should be reviewed prior to final solar array foundation design and construction.

STANDARD OF CARE

Hull has performed its services using that degree of care and skill ordinarily exercised under similar conditions by reputable members of its profession practicing in the same or similar locality at the time of service. No other warranty, expressed or implied, is made or intended by our proposal or by our oral or written reports. The work does not attempt to evaluate past or present compliance with federal, state, or local environmental or land use laws or regulations. Conclusions presented by Hull regarding the area within the Project Area are consistent with the Scope of Work, level of effort specified, and investigative techniques employed. Reports, opinions, letters, and other documents do not evaluate the presence or absence of any condition not specifically analyzed and reported. Hull makes no guarantees regarding the completeness or accuracy of any information obtained from public or private files or information provided by subcontractors. If you have any questions regarding the summary and conclusions presented in this Geology and Hydrogeology Report, please do not hesitate to contact either of the undersigned at your convenience.

Sincerely,



Cory E. Schoonover
Project Manager



Trent Hathaway, P.E.
Project Manager

Attachments

REFERENCES

1. CBC Engineers & Associates, Ltd., April 21, 2021, Initial Geotechnical Engineering Investigation for the Proposed Dixon Run Solar Project in Jackson County, Ohio: CBC Report No. 23897D-1-0421-02.
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FIGURES