thoroughbred solar

Attachment N
Cumulative Environmental Assessment

Exhibit 12 – Site Assessment Report

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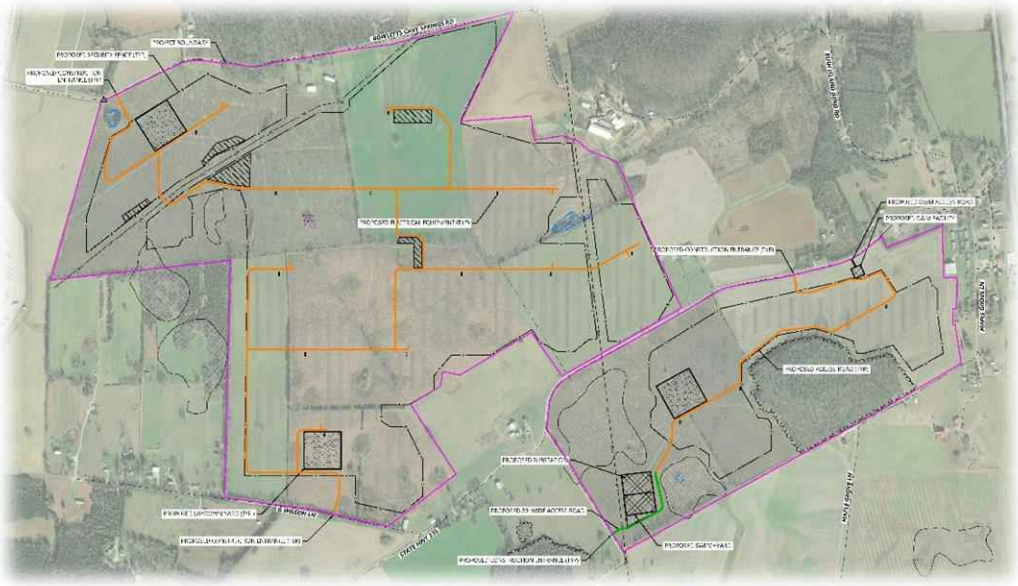
CUMULATIVE ENVIRONMENTAL ASSESSMENT:
THOROUGHBRED SOLAR
HART COUNTY, KENTUCKY



by
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for
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1. Introduction

Section 224.10-280 of the Kentucky Revised Statutes (KRS) sets forth requirements by the Energy and Environment Cabinet that an electrical facility may not be constructed until the developing party submits a cumulative environmental assessment (CEA) to the Kentucky Energy and Environmental Cabinet as part of its application documents.

In compliance with KRS 224.10-280, this CEA discusses potential impacts and impact mitigation plans for the following categories for Thoroughbred Solar (the Project), as proposed by Leeward Renewable Energy Development, LCC (the Applicant):

- Section 2 – Air Pollutants;
- Section 3 – Water Pollutants;
- Section 4 – Waste; and
- Section 5 – Water Withdrawal.

2. Air Pollutants

In accordance with the Clean Air Act, the United States Environmental Protection Agency (USEPA) developed National Ambient Air Quality Standards (NAAQS). The NAAQS were set to regulate air pollutants that are deemed harmful to public health and the environment. Maximum allowed concentrations and safety margins were established for six principal pollutants, referred to as "criteria" pollutants including ozone, particulate matter (PM), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb).

Based on daily measurements of regional air quality, areas that fall below the NAAQS threshold are designated as attainment areas. Regions that exceed the NAAQS are deemed non-attainment areas. When a non-attainment area improves in air quality and meets the NAAQS, it becomes a maintenance area.

The Project will be located in Hart County, which is within an air quality control region in attainment of NAAQS (USEPA, 2022). The Commonwealth of Kentucky implements further air quality protection through the Kentucky Administrative Regulations (KAR), Title 401, chapters 50 through 68.

Air quality impacts from construction would occur during daylight hours over the approximately 10-month construction period. Up to 200 construction workers are estimated to be onsite at one time during the several-month peak construction period, using equipment and machinery which may include bulldozers, backhoes, flatbed semi-trucks, forklifts, tractors, bobcats, augers, pile drivers, and concrete trucks.

Construction and operation of the completed Project would produce air pollutants. Emissions will predominantly originate from the construction and personnel vehicles, operating equipment, and supplies. Vehicles and equipment with internal combustion engines would produce PM, NO_2, carbon dioxide (CO_2), SO_2, and volatile organic compounds (VOCs). The anticipated emissions generated by construction are expected to be minor due to the scale and duration of operations. Estimating the precise quantity of emissions produced by heavy machinery will require factoring in engine horsepower, machine age, task duration, soil type (for ground-breaking equipment), and other variables tied to efficiency. Proper maintenance and use of ultra-low-sulfur diesel fuel will aid in reducing air pollutants from machinery.

In addition to criteria pollutants, construction activities would generate dust and other suspended particulates (temporary fugitive air pollutant emissions). Unpaved roads, parking lots, and exposed soil at the construction site provide sources of fugitive dust. Best management practices (BMPs) will be implemented onsite, requiring measures such as covering loads and applying water for dust suppression.

Dispersal of air pollutants across the Project Area and offsite will be influenced by the type and intensity of construction activity, extent of control measures, and natural factors such as wind and precipitation. With the use of appropriate BMPs, ambient air quality standards would not be exceeded, and construction activities would result in temporary, negligible impacts to air quality.

Any emissions from the operation of the Project would be generated by non-stationary sources such as worker vehicles and maintenance equipment. Operating solar panels does not produce any emissions, including criteria pollutants, or hazardous air pollutants (HAPs) during energy production. Therefore, Project operations would generate negligible levels of air pollutants.

The Project will yield an overall benefit to air quality at both the local and regional levels by reducing the use of non-renewable energy and offering an alternative, minimal- to zero-emission electricity source. The Project does not require an air quality permit.

3. Water Pollutants

3.1 SURFACE WATER

The Project is located within Hydrologic Unit 05110001, also referred to as the Upper Green Watershed. The Green River drains 3,141 square miles in Kentucky and ultimately connects to the Ohio River near Henderson, Kentucky, west of the Project Area (University of Kentucky, 2021). The Project Area is characterized primarily by well-drained silt loam soils (USDA, 2022). There is one wetland within the Project boundary. The closest pond is approximately 0.4-mile southwest of the Project boundary, and the closest stream is approximately 0.5-mile to the west. The Green River has been designated as an Outstanding State Water Resource (OSRW) by the Kentucky Division of Water (KDOW). The features within the Project boundary have not been designated as a Kentucky Special Waters by the KDOW (KDOW, 2021).

One wetland is present within the proposed Project boundary. No ponds or streams are present within the proposed Project boundary. The wetlands could be impacted by erosion and sedimentation generated by ground-disturbing construction activities. As with minimizing fugitive dust into the air, the Project will follow BMPs to limit surface water pollution from dust and sediment. Actions will include keeping ground-disturbing activities, such as grading and clearing, to a minimum. These actions generate conditions for erosion and sedimentation. Additionally, disturbed ground is prone to colonization by invasive species, which often require herbicide application to control.

Existing roads will be used as much as possible to minimize construction of additional access. If grading is deemed necessary and unavoidable, effort will be made to avoid drainages. Grading will follow the natural topography of the surrounding region to lower the risk of erosion. No fill above the permittable threshold is anticipated to be placed in jurisdictional waters during construction or operation of the Project.

Erosion control and sedimentation prevention measures will also apply to construction assembly areas, which could result in overland sediment migration into wetlands. Staging or laydown areas will be in place and located entirely within the Project boundary for the full construction phase. Approximately 9 acres of the overall Project Area will be used for staging areas.

Project construction may result in stormwater discharge. To mitigate effects from these activities, Thoroughbred Solar will use BMPs to protect jurisdictional wetlands and streams from sedimentation and prevent the migration of silt and sediment offsite. Silt fences, sediment basins, and 50-foot buffer zones will be used to prevent sedimentation of wetlands. Erosion control measures in disturbed areas, including using water to prevent dust and help compact the soil, will prevent sediment from entering jurisdictional waters and from moving offsite.

In compliance with KDOW, Thoroughbred Solar will design and implement a stormwater pollution prevention plan (SWPPP). Furthermore, the Project will comply with the KDOW Construction Storm Water Discharge General Permit on actions that will influence one or more acres of land. A Notice of Intent and Notice of Completion will be submitted prior to and upon completion of construction.

Construction may generate hazardous materials such as fuel, lubricants, and hydraulic fluids that could potentially contaminate groundwater. While the use of these materials will be limited to essential use only, there remains a small risk of on-site spills. BMPs will be established to minimize spill risk and immediately address any spills that occur. Proper maintenance of machinery and vehicles will further reduce this risk.

Hazardous materials will be appropriately stored, and chemicals such as herbicides and fertilizers will be used sparingly. Thoroughbred Solar does not anticipate further sources of groundwater pollution from Project operations. The completed photovoltaic (PV) panels will not include a runoff collection system, allowing rain to filter through vegetated soils into the groundwater table. In addition, disposal of these materials shall be in compliance with all applicable federal, state, and local regulations (Resource Conservation and Recovery Act [RCRA]).

Once construction is complete, vegetation cover will be planted using industry best practices to ensure stabilization of disturbed soils as quickly as possible to reach final stabilization. Seed mixes will be purchased from local, reputable sources, to the extent available. The vegetation will consist of low-growing, herbaceous plants and grasses from certified weed-free seed mixes. As soils stabilize, herbicide application in conjunction with mowing may be necessary to prevent the establishment of invasive species. In these instances, herbicides will be applied by certified commercial pesticide applicators who are licensed within the Commonwealth of Kentucky. Applicators will use USEPA-registered and approved herbicides and strictly follow the herbicides' application instructions. Chemical application near wetlands would be restricted to prevent aquatic impacts. Stormwater BMPs shall be left in place until final stabilization has been achieved per construction stormwater permit regulations.

Any earth-disturbing activities which are a part of Project maintenance shall be required to implement BMPs and permit requirements as necessary to reduce impacts to surface water. Design of the solar Project will only require small, dispersed areas of impervious surfaces in the form of access roads, gravel pads, operations and maintenance (O&M) buildings, the substation, and the switchyard, resulting in no or negligible impacts to surface waters from runoff. Much of the current land use is dedicated to cultivated crops and pasture, which introduce fertilizers, herbicides, and pesticides to the system. Application of these chemicals will be significantly reduced by converting agricultural land to solar fields. As such, surface water conditions may improve over the life of the project.

3.2 GROUNDWATER

Aquifers are permeable bodies of rock and sediments that store and allow for underground movement of water. Rain and other precipitation permeates the ground, enters the aquifer, and can then resurface as a natural spring, be extracted through man-made wells, or discharge into waterbodies such as streams and lakes. The subterranean water is referred to as groundwater (United States Geological Survey). No Kentucky Geological Survey (KGS) Kentucky Groundwater Observation Network observation wells are located within or near the Project Area. One possible spring location (Blowhole Cave Spring) is located approximately 0.5-mile west of the Project Area, by the Green River.

The Project is not expected to generate adverse impacts to groundwater. Hazardous materials, including but not limited to fuel, lubricants, hydraulic fluids, herbicides, and fertilizers, will be limited to essential use only, properly stored, and will only be used following proper techniques. Proper maintenance of machinery, spill prevention protocols, and readily available spill kits will be used to reduce the risk of groundwater contamination. Although prevention of potential impact to groundwater is always a concern, Implementation of these measures will be particularly carefully enforced due to the potential karst conditions that underlay the site. The conversion of the Project Area from agricultural land use to solar energy production will produce net reductions in fertilizer, herbicide, and pesticide use, thereby reducing chemical application to the landscape. Minor benefits to groundwater systems are anticipated as a result.

Groundwater protection will also result from the use of BMPs during construction. These BMPs will control stormwater flows and erosion/sedimentation, with the goal of preventing discharge of sediment-laden water into major sinkhole areas.

4. Waste

4.1 PROJECT CONSTRUCTION

Project construction will generate very small quantities of hazardous waste. To avoid any on- and off-site
impacts, all waste will be stored, handled, and disposed of in accordance with local, state, and federal regulations. The Applicant will develop a hazardous material business plan to ensure materials are handled, used, and stored using BMPs, with resources and operating procedure guidelines in place in case of a spill. The plan will include spill prevention measures, proper training of personnel, providing appropriate personal protective equipment (PPE), keeping Safety Data Sheets (SDSs) for all hazardous chemicals, and maintaining spill kits and other cleanup materials onsite.

Materials will be properly stored in containers most appropriate for each type of waste and labeled in compliance with federal, state, and local regulations. All hazardous material storage units will include secondary containment so that in the unlikely event of primary container failure, a spill would not reach the environment.

Solid construction waste will be recycled, if possible. Non-recyclable solid materials will be removed from the Project Area and disposed of at an appropriate regulated landfill. Anticipated solid waste includes construction debris, recyclables, and garbage, including packaging materials, storage boxes, wooden pallets, and building materials. Designated personnel will conduct daily inspections to ensure proper handling of wastes. This will include waste storage, labeling, cleanup, and disposal as well as recording the generated amounts of waste for Project records.

Construction machinery and vehicles will include semi-trucks, work trucks, excavators, and other equipment types that use gasoline, diesel, engine oil, and other petroleum-based products. These machines will produce hazardous liquid wastes such as used oil, diesel fuel, gasoline, hydraulic fluid, and other lubricants. Some vehicles may be refueled or undergo maintenance onsite. Spill prevention measures will consist of maintaining proper storage and material handling techniques and following procedure instructions for material use. Spill kits will be kept on all refueling vehicles and at strategic locations onsite. They will be easily accessible for any tasks that may incur a risk of spills.

Construction will result in human waste, but no negative impacts to environmental resources are expected. To accommodate increased personnel during construction, portable chemical toilets will be provided. These portable toilets will be properly maintained and regularly pumped by a licensed sewage waste contractor. The waste will be disposed of at a regulated wastewater treatment plant.

4.2 PROJECT OPERATION

The primary sources of waste during Project operation are expected to be the maintenance of equipment, vehicles, and machinery and the replacement of damaged or worn-out materials.

Maintenance machinery and vehicles will include semi-trucks, work trucks, and other equipment types that use gasoline, diesel, engine oil, and other petroleum-based products. No refueling or vehicle maintenance would occur onsite during operation. Therefore, no material risk of spills is anticipated.

Liquid supplies stored onsite may include cleaning supplies, pesticides and herbicides, air conditioning fluids, machinery maintenance supplies (hydraulics fluids, degreasers), fuels (gasoline or diesel), paints, and propane. It is expected that these materials will be kept in small quantities, measuring less than 55 gallons, 500 pounds, or 200 cubic feet of each substance.

Small quantities of other waste (paper, packaging, etc.) will be produced during both construction and Project operations. Appropriate disposal plans are in place for removing waste from the Project site to appropriate disposal or recycling facilities. Therefore, while Project construction and operations will generate hazardous and non-hazardous waste, due to their limited quantities and the implementation of spill prevention measures, they are not expected to negatively impact on-site or off-site resources.

If a permanent septic system or wastewater disposal system is not already present, the addition of bathroom facilities with appropriate waste handling procedures may be required for the standard Project operations.

5. Water Withdrawal

Construction and standard Project operations will require water. The Project plans to use either a new well developed within the Project Area or available municipal water. Construction activities will use water to prevent dust and sediment pollution into on-site air and wetlands. Ground-disturbing activities such as grading require water for soil compaction and dust control. Water used for any dust control measures will be properly handled using BMP protocols. Water may also be used during construction of building foundations and equipment pads, for washing equipment, and for other minor uses. The SWPPP will include regulations for both using water to clean equipment and appropriately disposing of this wastewater.

Anticipated use of water for construction is expected to be relatively minor and would not negatively impact groundwater resources. Once the facilities are complete, standard operations are expected to

have low water requirements. The surrounding area receives enough rainfall throughout the year to contribute to aquifers and reduce the need to regularly wash the solar panels. Rainfall will be adequate to keep the PV panels largely free from dust and debris. Additionally, rain will contribute to ongoing vegetation management. Some water will be needed to maintain ground cover planted between the PV panels, ground-stabilization vegetation, and planted visual buffers. An irrigation system may need to be installed to sustain vegetation through periods of low rainfall. Construction and operation of solar electricity-generating facilities are not anticipated to be water intensive. Water withdrawal for the Project is not expected to create negative effects on regional water resources.

References

EPA (United States Environmental Protection Agency). 2021. Outdoor Air Quality Data: Air Quality Index Report. Available at: https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report. Accessed 21 June 2022.

KDOW [Kentucky Division of Water]. 2021. Water Maps Portal: Special Waters Viewer. Available at https://watermaps.ky.gov/. Accessed 21 June 2022.

University of Kentucky. 2021. Available at: https://www.uky.edu/KGS/water/water-groundwater-monitoring.php. Accessed 21 June 2022.

USDA [United States Department of Agriculture]. 2022. Web Soil Survey. Available at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed 21 June 2022.

USGS. 2019. Aquifers and Groundwater. Available at Aquifers and Groundwater | U.S. Geological Survey (usgs.gov) Accessed 21 June 2022.