

CUMULATIVE ENVIRONMENTAL ASSESSMENT

DOGWOOD CORNERS SOLAR PROJECT CHRISTIAN COUNTY, KENTUCKY

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Prepared for

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practices
CO	Carbon Monoxide
EPA	US Environmental Protection Agency
KRS	Kentucky Revised Statute
NAAQS	National Ambient Air Quality Standards
NO _x	Nitrous Oxides
O ₃	Ozone
Oriden	Oriden, LLC
Pb	Lead
PM	Particulate Matter
Project	Dogwood Corners Solar Project
SO ₂	Sulfur Dioxide
SPCCP	Spill Prevention Containment and Countermeasures Plan
SWCA	SWCA Environmental Consultants
SWPPP	Storm Water Pollution Prevention Plan

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1 INTRODUCTION

Oriden, LLC (Oriden) is proposing to construct the Dogwood Corners Solar Project (Project) on 670 acres near Hopkinsville, Christian County, Kentucky (Project Area). The Project Area consists of primarily agricultural lands with areas of isolated woodlots. As part of the Project's permit application to the Kentucky Energy and Environment Cabinet, this report has been prepared by SWCA Environmental Consultants (SWCA) on behalf of Oriden to satisfy the requirements of the Kentucky Revised Statute (KRS) 224.10-280. KRS 224.10-280 requires the preparation and submittal of a Cumulative Environmental Assessment which evaluates potential impacts to air pollutants, water pollutants, waste management, and water withdrawal.

2 AIR POLLUTANTS

The Clean Air Act governs the control of air pollutants and empowered the US Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. Criteria pollutants covered under NAAQS include ozone (O₃), particulate matter with a diameter less than 2.5 microns (PM), carbon monoxide (CO), nitrous oxides (NO_x), sulfur dioxide (SO₂), and lead (Pb).

Geographical regions are categorized as attainment, nonattainment, or unclassified based on their compliance with the NAAQS criteria. Those areas where the ambient levels of the specified pollutants surpass the NAAQS thresholds are designated as nonattainment areas. Consequently, sources of emissions within these regions typically face more stringent air permitting obligations to address and mitigate their contributions to the air quality issues in these areas. Christian County is currently in attainment for all pollutants as are the surrounding counties of Trigg, Caldwell, Hopkins, Muhlenberg, and Todd (EPA 2023). Additionally, Christian County is subject to the Air Quality Regulations found in KAR Title 401 Chapters 50-68 which establishes a robust framework for air quality management, emission control, and pollution prevention across Kentucky.

During the initial phase of site preparation and construction, temporary increases in emissions of air pollutants stemming from the operation of construction equipment, worker commuting vehicles, delivery vehicles, and ground disturbing activities may occur. The extent of these increased emissions varies with weather conditions, construction activity, and workforce onsite; however, it is expected that the emissions generated by the Project will consistently remain below the NAAQS. All contractors engaged in the construction of the Project will be required to implement a set of best management practices (BMPs) aimed at mitigating dust and preserving air quality to the highest feasible degree.

Vehicles and heavy machinery anticipated to be on site during construction include personal passenger vehicles, backhoes, bulldozers, flatbed semi-trucks, cranes, forklifts, machinery fitted with drills and pile drivers, and concrete trucks. Fuel for these vehicles and machinery would generate temporary, local emissions of PM, NO_x, CO₂, SO₂, and volatile organic compounds. Increased air pollutant emissions will be minor and will be dependent on specific construction activity, weather, and number of workers and vehicles on site at any given time. It is estimated that up to 300 workers would be on site at any given time during the 12-month construction period. The limited number of vehicles, construction duration, and operating hours are anticipated to minimize the extent of these emissions.

The Project is sited to minimize tree clearing. Where tree clearing is unavoidable, trees that are felled will be managed at an offsite facility or chipped or mulched onsite. No burning of woody or vegetative debris will occur onsite.

Ground disturbing activities (e.g., excavation, drilling, grading, vehicle travel on unpaved roads, etc.) may increase dust emissions and result in temporary increases in air pollutant levels. These increases, however, will be localized and temporary and Project contractors will be required to implement BMPs, such as water suppression and lowered speed limits, to reduce dust emissions.

Upon completion of construction, the operation of the Project will not produce any criteria pollutants or hazardous air pollutants. The only emissions from the Project during operation will be from the operation of maintenance vehicles which are expected to be limited and will be restricted to site inspection visits, equipment maintenance, or vegetation management.

3 WATER POLLUTANTS

3.1 Surface Water

Surface water in the Project Area consists of wetlands and waterbodies, including streams, swales, and wet weather conveyances. The Project Area is within the North Fork Little River (HUC-51302050503), Lower Buck Fork Pond River (HUC-51100060202), and the East Branch Pond River (HUC-51100060101) watersheds. SWCA, on behalf of Oriden, conducted field delineations of wetlands and waterbodies within the Project Area in 2021 and 2022. Eight wetlands and fifteen ponds were delineated within the Project Area. Thirty-six ephemeral streams and swales were delineated within the Project Area and are expected to be only wet weather conveyances. These features exist largely as grassy swales and heavy erosional gullies and rills that are an agricultural byproduct to maintain proper growing conditions for crops through drainage. Eleven intermittent streams and four perennial streams also occur within the Project Area. No waterways within or adjacent to the Project are designated as Outstanding State Resource Waters or other Special Use Waters as defined by the Kentucky Division of Water (KDOW 2023). Oriden has micro-sited the Project to avoid all field delineated wetland and waterbody features. Therefore, no permanent impacts are anticipated to these features.

Construction activities have the potential to increase erosion and sedimentation, which may affect onsite streams and wetlands. To minimize these effects, BMPs will be implemented, and grading will be avoided whenever feasible.

As earth-moving and ground clearing activities are an anticipated component of site preparation and construction, the Project is expected to have stormwater discharge during these phases. However, no topsoil will be removed from the site. Since clearing activities are anticipated to disturb more than one acre, Oriden will comply with the Kentucky Division of Water Construction Storm Water Discharge General Permit requirements. To comply with the requirements of this permit, Oriden will prepare a Stormwater Pollution Prevention Plan (SWPPP) to be implemented throughout all ground disturbing activities, will submit a Notice of Intent before any work begins, and will submit a Notice of Termination once all work is complete.

During both construction and revegetation efforts, contractors will be required to adhere to the SWPPP and follow the BMPs laid out within. These may include silt fences, temporary sediment basins and traps, buffers around wetlands and waterbodies, mulching, dust control, and other BMPs that will minimize sediment runoff. Following construction, all disturbed areas, including temporary equipment storage and construction work areas, will be revegetated using a mixture of low-growing native and pollinator plant seed mixes from a certified distributor. If necessary for control of invasive and nuisance species, spraying of EPA-approved herbicide by a state licensed pesticide applicator may be conducted; spraying will be conducted in accordance with label directions and application will be limited near waterbodies.

All erosion controls and revegetated areas will be inspected and maintained until the Project Area is deemed stable.

Following construction, all equipment and waste will be removed from the Project Area. The Project is anticipated to have minimal or no impact to surface waters throughout its operational phase. Should any maintenance activities occur that could cause runoff of sediments or pollutants, proper BMPs will be implemented.

3.2 Groundwater

Groundwater is the water present beneath the Earth's surface in soil and porous rock formations. It accumulates in the spaces between particles of soil, sand, gravel, and rock, forming an underground reservoir that provides a crucial source of freshwater. Groundwater provides an important source of drinking water and plays a vital role in both human health and the environment. Pollution of groundwater can have major implications for human health and economics, can disrupt ecosystems, harm aquatic life, and compromise the quality of water bodies that rely on groundwater discharge. Thus, preventing groundwater pollution is crucial to ensuring the availability of safe and clean water resources.

Construction and operation of the Project is not expected to have any negative impacts to groundwater. During construction, hazardous materials (e.g., lubricants, fuels, and oils) will be stored in accordance with BMPs to minimize the risk of leaks and spills. Additionally, plans will be in place to address any leak or spill, should it occur, immediately and effectively. These BMPs limit any risk to groundwater resources. Should the use of fertilizer or herbicides be necessary during construction or operation of the Project, only county and/or state approved herbicides will be used. All chemicals will be used in accordance with the manufacturer's recommendations to reduce the risk of groundwater contamination.

During operation of the Project, any dust or pollen that accumulates on the surface of the solar panels will naturally be cleaned by rainwater. The rainwater runoff will either be absorbed into the ground or will be collected by nearby surface water features. No negative impacts to groundwater are expected from the operation of the Project.

4 WASTE

Waste generated by the Project is largely limited to the construction phase and may include packing materials (i.e., wooden crates, pallets, cardboard), wiring and mechanical debris, used fuel, oil, lubricants, or hydraulic fluid, and general trash. No waste will be disposed of, stored long-term, or burned at the Project site. Any waste that cannot be recycled will be properly contained on site and disposed of at a permitted facility offsite by a designated waste management company.

Any liquid waste (i.e., lubricants, fuels, and oils) will be stored in proper containers. These containers will be appropriately labeled, stored in secondary containment, and the associated Safety Data Sheet will be available onsite to all personnel.

The refueling of construction machinery, including tractors, trucks, and semi-trucks using petroleum-based fuels, will occur within designated zones in the Project Area. A comprehensive Spill Prevention, Containment, and Countermeasures Plan (SPCCP) will be developed and put into place to reduce the risk of hazardous material spills. Additionally, all refueling vehicles will be equipped with spill control kits to ensure prompt and effective response measures.

Small quantities of paint, degreasers, pesticides, herbicides, air conditioning fluids (chlorofluorocarbons), gasoline, propane, hydraulic fluid, welding rods, and janitorial supplies may be stored temporarily onsite (less than 55 gallons, 500 pounds, or 200 cubic feet). These materials will be stored in proper containers in a secure area. The small volume of these materials, combined with the implementation of proper containment and cleanup procedures, is expected to reduce the likelihood of spills and the potential for significant environmental impacts.

Portable chemical toilets will be used onsite during construction for the workers. The toilets will be maintained by a licensed contractor who will be responsible for pumping sewage from the toilets to be disposed of at a permitted facility offsite. The portable toilets will be removed upon construction completion.

During the operational phase of the Project no waste is expected to be generated and no permanent bathroom facilities are planned. Any potential waste generated from maintenance activities will be removed from the site by designated waste management companies and disposed of properly.

At the end of the Project's operation phase, all equipment associated with the facility will be removed and recycled or disposed of in accordance with a decommissioning plan that will be developed for the Project.

All waste generated during construction and operation of the Project will be disposed of in accordance with all local, state, and federal regulations and no adverse effects from waste generation or disposal are anticipated for the Project.

5 WATER WITHDRAWAL

Water for construction-related dust control and operational purposes is anticipated to be transported in from an offsite water supplier. The utilization of water during construction will primarily be for dust control for the grading of access roads, foundations, and equipment platforms. BMPs outlined in the SWPPP will be adhered to during all dust control activities and equipment washing. The volume of water needed during the construction phase is not expected to have any adverse impact on groundwater resources.

The operation of the Project does not require any additional water withdrawal as rainfall in the region should be sufficient to remove dust and debris from the solar panels and manual washing is not anticipated. However, water may be used during initial revegetation efforts or during periods of drought.

6 REFERENCES CITED

Kentucky Division of Water (KDOW). 2023. Kentucky Special Waters Viewer. Available at <https://kygis.maps.arcgis.com/apps/webappviewer/index.html?id=e933822f018d4fa483bee97accbcc49>. Accessed on August 18, 2023.

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