



To: Reservoir Road Solar, LLC

Date: December 2, 2024

Memorandum

Project #: 58952.07

From: Stephanie Wyman, PE

Re: Section 248 Waste Disposal, Soil Erosion Technical
Memorandum

Introduction

At the request of Encore Renewable Energy ("Encore") and Reservoir Road Solar, LLC ("Petitioner"), VHB has prepared this technical memorandum in support of a planned 2.375-megawatt ("MW") alternating-current ("AC") ground-mounted solar electric generation facility ("Project") that will occupy approximately 10.5 acres of land spanning two parcels. The Project site is located off Reservoir Road in Berkshire, Vermont (see Site Plan, *Exhibit RRS-SC-2*). The content of this technical memorandum presents the results of an assessment of the Project as it relates to the following criterion under 30 V.S.A. § 248(b)(5), which are given due consideration by the Vermont Public Utility Commission ("PUC") in its review of the Project for a Certificate of Public Good ("CPG"):

- Waste Disposal (Section 248(b)(5) / 10 V.S.A. § 6086(a)(1)(B))
- Soil Erosion (Section 248(b)(5) / 10 V.S.A. § 6086(a)(4))

Project Description

The proposed Project will consist of the installation of a 2.375-megawatt ("MW") alternating-current ("AC") solar electric generation facility to be located within an approximately 10.5-acre fenced Project area. The Project spans two adjacent parcels located north of Reservoir Road and west of the Enosburg Falls Reservoir in Berkshire, Vermont. See *Exhibit RRS-SC-2*.

The Project consists of ground-mounted, fixed-tilt solar modules on metal racks arranged in rows running east to west in arrays. More than half of the Project will be sited in what is currently an open field, whereas the other portion will be located in areas that are currently forested. Approximately 5.4 acres of tree clearing will be necessary to facilitate construction and reduce impacts from shading. The Project will involve earth disturbance from tree stump grubbing in these areas, as well as limited grading for construction including the following Project elements:

- Approximately 5,472 photovoltaic panels installed on ground-mounted racking systems, across approximately 10.5 acres of the site. The solar panels will be coated with a non-reflective glazing to reduce glare from the array, on ground-mounted racking systems, approximately ten to fifteen feet off the ground at their highest point;
- A network of string-inverters dispersed across the array connected with underground cables installed in protective conduit;
- Approximately 2,931 feet of agricultural-style perimeter fence, seven to eight feet in height;
- Temporary staging/laydown areas for delivery and short-term storage of materials;
- Widening and improvements to an existing access driveway to provide access to the solar site;
- Replacing two existing culverts (24" reinforced concrete pipe and 38" corrugated metal pipe) at the crossing of Trout Brook with a 15'x6.5' aluminum box culvert;

- An extension to the northern part of the existing access road up to the Project entrance, including turnaround area;
- One 2,500 KVA pad-mounted transformer, located in the south-central portion of the array, with secondary oil containment providing 110% of the equipment oil volume with freeboard for 5 inches of rain; and
- Simple disconnection stormwater treatment practices at the entrance of the Project area.

Section 248 Criteria Reviewed

Waste Disposal (10 V.S.A. § 6086(a)(1)(B))

The Waste Disposal criterion incorporated into Section 248 review provides that the Project must meet applicable health and Vermont Department of Environmental Conservation ("DEC") regulations regarding the disposal of waste and must not involve the injection of waste materials into groundwater or wells. For the Project, VHB's consideration of waste disposal involves sanitary wastewater, stormwater runoff, and general construction waste including tree and brush debris. VHB's consideration of the injection of waste materials into groundwater or wells also involves the Project's transformer oil and the potential for a leak or spill.

The Project will not need permanent sanitary waste treatment, will not require on-site sanitary waste treatment or use of public waste treatment facilities and will not involve any on-site waste disposal or the injection of waste materials or any harmful or toxic substances into groundwater or wells.

The Project will generate minor amounts of scrap and waste material during installation, and this waste will be disposed of or recycled at an approved disposal facility in accordance with Vermont Solid Waste Management Rules and Procedures (DEC 2012). General construction waste generated during construction, such as office trash from the contractor's operations trailer, or from portable toilets, will be the responsibility of the contractor to dispose of properly. The Project is not anticipated to generate any waste during operation.

Some tree clearing will be necessary to accommodate the proposed array, temporary widening of the access road of varying widths along the existing driveway to accommodate maneuvering of a WB-67 truck for deliveries, and upgrades to the existing culverts and associated grading necessary for the culvert replacement at Trout Brook. Woody debris generated from tree clearing will be sold for lumber if merchantable, offered as firewood to nearby landowners, or chipped and hauled to an approved disposal site.

The Project will result in approximately 0.08 acres of new impervious surface within the parcel. The Project spans two parcels, each with existing impervious surface. Since the resulting total between the two parcels is greater than one-acre of impervious surface at the completion of construction, an operational-phase stormwater discharge permit authorization (3-9050) will be required for discharges of regulated waters of the State. The Project will obtain the operational stormwater permit prior to site preparation or construction. The Project will not significantly modify the current existing drainage patterns on the site.

The Project will require two culvert replacements. The first replacement will be located at the driveway entrance where the existing driveway meets Reservoir Road. The current culvert is in poor condition and is anticipated to be replaced with a minimum 18" diameter culvert. The second culvert replacement will be located at the Trout Brook crossing where two undersized culverts in poor condition will be removed and replaced with one 15'x6.5' aluminum box culvert that will span the bankfull width of the stream channel. See Details, *Exhibit RRS-SC-2* at Sheet C3.01. The two culverts

proposed to be removed are a two-foot diameter corrugated metal pipe and a three-foot diameter reinforced concrete pipe. These culverts will be disposed of or recycled at an approved disposal facility in accordance with Vermont Solid Waste Management Rules and Procedures (DEC 2012).

The Project anticipates installing one 2,500 kVA pad-mounted transformer, located in the south-central Project Area, as shown on the Project plans included in the petition materials (*Exhibit RRS-SC-2*). The transformer will contain approximately 500 gallons of organic FR3 oil. The Project is not subject to Spill Prevention Control and Countermeasure ("SPCC") regulations under 40 CFR 112 ("SPCC Regulations"), because the total volume of oil storage at the Project will not exceed 1,320 gallons. Although not subject to SPCC Regulations, the transformers will be placed within a secondary containment structure to prevent the release of transformer oil to the environment. The secondary containment system will have a 110% storage volume and include 5 inches of freeboard. See detail, *Exhibit RRS-SC-2* at C5.03.

Though secondary containment will be constructed to prevent the unlikely release of oil to the environment, VHB evaluated the location of the fluid-filled transformer with respect to sensitive receptors near the Project. According to the Agency of Natural Resources ("ANR") Natural Resources Atlas, there are two groundwater source protection areas ("SPAs") surrounding two wellheads within the Project Study Area. The first groundwater SPA is located near the site access, and the existing access road is currently located within 200-ft of the wellhead. This access is anticipated to be upgraded for construction of the Project, including widening the existing access road as well as upgrading and replacing the existing crossing of Trout Brook with an aluminum box culvert, as mentioned above. The second groundwater SPA is located south-east of the Project. No Project components are to be installed within this SPA, however minimal off-grading from the temporary turn-around area for construction vehicles does encroach into the area. No delivery vehicles or construction equipment, other than those being utilized for grading, will enter the area.

VHB has coordinated with the Source Water Protection Specialist at the Vermont Agency of Natural Resources to receive consideration of the necessary impacts from construction within this sensitive area. At the request of the Source Water Protection Specialist, the Petitioner has agreed to the following conditions which would be required to allow temporary road improvements and temporary use of the existing access road in Zone 1 of the SPA for supply well WL001:

- Best Management Practices ("BMPs") shall be used to avoid the release of hazardous materials to the ground surface within the 200-foot radius isolation zone of the Town water supply wells, WL001 and WL002;
- No overnight parking, refueling of equipment and vehicles, and/or storage of chemicals or fuel within the 200-foot radius isolation zone shall be permitted;
- No nitrogen, herbicides, and/or pesticides applications may occur within the 200-foot radius isolation zone; and
- The controlled use of potassium and phosphorous fertilizers are permitted, if necessary.

Implementation of these steps will ensure that work within the SPAs will be limited and closely monitored, and as a result, construction within these areas will not cause adverse impacts to the SPAs.

There are no nearby surface water source protection areas within the Project Study Area. The closest ANR-mapped water supply well is a bedrock well located approximately 350 feet from the proposed transformer location. The transformer is not located within wetlands, wetland buffers, streams, or stream buffers. The distance from sensitive receptors and proposed secondary containment structures will prevent the unlikely release of oil to waters of the U.S. or other sensitive receptors. Accordingly, it is VHB's opinion that the Project, including the Project's construction plans and the proposed transformer, does not pose a potential for adverse impacts to sensitive receptors.

As indicated above, the Project will meet the applicable health and DEC regulations regarding the disposal of waste that have been considered and does not involve the injection of waste materials into groundwater or wells. Therefore, the Project will comply with this criterion.

Soil Erosion (10 V.S.A. § 6086(a)(4))

Act 250 Criterion 4, which is to be accorded due consideration as part of Section 248, requires a finding that the Project “will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.” (10 V.S.A. § 6086(a)(4)). Compliance with this criterion involves two considerations: (1) preventing soil erosion, and (2) preventing a reduction in the land’s capacity to hold water.

According to the Natural Resources Conservation Service (“NRCS”) soils report, underlying soils within the Project Site are described in the table below:

Table 1 Soil Classifications Within Project Site

Soil Classification	K-Value	Hydrologic Soil Group ¹
Binghamville silt loam	0.43	C/D
Missisquoi loamy sand, 3 to 8 percent slopes	0.15	A
Enosburg loamy find sand, 0 to 3 percent slopes	0.20	C/D

Erodibility ratings (or “K-values”) indicate the susceptibility of soil to erosion by water. Values typically range from 0.02 to 0.69, with higher values more susceptible to erosion. Soils with K-values that are greater than 0.17 but less than 0.36 are generally considered to have a moderate risk of erodibility per the Vermont Standards and Specifications for Erosion Prevention and Sediment Control. Any risks related to potential soil erodibility are intended to be minimized via implementation of a site-specific Erosion Prevention and Sediment Control (“EPSC”) plan.

Hydrologic soil groups (“HSG”) established by the NRCS are based on estimates of runoff potential, with four classifications (A, B, C, and D) based on their rate of water infiltration under certain conditions, with HSG A having the least runoff potential and HSG D having the greatest runoff potential. The Project Site is approximately half underlain by HSG A soils and half underlain by HSG C/D indicating a higher potential for runoff on the eastern side. However, there are also HSG A soils within the Project site as well, somewhat reducing this potential for runoff. Implementation of the EPSC plan will take these site-specific factors into consideration to reduce potential for runoff.

Potential soil disturbance for Project construction will total more than one acre (approximately 14.8 acres). Therefore, Petitioner will need to obtain a construction stormwater permit (GP-9020). The Project will implement EPSC BMPs to minimize soil erosion and reduce the potential for sediment-laden runoff to reach receiving waters. The installation and maintenance of BMPs will prevent any undue soil erosion from all areas of earth disturbance. BMPs that will be implemented as part of the Project include, but are not necessarily limited to, a stabilized construction exit to minimize tracking of soil by vehicles, demarcation of disturbed areas with barrier tape, installing perimeter controls such as silt fence and construction fencing. See also Site Details in *Exhibit RRS-SC-2*.

¹ Soils that can be adequately drained are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high-water table is kept at least 60 centimeters [24 inches] below the surface in a soil where it would be higher in a natural state (USDA NRCS 2007).

During operation of the Project, stormwater runoff from new impervious surfaces will be treated through simple disconnection practices located near the turnaround area at the entrance to the Project. See Site Plan *Exhibit RRS-SC-2* at Sheets C.202, C5.03. These stormwater treatment practices will be reviewed and approved as part of the operational stormwater permit that the Project will obtain prior to construction. These practices will ensure that there are no undue adverse impacts as a result of stormwater runoff during operation of the Project.

Based on evaluation of the proposed Project, it is VHB's opinion that the Project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition results.

References:

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