

**EXHIBIT O**  
**WATER RESOURCES**  
OAR 345-021-0010(1)(o)

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**ATTACHMENT**

O-1 Evidence of the Deschutes Valley Water District’s Willingness to Provide Water Service	
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**OAR 345-021-0010(1)(o)** *Information about anticipated water use during construction and operation of the proposed facility. The applicant shall include:*

## **O.1 WATER USE**

**OAR 345-021-0010(1)(o)(A)** *A description of the use of water during construction and operation of the proposed facility.*

**Response:** Water will be needed during construction and operation of the Madras Solar Energy Facility (Facility) for the uses described in the following section.

### **O.1.1 Construction**

Construction water use is estimated at approximately 12.8 million gallons over a 9-month construction period. The following aspects of Facility construction account for the majority of water usage during construction:

- **Civil and Site Preparation.** Approximately 10.53 million gallons of water will be required for civil and site preparation including road compaction and dust control. This water will be applied via tanker truck in a manner that avoids erosion and subsequent sediment discharge, and is consistent with the best management practices presented in the 1200-C Construction Stormwater National Pollutant Discharge Elimination System Permit (see Attachment I-1 in Exhibit I). The quantity and frequency of water used for dust suppression will be highly dependent on site and seasonal conditions. Generally, the quantity of water used for dust suppression, accounting for worst-case dry and dusty conditions, will be 30,000 to 50,000 gallons per day (gpd), when warranted.
- **Concrete.** Approximately 25,000 gallons of water will be required for the construction of concrete pads for the power conversion station, operations and maintenance (O&M) enclosure, point of interconnection switching station, substation, and battery storage (if needed). If concrete ballasts are required for the solar photovoltaic modules, then up to an additional estimated 2.2 million gallons of water will be needed.
- **Drinking and Sanitation.** Fewer than 50,000 gallons will be used for potable drinking water and portable toilet facilities available to construction workers over the 9-month planned construction timeframe.

### **O.1.2 Operations**

Once the Facility is constructed, there will be limited need for water. Water primarily will be used for cleaning activities such as periodically washing down the solar modules (panels), and for employee drinking and sanitation water, as follows:

- **Module Washing.** Depending on the effects of solar module dust and dirt on energy production (referred to as soiling), the solar modules will be washed. For the purpose of this analysis, it is conservatively assumed that they will be washed twice a year, which will require approximately 1,650,000 gallons of water per year. A third-party contractor will obtain water for panel cleaning from an offsite source. Water will be applied via a tanker truck and will not have any cleaning solvents in it. Washwater will be discharged by evaporation and seepage into the ground and, if deemed necessary, will be covered under an Oregon General Water Pollution Control Facilities Permit, WPCF-1700-B, Washwater Discharge from Equipment Cleaning. Equipment within the O&M enclosure may also be periodically washed down under this permit.
- **Employee Drinking and Sanitation Water.** Water will be provided to employees at the Facility. Hand-washing stations using water will be available to employees. Drinking water will be purchased in bottles and the hand-washing station water will be provided by the portable toilet contractor from an offsite source. Water provided to employees will be either consumed or sent offsite for treatment.

## O.2 SOURCES OF WATER

**OAR 345-021-0010(1)(o)(B)** *A description of each source of water and the applicant's estimate of the amount of water the facility will need during construction and during operation from each source under annual average and worst-case conditions.*

**Response:** The Facility will purchase water from the Deschutes Valley Water District for:

- Civil and site preparation during construction (approximately 10.53 million gallons; annual average conditions)
- Concrete mixing during construction (approximately 25,000 gallons for the construction of concrete pads for the power conversion station, O&M enclosure, point of interconnection switching station, substation, and battery storage, [if needed]). If concrete ballasts are required for the solar photovoltaic modules, then up to an additional estimated 2.2 million gallons of water will be needed; worst-case conditions)
- Drinking and sanitation during construction (approximately 50,000 gallons; annual average conditions)
- Module washing, drinking, sanitation, and dust suppression during operations (approximately 1.65 million gallons per year; worst-case conditions)

The Deschutes Valley Water District has sufficient domestic water capacity to supply the Facility and has agreed to manage the water sales through its hydrant meter program (Attachment O-1). Hydrants are located to the south of the Facility site boundary and a particular one will be assigned as part of a hydrant meter agreement between the Deschutes Valley Water District and Madras PV1, LLC (Applicant).

## O.3 WATER LOSSES

**OAR 345-021-0010(1)(o)(C)** *A description of each avenue of water loss or output from the facility site for the uses described in (A), the applicant's estimate of the amount of water in each avenue under annual average and worst-case conditions and the final disposition of all wastewater.*

**Response:** During construction, water loss will occur primarily through evaporation from wetted road surfaces and from curing concrete. Because of the dry conditions at the Facility and the relatively low rates of water use and application, it is expected that all water used during construction will be lost within or near the Facility site boundary, primarily through evaporation and infiltration. To the extent any water from dust control may drain into the nearby water features via overland sheet flow, such discharges are authorized by and will comply with the terms of the 1200-C Construction Stormwater Permit. Because of the cost and time involved in transporting water by tank truck to the work site, water used for road compaction and dust suppression will be applied at the minimum rate needed to perform its function. Similarly, water used for concrete mixing will be applied at the mixing rate required to make concrete. Water used for sanitary purposes will be treated offsite.

During Facility operations, water loss will be minimal. The disposition of water used for cleaning the solar photovoltaic modules will be evaporation or infiltration. Stormwater will infiltrate into the ground.

## O.4 WATER BALANCE DIAGRAM

**OAR 345-021-0010(1)(o)(D)** *For thermal power plants, a water balance diagram, including the source of cooling water and the estimated consumptive use of cooling water during operation, based on annual average conditions.*

**Response:** The Facility is not a thermal power plant; therefore, this rule does not apply.

## O.5 PERMITS OR TRANSFERS REQUIRED

**OAR 345-021-0010(1)(o)(E)** *If the proposed facility would not need a groundwater permit, a surface water permit or a water right transfer, an explanation of why no such permit or transfer is required for the construction and operation of the proposed facility.*

**Response:** As stated in Section O.2, water for the Facility's construction and module washing during operations will be supplied by the Deschutes Valley Water District from its domestic water supply system. No groundwater permit, surface water permit, or water right transfer is needed for these purposes because the Deschutes Valley Water District already has the permits and water rights to the sources of the water.

**OAR 345-021-0010(1)(o)(F)** *If the proposed facility would need a groundwater permit, a surface water permit or a water right transfer, information to support a determination by the Council that the Water Resources Department should issue the permit or transfer of a water use, including information in the form required by the Water Resources Department under OAR Chapter 690, Divisions 310 and 380.*

**Response:** This rule is not applicable.

## **O.6 MITIGATION MEASURES**

**OAR 345-021-0010(1)(o)(G)** *A description of proposed actions to mitigate the adverse impacts of water use on affected resources.*

**Response:** One of the environmental benefits of solar energy facilities is that they require minimal water, particularly during operations. Because construction and operation of the Facility will not significantly impact water resources, no mitigation is proposed for water use.

## **O.7 SUMMARY**

The information provided in this Exhibit demonstrates that Facility construction and operation will not result in significant adverse impacts to water resources. Therefore, the Applicant has satisfied the requirements of OAR 345-021-0010(1)(o).

**Attachment O-1**  
**Evidence of the Deschutes Valley Water**  
**District's Willingness to Provide Water**  
**Service**



## DESCHUTES VALLEY WATER DISTRICT

November 20, 2019

John Bortle  
Ecoplexus  
jbortle@ecoplexus.com

Dear Mr. Bortle:

Deschutes Valley Water District is a municipal corporation incorporated under Chapter 264 of the O.R.S for the purpose of delivering domestic water to persons within and without the District boundaries that request it.

Ecoplexus has requested access to water during construction up to 12.8 MG and water on an annual basis of up to 1.7 MG for maintenance and cleaning of a solar array. We are willing and able to serve these needs with domestic drinking water, up to requested amounts provided that the amounts are consumed at flows of 33 gpm or less.

Deschutes Valley Water District reserves the right to reject any or all applications for future water services when, in our opinion, additional services would jeopardize the sanitary water supply to our customers and/or if the applicant has not met the rules and regulations of the District.

Respectfully,

A handwritten signature in blue ink, appearing to read "Joel Gehrett".

Joel Gehrett, P.E.  
General Manager