ATTACHMENT V: SOIL MONITORING MEMO

TETRA TECH

Memo

To: Laura O'Neill (Innergex Renewable Development USA, LLC)

From: Karen Brimacombe, Jonathan Thompson, Jess Taylor, Linnea Fossum (Tetra Tech)

Date: March 29, 2023

Subject: Wautoma Solar Facility Effects on Currently Irrigated Farmland

1.0 INTRODUCTION

The Wautoma Solar Energy Project (Project) is a proposed 470-megawatt solar photovoltaic (PV) generation facility coupled with a 4-hour battery energy storage system, located in unincorporated Benton County, Washington. The Energy Facility Site Evaluation Council (EFSEC) recently shared with Innergex Renewable Development USA, LLC (Innergex) concerns they had received from the Washington State Department of Agriculture (WSDA) regarding potential impacts to prime farmland if irrigated lands (hereafter referred to as prime farmland) from construction and operation of the proposed Project. This memorandum provides a summary of the irrigated farmland identified within the Project Area, summarizes Innergex's understanding of WSDA's concerns, and provides an overview of how current plans for revegetation, operations, and maintenance of the facility may affect soil health and future potential use for agricultural purposes.

2.0 PRIME FARMLAND IF IRRIGATED LANDS WITHIN PROJECT AREA

In May of 2021 and 2022, Tetra Tech performed field botanical and habitat field surveys within the approximately 4,819-acre Project Area, which includes the full extent of the Project Solar Siting Area. As a result of these field surveys, approximately 794 acres of the Project Area were mapped as agricultural land. Agricultural lands in the Project Area were also assessed using WSDA 2021 agricultural land use data (WSDA 2021)[1] and using Natural Resources Conservation Service (NRCS) soils data[2]. Of lands classified by the NRCS as prime farmland if irrigated, only 699 acres within the Project Fence Line are currently irrigated and thus considered prime farmland, and an additional 182 acres are considered farmland of unique[3] or statewide importance[4]. Details of these designations and determinations were provided in Attachment D to the Application for Site Certification.

[1] WSDA (Washington Department of Agriculture). 2021. Agricultural Land Use Data. Available at: https://agr.wa.gov/departments/land-and-water/natural-resources/agricultural-land-use.

[2] Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. (Natural Resources Conservation Service. 2022. "Prime and Other Important Farmlands Definitions, available online at https://efotg.sc.egov.usda.gov/references/public/LA/Prime_and_other_Important_Farmland.html)

[3] Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables (NRCS 2022)

[4] Land that does not meet the criteria for prime or unique farmland is considered to be farmland of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate state agencies. (NRCS 2022)

3.0 WASHINGTON DEPARTMENT OF AGRICULTURE INPUT

The WSDA expressed to EFSEC several concerns related to impacts to prime farmland from construction and operation of the proposed Project. These concerns include:

- soil cracking and changes in the soil profile due to the lack of continued irrigation;
- soil compaction; and
- loss of organic matter.

The WSDA is concerned that construction and operation of the Project would result in permanent impacts to soils that would create the loss of prime farmland. To prevent or mitigate for these potential impacts, the WSDA has suggested various approaches including:

- Agricultural dual use (i.e., agrivoltaics) with grazing;
- Application of water during construction and/or operation;
- Tilling between the solar panels every summer; and
- Soil testing and application of soil amendments.

4.0 PROPOSED AVOIDANCE AND MITIGATION MEASURES

Innergex has considered the WSDA's concerns regarding soil health and the loss of prime farmland and has considered WSDA's suggested approaches for minimizing these potential impacts. Innergex is currently evaluating options for agricultural dual use within the Project Area, specifically sheep grazing within the solar array areas. Although discussions are ongoing, Innergex is not able to formally commit to agricultural dual use with sheep grazing at this point. Additionally, Innergex is concerned about implementing ongoing water applications and annual tilling. Water application would not only be logistically challenging and an unwise use of this limited resource in the arid landscape within the Project vicinity, but would potentially promote growth of non-native, invasive plant species such as cheatgrass (*Bromus tectorum*), bulbous bluegrass (*Poa bulbosa*), and diffuse knapweed (*Centaurea diffusa*) that are prevalent within the Project Area. Cheatgrass and bulbous bluegrass are competitive species that can germinate in the late fall and early spring allowing them to outcompete native seedlings for water and nutrients (Locke and Burrill 1994[5]; Quintanilla 2017[6]; USDOE 2011[7]) Similarly, seasonal tilling would likely promote germination and growth of non-native, invasive plant species because soil disturbance can create suitable conditions for the establishment of invasive plants (CIPC 2012[8]). In addition to resulting in undesirable vegetative conditions and increased requirements for herbicide use to control weedy species, proliferation of non-native species such as cheatgrass can increase

[5] Locke, K. and L.C. Burrill. 1994. Bulbous Bluegass *Poa bulbosa L.* Available online at: https://ir.library.oregonstate.edu/downloads/9k41zd86x
[6] Quintanilla, J. 2017. Invasive Bulbous Bluegrass Choking Desirable Grasses. Available online at: http://www.uwyo.edu/barnbackyard/_files/documents/magazine/2017/winter/0117bulbous.pdf
[7] USDOE (U.S. Department of Energy). 2011. Hanford Site Revegetation Manual. Available online at: https://www.hanford.gov/files.cfm/DOE-RL-2011-116_-_Rev_01.pdf
[8] CIPC (California Invasive Plant Council). 2012. Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers, 3rd Edition. Available online at: https://www.cal-ipc.org/docs/bmps/dd9jwo1ml8vttq9527zjhek99qr/BMPLandManager.pdf

the fuel load in this already fire-prone region of the state (CSU Extension 2012[9]). Annual tilling is also likely to increase erosion and fugitive dust generation and would not be compatible with revegetation expected to be required as part of the site certification as outlined in the Draft Vegetation and Weed Management Plan prepared for the Project.

As described in the Draft Vegetation and Weed Management Plan, all areas temporarily disturbed during construction, as well as areas within the solar arrays without native root structures or available seed banks, or where noxious weeds are anticipated (e.g., areas currently under agricultural cultivation), would be actively revegetated with a mix of native or non-invasive, non-persistent non-native grasses and forbs. Revegetation with native and non-native, non-invasive species (i.e., species that may provide more rapid soil stabilization and vegetative cover than slower-growing native species) will help avoid or minimize WSDA's concerns regarding soil compaction and loss of organic matter. Species chosen for revegetation, such as bluebunch wheatgrass (*Pseudoroegneria spicata*) and yarrow (*Achillea millefolium*), are deep-rooted and drought tolerant. The deep roots of these species will help de-compact and stabilize soils. Application of mulch, if required during revegetation, would help reduce erosion, as well as provide organic matter to the soil. Once established, the revegetated areas would improve the soil by increasing organic matter as revegetated plants die and decompose. Furthermore, revegetating with native plants under solar panels can help recharge groundwater and improve soil carbon sequestration (Neale and Atre 2020[10]). Annual tilling and grazing, if not managed correctly, would reduce the benefits provided by revegetation efforts. In addition the U.S. Department of Agriculture currently recommends no-till practices which have been shown to reduce wind and water erosion, increase soil-water holding capacity, and maintain or increase soil organic matter as compared to conventional tillage practices (USDA 2023[11]).

Additionally, the Draft Vegetation and Weed Management Plan contains success criteria that are intended to support the Project successfully filing for Notice of Termination (NOT) for the construction National Pollutant Discharge Elimination System (NPDES) permit. Eligibility criteria for NOT are provided in the Construction Stormwater General Permit (CSWGP) (Ecology 2020), and require that the site has undergone final stabilization. Any modifications to the revegetation plan should take into account the need to support the Notice of Termination and minimize future potential for erosion.

In order to further address WSDA's concerns, Innergex proposes to revise the Draft Vegetation and Weed Management Plan to:

- Clarify that areas compacted during construction will be de-compacted prior to implementation of revegetation activities.

[9] CSU Extension (Colorado State University Extension). 2012. Cheatgrass and Wildlfire, Fact Sheet No, 6.310. Available online at: https://extension.colostate.edu/docs/pubs/natres/06310.pdf

[10] Neal, A., and U. Atre. 2020. Pollinator-Friendly Solar Installations Benefit Wildlife, Farmers, Climate. Environmental and Energy Study Institute. Available online at: https://www.eesi.org/articles/view/pollinator-friendly-solar-installations-benefit-wildlife-farmers-climate.

[11] USDA (U.S. Department of Agriculture). 2023. Northwest No-Till Farming for Climate Resilience. Available online at: https://www.climatehubs.usda.gov/hubs/northwest/topic/northwest-no-till-farming-climate-resilience.

- If desired by EFSEC, WDFW, and Department of Agriculture, amend the proposed revegetation seed mixes to include species that will further enhance soil health, such as nitrogen-fixing species.

In addition to revising and implementing measures in the Draft Vegetation and Weed Management Plan, if requested by EFSEC, Innergex proposes to develop a Soil Monitoring Plan. This plan would include methods for:

- Monitoring soil compaction by testing the soil infiltration rate.
- Sampling the soil to determine physical characteristics such as topsoil depth, which is important for soil fertility, water-holding capacity, soil organic carbon content, and productivity, and soil structure (e.g., aggregate size), which affects retention and transmission of water and air in the soil, as well as the mechanical properties of the soil.
- Measuring nutrient, organic matter, and pH levels of the soil.

If monitoring shows a decline in soil conditions, adaptive management actions would be implemented. Adaptive management actions may include tilling of the soil, application of soil amendments to supply additional organic matter, or addition of nutrients or minerals to adjust soil pH. With implementation of measures in the Draft Vegetation and Weed Management Plan (with revisions as noted above) and development and implementation of a Soil Monitoring Plan, Innergex believes that the Project would not result in permanent adverse impacts to soils or result in the loss of prime farmland.