



Union Ridge Solar

Exhibit E

Drain Tile Mitigation Plan

Case No. 20-1757-EL-BGN



Union Ridge Solar – Drain Tile Mitigation Plan

2/4/2021



UNION RIDGE SOLAR – DRAIN TILE MITIGATION PLAN

Prepared By: Development Engineering

Approved by: Executive of Department

Document ID: **ENG.7900.000**

Version: 1.0

Effective Date: **2/4/2021**

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1. INTRODUCTION

Leeward Renewable Energy, LLC (“Leeward”) proposes to construct an up to 108 MWac solar generating facility, Union Ridge Solar (the “Project” or “Facility”), in Licking County, Ohio. The Project will be located in Harrison Township, along the east and west sides of Watkins Road SW, approximately 0.7 miles north of the intersection of Watkins Road SW and Refugee Road SW. The project site consists of approximately 480 acres of predominantly undeveloped farmland, with evidence of harvested crops and drain tiles to aid in drainage of the fields. Leeward has developed the following Drain Tile Mitigation Plan for the project to cover the proper care and maintenance of drain tile systems to ensure continued productivity of the farmland.

2. DRAIN TILE IDENTIFICATION

Leeward has contracted with Huddleston McBride Land Drainage Co. to support drain tile locating efforts on the Union Ridge Solar project. Drain tile locating services will consist of coordination with the county engineer, private landowner interviews, review of aerial imagery, and visual field observation. Data on the existing drain tile system will be aggregated to create a comprehensive mapping of known and suspected drain tile systems. Landowner coordination and field investigations are ongoing during permitting efforts and the mapping will be updated upon receipt of additional information and prior to construction.

Appendix B provides existing mapping of the drain tile system based on desktop aerial photography and consultation with the land owner.

3. DRAIN TILE AVOIDANCE


Leeward will implement the following drain tile avoidance measures prior to construction:

- Drain tile mains will be considered in the development of the final project layout and avoided where practicable.
- The drain tile dataset will be shown on the final construction plans or on a separate exhibit, as required.
- Identified drain tile mains will be flagged in the field during construction to facilitate avoidance during construction activities.

4. DAMAGED DRAIN TILE IDENTIFICATION

Even under ideal circumstances, some drain tile damage during construction is unavoidable. The following techniques will be utilized to identify damaged drain tile during construction activities at Union Ridge Solar:

- For excavation associated with the installation of collection lines and foundation slabs, any broken tile system will likely be visible along the boundary of the excavated area.
- In the event drain tile is damaged during pile installation, the location will be assessed for the need for repair, as discussed in more detail in Section 5 *Drain Tile Repair*.


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- It is possible that drain tile damage is not noted immediately upon the event, as damage may become evident over time. Evidence of damage may include unexpected flows of water out of the ground, ponding, or the formation of localized voids in dry conditions. Construction crews will regularly monitor and assess the site for any such conditions. Should conditions indicative of damaged tile be noted, the location will be assessed for the need for repair based on the specifications below in Section 5 *Drain Tile Repair*.

5. DRAIN TILE REPAIR

The following protocols will be implemented if broken drain tile is identified:

- a) Unless otherwise agreed to by the landowner, underground drain tile mains within the footprint of the Facility that are damaged from construction will be repaired by a qualified contractor within 30 days of discovery, as weather and soil conditions allow.
 - i. Lateral drain tile lines contained within the Facility area may not be repaired, as they are subject to landowner agreements that may not necessitate repair. Excavation of laterals may harm the structural integrity of pile driven posts, and thus repair may not be feasible. These lines will be assessed for repair on a case-by-case basis.
 - ii. Landowner agreements that do not necessitate the repair of drain tile shall be applicable only to drain tile lines contained fully on the landowner's property.
 - iii. Drain tile mains that are known to extend outside of the participating landowner property on either the upstream or downstream side, will be repaired, regardless of landowner agreements.
 - iv. If it cannot be determined if a drain tile line extends onto neighboring parcels based on field assessment and/or mapping dataset, the line will be treated as a main line and be subject to repair, regardless of landowner agreements.
- b) All repairs will be completed by a qualified contractor, and will consist of the following:
 - i. Drain tile lines that are subject to repair shall be repaired at a minimum to the standard details provided in Appendix A.
 - ii. Any new drain tile lines will be of comparable quality to the original and will be installed to restore the underground drainage capacity found onsite prior to construction.
 - iii. All subsurface drains subject to repair shall be repaired or replaced with materials of equal or higher quality and of equal or larger inside diameter as those which were damaged or removed.
 - iv. To the greatest extent practicable, the subsurface drain repair shall maintain the original alignment, grading and water flow.

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- c) The locations of all subsurface drains that are damaged and/or repaired will be documented. The location will be recorded, a photo will be collected, and a description of the repair will be documented and available to the landowner at their request.

6. COMPLAINT RESOLUTION

Leeward is committed to addressing landowner concerns regarding drain tile repair and maintenance. Per the complaint resolution program developed for the Facility, landowners may file concerns by phone directly to the Construction Manager, in person at the temporary construction office (during construction phase), in person at the Operations & Maintenance building (during operational phase), or via a written mail-in form. Leeward will work to address landowner concerns related to drainage in a timely manner.

7. REFERENCES

- Ohio Department of Agriculture. Ohio Pipeline Standards and Construction Specifications. 2015. Accessed February 2021. https://agri.ohio.gov/wps/wcm/connect/gov/553ebd44-98e5-485c-a78d-49156289a388/PIPELINE+STANDARD+12-28-15new+letterhead.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=ROOTWORKSPACE.Z18_M1HGGIK0N0JO00QO9DDDDM3000-553ebd44-98e5-485c-a78d-49156289a388-nbcl.gv
- Tom Huddleston, Huddleston McBride Land Drainage. (2021). *Agricultural Drainage Considerations Including Modifications and Maintenance Recommendations for Ground Mounted Solar Projects Within Existing Agricultural Land Use Areas.*

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Appendix A

Typical Drain Tile Repair Construction Details



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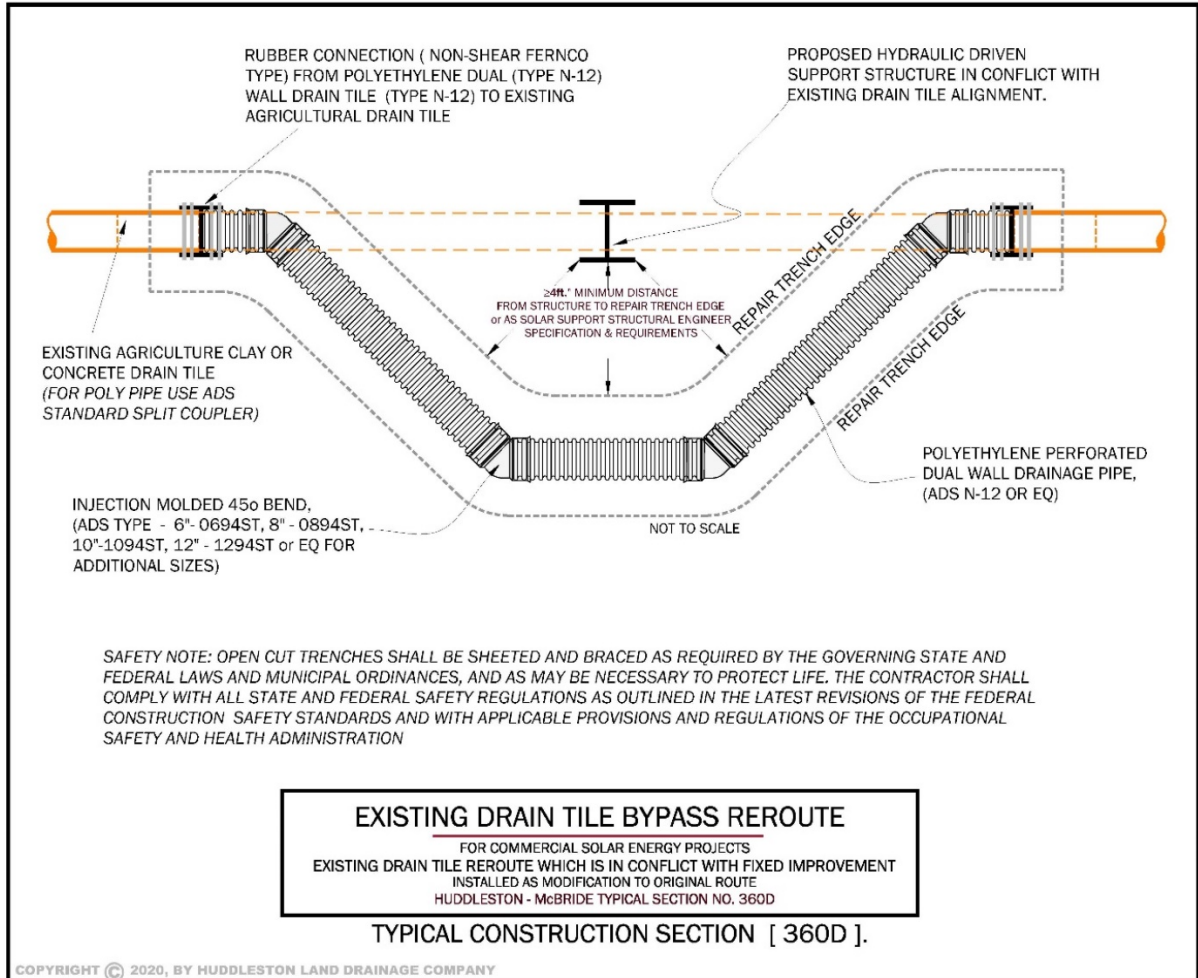
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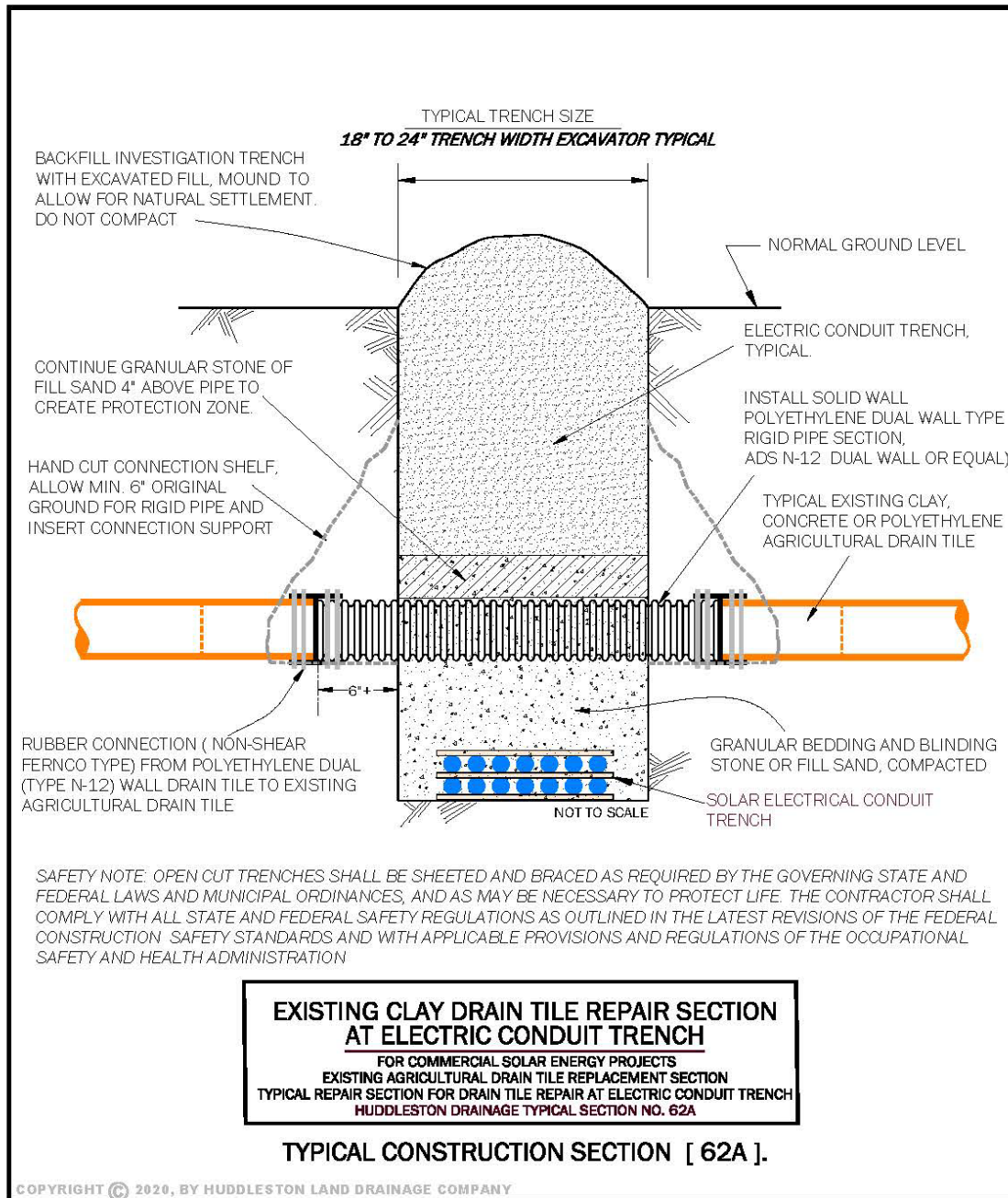
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Appendix B

Existing Drain Tile Aerial Identification Mapping



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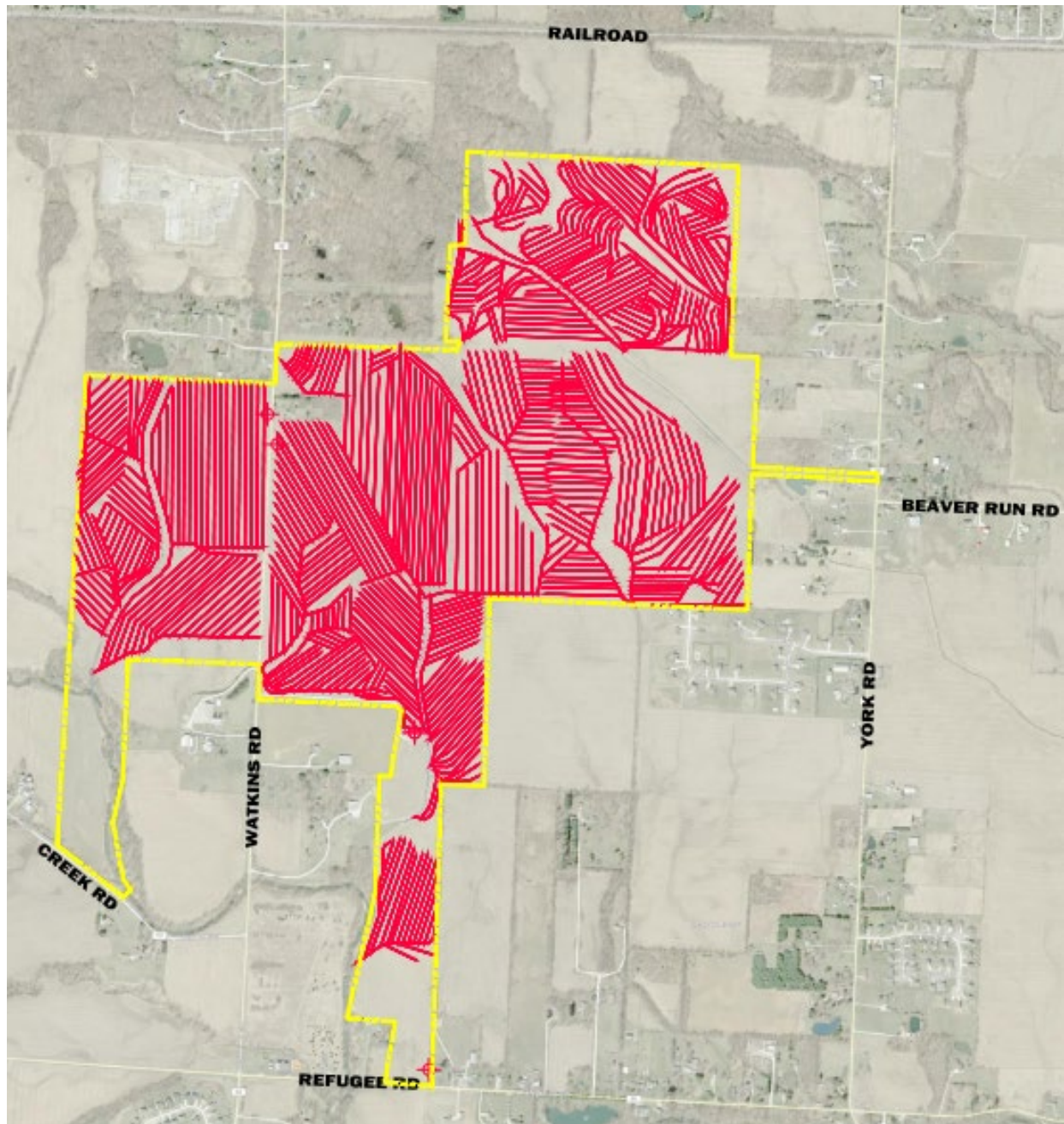
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Commission of Ohio Docketing Information System on

3/26/2021 3:04:27 PM

in

Case No(s). 20-1757-EL-BGN

Summary: Application Exhibit E - Drain Tile Mitigation Plan electronically filed by Teresa Orahoad on behalf of Dylan F. Borchers