

BEFORE THE OHIO POWER SITING BOARD

In the Matter of the Application of)	
Alamo Solar I, LLC)	
for a Certificate of Environmental)	Case No. 18-1578-EL-BGN
Compatibility and Public Need)	

DIRECT TESTIMONY OF NOAH WATERHOUSE

Q.1. Please state your name, title and business address.

A.1. My name is Noah Waterhouse. I am the Director of Solar - Civil Engineering for EVS, Inc. My business address is 10025 Valley View Road, Suite 140, Eden Prairie, MN 55344.

Q.2. What are your duties as the Director of Solar – Civil Engineering?

A.2. As the Director of Solar Civil at EVS, my role is to lead a group of engineers in providing civil design for solar projects. That leadership includes developing design procedures, establishing scopes with clients, overseeing project execution, and educating staff on Solar Civil specific design principles.

Q.3. What is your educational and professional background?

A.3. I have a Bachelor of Science in Civil Engineering from the University of Minnesota. I am a licensed Professional Engineer in the State of Minnesota. I have worked as a Civil Engineer at EVS continuously for the past 15 years, and have been doing work exclusively for solar projects for approximately five years. I became Director of Solar Civil at EVS in 2017. During my career I have been the site design engineer for both government, including military, and commercial projects. I have performed project management and design duties, including field work, regarding grading and drainage, stormwater management, utilities, erosion control, pavement design, and demolition

1 design. I have also prepared permit applications for a number of projects, including
2 water discharge permits and various local permits for grading, driveway connections, and
3 stormwater management. I have extensive experience evaluating drainage and runoff
4 issues and/or drain tile at dozens of sites, including more than 50 solar projects.

5 **Q.4. On whose behalf are you offering testimony?**

6 **A.4.** I am testifying on behalf of the Applicant, Alamo Solar I, LLC, in support of its
7 application filed in Case No. 18-1578-EL-BGN.

8 **Q.5. What is the purpose of your testimony?**

9 **A.5.** The purpose of my testimony is to describe the methodology of the Drain Tile
10 Assessment (“DTA”) my firm will complete on behalf of the Applicant and to summarize
11 the projected impacts of the Alamo Solar Project (“Project”) on drain tile, drainage, and
12 runoff in the area in which the Project will be located (“Project Area”). I will also
13 address Condition 16 in the Joint Stipulation filed July 5, 2019, which I have reviewed.

14 **Q.6. Please describe the study that you and your firm will complete on behalf of the**
15 **Applicant.**

16 **A.6.** The DTA will include both desktop and onsite physical evaluation of the Project
17 Area to locate drain tile. Specific measures to be undertaken include evaluation of aerial
18 images, location of inlets and outlets, soil subsidence, and topography, all of which can
19 provide indications of the location of drain tile. Following these measures, physical
20 exploration allowing drain tile routes to be marked and surveyed would be used. These
21 physical measures could include:

- 22 • Using an excavator or other small piece of equipment to dig trenches perpendicular to
23 the suspected drain tile route until the pipe is exposed, where it can be marked and
24 surveyed.

- Using a T-handled steel rod during soft soil conditions to press vertically down into the soil where drain tile is suspected to occur. When the rod touches a tile, the spot is marked and surveyed.
- Using a maverick tile finder. A flexible rod is inserted into the drain tile at a known location. Embedded in the rod is a copper wire that sends a signal to a locator on the surface. The locator traverses the approximate drain tile route above and when a positive signal is encountered, the location is marked and surveyed.

Q.7. What is your role in completion of the DTA?

A.7. My role is to conduct and/or provide management of the various aspects of the DTA, including 1) planning, scheduling, organization, and management of desktop investigations, 2) conducting field reviews, 3) performing review and quality assurance on the study products (e.g., report, figures, tables), and 4) providing communication with the Applicant regarding the study's progress, results and Project implications.

Q.8. What activities have you undertaken to date in support of the DTA?

A.8. I visited the Project Area on April 15 and April 16, 2019 to evaluate the site and verify that the techniques described previously in my testimony would be effective in identifying the locations of drain tile, and that adequate measures could be put into place to avoid impacts to drain tile where possible, and to repair any damage if impacts do occur. Part of my visit to the Project Area included a preliminary evaluation of drainage and runoff in the Project Area.

I am currently working with the Applicant to document and map the location of drain tile in the Project Area. Efforts undertaken to date include: 1) working with the Preble County Engineer and the Preble Soil & Water Conservation District to obtain maps of any drain tile in the Project Area, 2) discussions with landowners in the Project Area to identify drain tile locations, and 3) conducting an on-site review to identify drain tile visually. I anticipate continuing to work with the Applicant as well as local landowners

1 and officials to continue to refine the understanding of drain tile in the Project Area and
2 ensure that any impact from the Project is minimized.

3 **Q.9. What was the conclusion of your site visit with respect to drain tile?**

4 **A.9.** It should be possible to identify drain tile in the Project Area using the methods
5 described previously. If advance identification is not possible, it should be possible,
6 during construction, to identify damaged drain tile and repair it at that time. Damaged
7 drain tile generally can be identified by the presence of water flowing out of the ground
8 in an unexpected location. Excavating the area and following the source of the flowing
9 water will lead to any broken pipe. The construction period for the Project should be
10 long enough for an ample number of rain events to reveal any locations in which tile was
11 damaged but not immediately discovered and repaired.

12 **Q.10. What is your overall assessment of the potential impact of the Alamo Solar Project**
13 **on drain tile?**

14 **A.10.** Many megawatts of solar energy facilities have been designed and constructed on
15 agricultural land similar to the Project throughout the Midwest where drain tile is
16 commonly used. Unknown drain tile locations can present a challenge, but one that can
17 be overcome through a well-coordinated program of research, preliminary mapping,
18 physical investigation, locating, surveying, and design. The Applicant is in the process of
19 implementing such a program to ensure that neither the Project Area itself nor adjacent
20 properties are negatively impacted by damage to existing drain tile networks.

21 **Q.11. What is your overall assessment of the potential impact of the Alamo Solar Project**
22 **on drainage and runoff?**

1 **A.11.** The Project should not have an impact on drainage, nor should it result in an
2 increase in runoff from the Project Area. Although the solar panels and some of the
3 ancillary equipment are impervious, the large gaps between panel arrays to prevent
4 shading and other open areas, combined with the vegetation surrounding and beneath
5 each panel, means that drainage and runoff characteristics should not be dissimilar from a
6 farmed field with crops growing on it. In my experience, the construction and operation
7 of similar projects to the Project has not led to drainage issues, or an increase in runoff.
8 In fact, when compared to a fallow field, I would expect the Project to have superior
9 drainage and runoff characteristics, due to the year-round vegetation maintained in and
10 around the Project Area.

11 **Q.12. Do you support Condition 16 in the Joint Stipulation?**

12 **A.12.** Yes. The Joint Stipulation makes changes to Staff's recommended condition
13 regarding drain tile (see Condition 16). Specific changes include: a requirement to
14 document benchmark tile conditions prior to construction, a standard for any installation
15 or repairs that are made, and an express requirement to consult with the County Engineer
16 for certain tile located in a county maintenance/repair ditch. The Applicant is also now
17 required to give the County Engineer and Staff reasonable notice of certain repairs, and
18 obtain approval prior to backfill for those repairs. Finally, the revised condition requires
19 the Applicant to utilize a silt fence as a part of its Stormwater Pollution Prevention Plan
20 ("SWPPP") during construction.

21 **Q.13. How will Condition 16 in the Joint Stipulation affect the impact of the Project on**
22 **drainage and drain tile?**

1 **A.13.** Although the original condition as recommended by Staff was adequately
2 protective of drainage and drain tile, the revised language of Condition 16 will assist in
3 ensuring that drain tile in the Project Area is avoided where possible, maintained in good
4 working order, and, if damaged during construction of the Project, is adequately repaired.
5 I am currently working with the Applicant to document and map the location of drain tile
6 in the Project Area. Efforts undertaken to date include: 1) working with the Preble
7 County Engineer and the Preble Soil & Water Conservation District to obtain maps of
8 any drain tile in the Project Area, 2) discussions with landowners in the Project Area to
9 identify drain tile locations, and 3) conducting an on-site review to identify drain tile
10 indicators visually. Prior to construction, additional analysis of data gathered will be
11 reviewed and an action plan determined for each property in the Project Area. The
12 purpose of the action plan is to identify additional field work and physical investigation
13 that will be required at each property in order to support the requirements of Condition
14 16.

15 Additionally, appropriate implementation of a SWPPP, including silt fences, will help to
16 ensure that erosion in the Project Area is minimized, preventing siltation of drainage
17 ditches and waterways and maintaining effective overall drainage in the Project Area. A
18 SWPPP is a requirement under the Ohio EPA construction stormwater general permit that
19 the Project will require, and I would expect the SWPPP for the Project would include
20 other controls and best management practices beyond silt fencing that will serve to
21 control runoff and sedimentation and prevent flooding.

22 **Q.14. Is Condition 16 in the Joint Stipulation in the public interest?**

1 **A.14.** Yes. Condition 16 benefits the public interest by ensuring the protection of drain
2 tile and existing drainage in the Project Area. Condition 16 is a comprehensive condition
3 that requires the Applicant to engage with the Preble County Engineer. This condition
4 puts measures in place to help ensure that surrounding properties are not impacted by the
5 Project.

6 **Q.15. Does this conclude your direct testimony?**

7 **A.15.** Yes, it does.

CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served upon the persons below via electronic mail this 5th day of July 2019.

/s/ MacDonald W. Taylor

Werner Margard
werner.margard@ohioattorneygeneral.gov

Dylan Borchers
dborchers@bricker.com

Kathryn West
kwest@prebco.org

W. Joseph Scholler
jscholler@ftblaw.com

Thaddeus Boggs
tboggs@ftblaw.com

Chad Endsley
cendsley@ofbf.org

Leah Curtis
lcurtis@ofbf.org

Amy Milam
amilam@ofbf.org

Jack Van Kley
jvankley@vankleywalker.com

Chris Walker
cwalker@vankleywalker.com

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

7/5/2019 4:21:05 PM

in

Case No(s). 18-1578-EL-BGN

Summary: Testimony Direct Testimony of Noah Waterhouse electronically filed by Mr. MacDonald W Taylor on behalf of Alamo Solar I, LLC