ZUVIC · CARR
AND ASSOCIATES
CONSULTING ENGINEERS

August 3, 2017

Jerome F. Shea, Town Engineer
Town of Simsbury
933 Hopmeadow St.
Simsbury, CT. 06070

RE: Review of Meadowood Development Documents as may be Pertinent to DWW Solar II, LLC – Tobacco Valley Solar Project

Dear Mr. Shea:

As requested by the Town of Simsbury, Zuvic, Carr and Associates, Inc. (Zuvic Carr) reviewed environmental and property use documents pertinent to the Meadowood development ("Meadowood") property as they may relate to the petition submitted to the Connecticut Siting Council (SCS) by DWW Solar II, LLC for installation and operation of a 26.4 megawatt AC solar photovoltaic electric generating facility. The solar facility is proposed to be located on approximately 289 acres comprised of 5 separate and abutting privately-owned parcels on Hopmeadow Street, County Road, and Hoskins Road. The Meadowood property is located west of the proposed solar facility property along County Road, Hoskins Road, Barndoor Hills Road, Firetown Road and Holcomb Street. Both the Meadowood and proposed solar facility properties were formerly used for tobacco cultivation and associated activities by Culbro Land Resources, Inc. ("Culbro Tobacco") and similar activities historically occurred on the two properties. Therefore, environmental and property use information for the Meadowood property may be pertinent to the proposed solar facility project.

Zuvic Carr reviewed the following environmental investigation and remediation reports for the Meadowood property conducted between 1995 and 2014:

- "Soil Sampling Investigation, Frances Farms Subdivision", June 6, 1995, prepared by Fuss & O'Neill, Inc.;
- "Environmental Sampling Report, Lot #4 Firetown Road", August 3, 1996, prepared by Anchor Engineering Services, Inc.;
- "Soil Mixing Plan, Meadowood Development", December 1999, revised February 2000, prepared by Fuss & O'Neill, Inc.;
- "Soil Mixing Plan, Meadowood Development", January 2000, prepared by Fuss & O'Neill, Inc.;
- "Supplementary Environmental Analyses, Meadowood Development", February 2000, prepared by Fuss & O'Neill, Inc.;
- "Investigation Results Report, Confirmatory and Pre-Remediation Soil Sampling and Hydrogeologic Investigation, Parcel 3 East", April 2005, prepared by Fuss & O'Neill, Inc.;
- "Supplemental Activities Report, Parcel 3 East, Simsbury", September 2005, prepared by Fuss & O'Neill, Inc.;
- "Soil Relocation and Removal Management Plan, Parcel 3 East", November 2005, revised July 2007, prepared by Fuss & O'Neill, Inc.;

- "Soil Relocation Summary Report, Parcel 3 East", January 2012, prepared by Fuss & O'Neill, Inc.; and,
- "Soil Removal Summary Report, Parcel 3 East – Hoskins 7 (Area 1)", June 2014, prepared by Fuss & O'Neill, Inc.

In addition, Zuvic Carr reviewed applications submitted to the Town of Simsbury for development of the Meadowood property for residential housing.

In summary, portions of the Meadowood property were used for tobacco cultivation and associated activities since before the 1930s. Tobacco drying/storage barns, tobacco fields, farm dumps (solid waste disposal areas, including for empty pesticide and fertilizer containers), presumed pesticide, fungicide and fertilizer storage areas and possible irrigation wells, are and/or were present on the property. Several fires occurred on the property, set either intentionally or accidently, and include burning of barns, pesticide/fungicide-treated tobacco, netting, tent cloth, wood and unspecified "agricultural products". In addition, sand and gravel removal operations were conducted on a portion of the property.

An environmental consultant to the property owner, Fuss and O'Neill (F&O), evaluated the types of pesticides/fungicides used on the property to develop a list of contaminants of concern (COC) for its testing programs. The results of F&O's evaluation are attached ("Response to Ms. Kathleen Cowen Bessett's Revised Letter Dated February 17, 2000") and include "Table A-1 Chemicals Known or Likely to Have Been Applied at Culbro Tobacco Fields...". Note that all chemicals on the list, regardless of whether they were determined to have been used in the "past ten years" or were "used currently", were determined by F&O to be COCs for the site. Not included on the list are cyanide and metals (arsenic, lead and zinc) that were also determined to be COCs. Although not tested for or determined by F&O to be a COC, dioxins should also be considered a COC for the property since dioxins are formed during the combustion of chlorinated organic compounds.

The results of sampling and testing of near-surface soil (from ground surface to 3 ft. deep) and sediments at the property indicated the presence of one or more of the following chemicals:

- Chlorinated solvents and their breakdown products, cleaning chemicals and petroleum-related compounds, including tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, methyl ethyl ketone, toluene and xylenes;
- Cyanide;
- Arsenic, copper, lead and zinc were reported at concentrations that may represent naturally-occurring levels present in uncontaminated soil;
- Organochlorine pesticides, including, chlordane, DDT, DDE, DDT, BHC (aka Lindane), heptachlor epoxide, aldrin, endosulfan (and its derivatives), dieldrin and endrin; and,
- Leachable pesticides, as determined using the Synthetic Precipitation Leaching Procedure (SPLP).

The results of sampling and testing of groundwater at the property identified the presence of ethylene dibromide (EDB), DDT and total petroleum hydrocarbons in overburden groundwater.

Town and State records indicate that several potable residential wells and a possible presumed irrigation well near, and potentially at, the Culbro properties are or were contaminated with EDB (a soil and post-harvest fumigant) and/or Vorlex soil fumigant (composed of 1,3-dichloropropene, 1,2-dichloropropane and methyl isocyanate). The Town of Simsbury installed a drinking water supply system in the area in the 1980s, however it is unknown which properties are connected to the system. At least one property on/near Centerwood Road/Knollwood Circle/Gordon Street has a granular activated carbon treatment system installed to treat its well water. Connecticut Department of Energy and Environmental Protection (CTDEEP) records indicate that a drinking water supply well on Knollwood Circle and either a drinking water supply or irrigation well at/near 85 Hoskins Road are contaminated with Vorlex.

As described in Zuvic Carr's letter dated July 27, 2017 concerning our comments on a Phase I Environmental Site Assessment report for the DWW Solar II, LLC, Tobacco Valley Solar Project (prepared by GZA Environmental, Inc., dated March 2016), additional information is required to evaluate if the Connecticut Transfer Law (CGS Section 22a-134, as amended) will apply to a qualifying transfer of the property. Specifically, it is unknown if the proposed solar facility property meets the definition of an "establishment" under the Law since there are significant gaps in information regarding the generation and disposal of hazardous wastes that may be attributed to the Site. This issue should be evaluated once additional pertinent information has been obtained and reviewed.

In addition, CGS Section 22a-427 prohibits pollution or discharges of wastes to the waters of the state by any person and municipality. The Statute would require remediation of the property if the waters of the state were impacted by past practices.

Based on the information reviewed by Zuvic Carr and the presence of contaminants in soil, sediment and groundwater at/near the Meadowood property and presumably the proposed solar facility site, that apparently have resulted from past agricultural practices, Zuvic Carr recommends that the information described below be evaluated since it may be pertinent to the Town's or its resident's interests.

Site Investigation/Assessment:

- Plans for, and results of, investigations to evaluate the presence, and degree and extent of soil, sediment and groundwater contamination;
- Results of an evaluation of potential mobilization of soil/sediment contaminants during and after construction; and,
- Results of an ecological risk assessment to evaluate potential effects on macro and micro organisms in and near the property.

Remedial Activities:

- Description of how the property owner/developer intends to achieve compliance with State and Federal regulations, statutes, guidance and common practices concerning remediation of on- and off-site contamination, including potential plans for soil mixing, soil excavation/off-site disposal, rendering soil inaccessible, recording inaccessible and/or Industrial/Commercial Environmental Land Use Restrictions (ELURs) and any related operating and maintenance procedures, etc.

Construction Management:

- Plans for dust control and air monitoring during development activities to eliminate, and evaluate the presence of, airborne dust which may contain contaminants;
- Plans for stormwater management since stormwater may mobilize soil- and sediment-bound contaminants during and after site development;
- Plans for maintenance of, and mitigation of effects to, on-site wetlands since wetland areas may mitigate the mobilization of contaminants;
- Project design plans to assess potential environmental impacts during and after construction; and,
- Plan for management of soil excavated and handled during construction.

Zuvic Carr may have additional comments or questions as additional information on the project is provided. Please contact the undersigned if you have any questions.

Sincerely,
Zuvic, Carr and Associates, Inc.

Victoria L. Man, LEP
Senior Project Manager

Robert J. Carr P.E., LEP
Vice President

Attachment

C: Lisa L. Heavener, Town of Simsbury, First Selectwomen
Jesse A. Langer, Updike, Kelly and Spellacy, P.C.

RESPONSE TO MS. KATHLEEN COWEN BESSETT'S REVISED LETTER DATED FEBRUARY 17, 2000

Based on our review of Ms. Bessette's letter regarding Chemicals of Concern (COCs) at the Meadowood site, we conclude that there is a misunderstanding of both our method of developing COCs for the site and how to interpret Table A-1 in Appendix A of our "Summary of Environmental Conditions" report.

We did not rely solely on "human memory" to develop our COC list for the site. The following sources of information were used:

- A list of chemicals used in Culbro's farming operations developed in 1979 by Mr. Richard Milliken, former General Manager of Culbro Tobacco. This list covers the time period from 1960 to 1979 and was developed prior to the fire which destroyed Culbro Tobacco's records of pesticide use. The list was submitted to the DEP in May 1979.

- All chemicals included in Appendix A of the report entitled "Pesticides in Ground Water, Soil, and Unsaturated-Zone Sediments at Selected Sites in Connecticut", Connecticut Water Resources Bulletin No. 42, 1991.

- Interviews were conducted with long-time Culbro employees as well as officials from the DEP Pesticides Group, CT Agricultural Experimental Station, University of Connecticut and Simsbury Conservation Officer (see memo attached). A chemical was only removed from our COC list if knowledgeable Culbro staff could emphatically state that a particular chemical was never used at the site.

Table A-1 in Appendix A (attached) of the Summary of Environmental Conditions Report shows COCs in the left column, followed by two columns to the right, the first being "Used in the Past Ten Years" and the second "Used Currently". The usage data was presented in order to determine chemicals which had a history of extended use at the site, including use up to the present day. Note that 27 of the 44 chemicals (60 percent of the list) do not have an "X" in either column, indicating that they are COCs, but that they are currently not used at the site and have not been used at the site in the past ten years. However, as stated earlier, our usage records go back at least 40 years.

In response to the list of 22 chemicals Ms. Bessett developed, it should note that chemicals may have different names. "Brand" names of pesticides, herbicides, and fungicides may include several chemicals that make up that product. Many of the chemicals that Ms. Bessett has identified were specifically included in our COC list. Others, while not COCs, were included in our analyses. With the exception of formaldehyde, all the chemicals listed would have been detected by one or more of the analytical methods selected in the development of the project COC list.

In the development of our COC list we specifically asked the laboratory to identify any compounds detected by these methods. This was done by requesting standard EPA SW-846 methods with their associated parameter lists and identification of "unknown" peaks in the total

ion chromatogram (TIC) The TIC analysis compares the mass spectrum of the "unknown" peak to the National Bureau of Standards mass spectrometry library. This library contains several thousand compounds including pesticides, herbicides and fungicides. TIC analysis did not indicated the presence of any pesticide, herbicide or fungicide other than those included in our COC list.

Ms. Bessette is correct in revising her February 16, 2000 letter in that ethylene dibromide, dichloropropane, and aldrin are specifically listed on Table A-1 of our report. In addition, copper analysis would have identified Cuprocide, Copper Spray, and Bordeaux. Benzene, dichloropropene, and 1,4- dichlorobenzene can be detected by EPA method 8260 for Volatile Organic Compounds. Arasan, Fermate, Fermate Spray, Karbam, and Parzate can be detected by EPA method 8318 and TIC analysis. Chlorpicrin, Retenone and Nicotine can be detected by EPA method 8260 or 8270 TIC analysis. Tetraethyl Pyrophosphate is detected by EPA method 8141 for Organophosphorus Pesticides. Lindane (gamma-BHC) and Rotohane (4,4,- DDD) are detected by EPA method 8081. Metacide is detected by EPA method 8141. In addition to the above methods, EPA method 8150 for chlorinated herbicides and EPA method 9010 for cyanide were also used in the development of our COC list.

Formaldehyde was not on our COC list because it was not used on-site. Formaldehyde can be used as a disinfectant for seeds. It is typically used in a concentration of 0.1 to 0.13 percent. The compound is very volatile (vapor density 1.03) and water soluable (55 g/100 ml). Even if seeds or soil was historically treated with formaldehyde before sowing, it is our professional opinion there would be no residue currently present.

Table 1 lists each of the chemicals identified in Ms. Bessett's letter, alternate chemical names, the EPA method that it would have been identified by, and the number of soil samples tested for each compound.

Table A-1: Chemicals Known or Likely to Have Been Applied at Culbro Tobacco Fields in Simsbury
Summary of Environmental Conditions, Meadowood, Appendix A
October 1999

Chemical	Used in Past Ten Years	Used Currently
Acrobat	x	
Admire (experimental only)	x	
Aldrin		
Aliette	x	
Aqua Malathion (aerial spraying, 6-7 years)	x	
delta-BCH		
gamma-BCH		
Carbaryl	x	x
alpha-Chlordane		
gamma-Chlordane		
Chlordane (technical)		
4,4'-DDD		
4,4'-DDE		
4,4'-DDT		
Diazinon	x	x
Dieldrin		
Dilox		
Dithane		
Endosulfan I		
Endosulfan II		
Endosulfan sulfate		
Endrin		
Endrin aldehyde		
Endrin ketone		
Ethylene dibromide (EDB)		
Heptachlor		
Heptachlor epoxide		
Lorsban	x	x
Malathion (6-7 years)	x	
Methoxyclor		
Orthene	x	x
Orthene 75% wettable powder	x	x
Oxamyl		
Parathion		
Ridomil	x	x
Ridomil Gold	x	x
Rotonene		
Sevin	x	x
Telone II	x	
Thiodan	x	x
Toxaphene		
Vorlex (1,2-dichloropropane)	x	
Vydate	x	x
Zineb		

Questions from
Bill Voelker
Planning Department
Town of Simsbury
February 11, 2000

Question 1.

- Names and approximate dates of interviews with people associated with what was previously known as Culbro Corporation used in determining what pesticides were applied, stored, and or mixed for use on the land now proposed for "Meadowood" development.

- Any criteria used to choose individuals for interviews on pesticide questions.

Answer:

Interviews Conducted in Association with the Meadowood Project to Determine Past Pesticide Use

Names	Approximate Dates	Selection Criteria
Charles Fink	8/95	CT DEP - Pesticides
Joe Pignatello	8/95	CT Agriculture Experiment Station
Jim Lamondia	8/95	University of Connecticut
Brad Robinson	8/95	CT DEP - Pesticides
Christie Barton	6/28/95	Simsbury Conservation Officer
Richard Milliken	≈1984 to early 1990's*	General manager - Culbro Tobacco
Donald Breou	8/95	Farm Manager - Culbro Tobacco
Ruth Bancroft	8/29/95	Secretary (handled pesticide records)
Heinz Amarell	8/31/95	Pesticide Chemist - Culbro Tobacco
Records Examined	6/28/95	Simsbury Board of Selectmen Records 1975 - 1983
Records Examined	6/95	CT DEP Files

* Numerous conversations regarding pesticide use for several unrelated projects that Fuss & O'Neill worked on for Culbro Tobacco