PETITION NO. 1354 – Chatfield Solar Fund, LLC, petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 1.98-megawatt AC solar photovoltaic electric generating facility on approximately 25 acres located generally south of Route 80 (North Branford Road) and east of Chestnut Hill Road in Killingworth, Connecticut, and associated electrical interconnection to Eversource Energy's Green Hill Substation located at 775 Green Hill Road, Madison, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		May 9, 2019

Findings of Fact

Introduction

1. On October 23, 2018, Chatfield Solar Fund, LLC (CSF) submitted a petition (Petition or Project) to the Connecticut Siting Council (Council), pursuant to Connecticut General Statutes (C.G.S.) §16-50k and §4-176, for a declaratory ruling for the proposed construction, maintenance, and operation of a 1.98 megawatt (MW) alternating current (AC) solar photovoltaic electric generating facility on an approximate 25 acre parcel, located generally south of Route 80 (North Branford Road) and east of Chestnut Hill Road in Killingworth, Connecticut and associated electrical interconnection to Eversource Energy's Green Hill Substation located at 775 Green Hill Road, Madison, Connecticut. (CSF 1, pp. 1-2)

2. CSF is a Delaware limited liability company with a principal place of business located at 1355 Piccard Drive, Suite 300, Rockville, Maryland. CSF is a subsidiary of Standard Solar, Inc. (SSI), a Delaware corporation with a principal place of business at 1355 Piccard Drive, Suite 300, Rockville, Maryland. (CSF 1, p. 2; Tr. 3, pp. 114-115)

3. The parties in this proceeding are CSF and Killingworth Advocates for Responsible Solar (KARS). (Record; Transcript 1, February 21, 2019, 3:00 p.m. [Tr. 1], pp. 1, 7-9)

4. Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40, notice of the Petition was provided to all abutting property owners by certified mail on or about October 22, 2018. (CSF 1, pp. 8-9, Affidavit of Service Attachment)

5. CSF provided notice to all federal, state and local officials and agencies listed in RCSA §16-50j-40 on or about October 22, 2018. The Town of Madison, located within 2,500 feet of the project site, was notified by certified mail on October 26, 2018. Appropriate state legislators were notified by certified mail on November 26, 2018. (CSF 1, pp. 8-9, Affidavit of Service Attachment; CSF 2, response 1)

6. The proposed project would generate renewable electrical energy from solar power. Solar power is considered a Class I resource. (CSF 1, p. 2; C.G.S. § 16-1(a)(20))

7. The proposed project would be a "grid-side distributed resources" facility under C.G.S § 16-1(a)(37). (CSF 1, p. 1; C.G.S. § 16-1(a)(37))

8. The State legislature established a renewable energy policy under C.G.S. §16a-35k that encourages the development of renewable energy facilities to the maximum practicable extent. (C.G.S. §16a-35k)

9. The Council is required to approve the project by a declaratory ruling as long as the project meets Department of Energy and Environmental Protection (DEEP) air and water quality standards and the Council does not find a substantial adverse environmental effect. (C.G.S. §16a-50k(a))

Procedural Matters

10. Upon receipt of the Petition, on October 26, 2018, the Council sent a letter to the Towns of Killingworth and Madison as notification that the Petition was received and is being processed in accordance with C.G.S. §16-50k(a). (Council correspondence dated October 26, 2018)

11. On November 29, 2018, the Council provided notice of a public field review to be held at the site on December 10, 2018. (Record)

12. During a regular Council meeting held on December 6, 2018, in its discretion under C.G.S. §4-176, the Council voted to hold a public hearing on the Petition. (Record)

13. On December 7, 2018 the Council provided notice that the December 10, 2018 field review had been canceled. (Record)

14. A public hearing schedule was approved by the Council at a regular Council meeting on January 17, 2019. (Record)

15. On January 18, 2019, the Council sent a letter to the Towns of Killingworth and Madison to provide notification of the scheduled public hearing and invite the municipalities to participate. (Record)

16. Pursuant to C.G.S §16-50m, on January 23, 2019, the Council published legal notice of the date and time of the public hearing in The Middletown Press. (Record)

17. On January 30, 2019, the Council held a pre-hearing conference on procedural matters for parties and intervenors to discuss the requirements for pre-filed testimony, exhibit lists, administrative notice lists, expected witness lists, filing of pre-hearing interrogatories and the logistics of the public inspection of the site, scheduled for February 21, 2019, at the office of the Council, 10 Franklin Square, New Britain, Connecticut. The Petitioner participated in the pre-hearing conference. (Council Pre-Hearing Conference Memorandum, dated January 30, 2019).

18. Pursuant to RCSA § 16-50j-21, on February 5, 2019, CSF erected a sign along North Branford Road (Route 80), near the proposed site access driveway. The sign presented information including the project name, type of facility, date of Council's public hearing, and contact information for the Council. (CSF 7)

19. The Council and its staff conducted a public inspection of the proposed site on February 21, 2019, beginning at 2:00 p.m. (Council Hearing Notice dated January 18, 2019)

20. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public hearing on February 21, 2019, beginning with the evidentiary hearing session at 3:00 p.m. and continuing with the public comment session at 6:30 p.m. at the Killingworth Fire Station Meeting Room, 333 Route 81, Killingworth, Connecticut. (Council's Hearing Notice dated January 18, 2019; Tr. 1, p. 1; Transcript 2. February 21, 2019, 6:30 p.m. [Tr. 2], p. 1)

21. The Council held a continued evidentiary hearing session on March 26, 2019 beginning at 1:00 p.m. at the office of the Council. (Tr. 2, p. 53; Council Memorandum dated February 22, 2019; Tr. 3, p. 1)

22. The Connecticut Supreme Court acknowledges that constitutional principles permit an administrative agency to organize its hearing schedule so as to balance its interest in reasonable, orderly and non-repetitive proceedings against the risk of erroneous deprivation of a private interest. (*Concerned Citizens of Sterling v. Connecticut Siting Council*, 215 Conn. 474 (1990); *Pet v. Department of Public Health*, 228 Conn. 651 (1994); *FairwindCT, Inc. v. Connecticut Siting Council*, 313 Conn. 669 (2014))

Municipal Consultation and Community Outreach

23. Prior to the filing of the Petition with the Council, the Killingworth First Selectwoman, Catherine Iino submitted a letter to the Council on September 14, 2018 in support of the Project as long as appropriate environmental protections are implemented. The letter was also included within the Petition. (Town of Killingworth letter dated September 12, 2018; CSF 1, Exhibit A)

24. CSF held a public information meeting in the Town of Killingworth (Town) on February 18, 2019. It was attended by approximately 40-50 residents, First Selectwoman Iino and the Town energy task force. (Tr. 1, p. 49)

25. By letter dated January 27, 2019, Killingworth Volunteer Fire Company (KVFC) Chief Richard Bauer indicated the Chief Officers of the KVFC will not issue an official position on the proposed project and will defer to the appropriate state/local code officials and the applicable requirements for approval. (KVFC letter dated January 27, 2019)

26. First Selectwoman Iino made a limited appearance statement at the February 21, 2019 public comment session indicating that her support of the Project was based on the Project meeting stringent environmental standards during construction and operation. Additionally, First Selectwoman Iino requested that plantings for visual screening be installed along the Project development area fronting Route 80. (Tr. 2, pp. 10-12)

27. By letter dated March 20, 2019, the Chairman of the Town Planning & Zoning Commission listed several concerns in regards to environmental and stormwater issues, zoning designations, and site decommissioning. The letter further stated that the proposal is not an appropriate site for a solar farm and that the application should be denied. The letter is included as Attachment 1. (Town Planning & Zoning Commission letter dated March 20, 2019)

28. Commercial and industrial zoned property is limited to narrow segments of Route 80 and Route 81 in central and eastern Killingworth. (Council Administrative Notice 102, p. 69)

State Agency Comments

29. Pursuant to R.C.S.A. §16-50j-40, on October 30, 2018 and January 18, 2019, the following state agencies were requested to submit written comments regarding the proposed facility: Department of Energy and Environmental Protection (DEEP); Department of Agriculture (DOAg); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Emergency Services and Public Protection (DESPP); Department of Consumer Protection (DCP); Department of Labor (DOL); Department of Construction Services (DCS); Department of Transportation (DOT); the Connecticut Airport Authority (CAA); and the State Historic Preservation Office (SHPO). (Record)

30. DEEP submitted comments on December 17, 2018 listing concerns that include, but are not limited to, stormwater management, wetland buffers, core forest, and state-listed species that occur on the site. DEEP's comments are included as Attachment 2. (DEEP comment letter dated December 17, 2018)

31. On February 5, 2019, the Council received a response from the DOT's Bureau of Engineering and Construction indicating that the proposed project may result in overhead or underground utility work within the state right of way for Route 80, and therefore, CSF must attain a Highway Encroachment Permit prior to performing any work within the right of way. (DOT Letter dated February 5, 2019)

32. While the Council is obligated to consult with and solicit comments from state agencies by statute, the Council is not required to abide by the comments from state agencies. (Council Administrative Notice Item No. 100 – *Corcoran v. Connecticut Siting Council,* 284 Conn. 455 (2007)

33. The following agencies did not respond to the Council's request for comment on the proposed facility: DPH, DOAg, CEQ, PURA, OPM, DECD, DESPP, DCP, DOL, DCS, CAA, and SHPO. (Record)

Connecticut's Renewable Portfolio Standards

34. Renewable Portfolio Standards (RPS) requirements are stimulating the need for and the development of renewable energy resources and energy efficiency in the region, which reduce emissions. States typically develop RPS to facilitate the development of new renewable energy sources with the goals of stabilizing long-term energy prices, enhancing environmental quality and creating jobs. RPS targets are designed to achieve a certain level of renewable energy penetration, typically in proportion to total electricity sales. (Council Administrative Notice Item No. 26 - 2015 RSP, p. 12; Council Administrative Notice Item No. 55 FOF #71)

35. C.G.S. §16-245a, establishes Connecticut's RPS. Up until recently, RPS required that 20 percent of Connecticut's electricity usage had to be obtained from Class I renewable resources by 2020. Under Public Act 18-50, RPS was updated to require 21 percent of Connecticut's electricity usage to come from Class I renewable resources by 2020. (CGS §16-245a; Council Administrative Notice Item No. 64 – 2018 CES, p. 110-112; Public Act 18-50)

36. Renewable Energy Certificates (RECs) provide additional revenue to qualifying renewable resources in proportion to the energy each resource generates. RECs create a market that reveals the additional price required, beyond energy and capacity payments, to make projects economically viable and also identifies when there is a need for additional resources. The REC-based compliance feature is designed to use competitive market forces to identify the appropriate level of economic support to achieve the policy goals. (Council Administrative Notice Item No. 55-FOF #73)

37. Connecticut electric utilities that do not obtain the required number of RECs are required to pay an Alternative Compliance Payment (ACP). According to DEEP's 2018 Comprehensive Energy Strategy for Class I renewable energy in Connecticut, the ACP is $55 per MWh. (Council Administrative Notice Item No. 64 - 2018 Comprehensive Energy Strategy p. 112)

38. The 2018 CES notes that, "Most recent analyses indicate that there should be adequate Class I resources to meet Connecticut's Class I Renewable Portfolio Standards (RPS) goals in 2020*." *This was based on the "20 percent Class I by 2020" requirement that was in place at the time the 2018 CES was prepared. (Council Administrative Notice Item No. 64 – 2018 CES, p. 112)

39. The project was selected in the state's Low and Zero Emissions Renewable Energy Credit Program (LREC/ZREC Program) that was developed as part of Public Act 11-80, "An Act Concerning the Establishment of the [DEEP] and Planning for Connecticut's Energy Future." The LREC/ZREC Program creates a market-driven bidding process for renewable energy projects ranging from rooftop solar panels to fuel cells to compete to obtain a 15-year revenue stream from the sale of RECs to the electric utilities. It requires Eversource Energy (Eversource) and the United Illuminating Company (UI) to procure Class I RECs under 15-year contracts with owners or developers of renewable energy projects in the state. (Public Act 11-80; CSF 2, response 6; Tr. 1, p. 93-94; Tr. 3, pp. 113-116)

40. CSF has two valid ZREC contracts with Eversource for the delivery of 1 MW or less of RECs, with a term of 15 years. Both contracts were issued for a solar facility on the same parcel and are independent of each other. (CSF 2 , response 10; CSF 13, response 124; Tr. 3, pp. 17-18, 88-89, 115-116)

41. On January 28, 2019, SSI obtained approval from PURA of a Request for Extension that grants a six-month extension from April 1, 2019 to October 1, 2019, of the automatic termination date of the ZREC Contracts (L5-3814 and L5-3816) for the Purchase and Sale of Connecticut Class I RECs by and between SSI and Eversource. With this extension, SSI now has until October 1, 2019, to complete the project. (CSF 4)

42. CSF would sell power through the end of the Project's 30 year lifespan. (CSF 2, response 11 response 22)

43. The Independent System Operator for New England (ISO-NE) holds an annual auction to acquire the power system resources needed to meet future demand for the New England region. The annual Forward Capacity Market Auction (FCA) is held approximately three years before each capacity commitment period to provide time for new resources to be developed. Capacity resources can include traditional power generation, renewable generation, or demand-side resources, such as load management and energy efficiency measures. Resources clearing in the auction will receive a monthly payment during the delivery year in exchange for their

commitment to provide power or curtail demand when called on by ISO-NE. (Council Administrative Notice Item No. 44)

44. CSF does not currently plan to participate in the ISO FCA, but may do so in the future. The power can be sold on a merchant power basis. (CSF 2, response 12; Tr. 1, pp. 92-93)

Public Act 17-218

45. Effective July 1, 2017, Public Act 17-218 requires, "for a solar photovoltaic facility with a capacity of two or more megawatts, to be located on prime farmland or forestland, excluding any such facility that was selected by DEEP in any solicitation issued prior to July 1, 2017, pursuant to section 16a-3f, 16a-3g or 16a-3j, the DOAg represents, in writing, to the Council that such project will not materially affect the status of such land as prime farmland or DEEP represents, in writing, to the Council that such project will not materially affect the status of land as core forest." Because the proposed project has a generating capacity of less than 2.0 MW, the proposed project is exempt from this provision of Public Act 17-218. (Public Act 17-218)

46. Public Act 17-218 also requires that the Council not find a substantial adverse environmental effect in its exercise of jurisdiction over facilities eligible to be approved by declaratory ruling under CGS §16-50k. There are no exemptions from this provision of Public Act 17-218. (CGS §16-50k)

Project Site

47. The proposed site is located on an approximately 24.1 acre parcel with frontage on the south side of Route 80 in Killingworth, identified as Town Map/Block/Lot 26-14 B. No other road frontage exists. (CSF, 1, pp. 2, 4; CSF 6, response 102)

48. The Project parcel is undeveloped, consisting of a mix of forest and wetlands. (CSF 1, p. 4)

49. The parcel, owned by Rajvilla LLC, is zoned residential (R-2). Other residentially zoned parcels abut the parcel to the east, west and south. (CSF 1, p. 2, Environmental Assessment (EA) p. 2-1; CSF 6, response 102; Tr. 1, p. 16)

50. CSF would enter into a long term lease agreement with the property owner to develop, operate and maintain the Project on the site property. (CSF 1, p. 2)

51. The topography of the parcel slopes down in an easterly direction from a high elevation of approximately 315 feet above mean sea level (amsl) on the western property edge to an elevation of 250 feet amsl at the center of the wetlands in the eastern portion of the Site. Inland wetlands are located along the eastern edge of the property with another wetland area in the central portion of the property. There is a semi-perennial stream associated the eastern wetland area and an intermittent stream that connects from the west. (CSF 1, EA p. 2-1)

52. The surrounding area consists of undeveloped properties generally to the north, south and east, developed residential properties to the northwest and west, and state forest and state park properties to the east and northeast. (CSF 1, p. 5, EA Fig. 4; DEEP comments dated December 17, 2018)

53. The nearest residential structure is approximately 300 feet northwest of the proposed Project area, across Route 80, at 497 Route 80. (CSF 5, response 17-revised)

54. The nearest property lines to the proposed solar field areas (excluding the Route 80 right of way) are approximately 70 feet to the east and 95 feet to the south. (CSF 13, response 112; KARS 3)

Project Description

Solar Field

55. The site plans and related data within the original Petition filing were subsequently revised to account for changes in the site design. The main reason for the changes was the reliance on Town GIS mapping to determine the property boundaries. CSF subsequently conducted an A-2 land survey, which determined the GIS mapping within the Petition was not correct. The Project was revised to account for the A-2 survey, as well as other changes made for environmental and civil engineering reasons. The revised site plans, submitted on March 20, 2019 in response to Council interrogatory no. 112, were used to develop the following findings of fact, as applicable. (CSF 3, response 69; CSF 13, response 112; Tr. 1, pp. 68-69)

56. The Project would consist of 6,552 355 Watt solar modules connected to 32 inverters to produce 1.92 MW AC power at the point of Project interconnection with Eversource's distribution system. (CSF 2 cover letter; CSF 3, response 69; CSF 13, response 112; Tr. 1, pp. 62, 69, 74; Tr. 3, p. 106)

57. The project is designed to maximize total annual energy production. (CSF 2, response 25)

58. The solar array area is divided into three distinct sections, the north section, southeast section and southwest section. Each section contains the following:

a) North - 5,184 modules (1.519 MW AC)
b) Southeast - 504 modules (0.148 MW AC)
c) Southwest - 864 modules (0.252 MW AC)

Refer to Figures 2A, 2B. (CSF 13, response 125)

59. The solar array areas are separated by wetland corridors. A 12-foot wide, 40-foot long gravel access drive would be constructed across a wetland corridor to provide vehicle access to the Southeast and Southwest solar field areas from the North solar field area. (CSF 13, response 112, response 116)

60. The proposed facility would be enclosed by a seven-foot tall chain link security fence. The fence can be designed with a gap at the bottom to facilitate small wildlife movement. (CSF 2, response 63)

61. The fence would cross two wetland areas. To avoid fence post installation impacts to the wetlands, fence posts would be installed in upland areas adjacent to the wetlands and a rigid top rail or a cable would be used to support the top of fence fabric within the wetland areas. (Tr. 3, pp. 61-62)

62. The security fence would enclose an area of 11.5 acres and would have one gated access point at the north end of the site. (CSF 13, response 131)

63. A 12-foot wide by 75-foot long gravel access drive would extend south to the parking area at the north end of the Project site. A 16-foot wide vehicle access gate would control access to the parking area and interior solar field areas. (CSF 2, response 80; CSF 5, response 18 revised; CSF 6 response 102)

64. A 20-foot wide perimeter access way would be maintained between the security fence and solar array rows. The access ways would be developed without grading and would have stumps cut at grade interspersed with seeded grass as a surface. Slopes in the access ways would be up to 25 percent. (CSF 2, response 59; CSF 13, response 112, response 113; Tr. 3, pp. 20-21)

65. Each panel would be arranged at a 20 degree tilt and measure 3 feet by 6 feet. The 20 degree tilt angle allows for a reduced Project footprint when compared to a 25 degree tilt angle; however, the Project output would be reduced by 1 percent. (CSF 2, p. 24; Tr. 1, p. 70)

66. The specified 355 watt panel is the most economically viable panel for this Project. A higher wattage panel (e.g. 400 W) has a premium cost, and even with the potential for a reduced Project footprint, is still uneconomical. (Tr. 1, pp. 69-70)

67. The solar panels would be installed in linear arrays on a driven post racking system, arranged in an east-west orientation with the panels facing the south. (CSF 3, response 69)

68. The top of the solar panels would reach a height of approximately 7.5 feet above grade. The bottom of the solar panels would be located approximately 3 feet above grade. (CSF 2, response 33)

69. The aisle between the solar array rows would be approximately 14.7 feet wide. (CSF 6, response 94)

70. The racking support posts are approximately 12.5 feet long and would be embedded to a depth of approximately 7 feet, depending on specific soil conditions. (CSF 2, response 38)

71. If bedrock is encountered, the posts holes would be established with a screw auger. (Tr. 1, pp. 34-35)

72. The post/racking system can be installed on slopes up to 20 percent. (CSF 2, response 36)

73. The Project would require 32 inverters string inverters installed in groups of four on different solar array rows. They would convert the DC power produced by the solar panels to AC power. The inverters would then connect to transformers installed at a utility interconnection area adjacent to Route 80 at the north end of the Project site. (CSF 2, response 41; CSF 13, response 112; Tr. 1, pp. 45-47)

74. Wiring from the solar panels to the string inverters would use an integrated wire management system associated with the proposed racking system with the wires running underneath the solar arrays. (CSF 2, response 40)

75. Wiring from the groups of inverters would be combined and would be installed within an above ground cable tray supported with concrete ballasts that would run to the utility interconnection area. The support ballasts would consist of concrete blocks set at 10 to 15 foot intervals. (CSF 2, response 41; Tr. 1, pp. 42-43)

76. The above ground cable trays would be approximately 8 to 12 inches above ground and would extend in three main corridors through the site. (CSF 13, response 112; Tr. 1, pp. 44-45)

77. Above ground cable trays are proposed due to the shallow bedrock and rocky soils that exist on the site. (Tr. 1, p. 48)

78. To prevent accidental vehicle or personnel impact to the cable trays, warning placards would be installed at certain intervals. (Tr. 1, p. 48)

79. The cable tray route extending from the Southwest solar field to the North solar field would cross above ground through a wetland corridor. (CSF 13, response 112)

80. Underground cables would be installed where they cross the 20-foot wide perimeter access way and where they extend along the access drive through the wetland corridor between the North and Southeast solar field areas. (CSF 13, response 112)

81. The estimated upfront cost of the proposed project is approximately $666,195, including land acquisition, environmental studies, engineering, permitting, and interconnection. (CSF 6, response 91)

82. The primary cost of a solar development is its construction, and the benefits are then extracted over the life of the Project. It is not economical to replace system components with potentially more efficient components before the end of their service life. For example, there is no cost in continuing to use an existing, installed module, but there is an added cost of removing that module and replacing it with a higher efficiency module. (Tr. 3, pp. 102-103)

83. The Project would not be economically viable if either or both the Southeast or Southwest solar field areas were eliminated from the Project footprint. (CSF 13, response 126)

Electrical Interconnection

84. The Project electrical interconnection area would consist of two transformers and associated metering equipment. The transformers and related meter equipment would be installed on two 15-foot by 20-foot concrete equipment pads adjacent to the Project access/parking area. (CSF 5, response 18 revised; CSF 13, response 112)

85. The utility area would connect to Eversource's distribution system along Route 80. Four new utility poles would be installed on the Project parcel between the utility area and Route 80 to facilitate the overhead connection to Eversource's existing service on the north side of Route 80. (CSF 13, response 112; Tr. 1, p. 62)

86. A 480 volt-to-23 kilovolt service transformer would be installed and maintained by Eversource. The transformer would step up the inverter output voltage to distribution level voltage. (CSF 1, p. 8; Tr. 1, pp. 56, 62-63)

87. The distribution service conductors would feed into Eversource's Green Hill Substation in Madison, approximately 5.7 miles south of the Project site. (CSF 1, p. 8)

88. Project related work by Eversource at the Green Hill Substation has not commenced. Other work by Eversource at the Green Hill Substation not related to this Project includes transmission line structure replacements (Petition 1337) and substation expansion and equipment replacement to eliminate potential voltage criteria violations in the Haddam to Branford area that were identified in the May 2014 Greater Hartford and Central Connecticut Area Needs Assessment performed by ISO New England (Petition 1289). (Council Administrative Notice Items No. 54 and 57; Tr. 1, pp. 62-63)

89. Due to the required infrastructure and Project economics, no energy/battery storage system is proposed at this time. (CSF 2, response 28; Tr. 1, pp. 100-101)

Project Construction

90. The Project site is entirely forested. Approximately 12.7 acres of tree clearing would be required to develop the site for both the solar field areas and for shading mitigation around the periphery of the solar fields. This includes 0.1 acre of tree clearing within wetlands. (CSF 6, response 107 attachment; CSF 13, response 111)

91. CSF intends to flush cut stumps to reduce ground disturbance throughout the Project site. Areas that require selective grubbing include solar rack post locations, equipment pads, stormwater control features, the entrance drive, and the access drive through the wetland than connects the North solar field to the Southeast solar field. (CSF 6, response 99)

92. Approximately 2.1 acres of the Project site would require grubbing. The resulting root balls would be ground and chipped for use on-site as erosion control ground cover. (CSF 6, response 99; Tr. 1, pp. 32-33)

93. A field survey would be conducted to determine the placement of solar array rows and associated racking. Trees to be grubbed would be flagged prior to the start of construction. (CSF 13, response 117)

94. Site clearing and stabilization would occur in three phases with each phase consisting of less than a five acre area, as follows;

    a) Phase 1, north half of North solar field – 3.6 acres (estimated 2-3 weeks construction time)
    b) Phase 2, south half of North solar field and wetland corridor crossing - 4.5 acres (estimated 4 weeks construction time)
    c) Phase 3, Southeast and Southwest solar fields – 4.6 acres (estimated 4 weeks construction time)

    (CSF 13, response 111, response 112)

95. Slopes within the solar array area range from 8 percent to 30 percent. Racking post lengths can be adjusted so that the solar arrays do not exceed a 20 percent slope. (CSF 2, response 59; CSF 13, response 122; Tr. 1, p. 104)

96. Site grading within the footprint of the array would be minimized to the extent possible. Most grading would occur to install linear stormwater control features throughout the site and at the maintenance pad locations and the site driveway area. (CSF 2, response 78; CSF 13, response 112)

97. Prior to and throughout the duration of construction, sedimentation and erosion controls would be installed and maintained in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.* (CSF 1, p. 22)

98. Erosion controls (silt fence, hay bales) would be established to protect wetlands and other areas not within the construction areas. Sediment trenches would be established after grubbing is complete, extending throughout the site at certain contour intervals. The trenches would have a two-foot gravel berm on the downgradient side to capture sediment. They would be cleaned as necessary, during construction. (Tr. 1, pp. 38-39, 108-109)

99. Project construction would occur right over the sediment trenches. For areas with active work, a temporary work pad would be established over the trench to maintain trench integrity or work would be done manually to avoid equipment impacts to the trench. The trenches would have to be actively maintained throughout construction. (Tr. 1, pp. 40-41; Tr. 3, p. 24)

100. Approximately 300 cubic yards of fill would be required for the wetlands crossing between the North solar field and the Southeast solar field. (CSF 2, response 78)

101. Disturbed and grubbed areas would be seeded with a grass mixture. (CSF 2, response 79; Tr. 1, 61)

102. A temporary construction entrance and anti-tracking pad would be installed with egress onto Route 80. (CSF response 112, response 118)

103. CSF would obtain necessary permits from DOT for work performed within the Route 80 right-of-way. (CSF 2, response 64)

104. Construction hours would be Monday through Friday between 7:00 a.m. and 5:30 p.m. Project construction would take approximately five months to complete. (CSF 2, response 83, response 84)

Facility Operation

105. Although the Petition specified a 1.98 MW AC output, the project layout was modified to account for environmental and civil conditions. The proposed revised project would be expected to produce approximately 1.92 MW AC of electrical energy per year. (CSF 2, cover letter)

106. The project parameters, including the 20 degree angle of the panels above the horizontal, were selected to maximize energy production. (CSF 2, response 24, response 25)

107. The estimated capacity factor of the proposed project is approximately 14.0 percent. The capacity factor considers soft shading and other environmental conditions that could affect facility output. (CSF 2, response 26, response 29; Tr. 1, p. 94)

108. The selected solar panels have an 18.2 percent efficiency factor. The expected annual power degradation of the panels is 0.5 percent per year. (CSF 2, response 27)

109. The proposed solar facility would have a service life of at least 30 years. (CSF 2, response 22)

110. The solar facility cannot operate as an independent microgrid. (CSF 2, response 30)

111. If grid power is lost, the facility would not be able to supply power. The solar facility's protection system would shut the plant down during a grid outage for safety purposes. (Tr. 1, p. 51)

112. Damaged panels would be detected using a remote monitoring system. No replacement panels would be stored on-site. (CSF 2, response 89)

113. The established grass cover within the solar fields would be maintained 3 to 4 times per year. Any season restrictions on vegetation maintenance would be adhered to. (CSF 2, response 86, response 87)

114. Stump regrowth within cleared areas would be monitored by annual operation and maintenance checks. If a stump is found to be growing back and the new growth affects facility operation, it would be recut flush to grade or managed at an appropriate height. (CSF 2, response 79, response 80)

Project Decommissioning

115. CSF has submitted a decommissioning plan for the Project which includes the removal of all structures and restoration of the site to the extent possible or as directed by the landowner. (CSF 6, response 93)

116. Decommissioning of the Project would require approximately 8 weeks. (CSF 6, response 93)

117. As part of the lease agreement with the landowner, SSI would issue a bond in the amount of $375,000 to mature in year 25 for Project decommissioning and site restoration. (CSF 2, response 14; Tr. 3, p. 126)

118. Neither State nor local taxpayers would be responsible for site decommissioning costs. (CSF 14, response 1)

Public Safety

119. The proposed project would comply with the applicable codes including the National Fire Protection Association codes, National Electrical Code, National Electrical Safety Code, and International Building Code. (CSF 2, response 45)

120. The proposed solar facility would be equipped with DC and AC protection systems which would cease facility operation if a fault is detected or an abnormality in grid operation occurs. The inverters have built in DC protection features including DC arc flash, ground fault and over current detection and isolation mechanisms. On the AC side, the Project is connected through a relay which would sense and control the Project output through a breaker. (CSF 2, response 44)

121. Glare from the proposed facility is not a concern as the front surfaces of the solar panels are made of tempered glass, which has an anti-reflective coating. Additionally, the glass has a high transmittance quality to reduce the light reflected from the solar panel surface. (CSF 2, response 46)

122. The nearest airport is the Chester Airport, located in Chester, approximately 5.24 miles east of the project site. (CSF 2, response 47)

123. The Project would not be a hazard to air navigation. (CSF 12)

124. The Killingworth Fire Marshal has several concerns regarding the Project, including the lack of a water supply on the site, no specifications for driveways or the wetland bridge that indicate these features are designed to support fire apparatus, lack of a non-combustible base material under the solar arrays, and lack of a secondary access point for fire personnel. (KARS 21)

125. The Killingworth Fire Marshal bases his conclusions on the 2018 CT State Fire Safety Code. (KARS 21)

126. CSF discussed the Project with the Killingworth Fire Marshal on at least three occasions since January 2, 2019 in an attempt to resolve the identified issues. (KARS 21)

127. The Project is being designed with a 20-foot access way around the perimeter of the solar array. Additionally, a 10-foot distance from the perimeter fence to the treeline would be maintained. (CSF 6, response 110; CSF 13 response 112)

128. CSF would offer solar facility training to local emergency responders. (CSF 2, response 49)

129. A lock box/key box can be provided for use by emergency responders in the event of an emergency. (CSF 2, response 49)

130. A main disconnect switch would be located within the utility area to shut down the site, if necessary. (CSF 2, response 49)

131. A 120-mph wind speed would be used to design the solar racking system. Each solar panel is fastened to the racking structure with four through bolts with nuts tightened to the required torque per manufacturer specifications to prevent the panels from separating from the foundation/racking system during high winds. (CSF 2, response 35)

132. Snow would be allowed to accumulate on the panels and naturally slide or melt off of the panels. The racking system that would support the solar panels would be designed to accommodate snow loading. (CSF 2, response 32, response 85; Tr. 3, pp. 80-81)

Environmental Effects

Air Quality

133. During operation, the proposed project would not produce air emissions of regulated air pollutants. Thus, no air permit would be required. (CSF 1, p. 11)

134. Given the loss of carbon dioxide sequestration due to tree clearing versus the net carbon dioxide emissions reduction resulting from the solar facility displacing existing fossil fueled generation in the grid portfolio, the "carbon debt payback period," would be 1.84 days of solar facility operation to produce a net improvement in carbon reduction. (CSF 13, response 119)

Water Quality

Hydrology

135. No work is proposed within a mapped Federal Emergency Management Agency (FEMA) 100-year or 500-year flood zone (map date August 2008). (CSF 13, response 119)

136. The proposed project is not located within a DEEP-designated Aquifer Protection Area. (CSF 1, p. 22)

137. Groundwater at the proposed site is classified as Class GA according to DEEP. Class GA-designated uses include existing private and potential public or private supplies of water suitable for drinking without treatment and base flow for hydraulically-connected surface water bodies. (CSF 1, p. 21; CSF 13, response 119)

138. The closest Level A aquifer protection area is approximately 3.25 miles to the south. The nearest surface water public supply area is located 0.25 miles to the northwest of the parcel (Lake Hammonassett). No impacts to public drinking water supplies are expected. (CSF 1, p. 22, Environmental Assessment p. 2-7)

139. There are no surface water or groundwater discharges from the site other than stormwater. (CSF 1, p. 21)

140. Construction of the proposed project, including installation of racking posts, would not impact any nearby private wells. There are no wells within 150 feet of the project site. (CSF 2, response 39; Tr. 1, pp. 36-37)

141. The solar panels would not require regular cleaning or other similar maintenance. A sufficient rainfall would adequately clean dust and other substances from the surface of the panels. (CSF 2, response 88)

142. No pesticides or herbicides would be used at the site. (CSF 2, response 90)

Stormwater

143. Development of the Project would disturb over one acre of land and therefore would require registration for a DEEP General Permit. (CSF 2, response 3; CSF 6, response 99; Tr. 1, pp. 33, 78)

144. DEEP retains final jurisdiction over stormwater management. The General Permit requires developers and builders to design and implement a Project-specific Stormwater Pollution Control Plan (SWPCP) to prevent the movement of sediments off of construction sites into nearby water bodies and to address the impacts of stormwater discharges from a project after construction is complete. (CGS §22a-430b; DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-WPED-GP-015); Council Administrative Notice No. 55– Petition No. 1312, DEEP Comment Letter, September 21, 2017)

145. The Project site upland soils consist of moderately well drained extremely stony fine sandy loam. Given the relatively steep slopes in the construction area, these soils are susceptible to erosion during rainfall events. (CSF 13, response 117)

146. DEEP noted in their comments that given the site topography and forest cover as well as minimal buffers to wetlands/intermittent watercourses, stormwater management would be an important aspect of project planning. DEEP attached a document entitled *Stormwater Management at Solar Farm Construction Projects, September 8, 2017* that provides guidance to solar farm project developers for permit registration and SWPCP preparation (DEEP comments, dated December 17, 2018)

147. In accordance with DEEP General Permit guidelines, the project would be constructed in three phases with each phase being less than five acres. A Phasing Plan is shown in Attachment 3. (CSF 13, response 11, response 112, response 117)

148. Post-construction, the solar arrays would increase the effective impervious surface of the Project site by 11.5 percent, based on Minnesota Stormwater methodology, as adopted by DEEP. Although the panels themselves are impervious, the rain would run across the panels and fall onto the ground surface. From there, the water would either infiltrate or run down gradient. (CSF 13, response 118)

149. An increase in impervious area would not increase the runoff at the Project site because the ground surface would remain pervious and vegetated. The increase was used to properly design stormwater management controls at the site. By maintaining the natural ground cover as an herbaceous meadow, as well as minimizing alteration of existing slopes, post-construction stormwater would follow the same runoff pattern as pre-construction conditions. (CSF 13, response 118)

150. The Project has been designed with post-construction linear water quality basins that generally extend along the north-south contours of the Project site. (CSF 13, response 112, response 118)

151. The water quality basins would be established by converting the construction stormwater trenches to post-construction features. The trenches would be cleaned by hand, the underlying fabric and stone, removed and the subsurface tilled if necessary. The gravel lip (weirs) would be raked to the downgradient side of the slope to act as a basin overflow energy dissipator. (Tr. 1, pp. 41, 107 -110; Tr. 3, pp. 25-26, 60-61)

152. The stormwater basins would be approximately 2 feet deep, depending on location, and would be designed to have a consistent depth throughout their length. A gravel weir would be installed on the downgradient side of the basins to capture runoff/sediment. (Tr. 3, pp. 58-59; CSF 13, response 112)

153. The stormwater basins have a lower elevation on each end when compared to the height of the gravel weir. These low spots would allow water to discharge as a concentrated flow at the basins ends rather than sheet flow across the top of the gravel weir. (CSF 13, response 112)

154. The stormwater basins would be composed of filter fabric or sand base covered with gravel. Sand is preferred over fabric since it allows for greater infiltration. The use of a sand base depends on product availability. (CSF 13, response 117; Tr. 3, p. 27)

155. The basins would be inspected periodically for sedimentation. Additionally, an observation well would be installed within each basin to monitor basin water drainage. (CSF 13, response 117)

156. Repairs to the post-construction sedimentation basins would be performed by hand in space constrained areas where machinery cannot operate (e.g. under the solar arrays). Repairs may include the removal and replacement of the base material and tilling of soil beneath the base material. (CSF 13, response 117; Tr. 3, pp. 26-27)

157. As the stormwater runs off the panels, it would sheet flow toward the stormwater basins where it would be captured and retained, allowing infiltration into the soil. Any water that initially runs-off the panels, and could be thermally heated, would be retained within the stormwater basins. Runoff exceeding one inch would be at ambient temperature and would overflow the basins and discharge as sheet flow on the downgradient side. (CSF 13, response 118; Tr. 1, pp. 111-112; Tr. 3, pp. 96-97)

158. CSF consulted with DEEP in developing the proposed post-construction stormwater basins. Rather than develop larger basins around the perimeter of the project site, the linear stormwater basins are designed to mimic overland flow as much as possible as well as to allow stormwater infiltration at different points throughout the Project site. (Tr. 3, pp. 93-94)

Wetlands and Watercourses

159. The Inland Wetlands and Watercourses Act (IWWA), CGS §22a-36, *et seq.*, contains a specific legislative finding that the inland wetlands and watercourses of the state are an indispensable and irreplaceable but fragile natural resource with which the citizens of the state have been endowed, and the preservation and protection of the wetlands and watercourses from random, unnecessary, undesirable and unregulated uses, disturbance or destruction is in the public interest and is essential to the health, welfare and safety of the citizens of the state. (CGS §22a-36, et seq.)

160. The IWWA grants regulatory agencies with the authority to regulate upland review areas in its discretion if it finds such regulations necessary to protect wetlands or watercourses from activity that will likely affect those areas. (CGS §22a-42a)

161. The IWWA forbids regulatory agencies from issuing a permit for a regulated activity unless it finds on the basis of the record that a feasible and prudent alternative does not exist. (CGS §22a-41)

162. Wetland surveys, conducted in August and September 2018, identified 6 wetland areas on the Project Site. A site map showing the wetland locations is included as Figure 4. The wetlands are as follows:

a) **Wetland A**- a forested wetland that begins at the northeastern portion of the site from a 24-inch metal drainage pipe that conveys stream water under Route 80. It is associated with a semi-perennial to perennial watercourse along the east side of the site.
b) **Wetland 1A**- a forested wetland along an intermittent stream that begins within the northwestern portion of the site, and extends generally east through the center of the site and joins with Wetland A.
c) **Wetland C**- a forested wetland that extends from off-site locations into the southern extent of the site.
d) **Wetland E**- a forested wetland located in the southwestern portion of the site.
e) **Isolated Wetland #-** a poorly drained, stony depressional forested wetland, 1,060 square feet in size, located east of the northern portion of Wetland 1A.
f) **Isolated Wetland B**- a poorly drained, very stony slight depressional forested wetland, 1,815 square feet in size, located in the northernmost section of the site.
g) **Wetland D**- located off-site, adjacent to the southwest corner of the property.

(CSF 1, EA, Attach. A; CSF 2, response 55; CSF 13, response 111, response 112)

163. Project Site development would result in the clearing of 1,260 square feet of forested Wetland E, and all of forested Wetland # (1,060 square feet) and forested Wetland C (1,815 square feet). Wetlands # and B both are considered as low functional value, transitional disturbance wetlands. (CSF 2, response 57; CSF 13, response 111)

164. Direct wetland impact would occur in Wetland 1A where approximately 644 square feet of forested wetland would be cleared and impacted by the construction of a bridge that would connect the North solar field to the Southeast solar field. Additionally, approximately 500 square feet of gravel would be installed within Wetland# to develop a perimeter access lane. (CSF 13, response 111, response 112)

165. A stilling basin, a few feet deep, would be constructed within Wetland 1A on the downstream side of the bridge to reduce the velocity of water conveyance pipe discharge water. The basin would be composed of filter fabric overlain with rip rap. (CSF 13, response 112, response 113; Tr. 3, pp. 28-29)

166. Wetland buffers from project development areas would be a minimum 3 to 5 feet throughout the site. There would be approximately 770 linear feet of clearing within 3 feet of wetlands and approximately 1,540 linear feet of clearing within 5 feet of wetlands. (CSF 13, response 116)

167. DEEP noted in their comments that the proposed wetland buffers, 10 feet wide at the time the DEEP comments were submitted, were minimal and can deprive the adjacent wetland systems

of shading, and lessen the protection from sedimentation after the site has been cleared. Due to subsequent Project modifications, the wetland buffers were reduced from 10 feet to 3 to 5 feet. (CSF 1 p. 10; CSF 13, response 112, response 116; DEEP comments dated December 17, 2018)

Vernal Pools

168. There are three potential vernal pools at the project site. Two of the potential vernal pools are in close proximity to each other (PVP 1A, PVP 1) and are located in the northern extent of Wetland 1A. The third potential vernal pool (PVP 2) consists of an old farm pond and is also located in Wetland 1A, in the south-central portion of the site. PVP 2 is approximately 5,320 square feet in size and up to 4 feet deep. (CSF 13, response 112 response 119; Tr. 3, p. 46; KARS 16 pond map)

169. The vernal pool envelope (VPE) is the area within 100 feet of the edge of the vernal pool. The critical terrestrial habitat (CTH) is the area within 100 to 750 feet from the vernal pool. (CSF 1, p. 20)

170. According to the U.S. Army Corps of Engineers New England District Vernal Pool Best Management Practices, disturbance should be avoided within the VPE (0 to 100 feet of the vernal pool). (CSF 13, response 115)

171. The initial project design maintained a 100-foot no construction buffer around each potential vernal pool. Additionally, site clearing would not occur within 50 feet of the potential vernal pools. Project modifications now propose construction within 100-feet of PVP 1A (fencing and gravel fill) and PVP 2 (gravel access drive, solar arrays, and a stormwater infiltration trench). (CSF 1, pp. 9-10; CSF 13, response 112)

172. CSF proposes to maintain a minimum 50-foot undisturbed forested buffer around the potential vernal pools (0 to 50 feet from the pool edge). (CSF 13, response 112, response 114)

173. Project site clearing and site construction would occur within the 51-foot to 100-foot portions of the VPE of the three potential vernal pools, as detailed below;
    a) PVP 1A – 22.0 percent VPE disturbance.
    b) PVP 1B – 16.8 percent VPE disturbance.
    c) PVP 2 – 44 percent VPE disturbance.

    (CSF 13, response 112, response 115)

174. DEEP noted in their comments that the initially proposed 100-foot no construction buffer around the vernal pools provides less than the standard amount of habitat typically afforded to vernal pools and further noted that clearing-related disturbance would occur within 100 feet of the potential vernal pools. Should vernal pool dependent species be present, the clearing of the surrounding forest without the preservation of significant amounts of upland critical terrestrial habitat surrounding the pools would have several impacts on the vernal pools and dependent species, the most important of which is the loss of foraging habitat. Other effects could include loss of shading, increase in water temperature, decreases in nutrient loading and increased sedimentation in the vernal pools. (DEEP comments dated December 17, 2018)

175. Venal pool surveys that would determine the quality of the vernal pools and the presence of vernal pool species are currently underway. The surveys should be completed by the end of April 2019. (Tr. 3, pp. 34-36)

Wildlife

176. As part of the DEEP General Permit application, DEEP provided a Natural Diversity Database (NDDB) State Listed Species Review to CSF for the Project, dated October 23, 2018. The letter identified two plant species (sand blackberry, pale green orchid) and one bird species (eastern whippoorwill) that occur on the site and stated that that field surveys should be conducted at the time when these targeted species are identifiable to determine the impacts of the Project on these species. Additionally, DEEP recommended a site clearing restriction from May 1 to July 31 to avoid potential impacts to nesting whippoorwills. (DEEP comments dated December 17, 2018; CSF 3, EA addendum; CSF 6, response 107; CSF 10)

177. Based on the DEEP NDDB letter, CSF conducted a field survey of the site for the listed species; however, it was too late in the season to perform an adequate survey for these species. A habitat assessment of the site for these species was submitted to DEEP on November 9, 2018. (CSF 6, response 107; CSF 10)

178. By letter dated February 19, 2019 to CSF, DEEP responded to CSF's habitat assessment report indicating that the report was not sufficient and that field surveys of the two plant species be conducted, and that a protection plan/conservation plan for the whippoorwill be developed, noting that habitat for the whippoorwill is in the area to be developed for the Project. (CSF 10)

179. CSF had subsequent discussions with DEEP regarding the requested NDDB surveys and mitigation plans. DEEP has indicated to CSF that a management plan for these species could be developed instead of conducting full site surveys for these species. (Tr. 3, pp. 32-34)

180. CSF has developed Project site plans that include habitat enhancement areas. The areas include the development and maintenance of scrub-shrub, moist meadow, and wet meadow habitats in cleared areas of the site, as well as the removal of invasive species in certain upland and wetland areas. (CSF 13, response 112; Tr. 3, pp. 31-34)

181. Some of cleared areas adjacent to wetlands would be planted with scrub-shrub species, whereas other areas adjacent to the 3 to 5-foot wetland buffer would have no scrub shrub enhancement, particularly along the south edge of Wetland 1A. (CSF 13, response 112)

182. Connecticut is within the range of the northern long-eared bat (NLEB), a federally-listed Threatened species and State-listed Endangered species and the site area contains suitable habitat for NLEB. According to DEEP, there are no known NLEB hibernacula or known maternity roost trees in the Project area. A survey of the site indicated that the probability of maternity roosts on the Project site is low. This is due to the relative lack of cavity trees, and the scarcity of tree snags with exfoliating bark, and of trees that are often used for maternity roosts, such as shagbark hickory. (CSF 2, response 50; CSF 6, response 96)

Visibility

183. The solar panels would extend to a height of approximately 8 feet above grade. (CSF 1, p. 12)

184. Project related clearing of forest would occur up the property line along most of the southern and western sides of the site parcel. CSF proposes to plant scrub-shrub habitat in these areas out to a distance of 20 to 30 feet from the property lines. Exact vegetation types have not been specified. (CSF 13, response 112)

185. A forested wetland corridor (minimum 228 feet wide) would remain between the cleared project area and the east property line. (CSF 13, response 112, response 121)

186. Site clearing would occur within close proximity to the Route 80 state right-of-way. A 25-foot wide forested buffer would remain within the State right-of-way except at the access drive and at a few adjacent canopy openings. CSF intends to install landscape screening along the northwest and northern portions of the Project site to provide screening from Route 80. (CSF 13, response 121; Tr. 1, pp. 26, 74)

187. Route 80 is a State-designated scenic road in Madison, terminating approximately 0.5 miles west of the Project site. (CSF 13, response 123)

188. Chestnut Hill Road and North Chestnut Hill Road are Town-designated scenic roads and are approximately 750 west of the Project site at their closest point. (CSF 1, p. 2-8; KARs 2, p. 6)

189. It is expected that abutting properties may be able to see the project during in leaf-off conditions. (CSF 2, response 19)

190. No adverse impact is expected at two DEEP state parks located east of the site: Forster Pond and Chatfield Hollow. (DEEP comments dated December 17, 2018)

191. The site would not be visible from the Chatfield Hiking Trail, a blue-blazed trail maintained by the Connecticut Forest and Parks Association that extends through a portion of the Cockaponset State Forest approximately 0.5 miles east of the site. The trail traverses a forested area and has one overlook oriented to the northeast, away from the site. (CSF 1, EA Fig. 4; Council Administrative Notice 98, Chatfield Trail)

Noise

192. Existing background noise levels at the Property is from traffic on Route 80. (CSF 1, p. 11)

193. Project operation noise levels would not increase beyond the property boundaries. (CSF 1, p. 11)

194. Construction noise is exempt from the DEEP Noise Control Standards. (R.C.S.A. §22a-69-108(g))

Historic and Archaeological Resources

195. There are no listings within the National Register of Historic Places (NRHP) on or near the proposed site. The nearest property listed on the NRHP consists of the Oak Lodge Building at Chatfield Hollow, approximately one mile to the east. (CSF 1, EA p. 2-8; CSF 11)

196. The property was former agricultural/pasture land in the early 20th centrury. Stonewalls are located throughout the site. Approximately 2,430 linear feet out of 3,375 linear feet of stonewalls would be removed to develop the Project. The removed stone walls would be piled on site or potentially used for site screening. (CSF 13, response 130; KARS 2 maps: Tr. 3, pp. 74-75)

197. The closest previously recorded prehistoric archaeological site (rockshelter) to the Project area is located at Chatfield Hollow, approximately one mile to the east. (CSF 11)

198. CSF conducted an archeological reconnaissance of the property and determined the site has a low sensitivity for potential prehistoric cultural resources. (CSF 11)

Core Forest

199. Of the forested land in the state, 46 percent is considered "core forest," defined as being outside the "edge effect," over 300 feet in all directions from non-forested areas. Small core forests are core forest patches that are less than 250 acres. Medium core forests are core forest patches that are between 250 acres and 500 acres. Large core forests are core forest patches that are greater than 500 acres. (Council Administrative Notice Item No. 55 – Petition No. 1312 Finding of Fact #268)

200. The state's Green Plan identifies the value of large-scale, intact forest areas as they provide "key habitat linkages" for wildlife species. Other benefits identified in the Green Plan include, but are not limited to, the forests ability to absorb rainwater and slow runoff, filter pollutants and regulate air temperature. (Council Administrative Notice Item No. 55 – Petition No. 1312 Finding of Fact #269)

201. The Project site is partially within a 1,072-acre block of contiguous forest that occurs on numerous parcels. Of the 1,072 acres, 642 acres are considered core forest (forest at least 300 feet away from a disturbed area) and 432-acres are considered edge forest (forest within 300 feet of a disturbed area). (CSF 1, EA p. 3-4)

202. The 2004 Environment Canada Report cited by the University of Connecticut Center for Land Use Education and Research suggests that 250 acres of upland forest should be considered the minimum forest patch size needed to support forest interior bird species. The recommended minimum forest patch size to support these types of birds is 500 acres, as this is likely to provide enough suitable habitat to support a greater diversity of interior forest species. (CSF 1, EA, p. 3-4)

203. Development of the Project would reduce the core forest area from 642 acres to 616 acres. Although there is a reduction of core forest, Project clearing would occur in the northwest corner of the core forest area, adjacent to Route 80, and thus, would not increase forest fragmentation. (refer to Figure 5). (CSF 1, EA, p. 3-4)

204. DEEP noted in their comments that unfragmented contiguous forest blocks in excess of 1,000 acres have become increasingly rare in Connecticut and DEEP puts a high priority on the preservation of those that remain. (DEEP comments dated December 17, 2018)

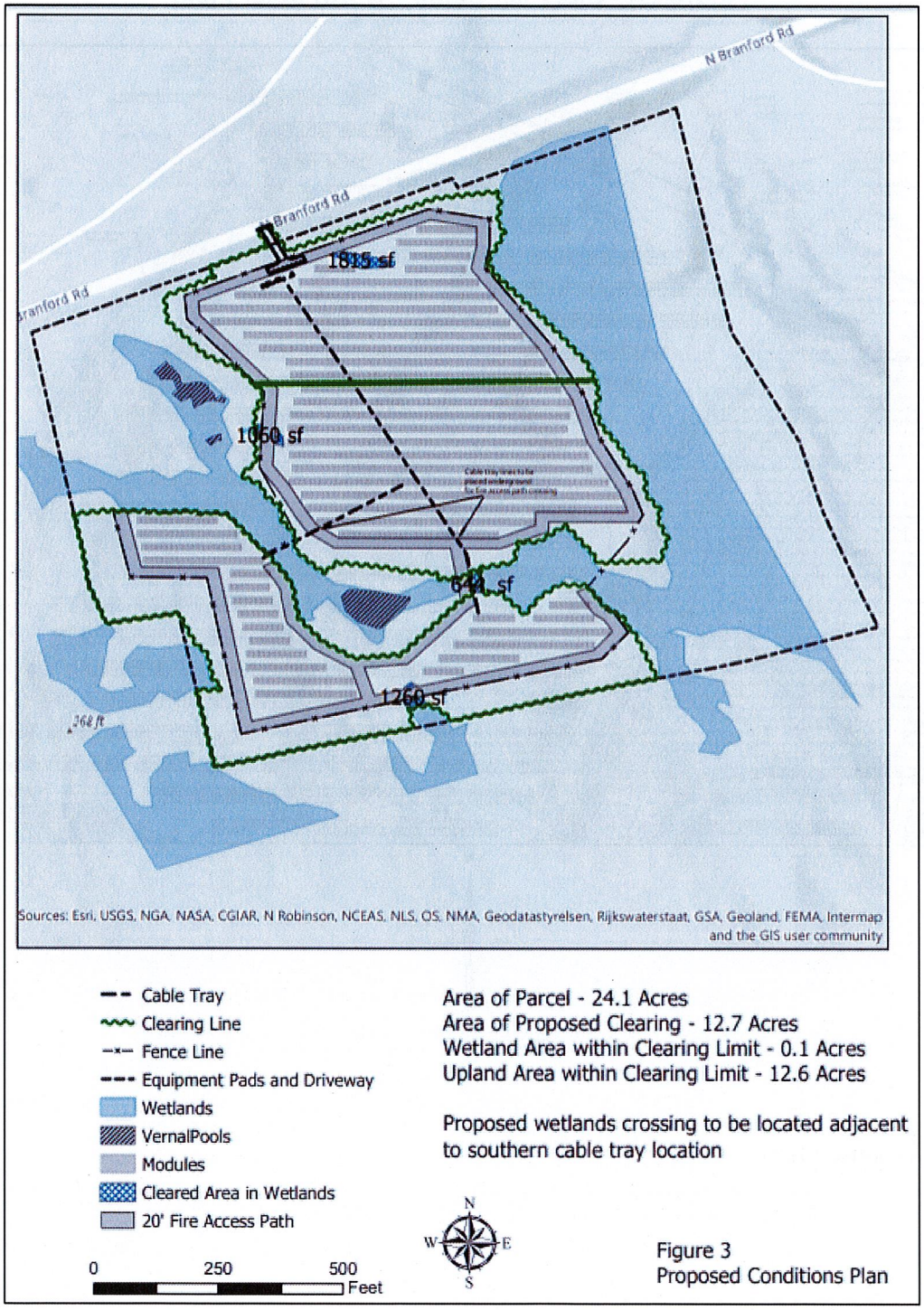
Agriculture

205. Prime Farmland Soils are defined by the United States Department of Agriculture (USDA) National Resources Conservation Service (NRCS) as having the ideal combination of chemical and physical characteristics to support crop production, such as for food, feed, forage, fiber and oil and seed crops. These soils are also considered important for pasture land, range land and forest land. (Council Administrative Notice Item No. 16 – USDA Soil Survey Manual; 7 C.F.R. §657.5 (2016) – Identification of Important Farmlands)

206. The Project site does not contain any mapped Connecticut Prime Farmland Soils. (CSF 2, response 21)

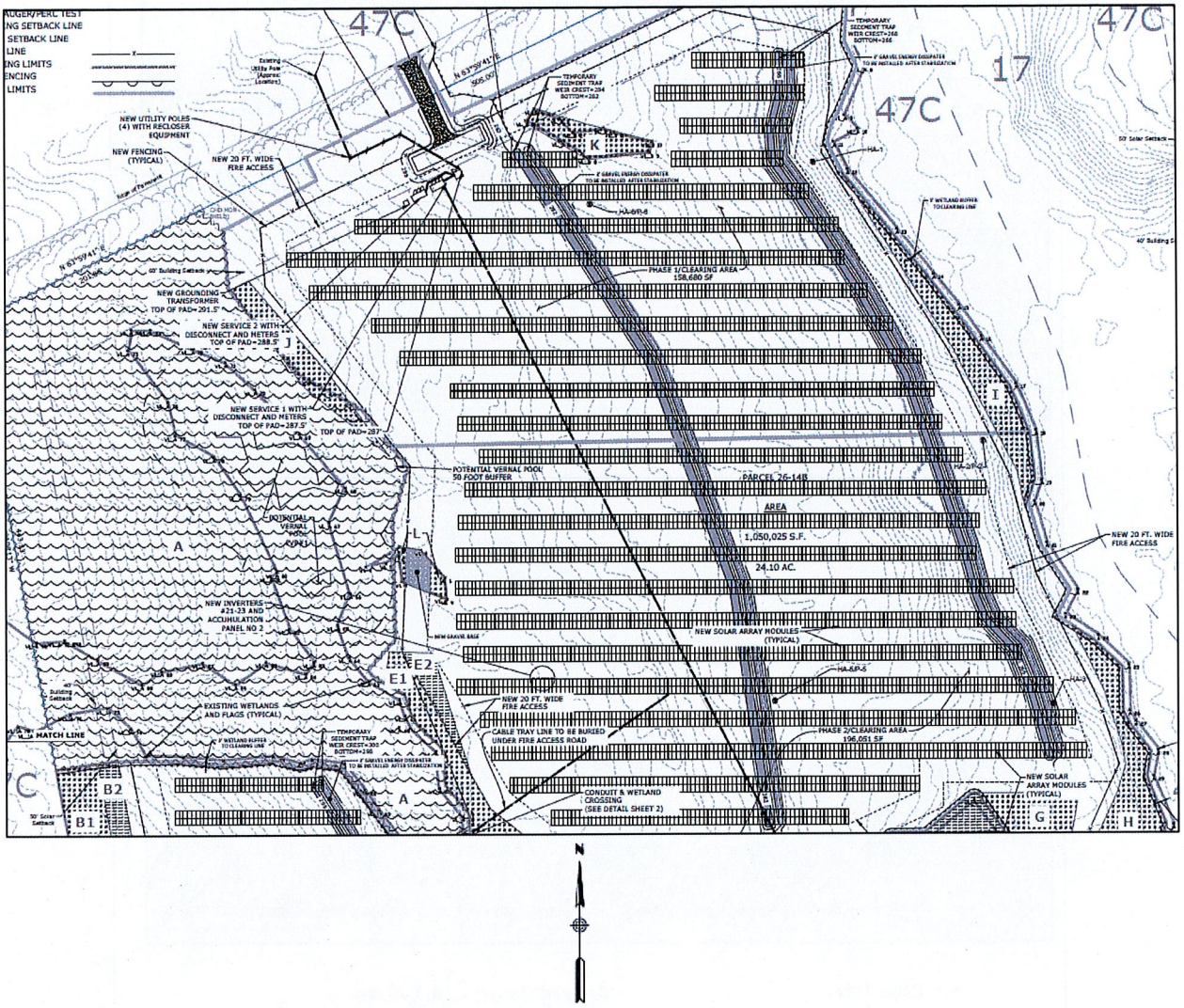
207. Public Act 490 is Connecticut's Land Use Value Assessment Law for Farm Land, Forest Land and Open Space Land that allows land to be assessed at its use value rather than its fair market or highest and best use value for purposes of local property taxation. The site parcel is currently classified as "forestland" under the 490 Program. The parcel would have to be reclassified if the Project is constructed. (CSF 2, response 15)

Figure 1 – Proposed Site Plan



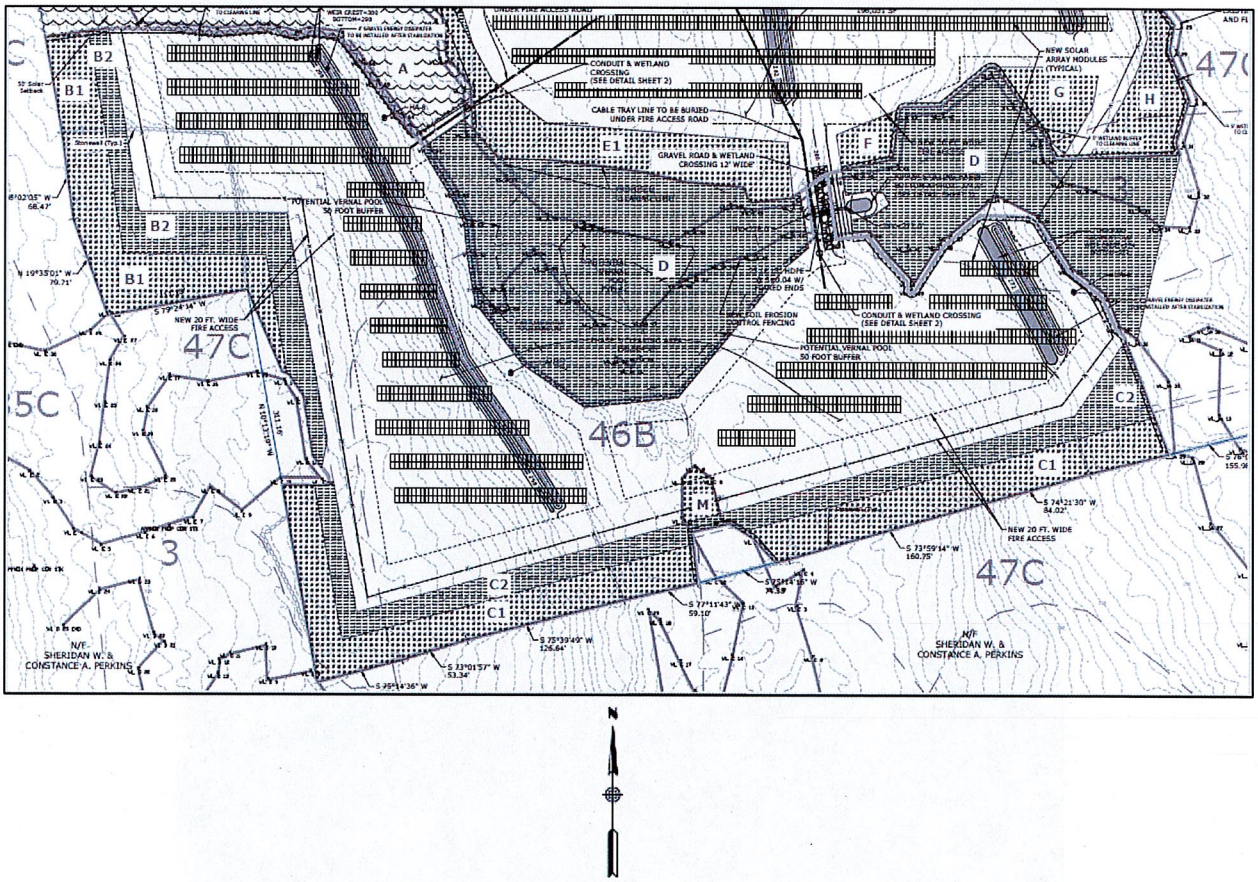
(CSF 13, response 111)

Figure 2A - Site Plan Detail – North Solar Field



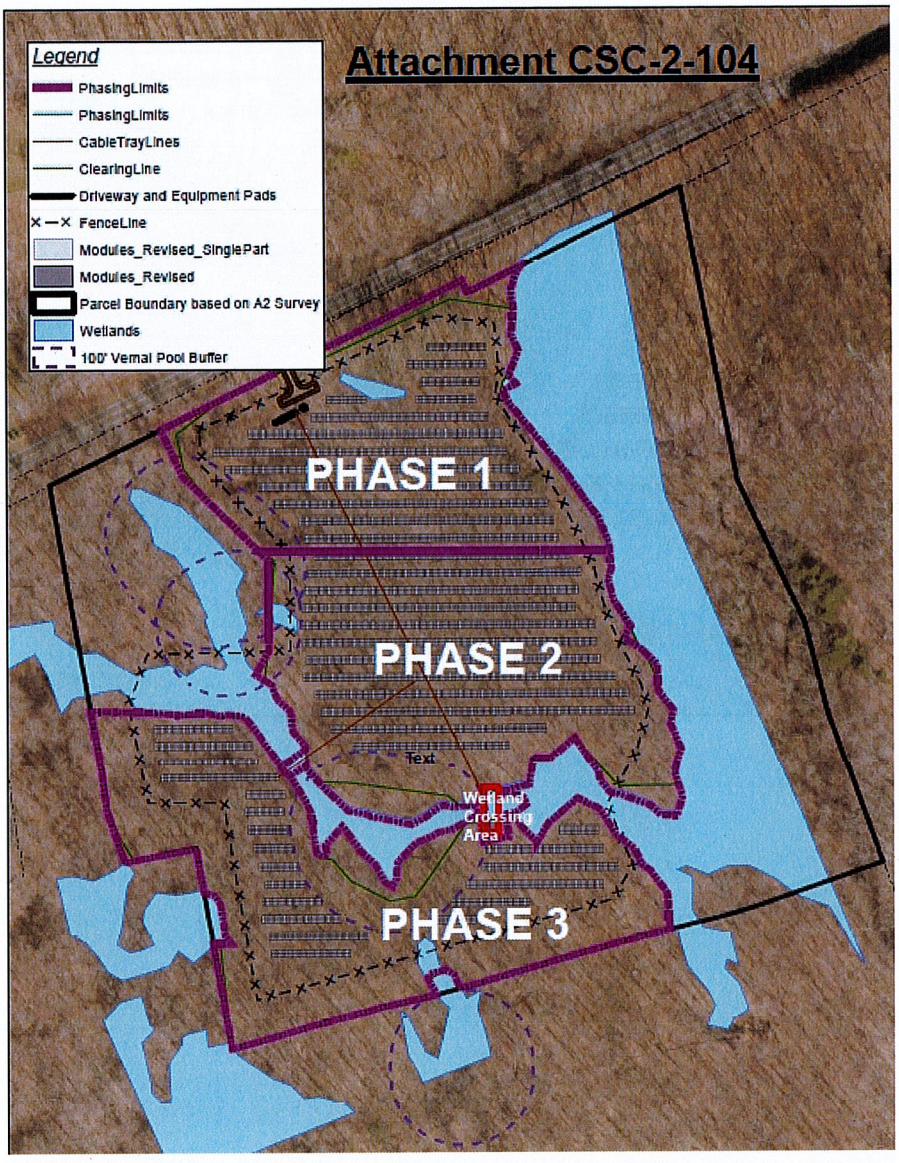
(CSF 13, response 112)

Figure 2B - Site Plan Detail – Southeast and Southwest Solar Fields



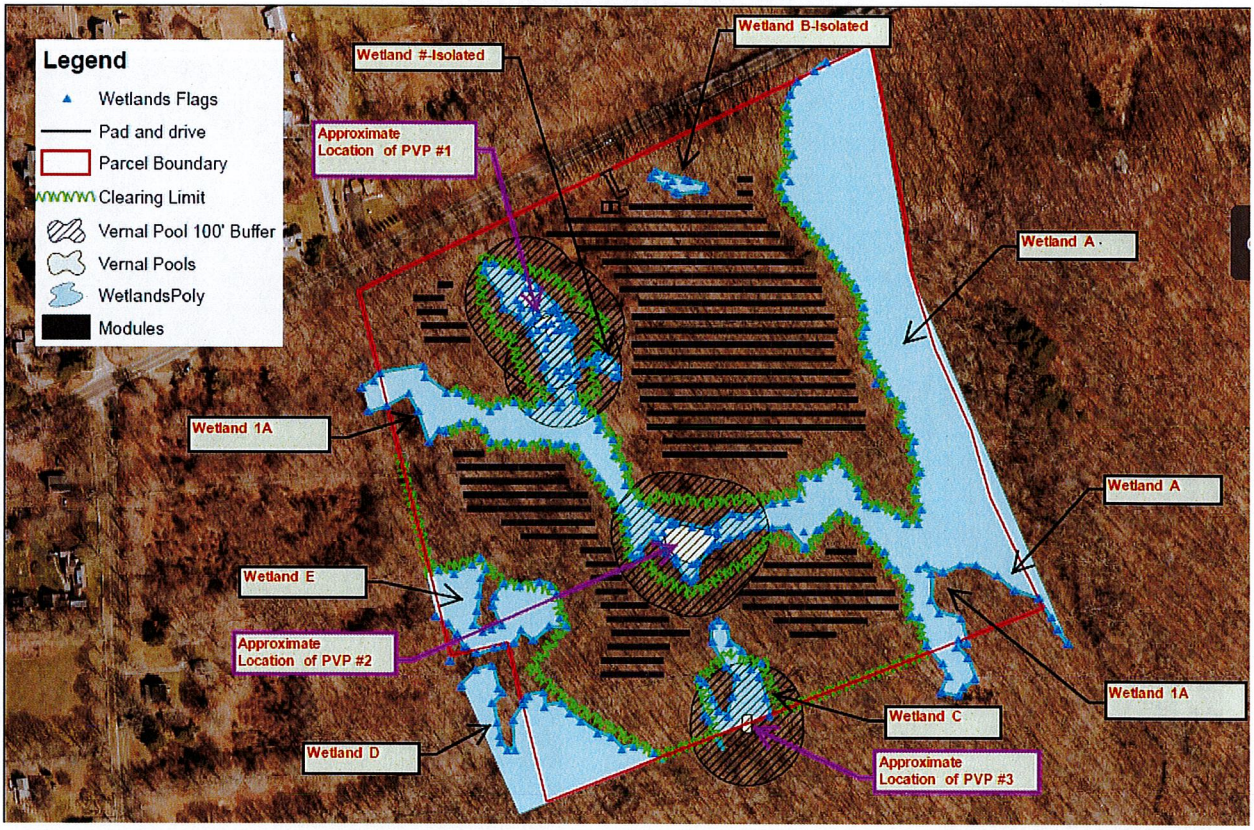
(CSF 13, response 112)

Figure 3 - Construction Phasing Plan



(CSF 6, response 104)

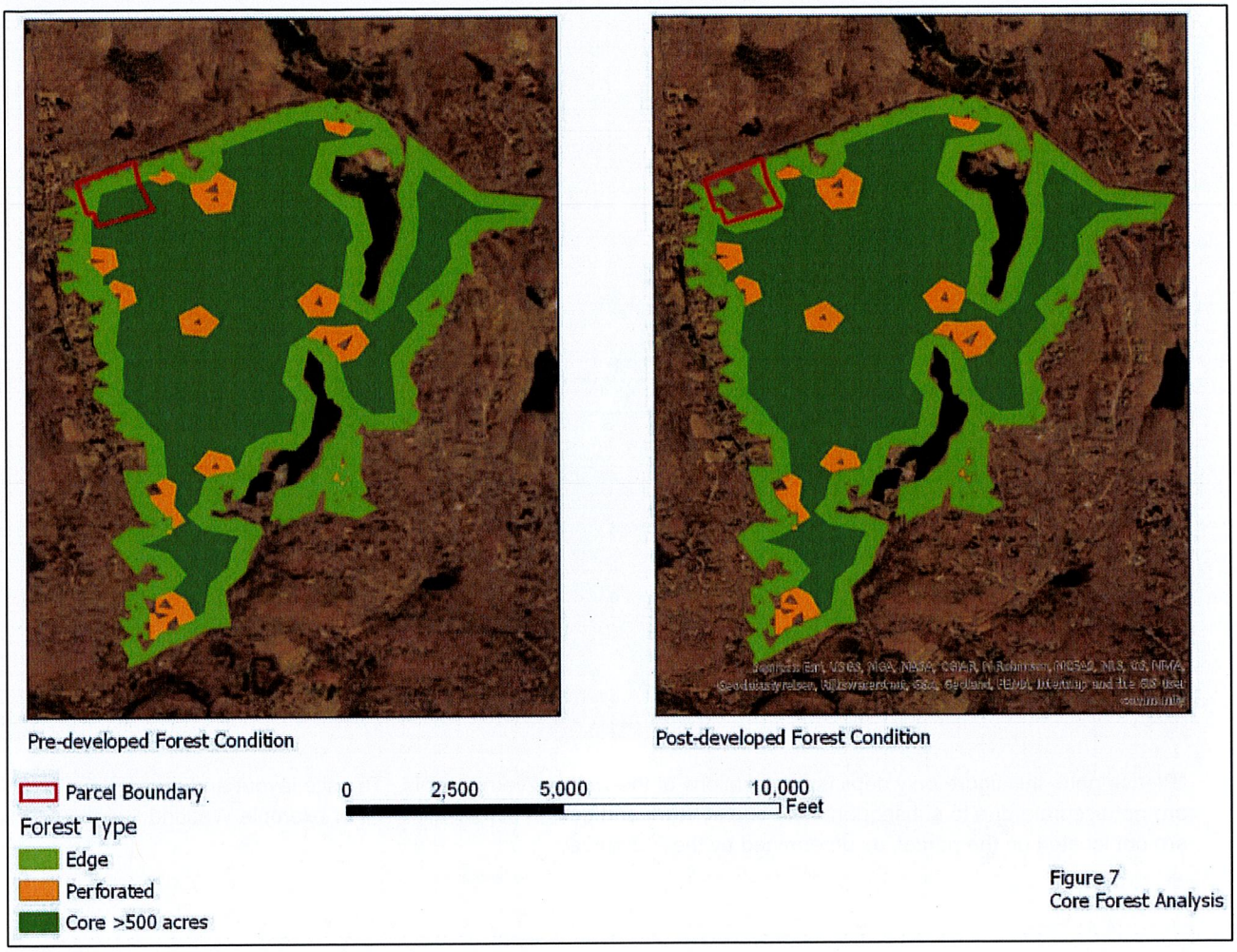
Figure 4 - Wetland Location Map*



*Please note, this figure only depicts the locations of the wetland/vernal pools. The site layout and parcel boundaries are not accurate due to subsequent land survey work and design modifications. For example Wetland D and PVP#3 are not located on the parcel, as determined by the A-2 survey.

(CSF 2, response 55)

Figure 5 – Core Forest Habitat



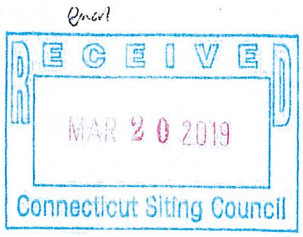
(CSF 1, EA Fig. 7)

ATTACHMENT A

Town Planning & Zoning Commission Comments, dated March 20, 2019

KILLINGWORTH PLANNING & ZONING COMMISSION

TOWN OFFICE BUILDING
323 ROUTE 81
KILLINGWORTH, CONNECTICUT 06419-1298



Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

March 20, 2019

Re: Petition 1354

Dear Council Members:

I am writing on behalf of the Killingworth Planning and Zoning Commission regarding the proposed Chatfield Solar Farm in Killingworth.

Of great concern are the comments of the Connecticut Department of Energy and Environmental Projection (DEEP). Their report notes that the site is characterized by forest, wetlands, streams, and slopes. Adequate stormwater management has not been addressed and is required because of the topography of the site and the fact that it would be clear cut. There are three species of concern on the site: sand blackberry, pale green orchid, and the whippoorwill. Only a ten foot buffer is proposed around wetlands instead of the usual 75 to 100 feet. Insufficient buffers around vernal pools are proposed. DEEP notes that the site is part of a core forest of over 1,000 acres and that forests of the size are increasingly rare in Connecticut.

As noted by DEEP, adequate stormwater management is crucial. Deer Lake and a tributary of the Hammonasset River lie to the south of the site. Because of the clear cutting and slopes, there is the potential for runoff into these waters.

The applicant states that there are no historical features on the site. However, this is not known because there has been no historical and archaeological review by the State Archaeologist. It is known that Native Americans occupied the nearby Chatfield Hollow State Park and it should be determined if there was activity on this site. There are stone walls indicating Colonial activity.

The site is located in a rural-residential zone in Killingworth (not Commercial as the applicant stated in the original application). A commercial operation of this type in a residential zone is not permitted in the Zoning Regulations and the Town Plan of Conservation and Development. It would have an adverse effect on neighboring residential properties and the nearby Chatfield Hollow and Forster Pond State Parks. It should be noted that the Planning and Zoning Commission is not opposed to solar energy. There are provisions for small residential solar systems in the regulations and the Commission would not object to large systems such as this provided they were in a suitable location.

The Commission is also concerned that there appears to be no provision for remediation of the site in the event of possible future abandonment of the project.

In summary, the Killingworth Planning and Zoning Commission believes that this is not an appropriate site for a solar farm and that the application should be denied.

Sincerely yours,

Thomas L. Lentz

Thomas L. Lentz
Chairman, Killingworth Planning and Zoning Commission

This letter is being sent by email with a hard copy to follow by mail.

ATTACHMENT B

DEEP Comments to Council, dated December 17, 2018

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

December 17, 2018

Robert Stein, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

RE: 1.98-MW Photo-voltaic generating facility
Chatfield Solar Fund, LLC
Killingworth, Connecticut
Petition No. 1354

Dear Chairman Stein:

Staff of this department have reviewed the above-referenced petition for declaratory ruling that no Certificate of Environmental Compatibility and Public Need will be required for the construction of the proposed photo-voltaic generating facility south of Route 80, North Branford Road, in Killingworth. A field review of the site was conducted on December 4, 2018. Based on these efforts, the following comments are offered to the Council for your use in this proceeding.

Project Site

The 25-acre project site is a forested, eastward sloping site crossed by several linear wetland systems associated with both intermittent and perennial streams, as well as by several stone walls. In addition to those in the stone walls, the site is also characterized by abundant boulders scattered across it. Tree cover consists principally of sugar maple, ash, hickory, red oak, tulip poplar and lesser amounts of white oak, beech and black birch. On the day of the DEEP site visit, ground conditions were moist and soft in both wetland and upland areas. As noted in the Petition, Japanese barberry is common across the site, particularly along the western portion, where it forms a continuous mass of shrub cover.

Most of the site is moderately sloped, with gentler slopes along the western edge of the site, and a steeper slope to the eastern portion of the site as it drops down to the perennial stream and its fringing wetlands (Wetland A) along the eastern boundary of the site.

Even given the wetness of the site and some recent heavy rains, vernal pool PVP #1 within Wetland 1A was not apparent on the day of the DEEP field review. The other vernal pools were found as indicated in the Petition.

The project host property is completely forested and is part of a large tract of contiguous core forest. Figure 7 of the Environmental Assessment by Louriero Engineering, attached to the Petition, accurately portrays the nature of the site as composed of core forest and edge forest (the 300' outer ring of forested area surrounding the core forest block).

Page 12 of the Petition cites the nearest neighbor to the project as being 200' from the array, while page 2-1 of the Louriero Engineering Environmental Assessment cites the closest house as being 750' west of the western property line. The latter reference is apparently to the homes at 22 and 26 Chestnut Hill Road which are visible from the site and set back farther from that road than the home at 10 Chestnut Hill Road. The 200' reference in the Petition is for the home at 497 North Branford Road, across the street from the northwest corner of the site. That home, along with the one at 501 North Branford Road, are the closest homes to the project site.

Stormwater Management

There is no mention in either the Petition or the Environmental Assessment of the need for a Stormwater Permit, officially a General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities, for the proposed facility. However, representatives of the Petitioner have made initial contact with the DEEP Stormwater Management Program, though a formal application has not been submitted for the site. As with previous DEEP comments to the Council for solar farms, attached to these comments is the guidance document *Stormwater Management at Solar Farm Construction Projects,* dated September 8, 2017. Given the topography of the site and the need to clear the forest cover, as well as the very minimal uncleared buffers to be maintained around wetland areas including intermittent watercourses, stormwater management will be an important aspect of project planning, despite the relatively small size of this solar farm. The Stormwater Management Program did inform the petitioner's consultant of the need to obtain authorization under the General Permit before any site tree clearing can begin. This is relevant because the consultants had mentioned in the discussions with the Stormwater Management Program an intention to construct the facility over the winter months and be operational next year. This schedule would prevent any opportunity for establishing stabilizing ground cover on the site.

The challenges being faced in achieving successful stormwater management at solar farm sites, as well as guidance to hopefully achieve better outcomes, are discussed in the attached guidance document on solar farm stormwater management. DEEP would strongly advise planning for a longer construction schedule to allow for appropriately phased implementation of stormwater controls and site stabilization.

Natural Diversity Data Base

Page 13 of the Petition states that "the Property is not located within an NDDB area". Assumedly subsequent to the Petition being written, Louriero Engineering contacted the DEEP NDDB program asking for a review of the site. Three State-listed Species of Special Concern (two plant and one avian species) were identified as having historically occurred within the project site. These are sand blackberry (*Rubus cuneifolius*), pale green orchid (*Plananthera flava var. herbiola*) and whippoorwill (*Caprimulgus vociferius*). The initial DEEP response (see copy attached) was dated October 23, 2018. Subsequently, consultants for the petitioner submitted follow-up information on November 5, 2018 indicating that surveys of the site did not locate these species but acknowledging that these surveys were not performed at an appropriate time to find them if they were present.

As these comments go out to the Council, DEEP biologists are reviewing the November 5 consultant's submission to determine if specific mitigation measures or further seasonally-appropriate surveys are warranted.

Wetland Impacts

Unlike many other solar farm proposals where undisturbed wetland buffers of 75' to 100' are maintained around wetlands, Chatfield Solar is proposing (p. 10) to maintain only a 10' buffer around the wetlands on the property. This is done presumably because of the scattered distribution of wetlands across the property and the percentage of the property that would be consumed if conventional wetland buffer widths were maintained. The provision of such narrow vegetated buffers will affect the wetlands by depriving them of much of the shading they currently receive as well as lessening protection from sedimentation after the site has been cleared. These minimal buffers, combined with the proximity of the panels to the wetlands, will also increase thermal effects to the wetlands and watercourses, particularly in summer months when heated runoff could be draining from warm or hot solar panels.

Similarly, as the Council has undoubtedly noticed, the 100' buffer proposed to be maintained around the vernal pools provides less than the standard amount of habitat protection typically afforded for these pools. In fact, according to page 3-2 of the Environmental Assessment, clearing-related disturbance will occur within 100' of the vernal pools.

No surveys of the vernal pools have been done to determine if any indicator species are present in them or make use of them. Should vernal pool-dependent species be present at more appropriate times of the year, the clearing of the surrounding forest without the preservation of significant amounts of upland critical terrestrial habitat surrounding the pools would have several impacts on the vernal pools and dependent species, the most important of which is the loss of foraging habitat. Depending on the width of forested buffer left intact, other impacts could include loss of shading, increases in water temperature, decreases in nutrient loading and increased sedimentation to the vernal pools following clearing activities.

Core Forest Issues

As shown in Figure 7 in the Louriero Engineering Environmental Assessment, the proposed site is located completely within core forest and edge forest as defined by the UConn Center for Land Use Education and Research (CLEAR) Forest Fragmentation Study. According to the discussion on page 3-4 of the Environmental Assessment, clearing for the construction of the Chatfield Solar Farm would reduce core forest in the existing 1,072-acre contiguous forest block from 692 acres to 616 acres, a net loss of 26 acres for core forest. Unfragmented forest blocks in excess of 1,000 acres have become increasingly rare in Connecticut and DEEP puts a high priority on the preservation of those that remain.

The forestlands of Connecticut are one of the defining features of the state's landscape and culture. While there is still a high percentage of existing forestland within the state, continued increases in population statewide are exerting more pressure on this valuable resource, and forest land is being lost at a continuous rate. The loss of both overall forestland and core forest land are of concern, as the remaining quantity of forestland does not always equate to quality forestland. The ability of Connecticut's forests to provide wildlife habitat, clean water, and economically viable forest products is at least partially dependent on our ability to maintain sizeable tracts of unfragmented forest

Miscellaneous Petition Commentary

Two statements on page 3-1 of the Environmental Assessment appear to be inconsistent. The opening paragraph on this page says stumps within the upland areas of the array will be grubbed. However, according to the fourth paragraph on that page, less than 10% of the site is to be grubbed. If the array occupies 7.3 acres and none of the array is within wetland areas, it does not follow that less than 10% of the site would be grubbed.

In the discussion of mitigation measures on page 10 of the Petition, the first measure cited is reducing the tilt angle of the solar panels from 25° to 20° to reduce inter-row spacing and reduce the overall footprint of the array. Would not a reduction in the tilt angle of the panels, i.e., making the panels lie flatter, increase the footprint of the array compared to a steeper angle for the panels?

The Petition mentions the installation of 7' fencing around the solar array. Unlike many other solar farm proposals, no mention is made of providing a 6" gap between the ground and the fencing in order to provide for the movement of small animals. Can this measure be incorporated at this site?

The conclusion drawn at the end of Section 15 of the Petition, Wildlife and Habitat, that "the Project will not substantially impact the wildlife or habitat on or in close proximity to the Property" (p. 14) does not necessarily follow from the foregoing discussion that there are no NDDB species or critical habitats on the site. The lack of these specific resources on the project site does not necessarily mean that the clearing of 16 acres of forest does not impact wildlife habitat on the site.

No impacts are foreseen from the development of the Chatfield Solar Farm upon either of the two proximal DEEP State Park properties to the east of the site, namely Chatfield Hollow State Park and Forster Pond State Park. The latter is not well known and is not open to the general public, but rather used only for scheduled educational programs. Most notable among the educational programs supported there is the Connecticut Aquatic Resources Education or CARE Program which annually draws 800-900 predominantly inner city students. Summer fishing day camps as well as ice fishing camps are also run at the park, as are activities held in conjunction with the Haddam-Killingworth Parks and Recreation Department. The proposed solar farm would not affect any of these uses or activities.

Thank you for the opportunity to review this petition and to submit these comments to the Council. Should you, other Council members or Council staff have any questions, please feel free to call me at (860) 424-4110.

Respectfully yours,

Frederick L. Riese

Frederick L. Riese
Senior Environmental Analyst

cc: Commissioner Rob Klee
Attachments: (2)

Connecticut Department of
ENERGY &
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PROTECTION

Stormwater Management at Solar Farm Construction Projects September 8, 2017

Solar farms are on-the-ground installations of arrays of photovoltaic cell panels, supporting structures and related equipment for the production of electricity. As with other types of construction projects, the construction of solar farms can involve land clearing, grading, excavation, trenching, dewatering and similar activities that create land disturbances which potentially result in soil erosion and sediment discharges polluting wetlands, streams and other surface waters. Construction-related land disturbances of 0.5 acres or larger are regulated in Connecticut pursuant to the Connecticut Soil Erosion and Sediment Control Act under Sections 22a-325 to 22a-329, inclusive, of the Connecticut General Statutes ("CGS"). Constructionrelated land disturbances of one (1) acre or larger are also regulated under CGS Section 22a-430 and under Section 402(p) of the federal Clean Water Act and the National Pollutant Discharge Elimination System ("NPDES") program. Prior to the start of such regulated activities, authorization is required from local authorities and, for larger projects, the Connecticut Department of Energy and Environmental Protection ("Department"). Construction projects involving five (5) or more acres of land disturbance require an individual NPDES discharge permit from the Department, or may be eligible to register for coverage under the Department's NPDES General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (general permit).

The Department has encountered repeated problems associated with solar farm construction projects covered under the general permit, from the registration process through construction activities. Although in no way an exhaustive list, the following are common problems associated with solar farm general permit registration applications and ways to address such problems:

- Applicants have been submitting registration applications that lack the requisite information or the requirements necessary for authorization under the general permit. The Department requires a complete and sufficient application when a registration application is filed, and may reject any registration application it deems to be incomplete or insufficient.
- Applicants are not adhering to the sixty (60) day/ninety (90) day time frame for Department review as required by Section 3(c) of the general permit. While the Department has on occasion shortened the review timeframe, Applicants are expected to allocate no less than the requisite time frame for the registration application review process and must plan accordingly.
- Registration applications for solar farm projects often fail to identify the project's contractor and sub-contractors. Section 5(b)(1)(viii) of the general permit mandates that this information be included in the registration application.
- Applicants have been repackaging the Siting Council submittal, which is not acceptable. Section 3(c)(2)(D) of the general permit mandates that the application submittal include only materials required to support the Stormwater

Pollution Control Plan ("SWPCP"). This information must be up-to-date and accurate. Any superfluous information delays the registration application review process.

- SWPCPs for solar farm projects are often lacking sufficient detail and information. An approvable SWPCP shall include, but not be limited to, the location of all erosion, sediment and stormwater control measures including detailed design cut sheets with supporting calculations, construction means and methods, project phasing (i.e., site planning, pre-construction, construction, and post-construction stabilization, etc.), construction sequencing and a construction schedule.
- The Applicant's design professional must be well-versed in the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control ("E&S Guidelines"), specifically the techniques found in Chapter 4, Large Construction Sites, the 2004 Connecticut Stormwater Quality Manual, as well as *current* best management practices (BMPs) recognized by the International Erosion Control Association (IECA), provided such BMPs are equal to or better than the E&S Guidelines.
- From the Department's perspective, an approvable SWPCP will include methods for avoiding compaction of soils, disconnection and reduction of runoff associated with solar panel arrays, avoidance of concentration of stormwater, and other measures necessary to maintain or improve pre-construction hydrologic conditions.
- Applicants need to follow the SWPCP review checklist when preparing the SWPCP, giving specific attention to post-construction stormwater controls and the development of a detailed long-term maintenance plan to ensure that the SWPCP meets the terms and conditions of the general permit.

Subsequent to authorization for coverage under the general permit, the Registrant is responsible for ensuring compliance with all terms and conditions of the general permit and the approved SWPCP once construction has been initiated. However, for solar farm projects, Registrants often fail to comply with the terms and conditions of the general permit, including the approved SWPCP. In particular, Department staff have observed the following issues that a routine inspection protocol and proper oversight, as required under the general permit, would have prevented, including but not limited to:

- pre-construction site planning and management deficiencies (e.g., existing vegetation, scheduling, training, phasing/sequencing, tree protection, etc.)
- ineffective placement, maintenance, and/or repair of administrative/procedural, vegetative, and structural BMPs (e.g., erosion, sediment and stormwater runoff controls, good housekeeping, materials management, and training)
- lack of thorough inspections
- ineffective or untimely corrective action
- ineffective stabilization practices
- ineffective permanent post-construction controls (i.e., store, treat and direct stormwater quality and quantity to pre-construction levels)

Such issues at solar farm construction projects raise concerns, since such projects often create areas of land disruption larger than the generally accepted BMPs of five (5) acres anticipated under the general permit. As a result, any applicant seeking coverage under the general permit for a solar farm construction project should take care to address the issues noted above. While by no means exclusive, some recommendations that should be incorporated into a SWPCP to address these issues include:

- Ensuring that only a Professional Engineer and/or Landscape Architect, as defined in Section 2 of the general permit, who meets the qualifications described in Section 5(b)(4)(A)(ii) and who has been approved in writing by the Commissioner, serve as the Commissioner's agent to inspect the site and also serve as the qualified inspector for the purposes of Section 5(b)(4) of the general permit ("authorized professional"). Such authorized professional must remain in good standing with the Connecticut Department of Consumer Protection and be technically and ethically qualified to inspect the site and be retained for the duration of the construction project until the Notice of Termination acceptable to the Commissioner has been filed as described below.
- Ensuring that the authorized professional prepare a proposed inspection checklist to assure the construction project is being conducted in compliance with the terms and conditions of the general permit, and the approved SWPCP is implemented in accordance with the general permit. The inspection checklist shall comply with Section 5(b)(4)(B)(iii) of the general permit, and include a space for the authorized professional's signature and professional stamp.
- Ensuring that the credentials for the authorized professional proposed by the Applicant and the proposed inspection checklist prepared by such authorized professional be submitted for the review and approval of the Commissioner and be included with the registration application for the general permit. No other professional may serve as the authorized professional without the prior submittal of relevant credentials and inspection checklist for the Commissioner's review and written approval.
- Ensuring that the authorized professional personally perform all pre-construction, construction, and post-construction site inspections; perform inspections at the end of any storm event whether or not such storm generates a discharge; and prepare and submit all inspection reports including the supporting inspection checklists in compliance with Sections 5(b)(4)(A) and 5(b)(4)(B) of the general permit.
- Ensuring that the authorized professional report any violations of the terms and conditions of the general permit or the SWPCP to the Commissioner's designee within two (2) hours of becoming aware of such violation, or at the start of the next business day of becoming aware of such violation outside normal business hours and shall, within five (5) days, prepare and submit a signed and stamped written report, which documents the cause of the violation, duration including dates and times, and corrective action taken or planned to prevent future occurrences.

- Ensuring that if circumstances necessitate a revision to the SWPCP, the authorized professional works with the Permittee's design professional to ensure compliance with the terms and conditions of the general permit, and any such change to the SWPCP shall be submitted for the review and written approval of the Commissioner.
- Ensure that the authorized professional reviews all stormwater monitoring reports to evaluate the effectiveness of the SWPCP and to document any adverse impacts that any stormwater controls on the construction site or discharges from the construction site may have on wetlands, streams, any other receiving waterbodies. Such evaluation shall be documented in the inspection reports and inspection checklists performed pursuant to Section 5(b)(4) of the general permit.
- Ensuring that, in the event the authorized professional identifies a violation of the terms and conditions of the general permit, the SWPCP, or otherwise identifies adverse impacts on wetlands, streams or any other receiving waterbodies, that construction activity shall immediately cease and the site stabilized until such violation or adverse impacts have been corrected.
- Ensuring that reporting and record-keeping of all inspection checklists and inspection reports comply with the requirements of Section 5(d) of the general permit, except that a copy shall also be submitted electronically to the Department within ten (10) days from the date such inspection was performed.
- Ensuring that all inspection checklists and inspection reports comply with the requirements for Certification of Documents in Section 5(i) of the general permit, including the requirement that such checklists and reports shall also be prepared, stamped and signed by the authorized professional.
- After completion of a construction project, ensuring that a Notice of Termination is filed in compliance with Section 6 of the general permit, including the requirement that such Notice of Termination be stamped and signed by the authorized professional certifying that such authorized professional has personally inspected and verified that the site has been stabilized following the first full growing season (i.e., April through October) in the year following completion of the construction project.
- Ensuring that any transfer of the registration comply with the requirements of Section 5(m) of the general permit.

These recommendations are by no means intended to be exclusive. To help address the issues noted above, the Commissioner will also be considering the posting of a performance bond or other security, in accordance with Section 22a-6(a)(7) of the Connecticut General Statutes, to assure the solar farm construction project maintains compliance with the terms and conditions of the general permit and the SWPCP.

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October 23, 2018

Alisa Morrison
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Project: Preliminary Assessment for Construction of "Standard Solar", Installation a 1.98 Megawatt AC (MW) Solar-Based Electric Generating Facility on North Branford Rd (RTE 80), Killingworth, Connecticut

NDDB Preliminary Assessment No.: 201811339

Dear Alisa Morrison,

I have reviewed Natural Diversity Data Base maps and files regarding the Preliminary Assessment for Construction of "Standard Solar", Installation a 1.98 Megawatt AC (MW) Solar-Based Electric Generating Facility on North Branford Rd (RTE 80), Killingworth, Connecticut.

According to our information there are records of State Special Concern *Rubus cuneifolius* (Sand blackberry), *Platanthera flava var. herbiola* (Pale green orchid) and *Caprimulgus vociferus* (whippoorwill) that occur within the boundaries of this property.

State Listed Plant Species

Rubus cuneifolius (Sand blackberry)
Habitat: Sandy soils of old fields, utility transmission corridors, roadsides, openings in woods
Blooms May through July

Platanthera flava var. herbiola (Pale green orchid)
Habitat: Swamps, low woods, and wet meadows Blooms:
June through August

Please be advised that this is a preliminary review and not a final determination. A more detailed review will be necessary to move forward with any subsequent environmental permit applications submitted to DEEP for the proposed project. **This preliminary assessment letter cannot be used or submitted with your permit applications at DEEP**. This letter is valid for one year.

To prevent impacts to State-listed species, field surveys of the site should be performed by a qualified biologist when these target species are identifiable. A report summarizing the results of such surveys should include:

1. Survey date(s) and duration
2. Site descriptions and photographs
3. List of component species within the survey area (including scientific binomials)
4. Data regarding population numbers and/or area occupied by State-listed species
5. Detailed maps of the area surveyed including the survey route and locations of State-listed species

6. Conservation strategies or protection plans that indicate how impacts may be avoided for all state-listed species present on the site.
7. Statement/résumé indicating the biologist's qualifications. Please be sure when you hire a consulting qualified biologist to help conduct this site survey that they have the proper experience with target taxon.

The site surveys report should be sent to our CT DEEP-NDDB Program (deep.nddbrequest@ct.gov) for further review by our program biologists along with an updated request for another NDDB review. Please also include the site survey report and/or any conservation strategies you would like to propose to mitigate any impacts.

State Special Concern Whippoorwill
The whip-poor-will is a bird that nests in forest habitat with an open understory, often adjacent to areas of shrubby or herbaceous habitat. They are ground-nesting birds that breed between April 20th and July 30th. Project Activity should be conducted August 1 through April 30 so that the potential for destruction of nests, eggs, or young is reduced. They are ground nesting birds which lay eggs in small scrapes in the forest between May 1st and July 31st. They consume aerial invertebrates, especially Lepidopteran and Coleopteran.

Protection for State Special Concern Whippoorwill

Any protection or enhancement of patches of early successional habitat, adjacent to open understory forest, will benefit this species. Please provide mitigation, conservation or habitat improvements that will be implemented as part of this project that will prevent long term impacts to this bird species. You can provide this information to our program when you provide the botanical surveys for the site.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.
Sincerely,

Dawn M. McKay
Environmental Analyst 3