

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

GRE GACRUX LLC petition for a declaratory ruling for the proposed construction, maintenance and operation of a 16.78-megawatt AC solar photovoltaic electric generating facility in Waterford, Connecticut. Reopening of this petition based on changed conditions.

Petition No. 1347A

June 18, 2020

PRE-FILED TESTIMONY OF DEBORAH MOSHIER-DUNN

Q1. Please state your name for the record.

A1. My name Deborah Moshier-Dunn. I am the vice president of Save the River-Save the Hills, Inc. ("STR-STH").

Q2. What is your involvement with this project?

A2. I coordinated STR-STH's response to the project first proposed by petitioner GRE GACRUX LLC ("GRE") back in 2018, working with our experts to get technical reviews of the materials submitted and to compile comments on those materials for submission to the Council. When GRE asked the Council to re-open its petition, I again acted as the coordinator of STR-STH's efforts in opposition to this project. I also have reviewed GRE's submissions in this petition and, in consultation with STR-STH's board of directors, have expressed STR-STH's opinions with respect to the inadequacy of those submissions and to the adverse effects this project will have on the health of the Niantic River and its watershed.

Q3. What is your background?

A3. I was a change management manager at Accenture prior to leaving the firm in 2001 to start a family. I have an A.A.S. in Nursing, a B.A. in Sociology/Psychology and an MBA from the University at Albany. During my time at Accenture LLC, I studied and applied sustainability practices to business issues.

Q4. Tell us about STR-STH and how you got involved with it.

A4. I joined STR-STH as Vice President in 2003 to further build the membership and build support for water quality causes throughout the Niantic River Watershed. Founder and President Fred Grimsey served as a mentor to me in the work of STR-STH and continues to do so. Our grassroots, local organization has grown over the past 19 years to be a valuable, respected community organization within southeastern Connecticut. Our partnerships with DEEP, Connecticut Fund for the Environment/Save the Sound and other local environmental organizations have helped us create and build our programs in Water Quality Testing, the Pumpout Program, Watershed Education, Niantic River Appreciation Day and the advocacy of saving local lands that are environmentally important to the health of the Niantic River Estuary.

Q5. What is the purpose of your testimony?

A5. This testimony describes STR-STH's opinions and concerns with respect to GRE's submissions to the Council.

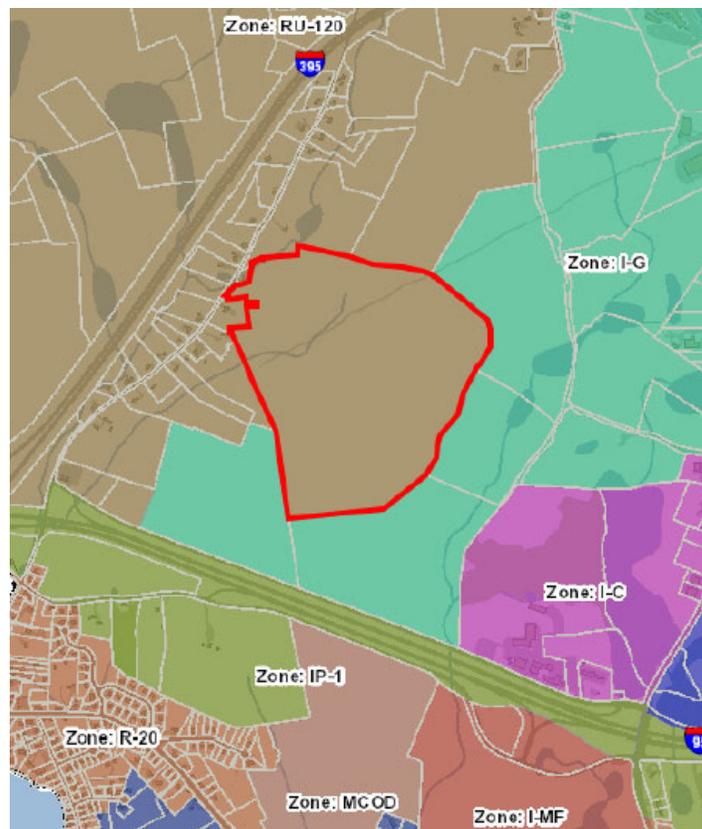
Q6. Why did STR-STH become an intervenor in Petition CSC 1347 and subsequently maintain that status in Petition CSC 1347A?

A6. Save the River-Save the Hill, Inc. (STR-STH) is a Waterford- based grassroots environmental organization with the mission of preserving the health of the Niantic River Estuary. In August 2018, STR-STH became aware of a threat to the Niantic River Estuary in the form of Petition No. 1347, a proposed installation of a ground-mounted solar array that would include clear cutting approximately 90 acres of core forest just 4,000 feet from the estuary in a site between two tributaries to the estuary. The site is an environmentally sensitive area as it is the headwaters of two trout-supporting brooks that flow into the estuary. STR-STH witnessed a smaller, but similar, solar installation built by GRE have its stormwater mitigation fail and

adversely impact a tributary to the estuary. STR-STH is actively trying to prevent that from happening at a larger scale so much closer to the estuary. The results would be devastating.

Q7. Please summarize some of STR-STH's opinions.

A7. STR-STH respectfully submits to the Council that there are simply some places that are inappropriate for a large ground-mounted solar installation. The proposed site has been a forested parcel, indeed a core forest, since at least 1934, as seen in flyover pictures taken by the state and on record. It is zoned RU-120, residential zone. The parcel and most land to the west and north are zoned RU-120. And although there are parcels directly south and to the east that are currently zoned Industrial/General, they are also currently forested parcels – making the site the center of a core forest of at least 750 acres. One of the parcels to the east has been donated to the Waterford Land Trust. In GRE's Figure 2 – Zoning Map pasted below, the preserved parcel is the one that has the label "Zone: I-G" typed on it.



In 2017, the Connecticut General Assembly passed Public Act 17-218, An Act Concerning the Installation of Certain Solar Facilities on Productive Farmlands to protect both farmlands and core forests. STR-STH realizes that this petition was filed with an RFP that predates the law, but respectfully submits that protecting core forest sites like the one GRE proposes to clear cut is exactly the reason that the law was passed. GRE is asking the Council to approve clear cutting of 75 acres of center of the core forest and the disruption of over 90 acres. That will create fragmented forests in all remaining sections, and it is well documented that fragmented forests are prone to invasive species and do not support birds and other flora and fauna that a core forest supports. Forests also play a key role in water quality of surrounding streams and wetlands, as the wetlands depend on the benefits offered by the forested land. (See Stony Brook Watershed Management Plan, 2009, available at: https://portal.ct.gov//media/DEEP/water/watershed_management/wm_plans/stonybrookwsplanpdf.pdf?la=en.) Taking down the core forest here will cost the state a valuable resource for wildlife and water quality.

Another key concern is the proposed change in stormwater runoff from this site. It was heartbreaking and very frustrating to sit through DEEP's January 8, 2020 presentation on the need for new stormwater regulations for ground-mounted solar as slide after slide showed the destruction to wetlands and streams that many of the large ground-mounted solar installations have caused around the state. That presentation is attached as Exhibit A. If any of these stormwater failures happen at the site that is the subject of this petition, it would destroy downstream trout streams and critical wetlands and adversely impact the Niantic River Estuary, something that is not acceptable to STR-STH, nor should it be to the Council.

STR-STH engaged Steve Trinkaus, Professional Engineer and Low Impact Development expert, and Donald Danila, fisheries biologist and Niantic River Estuary expert, to review GRE's new plans. As set out in their prefiled testimony and as explained by STR-STH in previous

submissions to the Council, the stormwater management design of Petition 1347A has not materially changed from the original petition, which the Council wisely denied. In Mr. Trinkaus's opinion, this will prove to be another stormwater failure both during construction and post-construction. According to Mr. Trinkaus, the plans are not in compliance with the DEEP 2004 Storm Water Quality Manual or with sound engineering practices. It is frustrating for STR-STH to watch as solar companies claim to be following regulations when they are not.

Q8. Why did STR-STH choose to engage experts in this matter?

A8. While STR-STH is a nonprofit with small resources, the board felt that protecting this site from the stormwater damage we believe will occur with a large ground-mounted solar installation was something we had to do given its significance to the health of the Niantic River. Steve Trinkaus has a unique understanding of ground-mounted solar because of his forestry undergraduate degree. He understands how the soils are draining now as a forested property versus when solar panels are being installed, with the trucks and the compaction of soils on the Site, as well as what the soils will do post-construction. Also, his LID insights are highly relevant for a project like this one, which could, if designed with the erroneous assumptions we have found here, destroy headwaters and critical wetlands. Steve's insights are sought and valued internationally.

Don Danila has been studying the Niantic River and its watershed for 40 years as a fisheries biologist. His insights about the effects of development on the Niantic River are invaluable as he has been specifically studying this river from many angles for many years. We are fortunate that Mr. Danila has not asked for nor is receiving any compensation for his services.

STR-STH is glad to have the input from Mr. Trinkaus and Mr. Danila to help educate the Council about the specific issues with this petition. As set out in their prefiled testimony, their

review reveals that the new plans are not significantly improved over the original submission that was denied without prejudice. Indeed, some of the requirements the Council stipulated in its denial without prejudice have not been met. The opinions expressed by Mr. Trinkaus and Mr. Danila in their prefiled testimony are adopted and supported by STR-STH. We believe that the stormwater design is fundamentally flawed by the fact that GRE refuses to acknowledge in its stormwater design that the solar panels are impervious. Using the faulty assumption that the panels are pervious will cause the stormwater mitigation to fail because there will actually be more runoff than GRE has planned for. That is exactly the same issue that caused the devastating failure in the Antares Solar Farm in East Lyme, releasing an estimated 800 cubic tons of silt into the surrounding wetlands and streams. It is alarming is that the Antares failure happened in 2014, and since that time, other stormwater failures of ground-mounted solar panels sites have been documented by DEEP. Pictures of these failures are captured in DEEP's presentation on January 8, 2020, which is attached as Exhibit A.

Q9. Does STR-STH have other opinions and concerns regarding Petition 1347A?

A9. Yes. Beyond the stormwater, forest and wildlife/aquatic species concerns expressed in the prefiled testimony of our experts, STR-STH has opinions and concerns about additional aspects of the submissions. Those include:

- how the choice of this forested Site (and others in the State) occurred;
- the lack of regulations specific to stormwater management for large ground-mounted solar installations;
- the fact local town officials have no authority to monitor design or construction of projects like this with respect to stormwater, yet will be the authority charged with enforcing violations;
- GRE's refusal to incorporate into its designs any of the engineering recommendations hand-delivered to it from STR-STH at a meeting in October 2018, as well as its apparent refusal to learn from the Antares Solar Farm stormwater debacle to inform their design of a new solar installation;

- GRE's refusal to listen to the criticisms and design a project that is as conservative as possible given the sensitive nature of the site;
- GRE offering to buy or lease 14 acres of an adjacent land owner's property for "stormwater mitigation";
- fire safety for the surrounding forest and abutters properties;
- the adequacy of GRE's decommissioning plans, including how the Site will be returned to "current state" as a core forest and how to hold a solar company LLC accountable for that in 20 to 30 years; and
- the lack of environmental representation on the Council.

Q10. Let's take each point in order. What is STR-STH's concern with respect to the choice of the project site?

A10. STR-STH has questions about why this project, which was originally floated to the Town to be sited at the town landfill or the local airport, was ultimately proposed for this environmentally sensitive piece of property. GRE has stated that it chose this site because of its proximity to electrical lines running through the property. The same reasoning was apparently behind the choice sites for similar projects, such as the one in a forested area of Old Lyme. This is a concerning development in the process for siting of electricity-producing installations. Electrical rights of way cross through many forests in Connecticut. The solar companies are claiming the ROWs cause breaks in core forests, allowing them to subvert the new state legislation that was passed to protect core forest from being destroyed to put in large ground-mounted solar arrays. I also sit on the board of Waterford Land Trust (WLT). I have seen letters that have come to the WLT that have solicited for placing large ground-mounted solar on properties protected by the WLT. Other land trusts have confided in me that they too are receiving these solicitations, with wildly high offers for leasing income should they allow the installations. This trend should alarm the Council, as the loss of preserved lands to an industrial use certainly adversely impacts the environment of the state.

Q11. What is STR-STH's concern with respect to regulations for ground-mounted solar arrays?

A11. STR-STH has grave concerns about the lack of state regulations specific to stormwater management and design of large ground-mounted solar installations in our state. Large ground-mounted solar installations are not new in Connecticut, and DEEP has documented many adverse impacts to lands surrounding these installations, caused by stormwater design and/or installation failures. It has been six years since the failure of the Antares stormwater management system, but there still are no DEEP stormwater regulations specific to these kinds of installations in place. This has led to many issues for the Council, leading it to go so far as to put a banner on the bottom of its webpage informing the public that stormwater is under DEEP's jurisdiction, not the Council's. The problem with the way these projects are currently handled is that to approve a petition, the Council needs to make a finding that the project complies with the DEEP water quality standards, and needs to not have a substantial adverse environmental effect. Here, STR-STH's position is that GRE is not even following the DEEP water quality standards and regulations that are in place. But without proper ground-mounted solar stormwater regulations in place, a solar company actually following those standards and regulations could claim, its project necessarily will not adversely affect the environment because it has followed DEEP regulations. Given the evidence of adverse impacts that can be plainly seen in the January DEEP presentation, and in the Cease, Desist and Restore Order in East Lyme and the DEEP Notice of Violation and subsequent Consent Order in Pomfret, either developers are just not following the regulations and standards but their projects are being approved anyway, or the regulations and standards are wholly inadequate to protect the environment from these kinds of installations. Neither is acceptable to STR-STH.

The two maps attached as Exhibits B and C show the flows of stormwater as it would come off the site as per the plans and topography. Exhibit B is a LIDAR map with the site limits, clearing, panels and flows overlaid. Exhibit C is a map showing critical wetlands, pulled from the Stony Brook Watershed Management Plan, with the eastern part of the site plans and flows overlaid. There is no question that any design failure on this site will result in stormwater going directly into these watercourse and wetlands, and the result will be devastating to the watershed.

Q12. What is STR-STH's concern with respect to local authority?

A12. STR-STH understands that the Council has been given legislative authority to site these projects that preempts local zoning control. But STR-STH has grave concerns about the Council allowing a developer to simply ignore a local town's regulations for stormwater, *especially* for projects in coastal towns, where much study, thought and care has been used in the creation of those town regulations. Town of Waterford, as a coastal town, has Low Impact Development ("LID") guidelines incorporated throughout its development regulations. The town worked extensively with UCONN in implementing LID approaches to development projects throughout the town, most notably the Jordan Cove subdivision. Waterford has taken seriously the work to decrease the effects of runoff into the Niantic River and into Long Island Sound. Large ground-mounted solar arrays are not telecommunication towers. Their effect on the Site and the surrounding lands are exponentially more significant than a tower. And power plants are subjected to a much more robust application and certification process and are at least held to building codes and regulations. These large solar arrays are complicated in their effect on the environment, yet there are currently no stormwater regulations specific to their unique issues, and the developers of these installations seem content to propose to follow just the bare minimum of regulatory requirements (though again, here, GRE has not even done that).

Allowing towns to enforce their regulations and oversee the construction and post-construction time periods would greatly decrease the issues like the ones STR-STH is seeing with this petition. DEEP currently does not have the regulations in effect, nor the personnel to oversee the construction. The Council likewise does not have the staffing to monitor the construction of projects like this on an ongoing basis; STR-STH is aware that the Council staff was significantly burdened by the stormwater failures of past projects and the work involved in making multiple site visits to review the damage and work with local authorities on mitigation. STR-STH strongly suggests the host town's town planner/zoning office be able to monitor the construction of projects like this instead of being called in after the fact when the stormwater design fails.

Q13. What is STR-STH's concern with respect to GRE's willingness to make changes to its plans?

A13. This has been a frustrating process for STR-STH. In 2018, STR-STH leaders invited the CEO of Clean Focus and managers of the GRE to the STR-STH president's house to listen and learn about our concerns with the project. We were thrilled when they accepted the invitation. The attendees at that meeting and a subsequent meeting seemed to genuinely listen to our concerns about the Site being an environmentally sensitive parcel (one even shared that he is an avid trout fisherman), and they accepted engineering input from Mr. Trinkaus and information about the failure of the Antares project's stormwater management design and its aftermath. They assured us that they were changing engineers and that the plans would be better than Antares. Imagine our surprise as the plans GRE submitted for this petition *still* do not use the assumption that the panels are impervious. The faulty assumption that solar panel structures that are structurally similar to car ports are pervious apparently has its creation myth beginnings in the Minnesota Stormwater manual, which provides that if the solar panels are *all*

installed on *flat* ground, spaced at least as far apart as they are tall, then and only then may the solar panels be deemed pervious. This site is anything but flat, with areas more than 15% grade that have to be re-graded to be less than 10% prior to the panels being installed, and many slopes remaining at more than 15% even post-construction. Add to this the fact that the panels (and the drip edges of each panel) will have to face south while being installed on a hill that slopes away to the west or east, and you have the situation depicted in this picture:



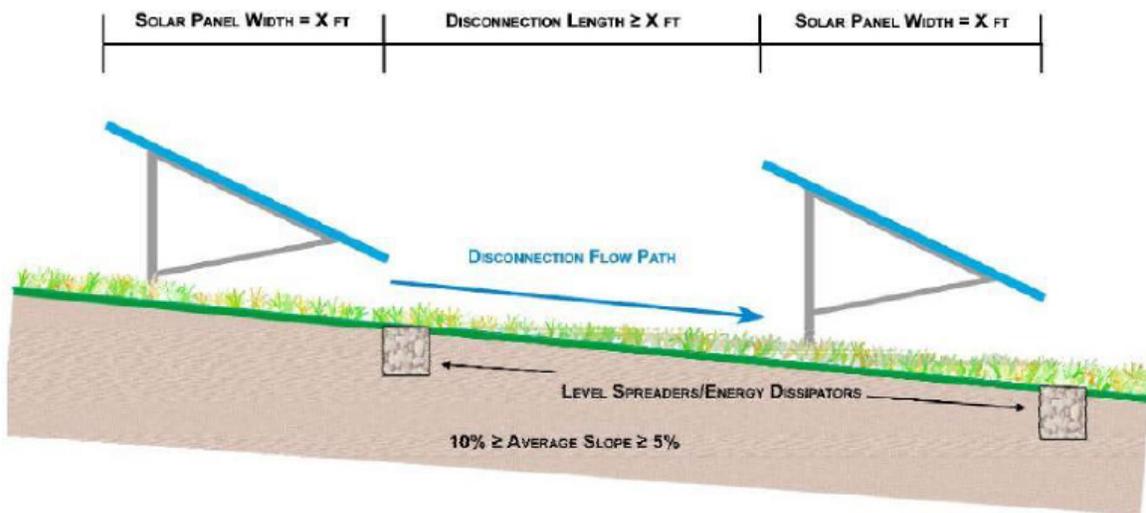
Notice the gravel the owners of this solar array have placed beneath the panels, because the runoff from the panels will travel in a channel down that hill.

DEEP has released their proposed revisions to the Construction General Permit, which includes Appendix I addressing solar installations. The draft of Appendix I provides:

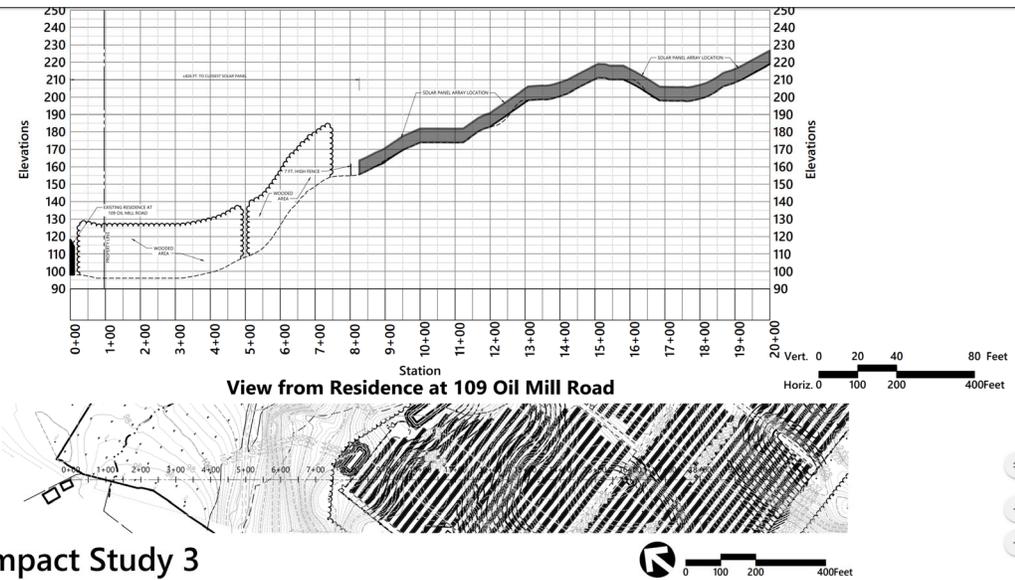
However, the *large amount of impervious surface inherent in the construction of a large-scale solar array* is unlike most other construction activities regulated under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (“general permit”) and entails challenges not encountered in traditional development projects. If not properly managed, stormwater discharged during and after the construction of solar arrays can be a significant source of pollution resulting from increased runoff, erosion, and sedimentation, which can adversely impact wetlands or other natural resources. It is vitally important to stabilize soil, minimize soil disturbance and soil compaction, and manage the total runoff volume and velocity. Proper stormwater management practices can significantly mitigate the

loss of topsoil, erosion and sediment discharges from disturbed areas and stormwater outlets, and erosion along downstream channels and streambanks. The opportunities to properly manage runoff decrease as site imperviousness increases.

(Emphasis added.) The last page of the proposed Appendix I shows a diagram borrowed from the 2000 Maryland Stormwater Design Manual, Volumes I and II, depicting a solar panel installation with slopes between 5% and 10% that has level spreaders at the drip edge. It is clear that DEEP is considering panels in this situation as impervious, and the runoff is not falling in a sheet as it would be if the panels were considered to be pervious. See below:



Stormwater erosion is concentrated directly below the drip edge at the lower (always southern) edge of the panel. The panel itself is impervious glass, so all the rainwater falling on the width of the panel is concentrated directly below the southern drip edge. On a hillside sloping down to the east or west, the erosion risk is amplified when the drip edge runs parallel with a downhill slope. This is because gravity tends to accelerate the water concentrated under the drip edge and channel the flow downhill. This will happen on this Site, as topography lines run north/south on most of it. GRE has not even proposed to put level spreaders below the drip lines of each row of panels, because it is wrongly assuming that the panels are impervious.



Visual Impact Study 3

In the Visual Impact Study from the submitted documents from GRE, one can plainly see that the topography and the solar panels will create concentrated runoff as the panels are not being installed in a way that would create the conditions required to be considered pervious. Therefore, GRE's entire stormwater mitigation plan is based on a faulty underlying assumption, just as it was in the Antares Solar Farm plans. This project, as it is now designed, is designed to fail.

During one meeting with GRE and its team, Mr. Danila discussed the surrounding brooks with GRE's representative and GRE's environmental consultant. STR-STH was given assurances that the plans would be engineered to keep the amount of runoff consistent with what is happening in the natural forested state as it is now. As set out above and in our expert's prefiled testimony, the current design does *not* meet that standard. GRE knows about the importance of the surrounding wetlands and that they support trout and are of high water quality. STR-STH expected that given that knowledge, GRE would give more care to the development of its stormwater mitigation plans, as was suggested during those meetings. Instead, the revised petition is silent on those considerations, and GRE is simply falling back on

its supposed compliance with water quality standards to show it “considered” the health of the watershed. That is not acceptable to STR-STH, and should not be acceptable to the Council.

Q14. What are STR-STH’s concerns about GRE’s offer to purchase or lease adjacent property?

A14. GRE offered to buy or lease 14 acres of an adjacent land owner’s property, and that land owner told me that GRE had said the land was needed for “stormwater mitigation.” This seems to me to be a significant admission that GRE knows its plans are inadequate. In the interrogatory process, GRE also seems to have admitted that yes, it did indeed contact an abutter for that reason, but that DEEP asked GRE to do it. That admission brings even more questions. Does DEEP think that the stormwater mitigation is inadequate for the site and would need additional acreage to prevent issues? Who at DEEP told GRE to contact the abutter and why? STR-STH has pending interrogatories asking some of those questions and believes the answers will be illuminating.

Q15. What are STR-STH’s concerns about fire safety?

A15. STR-STH has concerns about fire safety for the surrounding forest and abutters properties and questions about the petition’s adherence to the CT State Fire Prevention Code. In response to interrogatories, the Waterford fire marshal stated that “installation of the solar array must be installed in accordance with the Connecticut State Fire Prevention Code (CSFPC 11.12.3, 11.12.3.2, 11.12.3.3).” Those code provisions provide as follows:

11.12.3 Ground-Mounted Photovoltaic System Installations. Ground-mounted photovoltaic systems shall be installed in accordance with 11.12.3.1 through 11.12.3.3.

11.12.3.1 Clearances. A clear area of 10 ft (3048 mm) around ground-mounted photovoltaic installations shall be provided.

11.12.3.2 Noncombustible Base. A gravel base or other non-combustible base acceptable to the AHJ shall be installed and maintained under and around the installation.

11.12.3.3 Security Barriers. Fencing, skirting, or other suitable security barriers shall be installed when required by the AHJ.

The site plans provided to date do not adhere to those requirements. Will the Petitioner be following this Code?

Q16. What are STR-STH's concerns about decommissioning?

A16. GRE has described the time that the solar installation will be there as "Land Banking." How will Site be returned its "current state" as a core forest and how does the town hold a solar company LLC accountable for that in 20- to 0 years? Will GRE write a promissory note to the town in the amount it would take to replant a 90-acre forest? It also appears that GRE is not actually committing to return the site to its current site, as it repeatedly states that it would be the landowner's decision.

Q17. What are STR-STH's concerns about the makeup of the Council?

A17. The lack of environmental representation on the Council is of great concern to STR-STH. Since Dr. Klemens resigned, the Council has had only one member with a background in ecology. To STR-STH's knowledge, it does not have any members with backgrounds in conducting wildlife surveys or wetland/soil sciences or the like, which would permit such members to share their knowledge and experience with their colleagues during Council discussions of projects. This could lead to a lopsided slant towards approvals because of a lack of expertise and guidance with respect to the environmental impact of the projects before the Council. This is not to say that current Council members are not concerned about such effects, but STR-STH does not see how the Council can properly do its job in balancing the need for electricity against the potential adverse environmental effects of electricity-generating

projects without guidance on the environmental side (outside of that provided by developers). STR-STH concurs with the opinions expressed in an editorial by The New London Day in February 2020, attached as Exhibit D.

Q18. Is there anything else you would like to tell the Council about this petition?

A18. Yes. STR-STH feels the Council wisely denied Petition No. 1347, as well as GRE's December 2018 motion for reconsideration, for a number of good reasons. Among these were potential impacts to water quality, the absence of a geotechnical analysis for stormwater control designs, and the lack of a recommended wildlife survey. We believe that this revised petition still fails to properly address water quality and stormwater issues, did not adequately complete the geotechnical studies/analysis required for design the stormwater controls, and still lacks details regarding wildlife, which should include aquatic species given the nature of this site and DEEP's comments in August 2018. There is still a complete lack of information and analysis on the impacts this development could have on downstream environments and biota, namely, in the significantly important Niantic River Estuary.

We understand that the Council does not have jurisdiction over stormwater issues, per its disclaimer on its website. However, the Council cannot approve this project without finding that complies with DEEP water quality standards and will not have a substantial adverse environmental effect. Given the issues outlined in the prefiled testimony of STR-STH's experts, the comments by DEEP in August 2018 that have not been addressed in this petition, the Council's own reasons for denial in October and December 2018 that have also have not been addressed in this petition, as well as the lack of clarity on adequate solar installation stormwater controls, the Council must act to protect this environmentally sensitive site by denying GRE's petition with prejudice.

Q19. Does STR-STH have any other concerns to share?

A19. STR-STH's overall experience with the Siting Council process has opened our eyes to some very significant procedural issues that we believe the Council and the legislature should work together to remedy. Using a petition for declaratory ruling in order site facilities like this just does not provide the opportunity for real examination and oversight of the proposal, as appears to happen when the Council considers an application for a certificate. Nor is there the same opportunity for groups such as STR-STH to participate in the process - as the schedule is so tight that boards of organizations do not have time to meet to make decisions regarding involvement in the process. There seems to be a lack of transparency with respect to how the Council makes its decisions, when it will make its decisions, and the way in which it does any balancing.

We understand that the COVID-19 pandemic has limited the Council's usual operations, but STR-STH was denied site access because the Council declined to schedule a public site walk and GRE refused to permit us on site. Surely cautions could have been put in place to permit the parties and whichever masked Council members opted to attend to stay more than six feet away from each other on an outdoor walk. The significance of the site walk takes on greater meaning where there has been so much turnover on the Council membership since the first site walk was done (a walk STR-STH did not get to participate in because it was not yet a party). While we understand that a Zoom public hearing is likely a struggle and burden on the Council staff, we also have very serious concerns about the burden placed on public participation. Members of the public would typically be able to show up the night of the public hearing and sign up to speak; here, the Council required those who wished to speak to sign up *one week in advance* so it could coordinate the Zoom hearing, and declined to order GRE to put that

significant fact on the sign posted to announce the public hearing. There is no public hearing if the public cannot comment.

We also are concerned with the limited role that DEEP played in this re-opened petition, in contrast to its extensive review and comment back in August 2018, and with the complete absence of any DEEP Fisheries Division review of the petition. There seem to be real gaps in the process here that could be remedied with some rule-making. I would finally note that participating in this process has been extremely time-consuming and expensive for STR-STH, which is a nonprofit run by volunteers. I know this has also been very burdensome for the Town of Waterford. The significance of this site merited the effort, but I would urge the Council to look at its regulations and consider, with legislative support if needed, creating some sort of public participation fund for petitions. There is a requirement for developers to pay into such a fund when filing applications for certificates, yet not for petitions, which of course can have just as much of an impact on a community.

The statements above are true and accurate to the best of my knowledge.


Deborah Moshier-Dunn
Vice President, STR-STH


Date

ATTACHMENTS

- Exhibit A: *Construction Stormwater Permitting: Rain Happens!* Presentation by DEEP Stormwater Section, Jan. 8, 2020.
- Exhibit B: LIDAR map of area surrounding proposed site showing stormwater flows within and around the site
- Exhibit C: Map from Stony Brook Watershed Management Plan with overlaid site plans and stormwater flows within and around the site
- Exhibit D: The New London Day Editorial Board, *To protect ecosystem, improve balance on critical regulatory panel*, Feb. 1, 2020

EXHIBIT A



Connecticut Department of Energy Environmental Protection



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

Construction Stormwater Permitting



Rain Happens!

January 8, 2020

Christopher Stone, P.E.

DEEP Stormwater Section



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM

Construction Stormwater Permitting

- > National Urban Runoff Program (NURP)**
 - 1979-1983 – studied runoff pollutants**
 - Construction runoff - high levels of sed/pollutants**
 - Post-construction increased runoff is damaging**
- > 1987 CWA Reauthorization**
 - EPA directed to regulate stormwater**
 - Created concept of general permits**
- > 1992 – CT Authorized by EPA to run SW**
- program > 2013 – Most recent permit reissuance**



CT STORMWATER PROGRAM

Program goals



Improve construction oversight utilizing QPE & QLP



Ensure proper plan implementation



Implement full electronic submittal and review process (no paper)



Address issues with Locally Exempt (solar arrays, DOT, etc)



CT STORMWATER PROGRAM

Construction GP



Current Permit Structure



Registration



Stormwater Pollution Control Plan



Inspections



Monitoring



Termination



CT STORMWATER PROGRAM Proposed Mods



Registration



Only electronic filing

- All projects submit

Plan - No paper option



Electronic public review

- 30 days (formerly 15 days)



Existing permittees reregister

- 120 days from reissuance date



CT STORMWATER PROGRAM

Proposed Mods



Registration (cont)



Locally Exempt authorization

- 60/90 day threshold 15 acres
(formerly 20 acres)**



Requirements for Authorization



LA financial assurance to town



**Design QPE does pre-const.
mtg, site walk & Plan Imp.**



CT STORMWATER PROGRAM Proposed Mods



Eliminate turbidity monitoring



State agencies (DOT/DAS)



Create list of approved QPEs

- QPE does Plan review (not DEEP)**
- QPE does Plan Imp. Inspection**
- QPE does Post-Const. Inspection**



CT STORMWATER PROGRAM Proposed Mods



Inspections



Design QPE does Plan Imp. Insp.
- Also at start of each phase



State agencies can use QPE list



Inspection checklists part of Plan
- Plan Imp. & Routine Inspections



Qualified Inspector

- Qualifications identified in Plan



CT STORMWATER PROGRAM Proposed Mods



Keeping Plans Current



Disturbance increase – Notify DEEP



Revisions reviewed by Design QPE



Conservation District MOA



Loc. Approvable MOA changed to straight hourly fee



New Loc. Exempt MOA for Plan review/pre-const mtg/inspection



CT STORMWATER PROGRAM

Proposed Mods



Reporting & Record Keeping



All reporting through Net DMR

- Inspections, Plan mods, other



Mods documented as part of Plan



Duty to Correct & Report Violations



Construction ceases until fixed



Violations reported to DEEP



CT STORMWATER PROGRAM Proposed Mods



Notice of Termination



DOT/DAS use QPE list for Post-Construction Inspection



Final stabilization – One full growing season after stabilized



Endangered/Threatened Species



Eliminate $\frac{1}{4}$ mile buffer



1 year determination is now 2 years



CT STORMWATER PROGRAM

Solar Array Construction

2013 CGP did not consider Solar Arrays

- **Extremely large (>100 ac) disturbed area**
- **Typical design makes phasing impractical**
- **Frequently on hillsides (slope issues)**
- **Construction timelines very short (< 1 year)**
- **Designs insufficient to protect such large areas**
- **Contractors not following plans**
- **Lack of independence = unreliable inspections**
- **Soil compaction increases runoff**
- **Ineffective/untimely corrective actions**
- **Inadequate post-construction controls**



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200 acre clear cut



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM



Slope failure



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“Finished” basin



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM



No stabilization



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM



Erosion/stabilization failures

Connecticut Department of Energy and Environmental Protection



CT STORMWATER PROGRAM



Basin failure



CT STORMWATER PROGRAM



Severe runoff/erosion



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM



Severe runoff/erosion



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM



Severe runoff/erosion



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Stream bank high flow undercutting

Connecticut Department of Energy and Environmental Protection



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Post-construction erosion

Connecticut Department of Energy and Environmental Protection



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Post-construction erosion



Connecticut Department of Energy and Environmental Protection

CT STORMWATER PROGRAM

Solar Construction



How to Address Problems?



Review other large projects



Review other states' procedures

- MN, MD, PA, NH

- Minnesota solar calculator



NEIWPC Stormwater Workgroup



Discussions with consultants



CT STORMWATER PROGRAM

CGP Solar Appendix I



Design & Construction Measures



Array impervious if slopes $> 15\%$



Slopes $< 15\%$ array is impervious unless:

- Increase stabilization as slopes increase - Provide adequate spacing between rows
 - Maintain sheet flow
 - 100 foot watercourse/wetland buffer



Height of panels ≤ 10 feet



Routine inspections by Qualified PE



CT STORMWATER PROGRAM

CGP Solar Appendix I



Design & Construction Measures (cont)



Inspection reports submitted to DEEP



District & Design QPE at pre-construction mtg



District conducts periodic inspections



District conducts Post-Const/Final Inspections



Registrant provides letter of credit

- \$15,000/acre disturbance (Appendix J)



CT STORMWATER PROGRAM

CGP Solar Appendix I



Post-Construction Design Measures



Consider panel orientation for drainage pattern



Conduct pre- & post- runoff calculations



Maintain non-erosive velocity & volume at property line



Site specific soil mapping



Conduct complete hydrologic analysis



Downgrade Hydrologic Soil Group one level
- Ex. HSG A B, HSG B C, etc.



CT STORMWATER PROGRAM

Construction Permitting

Questions?



Connecticut Department of Energy and Environmental Protection

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Connecticut Department of Energy and Environmental Protection

EXHIBIT B

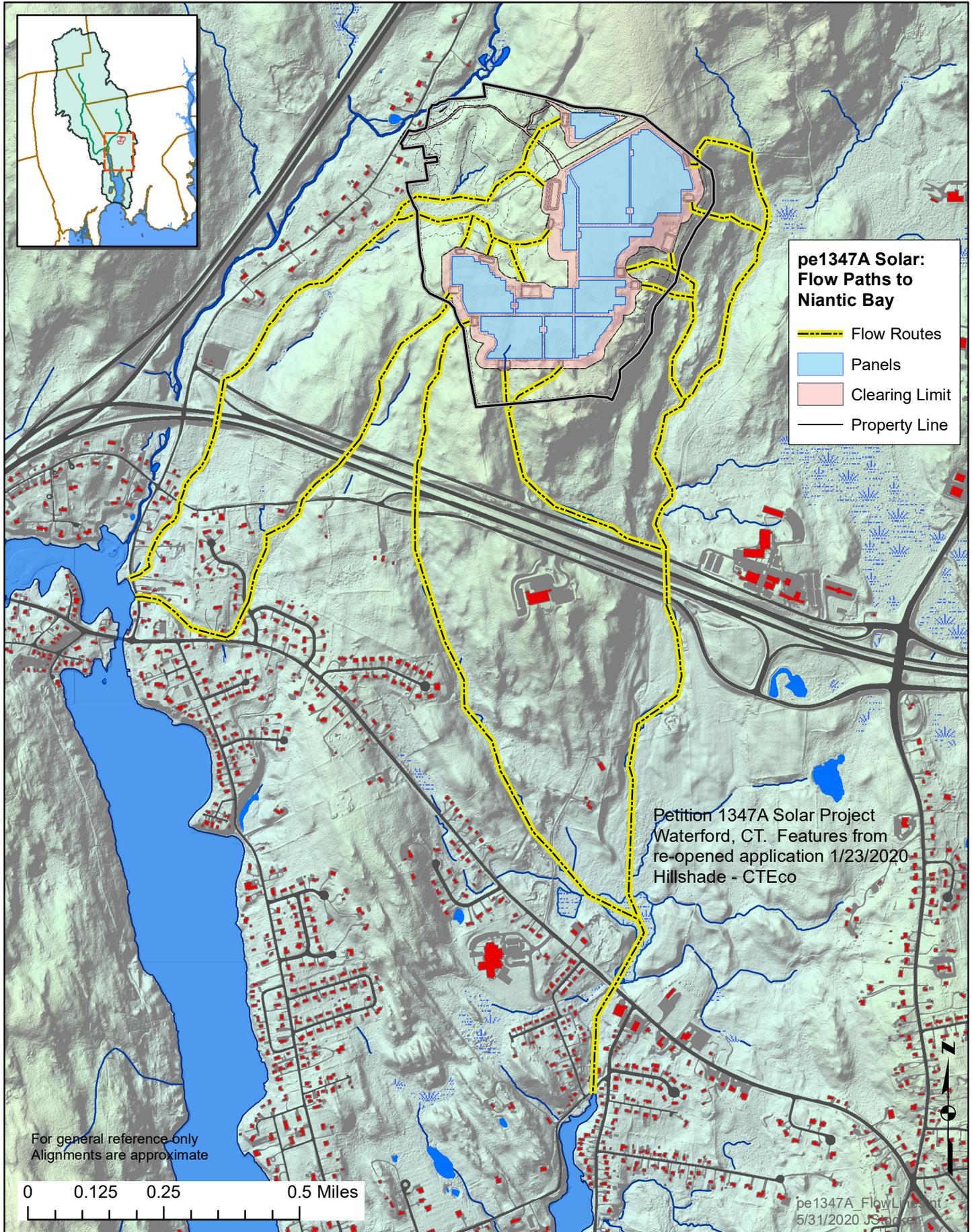
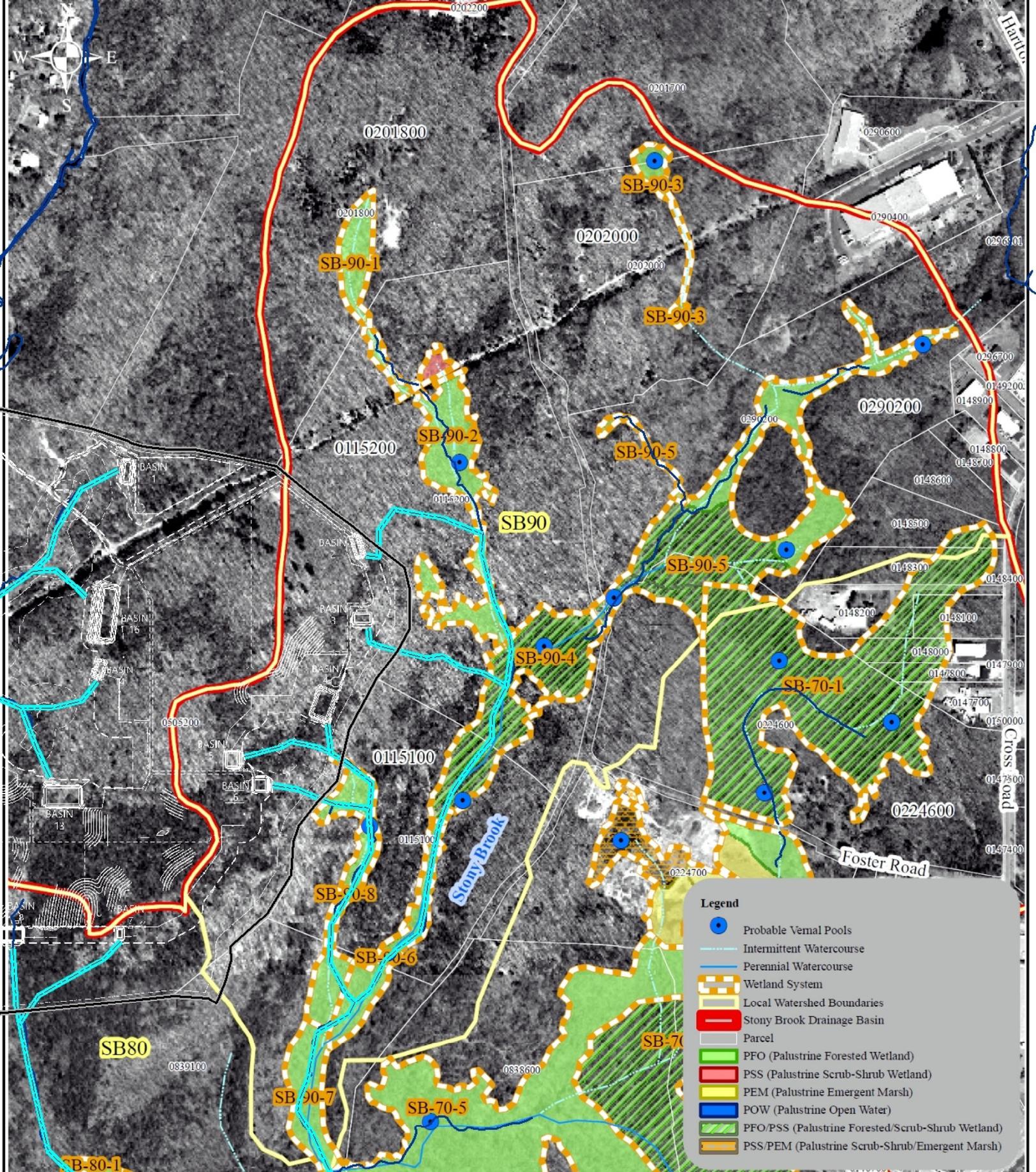


EXHIBIT C



Legend

- Probable Vernal Pools
- Intermittent Watercourse
- Perennial Watercourse
- Wetland System
- Local Watershed Boundaries
- Stony Brook Drainage Basin
- Parcel
- PFO (Palustrine Forested Wetland)
- PSS (Palustrine Scrub-Shrub Wetland)
- PEM (Palustrine Emergent Marsh)
- POW (Palustrine Open Water)
- PFO/PSS (Palustrine Forested/Scrub-Shrub Wetland)
- PSS/PEM (Palustrine Scrub-Shrub/Emergent Marsh)

Engineering,
Landscape Architecture
and Environmental Science

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Wetland Systems for Sub-Watershed 90

PROJECT#: 3104-01
 MAPPING: H:ws90.mxd
 SOURCE: DEP Bulletin No.40

Stony Brook

LOCATION:
Waterford, CT

DATE:
August 2007

SCALE:
1:7,800

SHEET:
Figure 5-2

EXHIBIT D

Support journalism that matters to you

Since COVID-19 impacts us all and we want everyone in our community to have the important information they need, we have decided to make all coronavirus related stories free to read on [theday.com/coronavirus](https://www.theday.com/coronavirus) (/coronavirus). While we are providing free access to articles, they are not free to produce. The newsroom is working long hours to provide you the news and information you need during this health emergency. Please consider supporting our work by subscribing or donating.

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To protect ecosystem, improve balance on critical regulatory panel

Published February 01, 2020 12:01AM | Updated February 01, 2020 10:20PM

By **The Day Editorial Board** (/apps/pbcs.dll/personalia?ID=editorialboard)

Connecticut law **requires** (http://www.ct.gov/deep/lib/deep/energy/ces/2018_comprehensive_energy_strategy.pdf%20) the state to reduce greenhouse gas emissions by 80 percent from 2001 levels by the year 2050 — and to do it without discouraging industry or weakening the state's economy. Intermediate goals, including a 45 percent reduction in the next 10 years, are just as ambitious.

The state's Comprehensive Energy Strategy wisely recognizes, however, that in an ecosystem nothing stands alone. Carrying out the mandate requires a string of different public and private tactics that will use energy more efficiently; generate it with fewer greenhouse gas emissions; and foster elements that balance out emissions.

Energy and the environment are naturally competing interests, but one environmental solution can also be the bane of another. It is perilously easy to undercut the balance while attempting to make progress in cutting emissions.

To provide expertise on what could happen to an ecosystem is why the Connecticut Siting Council is statutorily required to have two qualified ecologists on the board. The council's approval is needed for locating — "siting" — electric generating, transmission and storage facilities.

Right now the board has two vacancies and one qualified ecologist. By law, the governor appoints five "public members" to the board, among them the two ecologists. Gov. Ned Lamont has yet to appoint at least one more. Energy production proposals are coming in thick and fast, however, and some may cause harm out of proportion to their benefits. The council needs all the expertise it can muster.

Solar panel field siting proposals, in particular, have become a significant subject for the council's agenda. The council has just received a request to reopen a **proposal from Greenskies** (<https://www.ct.gov/csc/cwp/view.asp?a=2397&Q=603418&PM=1#MotiontoReopen>) for solar paneling on Oil Mill Road in Waterford, which it denied in 2018. The citizen environmentalist group Save the River-Save the Hills, has fought the proposal, which would clear 75 acres of woodland for 45,976 panels under the latest version.

An East Lyme property owner sued a Greenskies subsidiary over "virtual clearcutting" and siltation of his property and local streams. A member of the Niantic River Watershed Committee told The Day last fall that **expertise was lacking** (<https://www.theday.com/local-news/20191018/downhill-from-solar-project-concerns-mount%20>) in the review. Two more eastern Connecticut proposals are coming up. **Quinebaug Solar LLC** (<https://www.ct.gov/csc/cwp/view.asp?a=895&q=318776>)

has asked to reopen its application to build a massive 50-megawatt solar voltaic field on 561 acres of 29 privately owned properties in Canterbury and Brooklyn. A much smaller, 1.95-megawatt proposal for **13 acres off Short Hills Road** (<https://www.theday.com/local-news/20191210/new-group-urges-stricter-regulations-for-proposed-old-lyme-solar-project>) in Old Lyme has caught the attention of environmentalists, who want the siting council and the state Department of Energy and Environmental Protection to hear their viewpoints.

Michael W. Klemens, a seven-year former member of the siting council board, has been sounding alarms about the environmental impact of solar fields when there is clear-cutting — as in East Lyme and potentially in Old Lyme and Waterford — but even when the site is largely open fields. He asks why the state does not seek to put such developments along highways, for instance, or in other developed areas where the drainage and habitats are already artificial. It's a good question, and one that the siting council should be considering when asked for approvals.

When the council denied Greenskies' Waterford petition in 2018, it gave three reasons: impact on water quality, storm drainage and wildlife, including birds. What the council will decide about the Oil Mill Road site should depend not only on what it can allow but also on what it should allow, in the big picture. And in a development as huge as the Quinebaug proposal, the effects would inevitably alter the ecology of a pristine part of Connecticut, a tiny state that can't afford to be giving pristine away.

Above all, don't make things worse. Governor Lamont, appoint one if not two more ecologists to the siting council, and hear their expertise along with that of the engineers and developers.

*The Day editorial board meets regularly with political, business and community leaders and convenes weekly to formulate editorial viewpoints. It is composed of President and Publisher **Tim Dwyer** (</apps/pbcs.dll/personalia?ID=t.dwyer>), Editorial Page Editor **Paul Choiniere** (</apps/pbcs.dll/personalia?ID=p.choiniere>), Managing Editor **Tim Cotter** (</apps/pbcs.dll/personalia?ID=t.cotter>), Staff Writer **Julia Bergman** (</apps/pbcs.dll/personalia?ID=j.bergman>) and retired deputy managing editor **Lisa McGinley** (/section/columnists_mcginley). However, only the publisher and editorial page editor are responsible for developing the editorial opinions. The board operates independently from the Day newsroom.*

STORIES THAT MAY INTEREST YOU

Awaiting Bolton book (</editorials/20200617/awaiting-bolton-book>)

The president is trying to use the full force of the U.S. government to block the June 23 release of former national security adviser John Bolton's book, "The Room Where it Happened."

Help college students at risk (</editorials/20200617/help-college-students-at-risk>)

The simplest way to help vulnerable students stay in school is to raise Pell Grants, the federal government's main form of need-based aid.

Don't let ill-advised slogan derail an important movement (</editorials/20200616/dont-let-ill-advised-slogan-derail-important-movement>)

A recent Huffington Post/You Gov poll, taken after the Floyd killing and the groundswell of demand for change, found that defunding police was about the only reform Americans didn't back.

CERTIFICATION

I hereby certify that a copy of the foregoing document was delivered by first-class mail and e-mail to the following service list:

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