February 18, 2020 SolarConnecticut Comments Regarding Proposed Amendments to the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (the "Draft General Permit")

Thank you to DEEP for the chance to bring to this discussion the views of Connecticut businesspeople who are familiar, and in some cases experts, in stormwater discharge. We look forward to a dialogue.

In general, SolarConnecticut (SolarConn) is disappointed that DEEP has singled out of solar projects for special treatment in the Draft General Permit. Based on the Department's public commentary, DEEP seems to have identified four solar projects that have had "significant" stormwater discharge issues associated with their construction, such that cease and desist orders were issued.

One of those incidents took place before the Department issued its September 8, 2017 guidance document, "Stormwater Management at Solar Farm Construction Projects." Since the issuance of that guidance, we understand that according to the Department, the other three incidents have the same root cause – the construction contractor failed to properly follow the designs for the solar construction. If so, amending the General Permit to require additional conservatism in design (such as changing hydrologic soil groups, altering the definition of imperviousness, etc.) would not appear to address the root issue. Increased inspections and/or increased financial assurances may be warranted in certain situations, and would be responsive to the Department's expressed concerns, but increased design standards would not rectify the problems the Department speaks to in its prior-issued cease and desist orders.

The Draft General Permit, as currently drafted, does not provide enough clarity for when project developers will need to register under the General Permit if a solar development will disturb between one to five acres of land. The application of the General Permit is fairly clear for projects that will disturb more than five acres; however, smaller solar projects do not have clarity as to when the requirements for registration under the General Permit apply to them.[1]

In addition, there are currently a significant number of solar generation projects registered under the General Permit, but there is no guidance from the Department as to how these projects should be treated assuming the Draft General Permit is enacted as written. Some projects have registrations that pre-date the August 2019 and/or January 2020 guidance documents[2] issued by the Department, while other projects were developed in compliance with either the August 2019 or January 2020 guidance issued by the Department, and so while they would not be registered under the Draft General Permit, these projects would be in compliance with the Draft General Permit's requirements.

This is not merely an academic exercise. Many of these projects will be near the completion of construction or will be in a post-construction monitoring scheme where the projects are waiting for vegetation to complete growing so that the project's site is permanently stabilized. Forcing such projects into a new regulatory regime makes little to no sense, particularly when such projects may be close to

[1] As a general rule of thumb, approximately four to five acres of land are disturbed for each megawatt of capacity for a solar generating facility. Thus, a five-acre site would likely have a nameplate capacity of 1 MW, while a 25-acre site would likely have a nameplate capacity of approximately 25 MW.

[2] The January 8, 2020 guidance document on this topic can be obtained at: https://www.ct.gov/deep/lib/deep/water_regulating_and_discharges/stormwater/construction/200108_Guidance_for_Construction_of_Solar_Array_Projects.pdf.

achieving permanent stabilization. The Department should "grandfather" such projects that were designed to be compliant with current requirements and should explicitly state that such projects will continue to be deemed compliant with applicable regulations, even after the Draft General Permit is approved.

SolarConn is also hard-pressed to understand why the Department has linked the need for a wetlands buffer to the construction of solar arrays when it does not do so for other construction projects. While we recognize such buffers are often desirable, SolarConn also recognizes that the amount of a buffer is dependent on a wide variety of factors, such that a "one size fits all" restriction does not appear to be appropriate. Moreover, the 100-foot barrier selected by the Department becomes problematic since such a wide buffer throughout a site may have the unintended consequence of limiting water flow into wetlands, thus causing them to dry up. Wetlands are balanced ecosystems that require a certain level of water flow to go into the wetland so as not to cause adverse impact. By setting arbitrary, large buffer zones, the Draft General Permit may have the unintended consequence of causing some wetlands to dry out.

Similarly, SolarConn is concerned with the arbitrary, binary identification of whether a solar project should be considered impervious. As the Draft General Permit is currently written, the requirements act as a "switch," which is either fully on or fully off. If a project meets certain requirements, it is considered by the Department to be 100% pervious, however, if it fails to meet such requirements, it is considered to be 100% impervious. There is no middle ground. However, it is accepted that even in situations where panels are close together, there will be some level of infiltration into the ground. The panels will not act as an impervious stretch of road might for purposes of stormwater calculations. However, this is how such projects are treated by the Draft General Permit.

With regard to financial assurance mechanisms, while some form of financial assurance may be appropriate, we object with both the amount and the inflexibility as to the form of the financial assurance. At $15,000 per acre of disturbance, the Department is requiring financial assurance that will be equal to roughly $75,000 per megawatt of solar capacity. For a 20 MW solar project, this will result in a developer being required to post $1.5 million in financial assurance. At the Department's January 8, 2020 information session there was never an allegation that the cost of remediation of prior problems approached this amount for remediation. The potential for harm is far less than the amount the Department is calling on providers to submit.

In addition, by requiring project developers to provide the Department with a letter of credit (as specified by Appendix J of the Draft General Permit), the Department has assured that developers will be required to provide the most expensive form of financial assurance, short of escrowing cash in an account that can be accessed by the Department. The Department failed to consider other mechanisms for financial assurance that may be cheaper, such as providing a surety bond. It is important to note that by requiring such high levels of financial assurance and such expensive mechanisms for providing it, the Department will be acting counter to two of its stated goals – the development of renewable energy and the provision of electricity at lower rates. Requiring such high levels of financial assurance, and through such expensive means will likely cause developers to look at constructing projects in other, more favorable jurisdictions, or will result in those developers raising the prices of their bids when Connecticut next seeks to procure renewable energy through the RFP process. This requirement may well cost Connecticut jobs, adversely impact the Connecticut ratepayer, or more likely, do both.

With these general comments in mind, SolarConn respectfully submits the following specific technical comments and looks forward to meeting with DEEP officials to discuss.

Comments related to Appendix I - Stormwater Management at Solar Array Construction Projects

The comments related to Appendix I will track the subject matter headings and number for ease of review.

Design and construction requirements

(1)

- There is no parameter for the amount of the site with slopes over 15%. If a site has 90% grades less than 5% and only 10% of the site has grades greater than 15%, is the intent for the whole site to be subject to the proposed alterations to water quality volume (WQV) calculations? We respectfully request that the Department clarify its position on this matter.

  The following comments are offered on items (a)-(e):

  - (a) – No comment
  - (b) – When performing drainage calculations, per the National Engineering Handbook Part 630 Hydrology, Chapter 15, the term sheet flow is described as "flow over plane surfaces. Sheet flow usually occurs in the headwaters of a stream near the ridgeline that defines the watershed boundary. Typically, sheet flow occurs for no more than 100 feet before transitioning to shallow concentrated flow (Merkel 2001)."
    - It is unrealistic for any site in the pre- or post- condition to have runoff remain as sheet flow across a site based on the definition of sheet flow.
    - After the first 50-100 feet of sheet flow on site, stormwater runoff is considered to be shallow concentrated flow.
    - Shallow concentrated flow is assumed not to have a well-defined channel and has flow depths of 0.1 to 0.5 feet. The National Engineering Handbook states that shallow concentrated flow can be represented by one of seven flow types:
      1. Pavement and small upland gullies
      2. Grassed waterways
      3. Nearly bare and untilled
      4. Cultivated straight row crops
      5. Short-grass pasture
      6. Minimum tillage cultivation, contour or striped cropped, and woodlands
      7. Forest with heavy ground litter and hay meadows
  - (c) – For these bullets below there is no guidance on what percentage of site at certain percent grades would require the items being proposed below, e.g., if a 10-acre site has 5%-10% grades over less than 5% of the site is the entire site bound by the requirements of 5%-10% grades?
    - First bullet – It is unclear how Figure 1 applies here other than possibly not requiring some type of level spreader.
    - Second bullet –

        - As discussed above, it is unclear how to maintain sheet flow conditions when they only occur during the first 100 feet of a drainage area. There are no prescribed engineering calculations to keep sheet flow through an entire drainage area.
        - In cases of existing hayfields that have grades of over 5% and are functioning today, the installation of other level spreaders, terraces, or berms could have the undesirable effect of increasing the potential for erosion and sedimentation, contrary to The Department's intent.
      - Third bullet –
        - If the intent of this requirement is to have areas greater than 8% get some type of treatment at least once after final grading but prior to other work like racking occurring, the requirement appears to be reasonable and appropriate.
      - Fourth bullet –
        - This requirement should not be limited to areas that are equal to or greater than 10% and less than 15%; it should apply to any solar project regardless of the percent grades. In any event, such controls will become more prevalent in projects with grades upwards of 10%.
    - (d) No comment, as it has been noted that vegetation does grow beneath and between the panels.

(2) Comments:
- No comments.

(3) Comments:
- No comments.

(4) Comments:
- This section is requiring that a Professional Engineer serve as the inspector for routine (weekly) inspections.
  - Such a requirement will likely increase cost to solar projects, without providing a concomitant benefit.
    - For all other types of construction projects, under the Guidelines, a qualified inspector is considered to be someone with five years of demonstrable and focused experience in erosion and sediment control plan reading, installation, inspection and/or report writing for residential and commercial construction projects. No degree or other certifications are required. There is no rationale for why such an individual would be unable to perform such a function for solar projects.
  - Every type of project, including projects that do not involve solar arrays, could benefit from some type of PE oversight, but the PE does not necessarily need to be on site every week
  - This also removes a lot of qualified individuals that could perform this work, potentially creating a shortage of available inspectors that could actually delay necessary inspections.

(5) Comments:
- No comments.

(6) Comments:
- No comments.

(7) Comments:
- No comments.

(8) Comments:
- As stated in greater detail above, while it may be appropriate to require some formal assurance for maintenance of erosion and sedimentation controls, the amount being considered is too large and does not allow for a lesser amount to be selected. Moreover, consideration should be given to expanding the mechanism for such assurance, i.e., by allowing a bond or other instrument as an alternative to a letter of credit, similar to other types of construction projects.

Design Requirements for Post-Construction Stormwater Management Measures

(1) Comments:
- No comments.

(2) Comments:
- It should be noted that there is a small gap between all of the panels on a piece of racking, and depending on the panel orientation and configuration on the rack, there may be several edges where water falls to the ground rather than one concentrated runoff at the lower edge of the entire rack structure. Also, the panels are at different angles as they follow the natural contours of the land as much as possible. That being said, it is unclear how rows being perpendicular to the contours may result in higher runoff, and the Department should provide justification/calculations for its contention regarding higher runoff from rows being perpendicular to applicable contours.

(3) Comments:
a. No comments
b. It is unclear what criteria the Department is using to determine site specific soil mapping. While it may be appropriate for solar projects, it appears to be equally appropriate for any construction project. It should not be specific to just solar. Thus, the requirement should be removed from Appendix and placed in the Draft General Permit or removed altogether.

c. Comments
- Determining the infiltrative capacity of any stormwater management measure is not an issue through field tests.

- With regard to the reduction of the Hydrologic Soil Group present on-site by one (1) step (e.g. soils of HSG B shall be considered HSG C) to account for the compaction of soils that results from extensive machinery traffic during construction of the array:
    - Is the Department concerned about potential unintended consequences resulting from changing the hydrologic soil group when modeling stormwater runoff for post- conditions?
    - It is possible that by doing this, a project would be over-detaining runoff for a large site, resulting in downstream wetlands or agricultural properties seeing a significant change in hydrology and function?
    - Is the Department basing this change on any academic research?
    - The Vermont Agency of Agriculture, Food & Markets has addressed soil compaction from construction projects. See Act 250 Procedure: Reclamation of Vermont Agricultural Soils, attached. Of note:
        - They are requiring a pre-disturbance general site characteristics report.
        - For existing soils that are to be excavated and/or potentially compacted with heavy equipment: Soil compaction status should be measured for impacted areas, with at least one measurement for each NRCS soil map unit. Compaction can be measured by performing a soil bulk density test for the topsoil (A horizon). Alternatively, to measure surface and subsurface hardness, penetrometer readings can be taken using a field penetrometer with field penetration resistance measured in psi.
        - Final soil productivity testing should be performed on the same areas tested prior to soil disturbance. Results should be similar to the original, pre-disturbance measured readings. If bulk density is higher than tested originally, subsoiling, plowing or other methods of decompaction should be employed to alleviate soil compaction. Soil material should not be spread or driven on by heavy machinery when it is very wet, otherwise, soil compaction could be severe.
    - The State of Vermont 2017 Stormwater Treatment Standards includes post-construction requirements that are intended to ensure that the post-construction runoff coefficient remains the same as the pre-construction runoff coefficient for the remaining soils on site. While this mainly pertains to commercial development that will have more impact than a solar project, some provisions may be worth considering for solar projects.

d. No comments.
e. No comments.

Comments on the Remainder of the Draft General Permit

The comments below relate to the remainder of the Draft General Permit, and track the organization of the Draft General Permit, for ease of review.

Section 2 Definitions

Construction Activities definition was changed to include pile driving and soil compaction among other items. Solar Connecticut believes that this change is beneficial for the Draft General Permit.

Disturbance definition was changed to clearly state that construction activity on existing established ground would be considered disturbance. This is also a positive change to the Draft General Permit.

Effective Impervious Cover definition now includes compacted soils.

- What is the definition of compacted soils?
- If the Permit is going to state that compacted soils are Effective Impervious Cover, then Appendix I Number 1 does not really matter, and every site should have to address the Water Quality Volume calculations as identified in Appendix I Number 1.

Final Stabilization definition was added, which is also a positive change to the Draft General Permit.

Grab Sample can be removed from the definitions. All references to this were removed from the General Permit.

The Department should consider adding definitions for Engineered and Non-Engineered Corrective Actions.

The Department should consider adding Peak Flow or Peak Flow Control as a definition. Per the 2004 Stormwater Quality Manual, Page F-6, Peak Flow Control is defined as "Criteria intended to address increases in the frequency and magnitude of a range of potential flood conditions resulting from development and include stream channel protection, conveyance protection, peak runoff attenuation, and emergency outlet sizing."

Section 3(b):

(6) Discharge to Groundwater.

This section is still unclear with the removal of text. Are infiltration practices considered discharges entirely to ground water? If so, there should be a storm event listed here as, if a project is using a flood control/infiltration basin, lower storm events such as 2- and 10-year storms might be fully contained in the basins, to be able to control the peak flow for the 100-year storm event.

(10) Plan Review and Certification by a District

- This adds locally exempt projects (including solar arrays)
- The first paragraph needs to be revised for locally exempt projects, as Appendix F clearly states that The Department is required to initiate the review by the Districts.
- Appendix F as currently written does not cover Plan Review as Appendix E does. (See Appendix F comments below for further comments)
- Are fees for this in addition to the Department permit fees?

(14) Solar Arrays

(See comments on Appendix I, above)

(15) Other Requirements for Authorization

(A) This addition requires that the qualified professional who designed the project attend a preconstruction meeting including a site walk. Additionally, if the District is involved, the District should attend as well. (Qualified Professional who designed the plans will need to be involved during construction)

(C) The Qualified Professional who designed the plans will need to perform the implementation inspections and submit those reports to the commissioner. (Design engineer will need to be responsible for the plan implementation inspections.) This section states that for solar arrays and other projects that may be reviewed by the District, the Plan Implementation Inspections shall include District personnel. (This will be an added cost to projects.)

(D) This section states that the permittee shall provide evidence of submittal of financial assurance to the town in which the project is being developed for both locally approved and locally exempt projects subject to the jurisdiction of the CSC.

- For locally exempt projects that go through CSC what type of financial assurance is to be provided?
- Is this in addition to the letter of credit required by The Department for solar projects?
- Is the financial assurance just for erosion and sedimentation control and stormwater features?
- Would this requirement be imposed prior to issuance of a permit or prior to the start of construction?

Section 3 (d) Small Construction

- If a solar array's disturbance is under five acres of disturbance and is reviewed by the municipality pursuant to the requirements of section 22a-329 of the Connecticut General Statutes, is Appendix I required to be followed?
- Is a solar array project required to register under the general permits if it meets the requirements of this section?

Section 3 (g) Effective Date of Authorization

(2) Exceptions to Authorization Timelines

(C) Should the date be October 1, 2020 not October 1, 2019?

Section 4 (c) (2) Locally Exempt Projects

(D) This section states that boundary or lot surveys should not be included.

- Without these items, how is The Department to evaluate the requirement of Appendix I that states "For an engineered stormwater management

system, demonstrates no net increase in peak flows, erosive velocities or volumes, or adverse impacts to downstream properties"

This section states the 60- or 90-day periods cited in subsections (A), above, will not begin until all required elements have been submitted.

- What is the required time frame for The Department to inform an applicant that all required elements have been or have not been submitted?

Section 4 (d) (2)(J)(viii)

- Will the EZ File system be updated to provide a section for solar development for use in verifying that the plan has been developed in accordance with the provisions of Appendix I?

Section 4 (d) (2) (N)

This section states that boundary or lot surveys should not be included.

- Without these items. how is The Department to evaluate the requirement of Appendix I that states "For an engineered stormwater management system, demonstrates no net increase in peak flows, erosive velocities or volumes, or adverse impacts to downstream properties"

Section 5 (b) Stormwater Pollution Control Plan

- The Department should consider adding "and their contractors and subcontractors" after the word "permittee" in the second sentence of the first paragraph.

Section 5 (b) (1) (A)

- Second sentence - remove "2004 Connecticut" as Stormwater Quality Manual is already defined
- Second sentence after Stormwater Quality Manual consider adding ", including WQV and Peak Flow Control,"

Section 5 (b) (1) (B) (vi) Inspections

- See Appendix I comments in regards to inspection requirements.
- The end of this section states that an inspection checklist should be included in the plan and references checklists located at www.ct.gov/deep/stormwater, but no checklists are located at this link. Please provide the specific checklists that The Department is referring to.

Section 5 (b) (1) (B) (vii) Contractors

- This section states that only contractors and subcontractors that have the potential to cause pollution to water of the State need to be identified. Please consider removing "that have the potential to cause pollution to water of the State" as any contractor that drives onto an active construction site has the potential to cause pollution to waters of the State if not properly informed.

Section 5 (b) (2) Stormwater Control Measures

- The link to the DOT Qualified Products List is invalid.

Section 5 (b) (2)(A) (i) Soil Stabilization and Protection

- The requirement, "Temporary or permanent vegetation or other ground cover shall be maintained at all times to prevent erosion and soil compaction during construction activities." was added to this section. Should the following be added after compaction ", in undisturbed or inactive areas,"?

Section 5 (b) (2)(A) (ii) Structural Measures

- The Department should consider the following change to the first sentence in Paragraph 2. Replace "be installed" with be designed and installed".

Section 5 (b) (4)(A) Plan Implementation Inspections

- To comply with the changes made to the first sentence of Paragraph 1, The Department should consider adding "each phase of the" before each instance of "construction activity" in the second sentence in Paragraph 1.
- To comply with the changes made to the first sentence of Paragraph 1, The Department should consider removing "for the initial phase of construction" from the end of the second sentence in Paragraph 1.

Section 5 (b) (4)(B) Routine Inspections

- Under (i), reference to inspections only needed to occur once a month for three months remains, whereas later in the General Permit that is changed.
- Under (iii) the term engineered, and non-engineered corrective actions are identified but there are no definitions for these terms.

Section 5 (b) (5) Keeping Plans Current

- The following statement was added to Section (A): "If the amount of disturbed area increases from the amount specified on the original registration for the site or there are changes to engineered or non-engineered construction or post-construction control measures, that have the potential to increase the quantity or amount of pollutants in the site's stormwater discharges, the permittee shall submit a new registration to the commissioner in accordance with Section 4 of this general permit." This requirement is overly broad.
    - Are there parameters that The Department uses to determine if a change has the potential to increase the quantity or amount of pollutants from a site?
    - Would these need to go through the same review time frame as the initial submittal?
    - This change could impact the overall schedule of a project and the amount of time that disturbed soils are exposed.
    - Does this apply to engineered or non-engineered corrective actions after the fact?

Section 5 (b) (9) Plan Submittal

This section states that boundary or lot surveys should not be included.

- Without these items. how is The Department to evaluate the requirement of Appendix I that states "For an engineered stormwater management

system, demonstrates no net increase in peak flows, erosive velocities or volumes, or adverse impacts to downstream properties"

Section 5 (b) Turbidity Monitoring

Deletion of this section from the General Permit is a positive change that results in cost and time savings for project developers.

Section 5 (c) (3) (A) Inspection Reports

A reference should be added stating that reports should be submitted pursuant to Section 5 (c)(3)(C)

Section 5 (c) (3) (B) Plan Modification

See comments above on Section 5(b)(5) Keeping Plans Current

Section 5 (f) Duty to Correct and Report Violations

This section has been revised to state that if a violation occurs on site all construction activities need to cease.

- This may not be an issue for a small site but it could be an issue for a larger site with multiple crews and trades working.
- Suggest modifying the provision to require ceasing construction activities in the area of the violation.

Section 6 (a) Notice of Termination

The following sentence was amended to remove "three months following the final stabilization" and add "one full growing season (i.e. April through October) in the year following the"

- Under this revision, if a site completes construction and seeds in early May of a given year and is fully established and stable by June, monthly monitoring would need to continue through October of the following year. This would result in an additional 15 monthly inspections.
- Suggested alternate language: A project shall be considered complete after all post-construction measures are installed, cleaned and functioning and the site has achieved final stabilization (as defined in Section 2) through the end of the following seeding window as defined in the Guidelines, following the cessation of construction activities.
- Section (a) should have a reference to the (1) Post-Construction Inspection required below.

(2) Final Stabilization

The first sentence should be clarified to remove potentially contradictory references to "final stabilization", e.g., the qualified inspector should confirm that the site has maintained stabilization.

APPENDIX F Memorandum of Agreement Between DEEP and Districts for Technical Assistance for Locally Exempt Stormwater Construction General Permits

Section 3(b)(10) Plan Review and Certification by the District requires that locally exempt projects be reviewed by the district. However, Appendix F (Locally Exempt) does not include any requirements that are included in Appendix E (Locally Approved) covering the Components of the SWPCP Review, Plan Review Timeframes.

IV. Responsibilities of DEEP.

A. States that The Department is responsible for formal review of all locally exempt SWPCP submitted as part of the CGP.
    - This contradicts Section 3(b)(10) which provides for plan review and certification by the District.

No plan review certificate is included as part of Appendix F but is required per Section 3(b)(10).

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