

COMMUNITY LAND AND WATER COALITION

February 1, 2021

Conservation Commission
Town of Wareham
Attention: David Pichette, Conservation Administrator

RE: Borrego Solar Notice of Intent, SE 76 2611
140 Tihonet Road, Wareham MA

Dear Conservation Commissioners:

Thank you for the opportunity to comment on the Borrego Solar industrial energy generating facility at 140 Tihonet Road in Wareham. The project is on land owned by AD Makepeace Corporation (the project).¹ For the reasons set forth below, we urge you deny the Order of Conditions for this project.

These comments address the 140 Tihonet Road energy generating station proposed for 70 acres and the other power generating stations at 150 Tihonet Road and 27 Charge Pond Road. These three projects land under the ownership and control of one owner, Makepeace and are to be built and operated by one operator, Borrego Solar.

I. The NOI omits critical information about the conservation values of the site

The Massachusetts conservation data base shows the project area is a critical natural landscape with global significance. It is in the last remaining intact forest core in the area. The NOI omits this information. This deprives the Commission of the necessary scientific information needed to make a decision under the Bylaw.

¹ The NOI does not say whether the 140 Tihonet Road project is within the 6,107 acre ADM Tihonet Mixed Use development. This is a critical component of both the site plan review for the Planning Board and the Conservation Commission. It appears that 140 Tihonet is in the ADM Mixed Use Development and these comments are based on that assumption.

Rare species. The Bylaw requires the Commission to make findings about effects on resource areas, including but not limited to “rare species habitat including rare plant species”. Purpose, Section 1. Under the Bylaw,

The term “rare species” shall include, without limitation, all vertebrate and invertebrate animal and plant species listed as endangered, threatened, or of special concern by the Massachusetts Division of Fisheries and Wildlife, **regardless of whether the site in which they occur has been previously identified by the Division.**” (emphasis supplied)

Bylaw, Section III. The NOI only refers to Priority Habitat of Rare Species or Estimated Habitats of Rare Wildlife, claiming that because the site is not with an area “mapped” by Natural Heritage and Endangered Species (NHESP) no action is needed. Project Narrative 2-2, 2.2.4. **The Bylaw does not limit protection of rare species to areas “mapped” by NHESP.**

The Commission should require Borrego to conduct a biological survey to identify rare species for the following reasons.

First, the Massachusetts Secretary of Energy and Environmental Affairs (EOEEA or Secretary) has identified the site as “undeveloped land considered ecologically significant due to the presence of BioMap Core Habitat, Priority Habitat for rare and endangered species, and the underlying sole source aquifer.” MEPA Certificate 13940, 2012, page 1. The Secretary stated,

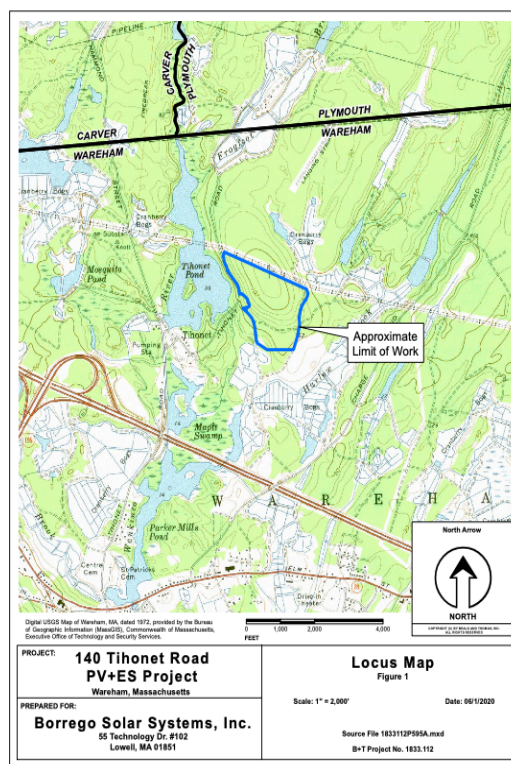
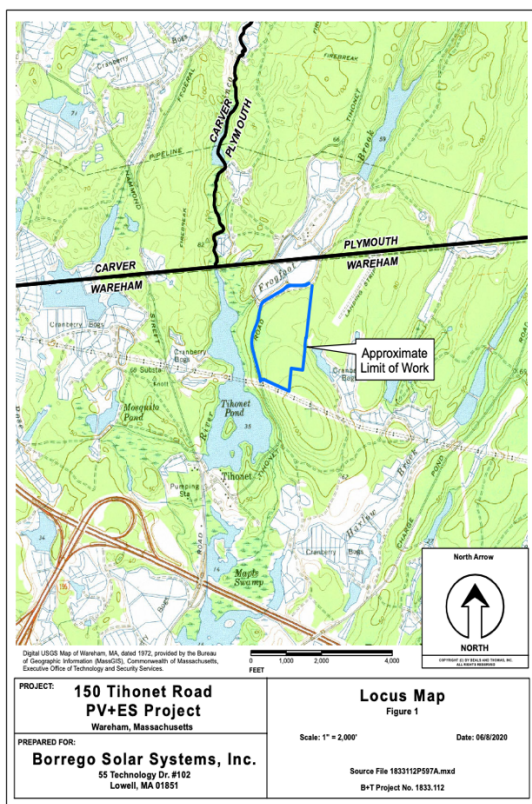
These areas consist primarily of undeveloped forested land, agricultural access roads and paths. Portions of the project site contain important, high quality pine barrens habitat supporting multiple state-listed species. This is part of a larger contiguous barrens system located in and around Myles Standish State Forest **that is of regional and global conservation significance.** Areas proposed for bog development [in 2012] include Estimated and Priority rare species habitat, including the Eastern Box Turtle (*Terrapene carolina*) and several pine barrens species. In addition, several areas of the site are designated as agricultural use under the Chapter 61 A program and several areas are in active forest management under an approved Chapter 61 forest management plan. (emphasis supplied) 2012 Certificate, page 3.

Second, current environmental designations on the Commonwealth’s OLIVER map data base identify at least the following critical and core habitat features for the 140 Tihonet Road site: BioMap2 Critical Natural Landscape and BioMap2 Core Habitat Vernal Pool. The adjacent 150 Tihonet Road solar site is BioMap2 Core Habitat Forest Core and BioMap2 Critical Natural Landscape.

Third, 140 and 150 Tihonet Road border each other and Tihonet Pond. A significant river herring fishery depends on Tihonet Pond for survival. A fish ladder provides access to the Pond for river herring annual upstream migration from the ocean to Tihonet Pond for spawning. This

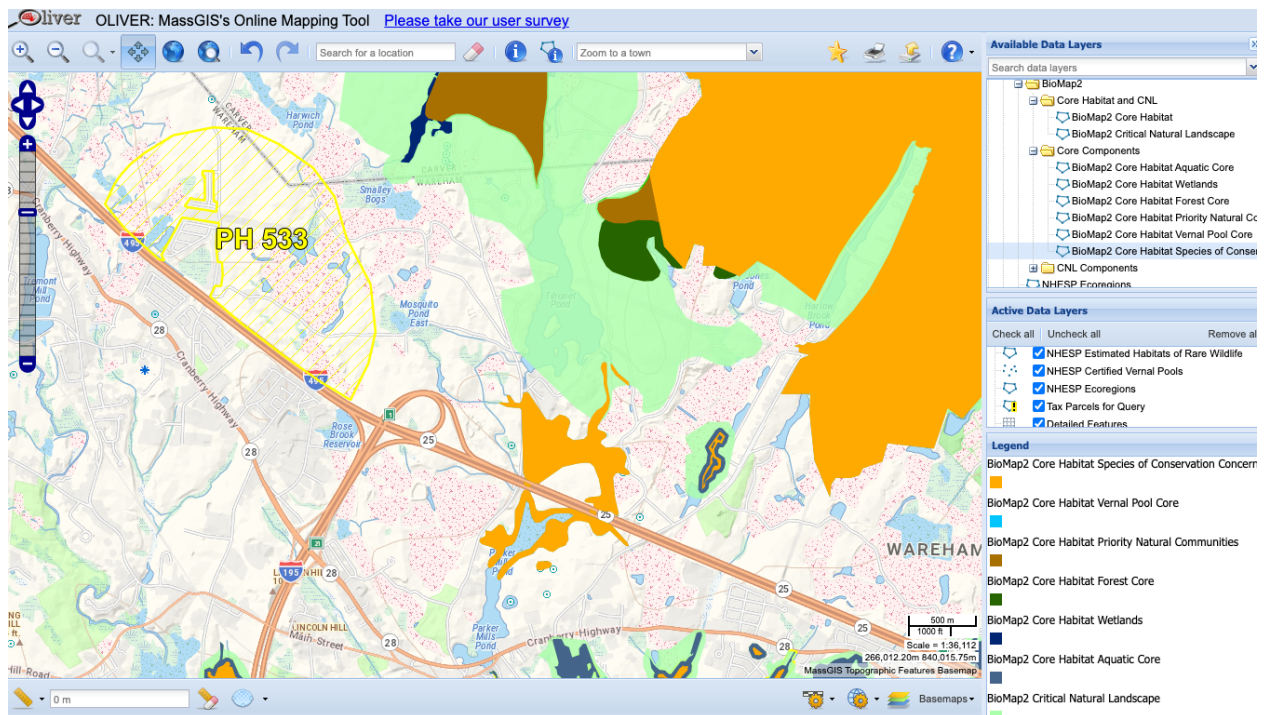
significant fish run is just 330 feet from the edge of the 140 Tihonet Road solar project. This fishery was not identified in the NOI and the NOI does not address potential impacts from the project, including discharge of sediment and pollutants. River herring including alewife are a species that have received close examination by fisheries agencies because it has been considered for listing on the federal Endangered Species Act list and should be considered rare under the Bylaw. <https://www.fisheries.noaa.gov/species/river-herring#management>

Below: Borrego maps showing the 140 and 150 Tihonet Road solar projects which are on the same parcel with a utility easement through it, totaling 110 acres. The developers' documents do not show the two projects side by side on one map giving a misleading representation.



Rare species downstream may also be impacted. See OLIVER map, below. Tihonet Pond flows to the Agawam River listed by Massachusetts as Priority Habitat Area 486 and it is connected to Wankinko River. Agawam River experiences well-documented water quality issues. The Applicant's projects do not address how the water quality and Priority Habitat in Area 486 will be impacted by the project.

The NOI states, "The site does not contain, nor is it tributary to any Critical Areas." This is contrary to the OLIVER maps.



Fourth, the NOI's Draft Endangered Species Certification (Application Section 3.0) in the GZA did a habitat assessment for the Northern Long-Eared Bat and Plymouth Red-Belly Turtle. Borrego Solar did not provide this habitat assessment to the Commission. It should be required to do so before the Commission makes its decision.

Narrowly defining the site. The NOI does not give an adequate overview of the landscape setting of the project. The NOI narrowly defines the site and ignores consideration of many potential impacts. As a result, there is inadequate evidence to support Borrego's claim that "No off-site impacts to the ecology of the area are anticipated from the Project." See, Road Beals + Thomas Site Plan Application, page 2-8.

The NOIs for all three Borrego Solar projects provide only generic descriptions of environment, ignoring the global, regional and local ecological documented by BioMap2 and other sources. For example, the Applicant describes the sites with such statements as, "currently undeveloped and primarily wooded." See, NOI for 150 Tihonet Road, page 2-2. The Applicant ignores the interconnectedness of water systems, ecosystems and wildlife habitat. This is contrary to the requirements of the Bylaw and its spirit and intent.

II. Improper segmentation of projects to evade environmental review

The three Borrego Solar/Makepeace projects at 140 and 150 Tihonet (on the same parcel) and 27 Charge Pond Road interconnected in every way. Their environmental effects on

resources covered by the Bylaw cannot reasonably be evaluated on a piecemeal basis, project by project, as the developers are attempting to accomplish.

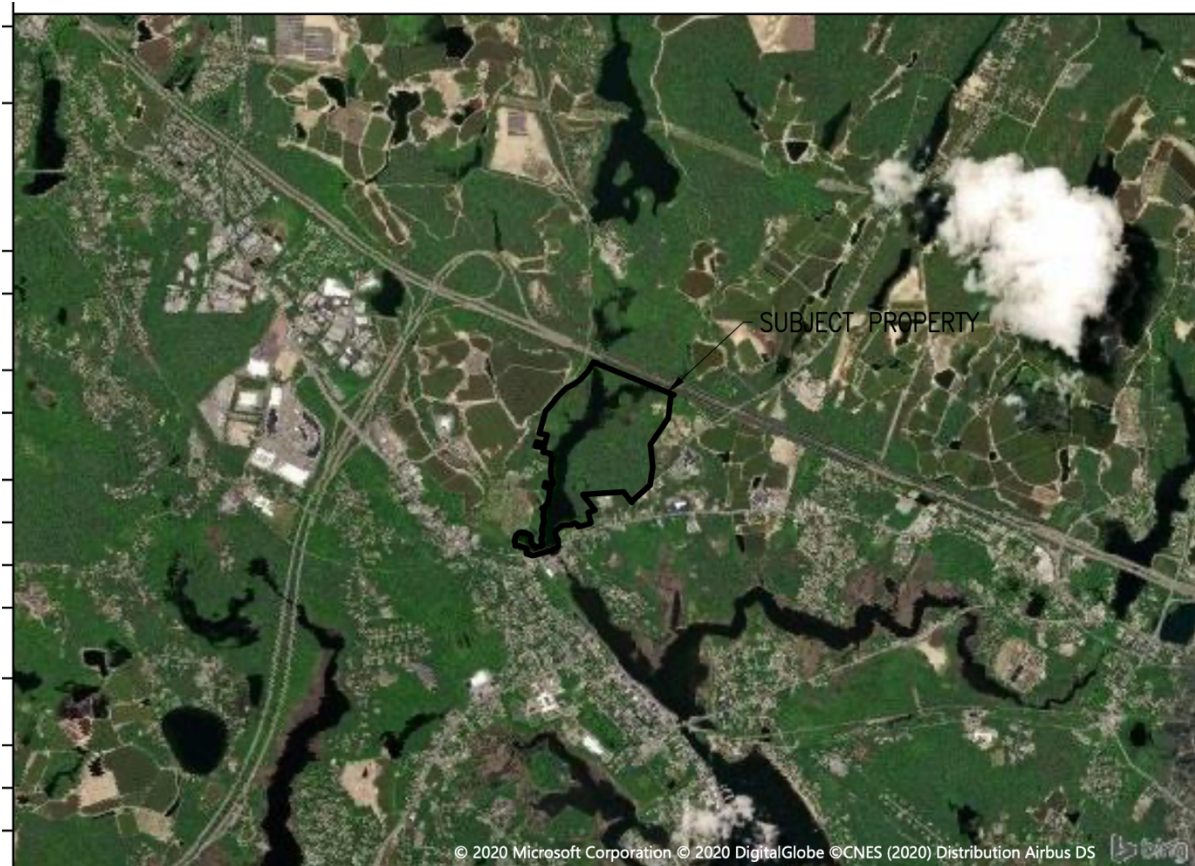
The 140 and 150 Tihonet Road projects are on the same parcel of property and the 27 Charge Pond Road project is downstream. These three projects will completely deforest 174 acres of land that borders on wetlands and waterways in BioMap2 habitat. The land will be completely denuded: “scraped” as it is described by the developer. The land will lose the ability to filter groundwater and provide ecosystems services as clean water, carbon sequestering forests and soils and wildlife habitat. The developers have done no environmental impact, no biological survey and no comprehensive hydrological assessment to determine the impacts of denuding 174 acres of land and irreversibly altering surface and groundwater water flows.

The 27 Charge Pond Road solar site is in BioMap2 Core Habitat Species of Conservation Concern and is BioMap2 Core Habitat. Federally listed Northern Cooters and Long Eared Bats are located in the area of all three sites, as referenced in the three NOIs. The Applicants plan for protecting rare and endangered species is the following:

The Project will limit earthwork and vegetation clearing to the extent feasible for operation of a ground-mounted solar energy collection system. The Site will be vegetated and stabilized after construction. Areas outside of the solar array within the shade clearing area will be left to revegetate, and stumps will remain.

Therefore the fisheries, shellfisheries, wildlife habitat, and rare species habitat including rare plant species interests of the Act and By-Law will be protected.

This is inadequate.



GENERAL ABBREVIATIONS

(E)	EXISTING	NS	NORTH-SOUTH
AHJ	AUTHORITY HAVING JURISDICTION	NTS	NOT TO SCALE
AI	ALTERNATIVE	OAE	OR APPROVED EQUAL

Above: Borrego map showing location of the third project at 27 Charge Pond Road. This is on Parker Mill Pond downstream and hydrologically connect to Tihonet Pond where the 150 and 140 Tihonet Road projects are located.

AD Makepeace has further segmented these three projects from its 160 Tihonet Road, Wareham industrial solar energy facility consisting of 49.5 acres and under construction now. This project is on land designated as BioMap 2 “Priority Habitat” on the Frog Foot Reservoir (Priority Habitat Area #559). Frog Foot Brook is surrounded by Critical Natural Landscape, the highest level of Priority Natural Community identified by the state. This project was done without an environmental impact report.

III. NOI does not address cumulative environmental impacts

The Wareham *Wetland Protective By-Law* states,

The purpose of this bylaw is to protect the wetlands, water resources, **and adjoining land** areas in Wareham by controlling activities deemed by the Conservation Commission likely to have a significant or **cumulative effect** upon resource area values, including but not limited to the following: public or private water supply, groundwater, flood control, **erosion and sedimentation control**, storm damage prevention including coastal storm flowage, **water quality, water pollution control, fisheries**, shellfish, land containing shellfish, **wildlife habitat, rare species habitat including rare plant species, aesthetics**, agriculture, aquaculture, and recreation values, deemed important to the community (collectively, the “resource area values protected by this bylaw”). This bylaw is intended to utilize the Home Rule authority of this municipality to protect additional resource areas, for additional standards and procedures stricter than those of the Wetlands Protection Act (G.L.Ch. 131, §40) and Regulations thereunder (310 CMR 10.00) (emphasis supplied)

Section 1.1 of the Bylaw further states the

Commission may take into **account the cumulative adverse effects of loss, degradation, isolation, and replication of protected resource areas throughout the community and the watershed, resulting from past activities, permitted and exempt, and foreseeable future activities.** (emphasis supplied)

Here, in considering the impacts to “resource areas” under the Bylaw from the 140 Tihonet industrial energy facility it is imperative that the Commission take into account the **cumulative impacts** all of the activities undertaken by AD Makepeace in partnership with Borrego Solar/Clearway over at least the past several years to determine the cumulative impact of these projects and the additional “adverse effects of loss, degradation, isolation...of protected resource areas throughout the community and the watershed, resulting from past activities.” As well, it should consider future activities of AD Makepeace within the ADM Mixed Use Development area.

Borrego’s failure to address the cumulative impacts and of the four industrial energy installations in close proximity and abutting Wareham’s water resources protected under the Bylaw constrains the Conservation Commission’s ability to reasonable determination of the effects of the 140 Tihonet Road project.

Basic hydrology and ecology tells us that AD Makepeace’s four solar projects, due to their scale and size will have ripple effects throughout the interconnected ecosystem. The four projects are located on interconnected waterbodies and impact connected wildlife corridors and habitats. Further impacting the waterbodies and wildlife habitats, in 2012 Makepeace was permitted to construct a 140-acre bog off Tihonet Road, located east of the Wankinko River in Plymouth and flowing to Wareham, and to build a “soil blending” facility for sand and gravel aggregate operations. AD Makepeace subsidiary Read Custom Soil operates upstream from the four industrial solar energy installations. Also upstream in Carver, 87 acres of solar installations are underway by AD Makepeace and Borrego, denuding and scraping undisturbed land that

provides ecosystem services for the water systems downstream. These are all cumulative impacts that should be considered by the Commission, which it is authorized to do by the Bylaw, Section 1.1.

One example of the cumulative impact to wildlife resources protected by the Bylaw is the fact that each of the four Wareham industrial energy projects will be surrounded by chain link fence.

- *What is the impact prohibiting wildlife from using 70 acres of habitat in the case of the 140 Tihonet Road project?*
- *When considered with the 150 and 160 Tihonet Road projects and the 27 Charge Pond Road projects, a total of about 220 acres of what was previously wildlife habitat for “high quality pine barrens habitat supporting multiple state-listed species” as described by the Secretary in the 2012 MEPA Certificate, is now off limits.*
- *What are the impacts?*

While some of the NOIs refer to “wildlife gaps” in the chain link fence, the description and plans are do not adequately describe the mitigation for the loss of habitat and how the migration and habitat use by wildlife will be effected.

IV. Impacts to water bodies

The NOI for 140 Tihonet Road is does not accurately address pollution discharges to water bodies from the activities at the site. Borrego’s pollution discharges are regulated by state and federal law (NDPES Construction General Permit and SWPPP). See, NOI Section 4.0 Stormwater Management Report. There is not enough information in the draft permit applications submitted to the Commission.

First, the record does not contain a final Stormwater Report and SWPP. This makes it impossible to know the actual pollutant discharges and the specifics means proposed to an attempt to control the pollution discharges to water bodies.

- *Why is there no final pollution discharge report and stormwater plan? How will the Commission evaluate the impacts to wetlands and resource areas without this information?²*

² The NOIs for 150 Tihonet and 27 Charge Pond Road NOI Borrego/Makepeace project also contain only “draft” stormwater management plans. Have the final plans been provided to the Commission? If so, was the public provided the opportunity for notice and comment on them as required by law? Are these being submitted after the fact, i.e. after the Order of Conditions is issued.

Second, the NOI misrepresents water quality information effects on Tihonet Pond. It describes discharge from the 140 Tihonet project as follows:

The site is currently undeveloped [i.e. forested and in its natural state] and is primarily wooded with an existing gravel cart path to the south and east. Runoff from the site drains radially outward from the existing hilltop ridge. Flows to the west go towards Tihonet Road and Tihonet Pond. Flows to the southwest are directed to an existing agricultural channel that flows southeast from Tihonet Pond into existing bogs south of the proposed array. Runoff also flows to existing bogs both on-site as well as off-site to the southeast, and easterly to an existing wetland system. See, NOI Section 2.1, Site Conditions

This description fails to acknowledge that in fact, the site will not be “primarily wooded” once the solar installation is complete. Instead, it will be stripped of all vegetation and topsoil, “scraped” as the Application describes it. This irreversibly and negatively impacts the ability of the land to absorb pollutants and filter the underlying groundwater where Wareham residents get their water. Creating stormwater detention basins irreversibly alters the flows impacting the wildlife and plants that depend on them.

The NOI does not explain how altering surface water flows will impact interconnected ecosystems on or off the site, individually or cumulatively. **The applications say the sites are connected.** For example, the 140 Tihonet Road NOI describes how the site is “associated with Tihonet Pond.” See, Project Narrative, 2-3. The 150 Tihonet Road NOI states the Bordering Vegetated Wetland on the site is “hydrologically associated with the adjacent pond/reservoir to the east, including a surface water connection to this waterbody.” Page 2-3.

The 150 Tihonet NOI states,

Runoff from the western most portion of the site flows to a wetland and potential vernal pool system on the west side of the property. Runoff from the southwestern portion of the site drains to a wetland system on the southwest side of the property. Runoff from the northwestern portion of the site drains to a wetland and potential vernal pool system on the northwest side of the property. **Runoff from the southwest, west and northwest wetland system ultimately discharges to Tihonet Pond.** NOI Application Section 2.1, 150 Tihonet Road. (emphasis supplied)

See also NOI for 150 Tihonet Road, Section 2.5.2: “Receiving waters: Runoff from the site drains to Tihonet Pond to the west and to existing wetlands and potential vernal pools to the west which eventually flow to Tihonet Pond. Runoff flows east to an off-site wetland system. Runoff from the northern portion of the site drains to stream on the north side of the property.”

The Site Plan Application (May 28, 2020) for 27 Charge Pond states, “The primary design point, DP-1, used for the stormwater analysis represents **flows to Parker Mills Pond.**”

The 140 and 150 Tihonet Road projects are **on Tihonet Pond**. This Pond flows into Parker Mills Pond and then to the Agawam River. Therefore the two Tihonet Road projects will be adding pollution to Tihonet Pond and the 27 Charge Pond Road will be adding pollution further downstream to Parker Mills Pond. Thus the three sites have potential pollution and surface water flow impacts that have not been addressed in one hydrological or water quality study.

The NOIs describe types of potential sources of pollution in the draft Stormwater Reports. See, e.g. Section 2.8. This includes sediment from “soil stripping and stockpiling” and nitrogen, phosphorous, naphta, mineral oil, benzene, ethyl benzene, toluene, xylene, MTBE, petroleum, oil and grease, naphthalene, xylenes, kerosene, antifreeze and toilets. These pollutants will be discharged on site and eventually enter ground and/or surface water. They will not simply disappear. As the Secretary stated, this is a sole source aquifer and globally significant ecosystem. A much better description of the cumulative impacts of these projects is required.

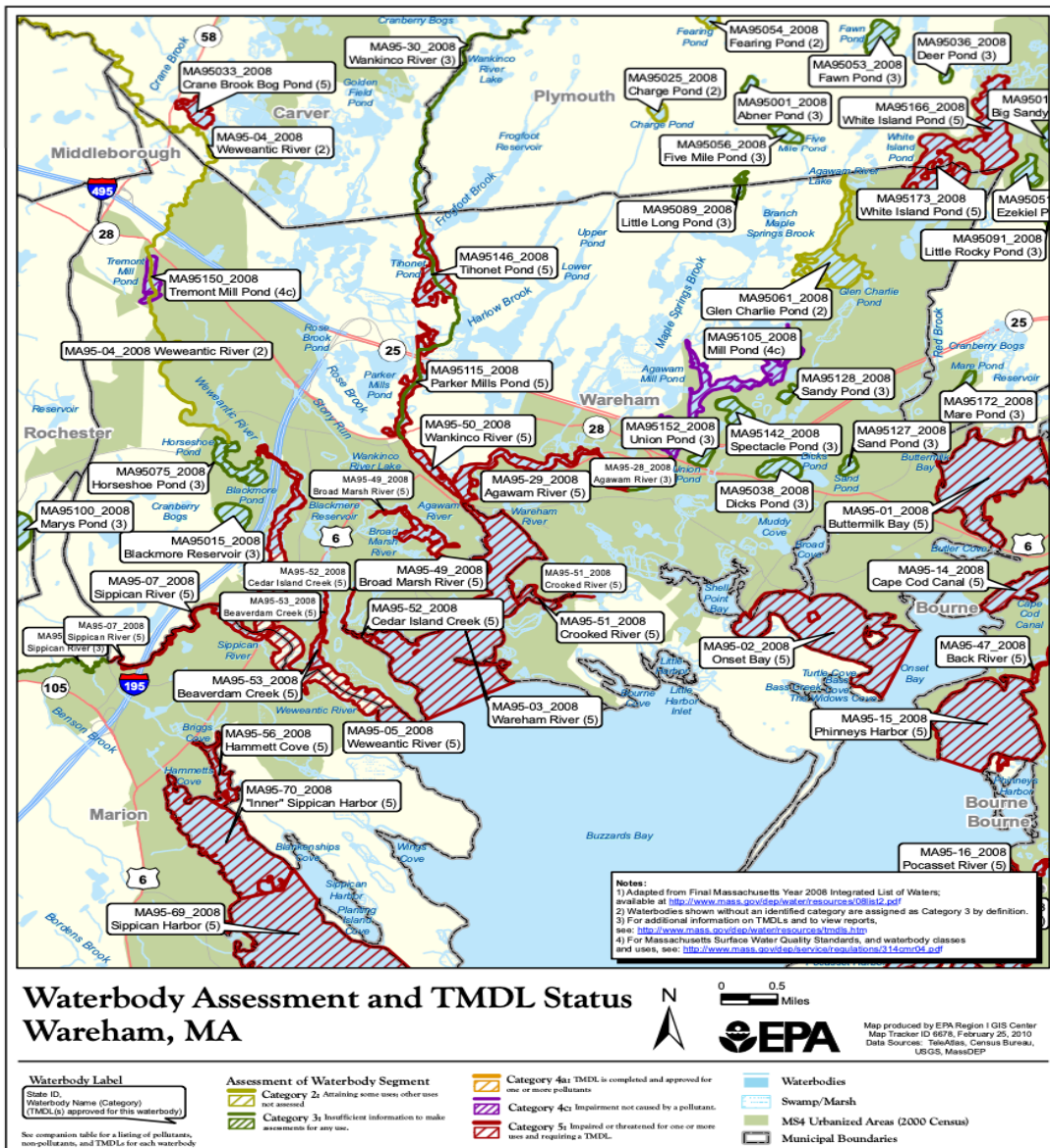
Finally, the NOI misrepresents the water quality of the receiving waters – that is, the water to which the Applicant’s pollution will be discharged. The NOIs for 140 and 150 Tihonet both state,

“The site does not discharge to a surface water with a TMDL or draft TMDL.”

See, Stormwater Reports, Section 2.0. This gives the distinct impression that there is no “TMDL” for the receiving waters. A TMDL is the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant.

<https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls#:~:text=approved%20by%20EPA%3F-,What%20is%20a%20TMDL%3F,standards%20for%20that%20particular%20pollutant.>

In fact, Tihonet Pond, Parker Mills Pond, the Wankinko River downstream of Parker Mills Pond and the Wareham River are all designated by US EPA as waters that are designated as impaired-that is polluted. They are identified as “Category 5: Impaired or threatened for one or more uses and requiring a TMDL.” See, Map below, *Waterbody Assessment and TMDL Status, Wareham MA*. EPA and Massachusetts have yet to set the “load reductions” needed to restore these water bodies. **This means that the three solar projects will be adding more pollution to water bodies that are already “impaired” and that do not support one or more uses, such as fisheries or recreation.**



The specifics on the TMDL listing for the water bodies the solar projects will discharge pollution to are on EPA's TMDL website. For example:

Tihonet Pond (a freshwater lake of 86 acres)

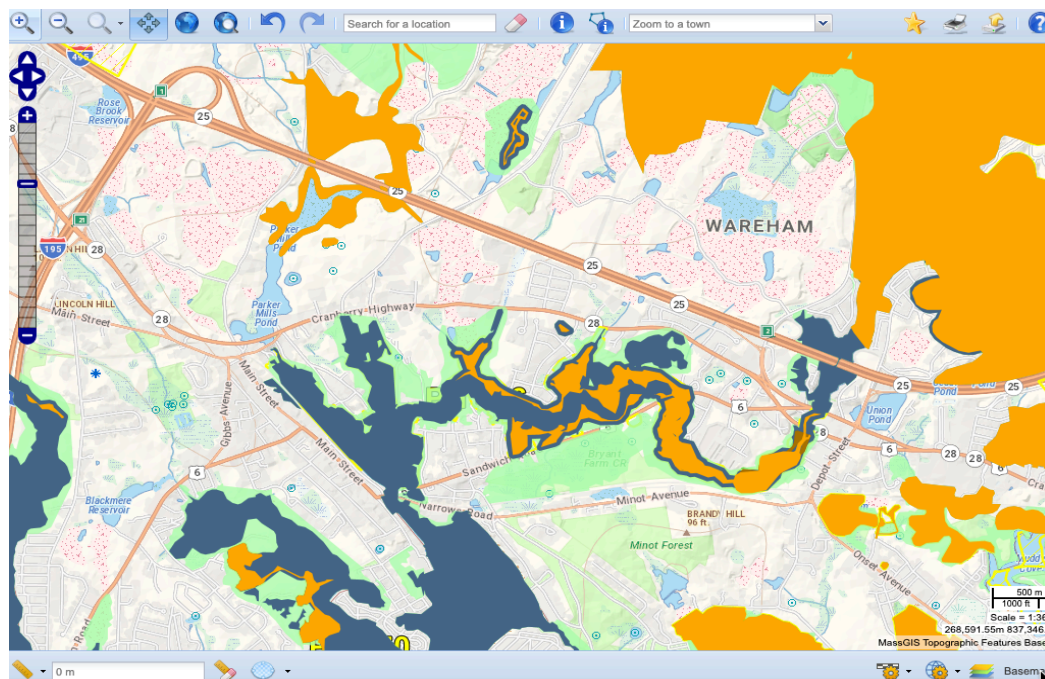
https://ofmpub.epa.gov/waters10/attains_index.search_wb?p_area=MA&p_cycle=2014

Parker Mills Pond and Wareham River:

https://ofmpub.epa.gov/waters10/attains_index.search_wb?p_area=MA&p_cycle=2014

Further, the NOI Stormwater Standard 6 for the 140 Tihonet Road project states “There are no stormwater **discharges to critical areas associated with this project.**” To the contrary, 140 Tihonet Road is adjacent to BioMap2 Critical Natural Landscape. It is upstream from BioMap2 Core Habitat Species of Conservation Concern and a section of BioMap2 Core Habitat Species of Conservation Concern extends on to the site. This can be viewed on the MassGIS Oliver website.

The same is true of the 27 Charge Pond site. See, NOI Application, Site Plan, Page T-1, map below and compare to OLIVER GIS map. The 27 Charge Pond site is identified as BioMap2 Core Habitat Species of Conservation Concern (orange shading). The 27 Charge Pond site is on Parker Mills Pond which flows to an area identified as BioMap Core 2 Habitat Wetlands, and BioMap2 Critical Natural Landscape. The Applicant had a duty to disclose all of this information to the Conservation Commission. The record does not show that this occurred.



The 2012 MEPA Certificate, #13940, page 11 also addresses the TMDL water quality that may be impacted by activities in the ADM Tihonet Mixed Use development:

The Wareham River is listed on the Massachusetts Integrated List of Impaired Waters and development of a Total Maximum Daily Load (TMDL) for nitrogen for the Wareham River

Estuary is underway. Future phases of the project that require a Groundwater Discharge Permit from MassDEP will likely be subject to nitrogen offset requirements. Associated review documents will be required to include a nitrogen loading analysis and identification of offsets. Comment letters from the Buzzards Bay Coalition and Mass Audubon reiterate a request (included in comments on previous phases) **that the Proponent provide a nitrogen loading analysis for the Wareham River and identify offsets for proposed projects.**

Because Phase C-2 does not require a Groundwater Discharge Permit and the creation of new bogs, with use of tailwater recovery ponds, to replace flow-through bogs and the construction of the bypass canal should reduce nitrogen loadings, the Proponent is not required to develop a nitrogen loading analysis, or meet nitrogen offset requirements, at this time.

The Applicant should be required to prove that these activities were completed with regard to the 2012 projects and identify the impact of adding pollutant discharges from four solar projects to the Wareham River.³

CONCLUSION: Deny the Order of Conditions

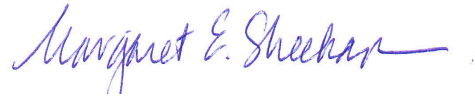
Under Section X of the Wareham Bylaw, Borrego has the “burden of proving by a preponderance of the credible evidence that the work proposed in the permit application **will not have unacceptable significant or cumulative effect upon the resource area values protected by this bylaw.**” Borrego’s “failure to provide adequate evidence to the Commission supporting this burden shall be sufficient cause for the Commission **to deny a permit** or grant a permit with conditions.” The Commission is empowered to deny a permit for failure to avoid or prevent **unacceptable significant or cumulative effects upon the resource area values protected by this bylaw; and where no conditions are adequate to protect those values.**

The Applicant has not met its burden and there has been no showing that conditions will prevent unacceptable significant or cumulative effects upon the resource area values protected by the Bylaw. Therefore, the Commission should deny the Order of Conditions.

³ MEPA Certificate 2012 also addresses the issue of cumulative impacts to water quality from the AD Makepeace Tihonet Mixed Use Plan. See, Page 11-12. “Comments from MassDEP indicate that the Proponent has agreed to work with MassDEP, the University of Massachusetts (UMass) Cranberry Experiment Station, and other appropriate stakeholders to **design a study to quantify the pollutant reduction associated with Phase C-2.** While it is recognized that construction of the new bog, in combination with abandonment of old bogs, should reduce pollutant loads, comments from **MassDEP indicate that this type of bog construction has not been widely used in Massachusetts and the reduction in pollutant load has not been quantified. Further, MassDEP comments note that an analysis of project benefits will be required if the Proponent intends to employ these improvements to offset other pollutant loads that may be required in future phases of the Tihonet Project. Attainment of offsets will require permanent abandonment of flow-through and/or unimproved bogs.**

Please contact me if you need additional information.

Very truly yours,

A handwritten signature in blue ink that reads "Margaret E. Sheehan". The signature is fluid and cursive, with a long horizontal stroke at the end.

Meg Sheehan
Volunteer
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