

October 6, 2023

Via Email to: kbuckland@wareham.ma.us

Members of the Wareham Planning Board
c/o Kenneth Buckland
Director of Planning and Community Development
Memorial Town Hall
54 Marion Road
Wareham, MA 02571

Re: *Site Plan Review Special Permit Application, 0 Rt. 25, Parcel ID 115-1000*

Dear Members of the Wareham Planning Board:

I am writing on behalf of the applicant, Wareham PV I, LLC, an affiliate of Longroad Development Company, LLC (“Longroad”), to provide additional information (1) in response to comments made by Board members during the September 11, 2023 public hearing session and (2) with respect to compliance with applicable provisions of the amended Wareham Zoning By-Laws (the “By-Laws”) as approved in part by the Attorney General on September 19, 2023.

Response to Peer Review Comments

We were provided a peer review report, dated September 6, 2023, prepared for the Board by Allen & Major Associates, Inc. Attached is a letter from VHB, dated October 5, 2023, responding to each of the peer review comments. As described in those responses, we are also submitting today (1) an updated Stormwater Report, revised September 2023, (2) updated site plans, revised September 22, 2023, and (3) an application to the Board for an MS4 Stormwater Management Permit.

Pollinator Seed Mix

During the September 11, 2023, we asked the Board to provide us with its preferred pollinator-friendly seed mix specifications so that we could incorporate them into the site plans. We subsequently received the seed mix specifications and have incorporated them into the revised site plans.

Member of the Wareham Planning Board

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Tree Survey

During the September 11, 2023 public hearing session, the Board asked for a survey of trees at the project site (the "Site") 18" DBH or greater in line with Section 1532.1.2 of the By-Laws. Enclosed is a memorandum from VHB, dated October 6, 2023 reporting the results of a tree survey.

Visuals Concerning Existing Vegetation

During the September 11, 2023 public hearing session, the Board asked for some additional information to provide a better sense of the existing vegetation that would form part of the vegetated buffer. VHB has collected additional information to share with the Board during the October 16, 2023 public hearing session.

Additional Fire Department Input

During the September 11, 2023 public hearing session, the Board asked for confirmation that the Wareham Fire Department is satisfied with the proposed gate locations. Captain Chris Smith confirmed this via email to Mr. Buckland dated September 14, 2023 (already uploaded to the Board's project webpage).

Decommissioning Financial Assurance Amount

During the September 11, 2023 public hearing session, a citizen claimed, with respect to the 2021 NREL report on "Best Practices at the End of the Photovoltaic System Performance Period," that the sample per MW cost estimates for decommissioning items in the report were per MW DC (direct current) and not per MW AC (alternative current). That is not apparent from the NREL document, but it has no bearing on this Project, as the Project will be both 3.5 MW AC and 3.5 MW DC.

Amended Zoning By-Laws

As the Board is aware, on September 19, 2023, the Attorney General issued a decision conditionally approving in part amendments to the By-Laws adopted by Town Meeting on April 25, 2022.

Longroad is aware that the amended By-Laws apply to the proposed project (the "Project") except as proscribed by M.G.L. c. 40A. There are two relevant provisions of Chapter 40A:

- As the Site is protected by an Approval Not Required ("ANR") plan, under M.G.L. c. 40A, § 6, Large-Scale Ground-Mounted Solar Photovoltaic Installation use cannot be prohibited on the Site, regardless of whether the prohibition is direct, such as a change

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from an allowed use to a prohibited use, or indirect, such as a change in dimensional regulation that has the practical effect of prohibiting the use.

- Under M.G.L. c. 40, § 3, a solar energy system cannot be subject to a zoning regulation that is not necessary to protect public health, safety or welfare.

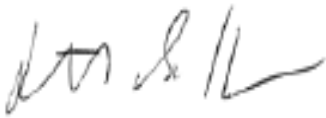
Based on our identification of new or potentially new requirements set forth in the amended By-Laws, we are taking the initiative to provide the following, each of which is enclosed with this letter:

- Memorandum from VHB, dated October 5, 2023, documenting compliance with amended By-Laws Section 591.1 (compliance with Land Use and Siting Criteria in 225 CMR 20.05(5)(e)).
- Letter from VHB, dated October 6, 2023, documenting compliance with amended By-Laws Sections 593.12 (environmental impact assessment) and 593.13 (wildlife/habitat impact evaluation).

The amended By-Laws also require in Section 595.1.3 that, with respect to a Large-Scale Ground-Mounted Solar Photovoltaic Installation, “the distance shall be 75 feet from the residential property line which may be increased to reduce or eliminate visibility and noise at the discretion of the SPGA.” This requirement does not apply to the Project for the reasons we explained in our separate letter to the Board dated October 5, 2023.

Thank you for your consideration.

Sincerely,



Jonathan S. Klavens

cc: Richard P. Bowen, Esq., Law Office of Richard P. Bowen
David Fletcher
Robert W. Galvin, Esq., Galvin & Galvin, PC
Matt Kearns, Longroad Energy
Cliff Sher, Longroad Energy
Lucy Fowler, Longroad Energy
Lindsey Kester, Longroad Energy
Vanessa Kwong, Esq., Longroad Energy
Sarah Ebaugh, VHB

Member of the Wareham Planning Board

October 6, 2023

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Enclosures:

Letter from VHB, dated October 5, 2023, responding to peer review comments

Memorandum from VHB, dated October 6, 2023, regarding tree survey

Memorandum from VHB, dated October 5, 2023, documenting compliance with amended By-Laws Section 591.1

Letter from VHB, dated October 6, 2023, documenting compliance with amended By-Laws Sections 593.12 and 593.13



October 5, 2023

Ref: 15225.01

Michael King, Chair
Town of Wareham Planning Board
54 Marion Road
Wareham, MA 02571

Re: Large Scale Ground Mounted Photovoltaic Solar Array
0 Route 25, Wareham, MA – Response to Peer Review Comments

Dear Chair King and Members of the Planning Board:

On behalf of the Applicant, Wareham PV I, LLC, VHB has prepared this letter in response to the peer review comments completed by Allen & Major Associates, Inc. dated September 6, 2023, regarding the project mentioned above.

In this response, for clarity, the comments provided by Allen & Major have been provided in regular text, and VHB's responses are *italicized and bold*.

Wareham By-Laws and Zoning By-Laws

1. The proposed project is required to obtain a Stormwater Management Permit (SMP) in accordance with Wareham By-Laws Division V, Article XI, Article I Stormwater Management. The applicant should provide documentation on the status of the SMP.

Under Section 2.D.13 of Article I (Stormwater Management), a stormwater management permit from the Board of Health is not required for "any construction activity requiring site plan review and/or a special permit, provided that the plans include stormwater management provisions, and that the activity is in compliance with any additional performance standards contained in the regulations promulgated to implement this bylaw." As the Project requires a Site Plan Review Special Permit from the Planning Board, and the proposed plans include stormwater management provisions that comply with the Massachusetts Stormwater Handbook and relevant provisions of the Wareham Zoning By-Laws, a stormwater management permit is not required from the Board of Health. (We are not aware that any regulations have been promulgated under Section 3.B of Article I.)

Director of Planning and Community Development Ken Buckland confirmed via email dated September 19, 2023, that a Board of Health stormwater management permit is not required for the proposed project.

2. Zoning By-Law Section 1031 requires "new projects or expansions exceeding 5,000 square feet of non-residential development or more than three multi-family dwelling units, the landscape plan shall be prepared by a registered landscape architect whose seal shall appear on the plan." Landscaping plans have been provided but have not been sealed by a landscape architect. Landscaping plans are relying on the use of the existing natural vegetation and limited new plantings are being proposed in select areas of the proposed



project. Based on review of the plans the applicant is not providing a 50-foot vegetated landscaped buffer as outlined in Section 594.1 subsections 3 through 5. Partial landscaping is proposed on the southerly side of the access road (Sheet C2.02) to infill where no vegetation currently exists. On the northerly side of the same access road, no vegetative improvements are proposed where no vegetation exists. The landscaping for purposes of classification fall under the Industrial designation (594.1 (2) and incorporate the standards of Article 10 landscaping. The landscaping plan fails to provide any pertinent detail on the "location, general type, and quality of existing vegetation, including trees" (1032.3). The Planning Board retains the opportunity to request additional plantings, or alternative measures, within the vegetative buffer to meet the performance standards of the By-laws. Without commentary to the existing vegetation, there is no ability for the Board to render an opinion on supplementing the current plantings. A&M recommends the applicant provide additional detailing on the existing state of vegetation that is intended to serve as buffer in the form of landscape narrative, pictures, qualitative measurements and other data to allow for further review. It is noted that the fencing for this project is "deer fencing" intended to delimit the project. The use as security fencing as outlined in 594.1 (6) should be clarified by the applicant. The fencing does not provide a visual barrier between adjacent uses and the Planning Board retains the opportunity to accept the fence as provided.

The Site Plans have been revised to provide a stamp and seal by a landscape architect. The design intent of the vegetated areas has been discussed with the Planning Board by the Applicant and VHB. Where applicable, the existing vegetation is proposed to remain within the 50' setback between the fence line and property line. As noted, additional vegetation is provided on the west property line adjacent to the Town property where existing vegetation is less dense. On the north side of the site, existing slopes provide the intent of screening the proposed solar array based on the differences in elevation from the adjacent site. All vegetation on the north side, including existing shrubs on the steep slopes and existing trees on the eastern property line, is proposed to remain. Within the property line the area underneath and surrounding the solar panels, as well as areas that have been previously disturbed, will be planted with a meadow mix.

3. The proposed project is subject to Article 12: Performance Standards, subsection 1260 Analysis of Development Impact: Stormwater Runoff in Compliance with MS4. The project is subject to an MS4 Stormwater Management Permit (MS4 SMP) issued by the ZBA. The applicant should provide documentation on the status of the MS4 SMP for the record. The design engineer should provide additional narrative and calculations to show/demonstrate compliance with the removal of 90% Total Suspended Solids (TSS) and removal of 60% Total Phosphorus from the total post-construction impervious surfaces.

Information regarding compliance with MS4 regulations has been included in the revised Stormwater Report. As indicated in the previous submission, the impervious area on site is considered 0 based on the de minimis impact that the concrete pads have compared to the overall site.

Mr. Buckland confirmed via email dated September 19, 2023, that the project would require an MS4 Stormwater Management Permit but issued by the Planning Board, as it is the Planning Board that is the Special Permit Granting Authority in this instance. As advised by Mr. Buckland, VHB is submitting on behalf of the applicant a letter application to the Planning Board for an MS4 Stormwater Management Permit.

Site Plan & Drainage Calculations

4. The design engineer states that runoff from the adjacent municipal site will continue to flow into the site and take the same drainage paths. Please confirm that no runoff from the adjacent lots are directed into the



proposed drainage basins. If off-site drainage is directed into the basins, then the basins should be updated to account for the additional runoff.

Existing and proposed drainage subcatchments have been revised to include the runoff from the adjacent lot that will be directed to the proposed infiltration basins.

5. The design engineer should review the grading on the westerly side of the gravel driveway, just south of infiltration basin #2, refer to sheet C2.01. A&M is unable to determine if the existing contours within the existing treeline is a hill or a depression. If there is a depression, runoff will be trapped on the westerly side.

Additional contour labels have been provided to show that no runoff will be trapped within the development.

6. The design engineer should review the pre-development and post development watersheds areas because the total overall areas are not equal. The post-development area is approximately 0.703 acres less than pre-development. The design engineer should provide a statement on the discrepancy in areas or revise the plans and calculations accordingly.

Existing and proposed HydroCAD models have been revised to ensure that pre- and post-development areas match.

7. The design engineer should review the delineation of watershed "PR-2". Based on the grading shown on Sheet C2.01, it appears that a small depression is being created in the northeasterly corner of the solar array around the "23" contour and not directed into Infiltration Basin #1.

Grading has been revised to clarify that this area will be adjusted such that it grades towards infiltration basin #1 and does not create an isolated low point.

8. The design engineer should review the HydroCAD value for the culvert diameter associated with Pond 1P: Infiltration Basin. The HydroCAD calls for a 6-inch diameter pipe, but the plans call for a 10-inch diameter pipe. The calculations and/or plans should be revised accordingly.

Plans have been revised to match HydroCAD and indicate a 6-inch diameter pipe within Pond 1P.

9. The design engineer should review the HydroCAD value for the weir associated with Pond 1P: Infiltration Basin. The HydroCAD calls for a 10-ft long weir, but the plans illustrate a longer weir which scales to be 20-ft long. The calculations and/or plans should be revised accordingly.

Plans have been revised to match the HydroCAD value for the weir associated with Pond 1P.

10. The design engineer should review the delineation of watershed "PR-3". Based on the grading shown on Sheet C2.01, it appears that not all the runoff will be directed into Infiltration Basin #2 as intended.

The proposed drainage figure has been revised to clarify the limits of each subcatchment based on the proposed grading.

11. Both infiltration basins do not provide the 1-ft of freeboard required by stormwater management standards. Please update the calculations and/or plans accordingly.

Pond 1P and 2P have been revised to provide 1-ft of freeboard from the top of berm to the outlet control structure rim elevation.



12. The applicant provides two test pits located around infiltration basin 1 with no soil test pit provided in support of basin #2. In order to comply with the Massachusetts Stormwater Management Standards, one test pit per 5,000 square feet of management area is required. A test pit should be performed in support of basin 2. The soils in this area are generally consistent and should the Planning Board be amenable, a condition of permit can require the soils to be verified during construction.

Acknowledged. This item has been discussed previously with the Planning Board and will be verified during construction.

13. The project exceeds the maximum access road length of 150 feet without provisions for a fire apparatus turn around (NFPA 1 18.2.3.5.4) for dead ends. The Wareham Fire Department is the Authority Having Jurisdiction (AHJ) for fire access roadways. The Wareham Fire Department provided an e-mail dated August 9, 2023 indicating they have reviewed the plans and have no additional comment. The applicant did not provide a swept path analysis plan nor turning accommodations. A&M notes this for record and defers to the approval of the Wareham Fire Department.

Turn arounds are provided at either end of the 20-foot-wide access road throughout the site. The alignment, turning movements, gate configurations, and overall access to the site has been reviewed by the Wareham Fire Department. Emails provided to the Planning Board on August 9, 2023 and September 14, 2023 from the Wareham Fire Department indicate that the Wareham Fire Department has no comments on the plans.

14. The project identifies signage that "identifies the owner and operator with an emergency telephone number where the owner and operator can be contacted on a twenty-four hour basis". Will the applicant be providing signs alerting to "danger" or "no trespassing" in keeping with Section 594.3 (3)?

Signage will be provided on the proposed fencing and gates as required by the Wareham Fire Department and Planning Board.

Statement on decommissioning estimate

The applicant has provided a decommissioning plan in accordance with Section 595 of the Zoning By-Laws. The plan of action includes a cost estimate that allocates approximately \$458,000.00 per Megawatt of decommissioning cost in concurrence with previous Planning Board recommendations with an additional 25% contingency and inflation value for a total surety estimate of \$2,003,750. This value aligns with the estimated costs of decommissioning as promulgated by the National Renewal Energy Laboratory which provides an estimated cost of \$300 - \$440 per kw (\$300,000 - \$440,000 per MW). The surety as provided is a reasonable estimate to the cost of decommissioning.

Acknowledged.

Sincerely,

VHB

A handwritten signature in black ink, appearing to read "Sarah Ebaugh", written in a cursive style.

Sarah Ebaugh, PE
Project Manager



Memorandum

To: Wareham PV I, LLC
330 Congress Street
6th Floor
Boston, MA 02210

Date: October 6, 2023

Project #: 15225.01

From: VHB

Re: Proposed Large-Scale Ground-Mounted Solar Photovoltaic
Installation - Tree Survey

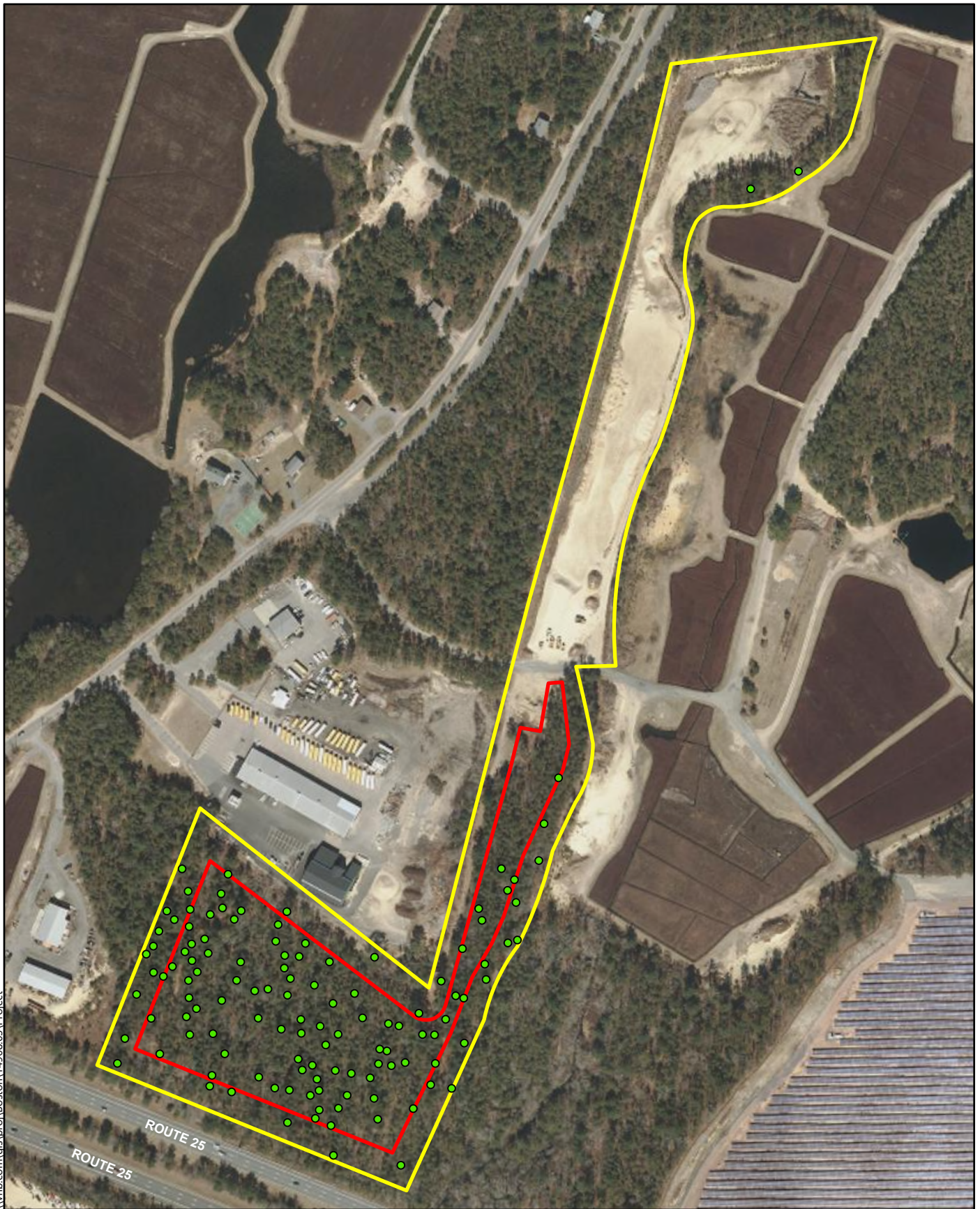
Tree Survey

This memorandum describes VHB's findings from a tree survey conducted on September 29, 2023 using the methodology described below for the approximately 22-acre parcel located along Charge Pond Road and Route 25 in Wareham, Massachusetts (the Project Site). Longroad Energy has filed an application with the Wareham Planning Board to construct a solar array on the Project Site, which would require clearing approximately eight acres of forested area. In its Site Plan Review checklist, the Town of Wareham includes a line item requiring that all trees greater than 18 inches diameter at breast height (DBH, a measurement taken approximately 4.5 feet above the ground surface) on a given property be accounted for on the site plans. At its public hearing on September 18, 2023, the Planning Board asked for this information to be added to the application. This report identifies the trees on the Project Site that meet this criterion. Refer to **Figure 1 – Tree Survey Data** for locations of such trees.

Methodology

The tree survey was conducted using a methodology approved by Director of Planning and Community Development Ken Buckland via email dated September 19, 2023. Trees with a DBH of 18 inches or greater were identified using high-resolution aerial imagery from March 2023 in conjunction with past field survey data. In 2022, VHB environmental scientists conducted a separate field survey of all trees (of any size) present within an approximately 5,000 square foot area at the edge the Project Site. Trees were measured in the field and GPS data was collected to identify the precise locations of all trees in the surveyed area, including trees with a DBH of 18 inches or greater. For the 2023 survey, the 2022 data was overlain with the aerial imagery from March 2023 to use as a point of reference for a desktop review of the forested areas on the Project Site. Trees with a similar canopy size to known trees 18 inches DBH or greater were then visually identified within the Project Site.

The resulting survey yielded a total of 123 trees with a DBH of 18 inches or greater on the Project Site. These trees are primarily located within the southern extent of the Project Site. From prior field visits, the approximate composition of trees on the Project Site is as follows: pitch pine (*Pinus rigida*) 60%, white pine (*Pinus strobus*) 20%, northern red oak (*Quercus rubra*) 10%, others 10% (others include red maple (*Acer rubrum*), black cherry (*Prunus serotina*), and scarlet oak (*Quercus coccinea*)). **Figure 1** summarizes the results of this survey.



\\vhb.com\gis\proj\Boston\14968.03\Project



Ground-Mounted Solar Photovoltaic Installation | Wareham, MA

Legend

- Approx. Limit of Clearing
- Project Site Boundary
- Trees ≥ 18 " DBH

Figure 1 - Tree Survey Data

Source Info: USGS, MassGIS, VHB



To: Wareham Planning Board
45 Marion Road
Wareham, MA

Date: October 5, 2023

Memorandum

Project #: 15225.01

From: Sarah Ebaugh, PE
Project Manager

Re: Proposed Large-Scale Ground-Mounted Solar Photovoltaic
Installation (the "Project")
0 Route 25, Wareham, MA (the "Site")

The purpose of this memo is to demonstrate compliance of the above-referenced Project with applicable Land Use and Siting Criteria set forth in 225 CMR 20.05(5)(e) as required by Section 592.1 of the amended Wareham Zoning By-Laws, as approved in part by the Attorney General on September 19, 2023.

225 CMR 20.05(5)(e) is part of 225 CMR 20.00: Solar Massachusetts Renewable Target (SMART) Program.

The Land Use and Siting Criteria in 225 CMR 20.05(5)(e) applicable to this Project are those set out in 225 CMR 20.05(5)(e)(5) (Ineligible Land Use) and 225 CMR 20.05(5)(e)(6) (Performance Standards). The memo discusses each in turn.

Compliance With 225 CMR 20.05(5)(e)(5) (Ineligible Land Use)¹

a. Solar photovoltaic Generation Units on protected open space, as established under Article XCVII of the Amendments to the Constitution, that do not meet the criteria of Category 1 Land Use;

> *As confirmed through a review of MassGIS layer "Openspace Article 97", the Site is not open space protected under Article XCVII (commonly known as "Article 97")*

b. Solar photovoltaic Generation Units sited in a wetland Resource Area, as defined in 310 CMR 10.04: Definitions, not including Buffer Zones, as defined in 310 CMR 10.04: Definitions, except as authorized by all necessary regulatory bodies; and

> *A Request for Determination of Applicability was submitted to the Conservation Commission, and a Negative Determination of Applicability ("NDA") was issued on October 27, 2022. The NDA confirmed that the Project is not within an area subject to protection under the Wetland Protection Act or the Wareham Wetland Protective By-Law.*

c. Solar photovoltaic Generation Units sited on properties included in the *State Register*, as defined in 950 CMR 71.03: Definitions, except as authorized by regulatory bodies.

> *As confirmed through a review of the MassGIS layers "MassHistoric Commission Inventory (Points)" and "MassHistoric Commission Inventory (Areas)", the Project is not sited on a property included in the State Register.*

¹ Although the additional "Ineligible Land Use" criteria in 225 CMR 20.05(5)(e)(7)(c) do not apply to this Project, we also note that, as confirmed through a review of the MassGIS layers "NHESP Priority Habitat of Rare Species" and "BioMap Core Habitat Components: Aquatic Core, Forest Core, Priority Natural Communities Core, Rare Species Core, Vernal Pool Core, and Wetland Core", the Site is not located on land designated as Priority Habitat or Core Habitat.

Compliance With 225 CMR 20.05(5)(e)(6) (Performance Standards)

- a. No removal of all field soils;
 - > *All soils will be retained on site. Some soils will be used for leveling and filling of low points and "potholes" but no soils will be removed from the Site as part of the proposed project*
- b. Existing leveled field areas left as is without disturbance;
 - > *There are no existing leveled field areas within the project Site.*
- c. Where soils need to be leveled and smoothed, such as filling potholes or leveling, this shall be done with minimal overall impact with all displaced soils returned to the areas affected;
 - > *Minor regrading is proposed as part of the Project to level out existing sand pits, and to level out areas where the access roadway will be constructed. Regrading will be limited, and all displaced soils will be used on site.*
- d. Ballasts, screw-type, or post driven pilings and other acceptable minimal soil impact methods that do not require footings or other permanent penetration of soils for mounting are required, unless the need for such can be demonstrated;
 - > *The array will use post driven pilings, and minimal soil will be impacted with the installation.*
- e. Any soil penetrations that may be required for providing system foundations necessary for additional structural loading or for providing system trenching necessary for electrical routing shall be done with minimal soils disturbance, with any displaced soils to be temporary and recovered and returned after penetration and trenching work is completed;
 - > *No foundations for additional structural loading are proposed with this Project. Trenching for electrical routing will be completed with minimal disturbance. Soils displaced for the installation of the bedding stone will be used elsewhere on site, and all existing soils will be retained on site.*
- f. No concrete or asphalt in the mounting area other than ballasts or other code required surfaces, such as transformer or electric gear pads;
 - > *The only concrete proposed on site is the small concrete pads for electrical equipment. No other concrete or asphalt is proposed.*
- g. Address existing soil and water resource concerns that may be impacted to ensure the installation does not disturb an existing soil and water conservation plan or to avoid creating a negative impact to soil and water conservation best management practices, such as stimulating erosion or water run-off conditions;
 - > *There is no soil and water conservation plan for the site. The Project was designed in conformance with the Massachusetts Stormwater Management Handbook and the Town of Wareham Zoning By-Laws. Proposed conditions will not impede infiltration as compared to existing conditions and any cleared areas and areas that have been previously cleared will be planted with a meadow mix to prevent erosion. The Project will not create a negative impact to soil and water on site as outlined in the site plans and stormwater management report.*

h. Limited use of geotextile fabrics;

> *Geotextile fabric in the form of slope stabilization is proposed only in limited areas on site.*

i. Maintain vegetative cover to prevent soil erosion.

> *The site will be planted with a meadow mix and will provide vegetative cover throughout the operation of the solar array. Additional landscaping is also proposed on the western property line to provide additional vegetative screening. The gravel access road is the only element of the site design that will not be vegetated.*

A handwritten signature in black ink, appearing to read "Sarah Ebaugh".

Stamped & Signed: October 5, 2023



October 6, 2023

Ref: 15525.01

Members of the Wareham Planning Board
c/o Kenneth Buckland
Director of Planning and Community Development
Memorial Town Hall
54 Marion Road
Wareham, MA 02571

Re: Site Plan Review Special Permit Application, 0 Rt. 25, Parcel ID 115-1000

Dear Members of the Wareham Planning Board,

On behalf of the applicant, Wareham PV I, LLC, an affiliate of Longroad Development Company, LLC ("Longroad"), I am submitting this letter to provide information with respect to two provisions in the amended Wareham solar bylaw as recently approved in part by the Massachusetts Attorney General's office, as it applies to Longroad's the above-referenced application. Section 593 of the bylaw discusses the application for Site Plan review and outlines required information to be included with the application and on the accompanying plans.

Section 593.12 requires "An assessment of the impact on the environment formatted in a before/after method so that it is easy to measure and understand the changes that the proposed Solar Photovoltaic Installation will have on the property and the property abutters." The site plans submitted with Longroad's application include an existing conditions plan created by VHB's survey team which shows the existing property line and area, abutting properties, site topography, access road, limits of vegetation, and nearby jurisdictional wetland resource areas and their associated buffer zones. The proposed site plans show the extent of the proposed solar array, grading, vegetation clearing, new access road, and stormwater features. The plans also include details for several site elements including the array, stormwater components, and erosion controls. The submitted plans can be used as a reference for a before/after comparison of site conditions in relation to the proposed project. The application narrative also includes information on proposed construction activities and final conditions. To assist the Board in reviewing the project with respect to Section 593.12, Table 1 presents a series of environmental factors and their before/after status as a result of the project.

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PO Box 9151
Watertown, Massachusetts 02471
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Engineers | Scientists | Planners | Designers



Table 1 Environmental Impact Factors

Environmental Factor	Before	After	References
Wetlands	100-foot buffer zone, 200-foot Riverfront Area on site	No impacts/changes to wetlands	Site plans; Negative Determination of Applicability issued by Wareham Conservation Commission
Land/Land Use	22.4-acre parcel; southern end of site wooded; land in northern portion of site heavily disturbed due to historic sand extraction activities and consists primarily of exposed dirt/sand	Approx. 8 acres of tree clearing, array installation, revegetation of existing unvegetated areas	Site plans; application narrative
Stormwater Control	None	Stormwater basin and measures to maintain pre-construction runoff rates	Stormwater Report
Air	No emissions	No emissions post-construction; solar energy generation will displace emissions from fossil fuel power plants and contribute to state's compliance with MA Global Warming Solutions Act	
Cultural Resources	None	No change	Environmental Constraints figure (attached)
Wildlife Habitat	See response below	See response below	
Endangered Species	See response below	See response below	
Traffic	Minimal traffic on access road	No significant change following site construction	
Hazardous Waste	None	None generated by array operation; area to be decommissioned after viable period	Decommissioning plan

Section 593.13 requires “An evaluation of the impact on the wildlife, habitat, and endangered species to determine potential harm to wildlife and habitat by the proposed Solar Photovoltaic Installation.” The site contains both wooded and previously cleared, disturbed areas free of vegetation. The wooded portion of the site is dominated by a pine forest with a dense shrub understory and areas of herbaceous cover. While



the site has modest value for wildlife that uses this habitat, the area overall does not contain important wildlife habitat. The wooded area does not offer a meaningful migration corridor as it is bounded to the south by Route 25, to the east by several cranberry bog operations and an existing solar array, and to the north by the Wareham municipal maintenance center. According to the most recently available data provided by the Massachusetts Natural Heritage and Endangered Species Program¹ (NHESP), no portion of the site is located within Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife, nor are there any Certified or Potential Vernal Pools on the site. The site also does not lie within any Area of Critical Environmental Concern² (ACEC). Additionally, according to the Information for Planning and Consultation ("IPaC") tool from the U.S. Fish and Wildlife Service³, there are no critical habitats for federal endangered species within the site. While clearing the site will impact the existing wooded area, the proposed project will utilize a pollinator seed mix under the solar array which will revegetate disturbed portions of the site and will provide a habitat for a variety of wildlife species. The proposed fencing around the array will include a gap at the bottom to allow for small animal movement.

If you have any questions regarding this letter or need additional information, please feel free to contact me at 617-272-6380 or at cwagner@vhb.com.

Regards,

A handwritten signature in blue ink that reads "Christopher J. Wagner".

Christopher Wagner, PWS
Senior Environmental Scientist

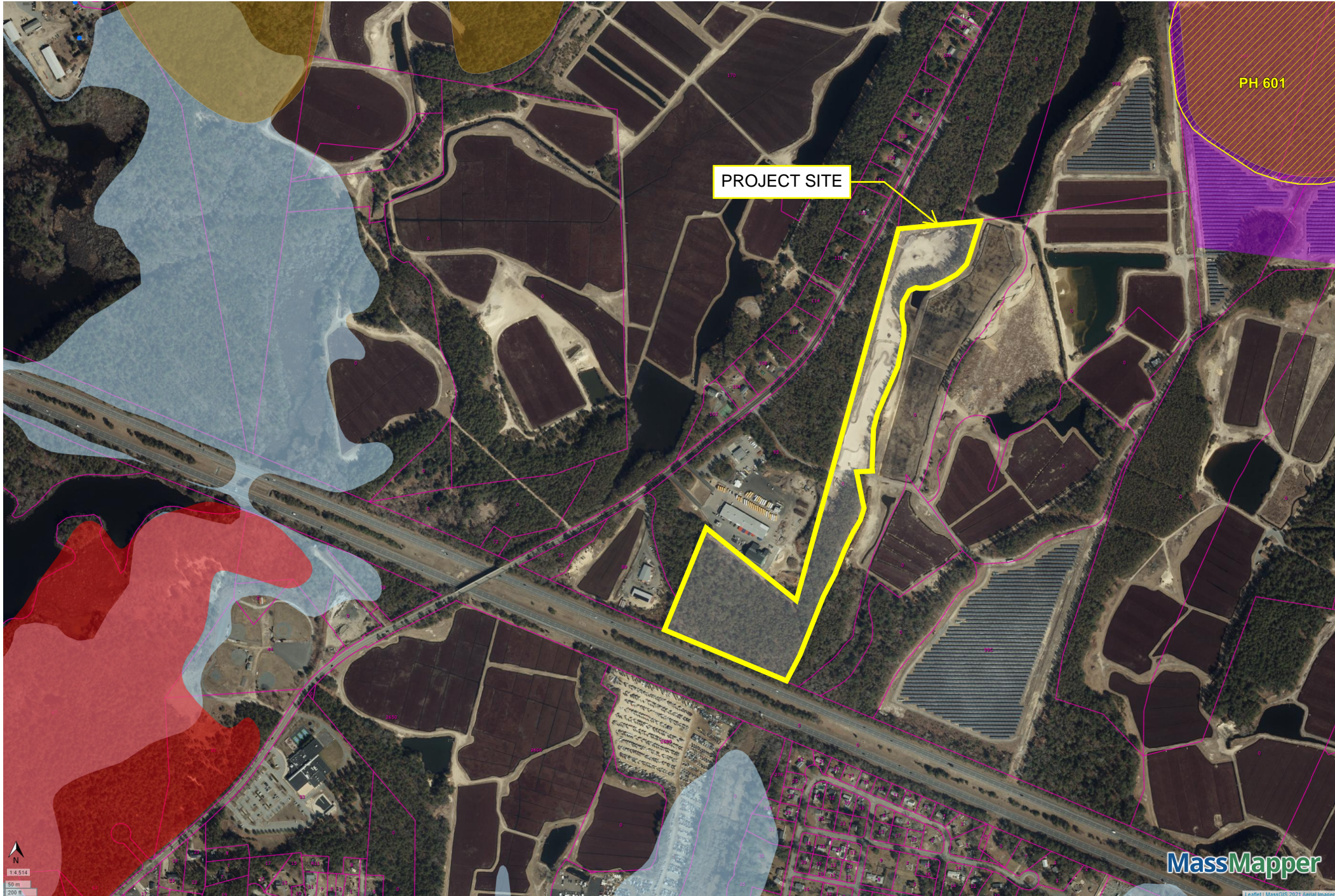
cc: Lindsey Kester, Longroad Development Company, LLC

¹ NHESP, 2021. *Massachusetts Natural Heritage Atlas, 15th Edition*.

² Massachusetts Executive Office of Energy and Environmental Affairs, 2009.

³ Tool available at <https://ipac.ecosphere.fws.gov>.

0 Route 25, Wareham MA



MassHistoric Commission Inventory (Points)

- National Register of Historic Places
- ★ Preservation Restriction
- ★ Massachusetts Historic Landmark
- ▲ Local Historic District
- ▼ NRHP and LHD
- Inventoried Property

NHESP Estimated Habitats of Rare Wildlife



NHESP Priority Habitats of Rare Species



BioMap Critical Natural Landscape Components: Wetland Core Buffer



BioMap Critical Natural Landscape Components: Tern Foraging Habitat



BioMap Critical Natural Landscape Components: Landscape Blocks



BioMap Critical Natural Landscape Components: Coastal Adaptation Areas



BioMap Core Habitat Components: Wetland Core



BioMap Core Habitat Components: Vernal Pool Core



BioMap Core Habitat Components: Rare Species Core



BioMap Core Habitat Components: Priority Natural Communities Core



BioMap Core Habitat Components: Forest Core



MassMapper

Leaflet | MassGIS 2021 Aerial Imagery

BioMap Critical Natural Landscape
Components: Aquatic Core Buffer



Property Tax Parcels