

**NARRATIVE IN SUPPORT OF PROPOSED GROUND MOUNTED  
PHOTOVOLTAIC SOLAR ARRAY  
JOHN VERTENTE BLVD.**

**DARTMOUTH ASSESSOR'S MAP 85, LOTS 8-3, 8-4, AND 9**

**NEW BEDFORD ASSESSOR'S MAP 135, LOTS 1, 3, 15 AND 47**

**PREPARED FOR:**

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## **1.0 INTRODUCTION**

It is proposed to construct a ground mounted, photovoltaic solar array off John Vertente Boulevard. There are Bordering Vegetated Wetlands involved. This requires the submission of a Notice of Intent to the Dartmouth and New Bedford Conservation Commissions. This Narrative has been prepared in support of those Petitions.

## **2.0 EXISTING CONDITIONS**

The Site is a forty-two acre wooded parcel with over 1,300 feet of frontage on John Vertente Blvd. Eighteen acres are in New Bedford, and twenty-four acres are in Dartmouth. It is referenced as Map 85, Lots 8-3, 8-4 and 9 on the Dartmouth Assessor's maps. It is Map 135, Lots 1, 3, 15 and 47 in New Bedford. There are wetlands on all seven parcels. The soils include Paxton sandy loam which is in hydrologic Group C and Freetown and Scarboro muck which are in hydrologic soils Group D. The balance of the site is Windsor loamy sand, Hinckley gravely fine sand and Pipestone loamy sand, all of which are in hydrologic soil Group A. There are over a dozen areas where historic sand and gravel mining has occurred. Where these excavations intercepted the groundwater, wetland vegetation has developed. Some of these are jurisdictional and some are not. In order to determine if these depressions are jurisdictional with respect to the MA wetland regulations, a one year 24 hour design storm was calculated within the contributing drainage area assuming no infiltration within the inundated area. The topography for the majority of the site is from LIDAR, which is not precise enough for accurate volume determination, so a survey crew conducted on the ground topography in the depressions. If the resultant volume exceeded a quarter acre foot and averaged a 6 inch depth, the depression was deemed jurisdictional. If the depression was jurisdictional, the computations were repeated using 7.0 inches of rainfall. The lateral extent of that volume established the limit of the Isolated Land Subject to Flooding (ILSF). Note that there is no buffer to ILSF with respect to the MA wetland regulations. Also note that there is no significance to the wetland flags that were placed around the depressions. Dartmouth has its own criteria for determining whether Isolated Land Subject to Flooding is jurisdictional. A 4.4 inch rainfall is calculated over the contributing drainage area. If that volume takes up an area of 1,000 square feet or more, it is considered jurisdictional. If it is jurisdictional, the lateral extent is derived by calculating the runoff volume from 7.1 inches of rainfall over the contributing drainage area. Refer to a set of plans entitled "Jurisdictional Isolated Land Subject to Flooding Assessment" dated October 24, 2019.

There are no certified vernal pools on site. MA GIS Oliver does show three vernal pools on site identified as # 1892, 1893 and 1894. Information on those vernal pools was requested from NHESP. Appendix F presents the information that was received from NHESP which indicates that, in fact, the vernal pools are not located on the subject site, but are, in fact, located 1,000 feet to the south at the existing Aerovox site. There are several uncertified vernal pools on the site labeled as "Wetland

1" and "Wetland 2" on the plans. Both are located in Dartmouth approximately 600 feet north of John Vertente Boulevard. These were assessed by Matthew R. Burne in late April and early June 2019. He reported Wetland 1 qualified as a vernal pool but did not feel Wetland 2 qualified. Nevertheless, the proponent will voluntarily protect Wetland 2 as if it were certifiable as a vernal pool. Mr. Burne's report is included in Appendix G.

### **3.0 PROPOSED DEVELOPMENT**

It is proposed to construct a 5 megawatt AC ground mounted photovoltaic solar array. Approximately half of the solar array will be in Dartmouth, setback approximately 200 feet from the roadway and 75 feet from other property lines. There will be two separate arrays as shown on the plans. The northwest array will span across the City/Town line with no proposed setback from that line since the parcel is in single ownership on both sides of the line. The northwest array will be accessed from its John Vertente Blvd. frontage. The electrical connection to the grid will be on the cul de sac in Dartmouth. The southeastern array will be accessed by its frontage on John Vertente Blvd. It is proposed to cut the trees all the way to the wetland line, but not stump anything within 25 feet of the Wetlands. That area will be maintained as an area of shrubs and herbaceous growth. The ground under the proposed panels will be planted with a wildflower mix (pollinator).

- Each panel is 78.74" long by 39.06" wide with a 20 degree tilt angle
- Each panel will have a plan view area of 20.070 square feet
- $(15,840 \text{ panels}) (20.070 \text{ SF/panel}) / 43,560 \text{ SF/acre} = 7.298 \text{ acres of panels}$
- $7.298 \text{ acres of panels} / 42 \text{ acres of land} = .174 \text{ lot cover, but not ground cover}$
- 82.6% will be open space

In New Bedford Industrial C, maximum lot coverage is 50% with 20% required green area. The area under the panels will be lush vegetation so there will be over 99.9% green area.

### **4.0 PROPOSED CONSTRUCTION**

Following silt fence installation, tree clearing and stump removal, the construction will commence with the installation of a six foot tall chain link fence around the perimeter of the project area. The solar rack system will then be mounted on the pillars. The racks are proposed to be Terraglide brand –TGL fixed-tilt ground mount racks. The pillars (leg posts) will be mounted on TerraSmart brand ground screws. Refer to Appendix A for rack details. The panels will be installed on the racks. Electrical cables will then be run to inverters in the racks under the panels which will convert the power from direct current to alternating current. Subsequently, transformers will adjust the power from low voltage to higher voltage. The control boxes and transformers will be set on concrete slabs that will be poured in place, as shown on the plans. The only ground surface areas which will be

impervious are the transformer and electric controls pads.

The ground surface of the entire cleared area, except the gravel access road, will be seeded with a commercial pollinator mix and allowed to develop into a meadow by mowing it only once or twice a year. A maintenance person will come to the site once a month to visually check the site. There will typically be no need to drive a vehicle onto the site.

## **5.0 STORMWATER CONSIDERATIONS**

In 2008, the Massachusetts Department of Environmental Protection (MassDEP) issued the Stormwater Management regulations. The goal of these regulations is to improve water quality and address water quantity problems, which are sometimes caused by development projects, through the implementation of performance standards for stormwater management. This project was designed to meet and exceed all relevant standards. The following section describes how each of these standards will be achieved on this project by incorporating Best Management Practices (BMPs) into the design.

### **5.1 UNTREATED STORMWATER - Standard 1**

Standard 1 recommends that no new stormwater conveyance, such as storm drain outfalls, discharge untreated stormwater directly to wetlands or waterways of the Commonwealth. Flows from woods, fields and other undeveloped areas are to be considered uncontaminated, however, runoff from paved road surfaces should receive treatment prior to discharge. There are no proposed paved areas and no source of pollution, therefore, there is no need for treatment. As such, DEP Standard 1 will be satisfied.

### **5.2 POST DEVELOPMENT PEAK DISCHARGE RATES - Standard 2**

Standard 2 prescribes that stormwater management systems be implemented in order to ensure that post-development peak rates of discharge do not exceed existing rates of runoff for standard two year and ten year design storms. In addition, the pre and post peak rates for the one hundred year storm must be evaluated to assure that there will not be increased off-site flooding of the eastern portion of the site. Based on the existing woods on a hydrologic A soil, the current hydrologic runoff curve number (RCN) is 30. It is proposed to seed the ground with wildflower seed and allow it to evolve into a meadow which has an RCN of 30. This will result in no increase in the volume and the peak rate of runoff.

Standards 2-4 requires provisions are taken so that post-development peak rates of discharge do not exceed pre-development peak discharge rates, loss of annual recharge rates are eliminated, and 80%

of the post-construction load of TSS is removed. MassDEP policy 17-1 (item 4) recommends certain measures be taken to ensure with standards 2-4. The following describes how each of these LID measures are met:

- None of the slopes on which the arrays are placed are greater than 3:1.
- An erosion control plan has been developed prevents direct discharges to wetlands. This is done through the use of silt fence and wood-strand berms. There is only minor grading proposed for the project and will not channelize stormwater flow to the Buffer Zone.
- Land disturbance and grading is conducted in a phased and selective manner. The project is divided into 3 separate arrays. None of the arrays will require the stripping of topsoil. The arrays within the upland bog will preserve existing vegetation while the array in the wooded area will be protected with silt fence and a 3' high wood-strand berm.
- Each array is within its own drainage area. The arrays within the upland bogs are within self-contained drainage areas. The ground beneath all of the arrays will be covered with natural vegetation, either with the existing cranberry vines, or new meadow grass. In the case of the upland bog arrays, there will be no change in cover type. In the case of the northern array, given this area has HSG-A soils, the curve number for "woods" is the same for "meadow" (30). Since the curve number does not change, there is no need for BMP's.
- It is proposed to preserve the top soil.
- Solar panel rows are spaced approximately 13' between rows. Adequate sunlight will reach the ground to support vegetation.
- Gaps between each panel will allow for stormwater to drip between the panels rather than sheet water off the entire array.
- The leading edge of the panels will be approximately 3' above the ground and in not case will be greater than 10 feet above the ground surface.
- No conveyances or outfalls are proposed.
- No work is proposed in a buffer zone of resource areas that border a critical area, as defined at 314 CMR 9.02, or in the estimated habitat identified on the most recent Estimated Habitat Map of State Listed Rare Species prepared by the Natural Heritage and Endangered Species Program.

Since all standards are being met, there is no need for hydrologic computations. By meeting the recommendations of 17-1, standards 2-4 are met. Therefore, DEP Standard 2 will be satisfied.

### **5.3 RECHARGE TO GROUNDWATER - Standard 3**

The annual recharge from the post development site will approximate the annual recharge from the pre-development conditions. Standard 3 of the DEP Stormwater Policy prescribes that the stormwater runoff volume to be recharged to groundwater should be determined using existing soil. According to the USDA Soil Conservation Service mapping, the surficial soils are Type A. The

DEP Stormwater Policy requires that a certain volume of runoff be infiltrated to groundwater based on the type of soil present and the amount of impervious area generated by the proposed development. Crushed stone will surround the concrete slab at the transformer and control boxes in order to infiltrate the runoff from that slab (refer to Detail plan). Other than the transformer/control box slabs, there is no proposed impervious surface. Therefore, there is no need to artificially infiltrate.

#### **5.4 REMOVAL OF 80% OF TOTAL SUSPENDED SOLIDS - Standard 4**

DEP Standard 4 does not apply to this project because there will be stable wildflower cover and there will be no source of suspended solids.

#### **5.5 USES WITH HIGHER POTENTIAL POLLUTANT LOADS - Standard 5**

The proposed development is not one that has potential for higher pollutant loads, therefore, DEP Standard 5 will be met.

#### **5.6 CRITICAL AREAS - Standard 6**

Standard 6 of the DEP Stormwater regulations seeks to protect critical areas. Critical areas are specifically designated Outstanding Resource Waters (ORWs), such as shellfish beds, swimming beaches, cold water fisheries and recharge areas for public water supplies. Such areas require the use of specific BMPs, however, the proposed project will not discharge to any of these areas, therefore, this standard does not apply.

#### **5.7 REDEVELOPMENT OF PREVIOUSLY DEVELOPED SITES - Standard 7**

Standard 7 applies to sites which have been previously developed and are being redeveloped. Diminished performance of BMPs is allowed in these areas. This project does not fall into this category, however, the proposed development will meet all DEP Stormwater Standards.

#### **5.8 EROSION AND SEDIMENT CONTROL - Standard 8**

An erosion and sediment control plan has been developed for this project and is included in the Construction drawings. These plans show the proposed locations for erosion control devices. The following supplemental provisions are also a part of this plan. Erosion and sedimentation control procedures are presented in Appendix B.

Erosion and sediment control measures which are proposed to be implemented during construction, include the installation of silt fencing which has the bottom six inches buried in the ground. Any



extra excavated soil which is not used to bury the base of the fence will be cast upgradient of the silt fence.

- Silt fence and haybales, if installed, shall be inspected after every major rainfall runoff event (over ½ inch depth of precipitation). All damaged or misaligned fences shall be immediately repaired. Silt shall be immediately removed from all areas of the silt fence when depth of accumulation reaches six inches.
- All exposed construction areas will be stabilized upon completion in order to minimize the time that these areas are unstabilized.

With the full impact of measures presented on the Erosion and Sedimentation Control Procedures, along with the provisions stipulated above, Standard 8 will be satisfied.

## **5.9 OPERATION AND MAINTENANCE PLANS - Standard 9**

Standard 9 of the DEP Stormwater Policy prescribes the adoption of a formal operation and maintenance plan to ensure that the stormwater management systems continue to function properly as designed. The following is the proposed operation and maintenance plan for the solar array:

- Owner: Christian Loranger  
NBD Solar LLC  
80 Front Street  
Marion, MA 02738  
Telephone: (508) 965-8637
- Parties responsible for Operation and Maintenance: Same as above

The stormwater management facilities were designed to require little or no intervention in operation and to require little or no maintenance once the project is built and stable vegetative cover is established.

However, the drainage improvements shall be subject to the following maintenance schedule:

- Mowing: The field may be mowed at least once a year during the growing season. It is to be cut to a height of no less than 4 inches.
- Debris: All debris and litter are to be removed from the site.
- Re-seeding: Areas that have excessive erosion or slumping are to be regraded and seeded with wildflower mix during the spring or fall growing seasons as needed.

A Permanent Stormwater System Operation and Maintenance Program is enclosed in Appendix C.

## **5.10 STATEMENT OF COMPLIANCE - Standard 10**

As presented above, this stormwater design meets all of the relevant standards contained in the DEP

Stormwater regulations. An executed form certifying to this fact is attached in the Checklist for Stormwater Report which is enclosed as Appendix D and an Interim Illicit Discharge Statement is presented in Appendix E.

## **6.0 COMPLIANCE WITH DARTMOUTH SOLAR BYLAW STANDARDS**

Section 37-44 of the Dartmouth Zoning Bylaws present required design standards. The following subsection presents how the design meets these standards.

### **6.1 SETBACKS**

The solar panels are setback a minimum of 75 feet from all property lines, as shown on the site plans.

### **6.2 HEIGHT**

No panel will extend more than 8 feet above the ground.

### **6.3 LOT COVERAGE**

There are no proposed on-the-ground impervious surfaces except for the concrete pads for the transformers and control cabinets. This amounts to less than 0.02% lot coverage.

### **6.4 BUFFERS**

A thirty foot wide, dense planting of evergreens trees will be maintained along the property lines.

### **6.5 SIGNAGE**

A sign providing 24 hour emergency contact information will be installed at the entrance gate.

### **6.6 LIGHTING**

There is no regular lighting proposed since all maintenance and inspection will be done during daylight hours. If security lighting is needed, it will be motion activated, night sky compliant and shielded so there is no bleed-over to neighboring properties.

### **6.7 UTILITY CONNECTIONS**

The low amperage, low voltage cables on each row of panels will run from tray to tray above ground.

At the end of each row, the cables will be run underground to the inverters, transformers, meters and switches. From there, the cables will be run underground to the southern portion of the array from which point, the cables will be run above ground on utility poles southerly to the high tension lines that abut the southern property line of the site.

## **6.8 ACCESSORY STRUCTURES**

Other than the fence, all accessory structures will meet the relevant setback requirements of 20 feet.

## **6.9 LAND CLEARING, SOIL EROSION AND HABITAT IMPACTS**

Clearing of natural vegetation will be limited to what is necessary for the construction, operation and maintenance of the solar array or otherwise prescribed by applicable laws, regulations and bylaws. Top soil will not be removed from the site.

## **6.10 CONTAINMENT PITS**

If the transformer contains 50 gallons or more of oil, secondary containment will be provided.

## **7.0 COMPLIANCE WITH NEW BEDFORD ZONING REQUIREMENTS**

New Bedford does not have a solar ordinance. The relevant standards are zoning dimensional requirements as detailed below.

<b>Criteria</b>	<b>Required</b>	<b>Provided</b>
Minimum Lot Size (acre)	0	18
Minimum Frontage (LF)	0	600
Maximum Height (LF)	100	8
Minimum Front, Side and Rear Setback (LF)	25	25
Maximum Lot Coverage (%)	50	<1
Minimum Green Space	20	99

## **8.0 CONCLUSION**

The proposed ground mounted photovoltaic solar array meets all relevant standards. It will provide a good source of alternative energy without any emission, glare or other deleterious impact.