

Wetland Delineation Report

Proposed Battery Energy Storage System Site Carver, Massachusetts

Version Number: 1

Prepared For:

**Sovereign Energy Storage, LLC
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San Francisco, CA 94117**

Prepared By:

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250 Apollo Drive
Chelmsford, MA 01824**

November 9, 2018

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1.0 INTRODUCTION

AECOM Technical Services, Inc. ("AECOM") is pleased to submit this Wetland Delineation report to Sovereign Energy Services, LLC (Sovereign) in support of permitting a proposed battery energy storage system (BESS) located in Carver, Massachusetts ("Project").

2.0 DELINEATION TECHNIQUE

On July 25 and October 29,, 2018 AECOM Biologists conducted a site reconnaissance to document any existing wetland resources and delineate those resources. This Report has been prepared to document the methods and results of the wetland delineation survey of the full extent of wetlands and associated plant communities at the subject property. This report will:

- Characterize any wetland resources identified; and
- Illustrate the identified resources with supporting figures and photographs;

Wetland boundaries were defined in the field with sequentially-numbered pink vinyl-glo flagging and subsequently mapped using a Global Positioning System (GPS) unit with reported sub-meter accuracy. Data was collected regarding vegetation, soils, and hydrology, in accordance with criteria set forth in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (2012).

2.1 Wetland Resource Areas

A Palustrine Forested (PFO1) wetland (W1) was determined south and east of the proposed BESS site, as noted on Figure 1. Flagging for this wetland included flags W1 (1-28) and flags W2 (1-26) (flagging for the W1 series connects to the W2 series at flags W1-1 and W2-1). A portion of a Palustrine Emergent (PEM)/Scrub-Shrub (PSS) wetland located within two electrical transmission line Rights-of Way (ROW) and an additional PFO wetland located to the east of the proposed BESS site was also delineated. Flagging for this portion of wetland included flags W1 (29-46). All these areas of PFO and PEM/PSS wetland are all contiguous and considered one large wetland area. The proposed BESS site lies partially within the 100-foot buffer zone.

Vegetation

The site is currently wooded and dominated by softwoods (Pines) and mixed hardwoods (maples and oaks). Understory species consist of a mix of saplings, shrubs & herbaceous species.

Species noted during the site visit in uplands included those species noted in Table 1.

Table 1. Upland Vegetation

Forested Area			
Common Name	Scientific Name	Indicator Status ¹	Comments
Trees			
White pine	<i>Pinus strobus</i>	FACU	
Scarlet oak	<i>Quercus coccinea</i>	UPL	
White Oak	<i>Quercus alba</i>	FACU-	
Red Maple	<i>Acer rubrum</i>	FAC	
Sapling/Shrubs			
Pepperbush	<i>Clethra alnifolia</i>	FAC+	
Black huckleberry	<i>Gaylussacia baccata</i>	FACU	
Lowbush Blueberry	<i>Vaccinium angustifolium</i>	FACU-	
Scarlet oak	<i>Quercus coccinea</i>	UPL	
White Oak	<i>Quercus alba</i>	FACU-	
White Pine	<i>Pinus strobus</i>	FACU	
Herbaceous			
Bracken fern	<i>Pteridium aquilinum</i>	FACU	
Lady slipper	<i>Cypripedium acaule</i>	FACU	
Partridge Berry	<i>Michella repens</i>	FACU	
Pennsylvania sedge	<i>Carex pensylvanica</i>	UPL	
Sarsaparilla	<i>Aralia nudicaulis</i>	FACU	
Solomons seal	<i>Smilacina racemosa</i>	FACU-	
Star flower	<i>Trientalis borealis</i>	FAC	
Teaberry	<i>Gaultheria procumbens</i>	FACU	
Vines			
Catbrier	<i>Smilax rotundifolia</i>	FAC	
Electric Transmission Right-of-way (ROW)			
Common Name	Scientific Name	Indicator Status ¹	Comments
Trees			
None			
Sapling/Shrubs			
Black locust	<i>Robinia pseudoacacia</i>	FACU-	
White pine	<i>Pinus strobus</i>	FACU	
Scarlet oak	<i>Quercus coccinea</i>	UPL	
White oak	<i>Quercus alba</i>	FACU-	
Sheep laurel	<i>Kalmia angustifolia</i>	FAC	
Late lowbush blueberry	<i>Vaccinium palladium</i>	UPL	
Nannyberry	<i>Viburnum lentago</i>	FAC	

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Forested Area			
Common Name	Scientific Name	Indicator Status ¹	Comments
Black huckleberry	<i>Gaylussacia baccata</i>	FACU	
Herbaceous			
Wrinkled Goldenrod	<i>Solidago rugosa</i>	FAC	
Black cherry	<i>Prunus serotina</i>	FACU	
Bracken fern	<i>Pteridium aquilinum</i>	FACU	
Sarsaparilla	<i>Aralia nudicaulis</i>	FACU	
Teaberry	<i>Gaultheria procumbens</i>	FACU	
Pennsylvania sedge	<i>Carex pensylvanica</i>	UPL	
Sweet	<i>Babiana angustifolia</i>	UPL	
Common mugwort	<i>Artemisia vulgaris</i>	UPL	
Whorled loosestrife	<i>Lysimachia quadrifolia</i>	FACU-	
1.) Reed, P.B. 1988. US Fish & Wildlife Service. National List of Plant Species that occur in Wetlands: Northeast (Region 1).			

Species noted during the site visit in the delineated wetlands included those species noted in Table 2.

Table 2. Wetland Vegetation

Common Name	Scientific Name	Indicator Status ¹	Comments
Trees			
Red Maple	<i>Acer rubrum</i>	FAC	
Yellow birch	<i>Betula alleghaniensis</i>	FAC	
Poison sumac	<i>Toxicodendron vernix</i>	OBL	
Atlantic White Cedar	<i>Chamaecyparis thyoides</i>	OBL	
Sapling/Shrubs			
Pepperbush	<i>Clethra alnifolia</i>	FAC+	
Spicebush	<i>Lindera benzoin</i>	FACW-	
Highbush Blueberry	<i>Vaccinium corymbosum</i>	FACW-	
Swamp Azalea	<i>Rhododendron viscosum</i>	OBL	
Herbaceous			
Sphagnum moss	<i>Sphagnum sp.</i>	OBL	
Goldthread	<i>Coptis trifolia</i>	FACW	
Massachusetts fern	<i>Parathelypteris simulata</i>	FACW	
Skunk cabbage	<i>Symplocarpus foetidus</i>	OBL	
Cinnamon Fern	<i>Osmundastrum cinnemomea</i>	FACW	
1.) Reed, P.B. 1988. US Fish & Wildlife Service. National List of Plant Species that occur in Wetlands: Northeast (Region 1).			

Soils

According to soils information, obtained through Web Base Soil Survey, Plymouth County, for the proposed site there are two mapping units. These units include:

259A – Carver loamy coarse sand, 0 to 3 percent slopes. This unit lies within 10% of the site in the northern portion of the proposed site.

259B – Carver loamy coarse sand, 3 to 8 percent slopes. This unit comprises the remainder of the proposed site.

The Carver series consists of very deep excessively drained sandy soils formed in glaciofluvial deposits of coarse and very coarse sands. Deep to bedrock exceeds 60 inches.

Soils were sampled in the field with descriptions as follows:

Table 3. Upland Profile

Depth (Inches)	Horizon	Color	Texture	Comments
0-2	Oi	10YR 3/3	muck	
2 - 4	A	10 YR 5/1	fine sandy loam	
4-16	B	10 YR 5/8	fine sandy loam	
16-20+	C	10 YR 6/8	fine sandy loam	

Table 4. Wetland Profile

Depth (Inches)	Horizon	Color	Texture	Comments
0-24	Oa	2.5/N (Black)	muck	
24-30+	C	2.5/N (Black)	sand	

Hydrology

Hydrologic indicators, noted during the site visit, included water table at 10" below the surface and saturation at the surface and deep organic soils.

3.0 REFERENCES

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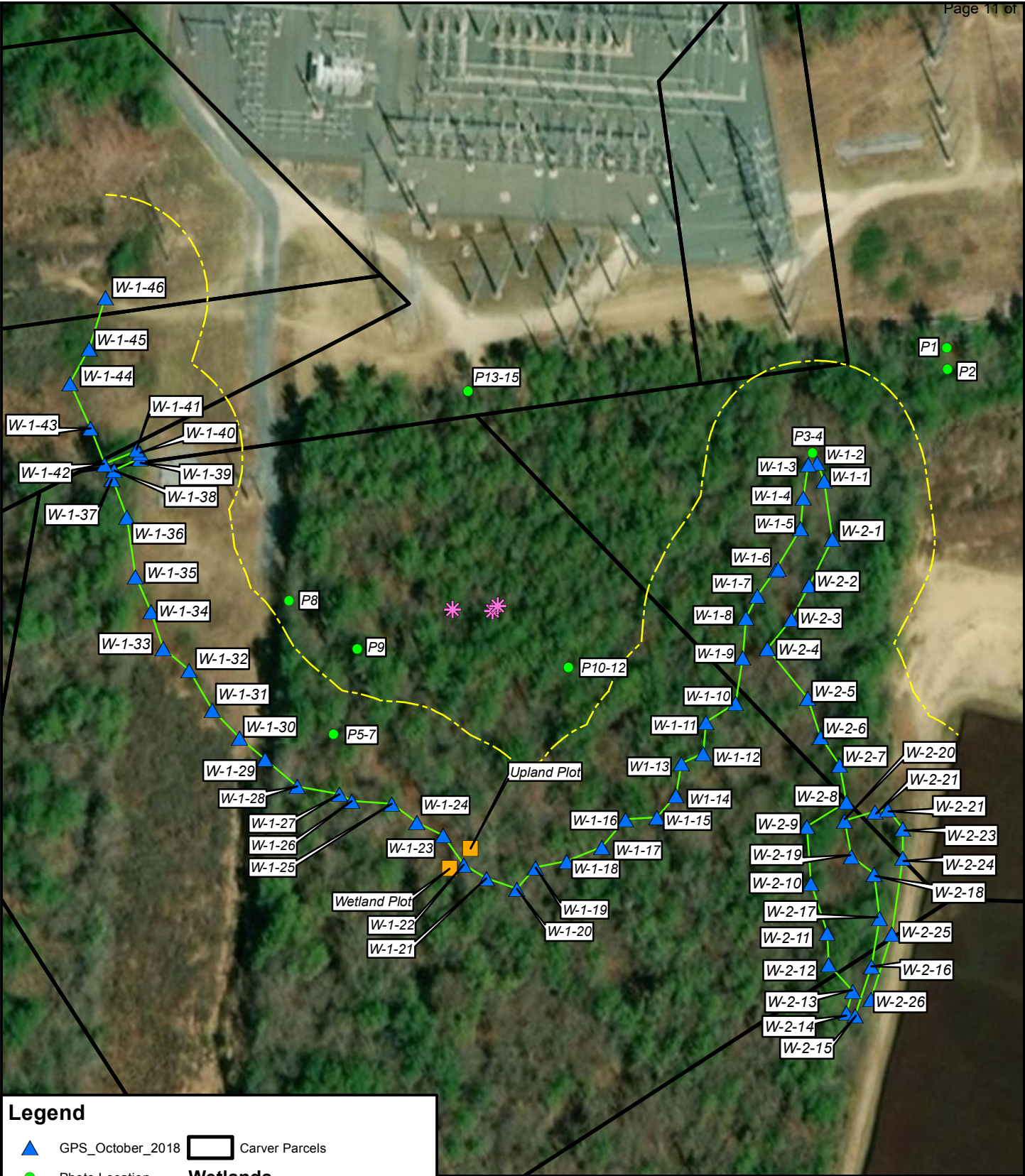
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Figures



Legend

- ▲ GPS_October_2018
- Photo Location
- USACE Plot
- ▲ Wetland Flag
- ✱ Snag Tree
- Carver Parcels
- Wetlands**
- 100-foot Buffer
- Wetland Boundary Line

0 50 100 200
Feet



Wetland Delineation

Proposed Battery Energy Storage
Site (BESS)
Carver, Massachusetts

SCALE	DATE	PROJECT NO.
1:1,600	11/2018	60581865

AECOM

Figure Number

1

Attachment A

Photographic Log



Carver - Area of Wetland Plot



Carver – Area of Upland Plot



Photo 1: Carver - Right-of-way northeast of site



Photo 2: Carver - Fox den



Photo 3: Carver – Tip of Wetland and forested Upland



Photo 4: Carver – Tip of Wetland and forested Upland



Photo 5: Carver - Transect southwest of site



Photo 6: Carver - Transect southwest of site



Photo 7: Carver - Transect southwest of site



Photo 8: Carver - Right-of-way west of site



Photo 9: Carver - Forested area within the site



Photo 10: Carver - Forested area within the site



Photo 11: Carver - Forested area within the site



Photo 12: Carver - Forested area within the site



Photo 13: Carver - Forested/ right-of-way Area north



Photo 14: Carver - Forested/ right-of-way area north of the site



Photo 15: Carver - Forested/right-of-way area north of site