



July 9, 2019

Email (chodgkinson@chilmarkma.gov)

Mr. Chuck Hodgkinson
Chilmark Conservation Agent
Chilmark Conservation Commission
401 Middle Road
Chilmark, MA 02535-0119

**Re: Concept Plan Review
Chilmark Firehouse
401 Middle Road
Chilmark, Massachusetts**

[LEC File #: TOCh\19-183.01]

Dear Mr. Hodgkinson:

In response to your request, LEC Environmental Consultants, Inc. (LEC) has prepared the following review of concept site plans for the new Chilmark Firehouse and associated improvements to the site located at 401 Middle Road in Chilmark. This report includes an assessment of the adjacent Wetland Resource Areas and guidance on measures to ensure the long-term protection of these Resources in the context of the proposed project, the *Massachusetts Wetlands Protection Act* (M.G.L. c. 31, s. 40, the *Act*) and its implementing Regulations at 310 CMR 10.00, and the *Town of Chilmark Wetlands Protection Bylaw* and its implementing *Regulations* (the *Bylaw Regulations*).

This review is based on a site evaluation conducted by LEC on May 22, 2019 and conceptual site plans prepared for the project, including the *Site Plan*, prepared by Vineyard Land Surveying & Engineering, Inc. (VLS), dated April 9, 2018, and the *Fire Station Conceptual Site Plan With Existing Underlay*, prepared by Pacheco Ross Architects, P.C. This review includes a General Site Description, Wetland Resource Area Description, Project Description, and Findings and Recommendations.

General Site Description

The 1.1± acre site at 401 Middle Road (Assessor’s Map 26, Lot 99) is located northeasterly of the Middle Road and Menemsha Crossroad intersection (Attachment A). The site is positioned on a relatively flat, southwesterly-facing slope of a glacial drumlin. Off-site, topography generally descends to the southwest, and ascends to the northeast toward the top of the drumlin (Appendix B).

The town-owned property contains the existing fire station, EMS building, and Town Hall, with associated asphalt and gravel parking lots, manicured lawn, a storage container, and brick walkways. The main parking lot is a gravel surface, while the access and parking in front of the fire station and EMS building are paved. Stone walls extend along the southeasterly, northeasterly, and northwesterly property lines.

Although the existing development encompasses most of the site, a strip of undeveloped land containing a forested wetland system extends onto the northeasterly and northwesterly portions of the property. The wetland system northeast of the gravel parking lot is maintained through periodic mowing, and contains a narrow and shallow ditch (protected as an intermittent stream) that directs stormwater from catch basins in Middle Road into the wetland (Attachment E, Photograph 1). The ditch terminates in the forested wetland; however, surface water becomes channelized again further downgradient near the culvert beneath Menemsha Crossroad, forming an intermittent stream (Photograph 2). The unnamed, intermittent stream continues off-site, flowing southwesterly into an expansive wetland system associated with Mill Brook, a perennial stream and a cold-water fishery.

Upland vegetation fringing the edge of the wetland system is limited due to the lack of a significant buffer between the development and wetland system. The limits of development adjacent to the wetland system, including the existing gravel parking lot (Photograph 3), storage container (Photograph 4), and EMS building (Photograph 5), are less than 10± feet from the edge of the wetland, and at the closest points actually extend into the wetland (see above-referenced *Plans*). Under existing conditions, the property does not contain any substantive stormwater controls. It appears that untreated stormwater from the gravel parking lot and buildings sheet flows northwesterly toward the wetland system.

A small man-made depression, containing standing water, is located between the edge of the parking lot and wetland system. This depression contained up to 12± inches of water during our site evaluation. The primary water source appears to be from a building sump pump which we observed actively discharging through a small plastic pipe (Photograph 6).

Floodplain Designation

According to the July 16, 2014 FEMA Flood Insurance Rate Map for Barnstable County (*Community Panel 25007 C 0176 J*), the subject locus is within a Zone X (unshaded) – *Area of minimal flood hazard* (Attachment C).

Natural Heritage and Endangered Species Program Designation

According to the 14th edition (August 1, 2017) of the *Massachusetts Natural Heritage Atlas* published by the Natural Heritage & Endangered Species Program (NHESP), the subject locus is not located within a *Priority Habitat of Rare Species* or *Estimated Habitat of Rare Wildlife*. No Certified Vernal Pool (CVP) are located in the immediate vicinity; however, a Potential Vernal Pools (PVP) is located southeast of the site on the east side of Middle Road (Attachment A).

NRCS Soil Survey Mapping

According to the Dukes County Soil Survey, the western portion of the site, including about half of the existing development and the existing wetland system, contains Ridgebury Variant Fine Sandy Loam soil. The eastern portion of the property contains Nantucket Sandy Loam soil (Attachment D). Ridgebury Fine Sandy Loam soils are described as *nearly level, poorly drained soil is in depressions and drainageways of glacial upland hills and drumlins*. Nantucket Soils are *very deep, well drained soils formed in dense glacial till. They are moderately deep to dense till. They are gently sloping to strongly sloping soils on or near terminal moraines*. As described below, soil evaluations conducted on-site confirmed the presence of poorly drained, fine sandy loam soils within the wetland system.

Wetland Resource Area Descriptions

The property contains a Bordering Vegetated Wetland (BVW) system associated with intermittent streams. Wetland Resource Areas include BVW and Bank, as described below. The physical characteristics of the BVW and Bank justify the presumption of significance and protection of the interests of the *Act* and *Bylaw*.

Bordering Vegetated Wetlands

BVW is defined in 310 CMR 10.55(2) as *freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes. In these areas soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.*

According to the *Bylaw* [3.02 (1)(a)], *Vegetated Wetlands are freshwater wetlands, classified as wet meadows, marshes, swamps and bogs. They are usually areas where the topography is relatively flat, or areas of sheet flow on moderate slopes, and where the soils are perennially saturated. The ground and surface water regime and the vegetational community which occur in each type of freshwater wetland are specified in Section 3.02(1)(c) below. Freshwater wetlands also include: disturbed areas such as, but not limited to, filled or devegetated wetlands where the substrate is composed of hydric soils.*

Vegetation within the forested BVW canopy is dominated by red maple (*Acer rubrum*), with scattered individuals of American holly (*Ilex opaca*). The dense to moderately dense shrub layer is dominated by arrowwood (*Viburnum dentatum*), winterberry (*Ilex verticillata*), sweet pepperbush (*Clethra alnifolia*), highbush blackberry (*Rubus alleghanensis*), and multiflora rose (*Rosa multiflora*), with entanglements of grape (*Vitis* spp.), poison ivy (*Toxicodendron radicans*), and greenbrier (*Smilax rotundifolia*).

Groundcover in the wetland consists of skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*), and cinnamon fern (*Osmunda cinnamomea*) (Photographs 7 and 8). The mowed wetland is characterized as wet meadow with various rushes (*Juncus* spp.), Canada mayflower (*Maianthemum canadense*), sensitive fern, and other grasses observed (Photographs 9 and 10).

Soils in the forested wetland were saturated to the surface with small, scattered pockets of standing water (Photograph 11). While saturation prevented a thorough documentation of the soil horizons, soil texture was confirmed to be a poorly drained, fine sandy loam. Hydrology in the wetland is driven primarily by shallow groundwater. Secondary contributions to wetland hydrology appear to include stormwater from the subject property and Middle Road via the above-referenced ditch, along with stormwater from upgradient off-site areas.

Bank

Bank is defined at 310 CMR 10.54(2)(a) and the *Bylaw* as *the portion of land surface which normally abuts and confines a water body. The upper boundary of a bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a bank is the mean annual low flow level.*

Bank is associated with the ditch within the mowed wetland meadow and the intermittent stream extending from the BVW beneath Menemsha Crossroad. The Banks near the culvert are approximately 1± foot tall and nearly vertical. The Banks associated with the ditch are smaller, typically less than 6± inches and gently sloping.

Project Summary

The project involves construction of a new fire station, reconfigured parking lot, and new walkways. The Town Hall building and the parking lot closest to the intersection in front of Town Hall will not be changed or relocated. The EMS building will be relocated to the adjacent property to the northeast, with a walkway connecting the two facilities, and a new footbridge over the ditch. Except for the on-site portion of the connecting walkway, the relocated EMS building is not part of this review. The footprint of the new fire station extends along the edge of the wetland system, and appears to modestly improve upon the current 10± foot setbacks to the wetland, as noted above.

The concept plans do not show the proposed limit of work, proposed grading, proposed stormwater management system, details regarding septic system/wastewater generation, parking lot surface material, connecting boardwalk design, landscaping, or erosion controls. These details are critical to understanding the project's potential impacts on adjacent wetlands and therefore this review cannot comprehensively evaluate the proposed project impacts. There are no direct wetland impacts proposed on the concept plans. All work is confined to the Buffer Zone to Wetland Resource Areas.

Findings and Recommendations

The proposed project involves redevelopment of the property with a new fire station and new parking configuration. As noted above, the concept plans do not provide sufficient project details to comprehensively review the project or definitively determine whether or not the project will result in an



adverse effect on the wetlands. However, conclusions can be drawn from the concept plans, based on our understanding of existing and proposed conditions, and experience with wetlands permitting.

The following Findings and Recommendations are intended to provide guidance to the Commission in their review of the concept plan and their review of the project when fully engineered plans are available and/or when a Notice of Intent (NOI) Application is filed.

Based on the information available at this point, the two primary issues associated with this project that affect the Wetland Resource Areas on the property are, 1) vegetated buffers to the wetlands, and 2) Stormwater Management.

Vegetated Buffer

With regard to the vegetated buffer, the existing site development currently extends to within 10± feet of the BVW boundary, and in some areas encroaches into the BVW, leaving minimal or no vegetated buffer. The proposed project appears to improve upon these setbacks, removing work from within the BVW and potentially providing a modest increase in the buffer compared to existing conditions, depending on the limit of work and if buffer plantings are provided. Given site constraints and the requirements for building size and parking, providing an increased buffer may not be feasible; however, the designers should explore all potential alternatives and provide justification for the building size and orientation in the context of its close proximity to the wetlands and potential alternative configurations that would increase the vegetated buffer. In addition, planting plans should include measures to remove fill and restore the BVW where existing structures/features will be removed from the wetland..

Stormwater Management

As noted above, the site does not currently appear to contain any stormwater management controls or features. As a result, untreated stormwater runoff from the existing site may discharge into the wetland system, carrying various petroleum and chemical pollutants from vehicles and sediment from the parking areas. The potential for adverse environmental impacts from untreated stormwater is a significant concern, since the site may generate stormwater that affects the temperature and water quality of the downstream cold-water fishery in Mill Brook.

As a redevelopment project, the stormwater design must comply with DEP's Stormwater Management Standards and the NOI Application must include the DEP Stormwater Checklist and supporting stormwater calculations, construction period Stormwater Pollution Prevention Plan, Sediment Control Plan, and Long and Short Term Operation and Maintenance Plan. These standards are designed to ensure protection of adjacent wetlands and waterbodies through collecting and treating stormwater from impervious surfaces during and post-construction. The *Massachusetts Wetlands Protection Act Regulations* [310 CMR 10.02 (5)] specifically incorporate and mandate compliance with the Stormwater Management Standards; therefore, addressing these Standards is not optional, since it is required as part of the NOI Application.

It is important to note that because the project is a redevelopment project, full compliance with the Standards is not required; however, it is incumbent upon the design team to incorporate stormwater management measures that will result in an overall improvement compared to existing conditions and to comply with the Standards to the maximum extent practicable.

According to Stormwater Standard 7: “A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.” The preceding excerpt is from Chapter 3 of the Stormwater Standards which includes a Checklist for Redevelopment Projects that should be applied to the project by the Project Engineer.

Compliance with the Standards will be limited because this site has significant existing constraints (i.e., shallow groundwater and limited space available for above-ground stormwater basins) that will create design challenges. Nevertheless, in its review of the project, the Commission may request a detailed explanation of stormwater treatment options that were considered, including Low Impact Development (LID) features and why they were dismissed.

Since stormwater from the site will discharge to a wetland system that is tributary to a cold-water fishery, Stormwater Standard 6 (Chapter 1, Pages 15-20) and Stormwater Standard 10 are applicable and require particular attention. Standard 6 requires water quality treatment 1.0 times impervious surface and places certain restrictions on the use of proprietary BMPs due to the potential discharge to a cold-water fishery. Standard 10 prohibits illicit discharges to the stormwater management system and stipulates submittal of an Illicit Discharge Compliance Statement confirming that the proposed project has been designed to prevent the entry of any illicit discharges into the stormwater management system. Plans must depict all systems for conveying wastewater and/or groundwater on the site and demonstrate that there are no connections between the stormwater and any wastewater systems. For example, it may be necessary for the fire station truck washing and maintenance activities to occur in a separate self-contained drainage system designed to treat or separate potential contaminants for proper disposal and prevent discharge of contaminants into the project stormwater system and eventually into the wetland and the cold-water fishery.

As noted above, the project must be designed to comply with certain Standards “only to the maximum extent practicable.” There is no guidance in the Standards for determining what constitutes “the maximum extent practicable” and most Conservation Commissions are not equipped to make such a determination. This technical analysis should be performed by a Massachusetts Registered Professional Engineer with extensive experience applying and interpreting the Stormwater Management Standards.



Conclusion

As requested, LEC has completed a review of the Chilmark Firehouse Project concept plans under the *Massachusetts Wetlands Protection Act* (M.G.L. c. 31, s. 40, the *Act*), its implementing Regulations at (310 CMR 10.00), and the *Town of Chilmark Wetlands Protection Bylaw* and its implementing *Regulations* (the *Bylaw Regulations*). While a comprehensive review is not feasible with concept plans, our site evaluation and project review identified two primary issues that will affect how the project impacts wetlands; 1) the size of the vegetated buffer, and 2) the stormwater management system design. The extent to which the vegetated buffer is improved and stormwater management is provided will be key to maximizing protection of the Wetland Resource Areas on this property and the downgradient cold-water fishery.

The concept plan appears to result in a modest improvement to the vegetated buffer. Native plantings between the limit of work and the wetland edge will increase and improve the vegetated buffer functions and wetland protection.

The project must be designed to comply with DEP’s Stormwater Management Standards for Redevelopment projects with a particular focus and attention to Standard 6 and Standard 10. As such, the project must include stormwater treatment measures that result in an overall improvement over existing conditions and must comply with all Standards to the maximum extent practical. Due to the inherent ambiguity and technical nature of stormwater management system design review, we recommend the Commission consider hiring a Massachusetts Registered Professional Engineer with extensive experience applying and interpreting the Stormwater Management Standards in order to review the project when the NOI is submitted or at some point in the project design process. Third party technical review for complex projects is standard procedure in Massachusetts. It will ensure the project is designed to maximize wetland protection in the context of site constraints, with sensitivity toward construction cost considerations.

We appreciate the opportunity to work with the Commission on this project. Please don’t hesitate to let us know if we can be of further assistance.

Sincerely,

LEC Environmental Consultants, Inc.

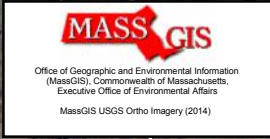
Mark L. Manganello
Assistant Director of Ecological Services

Ann M. Marton, President
Director of Ecological Services

Attachments

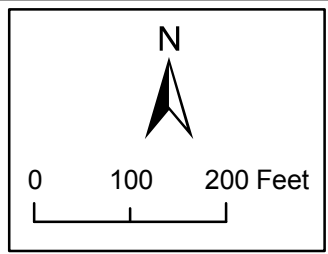
Attachment A

Aerial Orthophoto Map



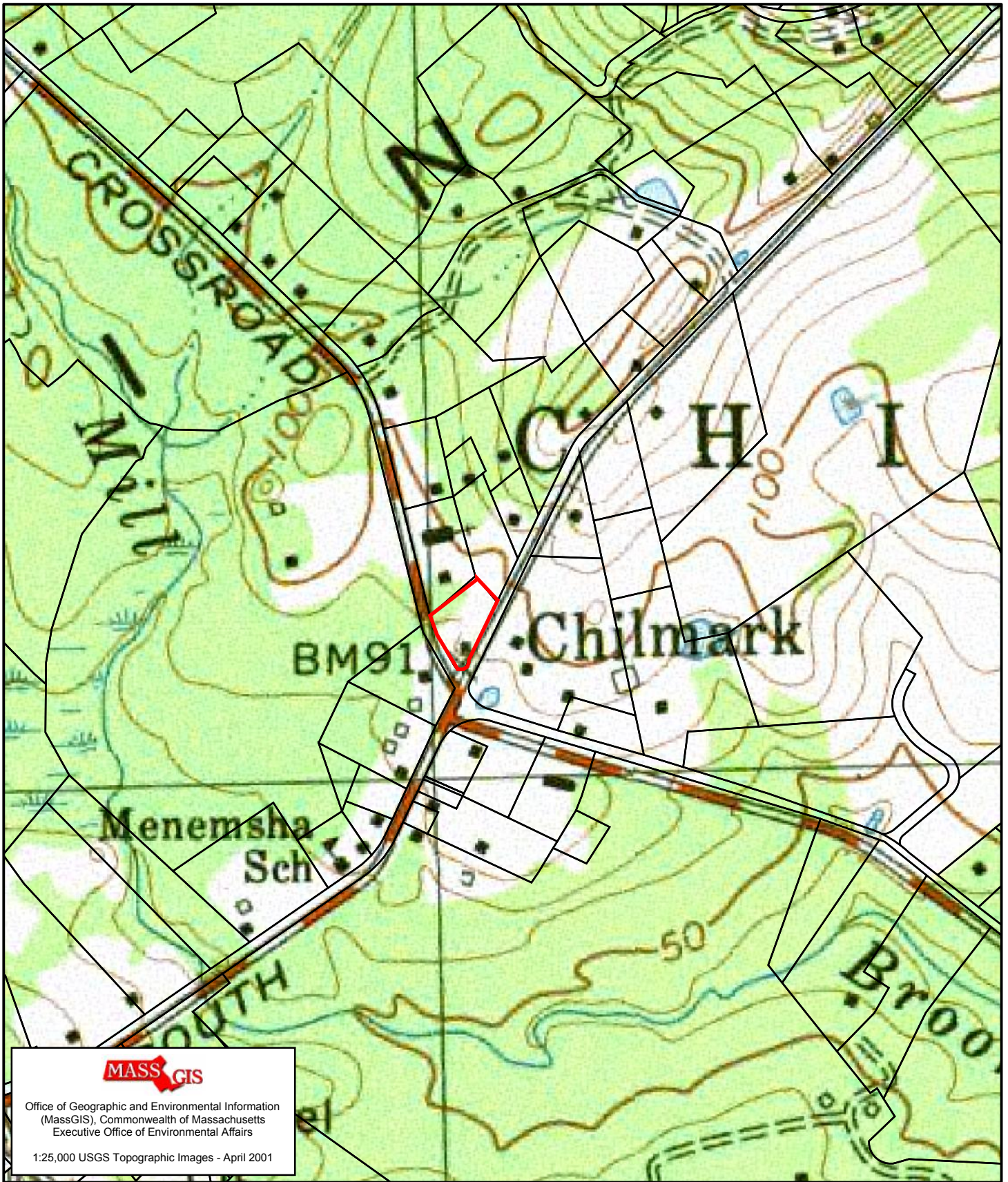
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Chilmark Fire Station
 401 Middle Road
 Chilmark, MA
 June 21, 2019



Attachment B

USGS Topographic Map

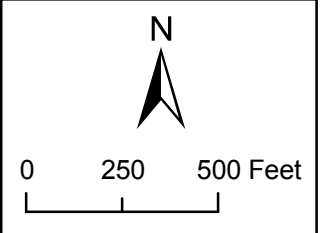


MASS GIS
Office of Geographic and Environmental Information
(MassGIS), Commonwealth of Massachusetts
Executive Office of Environmental Affairs
1:25,000 USGS Topographic Images - April 2001

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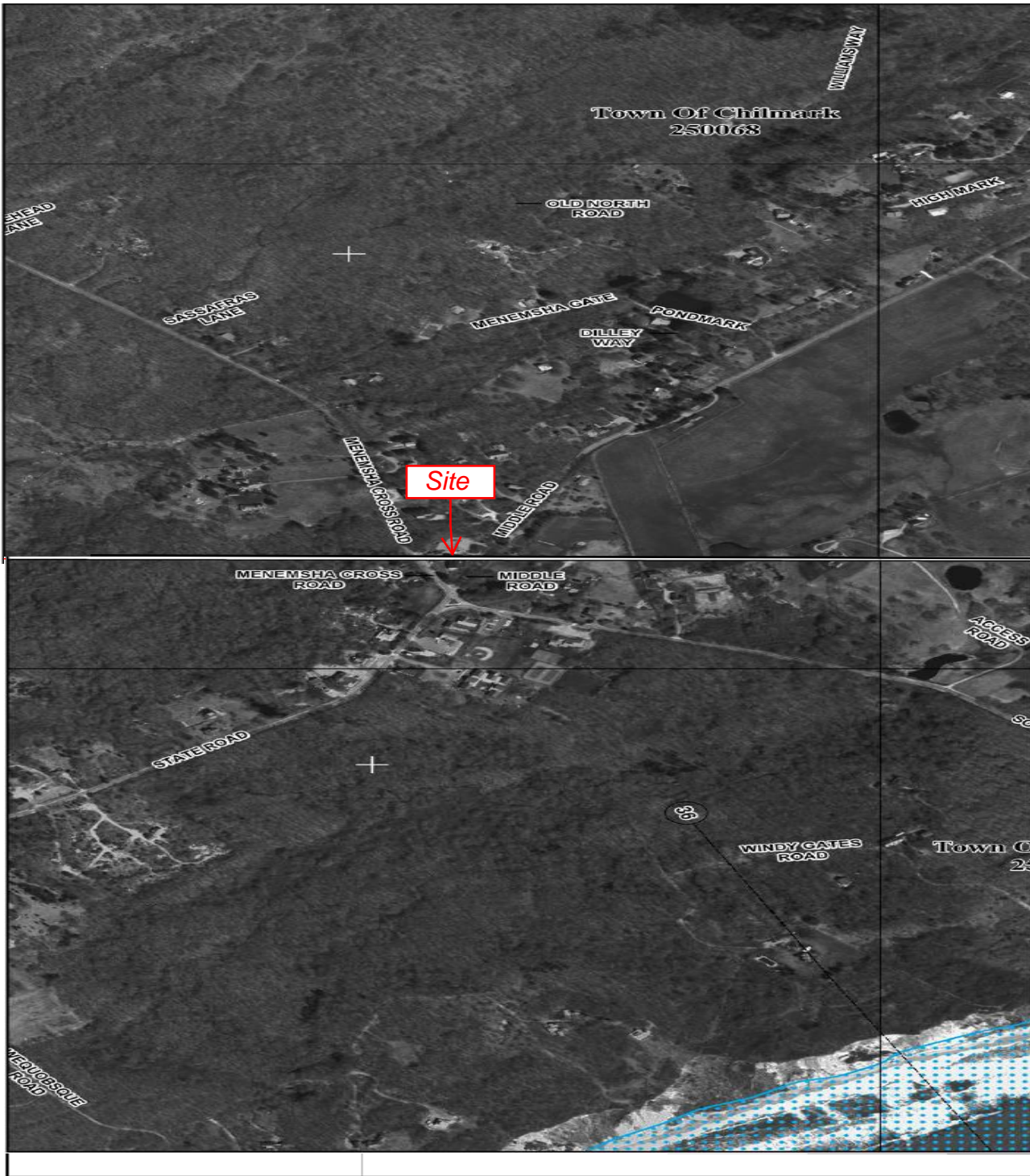
Chilmark Fire Station
401 Middle Road
Chilmark, MA

June 21, 2019

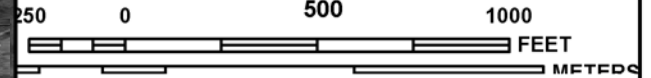


Attachment C

FEMA Flood Insurance Rate Map



MAP SCALE 1" = 500'



NFIP

PANEL 0176J

FIRM

FLOOD INSURANCE RATE MAP
 DUKES COUNTY,
 MASSACHUSETTS
 (ALL JURISDICTIONS)

PANEL 176 OF 227

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHILMARK, TOWN OF	250068	0176	J

NOTE:
 THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
 25007C0176J

MAP REVISED
 JULY 20, 2016

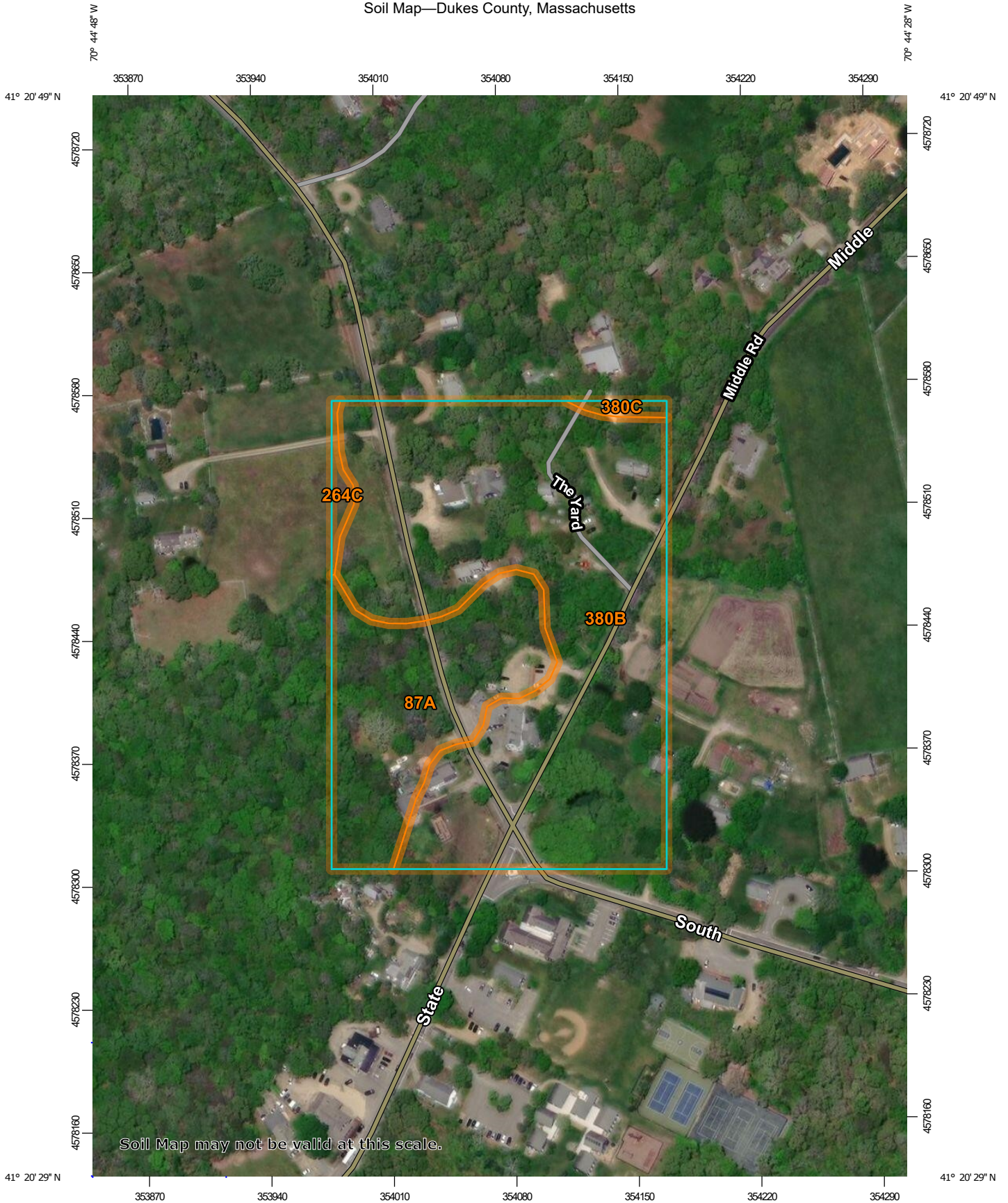
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Attachment D

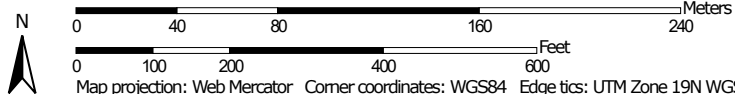
Soil Map

Soil Map—Dukes County, Massachusetts



Soil Map may not be valid at this scale.

Map Scale: 1:3,000 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84




Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

5/15/2019 Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dukes County, Massachusetts
 Survey Area Data: Version 15, Sep 5, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 5, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
87A	Ridgebury Variant fine sandy loam, 0 to 3 percent slopes	3.1	24.5%
264C	Eastchop loamy sand, 8 to 15 percent slopes	0.2	1.2%
380B	Nantucket sandy loam, 3 to 8 percent slopes	9.3	73.4%
380C	Nantucket sandy loam, 8 to 15 percent slopes	0.1	0.8%
Totals for Area of Interest		12.7	100.0%

Attachment E

Photographs



Photo 1: Ditch extending from Middle Road; mowed wet meadow to the left.



Photo 2: Intermittent stream at mouth of culvert beneath Menemsha Crossroad.



Photo 3: Gravel parking lot.



Photo 4: Storage container and rear of EMS building adjacent to wetlands.



Photo 5: EMS building located adjacent to wetlands.



Photo 6: Small stormwater basin with sump pump discharging adjacent to parking lot.



Photo 7: Wetland interior to the west of the parking lot.



Photo 8: Wetland interior to the west of the parking lot.



Photo 9: Wet meadow area to the northwest of gravel parking lot.



Photo 10: Intermittent stream and wet meadow northwest of parking lot.



Photo 11: Surface water within the wetland near Menemsha Crossroad.