

ATTACHMENT A

SUPPORTING PROJECT DOCUMENTS

FY21 RFR ID: DER 2020-04
CULVERT REPLACEMENT GRANT APPLICATION
TIAH'S COVE ROAD
WEST TISBURY

The following documents are included in this pdf.

1. Section 6.0 of the Aquatic Habitat Connectivity Survey of the Mill Brook prepared by the Division of Ecological Restoration August 2012.
2. Field Data form: Stream Crossing Inventory dated 5/12/2012 prepared by DER.
3. Letter from Kent A. Healy dated March 29, 2018 regarding determination that un-named tributary is not tidal.
4. Field Notes from site visit July 17, 2018, prepared by Brian Kelder, MA DER
5. Order of Conditions (DEP File # SE79 391-issued by the West Tisbury Conservation Commission on January 2, 2019 recorded in the Dukes County Registry of Deeds in Book 1486, Page 781.
6. Map showing FEMA Flood Zone in location of culvert.
7. Aerial photo showing site location.
8. Copy of FEMA approved Local and Regional Multi-Hazard Mitigation Plan for Dukes County approved by FEMA 04/26/2016.
9. Copy of Commonwealth Community Compact dated July 25, 2017.
10. Summary of Findings Community Resilience Building Workshop West Tisbury and Chilmark dated 6/30/18
11. Copy of Bid
12. Project Plans: Structural Set Proposed Culvert Replacement in West Tisbury, Mass Prepared for the Town of West Tisbury dated February 11, 2019 as revised to December 19, 2019 (3 sheets)
[Note: This plan will also be submitted separately.]

Aquatic Habitat Connectivity Survey

Mill Brook

West Tisbury and Chilmark, Massachusetts

August 2012



Upstream Face of culvert on Witch Brook at North Road

Prepared for
Town of West Tisbury

Prepared by
Massachusetts Division of Ecological Restoration
Department of Fish and Game
251 Causeway Street, Suite 400
Boston, MA 02114



Commonwealth of Massachusetts

Division of Ecological Restoration

6.0 UN-NAMED TRIBUTARY TO TIAH'S COVE

The Road-Stream Crossing Inventory Data Form for this site can be found in Appendix E.

6.1 Existing Conditions

This section describes the current conditions at this location as observed in the field and from other sources.

Tiah's Cove forms a lobe of Tisbury Great Pond on the south shore of Martha's Vineyard. The Cove is fed in part by an un-named tributary (UNT) that flows in at the Cove's northernmost extent after crossing under Tiah's Cove Road. The site was examined very near low tide (low pond) in Tiah's Cove. Based on the observed lack of localized scour or vegetation community discontinuity, it does not appear that the tide reaches as high as the road culvert, though the tide may cause back-up of the freshwater coming down the UNT. This assumption should be verified. The Stream Crossing Standards were developed specifically for freshwater, non-tidal rivers and streams and may not be appropriate for coastal waterways. Tidal crossing projects need to take into consideration:

- Daily fluctuating tides, bidirectional flows, tidal inundation and coastal storm surge,
- Flood protection of adjacent and upstream infrastructure,
- Saltwater channel morphology and potential impacts due to sea-level rises, and
- Hydraulic modeling to determine appropriate sizes of structures for desired degree of tidal restoration

Qualified personnel and consultants should carefully consider engineering design and construction techniques.

The UNT passes under Tiah's Cove Road via a corrugated metal pipe. This crossing does not meet the Massachusetts Stream Crossing Guidelines for fish and wildlife. The culvert measured 18 inches in diameter at its upstream end and 28 inches in diameter at its downstream end. Both ends of the culvert are supported by concrete headwalls. Part of the upstream⁹ headwall has dislodged and fallen into the stream forming a partial barrier to fish and wildlife movement through the culvert (see Photo 6). In addition, what appeared to be a coaxial cable was observed passing through the culvert on its eastern side. It is not clear what service, if any, this cable provides and to what adjoining properties.

It appears that stormwater draining from both directions on Tiah's Cove Road does not have a ready path off of the roadway, except for discharging directly into the brook at the culvert location. During rain events,

⁹ In general, the directionals "seaward" and "landward" are used here at sites that are tidally affected whereas the directionals "downstream" and "upstream" are used here at sites that are not tidally affected

Aquatic Habitat Connectivity Survey

water apparently collects at various points along the roadway in this area¹⁰. This condition is exacerbated by erosion of the soft shoulder by cars turning on the south side of the road, east of the culvert, and erosion of the dirt driveway opposite.

6.2 Recommendations

The culvert appears to adequately handle a range of flows and certainly allows passage of most fish species under moderate to lower flows. However, because of its blockage of some fish and wildlife passage and apparent hydraulic inadequacy, it does not meet the Massachusetts Stream Crossing Standards for fish and wildlife passage. In order for this crossing to achieve unimpeded passage of fish and wildlife, the crossing would need to be replaced, or at least modified, per the Standards. The size, alignment, geometry, and invert elevation of a replacement culvert would need to be determined based on engineering studies, consideration of beneficial and adverse environmental impacts, and fluvial processes in the downstream reach, including potential changes in downstream conditions that could occur following replacement of the Tiah's Cove Road culvert.

Though not assessed as part of this study, the opportunity for installing stormwater BMPs within the upland right-of-way should be explored. Grass-lined swales might prove to be a feasible and effective measure to reduce direct road runoff, if space is available.

It is not immediately clear why this culvert has a smaller upstream opening as compared to its outlet. A professional engineer should be consulted relative to hydrologic and hydraulic changes that might result from replacing this culvert with a more wildlife-friendly crossing. In addition, before pursuing any replacement, the Town should make contact with the relevant utilities that might be responsible for the coaxial cable currently running through the culvert and develop a plan to terminate or relocate that service.

Replacement of this culvert with a larger, more wildlife-friendly crossing would require excavation of the Tiah's Cove Road embankment, water management during construction, and installation of a new culvert. The design of a new crossing would likely need to be performed in accordance with MassDOT standards. Vehicular traffic would have to be maintained during construction. Active restoration of the brook landward or seaward from Tiah's Cove Road (e.g., excavation of sediment) is not considered in the ballpark cost estimates presented here.

The decision on what crossing structure to install could be made based in part on the results of a brief alternatives analysis in which a qualified engineer evaluated each crossing type against the site conditions and constraints. Total costs for this project might range from \$230,000 to \$500,000. The cost for such a study (including data collection, modeling, and a report with engineer's estimate of cost) might

¹⁰ Richard Olson, personal communication.

Aquatic Habitat Connectivity Survey

range from \$25,000 to \$40,000. The range of cost for permit application consultation, preparation, and submittal is from \$10,000 to \$20,000, with the actual level-of-effort being highly dependent on regulatory requests for information. The development of design plans to support regulatory permitting and bid solicitation is potentially \$20,000, and the cost for construction is likely to be at least \$175,000 depending on the crossing structure chosen.

6.3 Regulated Resources

Management of impacts to regulated wetland resource areas must be considered in the design and installation of any new crossing. This section briefly addresses jurisdictional resources regulated by the Massachusetts Department of Environmental Protection (MADEP) and West Tisbury Conservation Commission under the Massachusetts Wetlands Protection Act (WPA) and the West Tisbury Wetlands Protection Bylaw. Jurisdictional resource areas were not specifically identified or delineated by DER as part of this work; the intent of this section is solely to discuss potential regulated resources that may occur in and along the project reach of the UNT to Tiah's Cove. It is presumed here that the UNT is a perennial stream according to the WPA.

Regulated resource features and areas that may occur in and along the UNT may include Bank, Land Under Waterbodies and Waterways (LUWW), Bordering Vegetated Wetland (BVW), Bordering Land Subject to Flooding (BLSF), and Riverfront Area. This list is not exhaustive.



Photo 4: The downstream side of the outlet of the Old Farm Road Dam



Photo 5: View looking upstream from the culvert on Tiah's Cove Road



Photo 6: Inlet of culvert at Tiah's Cove Road showing the broken piece of the headwall in the foreground and coaxial cable exiting on the left.

APPENDIX E
Field Data Form for
Tiah's Cove Road Culvert

Scotswagon La Swales - good idea

5/12/2012

Data entry by NW Date: 8/6/12
Reviewed by _____ Date: _____

Field Data Form: Road-Stream Crossing Inventory

Coordinator UNT to Tish Cove Crossing ID# _____
Stream/River: Tish Cove Riv Road: Tish Cove Rd. Town: W. Tibby
Flow condition: Unusually low Typical low-flow Average flow Higher than average

GPS Coordinates (lat/long):

Decimal degrees N _____ W _____
OR Degrees, minutes, seconds North: D 41° M 22.482 S _____
West: D 70° M 38.988 S _____

Date: 8/6/12 Location: _____ Observer: _____
Photo IDs: #16-21 view of d/s face (1), (2), view d/s, u/s face, Tishy Cove looking u/s

Road/Railway Characteristics

Road surface: Paved Unpaved Railroad
Road type: 1-Lane road 2-Lane road Multilane road Divided highway Railroad Buried stream

Crossing/Stream Characteristics (during generally low-flow conditions)

Crossing type: Ford Bridge Open bottom arch Single culvert Multiple culverts (# _____)
 Removed No crossing
Condition of crossing: New Excellent Fair Poor
Does the stream at the crossing support fish? Yes Not likely Don't know
Is the stream flowing? Yes No
Crossing span: Severe constriction Mild constriction Spans bank to bank Spans channel & banks
Tailwater Scour pool: None Small (wider or deeper than stream) Large (width or depth 2X stream)
Crossing alignment matches stream? Yes (flow aligned) No (skewed)

Culvert/Bridge Cell Characteristics (Culvert/cell #1; use page 3 for additional culverts or cells)

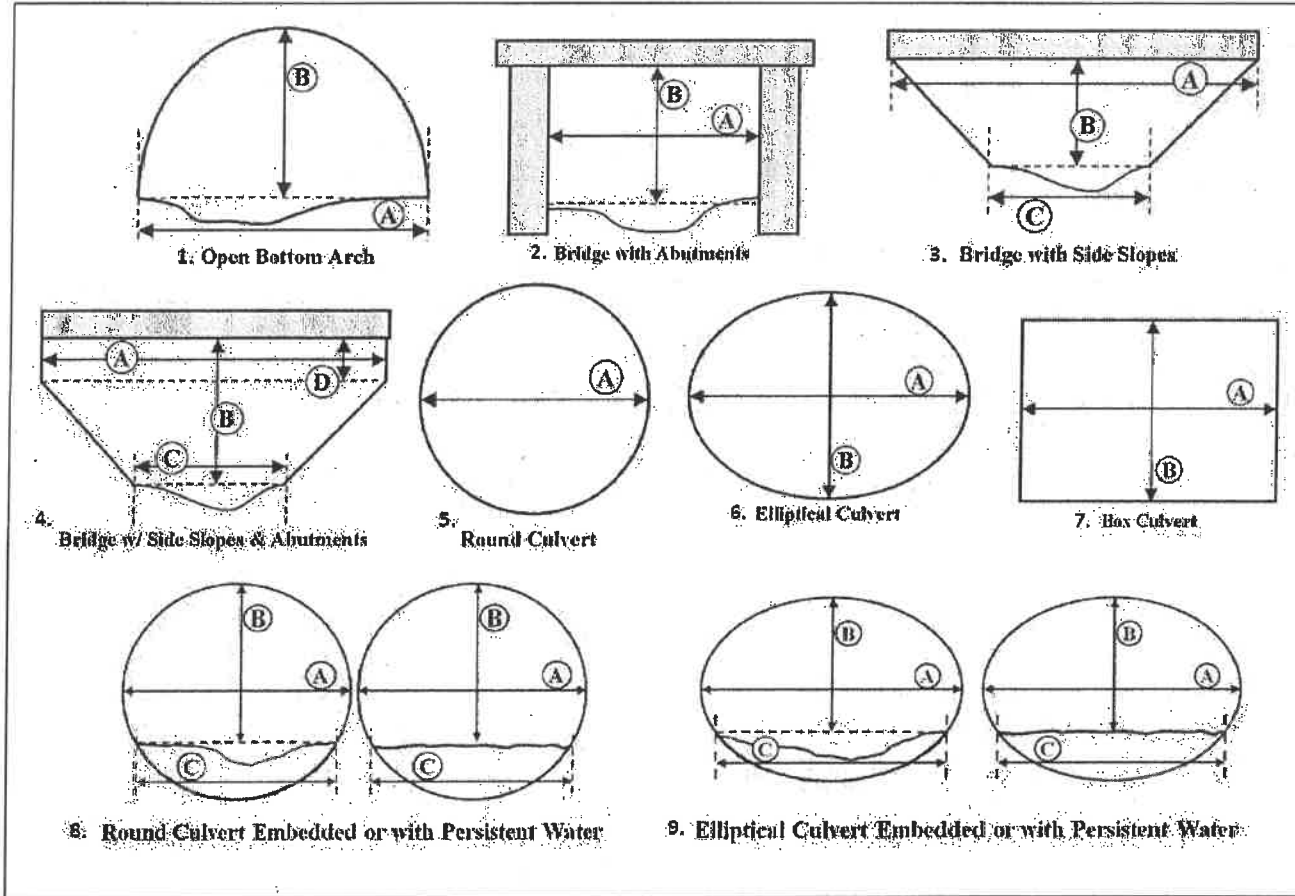
Structure embedded? Not embedded Partially embedded Fully embedded No Bottom
Structure substrate: None (smooth) None (rough/corrugated) Inappropriate Contrasting Comparable
Internal features None Slip lined Baffles/Sills Weir(s) Support structures
Physical Barriers to fish and wildlife passage: Severe Moderate Minor None
Describe any barriers: likely velocity barrier

Is there a clear line of sight through the structure? Yes No
Does the structure provide dry passage suitable for use by terrestrial wildlife? Yes No
If yes, what is the maximum structure height in the portion that offers dry passage? N/A Feet
Comments _____

For the following questions use as a reference a portion of the natural stream channel that is outside the influence of the crossing structure and not otherwise altered.

Water depth matches stream? Yes (comparable) No (deeper) No (shallower) Dry
Water velocity matches stream? Yes (comparable) No (slower) No (faster) Dry
Crossing Slope matches stream? Yes (comparable) No (flatter) No (steeper)

#2



Length of stream through crossing: 30 Feet

Inlet Structure Type (from above): 1. 2. 3. 4. 5. 6. 7. 8. 9. Ford

Inlet Dimensions: A) 28 (ft.) B) _____ (ft.) C) _____ (ft.) D) _____ (ft.) Submerged

Inlet Water Depth (max depth inside the structure at the inlet): 48 Inches Measured Estimated

Inlet Drop None, or if present _____ Inches Measured Estimated

Outlet Structure Type (from above): 1. 2. 3. 4. 5. 6. 7. 8. 9. Ford

Outlet Dimensions: A) 28 (ft.) B) _____ (ft.) C) _____ (ft.) D) _____ (ft.) Submerged

Outlet Water Depth (max depth inside the structure at the outlet): 8 Inches Measured Estimated

Outlet Drop

a. Culvert bottom to water surface None, or if present _____ Inches Measured Estimated

b. Culvert bottom to stream bed None, or if present _____ Inches Measured Estimated

c. With an outlet drop, check one: Cascade Freefall Freefall onto cascade No drop

Armored streambed at outlet? Extensive Not extensive None

Comments Bankfull ~ 6' D/S 1/2 of inlet pool not accessible for request
Phase I in (?) on 1/2 culvert wall.
Left half of 1/2 head wall detached and partially blocking flow

#2

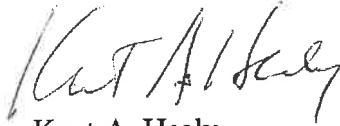
KENT A. HEALY Sc.D. PE
Civil Engineering
1 Farms End Road
P.O. Box 128
West Tisbury, MA 02575
508-693-6736

March
February 19, 2018

Tara Whiting, Chair
West Tisbury Conservation Commission
PO Box 278
West Tisbury, MA
02575

Dear Ms. Whiting;

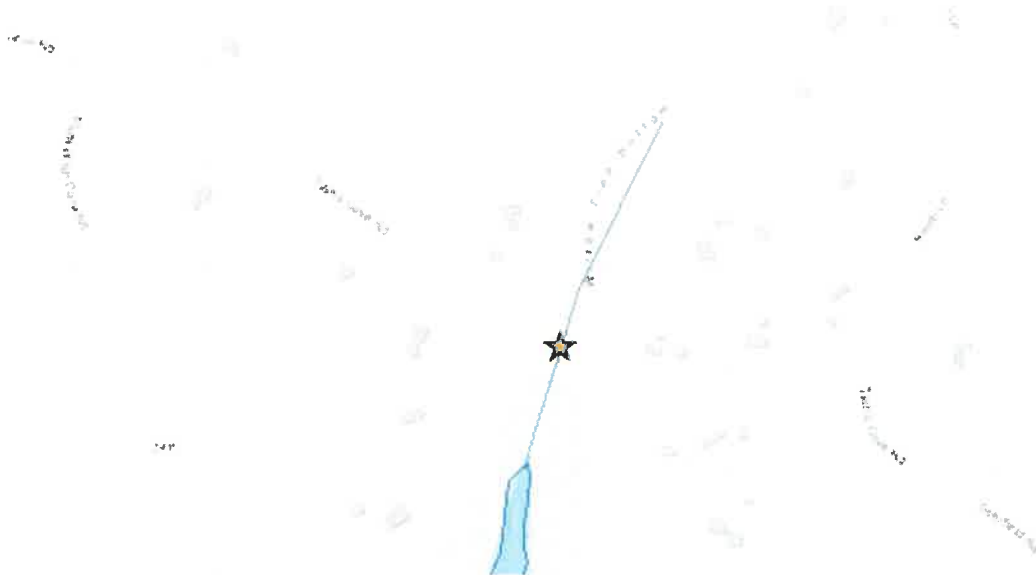
I have, over the last month when Tisbury Great Pond has been at it's highest 10 year level, measured the flow rate and electrical conductivity of the water flow through the culvert under Tiahs Cove Rd to the head of Tiahs Cove at the north end of Tisbury Great Pond. The flow results from rain fall on the approximately 50 acre water shed above the culvert and varies from less than one ft³/sec to 5 ft³/after heavy rain. The outlet water level is less than a foot above the level of Tisbury Great Pond when the pond is at its 10 year highest level, and the water has been fresh and never tidal.



Kent A. Healy
PE MA #28498

Field Notes from July 17th site visits in West Tisbury

Site 1: Tiah's Cove Road – Unnamed Tributary to Tiah's Cove



During the site visit I discussed the purpose and general considerations of the MA Stream Crossing Standards with representatives from the Town of West Tisbury. I did not conduct a formal survey or record any measurements at the site, but did make the following observations.

- The existing culvert is clearly undersized. While bankfull width was not measured, it appears that the culvert is less than 50% of bankfull.
- The culvert is deteriorating and the headwall is beginning to fail.
- There is a small scour pool at the structure outlet that is consistent with high velocity from an undersized culvert. Storm water runoff may also be contributing to the erosion of the headwall and scour pool.
- At the time of our visit this site seemed to be a typical stream crossing without tidal influence. Based on its proximity to Tiah's cove, which has periodically fluctuating water level and/or tidal influence, this condition should be confirmed.

The following recommendations assume the site is confirmed as a non-tidal stream crossing. The MA Stream Crossing Standards are specifically developed for non-tidal systems.

In order to choose a preferred replacement structure for this site, I recommend the Town engages a firm to conduct work beginning with **Field Data Collection** to select a preferred structure. The information gathered in this type of survey will help you select a replacement structure that is properly sized for the site and considers any site constraints in the context of the Stream Crossing Standards. I

Brian Kelder
MA Division of Ecological Restoration

have attached document that outlines DER's Recommendations for various phases of project development.

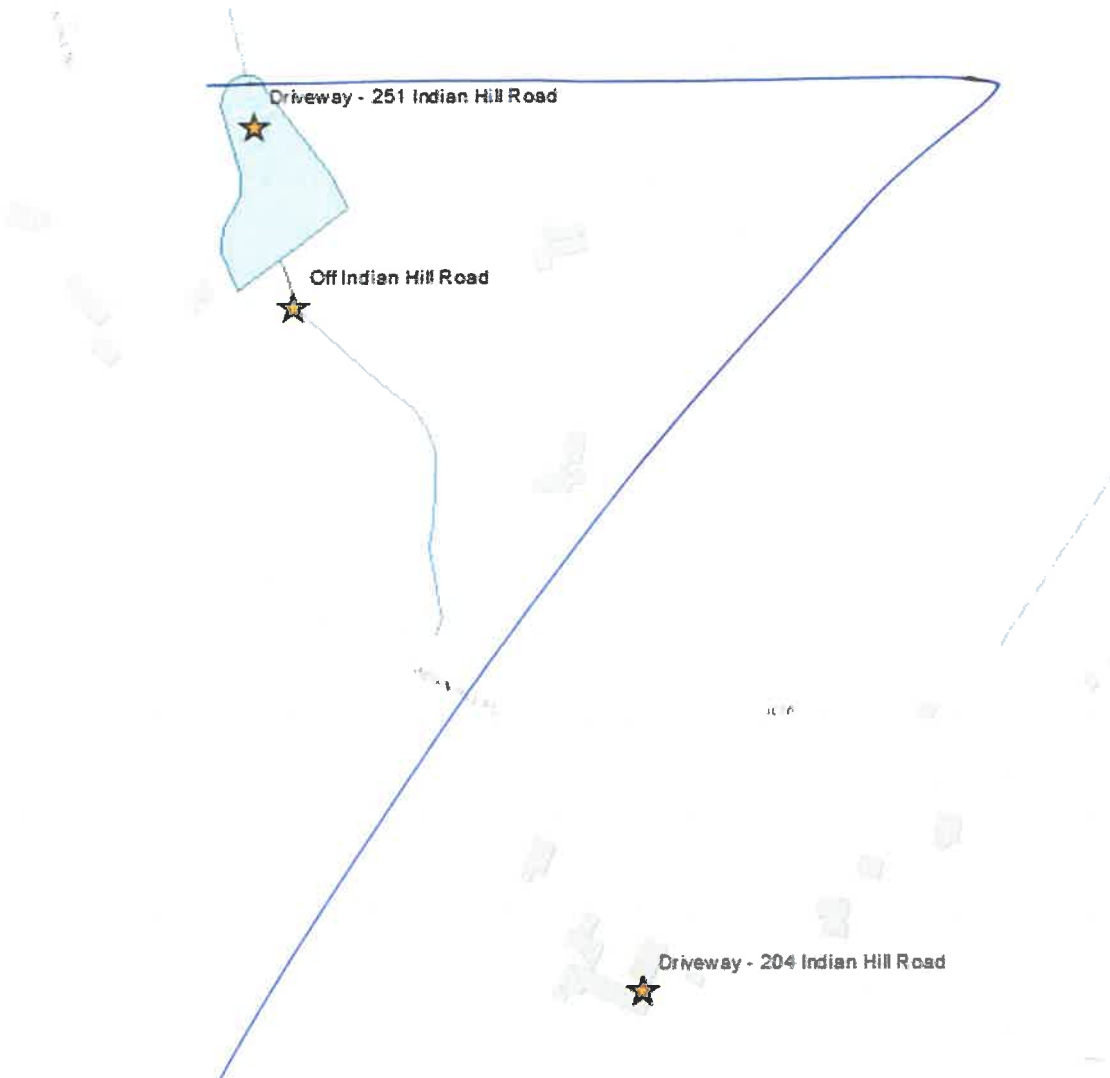


Figure 1. Sites on Unnamed Tributary to Mill Brook, West Tisbury

Site 2: 204 Indian Hill Road – Unnamed Tributary to Mill Brook

This stream crossing is made up of 3 12-18" corrugated metal pipes. The stream is channelized through the farm, but streambed material and instream habitat appear favorable to fluvial fish downstream of the crossing. The crossing is less than bankfull width, has a perched outlet, and lacks natural substrate. Under the flow conditions observed, it is likely a severe barrier to the upstream migration of fish with the exception of American eel. The culverts and headwall of the crossing are also beginning to fail and in risk of collapse/washout during high flows.

The owner expressed interest in replacing the culverts with a spanning structure. This approach would restore habitat connectivity and decrease the risk of washout. I advised that when the culverts are

4



2019 00000337

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
and West Tisbury Wetlands Protection Bylaw and
Regulations

Provided by MassDEP:

SE79-391

MassDEP File #

eDEP Transaction #

West Tisbury

City/Town

A. General Information

Please note:
this form has
been modified
with added
space to
accommodate
the Registry
of Deeds
Requirements

1. From: West Tisbury
Conservation Commission

2. This issuance is for
(check one): a. Order of Conditions b. Amended Order of Conditions

3. To: Applicant:

a. First Name Town of West Tisbury b. Last Name _____
c. Organization _____
d. Mailing Address P.O. Box 278
West Tisbury MA 02575
e. City/Town _____ f. State _____ g. Zip Code _____

Important:
When filling
out forms on
the
computer,
use only the
tab key to
move your
cursor - do
not use the
return key.



4. Property Owner (if different from applicant):

a. First Name _____ b. Last Name _____
c. Organization same as above
d. Mailing Address _____
e. City/Town _____ f. State _____ g. Zip Code _____

5. Project Location:

Tiah's Cove Road West Tisbury
a. Street Address _____ b. City/Town _____
n/a n/a
c. Assessors Map/Plat Number _____ d. Parcel/Lot Number _____

Latitude and Longitude, if known: 41d22'28m93"N 70d38'58m95"W
d. Latitude _____ e. Longitude _____

#5



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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West Tisbury
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A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
Dukes
 a. County 357 b. Certificate Number (if registered land) 190 and 194
 c. Book _____ d. Page _____
7. Dates: November 13, 2018 December 12, 2018 January 2, 2019
 a. Date Notice of Intent Filed b. Date Public Hearing Closed c. Date of Issuance
8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
Proposed Culvert Replacement 2 sheets
 a. Plan Title
Vineyard Land Surveying & Engineering, Inc. Reid G. Silva
 c. Signed and Stamped by
November 6, 2018 varies
 d. Final Revision Date e. Scale
Project Description/Narrative see Exhibit B November 7, 2018
 f. Additional Plan or Document Title g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:
 Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:
- a. Public Water Supply b. Land Containing Shellfish c. Prevention of Pollution
 d. Private Water Supply e. Fisheries f. Protection of Wildlife Habitat
 g. Groundwater Supply h. Storm Damage Prevention i. Flood Control
2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

- a. the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

#5



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
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B. Findings (cont.)

Denied because:

- b. the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**
- 3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) 0 a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input type="checkbox"/> Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	<u>66</u> a. square feet	<u>66 temporary</u> b. square feet	c. square feet	d. square feet
6. <input type="checkbox"/> Land Under Waterbodies and Waterways	a. square feet e. c/y dredged	b. square feet f. c/y dredged	c. square feet	d. square feet
7. <input type="checkbox"/> Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. <input type="checkbox"/> Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

#5



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands**

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B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	a. square feet	b. square feet	c. <u>cu yd</u> nourishment	d. <u>cu yd</u> nourishment
14. <input type="checkbox"/> Coastal Dunes	a. square feet	b. square feet	c. <u>cu yd</u> nourishment	d. <u>cu yd</u> nourishment
15. <input type="checkbox"/> Coastal Banks	a. linear feet	b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	a. square feet	b. square feet		
17. <input type="checkbox"/> Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. <input type="checkbox"/> Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. <u>c/y dredged</u>	b. <u>c/y dredged</u>		
21. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	620	620		
	a. square feet	b. square feet		
22. <input type="checkbox"/> Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

#5



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands**

WPA Form 5 – Order of Conditions

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B. Findings (cont.)

* #23. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BWV) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. Restoration/Enhancement *:

a. square feet of BWV

b. square feet of salt marsh

24. Stream Crossing(s):

0

1

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. The work is a maintenance dredging project as provided for in the Act; or
 - b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
 - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on _____ unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

#5



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]

"File Number SE79-391 "
11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
and West Tisbury Wetlands Protection Bylaw and
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City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.
19. The work associated with this Order (the "Project")
- (1) is subject to the Massachusetts Stormwater Standards
- (2) is NOT subject to the Massachusetts Stormwater Standards

If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
 - ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
 - iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- g) The responsible party shall:
 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

See Special Conditions set forth in Exhibit A attached hereto and incorporated herein by this reference.

-
-
-
- 20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

- 1. Is a municipal wetlands bylaw or ordinance applicable? Yes No
- 2. The West Tisbury Conservation Commission hereby finds (check one that applies):

- a. that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

- b. that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

West Tisbury See Exhibit A
1. Municipal Ordinance or Bylaw _____ 2. Citation _____

- 3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

See Exhibit A attached hereto and incorporated herein by this reference.

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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eDEP Transaction #

West Tisbury
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

1/2/19
1. Date of issuance

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2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Benjamin Rantich
Dr. Ben
Tara Wykes

John R. Smith
Richard Smith
Nisat Brown

by hand delivery on

by certified mail, return receipt requested, on

Date

Date

January 2, 2019

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations; the Department has no appellate jurisdiction. Appeals of this Order under the West Tisbury Wetlands Protection Bylaw and Regulations may be made to the Dukes County Superior Court in accordance with M.G.L. Ch. 249 Sec.4.

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EXHIBIT A

Special Conditions
Tiah's Cove Road Culvert Replacement
DEP File # SE79-391

Project Description and Jurisdiction:

On November 13, 2018 Vineyard Land Surveying & Engineering, Inc. filed a Notice of Intent (NOI) on behalf of the Town of West Tisbury (the "Applicant"), for a project to replace a failed culvert on Tiah's Cove Road. Tiah's Cove, part of Tisbury Great Pond, is fed in part by an unnamed tributary that flows in at the cove's northernmost extent after crossing under Tiah's Cove Road. It has been determined that this is not a tidal crossing project. The unnamed tributary passes under Tiah's Cove Road via a corrugated metal pipe. The culvert does not meet the Massachusetts Stream Crossing Guidelines for fish and wildlife passage. The bottom quarter of the existing culvert has corroded leaving a sand and gravel bed at the base of the culvert. The headwalls at the ends of the culvert have cracked and are coming apart. See Exhibit B for a more detailed project description and construction sequence. The construction details and composition of the culvert substrate are set forth on the project plan referenced below.

The replacement culvert has been designed to meet the Massachusetts Stream Crossing Guidelines to the extent practicable.

The Conservation Commission has conducted an on-site inspection, reviewed the NOI and submitted information, and has determined that the area where the work is proposed is significant to the values of the Wetlands Protection Act (the "Act") and the West Tisbury Wetlands Protection Bylaw (the Bylaw"). A public hearing was held on December 11.

This project was reviewed for compliance with the Act and 310 CMR 10.02 [Statement of Jurisdiction], 10.55 [Bordering Vegetated Wetland], and Riverfront Area [10.58].

Additional Jurisdiction under the Bylaw The Conservation Commission has conducted an on-site inspection, reviewed the NOI and submitted information and has determined that the area where the work is proposed is significant to the values of the Bylaw.

Under Section II of the Bylaw, the Buffer Zone is considered to be a Resource Area. This project was reviewed for compliance with Section IV [Buffer Zone], Section XVI [Vegetated Wetlands], and Section XX [Riverfront Area] of the Bylaw Regulations.

Findings under the Act and the Bylaw:

In making a decision on this project, the Commission has considered the magnitude of alteration, the environmental significance of the site, reasonable alternatives, and the minimization of impact and the extent of mitigation measures.

EXHIBIT A

The Commission finds that each parcel of land and proposed project thereon has its own unique characteristics and impacts, therefore, every project brought before the Commission for approval will be considered on a site specific basis. And, because of this site specificity, each project will stand alone and shall not set a precedent in the decisions to be made on subsequent projects. Due to the project location and project design, the proposed project, as conditioned, is allowed but the approval does not set any sort of precedent as each property and project are determined on their own merits.

The Commission finds that this project meets the definition of a Limited Project under 310 CMR 10.53(3) (i).

The Commission finds that the project, as proposed in the NOI and supplemental information will meet the General Performance Standards to the maximum extent feasible for Bank [10.54 (4)], Bordering Vegetated Wetlands [310 CMR 10.55 (4)], and Riverfront Area[310 CMR 10.24 (7) and 10.58(4)].

The Commission finds that the proposed project will have no long term adverse impact to Land Subject to Coastal Storm Flowage.

The Commission finds that the proposed project conforms to the provisions of the Massachusetts Stream Crossing Guidelines to the extent practicable.

Per 310 CMR 10.05 (6)(b) and 10.53, the Commission finds that the project as proposed in the NOI, and as conditioned, will not result in any adverse impact to any of the Resources Areas protected under the Act.

The Commission finds that the project as proposed in the NOI and supplemental information will meet the General Performance Standards under the Bylaw at Section XIII [Land Subject to Coastal Storm Flowage,] Section XIV, [Inland Bank], Section XVI [Vegetated Wetlands] and Section XX [Riverfront Area].

The Commission finds that the project as proposed in the NOI and as conditioned will not result in any adverse impacts to any Resource Areas protected under the Bylaw.

Special Conditions under the Act and the Bylaw

- 1) The Applicant and the Applicant's agent(s) shall adhere to General Conditions 1 through 17 of this Order.
- 2) The term "Applicant" as used in this Order of Conditions shall refer to the owner, any successor in interest or successor in control of the property referenced in the NOI, supporting documents and this Order of Conditions. The Commission shall be notified in writing within 30 days of all transfers of title of any portion of property that take place prior to issuance of the Certificate of Compliance.

EXHIBIT A

- 3) The form provided at the end of this Order shall be completed and stamped at the Dukes County Registry of Deeds, after the expiration of the 10-day appeal period and if no request of appeal has been filed with the Department of Environmental Protection. This form should be returned to the Commission in accordance with General Condition 8, and prior to the commencement of work.
- 4) The Commission has approved the proposed project in accordance with the specifications and notes shown a plan entitled, "Proposed Culvert Replacement in West Tisbury (two sheets), prepared for the Town of West Tisbury dated November 6, 2018 by Vineyard Land Surveying and Engineering, Inc and in the Project Description/Narrative dated November 7, 2018 attached hereto as Exhibit B (together these are the "Project Plan").

All notes on the Project Plan are adopted as additional conditions unless otherwise stated. Where the Commission's orders are more restrictive, the Order shall apply. No deviation from the Project Plan is permitted without prior written approval of the Commission. **Any change to the Project Plan requires prior approval by the Commission. See General Conditions No. 13 and No. 14 regarding approval of changes to the Project Plan.**

- 5) It is the responsibility of the Applicant to procure all other applicable federal state and local permits and approvals associated with this project. Should issuance of additional permits result in a change in the project, the provisions of special condition #4 above apply.
- 6) It is the responsibility of the Applicant, Applicant's representative, owner and /or successor (s) to ensure that all conditions of this Order are complied with. **A copy of this Order of Conditions including the special conditions and Project Plans shall be included in all bids documents, construction contracts, subcontracts and specifications and shall be available on-site upon commencement and during the performance of any and all construction activities regulated by this Order.**
- 7) All site contractors shall review and adhere to these conditions of approval in performing the approved activities. **The Applicant or its representative shall obtain a signed receipt from all site contractors stating that they have reviewed and will adhere to this Order. The receipt(s) shall be submitted to the Commission.** Any adverse impact to the Resource Areas and/or the Buffer Zone caused by vehicles, equipment or workers shall be mitigated immediately by the Applicant in consultation with the Commission.
- 8) The most favorable time for replacing stream crossings is during period of low flow, generally July 1 through September 30. Recognizing the increase in traffic during July and August, this project shall be done at a dry time of year when there is a favorable five (5) day forecast and preferably timed to coincide with an opening of Tisbury Great Pond.

EXHIBIT A

- 9) Prior to the start of any excavation or construction, there shall be a pre-construction meeting on the site involving the contractor conducting the work, the site engineer, the Applicant or their agent, and a member or agent of the Commission to ensure that all parties understand the requirements of this Order. **The pre-construction site visit shall be arranged with the Commission office at least 72 hours in advance of the start of work.**
- 10) Prior to the commencement of any work at the site, the Applicant shall submit a contingency plan to the Commission for approval, which provides in an emergency for pumped water to be contained in a settling basin to reduce turbidity prior to discharge into a resource area. The construction details and composition of the culvert substrate are set forth on the project plan referenced below.
- 11) All construction equipment must be cleaned of accumulated soil or plant matter from other sites and inspected for leaks off site prior to entering the project premises. The only vehicles or equipment approved to enter or cross the wetland resource area at any time, are those that shall be directly involved in the installation of the culvert and reconstruction of the streambed. Any impacts caused to the wetland resource by these vehicles shall be rectified.
- 12) The project specifications call for a 12'x30 ft. long PVC pipe to be installed to divert the flow of the stream during construction. The actual length needed will be determined by the contractor. The contractor shall place anti-seep collars around the diversion pipe. The upstream end of the culvert will be sand-bagged to direct all flow into and through the pipe. If practicable, the dewatering equipment will be in place at the time of this site visit.
- 13) Dewatering shall be done prior to excavation. Dewatering activities shall be conducted as described in the Project Narrative and shall be monitored daily by the contractor or the Applicant's representative to ensure that sediment-laden water is appropriately settled prior to discharge toward the wetland resource areas. The dewatering plan shall minimize the extent and duration of hydrological disruption. Dewatering shall be pumped through a hose to two existing vegetated drainage swales to the west of the culvert. Otherwise, no discharge of water is allowed directly into an area subject to jurisdiction under the Act or Bylaw.
- 14) When using a diversion pipe the contractor shall make sure that there is adequate pumping capacity available to handle storm flows.
- 15) To the extent practicable, post construction surface water runoff will be directed to the vegetated drainage swales referenced above, or to new drainage swales to be created as necessary.
- 16) The contractor shall take care to minimize impact to riparian vegetation and prevent excavated material and concrete wash from running into water bodies and other

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EXHIBIT A

sensitive areas by using appropriate sediment barriers such as silt fencing, straw [not hay] bales, or mats where necessary.

- 17) No earthen embankment in the Buffer Zone shall have a slope steeper than 2:1 (horizontal: vertical) without prior written approval of the Commission.
- 18) Pumps, generators or other stationary equipment containing fuel, oil hydraulic fluid or other potential contaminants shall not be stored or operated within the un-named tributary or Tiah's Cove or the buffer zone. If spillage is observed, the equipment shall be taken out of service immediately.
- 19) There shall be no stockpiling of new or excavated materials at the project site. The Applicant or its designee shall be responsible for removing all excavated materials directly into a truck, including surplus soils and asphalt, promptly and properly disposed of at an off-site disposal area which complies with all federal, state and local requirements and regulations.
- 20) No oils, calcium chloride or other salt shall be used within 200 feet of the stream and Tiah's Cove during any construction phase for the control of dust.
- 21) **The contractor shall adhere to the specifications for construction of the streambed as detailed on the Project Plan and shall use Best Available Measures to insure streambed continuity is maintained.**
- 22) All fill brought on site must be clean, debris-free and devoid of invasive plants or their parts or seeds.
- 23) All disturbed areas shall be stabilization and re-vegetated.
- 24) Upon completion of construction of the replacement culvert, the Applicant shall submit the following to the Conservation Commission to request a Certificate of Compliance (COC):
 1. A Completed Request for a Certificate of Compliance
 2. An as-built plan signed and stamped by a RPE or Land Surveyor, shall be submitted to the Commission upon completion of the project. A statement of any deviations from the Project Plan is required.
 3. A set of post-construction photographs of the work areas, access and project locus immediately after completion.
- 25) In case of emergencies, problems or the need to discuss site conditions with the Commission, call the Board Administrator at 508-696-6404.

EXHIBIT B



November 7, 2018

Tiah's Cove Road culvert replacement, West Tisbury



Tiah's Cove Brook Crossing – Design segment

PROJECT DESCRIPTION/NARRATIVE

Tiah's Cove Road crosses over Tiah's Cove Brook by means of a culvert/bridge. The culvert consists of an 18" diameter corrugated steel pipe.

The bottom quarter of the existing culvert has corroded leaving a sand and gravel bed at the base of the culvert. The headwalls at the ends of the culvert have cracked and are coming apart. The roadway surface has not failed yet and is still passable, however, failure of the roadway is imminent given the deterioration of the head walls and culvert pipe. The town of West Tisbury wishes to repair/replace the culvert to mitigate a potentially dangerous situation.

Design considerations: The replacement culvert/stream crossing has been designed to meet the Massachusetts Stream Crossing Guidelines to the extent practicable.

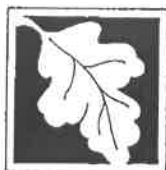
- Culvert width: stream design segment width: 6.1' – Proposed culvert width: 8.0' (ratio=1.31)
- Culvert height: 24" from substrate to concrete slab.
- Culvert slope: 3.0% = design segment slope.
- Culvert substrate: To match Design Segment.
 - Medium sand 20%

- Coarse Sand 30%
- Small Gravel (1/4"-1") 20 %
- Gravel/small Cobble (1"-4") 20%
- Large Cobble (4"-8") 10%

Tiah's Cove Road is a public way serving many homes, approximately 20 of which need to cross Tiah's Cove Brook for access. Being a well-traveled way and the sole access for some of these homes the project will be constructed in phases. The north side of the road will be built first preserving the south side of the road for access. The south side of the road will be constructed after the north side is finished and can support traffic.

The following is a detailed description of the work to be performed under this proposal:

1. Site preparation: Siltation barriers will be installed along the edge of clearing and up to the existing stone headwalls. A 12" x 30 ft. long PVC pipe will be inserted into and through the existing steel culvert. The PVC pipe will be used to temporarily contain the stream flow during construction. The upstream end of the culvert will be sand-bagged to direct all flow into and through the pipe.
2. Culvert removal & Replacement: The road shoulder topsoil, asphalt road surface, corrugated metal pipe and sandy fill above the culvert will be excavated and removed from the site. The 8' wide culvert will be excavated to the bottom of substrate depth. The culvert walls will consist of pre-cast 4' high by 7.5' long concrete panels. The culvert walls will be installed by excavating a trench 2' wide by 54" deep. The bottom of the trench will be leveled with 3/4" native gravel and the walls will then be installed. Gravel and sand will then be placed to the design specification at the bottom of the culvert.
3. Culvert and Road construction: After installation of culvert walls and substrate is complete, the top of the culvert will be constructed. A 3" metal pan will be installed and secured to the culvert walls. A 12" thick, reinforced concrete top will be poured as designed. The concrete cure time will be approximately 7 days after which the second half of the culvert can be constructed. A 3" asphalt finish layer will be installed above the concrete after both north and south sides of the culvert are constructed.
4. Restoration: Topsoil will be placed along the new road shoulders and seeded with grass. The 12" PVC pipe will then be removed to restore flow in the new culvert. The siltation barriers will remain in place until the road shoulders have established a stable vegetative layer.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

West Tisbury

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

West Tisbury

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Tiah's Cove Road

Project Location

SE79-391

MassDEP File Number

Has been recorded at the Registry of Deeds of:

Dukes

County

Book

Page

for: Town of West Tisbury
Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

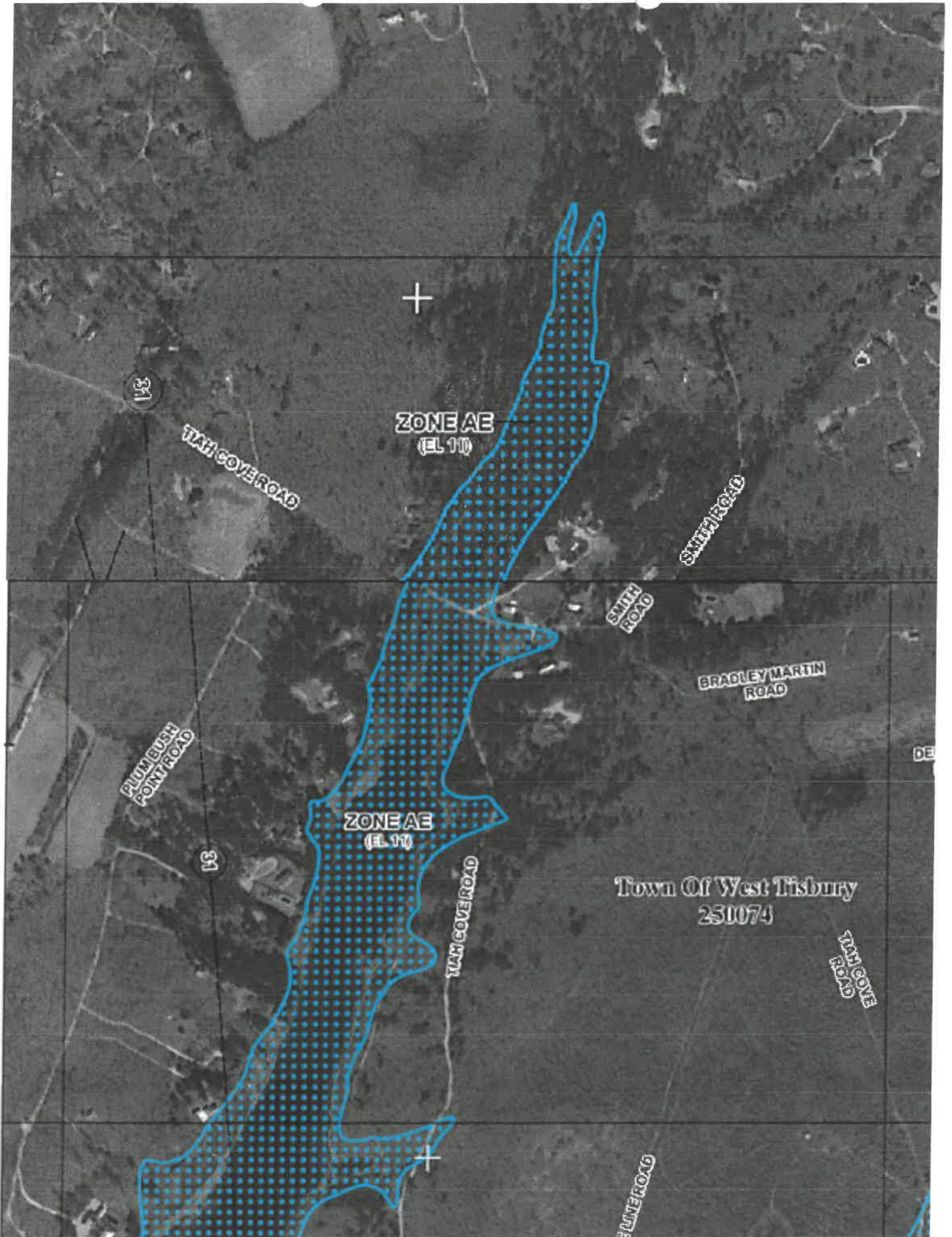
Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

#5



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FEMA-Approved Local and Regional Multi-Hazard Mitigation Plans

Current as of January 2019

Plan Name or Community Name (if Single Community Plan)	FEMA Plan Approval Date
Martha's Vineyard Commission Dukes County Multi-Jurisdiction Hazard Mitigation Plan Update Includes the jurisdictions of: Aquinnah, Chilmark, Edgartown, Gosnold, Oak Bluffs, Tisbury, and West Tisbury	04/26/2016
Merrimack Valley Region Multi-Hazard Mitigation Plan Update Includes the jurisdictions of: Andover, Boxford, Georgetown, Groveland, Haverhill, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, and West Newbury	05/26/2016
Montachusett Region Hazard Mitigation Plan Update Includes the jurisdictions of: Ashby, Ashburnham, Athol, Ayer, Gardner, Fitchburg, Groton, Hubbardston, Lancaster, Leominster, Lunenburg, Petersham, Phillipston, Royalston, Shirley, Sterling, Townsend, Westminster, and Winchendon	05/26/2016
Northern Middlesex Region Natural Hazard Mitigation Plan Includes the jurisdictions of: Billerica, Chelmsford, Dracut, Dunstable, Lowell, Pepperell, Tewksbury, Tyngsborough, and Westford	09/16/2015
Old Colony Region Natural Hazard Mitigation Plan Includes the jurisdictions of: Abington, Avon, Bridgewater, Brockton, East Bridgewater, Easton, Halifax, Hanson, Kingston, Pembroke, Plymouth, Plympton, Stoughton, West Bridgewater, and Whitman	11/12/2015
<i>Single Community Plans:</i>	
Abington	11/15/2015
Acton	11/15/2018
Adams	10/8/2012*
Agawam	8/2/2016
Amesbury	6/30/2017
Amherst	3/17/2017
Andover	5/26/2016



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COMMONWEALTH COMMUNITY COMPACT

WHEREAS cities and towns and the Commonwealth must work together to create the conditions for a strong and resilient economy; and

WHEREAS cities and towns face increasing pressures on municipal and school budgets which impact essential services; and

WHEREAS cities and towns are partners with the Commonwealth and the Baker-Polito Administration is recommitting itself to that partnership through the Community Compact Cabinet; and

WHEREAS the Commonwealth is committed to promoting mutual standards of best practice for both the state and municipalities that will create clear standards, expectations, and accountability for both partners; and

WHEREAS the citizens of Massachusetts are right to expect forward-thinking, innovative government from both the Commonwealth and local governments.

Commonwealth Commitments

As a sign of its commitment to an improved partnership with cities and towns, the Baker-Polito Administration:

- Intends to be a reliable partner on local aid.
- Pledges to work with our partners in the Legislature toward earlier local aid formula funding levels.
- Will work to make available technical assistance opportunities for cities and towns as they work toward best practices.
- Will not propose any new unfunded state mandates, and we will look at existing mandates with a goal toward making it easier to manage municipal governments.
- Will give special attention, in its review of state regulations, to those that affect the ability of municipalities to govern themselves.
- Pledges to work closely with municipal leaders to expand opportunities to add municipal voices to those state boards and commissions that impact local governments.
- Will introduce incentives for municipalities that sign Compacts in existing and proposed state grant opportunities, including proposals for technical assistance grants available only to compact communities.
- Will identify ways to expedite state reviews that can often slow down economic development opportunities or hinder other municipal interests.

Community Commitments

NOW THEREFORE the Town of West Tisbury pledges to adopt the following best practices:

1. Create a Housing Production Plan (HPP) that accounts for changing demographics, including young families, changing workforce, and an aging population.
2. Implement the Complete Streets program by becoming certified through MassDOT and demonstrate the regular and routine inclusion of complete streets design elements and infrastructure on locally-funded roads.
3. Implement a Citizen Engagement Communication Plan that leverages technology to engage the public through basic electronic communication channels and ensures that internal staff is positioned to support these initiatives.

The Commonwealth will work with the Town of West Tisbury as a partner in implementing these best practices, including prioritizing technical assistance when that is needed to accomplish execution of a new best practice.

Commonwealth Compact Community Incentives

The Baker-Polito Administration seeks to recognize municipalities that are striving to become more innovative and accountable and introduce incentives through various state grants and programs to reward municipalities who have signed Community Compacts and committed themselves to continuous improvement. Municipalities that pledge to adopt best practices through compacts will get bonus points on selected state grant programs and will be prioritized for various technical assistance programs.

TOGETHER we sign this Community Compact in a spirit of partnership and public service, understanding that we serve the citizens of our Commonwealth and that our citizens deserve the best government possible.

Signed this 25th of July in the Year 2017

Lt. Governor Karyn Polito
Commonwealth of Massachusetts

J. Skipper Manter
Chair, West Tisbury Board of Selectmen

God Save the Commonwealth of Massachusetts

9

Community Resilience
Building Workshop

WEST TISBURY AND CHILMARK, MA



SUMMARY OF FINDINGS

Prepared by:
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Prepared For:
Massachusetts Executive Office of Energy and Environmental Affairs
6/30/18

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OVERVIEW

West Tisbury and Chilmark are no strangers to weather-related hazards. These two “up-island” towns comprise most of the western half of the island of Martha’s Vineyard, and flooding and wind damage from coastal storms and hurricanes is a regular occurrence. The long-term effects of climate change will likely make severe weather events more frequent, and sea-level rise will increase the impact of coastal flooding and erosion. With no direct road access to the mainland, residents have learned to be self-reliant, and the towns plan carefully to respond to severe weather and other emergencies.

In 2015, the Martha’s Vineyard Commission drafted the Hazard Mitigation Plan (HMP) for Seven Towns in

Duke’s County. Emergency managers and stakeholders from Edgartown, Oak Bluffs, Tisbury, West Tisbury, Chilmark, Aquinnah, and Gosnold identified vulnerabilities and priority action items to build resilience against key hazards in each town. The report had a strong focus on enhancing the resilience of the county’s infrastructure, with recommendations for specific roads, bridges, beaches, stormwater systems, development regulations, and other elements of the built environment in each town.

The towns of West Tisbury and Chilmark decided to build on these previous hazard mitigation planning efforts by working towards Municipal Vulnerability Preparedness (MVP) certification from the Massachusetts Office of Energy and Environmental Affairs (EOEEA). In 2017, each town successfully applied for



Chilmark and West Tisbury comprise most of the western half of Martha’s Vineyard.

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The first day of the workshop began with dinner and an introductory presentation.

funding under the MVP program to hold Community Resilience Building workshops and further develop their resilience strategies. While the previous Hazard Mitigation Plan helped to identify key infrastructural vulnerabilities and priority action items that address part of the MVP requirements, the MVP process places additional emphasis on issues of social and environmental resilience, and takes advantage of the latest climate change data and projections.

As described in the following report, the two towns joined forces to hold Community Resilience Building workshops on May 3rd and 6th, 2018. Facilitated by consultants from Dodson & Flinker, the workshops included more than thirty stakeholders, who developed a detailed Risk Matrix outlining key hazards and exploring the impacts of those hazards on vulnerable infrastructure, social and environmental resources. At the final workshop, participants identified potential actions the towns can take to address these vulnerabilities, and set priorities for future action.

COMMUNITY RESILIENCE BUILDING WORKSHOP

The goal of the Community Resilience Building (CRB) Workshop was to build on the 2015 Hazard Mitigation Plan (HMP), especially by identifying a broader range of the community's hazards and vulnerabilities, in order to create an updated list of priorities and actions supported by the latest climate change projections.

Both West Tisbury and Chilmark received MVP grants and decided -- as adjacent towns with a very similar geography, economy, ecology and social structure -- that it would make sense to combine efforts and collaborate on a CRB Workshop process that drew upon expertise from both towns. The project was led by a Core Team that included Jen Rand (Town Administrator, West Tisbury), John Christensen (Emergency Management Director, West Tisbury), Tim Carrol (Emergency Management Director, Chilmark), Jo-Ann Taylor (Coastal Planner, Martha's Vineyard Commission), and Chris Seidel (GIS Coordinator, Martha's Vineyard Commission). The Core Team selected MVP providers Dodson & Flinker to facilitate the process, which began with a kick-off meeting and tour of the towns on March 27, 2018. The Core Team and their consultants developed a schedule and agenda for a two-day workshop series, and over the following weeks recruited a group of invited stakeholders. The 31 participants included representatives from town staff, police and fire, land surveying, state forest management, building inspection, planning board, transit authority, emergency response, airport, education, and other organizations, institutions, and groups.

The Community Resilience Building (CRB) workshop was held between two sessions on May 3 and May 6, 2018. Participants worked together to identify key hazards, infrastructural, societal, and environmental vulnerabilities, and prioritized action items to address climate change-related hazard preparedness for West Tisbury and Chilmark. Breakout groups were facilitated by MVP certified providers Peter Flinker, Dan Shaw, and Nate Burgess (Dodson & Flinker), with assistance from John Christensen (West Tisbury Emergency Management Director), following the structure of the CRB Workshop guide.

The workshop's central objectives were to:

- Define top local natural and climate-related hazards of concern
- Identify existing and future strengths and vulnerabilities
- Develop prioritized actions for the community
- Identify immediate opportunities to collaboratively advance actions to increase resilience.



On the first day of a two-part workshop, participants identified climate-related hazards and vulnerabilities in West Tisbury and Chilmark. On the second day, participants identified and prioritized action items towards building resilience.



The northwest coastline of Chilmark and West Tisbury is mostly characterized by low density single family housing distributed throughout the hilly, forested landscape.

TOP HAZARDS

At the beginning of the workshop, the consultants introduced the workshop process, along with an overview of Massachusetts' current climate change projections, both statewide and downscaled to Duke's county. The consultants also presented a brief summary of the findings from the 2015 Hazard Mitigation Plan for Seven Towns in Duke's County, reminding participants that today's CRB Workshop would add to this list of priority actions, rather than replace them.

Following this, workshop participants were asked to discuss hazards that West Tisbury and Chilmark may face now or in the future. The discussion began with the large group in order to generate a quick list of many possible hazards. A long list was quickly generated, and discussions then continued among the four tables, as each smaller group refined a list of their top four hazards.

Discussion about hazards focused on a few main themes, including hazard events that could pose a risk to the two towns' somewhat isolated rural population (compared to other MV and MA towns), risks to

the increasingly aging population, events that could disrupt transportation to the mainland, and events that could disrupt power, communication, and access to infrastructure.

The majority of participants identified the following as top hazards which West Tisbury and Chilmark face:

- Sea level rise
- Flooding and wind from hurricanes and nor'easters
- Ecosystem change resulting in increased vector borne diseases (such as Lyme)
- Wildfire
- Drought

2015 HAZARD MITIGATION PLAN FOR SEVEN TOWNS IN DUKES COUNTY

The Hazard Mitigation Plan (HMP) for Seven Towns in Duke's County identified hazards and vulnerabilities in West Tisbury and Chilmark along with the whole county. The most significant overall hazards include floods and wildfire. Floods are a frequent hazard caused by hurricanes, nor'easters and coastal storms. Hurricanes are rare but very serious, while nor'easters strike more frequently and have been responsible for more damage over time. Between 1864 and 1965 there were at least 24 fires over 1000 acres in size on Martha's Vineyard, though none of this scale have occurred since 1965. Wildfire is a significant threat as dried dead timber accumulates over time throughout all of the island's forested lands. With the steady accumulation of fuel coupled with a lack of a wildfire management plan outside the state forest, wildfire is a significant potential hazard.

For West Tisbury specifically, the top hazards identified were coastal flooding, severe wind and rain from hurricanes and nor'easters, coastal erosion, sea level rise, and wildfires. The list for Chilmark was similar, including coastal flooding and severe wind and rain from hurricanes and nor'easters.

A summary of West Tisbury's vulnerability from the HMP is as follows:

- 3,402 people (summer) live within areas considered at risk for wildfire. Vulnerable facilities in these areas include 900 residential buildings; 39 commercial buildings; 16 municipal, public, or non-profit buildings including the fire station; Mill Brook Bridge; 500 ft of transmission line; and stretches of South Rd / State Rd.
- 38 people (summer) live within 100 year flood zones.
- 110 people (summer) live within SLOSH category 4 (this could potentially increase to over 300 people under buildout). Critical infrastructure potentially inundated by hurricanes includes a few hundred feet of Tiah's Cove Rd.
- Only about 4 people live in areas directly inundated by 4' of sea level rise.

A summary of Chilmark's vulnerability from the HMP is as follows:

- About 2,308 people (summer) live within areas considered at risk for wildfire. Vulnerable facilities in these areas include 538 residential buildings; 2 commercial buildings; 3 municipal, public, or non-profit buildings; and stretches of South Rd / State Rd.
- 219 people (summer) live within areas at risk of flooding. Within the 100 year flood zone are 51 ft of State Rd near Aquinnah and 96 ft of State Rd near West Tisbury.
- 279 people (summer) live within SLOSH category 4. Hariph's Creek Bridge is also within this zone.
- 34 people live in areas directly affected by 4' of sea level rise.



Menemsha, a fishing village in Chilmark, is the only population center close to sea level in either town. The map above shows 3 meter contours, labeled in feet.

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VULNERABLE AREAS

Patterns of development throughout both towns are low density and distributed, with vulnerable resources spread across the landscape. The only population center directly on the coastline is the small village of Menemsha in Chillmark, which was identified as a specific area of concern. The town centers of West Tisbury and Chilmark are located inland and high enough in elevation to be less at risk from coastal hazards like storm surge and sea level rise.

However the decentralized nature of the two towns poses its own set of vulnerabilities, including the risk of elderly or disabled residents being isolated during disruptive storm events, or roads and power lines being cut in multiple locations by downed trees. Other areas of concern were specific vulnerable points along roads, at risk of inundation or washing out in a severe weather event. Isolated houses throughout the forest are vulnerable to wildfire. Many of these were identified by the Hazard Mitigation Plan and remain as priority items. Discussions on hazards were often based on specific references to these areas of concern, which included:

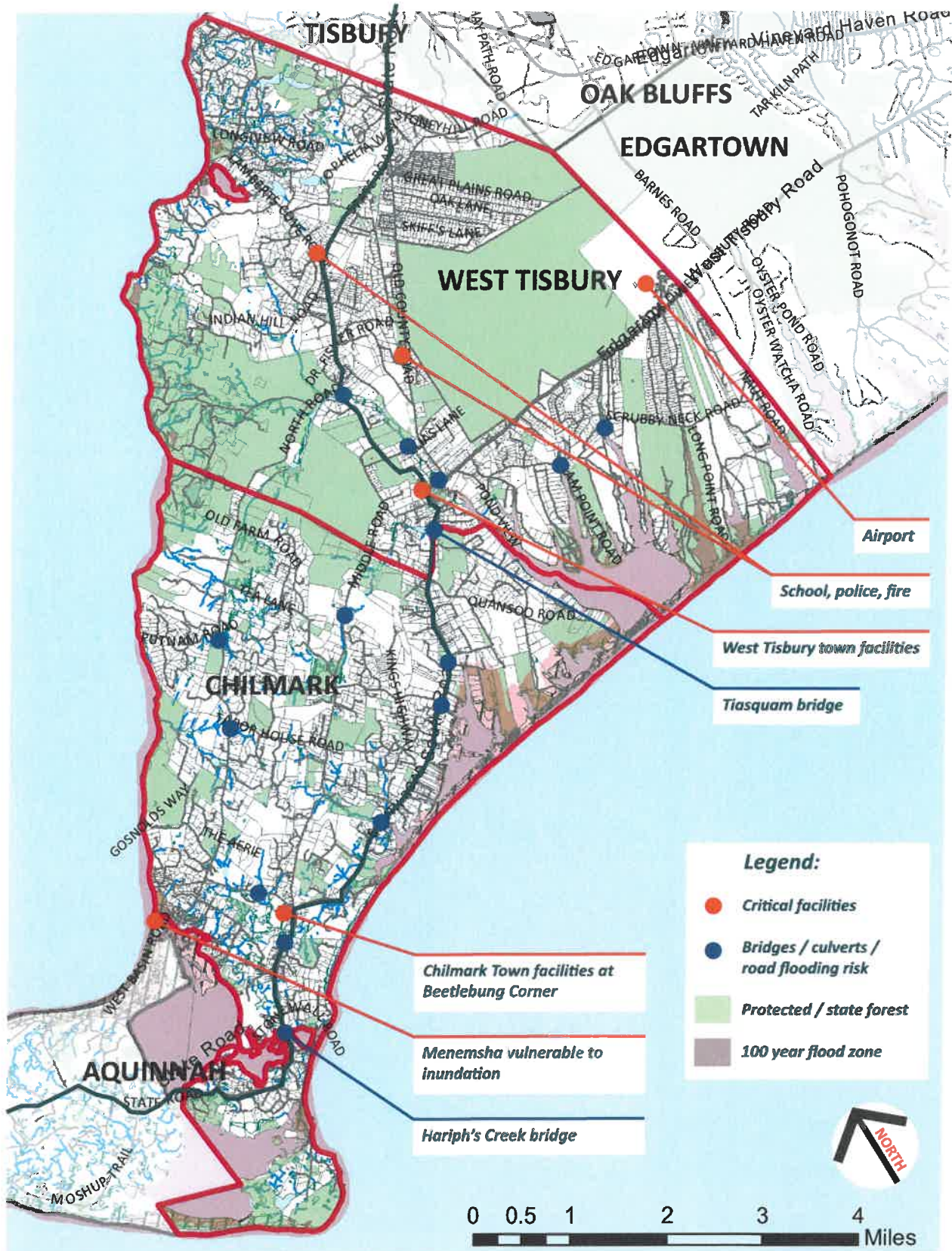
- Menemsha: Largest concentration of residents and buildings directly on the shoreline, vulnerable to inundation from storms and sea level rise
- Elders' homes: Growing elderly population lives de-centralized throughout the rural landscape
- Roads and culverts: Need for short-term infrastructure improvements including Hariph's Creek Bridge
- Ferry terminals and airport: Located in other towns but serve as the primary connection to the mainland
- Coastal environments: Ponds, dunes, beaches
- Forests: Habitat for growing tick population carrying Lyme and other vector borne diseases; significant wildfire threat
- Aquifer: Dependence on electricity to pump private well water; issues of water access for fire fighting, during power outages, and during drought

CURRENT CONCERNS AND CHALLENGES PRESENTED BY HAZARDS

Wildfire: the threat of wildfire came up at all tables at the workshop. Martha's Vineyard has not experienced a wildfire larger than 100 acres since a 1200-acre fire in 1965. Because of the homogenous forest canopy throughout both towns and the accumulation of fuel over the decades, many workshop participants voiced concern that West Tisbury and Chilmark residents live with a significant risk of a major wildfire. Some participants recalled that in the 1960s the forest structure across the island was both shorter and less continuous than it is now. Without a forest management plan, dead wood has been steadily accumulating in these forests. Not only is the fuel supply increasing, but the number of houses spread throughout the towns' forest has increased dramatically since the 1960s, which led participants to suggest that the impact of a large scale wildfire today could be much more catastrophic than in the past.

Vector borne disease associated with an exploding tick population was another major area of concern, which some groups included with forest management due to this connection with wildlife populations. Many residents view the spread of Lyme disease as an epidemic.

Extreme Storm Events: Coastal storms were discussed as a major hazard. While Vineyarders are relatively self-sufficient and capable of weathering these storms, there are basic infrastructural disruptions which could have severe impacts to people living in these up-island towns. If a hurricane or nor'easter caused a power outage, for example, well water pumps would cease to operate, cutting off water supplies for most homes. A sustained power outage could also become a communication blackout if people are unable to charge their mobile devices. Besides power, other key infrastructure which affects the whole of Martha's Vineyard is residents' dependence on the ferry system for the majority of transportation to and from the island. Whereas a typical town has many roads leading in and out, the six Martha's Vineyard towns rely entirely on water and air travel for all transportation and supply access to the mainland. If an extreme storm event were to disrupt any of these single ferries, terminals, or airport infrastructure, the whole island would be severely impacted.



Participants in the workshops identified areas of concern, including critical facilities, infrastructure, and bridges and culverts. See appendix for full workshop maps.

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Coastal Flooding: Inundation from storms and sea level rise was identified as a hazard largely affecting coastal ecosystems such as marshes, ponds, sand dunes, and barrier beaches. The only relatively dense coastal population center between the two towns is the village of Menemsha in Chilmark, which was identified as an area of concern.

Aging Population: Any hazards identified in West Tisbury and Chilmark have to be considered in light of these two towns' aging population. In West Tisbury, by 2035 the population over age 65 is expected to double, reaching 34% of the town's population. In Chilmark, by 2035 the population over age 65 is expected to increase from 22% to 34%.¹ Future hazards will increasingly impact an older, isolated/distributed population, requiring adequate communication procedures and response capacity be in place.

1 West Tisbury Housing Production Plan FY2018-2022. Prepared by JM Goldson with RKG Associates.

CURRENT STRENGTHS AND ASSETS

Self-Sufficiency: In general, the independent and self-sufficient nature of year-round island residents was identified as a major asset towards maintaining resilience in West Tisbury and Chilmark. Year-round residents are accustomed to periods of enforced isolation during winter storms, occasional interruptions in supplies and other challenges. Most importantly, most are active participants in community life and look out for one another.

Vulnerable Population Plan: Emergency managers and hospitals in the area maintain a confidential list of priority residents to reach in the event of a power and communication outage. This is important in these two towns where elders and people with regular medical needs live in a somewhat isolated, low-density rural area, and may not be able to seek help during a hazard event or in its aftermath. The importance of this priority list was emphasized by workshop participants. Some even suggested ideas like this without knowing that this system was already embedded in the towns' emergency response procedures, which revealed to the core team that some of the towns'



After completing their CRB Matrices in small groups, each group shared their top findings with the rest of the workshop group.

strengths and assets would benefit simply from more public awareness.

Public Water Supply Backup: Chilmark has a designated public water source with a backup power supply, where residents can go to fill water containers in emergency situations. This feature could benefit from more public awareness since some participants suggested ideas that were very similar to this in their action items lists. Improving access to West Tisbury's emergency public water supplies would further enhance this asset.

Resilient Natural Systems: The towns' dunes, beaches, marshes and ponds, while vulnerable to climate change hazards in their own right, do serve as an extremely valuable asset in protecting residents from the effects of coastal flooding and storm surges. Protecting and enhancing these resources would continue to make this part of Martha's Vineyard even more resilient.

TOP RECOMMENDATIONS TO IMPROVE RESILIENCE TO HAZARDS

Participants in the Community Resilience Building workshop identified dozens of potential actions to address climate change, sea level rise, flooding and other challenges. Each of the breakout groups presented its priority actions to the whole group, and at the end of the session each person voted on their top priorities. These have been compiled into the following list of general priorities. Below each one is a list of specific actions that emerged from the workshop discussion, supplemented by strategies that came out of the 2015 Hazard Mitigation Plan (HMP).

MANAGE STORMWATER RUNOFF

One of the primary impacts of climate change is expected to be more frequent severe storm events, heightening the importance of stormwater management. Requiring development to handle stormwater appropriately on site to reduce the concentration of flows was an important strategy discussed at the workshop. Concentrated stormwater flows can easily wash out roads and other key infrastructure, especially along low-lying roads over culverts, and on private dirt roads. Such disruptions can severely impact emergency access, compounding the severity of hazard events.

Stormwater concentrations also have an impact on natural systems from the erosion and water quality issues they cause. Because West Tisbury and Chilmark's dunes, marshes, ponds, and beaches provide resilient natural protection against storm surges, protecting these environments from damaging stormwater impacts is of critical importance.

- Update Zoning and Development Laws to Require More Responsible Stormwater Management
- HMP: Divert Town Road Runoff into Roadside Vegetated Areas, Rather than Concentrating it into Stream Crossings

REDUCE COASTAL FLOOD IMPACTS

Participants agreed that flooding from severe storms posed a significant threat to roads. Whereas typical towns in Massachusetts are surrounded by an interconnected network of roads, West Tisbury and Chilmark's island geography can result in only one road connecting entire large areas to the rest of the island. Participants reinforced the Hazard Mitigation Plan's recommendations to upgrade key road segments where flooding or erosion would leave populated areas stranded.

- HMP: Establish South Road as a Critical Facility, Protect Against Storm Surge and Sea Level Rise
- HMP: Engineering Upgrades and Raising Hariph's Creek Bridge
- HMP: Engineering Upgrades and Raising Low Lying Areas of Tiah's Cove Rd
- Professional and Technical Planning For Menemsha against Storm Surge and Sea Level Rise

WATER SUPPLY – DROUGHT AND STORM RESILIENCE

Since nearly all West Tisbury and Chilmark residents depend on private well water which is accessed by electric pump systems, disruptions to the electrical grid result in a lack of water access. Participants identified ways to improve private access to wells, along with recommendations for emergency public water access in key locations.

- HMP: Alternatives to Well Water Supply for Certain Areas where Wells wouldn't be Adequate During Drought or Wildfire
- HMP: Install 8,000 Gal Water Tank for Menemsha
- Hand Pumps or Other Methods Independent of the Power Grid for Accessing Private Well Water
- Enhance Emergency Public Water Sources (independent of power grid) in West Tisbury, similar to Chilmark's

TRANSPORTATION AND COMMUNICATIONS

The up-island towns' geography can make it challenging for people to reach one another during hazard events, through both transportation and communication. Participants identified goals of improving these networks' resilience to climate change.

Participants suggested long-range goals of improving the management of the ferry system, as well as continued engineering improvements to the ships themselves and the ferry terminals including raising the elevations of the ferry terminals over time to adjust to sea level rise.

Within West Tisbury and Chilmark, a rural and aging population requires that resilient communication infrastructure and well-established hazard response procedures be in place. In addition, there are residents who depend on access to home medical care who also live distributed throughout this large rural area, and response to their individual needs in the event of a hazard requires deliberate planning in advance.

- Improve Ferry System
- Engineering Improvements for Ferry Terminals to Respond to Sea Level Rise
- Continue and Enhance Communication and Transportation for Elders and People with Medical Needs, as Part of Post-Event Response
- Backup Power Sources for Vulnerable Residents' Cell Phones, and Backup Power for Emergency Responders' Communication Infrastructure
- Selective Undergrounding of Most-Vulnerable Wires

FOREST MANAGEMENT, FOR WILDFIRE AND VECTOR BORNE DISEASE

Workshop participants voiced the need for a forest management plan to reduce the accumulation of combustible fuel throughout the island, maintain

and create additional fire breaks within the State Forest, and help control the population of ticks. Such efforts will likely need to include education and public awareness of forest management practices, since a significant amount of the area's forests are owned and managed by private homeowners. In addition, it was suggested that the town or the island's medical facilities invest in tick-disease detecting equipment, in order to more effectively stop the spread of Lyme and other tick-borne diseases.

- Forest Fuel Reduction, Dead Wood Removal
- Fire Breaks
- HMP: Forest Management Plan
- Build Public Awareness on Forest Management
- Population Management of Vector Species such as Deer and Ticks
- Obtain Tick Disease Detecting Equipment

NEXT STEPS

The core team took the top priority actions from these categories and developed a short list of the top projects for each town, to seek funding for implementation. These projects were conceived with the goal of achieving multiple priority actions from different categories simultaneously. These projects are organized into three lists: West Tisbury, Chilmark, and combined between the two towns.

COMBINED

South Rd/ State Rd Resilience Corridor

Establish South Rd / State Rd as a resilience corridor, since it's the only route connecting all three up-island towns. Upgrade bridges, culverts, and other crossings (including Hariph's Creek Bridge, North Tisbury culvert, others) to accommodate more severe flows from stormwater runoff and storm surges without disruption. Upgrade and improve road-adjacent dams in West Tisbury per HMP recommendations. Filter runoff from road using vegetated swales and other green infrastructure techniques, to preserve water quality and reduce runoff volumes. Consider adding other important or vulnerable routes to this project, such as Tiah's Cove Rd in West Tisbury and Middle Rd in Chilmark. Because this corridor is shared between the towns and State/ South Rd is in MassDOT's jurisdiction, forming partnerships with MassDOT will be of key importance.

Forest Management Plan

A forest management plan should involve collaboration between DCR, the island's fire departments, private landowners through land management education programs, and the towns of West Tisbury, Chilmark, and eventually other municipalities. Parts of a plan currently exist, including West Tisbury's participation in Firewise, but these efforts would benefit from integration within a more comprehensive plan. Establishing an effective plan will require deliberate planning, public engagement, education, and coordination between agencies. The plan should provide a way to reduce the buildup of wildfire fuel, create fire breaks, expand water access for firefighting, build public awareness on forest management practices for privately owned land, and enhance participation in

the Firewise program. This forest management plan should also include ecological management strategies to reduce the abundance of disease-carrying ticks.

Microgrid Plan

The towns of West Tisbury and Chilmark should study the potential to develop microgrids within the two towns, so that the whole area doesn't experience a total blackout when one part of the electric grid is disrupted. This can include studies on solar power for certain areas, or other local sources of electricity. This plan should identify key places for undergrounding the most vulnerable wires, as well as offering solutions for vulnerable residents to keep their cell phones charged during power outages and to be able to retain the use of pumps for private well water access and other critical home infrastructure dependent on electricity.

Public Education Program on Hazard Preparedness

West Tisbury and Chilmark already have many hazard preparedness measures in place, which would benefit from greater public awareness. There were ideas suggested at the workshops that are already in practice (such as maintaining a priority list of vulnerable residents to reach during hazards), which indicated to the core team that more public knowledge of those resources was needed. Because the populations of both towns are generally independent and self-reliant, information about resources and hazard preparedness and response practices would be put to good use among individual residents here. A public education and outreach program on hazard preparedness could include hiring a resilience coordinator for the area. A project such as this could start in West Tisbury and Chilmark through MVP implementation, but should ultimately expand to encompass all of Martha's Vineyard.

CHILMARK

Resilient Menemsha Plan

Menemsha is a unique place, as the one densely settled village in Chilmark. Much of this fishing village is situated very close to sea level, and will be increasingly impacted by storm surges and flooding as sea level

rise increases over the next century. A plan should be developed that identifies appropriate elevations for docks, bulkheads, buildings, and critical infrastructure to be safely rebuilt as upgrades and redevelopment happen over time. The plan should also include strategies to enhance Menemsha's natural defenses and ecological infrastructure, with consideration as to how these strategies would interface with changes in the built environment over time. The process should include stakeholder workshops and public outreach. The final plan should offer strategies to protect and enhance the economic vitality and cultural identity of this historic fishing village as its climate change resilience strategies develop.

Upgrade Subdivision Regulations for Appropriate Stormwater Management

Subdivision regulations should be updated to require appropriate stormwater management on site, including green infrastructure and low impact development techniques to the extent possible, in order to minimize erosion, flooding, and water quality issues downstream. These standards should be applied to road access permits as well. All town regulations should require that surface runoff calculations factor in the increasing frequency of severe storms, and that town boards incorporate this into their reviews of new development or redevelopment.

WEST TISBURY

Enhance Emergency Public Water Supply

West Tisbury has emergency public water supplies in several of its town facilities, including the library and schools. These water supplies are equipped with backup generators, to make water accessible during a blackout. These are valuable resources, offering residents the ability to fill water containers during power outages when offline electric pumps make private well water inaccessible. The effectiveness of these emergency public water supplies could be enhanced with a minimal amount of management, infrastructural enhancement, and public outreach.

RECOMMENDATIONS FROM HAZARD MITIGATION PLAN¹

General recommendations for Dukes County towns overall included:

- Increase capacity in adaptation to climate change, by incorporating 25-year storm calculations rather than 10-year volume into regulations and public infrastructure planning. Establish management plans for state forests, to reduce fire risk, and participate in DCR Firewise program.
- Plan and build drought-resistant infrastructure for water supply.
- Continue mapping and estimates of structures within 100 year floodplain.

In addition to these overall recommendations, specific recommendations were made for individual towns. For West Tisbury, recommendations were assigned a score indicating their level of priority. Higher priority recommendation included:

- In order to reduce the impacts of drought and wildfire, establish an overall management plan for the State Forest.
- In order to reduce the impacts of drought and wildfire, install new public water supplies and water supply lines within State Forest
- Reduce flood impacts by identifying and correcting discharges from Town and Commonwealth roadways where they cross streams, including: Mill Brook (West Tisbury portion), Tiasquam (West Tisbury portion), Black Brook (West Tisbury), and Witch Brook (Tisbury). The road surface at each crossing should be adjusted during repaving to divert as much runoff as possible into roadside vegetation before it reaches the road crossing.
- Consider potential need for and options to provide water supply to areas with a development pattern

¹ Hazard Mitigation Plan for Seven Towns in Duke's County. Draft February 2015. Prepared by the Martha's Vineyard Commission.

that may not be compatible with continued private well water supplies, which may not be adequate in the event of emergencies such as drought and wildfire; build the necessary infrastructure.

- Install new public water supply lines within state forest, to prepare for wildfire and drought.
- Maintain and monitor dams for Priester's Pond, Mill Pond, and Looks Pond, which could threaten to wash out adjacent roads in case of failure or breach.
- Establish South Rd from town line to town line as a critical facility, prioritizing sea level rise protection and storm water management.
- Ensure town bylaws don't prevent homeowners from using fire-wise roofing materials.

Specific recommendations for Chilmark included:

- Establish South Rd as a critical facility from town line to town line and prioritize its storm protection and adaptation to rising sea level. Protect and possibly elevate the bridge adjacent to Stonewall.
- Install 8000 gal tank for Menemsha public water supply.
- Install dry hydrants to pump pond water for fire-fighting.
- Review and possibly amend Coastal District and other overlay regulations for hazard mitigation.
- Reduce volume of damaging stormwater discharge onto beaches.
- Review/revise subdivision regulations for better stormwater management.

CRB Workshop Participants

**indicates participation in group workshop exercises*

First	Last	Entity
Brian	Athearn	MV Agricultural Society
Bill	Austin*	VLSE: land surveyor
Joyce	Bowker	Council on Aging
Sandy	Broyard*	Chilmark Conservation Commission
Chris	Bruno*	Mass. State Forest
Brock	Callen*	Sail Martha's Vineyard
John	Christensen	WT Emergency Mgmt Director
Suzanne	Cioffi*	Vineyard Transit Authority
Barbara	Conroy	Polly Hill Arboretum CFO
Peter	Cook*	Chilmark Planning Board*
Nan	Doty*	Educator, Chilmark
Warren	Doty*	Chilmark
Jim	Feiner*	Chilmark Housing Committee
Julie	Flanders*	Real Estate
Whit	Griswold*	WT Cons Comm
Robert	Hannemann*	Chilmark Finance Advisory Committee
Sam	Hart*	Adult Continuing Education MV
Russel	Hartenstine*	WT Emergency Management
Kent	Healy*	Kent Healy PE
Omar	Johnson*	WT Health Agent
Ginny	Jones*	Planning Board
Donna	Lowell-Bettencourt*	WT School Principal
Heather	Maciel	Tree and Landscape Maintenance
Vincent	Maciel	Tree and Landscape Maintenance
Joan	Malkin*	Riparian owner, Chilmark ConsCom
Skipper	Manter*	WTPD Lt.; Selectman
Matt	Mincone*	WTPD
Cynthia	Mitchell*	CEO Community Health Center
Paddy	Moore*	Healthy Aging
Chris	Murphy*	Chilmark
Richard	Olsen*	Highway Superintendent
Richard	Osnoss*	Chilmark Planning Board
Jennifer	Rand	WT Town Administrator
Ann	Richart*	MV Airport
Chris	Seidel*	MVCommission, GIS
Candy	Shweder*	Chilmark Conservation Commission
Bonnie	Stacey*	MV Museum
Jo-Ann	Taylor*	MV Commission
Joe	Tierney*	WT Building Inspector
Eunice	Youmans*	Trustees of Reservation

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Acknowledgements

Special thanks to the West Tisbury Library for providing the facilities for this workshop and to Kitchen Porch Catering for providing dinner. This project was made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs, and through the efforts of the project's Core Team members: Jen Rand, John Christensen, Tim Carrol, Jo-Ann Taylor, and Chris Seidel.

CRB Workshop Project Team

Organization	Name	Role
West Tisbury, Town Administrator	Jennifer Rand	MVP Core Team
West Tisbury Emergency Management Director	John Christensen	MVP Core Team, Facilitator
Chilmark Emergency Management Director	Tim Carroll	MVP Core Team
Martha's Vineyard Commission	Jo-Ann Taylor	MVP Core Team, 2015 HMP Author
Martha's Vineyard Commission	Christine Seidel	MVP Core Team
Dodson & Flinker	Peter Flinker	MVP Provider, Facilitator
Dodson & Flinker	Dan Shaw	MVP Provider, Facilitator
Dodson & Flinker	Nate Burgess	MVP Provider, Facilitator

Citation

Flinker, Peter and Daniel Shaw (2018). Towns of West Tisbury and Chilmark Community Resilience Building Workshop Summary of Findings. Dodson & Flinker.

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BID BOND

Conforms with The American Institute of Architects, A.I.A. Document No. A-310

KNOW ALL BY THESE PRESENTS, That we, White Bros.-Lynch Corp.

P.O. Box 155, Oak Bluffs, MA 02557

_____ as Principal, hereinafter called the Principal,
and the Travelers Casualty and Surety Company of America

of 350 Granite Street, Braintree, MA 02184, a corporation duly organized under
the laws of the State of Connecticut, as Surety, hereinafter called the Surety, are held and firmly bound unto

Town of West Tisbury
1059 State Road, West Tisbury, MA 02575 as Obligee, hereinafter called the Obligee,

in the sum of Five Percent of Bid Amount

Dollars (\$ 5% of Bid Amount), for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for Project Number 2019-9 Culvert Replacement & Road Reconstruction

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 7th day of January, 2020.

Christine M. Astin
Witness

White Bros.-Lynch Corp. (Seal)
Principal
Christopher M. Lynch, President Title

Chad C. Wang
Witness

Travelers Casualty and Surety Company of America
By George G. Powers
George G. Powers, Attorney-in-Fact

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**Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company**

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **George G Powers** of Norwell Massachusetts, their true and lawful Attorney-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this 3rd day of February, 2017.



State of Connecticut

City of Hartford ss.

By:
Robert L. Raney, Senior Vice President

On this the 3rd day of February, 2017, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the 30th day of June, 2021



Marie C Tetreault
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 7th day of January 2020



Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary

**To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney-in-Fact and the details of the bond to which the power is attached.**

#11

**CERTIFICATION
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
TRAINING**

In accordance with Massachusetts General Law Chapter 30, Section 39S, as amended by Chapter 306 of the Acts of 2004, effective 7/1/06, for all contracts for the construction, reconstruction, alteration, remodeling or repair of any public work or the construction, reconstruction, installation, demolition, maintenance or repair of any public building estimated to cost more than \$10,000. the Contractor hereby certifies to the following:

(a) (1) that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

(b) Any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

(c) The attorney general, or his designee, shall have the power to enforce this section including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts in all cases where, after investigation of the facts, he has made a finding that the award or performance has resulted in violation, directly or indirectly, of subsection (b), and he shall not be required to pay to the clerk of the court an entry fee in connection with the institution of the proceeding.

The undersigned hereby certifies under the penalties of perjury to the above:

Company: White Bros. - Lynch Corp.

Authorized Signature: 

Print Name: Christopher M. Lynch

Title: President

Date: January 7, 2020

Telephone: (508) 693-0845

Fax: (508)693-0312

**Town of West Tisbury
Tiah's Cove Culvert**

BID PRICING SHEET

To the Awarding Authority:

We the undersigned propose to provide a Culvert and Associated Road Work per the attached specifications for the price stated below:

TOTAL PRICE OF THE CONTRACT \$ 82,036.00

*****White Bros. - Lynch Corp. acknowledges receipt of Addendum Number 1 dated 12/26/2019**

COMPANY NAME: White Bros. - Lynch Corp.

CONTACT: Christopher M. Lynch, President

ADDRESS: P.O. Box 155 / 22 Vineyard Ave.

Oak Bluffs, MA 02557

PHONE: (508) 693-0845

EMAIL: clynch@lawrencelynch.com

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REFERENCE FORM

Bidder:

White Bros. - Lynch Corp.

Bidder must provide references for all culvert contracts performed within the last three (3) years.

**

Reference: Wampanoag Tribe of Gay Head (Aquinnah)
Address: 20 Blackbrook Road, Aquinnah, MA 02535
Contact: Cheryl Andrews, Natural Resources Department
Phone: (508) 645-9265

Description and date(s) of service provided:

November 2018 - Culvert Replacement on Lobsterville Road

\$141,595.00

Reference: Town of Mashpee
Address: 16 Great Neck Road North, Mashpee, MA 02649
Contact: Catherine Laurent
Phone: (508) 539-1420

Description and date(s) of service provided:

October 2017 - Culvert Replacement on Quinaquisett Avenue

\$3,000,000.00

Bidder:

White-Bros. - Lynch Corp.

Bidder must provide references for all contracts performed within the last three (3) years.

**

Reference: Town of Oak Bluffs

Address: P.O. Box 1327, Oak Bluffs, MA 02557

Contact: Geoffrey Glover - Horsley Witten

Phone: (508) 833-6600

Description and date(s) of service provided:

September 2019 - County Road Drainage Improvements

\$415,300.00

Reference: Town of Edgartown

Address: 70 Main Street, Edgartown, MA 02539

Contact: Stuart Fuller

Phone: (508) 627-2419

Description and date(s) of service provided:

April 2018 - Improvements to Town Sidewalks

\$202,199.14

White Bros.-Lynch Corp.
Project References

Owner: Wampanoag Tribe of Aquinnah
20 Black Brook Road, Chilmark, MA 02535
Mr. Bret Stearns
Job Description: New York Avenue Storm Water Drainage
Oak Bluffs, MA
Contract Date: April 15, 2013
Contract Amount: \$82,000.00
Completion Date: November 5, 2013
Publicly Bid Project
Engineering Firm: Sourati Engineering Group, Inc.
P. O. Box 4458, Vineyard Haven, MA 02568
Mr. George Sourati, Principal

Owner: County of Dukes County and Wampanoag Tribe of Aquinnah
20 Black Brook Road, Chilmark, MA 02535
Mr. Bret Stearns
Job Description: Cranberry Bog Protection Project
Contract Dated: December 13, 2010
Completion Date: August 31, 2011
Engineering Firm: Sourati Engineering Group, Inc.
P. O. Box 4458, Vineyard Haven, MA 02568
Mr. George Sourati

Owner: Sengekontacket Homeowners Association
RR6 Box 475Y, Edgartown, MA 02539
Contact: Ms. Betsy Gilroy
Phone #978-807-5095
Paved roads and furnished and placed loam and seed on shoulders for Association.
Contract Price: \$145,000.00
Completion Date: July 2013

Owner: Town of Edgartown
General Contractor: Barbato Construction Co., Inc.
155 East Grove Street, P. O. Box 1259, Middleborough, MA 02346
Contact: Peter Barbato, President of Barbato Construction Co., Inc.
Phone #508-946-9414
Edgartown Control Center – Site Work and Paving
Contract Amount: \$185,000.00
Project Period: July 2010 to December 2010

Page 2 – Project References

Owner: Town of West Tisbury
General Contractor: J. K. Scanlan Co., Inc.
Falmouth Technology Park, 15 Research Road, East Falmouth, MA 02536
Phone #508-540-6226
West Tisbury Town Hall – Site Work & Paving
Contract Amount: \$160,588.00
Project Period: March 1, 2009 to March 31, 2010

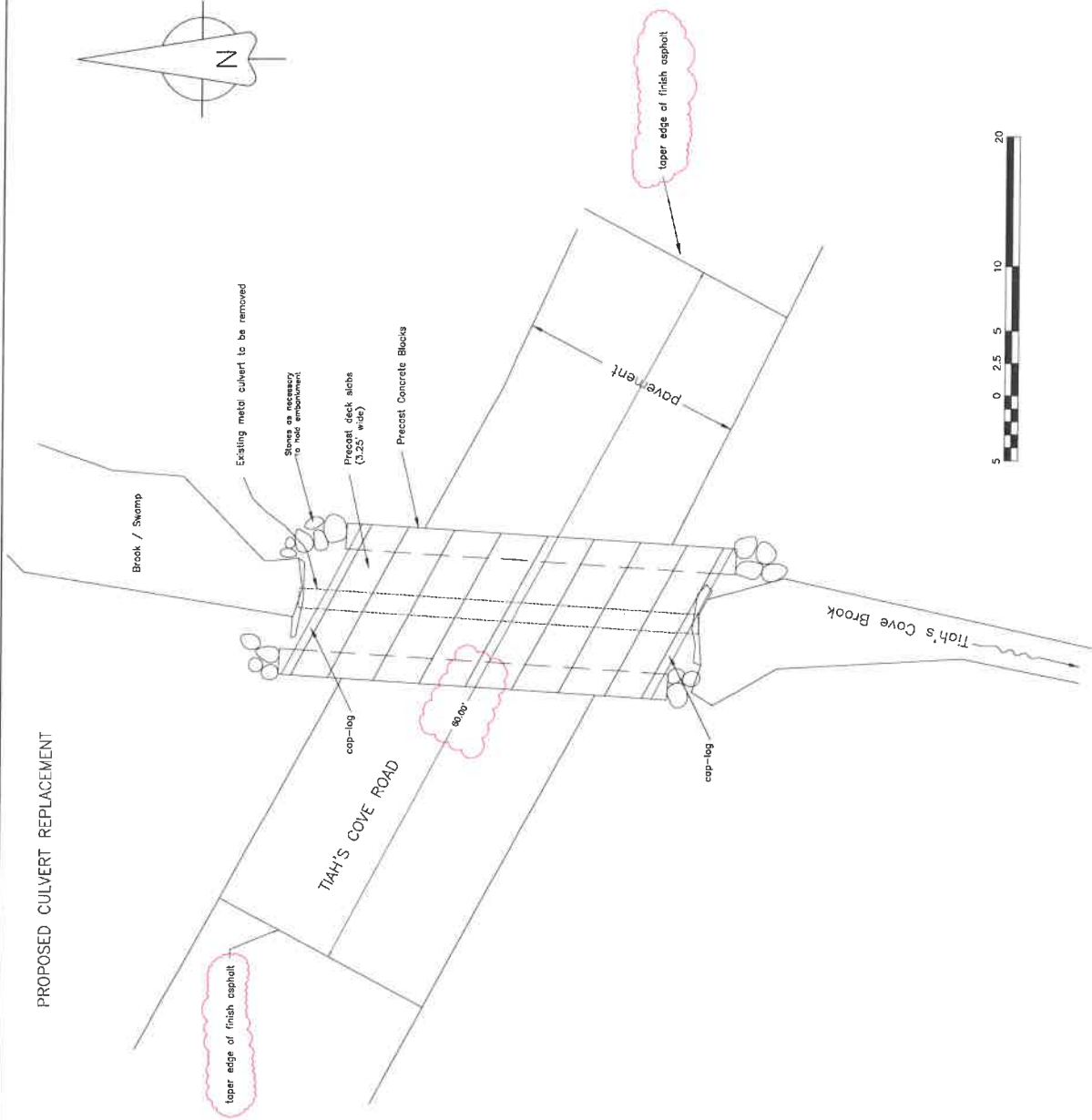
Owner: Town of Oak Bluffs
P. O. Box 1327, Oak Bluffs, MA 02557
Contact: Mr. Richard Combra, Highway Director
Phone #508-693-0072
General Contractor: White Bros.-Lynch Corp.
Oak Bluffs Harbor Project – Site and Drainage Work
Contract Amount: \$142,000.00
Project Period: April 1, 2010 to June 30, 2010

Owner: Town of Tisbury
Highway Department, P. O. Box 788, Vineyard Haven, MA 02568
Phone #508-696-4220
Soccer Field at Veteran's Park
Contract Amount: \$110,000.00
September 2008 to November 2008
Owner: Town of West Tisbury
General Contractor: White Bros.-Lynch Corp.
Sidewalk Construction and Paving
Contract Amount: \$196,229.00
Project Period: September 1, 2007 to June 30, 2008

Owner: United States Coast Guard
General Contractor: General Dynamics Information Technology Inc.
77 A Street, Needham Heights, MA 02494
Contract Amount: \$113,000.00
Paving and drainage work on Peaked Hill
Contract Period: May 2010 to June 2010
Completed: June 2010

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PROPOSED CULVERT REPLACEMENT



LOCUS MAP

This plan shows and describes the replacement of the Tish's Cove Brook culvert with a precast block and slab system. The design is done so that one lane for traffic can be maintained while the bridge is built. The precast components are sized so that one half the bridge could be built while allowing traffic to pass on the other half.

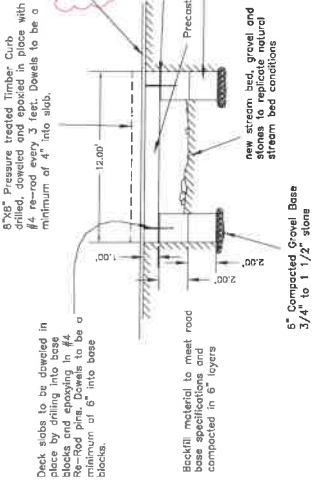
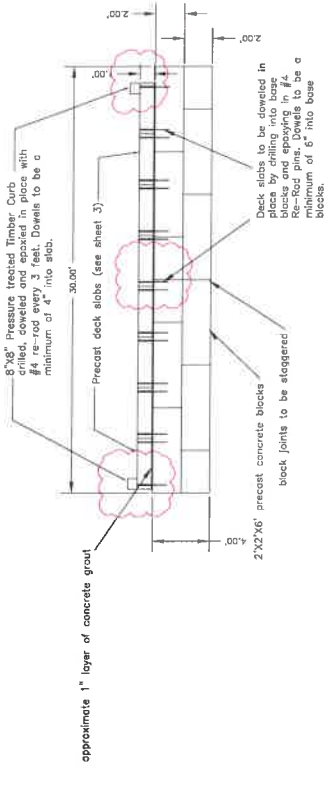
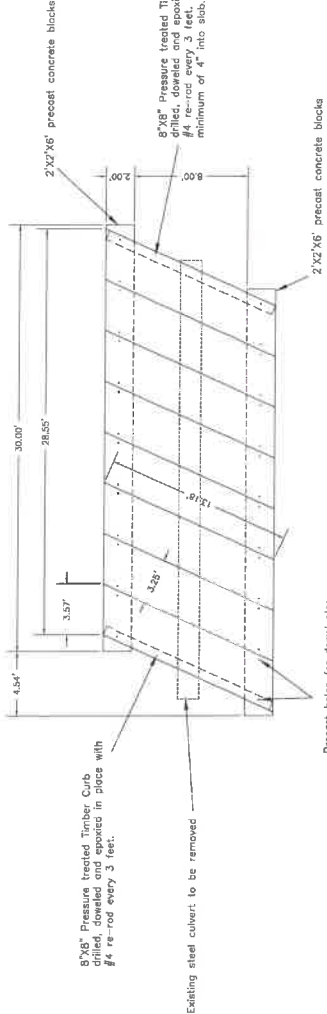
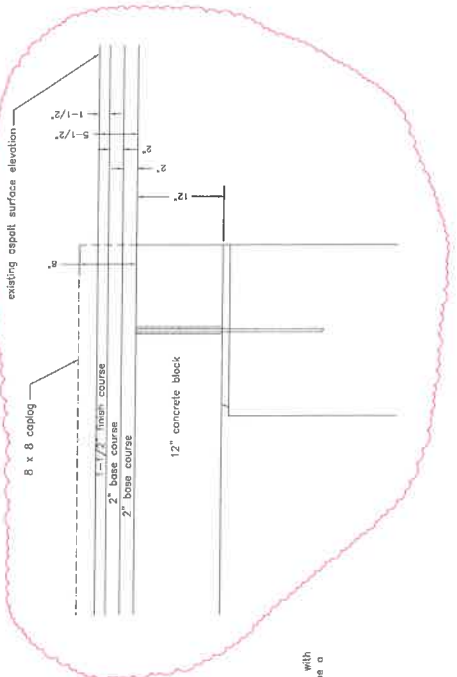
Structural Set
 Sheet 1 of 3
 Proposed Culvert Replacement
 In West Tisbury, Mass.
 Prepared for
 Town of West Tisbury

February 11, 2019
 Scale 1" = 4'

Revised: 12/20/2019 - asphalt taper edge



Handwritten initials or signature.



**Structural Set
Sheet 2 of 3
Proposed Culvert Replacement
In West Tisbury, Mass.
Prepared for
Town of West Tisbury**

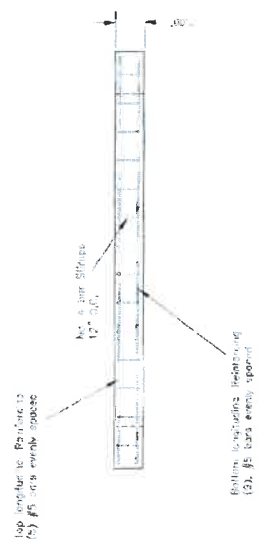
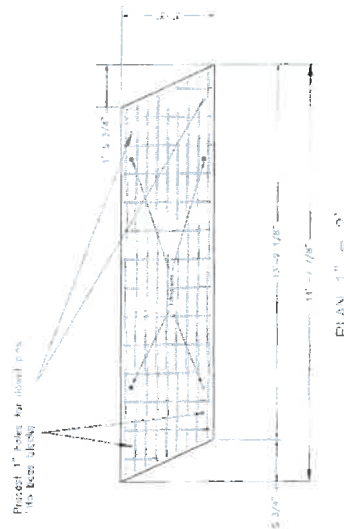
Scale 1" = 4"
February 11, 2019

Revised: 12/20/2019 - cure notation, add asphalt
spec. and wall joint.



#12

PRECAST DECK SLABS



These slabs are designed to accommodate a 25' bearing area built, supported, in accordance with the following:

Soil below to conditions must be sufficient to support a bearing capacity of three times the weight of concrete slabs.

Concrete is to have a minimum 28 day breaking strength of 4,000 psi.

Concrete to be in an enclosure, vibrated in place, and kept moist and cured for 28 days.

Cast-in-place steel reinforcement for each slab to be 12" x 12" No. 4 bars spaced at 12" on center. Results shall be as certified by an engineer and stamped by the town.

All reinforcing bar to be AS V grade 60.

4" bearing width of No. 4 bars shall be centered with axis for bearing. After the slabs are in place, the steel can be bent down and bent up.

All other specifications shall be as given in the specifications for precast concrete slabs and shall be in accordance with the manufacturer's instructions with the plans.



Structural Set
 Sheet 3 of 3
 Proposed Culvert Replacement
 in West Tisbury, Mass.
 Prepared for
 Town of West Tisbury
 Scale 1" = 2'
 February 11, 2019



#12