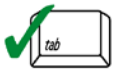
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
and Wellfleet Environamental Protection By-law

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Wellfleet
City/Town

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



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Chequessett Neck, Pole Dike, Bound Brook Island & High Toss Rds, Way #672 (a. Street Address) | Wellfleet (b. City/Town) | 02667 (c. Zip Code)

Latitude and Longitude: Form 3 Attachment A (d. Latitude) | (e. Longitude)

various (f. Assessors Map/Plat Number) | various (g. Parcel /Lot Number)

2. Applicant:

See Form 3 Attachment B (a. First Name) | (b. Last Name)

c. Organization

d. Street Address

e. City/Town | f. State | g. Zip Code

h. Phone Number | i. Fax Number | j. Email Address

3. Property owner (required if different from applicant): ☒ Check if more than one owner

See Form 3 Attachment C (a. First Name) | (b. Last Name)

c. Organization

d. Street Address

e. City/Town | f. State | g. Zip Code

h. Phone Number | i. Fax Number | j. Email address

4. Representative (if any):

Carole (a. First Name) | Ridley (b. Last Name)

Ridley & Associates, Inc. (c. Company)

115 Kendrick Road (d. Street Address)

Harwich (e. City/Town) | MA (f. State) | 02645 (g. Zip Code)

508-221-8941 (h. Phone Number) | 508-432-3788 (i. Fax Number) | cr@ridleyandassociates.com (j. Email address)

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

Exempt (a. Total Fee Paid) | n/a (b. State Fee Paid) | n/a (c. City/Town Fee Paid)

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A. General Information (continued)

6. General Project Description:

The Herring River Restoration Project will restore native tidal wetland habitat to large portions of the Herring River floodplain in and adjacent to the Seashore by removing man-made tidal restrictions and re-establishing tidal exchange in the river basin and its connected sub-basins. See attached project narrative for additional information.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☒ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☒ Yes ☐ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

Ecological Restoration Limited Project for Tidal Restoration (inland and coastal)
2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Barnstable a. County	See Form 3 Attachment C b. Certificate # (if registered land)
See Form 3 Attachment C c. Book	See Form 3 Attachment C d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☒ Bank	91(T) 468(P) 1. linear feet	2. linear feet
b. ☒ Bordering Vegetated Wetland	112,055(T) 631,399(P) 1. square feet	2. square feet
c. ☒ Land Under Waterbodies and Waterways	1,016(T) 8,291(P) 1. square feet 698(P) 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☒ Riverfront Area	Herring River, Mill & Pole Dike Creeks, Bound Brook- all coastal 1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☒ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
107,156(T) 461,116(P)		

5. Has an alternatives analysis been done and is it attached to this NOI? ☒ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☒ Yes ☐ No

3. ☒ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☒ Land Under the Ocean	19,188(T) 21,806(P) — 1. square feet 3,562(P) — 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☒ Coastal Beaches	980(T) 8,070(P) — 1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☒ Coastal Banks	**1,333(T) 7,522(P)** — 1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☒ Salt Marshes	31,173(T) 18,865(P) — 1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☒ Land Containing Shellfish	23,585(T) 36,716(P) — 1. square feet	
k. ☒ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 3,475(P) — 1. cubic yards dredged	
l. ☒ Land Subject to Coastal Storm Flowage	311,359(T) 1,858,855(P) — 1. square feet	

4. ☒ Restoration/Enhancement
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.2.b or B.3.h above, please enter the additional amount here.

~43 acres Project-wide (see narrative Table 6) — a. square feet of BVW
~ 257 acres Project-wide (see narrative Table 6) — b. square feet of Salt Marsh

5. ☒ Project Involves Stream Crossings

1 — a. number of new stream crossings
6 — b. number of replacement stream crossings

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C. Other Applicable Standards and Requirements

☒ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☐ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/ma-endangered-species-act-mesa-regulatory-review).
Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

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C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review).
Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☐ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. ☐ Is this an aquaculture project? d. ☐ Yes ☐ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).

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C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☐ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☐ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☐ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☐ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☐ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☒ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☐ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☐ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

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D. Additional Information (cont'd)

3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☐ List the titles and dates for all plans and other materials submitted with this NOI.

a. Plan Title

b. Prepared By

c. Signed and Stamped by

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☐ Attach NOI Wetland Fee Transmittal Form

9. ☐ Attach Stormwater Report, if needed.

E. Fees

1. ☒ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name

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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of ~~Applicant~~ Town of Wellfleet, Charles Sumner, Interim Town Administrator

2. Date 3/23/2022

3. Signature of ~~Property Owner (if different)~~ Applicant
Stacy Ann Ferguson for Brian Carlstrom
Cape Cod National Seashore, Brian Carlstrom, Superintendent

4. Date 3/23/2022

5. Signature of Representative (if any)

6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

WPA Form 3 Attachment A - Project Location Latitude and Longitude

WELLFLEET

Chequessett Neck Road Bridge.....Lat: 41°55'52.07" .....Long: 70°03'51.64"

MC WCS.....Lat: 41°55'59.49" .....Long: 70°03'26.49"

High Toss Road .....Lat: 41°56'37.15" .....Long: 70°03'26.62"

Low-Lying Roads and Culverts .....Lat: 41°56'52.52" .....Long: 70°02'39.88"

Chequessett Yacht and Country Club .....Lat: 41°56'01.19" .....Long: 70°03'07.41"

Way #672 .....Lat: 41°56'33.02" .....Long: 70°03'12.73"

M-F LLP.....Lat: 41°56'59.87" .....Long: 70°04'10.52"

TRURO

Low-Lying Roads and Culverts .....Lat: 41°57'59.87" .....Long: 70°03'58.77"

WPA Form 3 Attachment B - Applicants

Town of Wellfleet
c/o Charles Sumner
Interim Town Administrator
300 Main Street
Wellfleet, MA 02667
Tel. 508-349-0300
Fax. 508-349-0305
Email: Charles.Sumner@wellfleet-ma.gov

Cape Cod National Seashore
c/o Brian Carlstrom
Superintendent
99 Marconi Site Drive
Wellfleet, MA 02667
Tel. 508-771-2144
Fax. 508-349-9052
Email: brian_carlstrom@nps.gov

WPA Form 3 Attachment C Property Owner and Recording Information

Element*	Street Address - WELLFLEET	Map/Pcl	Book / Page	Certificate	Owner	Mailing Address	City	State	Zip
MCWCS	575 Old Chequessett Neck Rd	19-6		178899	N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	1000 Old County Rd	2-3	30946 / 130		N/F Michael Packard & Julie Monger	1000 Old County Rd	Wellfleet	MA	02667
LLR	360 Cole's Neck Rd	7-27		209956	N/F Stephen R & Theresa A Ayotte	74 Westleigh Drive	Harwinton	CT	06791
LLR	370 Coles Neck Road	7-28	N/A N/A		Town of Wellfleet Transfer Station	300 Main Street	Wellfleet	MA	02667
LLR	0 Cole's Neck Rd	7-48	8969 / 132		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Bound Brook Island Rd	7-49	8969 / 129		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Bound Brook Island	7-50		13TL147601	Town of Wellfleet	300 Main Street	Wellfleet	MA	02667
LLR	0 Bound brook Island Rd	7-51	10589 / 287		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Cole's Neck Rd	7-51-1	8969 / 131		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Bound Brook Island Rd	7-52	8969 / 129		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Bound Brook Island Rd	7-53	10552 / 332		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Pole Dike Rd	7-54	8979 / 277		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	339 Cole's Neck Rd	7-56-1		152721	N/F Marnie Crawford Samuelson Revocable Trust	PO Box 45	Chatham	MA	02633
LLR	0 Cole's Neck Rd	7-62	8969 / 131		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Cole's Neck Rd	7-63	8969 / 131		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	0 Pole Dike Road	7-65	25980 / 134		Town of Wellfleet	300 Main Street	Wellfleet	MA	02667
LLR	1136 Brown's Neck Rd	7-69	10171 / 206		N/F P. Reed Larson	161 Clinton Road	Brookline	MA	02446
LLR	0 Pole Dike Rd	7-76	11065 / 231		N/F Wellfleet Conservation Trust	PO Box 84	Wellfleet	MA	02667
LLR	1200 Bound Brook Island Rd	7-602	33812 / 58		N/F Lisa Brown & Belinda Brown Carrier	1200 Bound Brook Isl Rd	Wellfleet	MA	02667
LLR	730 Bound Brook Island Rd	6-4		218437	N/F Thomas J Whitman & Mira Rabin	720 Westview Street	Philadelphia	PA	19119
LLR, M-F	695 Bound Brook Island Rd	6-6	24096 / 71		N/F Carl Frederiksen & Tatiana F Miller	1873 Pound Lane	Santa Cruz	CA	95062
LLR	145 Pole Dike Road	12-224	23195 / 308		Town of Wellfleet Sand Pit	300 Main Street	Wellfleet	MA	02667
W672	25 Way #672	12-235	27725 / 9		N/F Jonathan H Hirsch & Robert P Meek	165 Bigelow Street	Brighton	MA	02135
W672	27 Way #672	12-235-1	10981 / 176		N/F Judith Anne Ellis	25 High Toss Road	Wellfleet	MA	02667
CYCC	680 Chequessett Neck Rd	19-81-0		78460	N/F Chequessett Yacht & Country Club	PO Box 779	Wellfleet	MA	02667
Element	**Street Address - TRURO**	**Map/Pcl**	**Book & Page**	**Certificate**	**Owner**	**Mailing Address**	**City**	**State**	**Zip**
LLR	133 Old County Road	59-66	5158 / 339		Town of Truro	PO Box 2030	Truro	MA	02666
LLR	125 A Old County Road	59-108	1456 / 768+		Franja Lewis Sanders	PO Box 96	Truro	MA	02666

N/F = Now or Formerly

Various federally-owned parcels within Cape Cod National Seashore was shown on plans.

* There is no work beyond the ROW at Chequessett Neck Road Bridge & Water Access Facility or at High Toss Road, except on property owned by the Applicants.

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WPA Form 3 – Notice of Intent
Appendix A: Ecological Restoration Limited Project Checklists
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Eligibility Checklist

Provided by MassDEP:

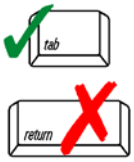
MassDEP File Number

Document Transaction Number

Wellfleet / Truro
City/Town

This Ecological Restoration Limited Project Eligibility Checklist guides the applicant in determining if their project is eligible to file as an Inland or Coastal Ecological Restoration Limited Project (310 CMR 10.53(4) or 310 CMR 10.24(8) respectively). These criteria must be met when submitting the Ecological Restoration Limited Project Notice of Intent to ensure that the restoration and improvement of the natural capacity of a Resource Area(s) to protect and sustain the interests identified in the WPA is **necessary** to achieve the project's ecological restoration goals.

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



Regulatory Features of All Coastal and Inland Ecological Restoration Limited Projects

(a) May result in the temporary or permanent loss of/or conversion of Resource Area: An Ecological Restoration Limited Project that meets the requirements of 310 CMR 10.24(8) may result in the temporary or permanent loss of Resource Areas and/or the conversion of one Resource Area to another when such loss is necessary to the achievement of the project's ecological restoration goals.

(b) Exemption from wildlife habitat evaluation: A NOI for an Ecological Restoration Limited Project that meets the minimum requirements for Ecological Restoration Projects and for a MassDEP Combined Application outlined in 310 CMR 10.12(1) and (2) is exempt from providing a wildlife habitat evaluation (310 CMR 10.60).

Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

(c) The following are considerations for applicants filing an Ecological Restoration Limited Project NOI and for the issuing authority approving a project as an Ecological Restoration Limited Project:

☒ The condition of existing and historic Resource Areas proposed for restoration.

☒ Evidence of the extent and severity of the impairment(s) that reduce the capacity of the Resource Areas to protect and sustain the interests identified in M.G.L. c. 131, § 40.

☒ The magnitude and significance of the benefits of the Ecological Restoration Project in improving the capacity of the affected Resource Areas to protect and sustain the other interests identified in M.G.L. c. 131, § 40.

☒ The magnitude and significance of the impacts of the Ecological Restoration Project on existing Resource Areas that may be modified, converted and/or lost and the interests for which said Resource Areas are presumed significant in 310 CMR 10.00, and the extent to which the project will:

a. avoid adverse impacts to Resource Areas and the interests identified in M.G.L. c. 131, § 40, that can be avoided without impeding the achievement of the project's ecological restoration goals.

b. minimize adverse impacts to Resource Areas and the interests identified in M.G.L. c. 131, § 40, that are necessary to the achievement of the project's ecological restoration goals.

c. utilize best management practices such as erosion and siltation controls and proper construction sequencing to avoid and minimize adverse construction impacts to resource areas and the interests identified in M.G.L. c. 131, § 40.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent
Appendix A: Ecological Restoration Limited Project Checklists

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Wellfleet / Truro
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Eligibility Criteria - Coastal Ecological Restoration Limited Projects (310 CMR 10.24(8))

Complete this Eligibility Criteria Checklist ***before*** filling out a Notice of Intent Application to determine if your project qualifies as a Coastal Ecological Restoration Limited Project. (310 CMR 10.24(8)) Sign the Eligibility Certification at the end of Appendix A, and attach the checklist with supporting documentation and the Eligibility Certification to your Notice of Intent Application.

General Eligibility Criteria for All Coastal Ecological Restoration Limited Projects

Notwithstanding the requirements of 310 CMR 10.25 through 10.35, 310 CMR 10.54 through 10.58, and the Wildlife Habitat evaluations in 310 CMR 10.60, the Issuing Authority may issue an Order of Conditions permitting an Ecological Restoration Project listed in 310 CMR 10.24(8)(e) as an Ecological Restoration Limited Project and impose such conditions as will contribute to the interests identified in the WPA M.G.L. provided that the project meets all the requirements in 310 CMR 10.24 (8).

☒ The project is an Ecological Restoration Project as defined in 310 CMR 10.04 and is a project type listed below [310 CMR 10.24(8)(e)].

☒ Tidal Restoration.

☐ Shellfish Habitat Restoration.

☐ Other Ecological Restoration Limited Project Type.

☒ The project will further at least one of the WPA (M.G.L. c. 131, § 40) interests identified below.

- ☐ Protection of public or private water supply.
- ☐ Protection of ground water supply.
- ☒ Flood control.
- ☒ Storm damage prevention.
- ☒ Prevention of pollution.
- ☒ Protection of land containing shellfish.
- ☒ Protection of fisheries.
- ☒ Protection of wildlife habitat.

See email from J. Leddick found in Appendix C

☒ If the project will impact an area located within estimated habitat which is indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetlands, a NHESP preliminary written determination is attached to the NOI submittal that the project will not have any adverse long-term and short-term effects on specified habitat sites of Rare Species or the project will be carried out in accordance with an approved NHESP habitat management plan.

Eligibility Criteria - Coastal Ecological Restoration Limited Projects (310 CMR 10.24(8)) (Cont.)

General Eligibility Criteria for All Coastal Ecological Restoration Limited Projects (cont.)

☐ If the project is located in a Coastal Dune or Barrier Beach, the project avoids and minimizes armoring of the Coastal Dune or Barrier Beach to the maximum extent practicable.

☒ The project complies with all applicable provisions of 310 CMR 10.24(1) through (6) and 310 CMR 10.24(9) and (10).

Additional Eligibility Criteria for Specific Coastal Ecological Restoration Limited Project Types

These additional criteria must be met to qualify as an Ecological Restoration Limited Project to ensure that the restoration and improvement of the natural capacity of a Resource Area to protect and sustain the interests identified in the WPA is **necessary** to achieve the project's ecological restoration goals.

☒ This Ecological Restoration Limited Project application meets the eligibility criteria for Ecological Restoration Limited Project [310 CMR 10.24(8)(a) through (d) and as proposed, furthers at least one of the WPA interests is for the project type identified below.

☒ **Tidal Restoration Projects**

☒ A project to restore tidal flow that will not significantly increase flooding or storm damage impacts to the built environment, including without limitation, buildings, wells, septic systems, roads or other man-made structures or infrastructure.

☐ **Shellfish Habitat Restoration Projects**

☐ The project has received a Special Projects Permit from the Division of Marine Fisheries or, if a municipality, has received a shellfish propagation permit.

☐ The project is made of cultch (e.g., shellfish shells from oyster, surf or ocean clam) or is a structure manufactured specifically for shellfish enhancement (e.g., reef blocks, reef balls, racks, floats, rafts, suspended gear).

☐ **Other Ecological Restoration Projects** that meet the criteria set forth in 310 CMR 10.24(8)(a) through (d).

☐ Restoration, enhancement, or management of Rare Species habitat.

☐ Restoration of hydrologic and habitat connectivity.

☐ Removal of aquatic nuisance vegetation to impede eutrophication.

☐ Thinning or planting of vegetation to improve habitat value.

☐ Fill removal and re-grading.

☐ Riparian corridor re-naturalization.

☐ River floodplain re-connection.

Eligibility Criteria - Coastal Ecological Restoration Limited Projects (310 CMR 10.24(8)) (Cont.)

Additional Eligibility Criteria for Specific Coastal Ecological Restoration Limited Project Types

- ☐ In-stream habitat enhancement.
- ☐ Remediation of historic tidal wetland ditching.
- ☐ Eelgrass restoration.
- ☐ Invasive species management.
- ☐ Installation of fish passage structures.
- ☐ Other. Describe: _____

☒ This project involves the construction, repair, replacement or expansion of public or private infrastructure (310 CMR 10.24(9).

- ☒ The NOI attachment labeled Appendix H is an operation and maintenance plan to ensure that the infrastructure will continue to function as designed.
- ☒ The operation and maintenance plan will be implemented as a continuing condition in the Order of Conditions and the Certificate of Compliance.

☒ This project proposes to replace an existing stream crossing (310 CMR 10.24(10). The crossing complies with the Massachusetts Stream Crossing Standards to the maximum extent practicable with details provided in the NOI. The crossing type:

- ☒ Replaces an existing non-tidal crossing that is part of an Anadromous/Catadromous Fish Run (310 CMR 10.35)
- ☒ Replaces an existing tidal crossing that restricts tidal flow. The tidal restriction will be eliminated to the maximum extent practicable.

☒ At a minimum, in evaluating the potential to comply with the standards to the maximum extent practicable the following criteria have been consider site constraints in meeting the standard, undesirable effects or risk in meeting the standard, and the environmental benefit of meeting the standard compared to the cost, by evaluating the following:

- ☒ The potential for downstream flooding;
- ☒ Upstream and downstream habitat (in-stream habitat, wetlands);
- ☒ Potential for erosion and head-cutting;
- ☒ Stream stability;
- ☒ Habitat fragmentation caused by the crossing;
- ☒ The amount of stream mileage made accessible by the improvements;
- ☒ Storm flow conveyance;

Eligibility Criteria - Coastal Ecological Restoration Limited Projects (310 CMR 10.24(8)) (Cont.)

Additional Eligibility Criteria for Specific Coastal Ecological Restoration Limited Project Types

☒ Engineering design constraints specific to the crossing;

☒ Hydrologic constraints specific to the crossing;

☒ Impacts to wetlands that would occur by improving the crossing;

☒ Potential to affect property and infrastructure; and

☒ Cost of replacement.

Eligibility Criteria - Inland Ecological Restoration Limited Project (310 CMR 10.53(4))

Complete this Eligibility Criteria Checklist ***before*** filling out a Notice of Intent Application to determine if your project qualifies as an Inland Ecological Restoration Limited Project. (310 CMR 10.53(4)) Sign the Eligibility Certification at the end of Appendix A, and attach the checklist with supporting documentation and the Eligibility Certification to your Notice of Intent Application.

General Eligibility Criteria for All Inland Ecological Restoration Limited Projects

Notwithstanding the requirements of any other provision of 310 CMR 10.25 through 10.35, 310 CMR 10.54 through 10.58, and 310 CMR 10.60, the Issuing Authority may issue an Order of Conditions permitting an Ecological Restoration Project listed in 310 CMR 10.53(4)(e) as an Ecological Restoration Limited Project and impose such conditions as will contribute to the interests identified in M.G.L. c. 131, § 40, provided that:

☒ The project is an Ecological Restoration Project as defined in 310 CMR 10.04 and is a project type listed below [310 CMR 10.53(4)(e)].

- ☐ Dam Removal
- ☐ Freshwater Stream Crossing Repair and Replacement
- ☐ Stream Daylighting
- ☒ Tidal Restoration
- ☐ Rare Species Habitat Restoration
- ☐ Restoring Fish Passageways
- ☐ Other (describe project type): _____

Eligibility Criteria - Inland Ecological Restoration Limited Project (310 CMR 10.53(4)) (cont.)

General Eligibility Criteria for All Inland Ecological Restoration Limited Projects

☒ The project will further at least one of the WPA (M.G.L. c. 131, § 40) interests identified below.

- ☐ Protection of public or private water supply
- ☐ Protection of ground water supply
- ☒ Flood control
- ☒ Storm damage prevention
- ☒ Prevention of pollution
- ☒ Protection of land containing shellfish
- ☒ Protection of fisheries
- ☒ Protection of wildlife habitat

☒ If the project will impact an area located within estimated habitat which is indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetlands, a NHESP preliminary written determination is attached to the NOI submittal that the project will have no adverse long-term and short-term effects on specified habitat sites of Rare Species or the project will be carried out in accordance with an approved NHESP habitat management plan.

☒ The project will be carried out in accordance with any time of year restrictions or other conditions recommended by the Division of Marine Fisheries for coastal waters and the Division of Fisheries and Wildlife in accordance with 310 CMR 10.11(3).

☒ If the project involves the dredging of 100 cubic yards of sediment or more or dredging of any amount in an Outstanding Resource Water, a Water Quality Certification has been applied for or obtained.

☒ The project complies with all applicable provisions of 310 CMR 10.53(1), (2), (7), and (8).

Eligibility Criteria - Inland Ecological Restoration Limited Project (310 CMR 10.53(4)) (cont.)

Additional Eligibility Criteria for Specific Inland Ecological Restoration Limited Project Types

These additional criteria must be met to qualify as an Ecological Restoration Limited Project to ensure that the restoration and improvement of the natural capacity of a Resource Area to protect and sustain the interests identified in the WPA is **necessary** to achieve the project's ecological restoration goals.

☒ This project application meets the eligibility criteria for Ecological Restoration Limited Project in accordance with [310 CMR 10.53(4)(a) through (d) and as proposed, furthers at least one of the WPA interests is for the project type identified below:

☐ **Dam Removal**

☐ Project is consistent with MassDEP's 2007 Dam Removal Guidance.

☐ **Freshwater Stream Crossing Repair and Replacement**. The project as proposed and the NOI describes how:

☐ Meeting the eligibility criteria set forth in 310 CMR 10.13 would result in significant stream instability or flooding hazard that cannot otherwise be mitigated, and site constraints make it impossible to meet said criteria.

☐ The project design ensures that the stability of the bank is NOT impaired.

☐ To the maximum extent practicable, the project provides for the restoration of the stream upstream and downstream of the structure as needed to restore stream continuity and eliminate barriers to aquatic organism movement.

☐ The project complies with the requirements of 310 CMR 10.53(7) and (8).

☐ **Stream Daylighting Projects**

☐ The project meets the eligibility criteria for Ecological Restoration Limited Project [310 CMR 10.53(4)(a) through (d)] and as proposed the NOI describes how the proposed project meets to the maximum extent practicable, consistent with the project's ecological restoration goals, all the performance standards for Bank and Land Under Water Bodies and Waterways.

☐ The project meets the requirements of 310 CMR 10.12(1) and (2) and a wildlife habitat evaluation is not included in the NOI.

☒ **Tidal Restoration Project**

☒ Restores tidal flow.

☒ the project, including any proposed flood mitigation measures, will not significantly increase flooding or storm damage to the built environment, including without limitation, buildings, wells, septic systems, roads or other man-made structures or infrastructure.

Eligibility Criteria - Inland Ecological Restoration Limited Project (310 CMR 10.53(4)) (cont.)

☐ **Other Ecological Restoration Projects** that meet the criteria set forth in 310 CMR 10.53 (4) (a) through (d).

- ☐ Restoration, enhancement, or management of Rare Species habitat.
- ☐ Restoration of hydrologic and habitat connectivity.
- ☐ Removal of aquatic nuisance vegetation to impede eutrophication.
- ☐ Thinning or planting of vegetation to improve habitat value.
- ☐ Riparian corridor re-naturalization.
- ☐ River floodplain re-connection.
- ☐ In-stream habitat enhancement.
- ☐ Fill removal and re-grading.
- ☐ Flow restoration.
- ☐ Installation of fish passage structures.
- ☐ Invasive species management.
- ☐ Other. Describe: _____

☒ This project involves the construction, repair, replacement or expansion of public or private infrastructure. (310 CMR 10.53(7))

- ☒ The NOI attachment labeled Appendix H is an operation and maintenance plan to ensure that the infrastructure will continue to function as designed.
- ☒ The operation and maintenance plan will be implemented as a continuing condition in the Order of Conditions and the Certificate of Compliance.

☒ This project replaces an existing stream crossing (310 CMR 10.53(8)). The crossing type:

- ☒ Replaces an existing non-tidal crossing designed to comply with the Massachusetts Stream Crossing Standards to the maximum extent practicable with details provided in the NOI.
- ☒ Replaces an existing tidal crossing that restricts tidal flow. The tidal restriction will be eliminated to the maximum extent practicable.

Eligibility Criteria - Inland Ecological Restoration Limited Project (310 CMR 10.53(4)) (cont.)

☒ At a minimum, in evaluating the potential to comply with the standards to the maximum extent practicable the following criteria have been consider site constraints in meeting the standard, undesirable effects or risk in meeting the standard, and the environmental benefit of meeting the standard compared to the cost, by evaluating the following:

- ☒ The potential for downstream flooding;
- ☒ Upstream and downstream habitat (in-stream habitat, wetlands);
- ☒ Potential for erosion and head-cutting;
- ☒ Stream stability;
- ☒ Habitat fragmentation caused by the crossing;
- ☒ The amount of stream mileage made accessible by the improvements;
- ☒ Storm flow conveyance;
- ☒ Engineering design constraints specific to the crossing;
- ☒ Hydrologic constraints specific to the crossing;
- ☒ Impacts to wetlands that would occur by improving the crossing;
- ☒ Potential to affect property and infrastructure; and
- ☒ Cost of replacement.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent
Appendix A: Ecological Restoration Limited Project Checklists
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Wellfleet / Truro
City/Town

Required Actions (310 CMR 10.11)

Complete the Required Actions before submitting a Notice of Intent Application for an Ecological Restoration Project and submit a completed copy of this Checklist with the Notice of Intent.

☒ **Massachusetts Environmental Policy Act (MEPA) / Environmental Monitor**
http://www.mass.gov/eea/agencies/mepa/submitting-notices-to-the-environmental-monitor.html

For Ecological Restoration Limited Projects, there are no changes to MEPA requirements.

☒ Submit written notification at least 14 days prior to the filing of a Notice of Intent (NOI) to the Environmental Monitor for publication. A copy of the written notification is attached and provides at minimum:

☒ A brief description of the proposed project.

☒ The anticipated NOI submission date to the conservation commission.

☒ The name and address of the conservation commission that will review the NOI.

☒ Specific details as to where copies of the NOI may be examined or acquired and where to obtain the date, time, and location of the public hearing.

☒ **Massachusetts Endangered Species Act (MESA) /Wetlands Protection Act Review**

See email from J. Leddick found in Appendix C

☒ Preliminary Massachusetts Endangered Species Act Review from the Natural Heritage and Endangered Species Program (NHESP) has been met and the written determination is attached.

☒ Supplemental Information for Endangered Species Review has been submitted.

NOTE: Section 2.2.4 of the NOI narrative identifies the elements of the project that are exempt from MESA review, and calculates impacts to Estimated Habitat of Rare Wildlife associated with elements that are not exempt from MESA review.

1. ☒ Percentage/acreage of property to be altered: (includes temporary and permanent alterations)
   a. Within Wetland Resource Area — 45% / 4.4 ac (Percentage/acreage)
   b. Outside Wetland Resource Area — 55% / 5.4 ac (Percentage/acreage)
2. ☒ Assessor's Map or right-of-way plan of site
3. ☒ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work.
4. ☒ Project description (including description of impacts outside of wetland resource area & buffer zone)
5. ☒ Photographs representative of the site
6. ☒ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm)

Required Actions (310 CMR 10.11) (cont.)

Make check payable to "Commonwealth of Massachusetts - NHESP" and mail to NHESP:

Natural Heritage & Endangered Species Program
MA Division of Fisheries & Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

NOTE: Section 2.2.4 of the NOI narrative identifies the elements of the project that are exempt from MESA review, and calculates impacts to Estimated Habitat of Rare Wildlife associated with elements that are not exempt from MESA review.

7. Projects altering 10 or more acres of land, also submit:

   a. ☐ Vegetation cover type map of site

   b. ☐ Project plans showing Priority & Estimated Habitat boundaries

OR Check One of the Following:

1. ☒ Project is exempt from MESA review.

Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/mass-endangered-species-act-mesa/; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59 – see C4 below)

2. ☐ Separate MESA review ongoing.

a. NHESP Tracking # _____ b. Date submitted to NHESP _____

3. ☐ Separate MESA review completed. Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

☒ **Estimated Habitat Map of State-Listed Rare Wetlands Wildlife**

If a portion of the proposed project is located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP), complete the portion below. To view habitat maps, see the **Massachusetts Natural Heritage Atlas** or view the maps electronically at: http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review

See email from J. Leddick found in Appendix C

☒ A preliminary written determination from Natural Heritage and Endangered Species Program (NHESP) must be obtained indicating that:

☒ Project will NOT have long- or short-term adverse effect on the actual Resource Area located within estimated habitat indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetlands Wildlife published by NHESP.

☐ Project will have long- or short-term adverse effect on the actual Resource Area located within estimated habitat indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetlands Wildlife published by NHESP. A copy of NHESP's written preliminary determination in accordance with 310 CMR 10.11(2) is attached. This specifies:

☒ Date of the map: August 1, 2021

Required Actions (310 CMR 10.11) (cont.)

☐ If the Rare Species identified is/are likely to continue to be located on or near the project, and if so, whether the Resource Area to be altered is in fact part of the habitat of the Rare Species.

☐ That if the project alters Resource Area(s) within the habitat of a Rare Species:

☐ The Rare Species is identified;

☐ NHESP's recommended changes or conditions necessary to ensure that the project will have no short or long term adverse effect on the habitat of the local population of the Rare Species is provided; or

☒ An approved NHESP habitat management plan is attached with this Notice of Intent.

Send the request for a preliminary determination to:
Natural Heritage & Endangered Species Program
MA Division of Fisheries & Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

☒ **Division of Marine Fisheries**

☒ If the project will occur within a coastal waterbody with a restricted Time of Year, [see Appendix B of the Division of Marine Fisheries (DMF) Technical Report TR 47 "Marine Fisheries Time of Year Restrictions (TOYs) for Coastal Alteration Projects" dated April 2011 http://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/NEGP/MADMFTR-47.pdf].

☒ Obtain a DMF written determination stating:

☐ The proposed work does NOT require a TOY restriction.

☒ The proposed work requires a TOY restriction. Specific recommended TOY restriction and recommended conditions on the proposed work is attached.

☒ If the project may affect a diadromous fish run [re: Division of Marine Fisheries (DMF) Technical Reports TR 15 through 18, dated 2004: http://www.mass.gov/eea/agencies/dfg/dmf/publications/technical.html]

☒ Obtain a DMF written determination stating:

☒ The design specifications and operational plan for the project are compatible with the passage requirements of the fish run.

☐ The design specifications and operational plan for the project are not compatible with the passage requirements of the fish run.

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Appendix A: Ecological Restoration Limited Project Checklists

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Required Actions (310 CMR 10.11) (cont.)

Send the request for a written or electronic determination to:

South Shore – Cohasset to Rhode Island border, and the Cape & Islands:
Division of Marine Fisheries –
South Coast Field Station
Attn: Environmental Reviewer
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
Email: DMF.EnvReview-South@state.ma.us

North Shore – Hull to New Hampshire border:
Division of Marine Fisheries –
North Shore Field Station
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

☒ **Division of Fisheries and Wildlife –** http://www.mass.gov/eea/agencies/dfg/dfw/

☒ Projects that involve silt-generating, in-water work that will impact a non-tidal perennial river or stream and the in-water work will not occur between May 1 and August 30.

☒ Obtain a written determination from the Division of Fisheries and Wildlife (DFW) as to whether the proposed work requires a TOY restriction.

☒ The proposed work does NOT require a TOY restriction.

☐ The proposed work requires a TOY restriction. The DFW determination with TOY restriction and other conditions is attached.

☒ **MassDEP Water Quality Certification**

☒ Project involves dredging of 100 cubic yards or more in a Resource Area or dredging of any amount in an Outstanding Resource Water (ORW). A copy and proof of the MassDEP Water Quality Certification pursuant to 314 CMR 9.00 is attached to the NOI.

☐ This project is a Combined Permit Application for 401 Dredging and Restoration (BRP WW 26).

☒ **MassDEP Wetlands Restriction Order**

Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

☒ Yes ☐ No

☒ **Department of Conservation and Recreation**

Office of Dam Safety

☐ For Dam Removal Projects, obtain a written determination from the Department of Conservation and Recreation Office of Dam Safety that the dam is not subject to the jurisdiction of the Office under 302 CMR 10.00, a written determination that the dam removal does not require a permit under 302 CMR 10.00 or a permit authorizing the dam removal in accordance with 302 CMR 10.00 has been issued.

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Required Actions (310 CMR 10.11) (cont.)

Areas of Critical Environmental Concern (ACECs)

Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

☒ Yes ☐ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations).

Wellfleet Harbor
Name of ACEC

Minimum Required Documents (310 CMR 10.12)

Complete the Required Documents Checklist below and provide supporting materials before submitting a Notice of Intent Application for an Ecological Restoration Project.

☒ This Notice of Intent meets all applicable requirements outlined in for Ecological Restoration Projects in 310 CMR 10.12. Use the checklist below to insure that all documentation is included with the NOI.

At a minimum, a Notice of Intent for an Ecological Restoration Project shall include the following:

☒ Description of the project's ecological restoration goals;

☒ The location of the Ecological Restoration Project;

☒ Description of the construction sequence for completing the project;

☒ A map of the Areas Subject to Protection Under M.G.L. c. 131, § 40, that will be temporarily or permanently altered by the project or include habitat for Rare Species, Habitat of Potential Regional and Statewide Importance, eel grass beds, or Shellfish Suitability Areas.

☒ The method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.) is attached with documentation methodology.

☒ List the titles and dates for all plans and other materials submitted with this NOI.

See Appx A (plans), H (O&M manuals) and J (Stormwater Management Reports & SWPPP)
a. Plan Title

b. Prepared by

c. Signed and Stamped by

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

g. Date

☒ If there is more than one property owner, attach a list of these property owners not listed on this form.

☒ Attach NOI Wetland Fee Transmittal Form.

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Minimum Required Documents (310 CMR 10.12)

☒ An evaluation of any flood impacts that may affect the built environment, including without limitation, buildings, wells, septic systems, roads or other man-made structures or infrastructure as well as any proposed flood impact mitigation measures;

☒ A plan for invasive species prevention and control;

☒ The Natural Heritage and Endangered Species Program written determination in accordance with 310 CMR 10.11(2), if needed;

☒ Any Time of Year restrictions and/or other conditions recommended by the Division of Marine Fisheries or the Division of Fisheries and Wildlife in accordance with 310 CMR 10.11(3), (4), (5), if needed;

☒ Proof that notice was published in the Environmental Monitor as required by 310 CMR 10.11(1;

N/A - not seeking a Restoration OOC

☐ A certification by the applicant under the penalties of perjury that the project meets the eligibility criteria set forth in 310 CMR 10.13;

☒ If the Ecological Restoration Project involves the construction, repair, replacement or expansion of infrastructure, an operation and maintenance plan to ensure that the infrastructure will continue to function as designed;

☒ If the project involves dredging of 100 cubic yards or more or dredging of any amount in an Outstanding Resource Water, a Water Quality Certification issued by the Department pursuant to 314 CMR 9.00;

☒ If the Ecological Restoration Project involves work on a stream crossing, information sufficient to make the showing required by 310 CMR 10.24(10) for work in a coastal resource area and 310 CMR 10.53(8) for work in an inland resource area; and

☒ If the Ecological Restoration Project involves work on a stream crossing, baseline photo-points that capture longitudinal views of the crossing inlet, the crossing outlet and the upstream and downstream channel beds during low flow conditions. The latitude and longitude coordinates of the photo-points shall be included in the baseline data.

☒ This project is subject to provisions of the MassDEP Stormwater Management Standards. A copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) is attached.

☒ Provide information as the whether the project has the potential to impact private water supply wells including agricultural or aquacultural wells or surface water withdrawal points.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent
Appendix A: Ecological Restoration Limited Project Checklists

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Wellfleet / Truro
City/Town

Certification that the Ecological Restoration Project Meets the Eligibility Criteria

I hereby certify under penalties of perjury that the Ecological Restoration Project Notice of Intent application does not meet the Eligibility criteria for an Ecological Restoration Order of Conditions set forth in 310 CMR 10.13, but does meet the Eligibility Criteria for a Ecological Restoration Limited Project set forth in 10.24(8) or 10.53(4) whichever is applicable. I certify that I am familiar with the information contained in the application, and that to the best of my knowledge and belief such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities.

Stacy Ann Ferguson for Brian Carlstrom	Brian Carlstrom, Supt., Cape Cod National Seashore	3/23/2022
Signature of Applicant ~~or Authorized Agent~~	Printed Name of Applicant	Date
Rebecca Roughley for Charles Sumner	Charles Sumner, Town Admin., Town of Wellfeet	3/23/2022
Signature of Applicant ~~or Authorized Agent~~	Printed Name of Applicant	Date

The certification must be signed by the applicant; however, it may be signed by a duly authorized agent (named in Item 2) if this form is accompanied by a statement by the applicant designating the agent and agreeing to furnish upon request, supplemental information in support of the application.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent
Appendix A: Ecological Restoration Limited Project Checklists

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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Stacy Ann Ferguson for Brian Carlstrom	Brian Carlstrom, Supt., Cape Cod National Seashore	3/23/2022
Signature of Applicant ~~or Authorized Agent~~	Printed Name of Applicant	Date
Rebecca Roughley for Charles Sumner	Charles Sumner, Town Admin., Town of Wellfeet	3/23/2022
Signature of Applicant ~~or Authorized Agent~~	Printed Name of Applicant	Date

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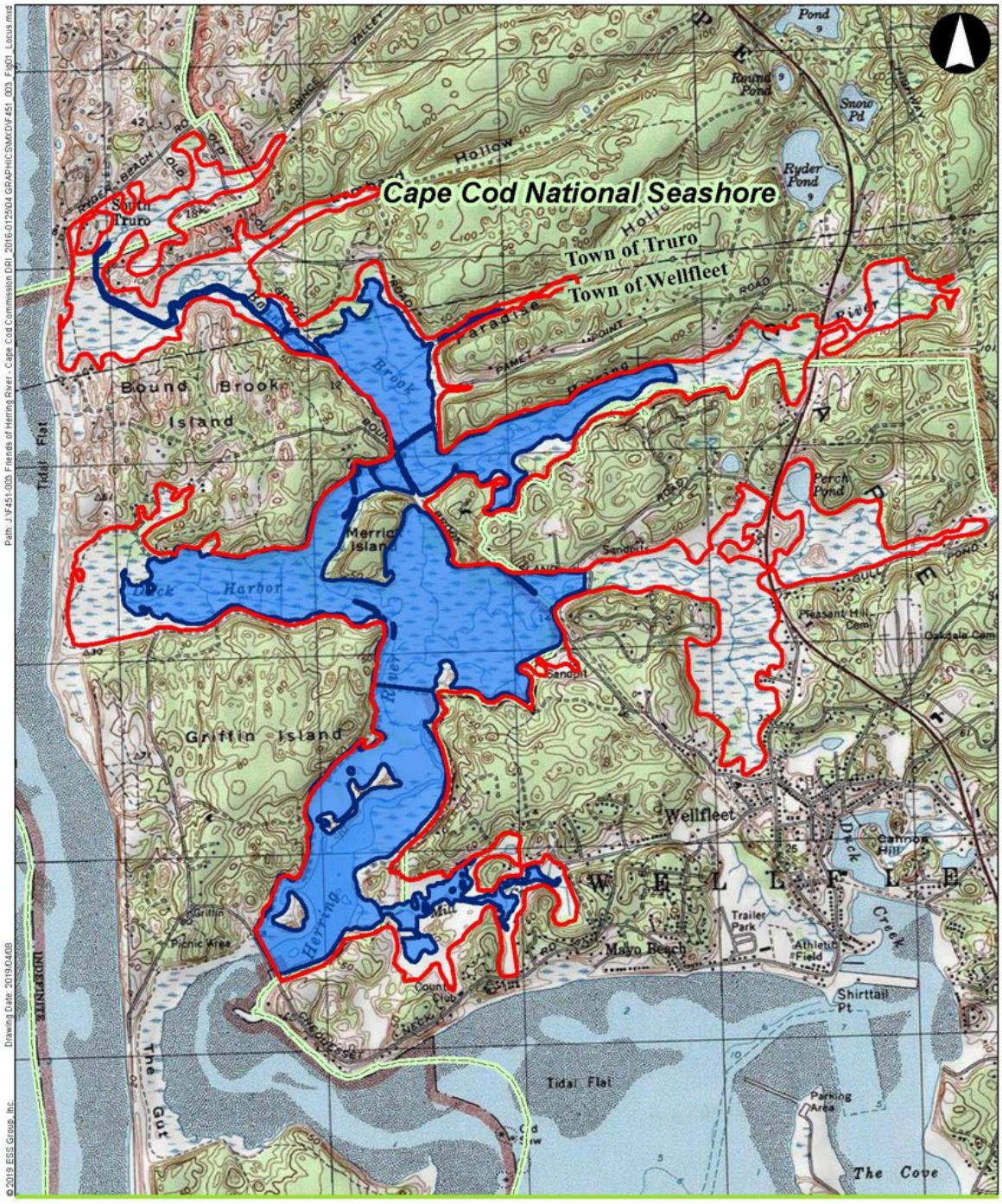


ess group
environmental consulting & engineering services

0 1,000 2,000 Feet

Herring River Restoration Project
Wellfleet and Truro, Massachusetts

1 inch = 2,167 feet

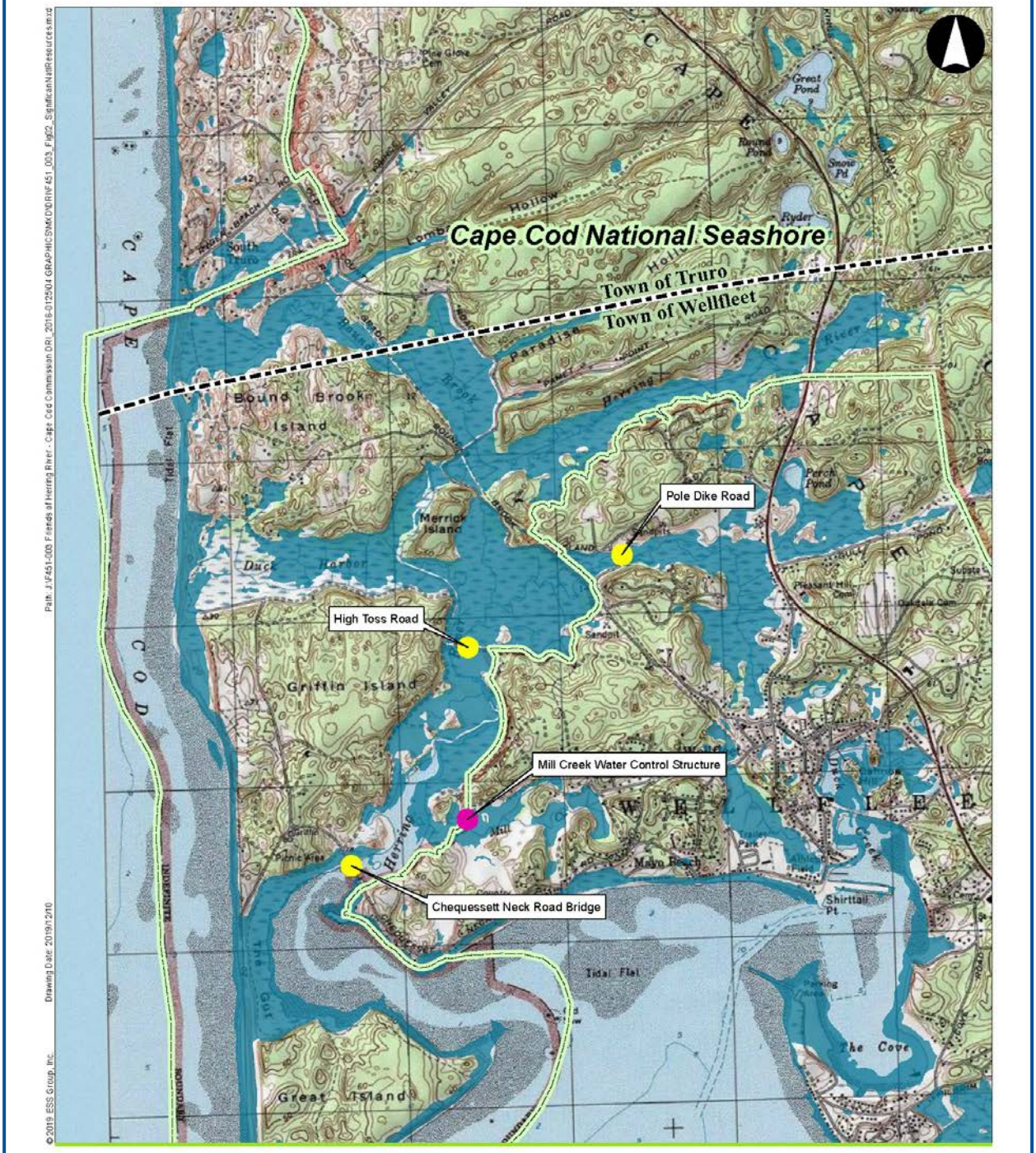
Source: 1) ESRI, USA Topo Map, 2017
2) National Park Service, Basin and Park Boundaries, 2017

Legend

- Maximum extent of Phase 1 restoration (mean high water spring tides)
- Project Area/Extent of Full Restoration pending future permits and landowner agreements
- CCNS Boundary

USGS Topographic Locus Map

Figure 1



Herring River Restoration Project
Wellfleet and Truro, Massachusetts

Cape Cod Commission
Significant Natural Resources

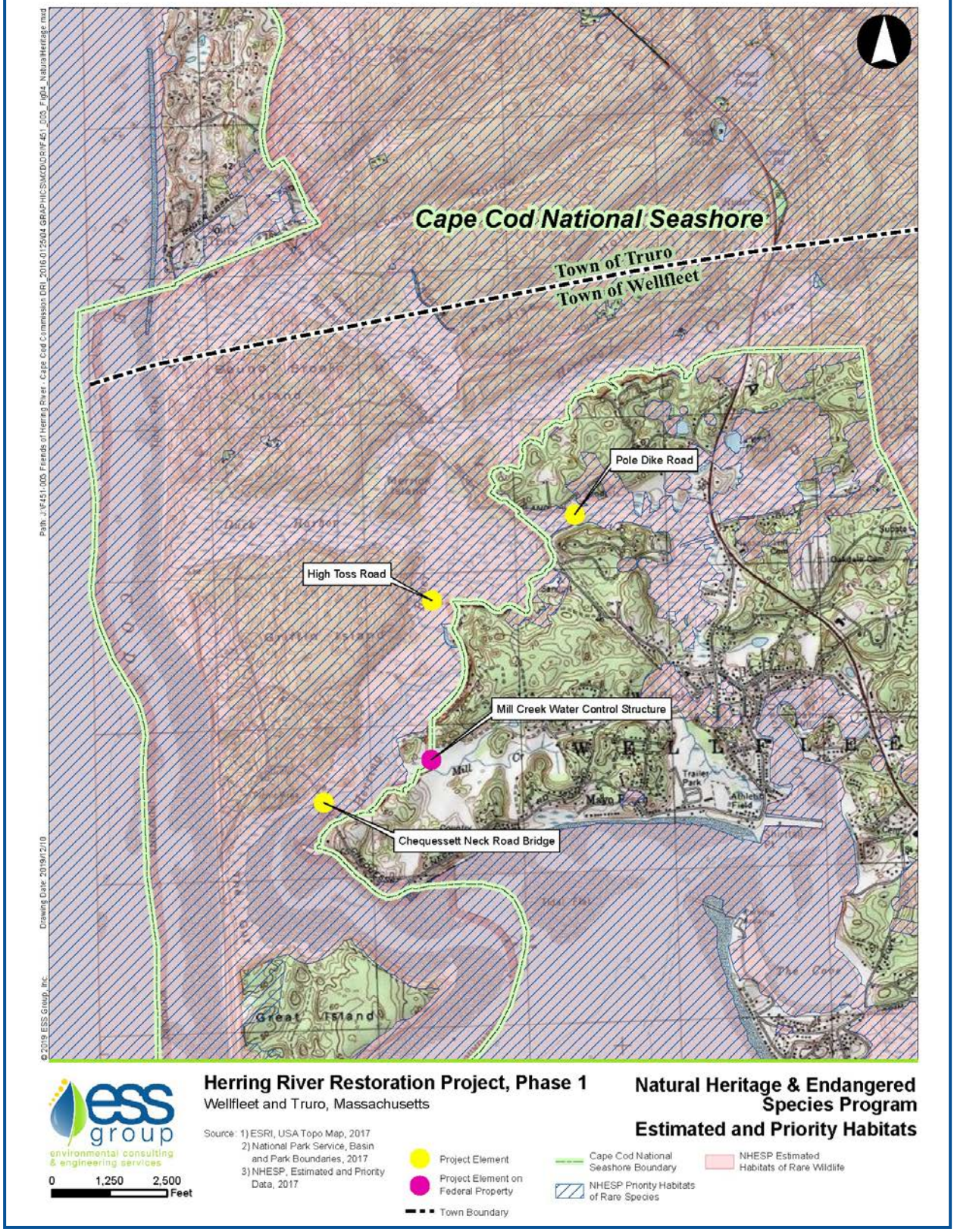
ess group
environmental consulting & engineering services

0 1,250 2,500 Feet

Source: 1) ESRI, USA Topo Map, 2017
2) National Park Service, Basin and Park Boundaries, 2017
3) Cape Cod Commission, Wetlands 2018

Project Element
Project Element on Federal Property

Town Boundary
Cape Cod National Seashore Boundary
Wellhead Protection Area
Wetlands



ess group
environmental consulting & engineering services

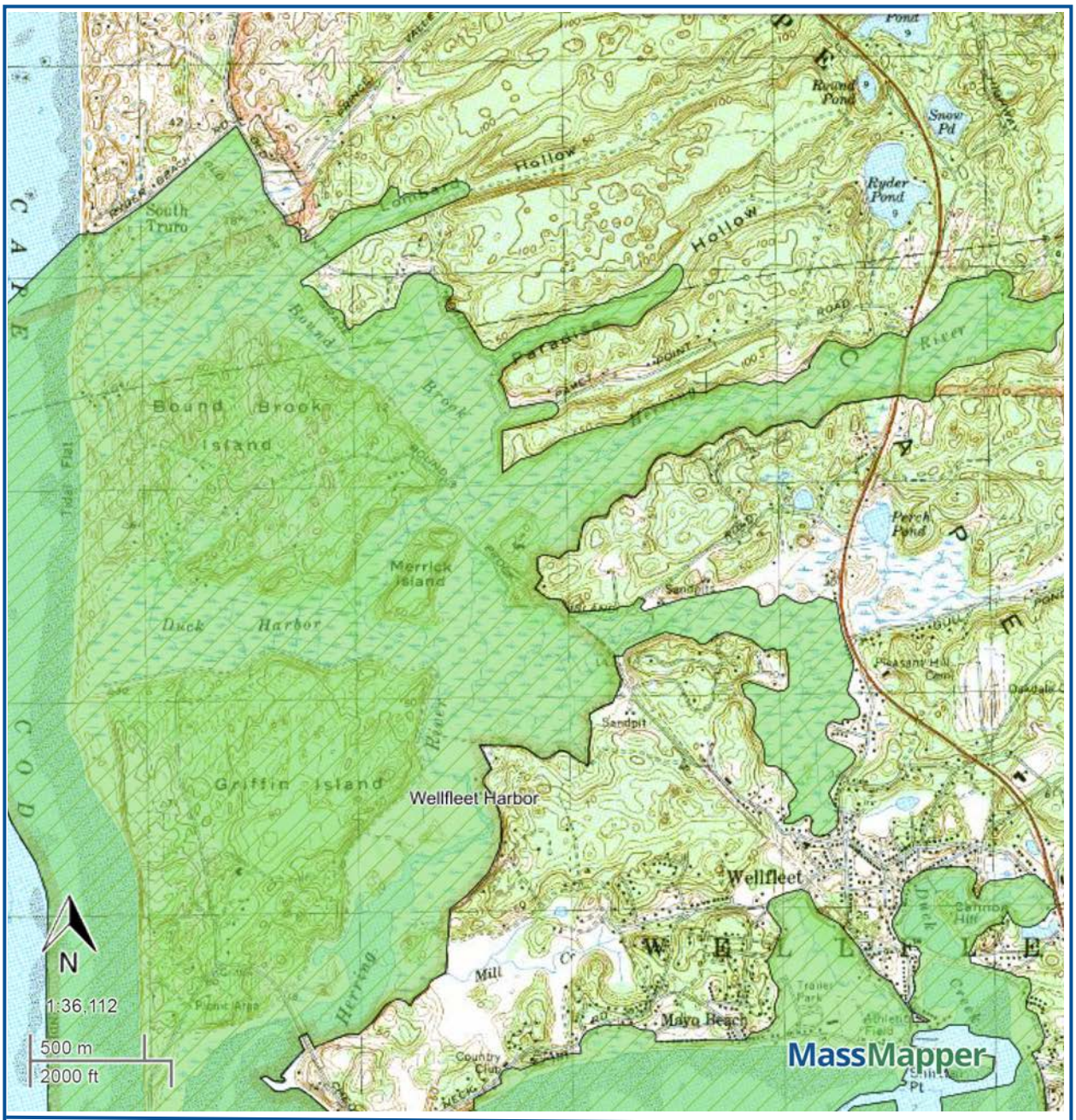
0 1,250 2,500 Feet

Herring River Restoration Project, Phase 1
Wellfleet and Truro, Massachusetts

Source: 1) ESRI, USA Topo Map, 2017
2) National Park Service, Basin and Park Boundaries, 2017
3) NHESP, Estimated and Priority Data, 2017

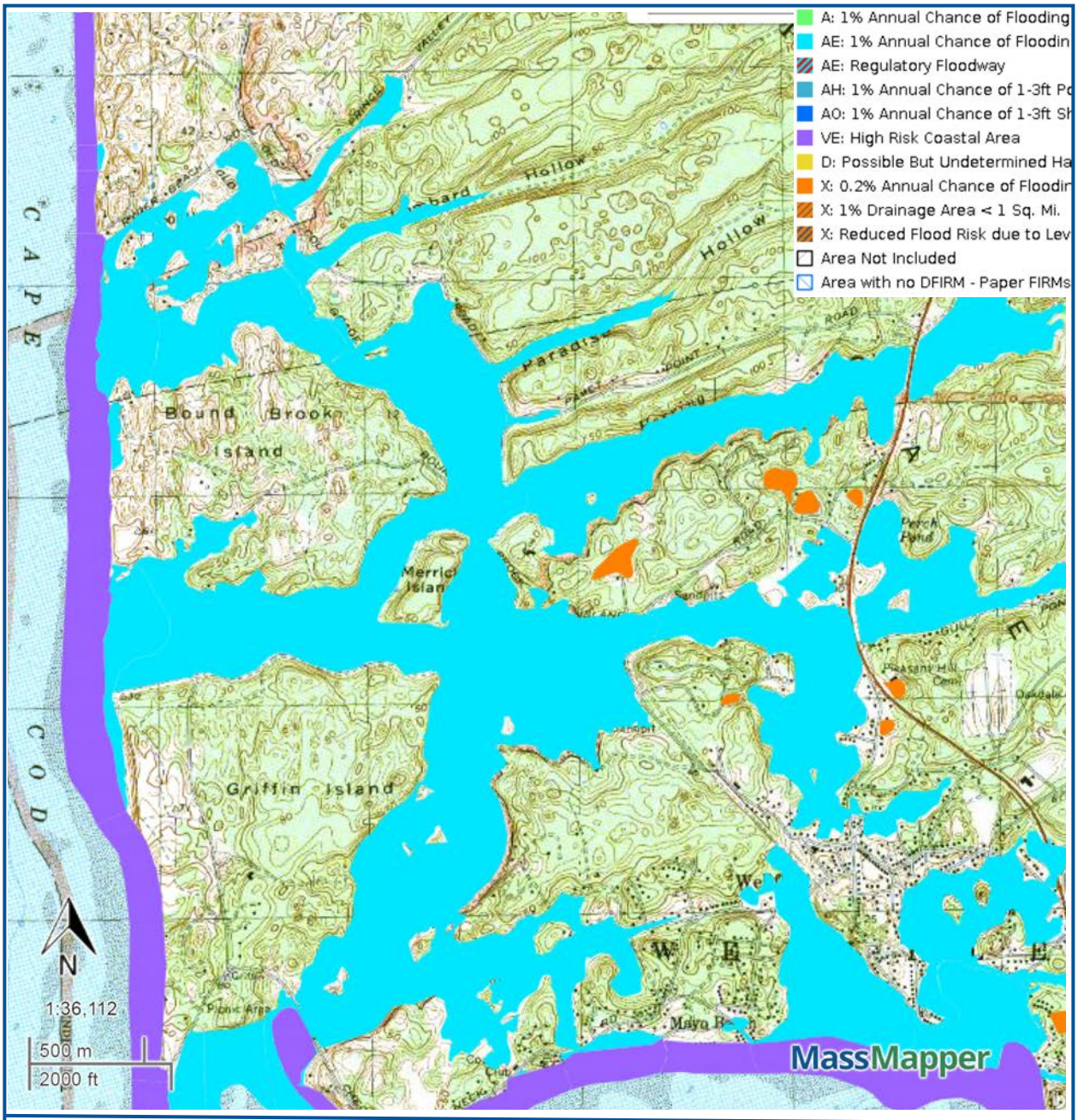
Project Element
Project Element on Federal Property
Town Boundary
Cape Cod National Seashore Boundary
NHESP Priority Habitats of Rare Species
NHESP Estimated Habitats of Rare Wildlife

Natural Heritage & Endangered Species Program
Estimated and Priority Habitats



WELLFLEET HARBOR AREA OF CRITICAL ENVIRONMENTAL CONCERN

Herring River Restoration Project, Phase 1
Wetlands Protection Act | Notice of Intent



FEMA FLOOD ZONES / LAND SUBJECT TO COASTAL STORM FLOWAGE

Herring River Restoration Project, Phase 1
Wetlands Protection Act | Notice of Intent

SHELLFISH SUITABILITY AREAS

(*NO MAPPED EELGRASS BEDS*)

Herring River Restoration Project, Phase 1
Wetlands Protection Act | Notice of Intent

NOTIFICATION TO ABUTTERS UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT

In accordance with Massachusetts General Laws Chapter 131, Section 40, you are hereby notified that the Town of Wellfleet and Cape Cod National Seashore have jointly filed Notices of Intent (NOI) with the Conservation Commissions of the Town of Wellfleet and Town of Truro, respectively, for authorization of Phase 1 of the Herring River Restoration Project as an Ecological Restoration Limited Project. The Project will restore tidal flow to 570 acres of native tidal wetlands, primarily within the national park boundary in Wellfleet. Proposed construction work in jurisdiction of the Wetlands Protection Act consists of removal of the Chequessett Neck Road dike and replacement with a new bridge, sluicegate system and water access facility; installation of a water control structure at the entrance to the Mill Creek and Pole Dike Creek sub-basins, respectively; removal of a portion of High Toss Road where it crosses Herring River marsh; elevation of low-lying road segments and replacement of associated culverts on the following roads: Old County, Bound Brook Island, Pole Dike and High Toss Roads and Way #672, and elevation of a portion of Chequessett Club golf course and other work on low-lying private properties.

The Wellfleet NOI may be viewed at the Wellfleet Health/Conservation Department office at 220 West Main Street, Wellfleet or online at https://www.wellfleet-ma.gov/home/news/herring-river-project.

The Truro NOI may be viewed at the Truro Conservation Department office at Truro Town Hall, 24 Town Hall Road, Truro or online at https://www.truro-ma.gov/conservation-department/pages/herring-river-restoration-project.

The NOI may also be obtained in electronic format by contacting Carole Ridley, Ridley & Associates, Inc., by Tel. at 508-430-2563; email at: cr@ridleyandassociates.com; or mail at 115 Kendrick Road, Harwich, MA 02645.

Information about the date, time and location of the Wellfleet Conservation Commission public hearing may be obtained from the Wellfleet Conservation Commission, 220 West Main Street, Wellfleet, MA 02667; Tel. 508-349-0308; email: Hillary.Lemos@wellfleet-ma.gov.

Information about the date, time and location of the Truro Conservation Commission public hearing may be obtained from the Truro Conservation Commission, 24 Town Hall Road, PO Box 2030, Truro, MA 02666; Tel. 508-349-7004, Ext. 131; email: EBeeBe@truro-ma.gov.

National Park Service and Town of Wellfleet
Herring River Restoration Project, Phase 1
Notice of Intent

Abutter List - Certified via e-mail by Nancy Vail

LOCATION - WELLFLEET	MAP_PCL_EXT	OWNER NAME1	OWNER NAME2	MSTRT	MCITY	MSTAT	MZIPC
1000 OLD COUNTY RD	2_3_0	PACKARD MICHAEL &	MONGER JULIE	1000 OLD COUNTY RD	WELLFLEET	MA	02667
730 BOUND BROOK ISLAND RD	6_4_0	WHITMAN THOMAS J &	RABIN MIRA	720 WESTVIEW ST	PHILADELPHIA	PA	19119
695 BOUND BROOK ISLAND RD	6_6_0	MILLER TATIANA F &	FREDERIKSEN CARL	1873 POUND LANE	SANTA CRUZ	CA	95062
340 COLES NECK RD	7_26_0	BESWICK SCOTT &	VERMEHREN TRUDY	340 COLES NECK RD	WELLFLEET	MA	02667
360 COLES NECK RD	7_27_0	AYOTTE STEPHEN R & THERESA A		74 WESTLEIGH DR	HARWINTON	CT	06791
10 PHEASANT RUN	7_29_0	WALSH PATRICK & HEIDI		114 PALMER ST	NEW BEDFORD	MA	02740
30 THOMAS COLES LANE	7_34_4	LAPOINTE ROBERT J	JOHNSON LORRAINE E	30 THOMAS COLE LANE	WELLFLEET	MA	02667
15 WHITETAIL LANE	7_37_0	DALZELL KATHLEEN R		2112 LOCUST ST	PHILADELPHIA	PA	19103
4 WHITETAIL LANE	7_38_0	DALZELL STEWART & KATHLEEN R		2112 LOCUST ST	PHILADELPHIA	PA	19103
49 PHEASANT RUN	7_44_0	GIESE BENJAMIN S TRUSTEE	BRAMSON RACHEL TRUSTEE	49 PHEASANT RUN	WELLFLEET	MA	02667
45 PHEASANT RUN	7_45_0	GOLDMAN ISABEL P &	NABATI LIDA	28 ESSEX ST APT 2	CAMBRIDGE	MA	02139
15 PHEASANT RUN	7_46_0	GREENE DIANE M &	AXELROD NAOMI G	15 PHEASANT RUN	WELLFLEET	MA	02667
1050 BOUND BROOK ISLAND RD	7_47_0	CUNNINGHAM DENNIS P &	SHANTZ KRISTEN A	1050 BOUND BROOK ISLAND RD	WELLFLEET	MA	02667
0 COLES NECK RD	7_48_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 BOUND BROOK ISLAND	7_49_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 BOUND BROOK ISLAND	7_51_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 COLES NECK RD	7_51_1	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 BOUND BROOK ISLAND	7_52_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 BOUND BROOK ISLAND	7_53_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 POLE DIKE RD	7_54_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 POLE DIKE RD	7_55_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
339 COLES NECK RD	7_56_1	SAMUELSON MARNIE CRAWFORD	C/O IN BALANCE	PO BOX 45	CHATHAM	MA	02633
319 COLES NECK RD	7_56_2	FAWKES ASHLEY E		319 COLES NECK RD	WELLFLEET	MA	02667
0 COLES NECK RD	7_62_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
0 COLES NECK RD	7_63_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
1160 BROWNS NECK RD	7_66_0	MCMAHON KEVIN &	CARFRAE DOUG	BOX 1178	WELLFLEET	MA	02667
1150 BROWNS NECK RD	7_67_0	JACOBSON SCOTT &	SCHWAB HILLARY	3 GIBBS ST	BROOKLINE	MA	02446
1142 BROWNS NECK RD	7_68_0	WADSWORTH PAUL K &	LISY JANE E	2906 KINGSLEY RD	CLEVELAND	OH	44122
1136 BROWNS NECK RD	7_69_0	LARSEN P REED		161 CLINTON RD	BROOKLINE	MA	02446
1130 BROWNS NECK RD	7_70_0	KERBER JORDAN E & MORAN MARY H		19 WEST PLEASANT ST	HAMILTON	NY	13346
0 POLE DIKE RD	7_76_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
1200 BOUND BROOK ISLAND RD	7_602_0	BROWN LISA & BROWN BELINDA		1200 BOUND BROOK ISLAND RD	WELLFLEET	MA	02667

National Park Service and Town of Wellfleet
Herring River Restoration Project, Phase 1
Notice of Intent

Certified Abutter List

LOCATION - WELLFLEET	MAP_PCL_EXT	OWNER NAME1	OWNER NAME2	MSTRT	MCITY	MSTAT	MZIPC
35 HAYWAIN WAY	8_209_0	HEITCZMAN CARA M &	BAXTER MARGARET	384 MARLBORO RD	WOOD RIDE	NJ	07075
149 HAMBLEN FARM RD	12_47_0	HAMBLEN FARM LLC		BOX 1493	WELLFLEET	MA	02667
104 CHEQUESSETT KNOLLS DR	12_61_0	FAXON RICHARD PAUL	FAXON JAYNE OLIVA	104 CHEQUESSETT KNOLLS DR	WELLFLEET	MA	02667
115 CHEQUESSETT KNOLLS DR	12_64_0	BIRNBERG JEAN L		1 HOLLOW LANE	LEXINGTON	MA	02420
130 CHEQUESSETT KNOLLS DR	12_65_0	GLENMULLEN MUIRENN		4 CHANNING CIRCLE	CAMBRIDGE	MA	02138
150cCHEQUESSETT KNOLLS DR	12_66_0	TEMIN CHARLOTTE B		221 MT AUBURN ST #603	CAMBRIDGE	MA	02138
490 OLD CHEQUESSETT NECK	12_70_0	NIEDERMAN NICHOLAS & ADELE		65 WEST 90TH ST #26G	NEW YORK	NY	10024
480 OLD CHEQUESSETT NECK	12_71_0	SERRANO ALFONSO I & CECILE A		681 E 24TH ST	BROOKLYN	NY	11210
460 OLD CHEQUESSETT NECK	12_72_0	MARINI PAMELA ANNE	C/O INVESTORS' SECURITY TRUST	5246 RED CEDAR DR #101	FT MYERS	FL	33907
50 NEWCOMB HILL WAY	12_79_0	RIEHL LINDA B TRUSTEE	RIEHL JOHN W TRUSTEE	PO BOX 1153	WELLFLEET	MA	02667
20 NEWCOMB HILL WAY	12_80_0	YOUNG MONICA TRUSTEE		50 HIGHLAND AVE, APT 2	CAMBRIDGE	MA	02139
95 NEWCOMB HILL RD	12_81_0	SNAPE EDWIN TRUSTEE &	PALTAUF JULIE F	73 CLUBHOUSE DR	HINGHAM	MA	02043
105 NEWCOMB HILL RD	12_82_0	HANCOCK THOMAS & ANDREA		6 MAST HILL RD	HINGHAM	MA	02043
20 SALT MEADOW LANE	12_129_0	ELLIOTT DARRYL & PATRICIA		97 BRIERBROOK RD	MILTON	MA	02186
10 SALT MEADOW LANE	12_130_0	BRUCE BERTRAM C JR & SUSAN P		10 SALT MEADOW LANE	WELLFLEET	MA	02667
135 HIGHMEADOW RD	12_131_0	SANDY SHOES LLC	C/O SUSAN DOMSKI	10 OLD FARM RD	HOPKINTON	MA	01748
145 HIGHMEADOW RD	12_132_0	BEKER HARVEY & JAYNE TRUSTEES		290 BRIDGE ST	OSTERVILLE	MA	02655
160 HIGHMEADOW RD	12_133_0	BIEWENGA WILLIAM R &	WARNER LAURIE J	P.O.BOX 686	WELLFLEET	MA	02667
10 QUAIL RUN	12_144_0	ANTHONY CUSHMAN D		19 BLUEBERRY COVE	YARMOUTH	ME	04096
125 HIGH TOSS RD	12_225_0	ANTHONY BARBARA M		BOX 1464	WELLFLEET	MA	02667
75 DEER PATH WAY	12_226_0	ANTHONY BARBARA M		BOX 1464	WELLFLEET	MA	02667
224 HOPKINS DR	12_227_0	ANTHONY BARBARA M		BOX 1464	WELLFLEET	MA	02667
228 HOPKINS DR	12_228_0	ANTHONY BARBARA M TRUSTEE	FIDUCIARY TRUST CO TRUSTEE	175 FEDERAL ST	BOSTON	MA	02110
230 HOPKINS DR	12_229_0	SMITH DAVID B TRUSTEE		253 WASHINGTON ST APT 2221	HUDSON	MA	01749
260 HOPKINS DR	12_230_0	SMITH DAVID B TRUSTEE		253 WASHINGTON ST APT 2221	HUDSON	MA	01749
245 HIGH TOSS RD	12_231_0	MURRAY-BROWN ANDREW J &	MURRAY-BROWN EUGENIE B	10 MAST HILL RD	HINGHAM	MA	02043
20 QUAIL RUN	12_232_0	HOLMES ROBERT W TRUSTEE	HOLMES NORMA L TRUSTEE	20 QUAIL RUN	WELLFLEET	MA	02667
255 HIGH TOSS RD	12_234_0	BESSETTE RODOLPHE G JR& JEAN C		BOX 141	WELLFLEET	MA	02667
25 WAY #672	12_235_0	HIRSCH JONATHAN H &	MEEK ROBERT P	72 WARREN AVE UNIT 202	BOSTON	MA	02116
27 WAY #672	12_235_1	ELLIS JUDITH ANNE		25 HIGH TOSS RD	WELLFLEET	MA	02667
1162 BROWNS NECK RD	12_266_0	BIRENBAUM HELEN B TRUSTEE		108 WILLOW ST	BROOKLYN	NY	11201
1170 BROWNS NECK RD	12_267_0	MITCHELL PAULA A TRUSTEE	C/O INVESTORS SECURITY TRUST	5246 RED CEDAR DR STE 101	FT MEYERS	FL	33907

Certified Abutter List

LOCATION - WELLFLEET	MAP_PCL_EXT	OWNER NAME1	OWNER NAME2	MSTRT	MCITY	MSTAT	MZIPC
1172 BROWNS NECK RD	12_268_0	HOPKINS GRACE		1172 BROWN'S NECK RD	WELLFLEET	MA	02667
20 GRIFFINS ISLAND RD	18_1_0	GISOLFI PETER TRUSTEE		566 WHARBURTON AVE	HASTINGS ON HUDSON	NY	10706
125 WAY #026	18_4_0	ARONS ELISSA TRUSTEE		1010 MEMORIAL DRIVE	CAMBRIDGE	MA	02138
575 OLD CHEQUESSETT NECK	19_6_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
565 OLD CHEQUESSETT NECK	19_7_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
545 OLD CHEQUESSETT NECK	19_8_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
535 OLD CHEQUESSETT NECK	19_9_0	WELLFLEET CONSERVATION TRUST		PO BOX 84	WELLFLEET	MA	02667
505 OLD CHEQUESSETT NECK	19_10_0	NIESKI MARTIN L		485 BARLOW CEMETERY RD	WOODSTOCK	CT	06281
465 OLD CHEQUESSETT NECK	19_11_0	MURPHY DENNIS D TRUSTEE	MURPHY ELIZABETH E TRUSTEE	465 OLD CHEQUESSETT NECK RD	WELLFLEET	MA	02667
0 CHEQUESSETT NECK RD	19_11_1	CHEQ YACHT & COUNTRY CLUB		BOX 779	WELLFLEET	MA	02667
151 HAMBLEN FARM RD	19_12_0	NAUSET ROAD LLC		465 OLD CHEQUESSETT NECK RD	WELLFLEET	MA	02667
0 CHEQUESSETT NECK RD	19_12_1	CHEQ YACHT & COUNTRY CLUB		BOX 779	WELLFLEET	MA	02667
445 OLD CHEQUESSETT NECK	19_12_2	MURPHY DENNIS & ELIZABETH		465 OLD CHEQUESSETT NECK	WELLFLEET	MA	02667
119 HAMBLEN FARM RD	19_13_0	EMMONS RANDALL L & KATHERINE C		4220 WELLESLEY RD	BETHLEHEM	PA	18017
99 WAY #060	19_13_1	MOORE STEVEN R & LYNDA M		BOX 1698	WELLFLEET	MA	02667
95 WAY #060	19_14_0	CAVANAUGH RICHARD & DEBORAH A		105 MYRTLE CT	PINE KNOLL SHORES	NC	28512
70 MILL CREEK LANE	19_67_0	EAMES EVAN & SETH & ALEXANDRA	EAMES GILLIAN & STOIAN MARIA	116 PINEHURST AVE APT E-43	NEW YORK	NY	10033
80 MILL CREEK LANE	19_68_0	SCHAPIRO HARRIET D TRUSTEE		535 TELNER ST	PHILADELPHIA	PA	19118
100 MILL CREEK LANE	19_69_0	MILLER PETER S TRUSTEE	MILLER MARCIA S TRUSTEE	17 PARTRIDGE RD	LEXINGTON	MA	02420
70 WAY #055	19_74_0	PARKIN LAURA ANN TRUSTEE		2373 BROADWAY APT 807	NEW YORK	NY	10024
80 WAY #055	19_75_0	PARKIN LAURA ANN TRUSTEE		2373 BROADWAY APT 807	NEW YORK	NY	10024
90 WAY #055	19_76_0	COLONY OF WELLFLEET INC		BOX 189	WELLFLEET	MA	02667
95 WAY #055	19_77_0	WHILTON TODD H & ANNEMARIE		207 N MAIN ST	COHASSET	MA	02025
W25 AY #055	19_79_0	COLONY OF WELLFLEET INC		BOX 189	WELLFLEET	MA	02667
680 CHEQUESSETT NECK RD	19_81_0	CHEQ YACHT & COUNTRY CLUB		PO BOX 779	WELLFLEET	MA	02667
940 CHEQUESSETT NECK RD	19_81_1	WELLFLEET CONSERVATION TRUST		BOX 84	WELLFLEET	MA	02667
650 CHEQUESSETT NECK RD	19_81_3	WELLFLEET CONSERVATION TRUST		BOX 84	WELLFLEET	MA	02667
0 CHEQUESSETT NECK RD	19_81_4	WELLFLEET CONSERVATION TRUST		BOX 84	WELLFLEET	MA	02667
1000 CHEQUESSETT NECK RD	19_81_6	WELLFLEET CONSERVATION TRUST		BOX 84	WELLFLEET	MA	02667
970 CHEQUESSETT NECK RD	19_81_7	FOUSE JACQUALYN		960 CHEQUESSETT NECK RD	WELLFLEET	MA	02667
720 CHEQUESSETT NECK RD	19_82_0	RHEAULT MARK A		10-1 S MEADOW VILLAGE	CARVER	MA	02330
744 CHEQUESSETT NECK RD	19_83_0	EVANGELISTA RENEE TRUSTEE	KOHLENBERG A MAX TRUSTEE	ONE FINANCIAL PLAZA STE 1600	PROVIDENCE	RI	02903

Certified Abutter List

LOCATION - WELLFLEET	MAP_PCL_EXT	OWNER NAME1	OWNER NAME2	MSTRT	MCITY	MSTAT	MZIPC
760 CHEQUESSETT NECK RD	19_84_0	EVANGELISTA RENEE TRUSTEE	KOHLENBERG A MAX TRUSTEE	ONE FINANCIAL PLAZA STE 1600	PROVIDENCE	RI	02903
780 CHEQUESSETT NECK RD	19_85_0	EVANGELISTA RENEE TRUSTEE	KOHLENBERG A MAX TRUSTEE	ONE FINANCIAL PLAZA STE 1600	PROVIDENCE	RI	02903
790 CHEQUESSETT NECK RD	19_86_0	CLAPP NATHAN A & ELLIOTT		4314 KLINGLE ST NW	WASHINGTON	DC	20016
810 CHEQUESSETT NECK RD	19_87_0	DURBIN CHRIS A TRUSTEE	DURBIN PORTIA J TRUSTEE	66 HALCYON RD	NEWTON	MA	02459
830 CHEQUESSETT NECK RD	19_88_0	DAITCH IRENE M LIFE ESTATE		830 CHEQUESSETT NECK ROAD	WELLFLEET	MA	02667
950 CHEQUESSETT NECK RD	19_89_0	FOUSE JACQUALYN A &	ERONY JOYCE	175 RIVERSIDE DR UNIT 7F	NEW YORK	NY	10024
1065 CHEQUESSETT NECK RD	19_91_0	EURICH DONALD A & LAZARUS JILL		7 WALNUT ST	NEWTONVILLE	MA	02460
935 CHEQUESSETT NECK RD	19_99_0	KEEGAN KEVIN K	KEEGAN TRACY S	51 LAFAYETTE ST UNIT 503	SALEM	MA	01970
925 CHEQUESSETT NECK RD	19_100_0	DOUGLASS STEPHEN F TRUSTEE	DOUGLASS LAURA G TRUSTEE	460 N WASHINGTON RD	LAKE FOREST	IL	60045
915 CHEQUESSETT NECK RD	19_102_0	THE WELLFLEET RITZ LLC		79 ALFRED DROWNE RD	BARRINGTON	RI	02806
885 CHEQUESSETT NECK RD	19_103_0	LAZARUS CAROL & JILL		304 SCHOOL ST	WATERTOWN	MA	02172
506 OLD CHEQUESSETT NECK	19_172_0	BOYADJIAN HAYG & BRIGITTE		43 FERN ST	LEXINGTON	MA	02421
0 CHEQUESSETT NECK RD	19_173_0	CHEQ YACHT & COUNTRY CLUB		BOX 779	WELLFLEET	MA	02667
580 OLD CHEQUESSETT NECK	19_601_0	KRAFT ALFRED L	MEANY MADALON C	97 MT VERNON ST APT 4	BOSTON	MA	02108

From: Nancy Vail <Nancy.Vail@wellfleet-ma.gov>
Sent: Monday, 6 December, 2021 11:12
To: Christine Odiaga <codiaga@herringriver.org>
Subject: RE: abutter list

Your list as sorted is fine. These are the most up-to-date owners and mailing addresses I have. Consider it certified.

Nancy Vail
Assessor
Town of Wellfleet
300 Main St.
Wellfleet, MA 02667
508-349-0304
Nancy.vail@wellfleet-ma.gov

TRURO ASSESSORS OFFICE
PO Box 2012 Truro, MA 02666
Telephone: (508) 214-0921
Fax: (508) 349-5506

Date: December 1, 2021

To: **Friends of** Herring River
Christine Odiaga

From: Assessors Department

Certified abutters list application for: Conservation/Friends of Herring River Use

Attached is a list of the owners and mailing addresses of the requested Truro parcels. The names and addresses of the parcels are as of November 19, 2021, according to the most recent documents received from the Barnstable County Registry of Deeds and the ownership records kept by the Town of Truro.

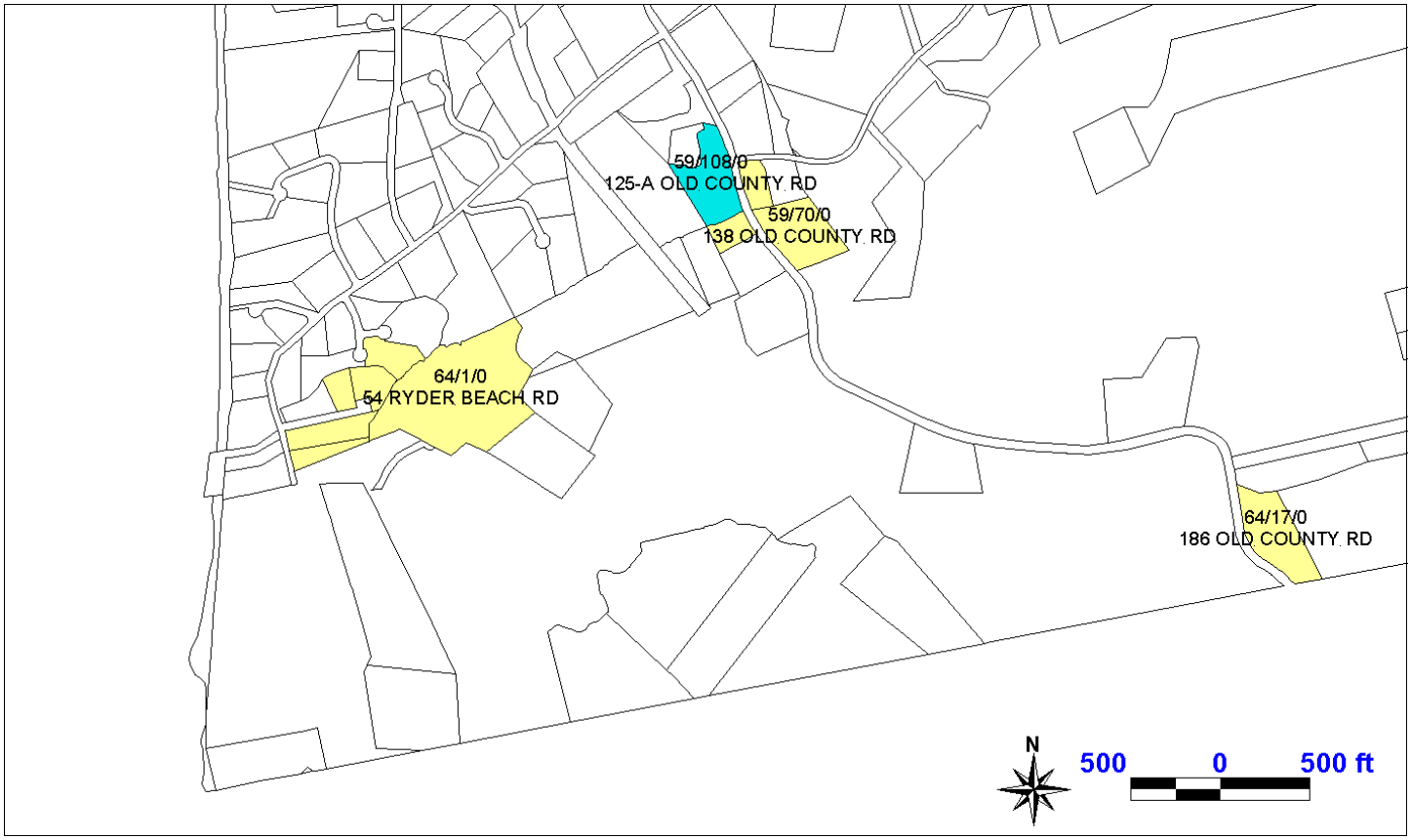
Certified by: _____Jon Nahas_____

Jon Nahas
Principal Assessor
Town of Truro
24 Town Hall Rd
PO Box 2012
Truro, MA 02666
508.214.0917
jnahas@truro-ma.gov

Various Parcels
Friends of Herring River
Conservation Use

TOWN OF TRURO, MA
BOARD OF ASSESSORS
P.O. BOX 2012, TRURO MA 02666

Custom Abutters List



Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
3518	59-66-0-E	TOWN OF TRURO	133 OLD COUNTY RD	PO BOX 2030	TRURO	MA	02666-2030
3520	59-68-0-R	MARANGONI ALEXANDRE & LUZANNA	120 PRINCE VALLEY RD	21 FATHER FRANCIS GILAY ST APT 209	BOSTON	MA	02118
3522	59-70-0-R	MARSHALL JOHN CHRISTOPHER	138 OLD COUNTY RD	809 WEST BROAD ST #119	FALLS CHURCH	VA	22046
6410	59-108-0-R	SANDERS FRANJA L	125-A OLD COUNTY RD	PO BOX 96	TRURO	MA	02666-0096
3628	63-12-0-R	REFFUE ELIANA & DOUGLAS	6 RYDER BEACH WAY	3 WESTON ROAD	HINGHAM	MA	02043-2520
3631	63-15-0-R	GRANT FREDERIC D JR & GRANT BARBARA LEMPERLY	6 RYDER HOLLOW RD	PO BOX 1127	TRURO	MA	02666
3632	63-16-0-R	MOODY NANCY DOW	8 RYDER HOLLOW RD	20 PLACE MOULIN	TIBURON	CA	94920
3634	63-18-0-R	OWNER UNKNOWN	44 RYDER BEACH RD	44 RYDER BEACH RD	TRURO	MA	02666
3637	63-21-0-R	FRANCIS JOSEPH W HEIRS OF ETAL	46 RYDER BEACH RD	C/O ROSE LOIS F PO BOX 72	WELLFLEET	MA	02667-0072
3641	64-1-0-R	RYDER HOUSE REALTY TRUST TRS: HOBBS HARRIET J	54 RYDER BEACH RD	PO BOX 2021	TRURO	MA	02666-2021
3657	64-17-0-R	BELLONCI CHRISTOPHER & FONTENOT EDOUARD	186 OLD COUNTY RD	PO BOX 457	TRURO	MA	02666

jn

59-66-0-E

TOWN OF TRURO
PO BOX 2030
TRURO, MA 02666-2030

59-68-0-R

MARANGONI ALEXANDRE & LUZANNA
21 FATHER FRANCIS GILAY ST
APT 209
BOSTON, MA 02118

59-70-0-R

MARSHALL JOHN CHRISTOPHER
809 WEST BROAD ST #119
FALLS CHURCH, VA 22046

59-108-0-R

SANDERS FRANJA L
PO BOX 96
TRURO, MA 02666-0096

63-12-0-R

REFFUE ELIANA & DOUGLAS
3 WESTON ROAD
HINGHAM, MA 02043-2520

63-15-0-R

GRANT FREDERIC D JR &
GRANT BARBARA LEMPERLY
PO BOX 1127
TRURO, MA 02666

63-16-0-R

MOODY NANCY DOW
20 PLACE MOULIN
TIBURON, CA 94920

63-18-0-R

OWNER UNKNOWN
44 RYDER BEACH RD
TRURO, MA 02666

63-21-0-R

FRANCIS JOSEPH W HEIRS OF ETAL
C/O ROSE LOIS F
PO BOX 72
WELLFLEET, MA 02667-0072

64-1-0-R

RYDER HOUSE REALTY TRUST
TRS: HOBBS HARRIET J
PO BOX 2021
TRURO, MA 02666-2021

64-17-0-R

BELLONCI CHRISTOPHER &
FONTENOT EDOUARD
PO BOX 457
TRURO, MA 02666

AFFIDAVIT OF SERVICE

under the Massachusetts Wetlands Protection Act

(to be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, Christine A. Odiaga, hereby certify under the pains and penalties of perjury that on March 23, 2022, I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

> A Notice of Intent filed under the Massachusetts Wetlands Protection Act by **Town of Wellfleet** and **Cape Cod National Seashore** with the **Town of Wellfleet** and **Town of Truro** Conservation Commissions on March 23, 2022, for property located on **Chequessett Neck, Old Chequessett Neck, High Toss, Pole Dike & Bound Brook Island Roads and Way #672 in Wellfleet** and **Old County Road in Truro**.

The form of the notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

Christine A. Odiaga — 23 Mar 2022

Name — Date

The following notice was published in the Environmental Monitor on January 26, 2022:

FILING OF NOTICE OF INTENT FOR HERRING RIVER RESTORATION PROJECT
IN WELLFLEET AND TRURO
AS AN ECOLOGICAL RESTORATION LIMITED PROJECT

On or about January 26, 2022, the Town of Wellfleet and Cape Cod National Seashore intend to jointly file Notices of Intent with the Conservation Commission of the Town of Wellfleet and Town of Truro, respectively, for authorization of Phase 1 of the Herring River Restoration Project as an Ecological Restoration Limited Project. The Project will restore tidal flow to approximately 570 acres of native tidal wetlands. Proposed work in jurisdiction of the Wetlands Protection Act consists of removal of the Chequessett Neck Road dike and replacement with a new bridge, sluicegate system and water access facility; installation of a water control structure at the entrance to the Mill Creek and Pole Dike Creek sub-basins, respectively; removal of a portion of High Toss Road where it crosses Herring River marsh; elevation of road segments and/or replacement of culverts on the following roads: Old County, Bound Brook Island, Pole Dike and High Toss Roads and Way #672, and elevation of a portion of Chequessett Club golf course and other work on private properties.

The NOI may be examined or obtained by contacting Carole Ridley, Ridley & Associates, Inc., 115 Kendrick Road, Harwich, MA 02645; Tel. 508-430-2563; or email: cr@ridleyandassociates.com. Information about the date, time and location of the Wellfleet Conservation Commission public hearing may be obtained from the Wellfleet Conservation Commission, 220 West Main Street, Wellfleet, MA 02667; Tel. 508-349-0308; email: Hillary.Lemos@wellfleet-ma.gov. Information about the date, time and location of the Truro Conservation Commission public hearing may be obtained from the Truro Conservation Commission, 24 Town Hall Road, PO Box 2030, Truro, MA 02666; Tel. 508-349-7004, Ext. 131; email: EBeeBe@truro-ma.gov.

United States Department of the Interior

NATIONAL PARK SERVICE
Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667

IN REPLY REFER TO:

February 23, 2022

Wellfleet Conservation Commission
220 W. Main Street
Wellfleet, MA 02667
Attn: Mr. Leon Shreves (Chairperson)

Dear Mr. Shreves:

Cape Cod National Seashore is a project proponent in conjunction with the Town of Wellfleet for the restoration of more than 800 acres of tidal wetlands through the Herring River Restoration Project. Approximately 80% of the returned tidal flow resulting from restoration activities including replacement of the Chequessett Neck Dike will occur within federal lands of the Seashore. However, only limited project activities will be directly undertaken on federally-owned property. The bulk of project activities will occur on Town of Wellfleet-owned and private property. The mixed nature of this restoration project warrants a brief reminder and clarification at the outset of our consultation with the Conservation Commission.

As we have discussed previously with the Conservation Commission, the Park is limited in its legal responsibilities associated with state and local regulatory requirements and processes. A fundamental aspect of the federal-state regulatory relationship is that Federal Agencies are exempt from all state and local permitting requirements, except when Congress clearly indicates that the sovereign immunity of the Federal Government is waived. One instance of such a waiver relates to activities resulting in the discharge or runoff of pollutants as presented in Section 313 of the Clean Water Act, codified in Title 33 of the United States Code, Section 1323(a). Thus, when federal actions "result in the discharge or runoff of pollutants" and there are state and local (e.g., Conservation Commission) permitting processes regulating these, the Park is subject to those permitting requirements.

In terms of activities occurring in wetland areas, the state Wetland Protection Act, Chapter 131, Massachusetts General Law, Section 40 is far broader in scope than discharge control. The interests protected under this regulation include flood and storm damage control, wildlife protection, and other interests beyond pollutants[1] discharge. The sovereign immunity of the Federal Government has not been waived for any of the above-mentioned interests. As a result,

1 The Clean Water Act broadly defines "pollutant" to mean "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." 33 U.S.C. § 1362(6).

the Park is exempt from the requirement of consulting with the Conservation Commission by filing a Notice of Intent for projects affecting the coastal bank or related issues, except when the discharge of pollutants is a concern, even though the activity would otherwise be subject to the review authority of the Conservation Commission if the same activity were being conducted by a non-federal entity on non-federal land.

Thus, as pertains to the Herring River Restoration Project, the Park is required to consult with the Conservation Commission on project activities on federal land that may result in the discharge or runoff of pollutants. In the context of this project, the term "discharge of pollutants," as defined by the Clean Water Act, pertains to the movement or relocation of dredged material or sediment runoff and does not connote the presence of contaminants. Accordingly, we join in filing this Notice of Intent for the limited purpose of consulting with the Conservation Commission on federal aspects of the project in which activities that will occur on federal land may result in the discharge or runoff of pollutants, such as activities related to the construction of the Mill Creek Water Control Structure and other construction staging on federal land. We welcome your comments and input respecting the control and abatement of discharge or runoff that could result from these project activities. By contrast, we acknowledge that the Conservation Commission's authority is not similarly limited with respect to non-federal project activities that occur on non-federal land. We respectfully request that care be taken to differentiate among conditions appropriately applicable to the limited federal portions of the project versus those applicable more broadly.

We further note that General Condition No. 9 (WPA Form 5 rev. 5/18/2020) requires filing of the Order of Conditions within the chain of title of the property at the Registry of Deeds. However, this provision is not connected to the scope of the waiver of sovereign immunity so the Federal Government may not be required to comply with this condition. Rest assured that the wetlands will be protected regardless of such registry filing. If you have any questions or concerns please contact me at brian_carlstrom@nps.gov or 508-957-0739. Thank you for your understanding of this clarification.

Sincerely,

Brian T. Carlstrom

Brian T. Carlstrom
Superintendent, Cape Cod National Seashore

Landowner Consent

for work proposed beyond the Right-of-Way

Note:
There is no work beyond the ROW at Chequessett Neck Road Bridge and Water Access Facility or at High Toss Road, except on Cape Cod National Seashore property.

Mill Creek Water Control Structure

Consent to File Permit Applications

I, **R. Dennis O'Connell**, am a duly authorized representative of the **Wellfleet Conservation Trust** (WCT), which is the owner of parcels of land in Wellfleet, Massachusetts, located at **0 Coles Neck Road, 0 Bound Brook Island Road and 0 Pole Dike Road**, as shown on **Assessors Map 7, Parcels 48, 49, 51, 51-1, 52, 53, 54, 55, 62, 63 and 76**; located at **0 Browns Neck Road Off**, as shown on **Assessors Map 8, Parcel 261**; and located at **575, 565, 545 and 535 Old Chequessett Neck Road** as shown on **Assessors Map 19, Parcels 6, 7, 8 and 9** (collectively, the "Property"). A portion of the Herring River system is located on or adjacent to the Property.

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and potential work on WCT Property related to the Project, as shown in part on plans entitled ***Herring River Restoration Project Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts Truro and Wellfleet Massachusetts Permit Plans – Not for Construction June 2017***, sheet 34-36, and as otherwise described to improve drainage in Mill Creek and Pole Dike Creek. I understand that by signing the authorization below, WCT is agreeing only to allow the Project proponents to include its Property and the proposed Work noted above in permitting applications to federal, state, and/or local authorities. By signing the authorization below, WCT is not yet authorizing the Work to be done on its property, and I understand that WCT will have additional opportunities to discuss specifics of the Work or, if we so choose, to deny permission for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include WCT Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on our Property.

Where necessary, I agree to provide signatures on permit applications to indicate WCT's assent, as owner of property, prior to the filing of permit applications in accordance with this Consent.

Signed: R Dennis O'Connell

R. Dennis O'Connell, President
Board of Trustees, Wellfleet Conservation Trust

535, 545, 565 and 575 Old Chequessett Neck Road; 0 Browns Neck Road Off; 0 Coles Neck Road; 0 Bound Brook Island Road; and 0 Pole Dike Road
Wellfleet, MA 02667

Dated: April 23, 2018

RECEIVED BY:

HEALTH DEPARTMENT
TOWN OF WELLFLEET
APR 26 2018

National Park Service and Town of Wellfleet
Herring River Restoration Project, Phase 1
Notice of Intent

Elevation of Low-lying Roads and Replacement of Associated Culverts *including Pole Dike Creek Water Control Structure*

Consent to File Permit Applications

We, **Michael Packard** and **Julie Packard**, are the owners of a parcel of land consisting of approximately **3.52 acres** of land, more or less, with structures located at **1000 Old County Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 2, Lot 3** (collectively, the "Property").

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). I understand that by signing the authorization below, I am agreeing only to allow the Project proponents to include my Property and the proposed Work noted above in permit applications to federal, state and/or local authorities. By signing the authorization below, I am not yet granting a temporary or permanent easement on my property, and I understand that I will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on my Property. My discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include my Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, I agree to provide signatures on permit applications to indicate my assent, as owner of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Michael Packard Julie Packard

1000 Old County Road
Wellfleet, MA 02667

Dated: 9/7/18

HEALTH DEPARTMENT
TOWN OF WELLFLEET

SEP 18 2018

RECEIVED BY: _____

Consent to File Permit Applications

We, **Thomas I Whitman** and **Mira Rabin**, are the owners of a parcel of land consisting of approximately **5.62 acres** of land, more or less, with structures located at **730 Bound Brook Island Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 6, Lot 4** (collectively, the "Property").

The Town of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, May 2019*** (the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet granting a temporary or permanent easement on my property, and we understand that we will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, the Town of Wellfleet and the Cape Cod National Seashore, to include our Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Thomas I Whitman — Mira Rabin

720 Westview St
Philadelphia, PA 191198

Dated: 3/19/21

Consent to File Permit Applications

We, **Thomas I Whitman** and **Mira Rabin**, are the owners of a parcel of land consisting of approximately **5.62 acres** of land, more or less, with structures located at **730 Bound Brook Island Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 6, Lot 4** (collectively, the "Property").

The Town of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, May 2019*** (the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet granting a temporary or permanent easement on my property, and we understand that we will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, the Town of Wellfleet and the Cape Cod National Seashore, to include our Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Thomas I Whitman — Mira Rabin

720 Westview St
Philadelphia, PA 191198

Dated: 3/19/2021

Consent to File Permit Applications

We, **Tatiana Miller** and **Carl Frederiksen**, are the owners of a parcel of land consisting of approximately **six (6) acres** of land, more or less, with structures located at **695 Bound Brook Island Road** in Wellfleet, Massachusetts, as shown on Assessors **Map 6, Parcel 6** (collectively, the "Property"). A portion of the Herring River system is located on or adjacent to the Property.

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and potential work on our Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Permit Plans for Low-Lying Property Impact Prevention, Miller-Frederiksen Property (695 Bound Brook Island Road) Wellfleet, Massachusetts, Permit Plans – Not for Construction, January 2018*** and plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (collectively, the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permitting applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet authorizing the Work to be done on our property, and we understand that we will have additional opportunities to discuss specifics of the Work or, if we so choose, to deny permission for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include our Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on our Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Tatiana Miller

Carl Frederiksen

1873 Pound Lane
Santa Cruz, CA 95062

Dated: 2/8/18

Consent to File Permit Applications

We, **Stephen Ayotte** and **Theresa Ayotte**, are the owners of a parcel of land consisting of approximately **1.40 acres** of land, more or less, with structures located at **360 Coles Neck Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 7, Lot 27.** (collectively, the "Property").

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet granting a temporary or permanent easement on my property, and we understand that we will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include our Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Stephen Ayotte Theresa Ayotte

74 Westleigh Drive
Harwinton, CT 06791

Dated: _____

Consent to File Permit Applications

I, **Marnie Crawford Samuelson**, am the owner of a parcel of land consisting of approximately **0.72 acres** of land, more or less, with structures located at **339 Coles Neck Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 7, Lot 56-1** (collectively, the "Property").

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). I understand that by signing the authorization below, I am agreeing only to allow the Project proponents to include my Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, I am not yet granting a temporary or permanent easement on my property, and I understand that I will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on my Property. My discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include my Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, I agree to provide signatures on permit applications to indicate my assent, as owner of property, prior to the filing of permit applications in accordance with this Consent.

Signed: M. Crawford Samuelson

Marnie Crawford Samuelson

c/o In Balance
PO Box 45
Chatham, Massachusetts 02633

Dated: April 13, 2018

Consent to File Permit Applications

I, **P. Reed Larsen**, am the owner of a parcel of land consisting of approximately **0.69 acres** of land, more or less, with structures located at **1136 Browns Neck Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 7, Lot 69** (collectively, the "Property").

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet granting a temporary or permanent easement on my property, and we understand that we will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include our Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: P. Reed Larsen

P. Reed Larsen

161 Clinton Road
Brookline, MA 02446

Dated: February 16, 2018

RECEIVED BY:

FEB 21 2018

HEALTH DEPARTMENT
TOWN OF WELLFLEET

Consent to File Permit Applications

I, **Lisa Brown, trustee of Elaine Brown-Gallagher Revocable Trust**, am the owner of a parcel of land consisting of approximately **8.54 acres** of land, more or less, with structures located at **1200 Bound Brook Island Road** in Wellfleet, Massachusetts, as shown on **Assessors Map 7, Lot 602** (collectively, the "Property").

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). I understand that by signing the authorization below, I am agreeing only to allow the Project proponents to include my Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, I am not yet granting a temporary or permanent easement on my property, and I understand that I will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on my Property. My discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include my Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, I agree to provide signatures on permit applications to indicate my assent, as owner of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____

Lisa Brown, Trustee

1200 Bound Brook Island Road
Wellfleet, Massachusetts

Dated: FEB 13TH, 2018

Consent to File Permit Applications

The Town of Truro is owner of a parcel of land consisting of approximately **.73 acres**, more or less, located at **133 Old County Road** in Truro, Massachusetts, as shown on **Truro Assessors Map 59, Parcel 66 (collectively, the "Property").**

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, May 2019*** (the "Work"), the Project will include work on the Property. Proposed activities include elevation of the roadway and replacement of a culvert. The Project Proponents have discussed the Project and the work proposed on the Property with Town representatives.

The Town's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, the Town consents to such inclusion on permit applications. The Town grants no other permissions or rights with respect to the Property at this time. Discussions between the Town and the Project Proponents are ongoing, and will include the additional permissions and agreements required for the Work to be performed on the Property.

We hereby authorize the Project proponents, the Town of Wellfleet and the Cape Cod National Seashore, to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: Truro Select Board

Robert Weinstein, Chair

Kristen Reed, Vice Chair

Susan Areson, Clerk

Janet W. Worthington, Member

Stephanie Rein, Member

Dated: March 23, 2021

Consent to File Permit Applications

I, **Franja Lewis Sanders**, am the owner of a parcel of land consisting of approximately **2.63 acres** of land, more or less, located at **125A Old County Road in Truro, Massachusetts**, as shown on **Assessors Map 59, Lot 108** (the "Property").

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and potential work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). I understand that by signing the authorization below, I am agreeing only to allow the Project proponents to include my Property and the proposed Work noted above in permit applications to federal, state and/or local authorities. By signing the authorization below, I am not yet granting a temporary or permanent easement on my property, and I understand that I will have additional opportunities to discuss specifics of any such easement, or to deny the easement for the Work to be performed on my Property. My discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include my Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on my Property.

Where necessary, I agree to provide signatures on permit applications to indicate my assent, as owner of property, prior to the filing of permit applications in accordance with this Consent.

Signed: Franja Lewis Sanders

Franja Lewis Sanders

PO Box 96
Truro, MA 02666

Dated: 12-22-2018

Consent to File Permit Applications

I, **R. Dennis O'Connell**, am a duly authorized representative of the **Wellfleet Conservation Trust** (WCT), which is the owner of parcels of land in Wellfleet, Massachusetts, located at **0 Coles Neck Road, 0 Bound Brook Island Road and 0 Pole Dike Road**, as shown on **Assessors Map 7, Parcels 48, 49, 51, 51-1, 52, 53, 54, 55, 62, 63 and 76**; located at **0 Browns Neck Road Off**, as shown on **Assessors Map 8, Parcel 261**; and located at **575, 565, 545 and 535 Old Chequessett Neck Road** as shown on **Assessors Map 19, Parcels 6, 7, 8 and 9** (collectively, the "Property"). A portion of the Herring River system is located on or adjacent to the Property.

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and potential work on WCT Property related to the Project, as shown in part on plans entitled ***Herring River Restoration Project Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts Truro and Wellfleet Massachusetts Permit Plans – Not for Construction June 2017***, sheet 34-36, and as otherwise described to improve drainage in Mill Creek and Pole Dike Creek. I understand that by signing the authorization below, WCT is agreeing only to allow the Project proponents to include its Property and the proposed Work noted above in permitting applications to federal, state, and/or local authorities. By signing the authorization below, WCT is not yet authorizing the Work to be done on its property, and I understand that WCT will have additional opportunities to discuss specifics of the Work or, if we so choose, to deny permission for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include WCT Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on our Property.

Where necessary, I agree to provide signatures on permit applications to indicate WCT's assent, as owner of property, prior to the filing of permit applications in accordance with this Consent.

Signed: R Dennis O'Connell

R. Dennis O'Connell, President
Board of Trustees, Wellfleet Conservation Trust

535, 545, 565 and 575 Old Chequessett Neck Road; 0 Browns Neck Road Off; 0 Coles Neck Road; 0 Bound Brook Island Road; and 0 Pole Dike Road
Wellfleet, MA 02667

Dated: April 23, 2018

RECEIVED BY:

HEALTH DEPARTMENT
TOWN OF WELLFLEET
APR 26 2018

Low Lying Property Impact Prevention, Way #672

Consent to File Permit Applications

We, **Jonathan Hirsch and Robert Meek**, are the owners of a parcel of land consisting of approximately **0.95 acres** of land, more or less, with structures located at **25 Way #672**, in Wellfleet, Massachusetts, as shown on Assessors **Map 12, Parcel 235**, (collectively, the "Property"). A portion of the Herring River system is located on or adjacent to the Property.

The Town of Wellfleet and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and proposed work on our Property related to the Project, as shown on plans entitled ***Herring River Restoration Project Permit Level Design for Low Lying Property Impact Prevention Way #672, Hirsch-Meek Property (25 Way #672), & Ellis Property (27 Way #672), Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet authorizing the Work to be done on our property, and we understand that we will have additional opportunities to discuss specifics of the Work or, if we so choose, to deny permission for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, including the Town of Wellfleet, as well as the Cape Cod National Seashore, to include our Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on our Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Jonathan Hirsch Robert Meek

72 Warren Ave Unit 202
Boston, MA 02116

Dated: 1/29/2021

Consent to File Permit Applications

I, **Judith Anne Ellis**, am the owner of a parcel of land consisting of approximately **0.72acres** of land, more or less, with structures located at **27 Way #672**, in Wellfleet, Massachusetts, as shown on Assessors **Map 12, Parcel 235-1**, (collectively, the "Property"). A portion of the Herring River system is located on or adjacent to the Property.

The Town of Wellfleet and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

I have been in communication with representatives of the Project proponents regarding the Project and proposed work on my Property related to the Project, as shown on plans entitled ***Herring River Restoration Project Permit Level Design for Low Lying Property Impact Prevention Way #672, Hirsch-Meek Property (25 Way #672), & Ellis Property (27 Way #672), Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (the "Work"). I understand that by signing the authorization below, I am agreeing only to allow the Project proponents to include my Property and the proposed Work noted above in permit applications to federal, state, and/or local authorities. By signing the authorization below, I am not yet authorizing the Work to be done on my property, and I understand that I will have additional opportunities to discuss specifics of the Work or, if I so choose, to deny permission for the Work to be performed on my Property. My discussions with the Project proponents are ongoing.

I hereby authorize the Project proponents, including the Town of Wellfleet, as well as the Cape Cod National Seashore, to include our Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on our Property.

Where necessary, I agree to provide signatures on permit applications to indicate my assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: Judith Anne Ellis

Judith Anne Ellis

25 High Toss Road
Wellfleet, Massachusetts 02667

Dated: 1·28·21

Chequessett Yacht and Country Club Reconfiguration

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road**, in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB TRUST	CHEQUESSET YACHT & COUNTRY CLUB, INC.
By: _____	By: _____ Shea S. Kinney
Dated: _____	Dated: 3/28/21
By: _____	By: _____
Dated: _____	Dated: _____

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road**, in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB ~~TRUST~~ Inc.	CHEQUESSET YACHT & COUNTRY CLUB, INC.
By: _____	By: _____
Dated: 3/24/2021	Dated: _____
By: _____	By: _____
Dated: _____	Dated: _____

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road**, in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB TRUST	CHEQUESSET YACHT & COUNTRY CLUB, INC.
By: _____	By: _____
Dated: 3/25/21	Dated: _____
By: _____	By: _____
Dated: _____	Dated: _____

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road**, in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB TRUST	CHEQUESSET YACHT & COUNTRY CLUB, INC.
By: Steven Swig Trustee	By: _____
Dated: 3/24/21	Dated: _____
By: _____	By: _____
Dated: _____	Dated: _____

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road**, in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB TRUST	CHEQUESSET YACHT & COUNTRY CLUB, INC.
By: Mary Carter	By: _____
Dated: 3/24/21	Dated: _____
By: _____	By: _____
Dated: _____	Dated: _____

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road**, in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB TRUST

By: _____

Dated: 3/25/2021

CHEQUESSET YACHT & COUNTRY CLUB, INC.

By: _____

Dated: _____

By: _____

Dated: _____

By: _____

Dated: _____

Consent to File Permit Applications

Chequessett Yacht & Country Club Trust is the owner of parcels of land consisting of approximately **102.2 acres** of land, more or less, located at **0 and 680 Chequessett Neck Road,** in Wellfleet, Massachusetts, as shown on Assessors **Map 19, Lots 81, 173, 11-1 and 12-1** (collectively, the "Property"). **Chequessett Yacht & Country Club Inc.** owns the personal property and operates the business entities that constitute and compromise the public golf, tennis and sailing club known as the Chequessett Yacht & Country Club located on the Property. Chequessett Yacht & Country Club Trust and Chequessett Yacht & Country Club Inc. are referred to, collectively, as "CYCC."

The Town of Wellfleet and the Cape Cod National Seashore ("Project Proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

As proposed in plans entitled ***Chequessett Yacht and Country Club Reconfiguration Permit-Level Design Plans, September 13, 2019***, attached as part of Cape Cod Commission DRI Application Appendix 8.H (the "Work"), the Project includes performance of the Work on the Property. The Project Proponents have discussed the Project and the Work proposed on the Property with CYCC representatives and CYCC counsel.

CYCC's consent is required to allow the Project Proponents to include the Property and the proposed Work thereon in permit applications to federal, state, and/or local authorities. In signing the authorization below, CYCC consents to such inclusion on permit applications. CYCC grants no other permissions or rights with respect to the Property at this time. Discussions between CYCC and the Project Proponents are ongoing, and may include additional permissions and agreements required for the Work to be performed on the Property.

CYCC hereby authorizes the Project Proponents to include the Property and the Work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for Work on the Property.

Where necessary, CYCC agrees to provide signatures on permit applications to indicate CYCC's assent, as owner of the Property, prior to the filing of permit applications in accordance with this Consent.

CHEQUESSET YACHT & COUNTRY CLUB TRUST

By: Gayle Fee

Dated: 3/26/2021

Gayle Fee

By: _____

Dated: _____

CHEQUESSET YACHT & COUNTRY CLUB, INC.

By: _____

Dated: _____

By: _____

Dated: _____

By: _____

Dated: _____

National Park Service and Town of Wellfleet
Herring River Restoration Project, Phase 1
Notice of Intent

Low Lying Property Impact Prevention, Miller-Frederiksen Property

Consent to File Permit Applications

We, **Tatiana Miller** and **Carl Frederiksen**, are the owners of a parcel of land consisting of approximately **six (6) acres** of land, more or less, with structures located at **695 Bound Brook Island Road** in Wellfleet, Massachusetts, as shown on Assessors **Map 6, Parcel 6** (collectively, the "Property"). A portion of the Herring River system is located on or adjacent to the Property.

The Towns of Wellfleet and Truro and the Cape Cod National Seashore ("Project proponents") are undertaking the Herring River Restoration Project ("Project") to restore tidal flow to the river system, and revive the ecological and economic benefits provided by a healthy estuary.

We have been in communication with representatives of the Project proponents regarding the Project and potential work on our Property related to the Project, as shown on plans entitled ***Herring River Restoration Project, Permit Plans for Low-Lying Property Impact Prevention, Miller-Frederiksen Property (695 Bound Brook Island Road) Wellfleet, Massachusetts, Permit Plans – Not for Construction, January 2018*** and plans entitled ***Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Truro and Wellfleet, Massachusetts, Permit Plans-Not for Construction, June 2017*** (collectively, the "Work"). We understand that by signing the authorization below, we are agreeing only to allow the Project proponents to include our Property and the proposed Work noted above in permitting applications to federal, state, and/or local authorities. By signing the authorization below, we are not yet authorizing the Work to be done on our property, and we understand that we will have additional opportunities to discuss specifics of the Work or, if we so choose, to deny permission for the Work to be performed on our Property. Our discussions with the Project proponents are ongoing.

We hereby authorize the Project proponents, including the Towns of Wellfleet and Truro, as well as the Cape Cod National Seashore, to include our Property and the proposed work thereon in permit applications to federal, state, and/or local authorities for the Project for the purpose of obtaining permits for proposed Work on our Property.

Where necessary, we agree to provide signatures on permit applications to indicate our assent, as owners of property, prior to the filing of permit applications in accordance with this Consent.

Signed: _____ _____

Tatiana Miller

Carl Frederiksen

1873 Pound Lane
Santa Cruz, CA 95062

Dated: 2/8/18

Herring River Restoration Project, Phase 1

Wetlands Protection Act Notice of Intent

SUBMITTED TO:

Wellfleet Conservation Commission and Truro Conservation Commission

SUBMITTED BY:

Town of Wellfleet
300 Main Street
Wellfleet, MA 02667

U.S. National Park Service
Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667

March 2022

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List of Required Forms and Documents

Attached

- WPA Form 3 Notice of Intent (with Attachment)
- Ecological Restoration Limited Project Checklist
- Resource Area Maps
- Abutter Notification, Certified Lists of Abutters and Affidavit of Service
- Evidence of Notice in Environmental Monitor
- Letter from Cape Cod National Seashore re: Wetland Protection Act jurisdiction
- Letters of Consent from Property Owners

Provided Separately

- Wetland Delineations ..... Appendix E
- Evaluation of Flood Impacts ..... Appendix J
- NHESP-approved Habitat Monitoring and Restoration Plan ..... Appendix C
- Time of Year Restrictions and Other Conditions ..... Appendix B
- Operation and Maintenance Plans ..... Appendix H
- Combined Permit and Water Quality Certification ..... Appendix F
- Stream Crossing Photos ..... Appendix G
- Stormwater Reports ..... Appendix I
- Groundwater Reports ..... Appendix K

1.0 Introduction

1.1 Project Overview

The Herring River system is a 1,100-acre tidally-restricted estuary located in the Towns of Wellfleet and Truro, in Barnstable County, Massachusetts. Prolonged tidal restriction has resulted in severe habitat degradation and nearly complete loss of native tidal wetland habitat. Herring River is listed as an "Impaired Water" under the Clean Water Act, and the Chequessett Neck Road Bridge is a state-designated point source for bacterial contamination. The Town of Wellfleet and the National Park Service (NPS) have entered into a Memorandum of Understanding to implement the Herring River Restoration Project (or "Project") to re-establish tidal exchange to the Herring River estuary and thereby remediate degraded conditions and restore native wetland habitats. The Project represents an unmatched opportunity to restore the environment of Cape Cod and revive the ecological and economic benefits provided by a healthy natural coastal river and tidal wetland system.

The Project will re-establish tidal flow to the estuary incrementally using a carefully calibrated adaptive management approach that will balance ecological goals with water level control measures to allow the highest tide range practicable while protecting potentially vulnerable structures on public and private properties, including roads and homes. Tidal flow will be facilitated through replacement of a portion of the existing earthen dike and tidal control structure at Chequessett Neck Road with a new bridge and sluice gate system[1]; construction or alteration of other tidal control structures at the entrances to the Mill Creek and Upper Pole Dike Creek sub-basins; removal of a portion of High Toss Road where it crosses the marsh between the Lower Herring River and Mid-Herring River sub-basins; vegetation and marsh management; and measures to prevent water intrusion impacts to structures on public and private properties. Extensive ongoing modeling, monitoring and analysis will guide Project implementation so that unexpected and/or undesirable responses can be detected early on and addressed with appropriate adaptive management actions. The Project will result in significant improvements in water quality, rare species habitat, fisheries, and recreational opportunities throughout the Herring River floodplain while improving its resiliency and ability to adapt to the effects of climate change. Restored tidal wetlands will significantly reduce greenhouse gas emissions by reclaiming lost carbon storage and reducing methane emissions.

This Notice of Intent is made jointly by the Town of Wellfleet and U.S. National Park Service Cape Cod National Seashore (Seashore). The Town of Wellfleet is owner of most of the water control infrastructure needed to achieve tidal restoration. Likewise, much of the public and private property on which measures to protect structures from potential impacts caused by tidal restoration will occur in the Town of Wellfleet. The Mill Creek water control structure is proposed on federally owned land in the Seashore. Similarly, the United States is fee owner of the land underlying the driveway from Bound

[1] The sluice gate system consists of slide gates that are six feet wide by ten feet high and raised and lowered on a screw. When closed at their lowest setting, these gates are fixed in place and block both ebb and flood flows. When raised, the height of the opening determines the volume of water that can pass through in each direction. Seven of these gates are incorporated into the structure. Similar to the slide gates, combination slide-sluice gates are also raised and lowered on a screw; however the gates are mounted on hinges, opening toward the ocean side allowing ebb flows to drain even at their lowest setting. This means that no matter how the other gates are set, these gates will open during an ebbing tide and more water will flow out of the river into the harbor then will flow in. Two slide-sluice gates are incorporated into the structure. This definition applies to gates as shown on plan sets included in Appendix B.

Brook Island Road; however, a private landowner holds an access easement over the road to reach their private inholding. Also, nearly all (540 acres or 95%) of the Phase 1 restoration area is federally owned within the Seashore[2].

The Notice of Intent encompasses work proposed to occur on land owned by private parties or by the Town of Truro along Way 672, Pole Dike Road, Bound Brook Island Road, and Old County Road for purposes of road elevation, culvert replacement and/or flood protection of structures. This work will be undertaken by contractors to be hired by or on behalf of the Town, in accordance with easements or agreements acquired by the Town, as may be needed. The Notice of Intent also encompasses work on land owned by Chequessett Yacht and Country Club (CYCC). It is anticipated that CYCC would be authorized by an Order of Conditions for this project to be issued by the Wellfleet Conservation Commission to undertake the proposed work on its property in accordance with the terms of an agreement executed between the Town and CYCC, as may be amended.

The Town of Wellfleet and the Seashore entered into successive memoranda of understanding (MOUs) to study the feasibility of restoration (MOU I in 2005), develop a conceptual restoration plan (MOU II in 2007) and agree to implement the restoration plan (MOU III in 2016). The Town of Wellfleet and Seashore entered into a new Memorandum of Understanding (MOU IV) to guide their collaboration.

The MOUs set forth the structure and decision making process for the Project. MOU IV establishes a Herring River Executive Council consisting of three members from Wellfleet and two from the Seashore. MOU IV also describes a Herring River Technical Team (HRTT), an informal sounding board composed of intergovernmental technical staff to provide technical input for Project-related decisions as necessary or appropriate. Participants in the Technical Team include the Town of Wellfleet, National Park Service, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, USDA/Natural Resources Conservation Service, and Massachusetts Department of Fish and Game - Division of Ecological Restoration.

Project management and coordination support is provided by the Friends of Herring River (FHR). The FHR is a non-profit organization formed in 2008 to "promote education, research and public awareness of the Herring River estuary as one of critical environmental concern, to preserve the native environmental integrity of the river and estuary, to ensure habitat protection and retention of the native biological diversity and productivity of the river and estuary, to retain and enhance public access to the river and estuary, to preserve natural and historic sites, and to promote public awareness." The FHR has helped to acquire and manage grant funding from state and federal agencies. These resources have been used to undertake much of the technical studies, engineering and design work, and project coordination necessary to advance various project components.

[2] As explained in the cover letter from Cape Cod National Seashore, aspects of the Project on federal land or involving NPS are subject to limited Conservation Commission review under the state Wetlands Protection Act because Congress has granted a circumscribed waiver of sovereign immunity pursuant to the federal Clean Water Act with respect to state and local regulations addressing solely water quality (i.e., which provide for the control and abatement of water pollution from discharge or runoff). Federal portions of the Project are described herein for the purposes of engaging in the limited consultation consistent with federal obligations and also for informational purposes to facilitate the Conservation Commission's broader review of other project activities in the context of the full project scope.

The restoration Project is the result of more than a decade of scientific study, extensive stakeholder involvement federal, state and local collaboration and public discussions with local leadership.[3] The Project team includes national experts in estuarine science, civil engineering and environmental resource management. The Project design has been strengthened by the input of community and regional stakeholders. At each stage of project development, the Project team has worked closely with federal, state and local entities to account for their interests and potential concerns. The Project has completed review under the Massachusetts Environmental Policy Act (MEPA), and received its Certificate of Compliance on July 15, 2016 (EEA # 14272). Phasing of the Project is contemplated in the FEIS/FEIR, and the impacts of Phase 1 proposed herein are within the scope of impacts identified in the FEIS/FEIR.

1.2 Notice of Intent for Ecological Restoration Limited Project

This Notice of Intent (NOI) for the Herring River Restoration Project is submitted as an Ecological Restoration Limited Project (ERLP), as defined in 310 CMR 10.04. As described below, the Project meets the eligibility criteria for an ERLP as set forth in 310 CMR 10.24(8) and 10.53(4) and the Town of Wellfleet Environmental Protection Regulations Section 1.04 and of the Town of Truro Conservation Regulations Section 1.07. In accordance with Section 1.05(1)(d) of the Town of Wellfleet Environmental Protection Regulations, and Section 1.07(1)(c) of the Town of Truro Conservation Regulations, it is proposed that this NOI be reviewed in conformance with the provisions and performance standards of 310 CMR 10.00 et seq.

As an ERLP, the Project's primary purpose is to restore or otherwise improve the natural capacity of a Resource Area(s) to protect and sustain the interests identified in M.G.L. c. 131, § 40, when such interests have been degraded or destroyed by anthropogenic influences. Sections 3.1 and 3.2 of this application narrative will describe in detail the severely degraded condition of the existing ecosystem and the wetlands and waters contained therein caused by construction of an earth dike across the mouth of Herring River. Section 3.3 will describe the magnitude and significance of the benefits of the Herring River Restoration Project in improving the capacity of the affected ecosystem and the waters and wetlands contained therein to sustain their designated uses, as identified in 314 CMR 4.00: Massachusetts Surface Water Quality Standards. While there will be benefits other than environmental benefits as a result of the Project, the Project has been in development for decades for the sole purpose of re-establishing tidal exchange to the Herring River estuary and thereby remediating degraded conditions and restoring the health and functioning of resources protected under M.G.L. c. 131, § 40 and 310 CMR 10.00.

The Project will generate temporary and permanent construction-related impacts as described in Sections 3.0 and 9.0 of this application. The construction related impacts have been minimized to the extent feasible and are necessary to achieve the 570 acres of tidal restoration in Phase 1 (of which 12 acres are located in Truro), and set the stage for an additional 320 acres of restored tidal wetlands at full

[3] Project planning and evaluation began in 2005 and has included over 50 community meetings and presentations, 100 one-on-one meetings with property owners, 125 technical meetings with project partners, town and NPS staff and consultants.

restoration conditions. There are no thresholds for the amount of alteration or loss allowed if the issuing authority determines that the project complies with the other applicable ERLP provisions. These provisions would allow the Herring River Restoration Project to proceed without a variance to the WPA regulations.

Accordingly, the Project Site for this NOI is the approximately 570-acre Phase 1 restoration area (Figure 1 and Section 6.1 of this NOI). All restoration benefits within the Phase 1 restoration area are proposed to be included in the Commission's assessment of consistency with the applicable provisions of the WPA. Within the Project Site, the NOI seeks authorization for Class 1 actions. Class 1 actions involve the construction of water control features and mitigation measures for which the footprint, timing, design, and resource area impacts are clearly defined at the time of this application. This NOI seeks authorization of the following Class 1 actions during Phase 1 as described in greater detail in Section 6.2 of this NOI:

- Construction of all water control elements needed to achieve Phase 1 restoration: Chequessett Neck Road Bridge with water control and public access components; Mill Creek water control structure; High Toss Road causeway removal and road elevation; Way #672 road elevation; other low road elevations and replacement culverts, including the installation of the Pole Dike Road water control structure. The vast majority of Class 1 work during Phase 1 is proposed to occur in the Town of Wellfleet. The work proposed to occur in the Town of Truro consists of elevating approximately 617 linear feet along Old County Road and replacing two culverts (See 6.2.5).

- Construction of mitigation measures on CYCC golf course and private properties on Way #672 and Bound Brook Island Road (all in Wellfleet).

During Phase 1, vegetation management on federally owned Seashore property will be needed to enhance restoration. Because this work is to be conducted by the NPS on federally owned land, it does not require Conservation Commission authorization. For informational purposes, the proposed vegetation management on federally owned land is described in Section 6.3.2 of this NOI and in the Habitat Restoration and Monitoring Plan (Appendix C).

Class 2 actions are secondary marsh management actions such as additional vegetation management and marsh drainage and fill that will be needed to enhance restoration. However, the precise location, timing and methods for this work will depend in part on the system response to the return of tidal flow. Accordingly, this work is not included for authorization in this NOI. As the need for Class 2 actions arises, Project Proponents will confer with the Conservation Agent to determine the appropriate authorization for the proposed work. Any such work will be designed to be consistent with the Project's Adaptive Management Plan.

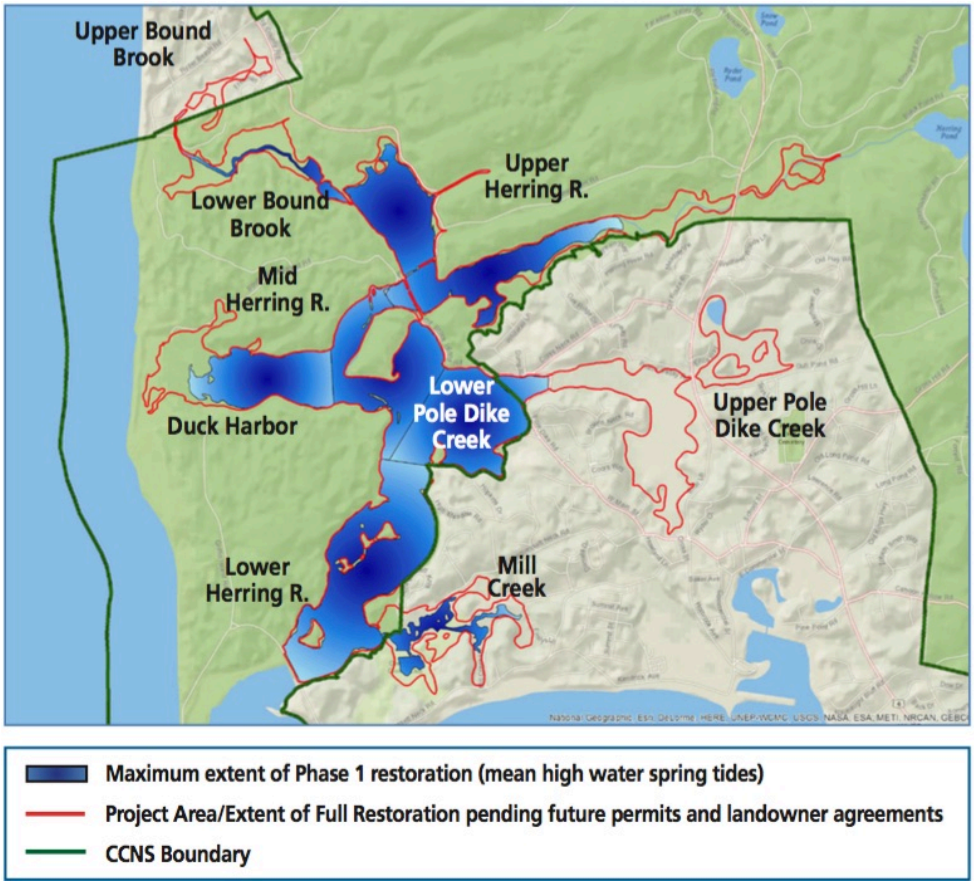


Figure 1 Extent of Phase 1 Restoration, Project Site Area of NOI

1.3 Organization of Application Package

This Notice of Intent includes the required forms as well as a supporting project narrative that describes the Project and compliance with applicable standards in the following sections:

- Required forms and checklist precede the NOI narrative.
- Section 1.0 consists of this introduction.
- Section 2.0 documents compliance with the applicable provisions required for Ecological Restoration Limited Project.

- Section 3.0 describes existing and proposed conditions within the project area.
- Section 4.0 provides a summary of construction-related impacts to wetland resource areas.
- Section 5.0 describes anticipated changes to wetland habitats resulting from tidal restoration.
- Section 6.0 describes project phasing, each Phase 1 project element, and adaptive management approach.
- Section 7.0 describes the assessment of alternatives to restoration and design elements.
- Section 8.0 describes construction methods and sequencing for each project element.
- Section 9.0 describes construction-related impacts to wetland resources for each project element.
- Section 10.0 describes post construction monitoring and maintenance plans.
- Section 11.0 demonstrates compliance with stormwater management requirements.
- Section 12.0 lists sources used in the preparation of the NOI.
- Section 13.0 is a list of appendices to the NOI.

2.0 Compliance with Required Provisions for Ecological Restoration Limited Project

2.1 Compliance Overview

The Herring River project may be permitted as an ERLP, as set forth in 310 CMR 10.24(8) for coastal ERLP and 10.53(4) for inland ERLP, as well as Section 1.04 of the Town of Wellfleet Environmental Protection Regulations. The Project is a Tidal Restoration ERLP pursuant to 310 CMR 10.24(8)(e) and 10.53(4)(e).

The Project meets definition of ERLP set forth in 310 CMR 10.04 because "its primary purpose is to restore or otherwise improve the natural capacity of a Resource Area(s) to protect and sustain the interests identified in MGL c. 131 §40, when such interests have been degraded or destroyed by anthropogenic influences." Based on the nature of construction related resource area impacts, the Project is filed as both a Coastal and Inland ERLP for tidal restoration. The Project demonstrates compliance with applicable provisions of 310 CMR 10.24(8) and 10.53(4), as described below.

2.1.1 Pre-Submission Requirements

The NOI met the pre-submission requirements set forth in 310 CMR 10.11:

(1) Notice in Monitor – Notice of filing was published in the Environmental Monitor on January 26, 2022. This satisfies the requirement that at least 14 days prior to filing this NOI, written notice of the proposed filing be submitted for publication in the Environmental Monitor (see Forms and Documents for evidence of submission.

(2) Natural Heritage and Endangered Species Program (NHESP) review and compliance with Massachusetts Endangered Species Act (MESA) - See Section 2.4 below.

(3-5) The Project will be carried out in accordance with any time of year (TOY) restrictions or other conditions contained in a written determination by Massachusetts Division of Marine Fisheries (MDMF) found in Appendix B.

(6) A Combined Permit and Water Quality Certification was issued for the Project on September 29, 2021[4] (Appendix F.)

2.1.2 NOI Requirements

This NOI contains the required applicable information as set forth in 310 CMR 10.12.

2.1.3 Considerations for ERLP Approval

Project complies with 10.24 (1-6) (8) (9) for Coastal ERLP and 310 CMR 10.53(1) (2) (7) (8) for Inland ERLP as provided below.

Project fully addresses the factors that an issuing authority must consider in approving a project as an ERLP, as set forth in 10.24.8d for coastal ERLP and 10.53.4d for inland ERLP:

[4] The Town and Seashore will be seeking an amendment to the Water Quality Certification regarding standard condition #5.

(1) The extent of severe degradation of existing and historic coastal resource areas in the Herring River system proposed for restoration. Prior to the installation of anthropogenic tidal restrictions more than a century ago, Herring River was a productive tidal river system and estuary to the Gulf of Maine. Degradation resulting from tidal restriction has reduced the capacity of the system to sustain the interests identified in M.G.L. c. 131 § 40, as documented in Section 3.1, 3.2 and Table 3 of this application. Evidence of degradation caused by tidal restriction includes loss of native coastal wetlands, including loss of all but 10 acres of nearly 1,000 acres of former native salt marsh (Figure 2); loss of wetland function including the subsidence of the marsh plain by up to three feet over hundreds of acres, due to tidal restriction and ditching, which contributed to the deterioration of marsh peat and emergence of acid sulfate soils; severe water quality impairment, including leaching of acid sulfate soils, leading to designation of the Herring River as an impaired water under the Clean Water Act, and designation of the Chequessett Neck Road dike as a point source for bacterial contamination (Figure 4); barriers to fish migration and loss of aquatic habitat; loss of habitat for birds and terrestrial species; loss of resilience through marsh subsidence and methane emissions from ponded freshwater wetlands; and proliferation of habitat conducive to freshwater dependent mosquito species which could potentially be vectors for arborvirus.

(2) The magnitude and significance of the impacts of the Project in improving the capacity of the affected resource areas to protect and sustain the interests identified in M.G.L. c. 131 § 40. Restoration of tidal flow to the Herring River is a generational opportunity to reclaim the vast ecological benefits of a healthy tidal river system, and protect and sustain the interests identified in M.G.L. c. 131 § 40, as documented in Section 3.3 and Table 3 of this application. The benefits include restoration of the native coastal wetland functions of the system including re-establishing water quality and the estuarine salinity gradient; re-establishing the elevation of subsided marsh plain; elimination of invasive species and re-colonizing of native tidal wetland vegetation; restoration of estuarine habitat for birds, aquatic life and other terrestrial species; restoration of the estuary as a food source and nursery contributing to the Gulf of Maine; re-opening waterways and restoring fish passage; increasing resilience by elevating the marsh plain and replacing methane emitting ponded wetlands with carbon storing saltwater wetlands; and eliminating habitat conducive to virus bearing nuisance mosquitoes.

(3) The magnitude and significance of impacts the Project will have on existing resource areas presumed to be significant in 310 CMR 10.00 that may be modified, converted or lost will be avoided or minimized. Section 7 and Appendix M describe alternatives analyses conducted to avoid or minimize impacts to Resource Areas in the design of project elements. Section 9 of this NOI quantifies and describes the unavoidable construction-related impacts to Resource Areas necessary to achieve the restoration goals of the Project, including the restoration of 570 acres of native tidal wetlands in Phase 1. Section 9.0 also describes how unavoidable adverse impacts to existing Resource Areas necessary to achieve the Project's ecological restoration goals will be minimized through design of each project element. Section 8.0 discusses construction practices and sequencing and erosion, siltation and sedimentation controls that will be employed to avoid adverse impacts to Resource Areas during construction. Best Management Practices that will be used to avoid and minimize impacts occurring during construction

are specified in construction notes found on plans for each project element contained in Appendix A and will be incorporated into construction bid documents.

The remainder of this section provides additional detail on compliance with the applicable requirements and provisions for coastal and inland ERLPs.

2.2 Compliance with Provisions for Coastal ERLPs

2.2.1 Compliance with 310 CMR 10.24(8)(a)(1)

The Project meets the definition of an ERLP, as stated at 10.04 because "its primary purpose is to restore or otherwise improve the natural capacity of a Resource Area(s) to protect and sustain the interests identified in MGL c. 131 S. 40, when such interests have been degraded or destroyed by anthropogenic influences." The cumulative effects of anthropogenic tidal restriction on the interests protected by the WPA, and the extensive ecological benefits of tidal restoration for those interests are documented in Section 3.0 of this application. Table 2 summarizes the negative impacts of tidal restriction on the interests of the WPA, and Table 3 summarizes the benefits of tidal restoration enabled the Project on protecting the interests of the WPA.

2.2.2 Compliance with 310 CMR 10.24(8)(a)(2)

See Section 2.4 below.

2.2.3 Compliance with 310 CMR 10.24(8)(a)(3)

The Project will be carried out in accordance with any time of year (TOY) restrictions or other conditions contained in a written determination by Massachusetts Division of Marine Fisheries (MDMF) found in Appendix B.

2.2.4 Compliance with 310 CMR 10.24(8)(a)(4)

Coastal Dune or Barrier Beach resources do not apply in the Phase 1 restoration area.

2.2.5 Compliance with 310 CMR 10.24(8)(a)(5)

The Project complies with the administrative provisions of 310 CMR 10.24 (1-6) as follows:

(1) Work in the buffer zone is shown on plans and included in the calculation of resource area impacts. Section 7 and Appendix M describe alternatives analyses conducted to avoid or minimize impacts to Resource Areas in the design of project elements. Section 9 of this NOI describes the unavoidable construction-related impacts to all resource areas, including buffer zone, which are necessary to achieve restoration goals, and also describes how unavoidable adverse impacts to existing Resource Areas necessary to achieve the Project's ecological restoration goals will be minimized through project design in order to protect and sustain the interests identified in M.G.L. c. 131 § 40.

(2) All of the construction-related resource impacts associated with the Project are described in Section 9.0, including measures to minimize adverse impacts in order to protect and sustain the interests identified in M.G.L. c. 131 § 40. All impacts are the minimum necessary to achieve restoration goals.

(3) This provision is not applicable.

(4) The Project complies with all local, state and federal statutes and bylaws, including 310 CMR 10.00. The status of all regulatory permits required by the Project is provided in Appendix D. The Project is not subject of a Coastal Restriction Order. An NPDES permit will be obtained by the contractor prior to construction or discharge, and the effluent limitations established in the NPDES permit will satisfy the Water Quality standards in 310 CMR 10.21through 10.37.

(5) Work to be undertaken for this Project is within the Wellfleet Harbor Area of Critical Environmental Concern. All resource areas are presumed to be significant to the interests of the Act, which will be served by this tidal restoration project. The ACEC standard of no adverse effect (310 CMR 10.24(5)) does not apply to Ecological Restoration Projects.

(6) The Project will comply with all procedures required under M.G.L. c. 131 sec 40 and 310 CMR 10.21-10.37 and any conditions contained in a Final Order of Conditions or Certificate of Completion. The Project is not requesting a Restoration Order of Conditions.

(9) This NOI includes operation and maintenance (O&M) plans including post-construction monitoring to ensure that the public and private infrastructure constructed or replaced by the Project will continue to function as designed (See Section 10). It is anticipated that implementation of the O&M plans will be a continuing condition set forth in the Order of Conditions and the Certificate of Compliance; and

(10) The Project will protect or enhance Anadromous/Catadromous fish runs by removing tidal restrictions and enhancing riverine habitat. This habitat enhancement has been acknowledged in correspondence from MassDMF (2016) and NOAA Greater Atlantic Marine Fisheries Office (2020), (See Appendix B). The Project will replace existing restricted tidal crossings with structures designed to allow natural tidal flow, reduce flow velocities, and enhance ingress/egress passage for fish. Impacts to tidal crossings and resource areas resulting from the new tidal crossings are the minimum necessary to achieve restoration goals and meet the requirements of 310 CMR 10.53 (8) (See Section 2.3.1.4).

2.2.6 Compliance with 310 CMR 10.24(8)(b)

Provisions at 310 CMR 10.24(8)(b) are statements that ERLP may result in loss or conversion, not performance standards requiring compliance.

2.2.7 Compliance with 310 CMR 10.24(8)(c)

This NOI meets the minimum requirements of 310 CMR 10.12(1) and is not a combined project. The Project is therefore exempt from the requirement to perform a wildlife habitat evaluation. Section 2.2.4 addresses NHESP review and MESA compliance..

2.2.8 Compliance with 310 CMR 10.24(8)(d)

See Section 2.1.3 above.

2.2.9 Compliance with 310 CMR 10.24(8)(e)

(1) The Project meets the requirements of a tidal restoration project, in that, in addition to meeting the requirements of an ERLP noted above, the Project will not significantly increase flooding or storm damage impacts to the built environment (e.g., buildings, wells, driveways, roads) because any potential

impacts will be avoided by employing a five-step strategy for flood impact prevention, including implementing site-specific flood prevention measures in accordance with recognized design standards and formal agreements with affected landowners:

- New bridge at Chequessett Neck Road with sluice gates to gradually increase tidal range.
- Additional water control structures at Mill Creek and Pole Dike Creek to provide secondary flood protection; protects virtually all properties.
- High-level oversight of operations and maintenance of new structures.
- Restoration project enhances the long-term resiliency and flood control function of the coastal flood plain.
- Property-specific measures to prevent impacts from restored tidal flow.

Section 6.1.1 describes how the use of hydrodynamic modeling was used to predict water surface elevations throughout the estuary during Phase 1. Copies of the hydrodynamic modeling study and subsequent technical memoranda are contained in Appendix J. Maximum water levels in all areas of the estuary affected by Phase 1 tidal restoration will be kept below elevations that could impact any private structures that are not protected by Phase 1 protection measures. Flood impact mitigation measures to protect public and private structures subject to WPA jurisdiction are described in Section 6.2.5 (low road elevations) and Section 6.2.6 (protection of private structures) of this application.

With respect to sea level rise, because sluice gates will remain in place at the new Chequessett Neck Road dike throughout Phase 1, the project will maintain the ability to control water levels throughout the Herring River system irrespective of changes to tidal hydrology in Wellfleet Harbor and Cape Cod Bay. No matter how sea level rise is manifested in the region, high tide levels will be limited in the river during the Phase 1 period to the elevations cited on Table 7 (page 40). Future effects of sea level rise occurring if or when sluice gates are removed and tidal control is no longer possible will be addressed if or when permits are sought for subsequent project phases. Over a longer time frame, higher sea levels will need to be considered when the Town plans for a replacement structure in 50 to 75 years.

2.3 Compliance with Provisions for Inland ERLPs

The Project is a tidal restoration project as defined in 310 CMR 10.53(4)(e)(4). Compliance with 310 CMR 10.53(4)(a) through (d) required to confirm eligibility as a tidal restoration ERLP is described below. As described in Section 2.1.9 above, the Project will not significantly increase flooding or storm damage impacts to the built environment.

2.3.1 Compliance with 310 CMR 10.53(4)(a)

(1) See Section 2.2.1 above.

(2) See Section 2.2.2 above.

(3) See Section 2.3.3 above

(4) The Project has received a Combined Permit/Water Quality Certification from MassDEP. (See Appendix F)

(5) The Project complies with 310 CMR 10.53 (1), (2), (7) and (8) as described below.

2.3.1.1 Compliance with 310 CMR 10.53 (1)
Work in the buffer zone is shown on plans and included in the calculation of resource area impacts. Section 7 and Appendix M describe alternatives analyses conducted to avoid or minimize impacts to Resource Areas in the design of project elements. Section 9 of this NOI describes the unavoidable construction-related impacts to all resource areas, including buffer zone, which are necessary to achieve restoration goals, and also describes how unavoidable adverse impacts to existing Resource Areas necessary to achieve the Project's ecological restoration goals will be minimized through project design in order to protect and sustain the interests identified in M.G.L. c. 131 § 40.

2.3.1.2 Compliance with 310 CMR 10.53 (2)
A part of the wetland system associated with Bound Brook in Truro that is expected to be impacted by the increased tidal range is the subject of an Inland Restriction Order imposed pursuant to G.L. c. 131, § 40A (See Appendix N.) The Restriction Order does not apply to Phase 1 work proposed for authorization under this NOI under terms set forth in paragraph 4 of that Order. Under paragraph 4, no person shall fill, drain or dredge wetlands covered by the Order, and no fill, drainage or dredging is proposed for the covered wetlands. Paragraph 4 also states that no person shall perform any act or use "which would destroy the natural contours of the inland wetland, substantially alter existing patterns of water flow, or otherwise alter or permit the alteration of the natural and beneficial character of the inland wetland." Table 1 compares tidal datums and salinity under existing conditions and at the end of Phase 1, demonstrating no substantial alteration to salinity or patterns of water flow.

Table 1. Existing and Proposed Water Flow Conditions* in Subject Restriction Order Wetlands

	Existing Conditions	End of Phase 1
Mean High Water – ft NAVD 88	0.21	0.22
Mean High Water Spring ft NAVD 88	0.22	0.24
Mean TL	0.22	0.23
Mean Storm of Record	n/a	0.28
Mean Depth	0.03	0.05
Maximum Salinity	0.0	0.0
Mean Ebb Flow (ft/sec)	0.3	0.3
Mean Flood Flow (ft/sec)	0.3	0.3

*Mean Values of 149 Hydrodynamic Model Grid Cells on Wetlands at 54 Ryder Beach Road (Map 64 Lot 01)

2.3.1.3 Compliance with 310 CMR 10.53 (7)

Draft Operation and Maintenance (O&M) plans including post-construction monitoring will ensure that the public and private infrastructure constructed or replaced by the Project will continue to function as designed (See Section 10). O&M plans will be finalized along with final design plans and bid packages. It is anticipated that implementation of the O&M plans will be a continuing condition set forth in the Order of Conditions and the Certificate of Compliance.

2.3.1.4 Compliance with 310 CMR 10.53 (8)

All crossings impacted by this Project are tidal crossings, which currently restrict tidal flow. For all tidal crossings, tidal flow will be improved following project implementation. The Project includes replacement of existing tidal crossings at the Chequessett Neck Road Dike and Pole Dike Creek channel entrance with water control structures with adjustable sluice gates to increase and control tidal flow. Seven existing undersized culverts along Pole Dike, Old County and Bound Brook Island Roads will be replaced with enlarged culverts designed to increase tidal flow. An earthen causeway and culvert crossing of the Herring River marsh plain at High Toss Road will be removed and a new channel will be created to re-establish tidal flow. A new tidal crossing at the Mill Creek entrance channel is designed as a water control structure with sluice gates to control tidal flow and will be coupled with vegetation removal and channel clearing to increase tidal flow into that sub-basin.

Each tidal crossing, as described in Section 6.2 and as shown on plans found in Appendix A, is designed to eliminate the tidal restriction to the maximum extent practicable and to minimize construction-related impacts to the tidal crossing and adjacent Resource Areas to the maximum extent practicable. Unavoidable construction-related impacts to tidal crossings and adjacent Resource Areas, as described in Section 9.0, are the minimum necessary to achieve the restoration goals of the Project. Additional measures to avoid and minimize construction-related impacts to tidal crossings and Resource Areas are described in Sections 8.0 and 9.0. Each design is the result of an alternatives assessment that considered, as applicable: potential for downstream flooding; upstream and downstream habitat; potential for erosion and head-cutting; stream stability; stream mileage and access; storm flow conveyance; design or site constraints specific to the crossing; hydrology and hydrologic constraints specific to the crossing; construction-related impacts to wetlands and habitat; potential impacts to property and infrastructure; and cost.

2.3.2 Compliance with 310 CMR 10.53(4)(b)

Provisions at 310 CMR 10.53(4)(b) are statements that ERLP may result in loss or conversion, not performance standards requiring compliance.

2.3.3 Compliance with 310 CMR 10.53(4)(c)

See Section 2.2.2 above.

2.3.4 Compliance with 310 CMR 10.53(4)(d)

See Section 2.1.3 above.

2.3.5 Compliance with 310 CMR 10.53(4)(e)

The Project meets the requirements of a tidal restoration project, in that, in addition to meeting the requirements of an ERLP noted above, the Project will not significantly increase flooding or storm damage impacts to the built environment (e.g., buildings, wells, driveways, roads) because any potential impacts will be avoided by implementing site-specific flood prevention measures in accordance with recognized design standards and formal agreements with affected landowners. See additional detail in Section 2.2.9.

2.4 Compliance with Massachusetts Endangered Species Act

The Project's compliance with the Massachusetts Endangered Species Act (MESA) is summarized in Table 2. This table includes a calculation of potential permanent or temporary impacts to mapped Priority Habitats that are associated with project elements. Certain project elements are either exempt from MESA review or are otherwise not subject to MESA review, and therefore are not included in impact calculations found in Table 2. A MESA Project Review Checklist has been submitted to the NHESP.

2.4.1 MESA Habitat Management Exemption

Massachusetts Department of Fisheries and Wildlife, NHESP has determined that the Project is eligible for a MESA Habitat Management Plan Exemption (321 CMR 10.14 (15)). The MESA Exemption encompasses the Chequessett Neck Road Bridge and sluice gate structure that controls restored tidal flow, as well as vegetation and marsh management actions in the Phase 1 restoration area necessary to facilitate tidal restoration. The Exemption recognizes the complexity of tidal restoration as it aims to achieve multiple, and at times divergent, objectives over an extended timeframe and a large spatial area. The Project will be carried out in accordance with an NHESP-approved Habitat Restoration and Monitoring Plan (see Appendix C). The plan provides a strategy for restoring habitat functions in specific portions of the overall project area, along with a specific timeframe, and a description of specific methods coordinated with incremental changes to tidal flow.

2.4.2 Other MESA Exemptions

Other portions of the Project located within mapped Priority Habitat are exempt from MESA review (321 CMR 10.14) because they are within existing lawn area, existing paved surface, existing paved or unpaved roadway out to four feet beyond the edge of roadway on either side, or existing paved or unpaved year-round parking areas. This exemption encompasses most of the road elevation work on Old County Road, Bound Brook Island Road, Pole Dike Road, High Toss Road and Way #672, as well as potential staging areas at Griffin Island Road.

Work proposed to occur on CYCC property is not subject to MESA review because it is outside of mapped Priority Habitat. Proposed work related to the Mill Creek water control structure is not subject to MESA review because it is a project of the National Park Service located on federal land.

The above-listed work that is either exempt from or not subject to MESA review is not included in the calculation of temporary and permanent impacts shown in Table 2.

2.4.3 Temporary and Permanent Impact to Priority Habitat

Certain project activities within areas mapped as Priority Habitat are not exempt, and the temporary and permanent impacts associated with these activities are shown in Table 2. Ancillary features of the exempted Chequessett Neck Road bridge and sluice gate structure, such as a water access ramp and public access way, are included in the impact calculations. Culvert replacements associated with the road elevation work, even if below existing exempt paved or unpaved area, along with any impacts beyond four feet of the edge of roadway, are quantified in Table 2. Potential impacts associated with private property mitigation on Way #672 and Bound Brook Island Road are included in Table 2. Optional construction staging areas that are within mapped habitat and are not existing paved or unpaved roads or parking areas are included in the calculation of impacts in Table 2. It is noted that the selection of staging areas is the contractor's prerogative, and so all of these staging areas may not be utilized during construction. Any areas of temporary disturbance associated with construction activity will be restored as noted on permit level design plans submitted with this NOI (see Appendix A) for review and approval by the Commission and NHESP.

2.4.4 Turtle Protection Plan

Exemption from MESA review does not preclude the Project's need to seek to avoid impacts to rare species during the construction period. The Project team and consultants, Oxbow Associates, are working with NHESP and MassDMF to develop a turtle protection plan to protect Eastern Box Turtle and Diamond-back terrapin during the construction period. The turtle protection plan will be finalized and approved by NHESP and MassDMF prior to the start of site mobilization and construction.

Table 2. Summary of MESA Compliance

Ŧ including "dry" resource areas: Buffer Zone, LSCSF, Riverfront Area ŦŦ fresh, marine, brackish

FID	Descr	Summary	Exempt or NA	LOD (sf)	LOD in Priority Habitat (sf)	Habitat Impact (sf) - UplandŦ (Permanent)	Habitat Impact (sf)- UplandŦ (Temporary)	Habitat Impact (sf) - Wetland (Permanent)	Habitat Impact (sf) - Wetland (Temporary)	Wetland Type ŦŦ
	CNR									
	Bridge structure		Yes							
1	Area beyond bridge structure footprint	Includes permeable parking area & path, boardwalk and portion of boat launch pad, to the limit of grading. Areas beyond limit of grading are captured below in the Duck Harbor Rd staging area	Partial - Paved road, bridge structure and unpaved road exempt. 4-ft off-set taken from existing dike including essential riprap and from existing paved road *Note: amount under "LOD in Priority Habitat" includes exempt areas*	135,310	132,887	15,298	4,471	4,621	25,976	Fresh and Marine
	CYCC	Not in mapped habitat	Yes							
	Mill Creek_WCS	Federal land	Yes							
	Low Lying Roads (LLR)									
2	Elevation of existing paved and unpaved surfaces	unpaved portion of road to remain unpaved	Partial - only embankment beyond 4 ft of existing surfaces counted	541,627	239,062	61,432	30,448	114,697	32,485	fresh
	LLR Culverts									
3	#1-Pole_Dike Rd @ Pole Dike Creek WCS			2,524	2,524	855	0	1,404	265	fresh
4	#2-Herring River @Bound_Brook_Island_Rd_			4,905	4,905	1,822	48	2,588	447	fresh
5	#3-Bound Brook@Bound_Brook_Island_Rd			1,357	1,357	56	0	1,072	229	fresh
6	#4-Old_County_Rd_1 culvert (Paradise Hollow)			602	602	32	0	374	196	fresh
7	#5-Old_County_Rd_2 culvert (Lombard S)			397	397	44	0	276	77	fresh
8	#6-Old_County_Rd_3 culvert (Lombard N)			522	522	35	0	280	207	fresh
9	#7-Miller_Frederickson culvert			1,090	1,090	11	0	374	705	fresh
	High Toss Road									
	Causeway & Culvert removal/Channel re-creation		Yes							
10	High Toss Road embankment	Unpaved road to remain unpaved	Partial - only embankment beyond 4 ft of unpaved surface counted	51,304	13,070	3,845	416	6,513	2,296	fresh
	Way 672									
	Ellis mitigation	Not in mapped habitat	Yes							
	Hirsch Meek mitigation	Not in maped habitat	Yes							
	Way 672 embankment	Not in mapped habitat (unpaved rd remains unpaved)	Yes							
	Miller Frederiksen mitigation	Unpaved pkg to remian unpaved	Yes							
	Staging Areas	**Use of these areas is optional; contractor will decide which areas will/won't be used for staging.	Non-exempt impacts to all Staging Areas are included in Totals, but some areas might not be used.							
11	Staging_Town Pit	Mostly not in mapped habitat	Partial - only a short segment of driveway is in PH		1,165	1,165	0	0	0	N/A
	Staging_Transfer Station **	Not in mapped habitat	Yes							
	Staging_parking off Griffin_Island_Rd**	Not within any proposed work zone/LOD. Entire Area in Priority Habitat	Yes - unpaved year-round parking	Not in LOD	N/A	0	7,150	0	0	N/A
12	Staging_Giffin Island Rd @ CNR (island) **	Not within any proposed work zone/LOD. Entire Area in Priority Habitat	Partial - only portion of island beyond 4 ft of paved surface counted	Not in LOD	N/A	0	4,800	0	0	N/A
	Staging_Giffin Island Rd @ CNR (side pkg) **	Not within any proposed work zone/LOD. Entire Area in Priority Habitat	Yes - paved year-round parking	Not in LOD	N/A	0	19,450	0	0	N/A
13	Staging_off Duck Harbor Rd	In mapped Habitat, Portions of LOD are exempt	Partial - Portion of unpaved road *Note: amount under "LOD in Priority Habitat" includes exempt areas*	85,013	85,013	0	84,949	0	0	Fresh/ Minimal sea spray
			Total Habitat Impact (ACRES)	**18.9**	**11.1**	**1.9**	**3.5**	**3.0**	**1.4**	

Note: Exempt = Yes, No, Partial. If Partial, indicate which portions are exempt and which are not.
Note: Habitat Impact = Non-exempt impacts in Priority Habitat.

3.0 Existing and Proposed Conditions

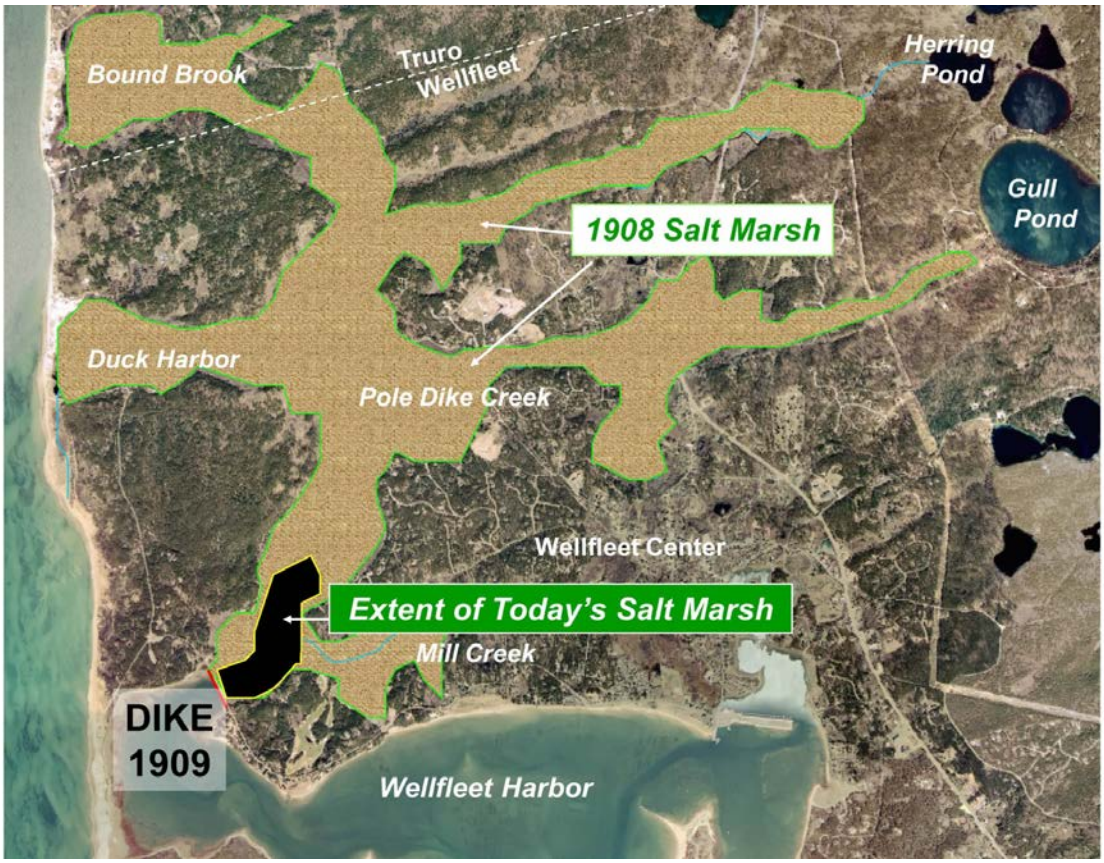


Figure 2. Extent of historic and current Spartina-dominated salt marsh, Herring River flood plain

3.1 History of Degradation

Historically, the Herring River was the largest tidal estuary complex on the Outer Cape and included about 1,100 acres of salt marsh, intertidal flats, and open-water habitats (HRTC 2007). The Herring River system was dramatically altered in 1909 when the Town of Wellfleet constructed the Chequessett Neck Road Dike at the mouth of the Herring River with the goal of reducing the presence of salt marsh mosquitoes. The dike restricted tides in the Herring River and reduced the tide range from approximately 10 feet to about two feet upstream of the dike. By restricting the flow of ocean tides and salt water, the dike had immediate and devastating effects on the tidal system and the community benefits provided by the river and its associated estuarine wetlands.

By the mid-1930s, the Herring River, now artificially altered from a saltwater to mostly a freshwater system, was channelized and straightened. Between 1929 and 1933, the Chequessett Yacht and Country

Club (CYCC) constructed a nine-hole golf course in the adjoining Mill Creek floodplain. Several homes were also built at low elevations in the former Herring River floodplain.

Figure 3. Chequessett Neck Road Dike today

By the 1960s, the dike's original tide gates had rusted (frozen) in an open position, increasing tidal range and salinity in the lower Herring River. This caused periodic inundation of the CYCC golf course and other private properties. In 1973, the Town of Wellfleet required that the dike be repaired to accommodate anadromous fish passage. As a result, the Massachusetts Department of Public Works rebuilt the dike in 1974 (HRTC 2007). Following reconstruction, tide height monitoring by the Seashore showed that the new tide gate opening was too small to achieve the tide heights required by the Order of Conditions issued by the Wellfleet Conservation Commission. In 1977, the Town was enjoined by the Massachusetts Attorney General to cede control of the dike to the Massachusetts Department of Environmental Quality Engineering (now the Department of Environmental Protection [MassDEP]) so that increased tidal flow could be attained to the level mandated by the Order of Condition (HRTC 2007).

In 1980, a large die-off of American eels (*Anguilla rostrata*) and other fish drew attention to the poor water quality in the Herring River. The Massachusetts Division of Marine Fisheries (DMF) and NPS identified the cause of the fish kill as high acidity and aluminum toxicity resulting from diking and marsh

drainage (Soukup and Portnoy 1986). The sluice gate opening was increased to 20 inches in 1983. That year, Seashore scientists documented summertime dissolved oxygen depletions and kills of alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) (collectively called river herring) for the first time (Portnoy 1991). The NPS then implemented measures to protect river herring by blocking their emigration from upstream ponds to prevent the fish from entering anoxic waters (HRTC 2007).

Concerns about flooding of private properties and increased mosquito populations prevented the Town from opening the tide gate further. NPS mosquito breeding research conducted from 1981 to 1984 found that mosquitoes, *Ochlerotatus cantator* and *O. canadensis*, were breeding abundantly in the Herring River. However, estuarine fish, important mosquito predators, could not access breeding areas because of low tidal range, low salinity, and high acidity (Portnoy 1984). In 1984, the Town increased the sluice gate opening to 24 inches, where it has since remained (HRTC 2007).

In 1985, the DMF classified shellfish beds in the river mouth as "prohibited" due to fecal coliform contamination. In 2003, water quality problems caused MassDEP to list Herring River as "impaired" under the federal Clean Water Act Section 303(d) for low pH, high metal concentrations, and pathogens. More recently, NPS researchers identified bacterial contamination as another result of restricted tidal flow and reduced salinity (Portnoy and Allen 2006).

3.2 Cumulative Effects of Tidal Restriction

Herring River's wetland resources and natural ecosystem functions have been severely altered and damaged by more than 100 years of tidal restriction and salt marsh drainage caused by the existing CNR dike. A range of water quality and other ecological problems will continue until the Project reconnects the river and wetlands with the marine environment. These cumulative effects of tidal restriction have severely degraded the natural capacity of the estuary to protect and sustain the interests of M.G.L. c 30 §40 (See Table 3). The evidence of degradation includes:

- Massachusetts DEP has designated Herring River as an "Impaired Water" in violation of §303d of the Clean Water Act standards for high aluminum, low pH, high fecal coliform bacteria and a fish passage barrier.
- Water quality in the river is impaired year-round. Data measured by the US Geological Survey and National Park Service over multiple years show that dissolved oxygen in river water regularly falls below established thresholds for causing stress and mortality for fish and other aquatic life.
- The Massachusetts DMF has designated the CNR dike as a point source of bacterial contamination, resulting in the closure of once harvestable shellfish beds upstream and downstream of the dike due to poor water quality. Fecal coliform monitoring (Portnoy, 2005, 2020) demonstrates persistent high levels above and below Chequessett Neck Road dike (Figure 4).

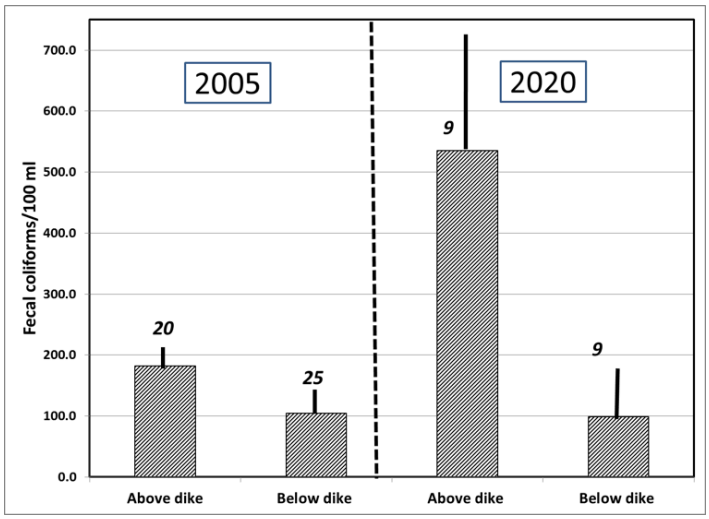


Figure 4. Comparison of average low-tide fecal coliform concentrations in summer 2005 and 2020 (at stations above and below the Chequessett Neck Road Dike. Error bars are 95% confidence intervals and numbers over columns are sample sizes.) (Portnoy, 2020)

- Much of the diked Herring River floodplain has subsided up to three feet relative to current mean sea level (Portnoy and Giblin 1997), because tidal restrictions radically diminish the processes of sedimentation on the salt marsh surface and the accumulation of belowground organic material (peat). Coastal marshes must increase in elevation at a rate equal to or greater than the rate of sea-level rise to persist. This increase in elevation (accretion) must occur to promote the growth of salt marsh vegetation and gradually increase the elevation of the marsh surface. Diking has effectively blocked sediment from reaching the Herring River floodplain and prevented necessary accretion. In addition, drainage has increased the rate of organic peat decomposition by aerating the sediment and caused sediment pore spaces to collapse. These processes have contributed to the severe historic and continuing subsidence in the Herring River's diked wetlands.
- Prolonged exposure of drained salt marsh peat to air causes it to decompose and release sulfuric acid into surrounding soils and receiving waters. Acid sulfate soils are a major problem covering hundreds of acres of original Herring River marshes. Absent regular saturation by salt water, these soils leach toxic acidity and aluminum into remaining surface water, killing fish and other aquatic animals.
- Coastal resiliency has been diminished due to alteration of natural sediment processes and salt marsh surface subsidence.
- Elimination of tidal flooding and salinity has resulted in a loss of salt marsh and other forms of estuarine habitat. Approximately ten acres out of an original 1,100 acres of salt marsh remain.
- Lower salinity and loss of estuarine vegetation has allowed non-native *Phragmites* to invade the salt marsh above the dike, and upland shrubs and trees to invade above High Toss Road, where water levels rarely reach the original marsh surface.
- The change to freshwater marsh vegetation has led to increased methane emissions and a reduction of carbon sequestered in tidal wetland peat, contributing to a net warming effect on the climate.

- River herring, American eel and other diadromous fish species that once thrived in the river have been depleted due to poor water quality and obstructions to migratory passage.

3.3 Benefits of Tidal Restoration

The community's commitment to and broad-based support of the Project stem from the extensive ecological and community benefits that the return of tidal flow to the Herring River system will generate. These benefits will also improve the natural capacity of the estuary to protect and sustain the interests of M.G.L. c 30 §40 (See Table 4). Some of these benefits include**:**

- Reconnecting the Herring River estuary to Cape Cod Bay and the Gulf of Maine to recover the estuary's functions as: (1) a nursery for marine animals, and; (2) a source of organic matter for export to near-shore waters.
- Restoring the natural coastal food web to support numerous fish and bird species and other wildlife that depend on healthy coastal marsh habitats and processes for their migration and survival.
- Reopening waterways to improve migration and spawning for a variety of fish species including River Herring, American Eel, Striped Bass and Winter Flounder, as well as Diamond-back Terrapin, salt marsh sparrow, willet, and American black duck.
- Enhancing habitat to increase local fish production; and remove physical impediments to migratory fish passage to restore once-abundant river herring and eel runs.
- Protecting and enhancing 200 acres of harvestable shellfish resources both within the estuary and in receiving waters of Wellfleet Harbor. Re-opening and expanding shellfish beds will benefit the local economy; in 2018 the shellfish harvest in Wellfleet was valued at $7.2 million. Shellfish habitat restoration will also help to sustain local shellfishing jobs, which are estimated to number 400-450.[5]
- Enhancing coastal resiliency by restoring normal sediment deposition needed to allow the marsh to gain elevation and mitigate impacts of sea level rise, and by constructing state-of-the-art tidal control infrastructure to protect low-lying roads and other structures.
- Re-establishing the estuarine salinity gradient of native salt, brackish, and freshwater marsh habitats in place of the invasive non-native and upland plants that have colonized most parts of the degraded floodplain.
- Enhancing opportunities for canoeing, kayaking, fishing, and wildlife viewing over a diversity of restored wetland and open-water habitats including 6 miles of waterways for recreation and tourism. Tourism accounts for nearly $11 million annually to the local community and supports jobs.
- Generating approximately $624 million in local and regional economic benefits over the life of the project based on economic studies of other coastal restoration projects.
- Combating climate change by returning lost carbon storage volume and reducing methane emissions from deteriorated salt marsh. A preliminary estimate indicates that, since the CNR dike

[5] Civetta, Nancy. Wellfleet Shellfish Department. Presentation to Herring River Stakeholder Group. November 6, 2019.

was built in 1909, the Herring River has emitted 730,000 metric tons of CO^2 equivalents, comparable to emissions from 155,000 US autos operating for one year.[6]

- Another consequence of tidal restriction has been to increase freshwater swamp habitat suitable for the freshwater dependent mosquito species more likely to carry viruses. Restoring tidal range and flushing will re-establish conditions that are not conducive to nuisance mosquito habitat, and increase access for fish that prey on mosquito larvae.

[6] Kroeger, KD, Gonneea, ME, et al. 2019. Climatic impacts of tidal restriction and restoration: Full carbon and greenhouse gas budgets, with radiative forcing calculations. Society of Wetland Scientists Annual Meeting, Baltimore, MD.

Table 3. Summary of Negative Effects of Tidal Restriction on the Interests of the Wetlands Protection Act

Existing Effect of Tidal Restriction	Affected Interests of the WPA							
	Protection of Public and Private Water Supply	Protection of Groundwater Supply	Flood Control	Storm Damage Prevention	Prevention of Pollution	Protection of Land Containing Shellfish	Protection of Fisheries	Protection of Wildlife Habitat
MassDEP has designated Herring River as an "Impaired Water" under the Clean Water Act for high aluminum, low pH, high fecal coliform bacteria and a fish passage barrier.					•	•	•	•
Multi-year USGS data show dissolved oxygen regularly below thresholds for causing stress and mortality for aquatic life.						•	•	•
The MassDMF has designated the CNR dike as a point source of bacterial contamination, resulting in closure of shellfish beds.						•	•	
Tidal restriction, stream channelization and ditch drainage have lowered water levels and caused peat decomposition leading to causing marsh plain subsidence of 2-3 feet.			•	•	•			•
Decomposing marsh peat release sulfuric acid into surrounding soils and waters threatening aquatic animals. Acid sulfate soils cover hundreds of acres in the Herring River.							•	•
Coastal resiliency has been diminished due to alteration of natural sediment processes and salt marsh surface subsidence.			•	•	•	•	•	•
Tidal restriction has resulted in a loss of salt marsh and other forms of estuarine habitat. Only 10 of 1,100 acres of salt marsh remain.						•	•	•
Lower salinity and loss of estuarine vegetation has allowed non-native *Phragmites* to invade the salt marsh above the dike, and upland shrubs and trees to invade above High Toss Road.						•	•	•
Methane-emitting ponded freshwater wetlands have displaced carbon-storing tidal wetlands, contributing to climate warming.					•			
River herring and other anadromous fish that once thrived in the river have been depleted due to poor habitat and obstructions to passage.							•	

Table 4. Summary of Ecological Benefits of Tidal Restoration to the Interests of the Wetlands Protection Act

Ecological Benefits of Tidal Restoration	Affected Interests of the WPA							
	Protection of Public and Private Water Supply	Protection of Groundwater Supply	Flood Control	Storm Damage Prevention	Prevention of Pollution	Protection of Land Containing Shellfish	Protection of Fisheries	Protection of Wildlife Habitat
Reconnecting the Herring River estuary to Cape Cod Bay and the Gulf of Maine to recover the estuary's functions					•	•	•	•
Restoring the natural coastal food web to support numerous fish and bird species and other wildlife					•	•	•	•
Reopening waterways to improve migration and spawning for a variety of fish species							•	•
Enhancing habitat to increase local fish production; and remove physical impediments to migratory fish passage							•	•
Protect and enhance harvestable shellfish resources both within the estuary and in receiving waters of Wellfleet Harbor.						•	•	
Restoring normal sediment deposition and peat saturation to allow the marsh to gain elevation and mitigate impacts of sea level rise.			•	•	•	•	•	•
Re-establish the estuarine gradient of native salt, brackish, and freshwater marsh habitats						•	•	•
Combating climate change by by 1) re-establishing natural wetland carbon storage and 2) reducing methane emissions from deteriorated salt marsh.					•			
Re-establish the natural control of nuisance mosquitoes by restoring tidal range and flushing of, and predatory fish access to, potential floodwater-mosquito breeding habitat.					•		•	•
Establish or enhance naturally vegetated buffers.				•			•	•

4.0 Summary of Resource Area Impacts in Jurisdiction

The Herring River flood plain is located with the Wellfleet Harbor Area of Critical Environmental Concern (ACEC), a designated Outstanding Resource Water (ORW). With the exception of work proposed to occur on Chequessett Yacht and Country Club, Way #672 and a short segment of Old County Road, all proposed work will occur within the ACEC and Estimated Habitat as delineated by the Natural Heritage and Endangered Species Program (NHESP). MESA compliance is addressed in Section 2.2.4.

Phase 1 of the Project (See Section 6.1.1) will restore historic tidal hydrology, which had been altered by tidal obstructions, thereby restoring estuarine wetland habitat, improving water quality in a designated ORW, and protecting and sustaining the interests of M.G.L. c. 130 §40. Phase 1 will restore the health and functioning of approximately 570 acres of tidal wetlands, and set the stage for full restoration of an additional approximately 320 acres. The restoration of tidal flow and reconnection of the estuary to Cape Cod Bay will repair the substantial damage to natural wetland functions and ecology caused by the construction of artificial tide control structures throughout the floodplain. Section 5.0 describes the anticipated changes to wetland habitats resulting from the restoration of tidal flow.

The Project will result in temporary and permanent construction-related impacts on wetland resources protected under M.G.L. c. 131 and 310 CMR 10.00. Coastal resources that will be affected by construction include Land Under Ocean, Fish Run, Salt Marsh, Coastal Bank, Land Containing Shellfish, Coastal Beach/Tidal Flats, Riverfront Area and Land Subject to Coastal Storm Flowage. Inland resources that will be affected by construction include Bordering Vegetated Wetlands, Land Under Water, Riverfront and Land Subject to Coastal Storm Flowage. Wetland resource delineations depicted on project plans (Appendix A) were performed in the field by qualified wetland professionals in accordance with the WPA, WPA Regulations and MassDEP guidance.

Tables 5 and 6 show the total estimated temporary and permanent impacts to coastal and inland resources that are associated with Phase 1 Project construction in Wellfleet and Truro, respectively. The wetland resource impacts and minimization measures associated with each project element are quantified and described in Section 9.0 of this application. The unavoidable impacts shown above are the minimum necessary to achieve restoration goals, including the restoration of native wetland habitat as described in Section 5.0.

Table 5. Summary of Construction-related Resource Area Impacts from Phase 1 in Wellfleet

Resource Area*	Permanent (sf)	Temporary (sf)
Land Under Ocean**	21,806	19,188
Tidal Flats	8,070	980
Salt Marsh	18,865	31,173
Land Containing Shellfish	36,716	23,585
Bordering Vegetated Wetlands	631,399	112,055
Coastal Bank (lf)	7,522	1,333
Land Subject to Coastal Storm Flowage	1,858,855	311,359
Riverfront Area	461,116	107,156
Bank (lf)	468	91
Land Under Water**	8,291	1,016
100-foot Buffer Zone	1,426	98,170

(Source: project drawing sets, as noted in Section 9)
*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.
**Dredging impacts include 4,260 cubic yards in Land Under Ocean and Land Under Water, of which 3,475 cubic yards are within the Fish Run associated with the Herring River waterway.

Table 6. Summary of Construction-related Resource Impacts from Phase 1 in Truro

Resource Area*	Permanent (sf)	Temporary (sf)
Bank (sf)	58	12
Bordering Vegetated Wetland	2,957	4,524
Land Under Water**	180	35
Riverfront Area	9,439	3,102
Land Subject to Coastal Storm Flowage	22,632	8,061
100-Foot Buffer Zone	19,426	3,329

(Source: Low-Lying Roadways drawing set)
*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.
**Includes 15 cubic yards of dredging in Land Under Water.

5.0 Predicted Changes to Wetland Habitats Resulting from Restored Tidal Flow

Re-introduction of tidal flows to the Herring River floodplain will result in the widespread restoration of degraded coastal wetlands to estuarine sub-tidal and intertidal habitats. Based on hydrodynamic modeling (FEIS, Appendix B), salinity within restored intertidal habitat will range from near full-strength seawater (approximately 30 ppt) in the lower portions closer to Wellfleet Harbor to freshwater (<5 ppt) in the upper reaches. Mid-range salinities (5 to18 ppt) will occur predominantly in the middle portions of the floodplain. High salinity (generally 18 ppt and higher) will kill salt-intolerant plants that have become established on the former salt marsh floodplain and support the re-colonization of native salt marsh plants. In areas further upstream where low to mid-range salinities will be present, a mix of brackish and freshwater hydrophytes is expected to persist (FEIR, Section 4.5). The uppermost reaches of the floodplain will likely show little to no change in the existing plant community.

Increased tidal exchange resulting from the implementation of Phase 1 of the Project will have a profound effect on the Herring River ecosystem. The majority of the floodplain is comprised of former tidally-dependent salt marshes that are now dominated by invasive common reed (*Phragmites australis*), emergent freshwater plants, and upland tree and shrub species. Restoring tidal flow to the floodplain will largely displace these plant communities with the polyhaline inter-tidal habitats that naturally occurred prior to construction of the Chequessett Neck Road dike in 1909.

The Project used the Sea Level Affecting Marshes Model (SLAMM) to develop predictions of wetland habitat change under each of the seven sluice gate management policies incorporated into the adaptive management plan at several time steps over project implementation time spans ranging from 5 to 25 years. The resulting model outputs can also inform a detailed analysis of expected habitat types at the end of the Phase 1 implementation period.

However, because SLAMM is a relatively simple model, several ecosystem processes that are critical for restoration of inter-tidal habitats within the Herring River project area cannot be directly simulated. For example, SLAMM does not provide the ability to predict future inter-tidal habitats influenced by an estuarine salinity gradient. To overcome this for the Herring River application, direct output from SLAMM was filtered by output from the salinity module of the Environmental Fluid Dynamics Code (EFDC) hydrodynamic model (WHG 2012) to create subclasses of potential future habitat types influenced by fresh, brackish, and marine salinity ranges (WHG 2018). The SLAMM outputs depicted in Figures 5 and 6 reflect this filtering process.

The Herring River SLAMM application outputs are not precise projections of future wetland habitat types.[7] While marsh accretion will certainly occur as the restoration project is implemented, the rate of

[7] The Herring River SLAMM application predicts future habitat types using future tidal range and salinity levels without changes to the present marsh surface elevations. Since areas of the Herring River floodplain have subsided by up to three feet due to tidal restrictions and marsh ditching, SLAMM outputs are biased toward lower elevation habitats. This includes prominent areas of sub-tidal and inter-tidal mudflat habitats.

accretion is not known and cannot feasibly be modeled due to the inherent uncertainties associated with multiple variables that will affect accretion rates in the Herring River system. Marsh surfaces will increase in elevation as salt marsh vegetation recolonizes the floodplain and below ground biological activity in the root zone contributes to marsh elevation. Sluice gate management policies can influence marsh sediment accretion and elevation. The sluice gate management policy to maintain artificially low tide ranges for two or more growing seasons as plants become established is intended to hasten this process. In addition, the areas with the greatest degree of subsidence are expected to function as sediment "sinks", receiving higher levels of natural sediment deposition as tide range is increased and thereby accreting at faster rates than other zones. Similar to the "2G" gate management policy, the "Sediment" gate policy is also designed to favor increased sediment deposition and retention in subsided areas. Sluice gate management policies are described in Section D.2 of the Herring River Adaptive Management Plan found in Appendix L.

In summary, the specific habitat conditions predicted by SLAMM are not the precise desired or expected habitat outcomes for the project because they don't account for marsh accretion during restoration. [8]Nonetheless, the SLAMM outputs are useful for illustrating general habitat changes (i.e., from non-tidal to tidal marsh) and for targeting zones for enhanced monitoring and potential implementation of secondary management actions. The most subsided areas are expected to receive the greatest degree of sediment deposition as tidal flow is increased. If supported by hydrodynamic (i.e., tide range, hydroperiod) and sediment (i.e., total suspended sediment, soil bulk density, accretion and surface elevation) monitoring data, sluice gate policies and secondary management actions (such as supplementation of the sediment budget) will be implemented to favor increased marsh elevations. The objectives for management of subsided area is to establish marsh elevations that support as much inter-tidal vegetated habitat as possible.

Summary of Habitat Changes: Existing wetland habitat types are shown in Figure 5 for the Phase 1 project area. Potential future habitat types at the end of Phase 1 are shown in Figure 6. Figure 6 also depicts areas of moderate and severe subsidence, which were projected by SLAMM to be tidal flat and sub-tidal habitats, respectively. In general, moderately subsided areas are located in the Duck Harbor, Middle Herring River, and Lower Pole Dike Creek sub-basins. These areas, shown in brown on Figure 6, are approximately 1-2 feet below the expected inter-tidal zone where salt marsh vegetation can grow. Through natural accretion associated with restored tidal flow and potential management intervention, these areas are expected to eventually develop into inter-tidal salt marsh. Severely subsided areas, show in yellow on Figure 6, located primarily in the Lower Bound Brook sub-basin, are 2-3 feet below future inter-tidal elevations and will take longer and likely a greater degree of management to recover sufficient elevation.

[8] The rate of marsh accretion is not known and cannot feasibly be modeled due to uncertainties associated with multiple variables that will affect accretion rates in the Herring River system. Marsh surfaces will increase in elevation as salt marsh vegetation recolonizes the floodplain and below ground biological activity in the root zone contributes to marsh elevation. A tide gate management policy to maintain artificially low tide ranges for two or more growing seasons as plants become established could be implemented to hasten this process. Areas with the greatest degree of subsidence are expected to function as sediment "sinks", receiving higher levels of natural sediment deposition as tide range is increased and thereby accreting at faster rates than other zones.

Coverage of existing and potential future habitat types projected by SLAMM are compared for each sub-basin in Table 7. In addition to the moderate and severely subsided areas shown on Figure 6, elevations are expected to generally increase on marsh surfaces and decrease in marsh channels throughout the floodplain. The SLAMM outputs are biased toward lower elevation estuarine wetland types and should be considered approximate, relative projections of future wetland habitats. SLAMM analyses and other methods of predicting future conditions will improve as the project is implemented and data from the actual response of the system are collected and assessed.

Restoration will lead to significant transitions in habitat types system-wide, from freshwater to salt-tolerant wetland types. These include a 139-acre increase in tidal flat and a 193-acre increase in salt marsh. Virtually all other habitat types will decrease system-wide, including a 214-acre decrease in non-tidal wooded swamp and a 135-acre decrease in fresh emergent marsh. The relative degree of change in water level and salinity influences the particular habitat changes in each sub-basin.

Lower Herring River: Closest to the tidal opening at Chequessett Neck Road, salt marsh will increase by 37 acres, and tidal flat will increase by 20 acres. A comparable amount of cumulative decrease in acreage will occur in freshwater categories: non-tidal wooded swamp (loss of 41 acres), fresh emergent marsh (loss of 1.7 acres), brackish marsh (loss of 10 acres) and freshwater sub-tidal (loss of one acre).

Mid Herring River: The effects of increased salinity will also be apparent in the Mid Herring River sub-basin, with a 20-acre increase in tidal flat where none currently exists; and a 28-acre increase in salt marsh. There is also a 9-acre increase in subsidence zone, which is expected to develop into salt marsh. Corresponding decreases in the following types will occur: fresh emergent marsh (loss of 5 acres), shrub-scrub freshwater (loss of 4 acres), freshwater sub-tidal (loss of 6 acres); and non-tidal wooded swamp (loss of 41 acres).

Upper Herring River: In Upper Herring River, salt marsh gains 8 acres, while tidal flat and subsidence zone will increase by 9 and 36 acres, respectively. The latter two categories, totaling 45-acres, are expected to develop into salt marsh over time. Non-tidal wood swamp (loss of 15 acres), shrub scrub freshwater (loss of 8 acres) and fresh emergent marsh (loss of 24 acres) are the categories showing the largest losses in acreage.

Mill Creek: Limited restoration in Mill Creek will result in less dramatic changes in habitat types. A 13-acre decrease in non-tidal wooded swamp and a 5-acre decrease in freshwater emergent marsh will be offset by an 8-acre gain in salt marsh and a 12-acre gain in tidal flat.

Duck Harbor: In Duck Harbor tidal flat (24 acres), salt marsh (19 acres) and subsidence zone (5 acres) will appear where none previously existed. These gains offset decreases in fresh emergent marsh (20 acres), shrub-scrub freshwater (7 acres) and non-tidal wooded swamp (20 acres).

Lower Pole Dike Creek: Lower Pole Dike Creek will see a 40-acre increase in tidal flat and a 5-acre increase in subsidence zone. Salt marsh will increase by 82-acres where less than three acres currently exists. These gains offset decreases in less salt-tolerant habitat types, including losses of fresh emergent marsh (30 acres), shrub-scrub freshwater (13 acres) and non-tidal wooded swamp (80 acres).

Upper Pole Dike Creek: Tidal restoration will be prevented from entering Upper Pole Dike Creek. As a result, habitat changes will be very limited in that sub-basin, and mainly attributable to improved drainage.

Coverage of existing and potential future habitat types projected by SLAMM is compared for each sub-basin in Table 7. This table shows a dramatic change in dominant vegetation types from non-tidal wooded swamp, shrub-scrub wetlands, and fresh emergent marsh (totaling approximately 434 acres in the existing Phase 1 project area) to saltwater dependent marshes.

Table 7 also demonstrates that there will be no loss of wetland area and significant improvement to overall wetland function. The Project will restore degraded wetlands and improve natural wetland functions, restore native vegetation, enhance natural coastal processes, function and sediment movement. By restoring native tidal wetland habitat to large portions of the Herring River estuary, the Project will:

- To the extent practicable, given adjacent infrastructure and other social constraints, re-establish the natural tidal range, salinity distribution, and sedimentation patterns of the former 1,100-acre estuary;
- Improve estuarine water quality for resident estuarine and migratory animals including fish, shellfish, and water birds;
- Protect and enhance harvestable shellfish resources both within the estuary and in receiving waters of Wellfleet Harbor;
- Restore the connection between the estuary and the larger marine environment to recover the estuary's functions as (1) a nursery for marine animals and (2) a source of organic matter for export to near-shore waters;
- Remove physical impediments to migratory fish passage to restore once-abundant river herring and eel runs;
- Re-establish the estuarine gradient of native salt, brackish, and freshwater marsh habitats in place of the invasive non-native and upland plants that have colonized most parts of the degraded floodplain;
- Restore normal sediment accumulation on the wetland surface and the accumulation of below ground organic material (peat) to counter subsidence of the former saltmarsh and to allow the Herring River marshes to accrete in the face of sea-level rise;
- Re-establish the natural control of nuisance mosquitoes by restoring tidal range and flushing, water quality, and predatory fish access;
- Restore the expansive marshes and tidal waters that were once a principal maritime focus of both Native Americans and European settlers of outer Cape Cod in a manner that preserves the area's important cultural resources;

- Minimize adverse impacts to cultural resources during project construction and adaptive management phases;
- Minimize adverse impacts to surrounding land uses, such as domestic residences, low-lying roads, wells, septic systems, commercial properties, and private property, including CYCC;
- Educate visitors and the general public by demonstrating the connection between productive estuaries and salt marshes and a natural tidal regime;
- Improve fin fishing and shellfishing opportunities; and
- Enhance opportunities for canoeing, kayaking, and wildlife viewing over a diversity of restored wetland and open-water habitats.

Although the SLAMM output indicate that salt marsh habitat will increase from about 64 to 256 acres, both the functionality and quantity of salt marsh is expected to improve and increase by much larger degrees for two primary reasons. First, of the existing 64 acres recognized as 'salt marsh' in SLAMM, a large portion, approximately two-thirds, is dominated by the non-native invasive species common reed (*Phragmites australis*). Tidal restoration, especially in the Lower Herring River, will largely eliminate this species and allow the reestablishment of highly productive native salt marsh cord-grass (*Spartina alterniflora*).

Second, because SLAMM did not incorporate marsh accretion processes, the model is biased toward lower elevation wetland types and is overestimating the future coverage of tidal flats and subsided marsh surfaces. Large portions of these areas, totaling 259 acres of projected wetland habitat, will either accrete through natural marsh building processes or will be actively managed by the project to achieve the inter-tidal surface elevation, relative to restored tidal exchange, needed to support native estuarine plant communities. Therefore, expected coverage of salt marsh as a result of Phase 1 is approximately 350 acres, not 256 as indicated in Table 7.

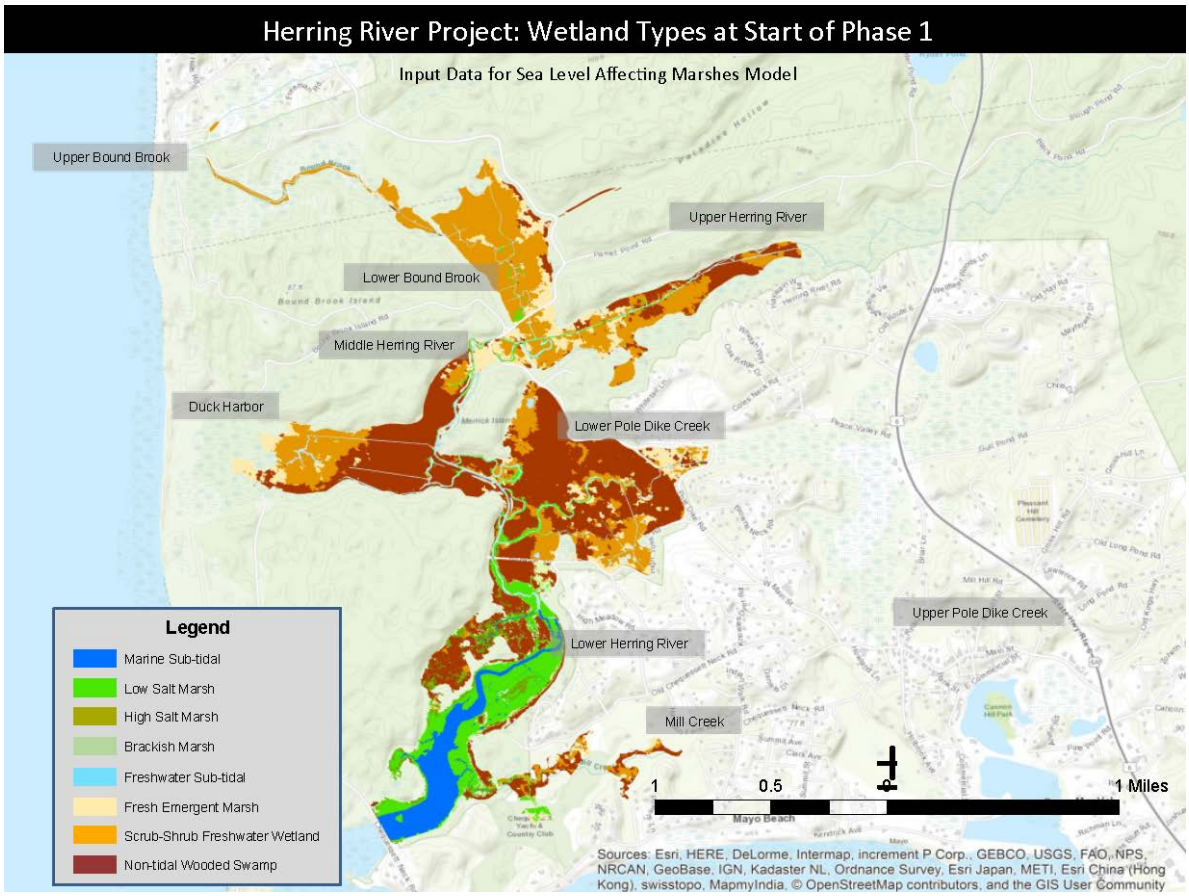


Figure 5. Wetland Types at Start of Phase 1

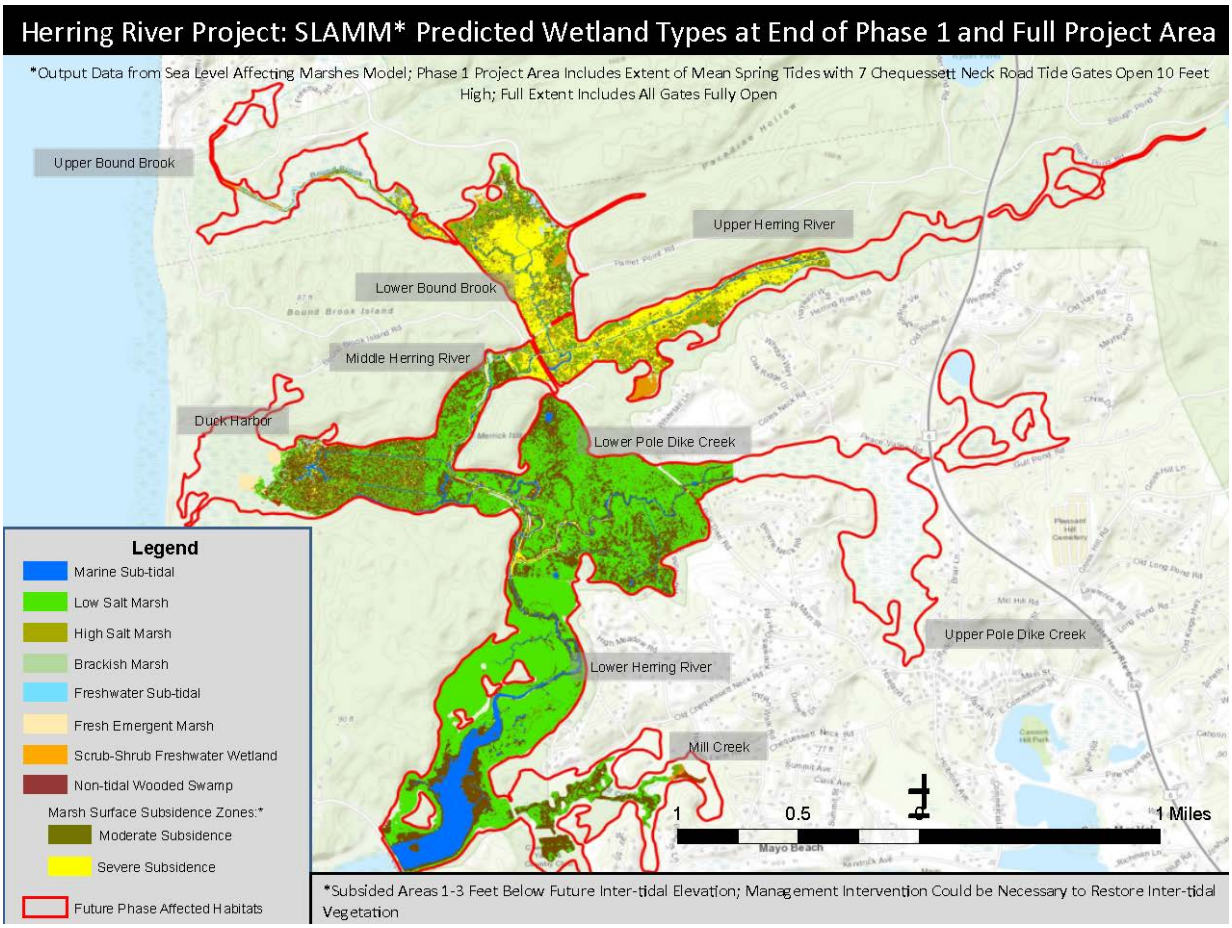


Figure 6. Wetland Types at the End of Phase 1 along with Boundary of the Full Project Area

Table 7. Existing and Proposed Wetland Habitat Types, Phase 1 Proposed Conditions (Acres)

MA DEP Wetland Resources Area Category	National Wetland Inventory Cover Class	Wetland Habitat Type	PHASE ONE	Lower Herring River	Mill Creek	Lower Pole Dike Creek	Duck Harbor	Mid Herring River	Lower Bound Brook	Upper Herring River	Upper Bound Brook	Totals
Bordering Vegetated Wetland	PFO	Non-tidal Wooded Swamp	Start	42.9	14.5	83.2	25.7	44.4	4.0	17.5	0.3	**232.6**
			End	1.5	0.8	2.8	5.8	3.8	1.4	2.2	0.2	**18.5**
Bordering Vegetated Wetland	PSS	Shrub Scrub Freshwater Wetland	Start	1.8	0.0	13.9	7.5	4.6	9.1	11.9	1.4	**50.2**
			End	1.3	0.4	0.6	0.1	0.3	0.6	3.2	0.1	**6.5**
Bordering Vegetated Wetland	PEM	Fresh Emergent Marsh	Start	1.7	5.1	30.4	21.1	5.7	47.2	32.9	8.9	**152.9**
			End	0.0	0.4	0.6	0.7	0.3	4.3	8.4	2.9	**17.6**
Salt Marsh	E2EM1	Brackish Marsh	Start	9.8	1.8	0.0	0.0	0.0	1.0	1.9	0.0	**14.6**
			End	0.0	0.0	0.0	0.2	0.0	0.5	0.5	0.2	**1.5**
Salt Marsh	E2EM1	Salt Marsh	Start	57.1	0.1	2.4	0.0	3.8	0.0	0.0	0.0	**63.5**
			End	93.8	8.5	84.9	19.0	31.5	9.8	7.9	1.4	**256.7**
Coastal Beach	E1UBL	Tidal Flat*	Start	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.2**
			End	20.8	11.5	39.4	24.4	19.7	13.5	8.8	1.5	**139.6**
Land Under Water	R1UBV	Freshwater Subtidal	Start	1.3	0.0	3.7	1.9	6.3	1.6	3.4	1.6	**19.7**
			End	0.0	0.0	0.0	0.5	0.1	1.5	0.3	2.7	**5.1**
Salt Marsh	E2EM1	Subsidence Zone*	Start	32.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**32.5**
			End	30.2	0.0	5.2	5.5	9.2	31.2	36.4	3.1	**120.9**
		Totals	**Start**	**147.2**	**21.5**	**133.6**	**56.2**	**64.9**	**62.9**	**67.6**	**12.2**	**566.0**
			End	**147.5**	**21.6**	**133.6**	**56.2**	**64.9**	**62.8**	**67.7**	**12.2**	**566.4**

* Tidal Flat and Subsidence Zone are artifacts of the SLAM Model and are expected to develop into inter-tidal salt marsh due to natural marsh accretion and active management. Accretion and other surface elevation changes could also occur after tidal restoration and could alter the composition of future wetland habitat types.

The SLAMM model output described above provides planning level information on estimated wetland habitat changes following the restoration of tidal flow at the end of Phase 1.

6.0 Project Description

6.1 Phasing

The Project's MEPA certificate (Appendix E) contemplates that the Project restoration would be implemented in phases as described below.

6.1.1 Phase 1

Phase 1 of the Project proposes to restore up to approximately 570 acres of tidal wetlands (Figure 1), of which 12 acres are located in Truro. During Phase 1, the new Chequessett Neck Road Bridge and sluice gates and the Mill Creek water control structure will eventually be configured to allow partial tidal flow into Herring River and Mill Creek up to a maximum water level specified for each respective basin. Thus, Phase 1 includes partial restoration of tides in the Mill Creek sub-basin following implementation of mitigation measures designed to prevent water intrusion impacts to CYCC. Partial tidal flow in Mill Creek will be controlled so that water levels will not reach any other private structures. Phase 1 will exclude tides from the Upper Pole Dike Creek sub-basin to protect several low-lying private properties that would require mitigation measures to prevent tidal flow impacts. The Pole Dike Creek crossing will be equipped with sluice gates that allow unidirectional flow (drainage only) while preventing any tidal flow from entering Upper Pole Dike Creek basin as a result of Phase 1 restoration. Maximum water levels in all areas of the estuary affected by Phase 1 tidal restoration will be kept below elevations that could impact any private structures that are not protected by Phase 1 protection measures.

Estimated mean water surface elevations in each sub-basin at the end point of Phase 1 are presented in Table 8. These water surface levels were established using multiple hydrodynamic modeling scenarios to determine the maximum Phase 1 area of restoration that can be achieved while preventing impacts to unprotected structures in the Mill Creek sub-basin. The overall Phase 1 restoration objectives will be achieved by the following actions:

- Under Phase 1, approximately 570 acres of the Herring River estuary will be restored by opening sluice gates on the new Chequessett Neck Road Bridge to a configuration (i.e., number of gates opened and size of openings) that achieves a maximum mean high tide in Lower Herring River of 3.6 feet North American Vertical Datum of 1988 (NAVD88)[9]. Chequessett Neck Road Bridge sluice gates will be opened incrementally over a number of years while careful monitoring of ecosystem responses is undertaken, and may be closed at any time if conditions warrant.

[9] All water levels in this document are in relation to North American Vertical Datum (NAVD) 1988, which in Wellfleet Harbor is approximately 0.3 feet above mean sea level and 5.2 feet above mean low water.

- Restoring approximately 21 acres (included in the 570 acres noted above) in the Mill Creek sub-basin with a water level of 2.5 feet during Mean High Water Spring (MHWS). [10] Hydrodynamic modeling projections indicate that for normal tides concurrent with a 100-year rainfall event, the peak water surface elevation would be 3.1 feet, and for a 10-year storm surge concurrent with a 100-year rainfall event, the peak water surface elevation would be 3.7 feet. This theoretical peak water surface elevation of 3.7 feet for a combined 10-year storm surge/100-year rainfall event has never been recorded. Even if it were to occur, this water surface elevation would not adversely affect any structures in the Mill Creek sub-basin.[11]

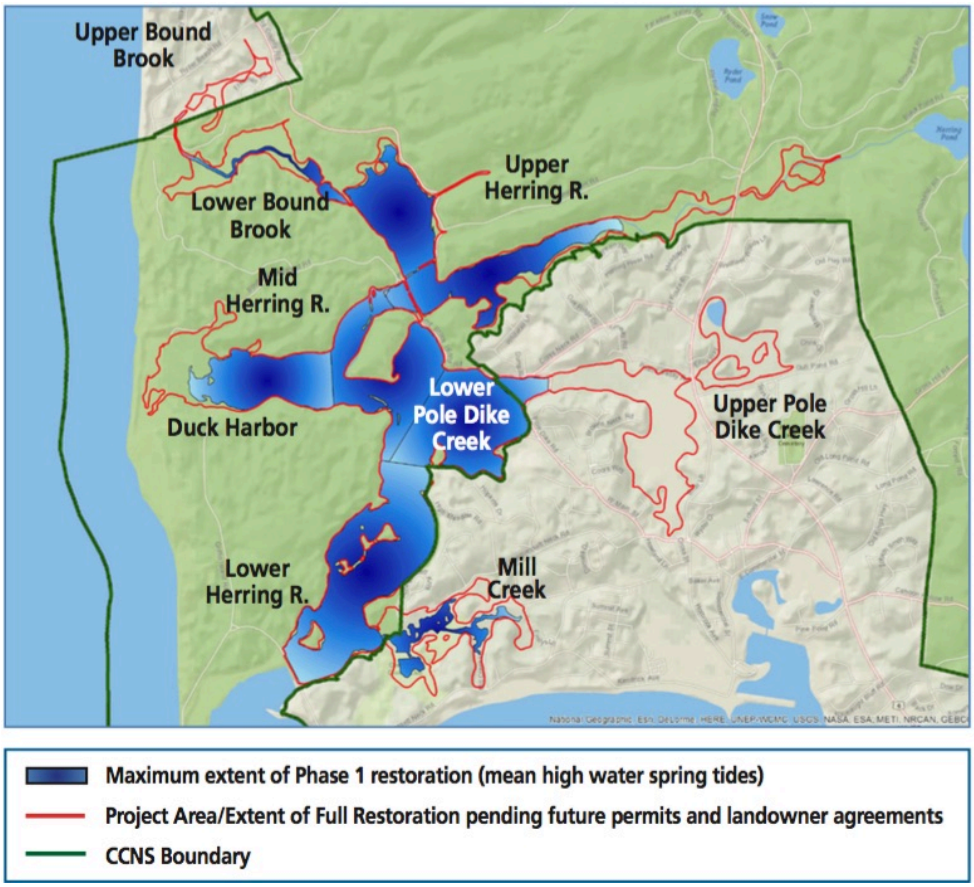


Figure 1. Extent of Phase 1 Restoration, Project Site Area of NOI

- Drainage will be significantly improved during Phase 1 by clearing channels to remove accumulated sediment in Mill Creek and by other measures that decrease low tides in the main river basin.

[10] Mean High Water Spring is a defined tidal datum that is the average of the successive pair of highest tides during spring tide range. This value was determined using the hydrodynamic model (Woods Hole Group, 2012) for the current 19-year tidal epoch.
[11] The combination of precipitation and surge conditions used in this analysis have never occurred in the observed historic record. This indicates the extreme nature of the conditions being considered and the overall conservative nature of the assessment. It is likely that these combination conditions may never occur. (Woods Hole Group, 2017)

- No tidal restoration is proposed for the Upper Pole Dike Creek sub-basin under current permit applications for Phase 1. Hydrodynamic models show that Phase 1 Project implementation will not cause an increase in peak water levels over existing conditions during combined tidal surge and precipitation storm events. (WHG 2015)

- Maximum water levels (including under storm conditions) during Phase 1 will be kept below the elevation of the lowest-lying unprotected structure. Once implementation begins, hydrodynamic models will be updated based on continuous monitoring of water levels as the sluice gates at the Chequessett Neck Road Bridge are opened incrementally to restore tidal flow. This will allow ongoing hydrodynamic model refinement during the early stages of tidal restoration to verify that the permitted maximum Phase 1 water levels for the main Herring River basin correspond with observed conditions.

If, during the early stages of Phase 1 tidal restoration, refined modeling indicates that the permitted maximum Phase 1 water levels for the main Herring River basin could cause water levels anywhere in the Project area to exceed elevations of the lowest low-lying structures, proactive adaptive management actions will be implemented to prevent impacts. Adaptive management actions could include allowing less than the permitted maximum Phase 1 water levels allowed in the main Herring River basin by closing sluice gates, drainage improvements within sub-basins, and/or additional on-site mitigation for low-lying structures (such as raising structures or constructing berms). Refined modeling results and adaptive management actions will be determined and implemented (if necessary) during the early stages of Phase 1 tidal restoration, well before water levels have any potential to impact low-lying structures.

Table 8. Estimated Average Water Surface Elevations and Acres Restored under Maximum Phase 1 Restoration Conditions by Sub-basin

Sub-Basin	Phase I		Full Restoration		
	Mean High Water Spring		Mean High Water Spring		Storm-of-Record
	Estimated Average Water Elevation up to (feet)	Area (acres)	Estimated Average Water Elevation up to (feet)	Area (acres)	Area (acres)
Lower Herring River	4.2	147	5.6	156	165
Mid Herring River	3.4	84	4.5	87	73
Lower Pole Dike Creek	3.8	103	4.8	106	146
Upper Pole Dike Creek	N/A	0	4.1	92	120
Mill Creek	2.5	21	4.7	71	80
Duck Harbor	3.5	68	4.3	108	119
Upper Herring River	3.0	68	3.4	103	132
Lower Bound Brook	2.5	63	4.2	71	86
Upper Bound Brook	2.4	12	2.9	56	148
Total		566		850	1,069

6.1.2 Future Phases

Future phases may propose to increase water levels above the maximum water level authorized in Phase 1 and may include increasing/initiating tidal restoration in the Mill Creek and Upper Pole Dike Creek sub-basins. Any future proposals to increase water levels above the maximum water level authorized in Phase 1 will require permit amendments or new permits as well as consent of property owners for site-based mitigation of potential structural impacts.

6.2 Class 1 Elements

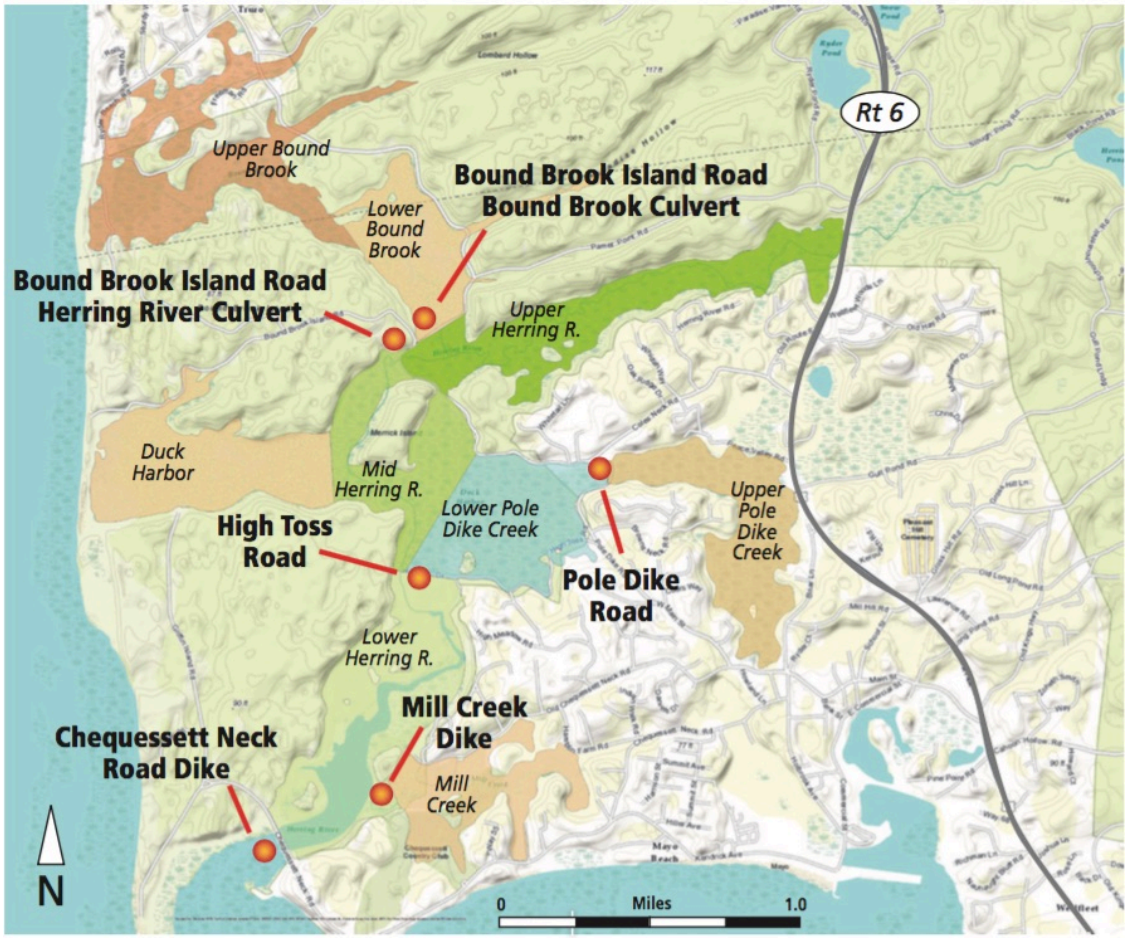


Figure 7. Project elements and Herring River sub-basins

Phase 1 of the Project will involve construction of all major water control infrastructure and allow tidal restoration to nearly two-thirds (570 acres) of the full restoration area (890 acres), while minimizing effects on private land. The extent of Phase 1 restoration is shown in Figure 1. Approximately 540 acres or 95% of the Phase 1 restoration area is within the Seashore boundaries and owned by the National Park Service.

The limits of disturbance include the footprint of the respective tide control element and any ancillary area necessary during construction (i.e., staging areas). The limits of disturbance for the Chequessett Neck Road Bridge and High Toss Road project elements occur entirely on land owned by either the Town of Wellfleet or National Park Service. Low-lying road elevation and culvert replacement, including the Pole Dike Creek water control structure, will have impacts beyond the Right-of-Way that will require temporary and permanent easements; the need for easements has been discussed with owners of the affected properties, each of whom has

provided written consent to show work on their property on permit applications (See Forms and Documents).

The Class 1 project elements are described below:

- Chequessett Neck Road Bridge (Section 6.2.1),
- Mill Creek Water Control Structure (Section 6.2.2),
- Removal of High Toss Road causeway (Section 6.2.3),
- Pole Dike Road Water Control Structure (Section 6.2.4);
- Elevation of low-lying road segments (along portions of Old County, Bound Brook Island, Pole Dike Creek and High Toss Roads and Way #672), and culvert replacements (Section 6.2.5);
- Reconfiguration of CYCC golf course (Section 6.2.6.1); and
- Low-lying property mitigation off Bound Brook Island Road (Section 6.2.6.2).

The scientific basis for the Project was largely drawn from a series of studies conducted by NPS researchers and others, beginning in the 1980s and summarized in the Herring River Conceptual Restoration Plan in 2007. A two-dimensional hydrodynamic model was developed that established the feasibility of tidal restoration and analyzed the effects of restoring tidal flow to different parts of the estuary. This included three different scenarios for sea level rise over the next 50 years and analysis of numerous combined storm events. The model was also used to develop and analyze restoration alternatives based on balancing degrees of tidal restoration with necessary flood prevention.

The project design is based on a thorough evaluation of any flood impacts to ensure that the Project including any proposed flood mitigation measures will not significantly increase flooding or storm damage impacts to the built environment, including without limitation, buildings, wells, septic systems, roads or other human-made structures or infrastructure, as required by Tidal Restoration Ecological Restoration Limited Project provisions at 310 CMR 10.24(8)(e)1 and 10.53(4)(e)1.

As described below, the Project includes multiple river and stream crossing replacements that are necessary to achieve tidal restoration goals. These culverts within Land Subject to Coastal Storm Flowage are currently restricting, or would eventually restrict, tidal flow. To evaluate the potential for eliminating tidal restrictions to the maximum extent practicable as required by limited project provisions for culvert replacements at 310 CMR 10.24(10) and 10.53(7) while also ensuring that the Project will not significantly increase flooding or storm damage impacts to the built environment, the Project team considered site constraints,

undesirable effects or risk, and the environmental benefits in comparison to the cost. Factors that were evaluated included:

- The potential for downstream flooding;
- Upstream and downstream habitat (in-stream habitat, wetlands);
- Potential for erosion and head-cutting;
- Stream stability;
- Habitat fragmentation caused by the crossing;
- The amount of stream mileage made accessible by the improvements;
- Storm flow conveyance;
- Engineering design constraints specific to the crossing;
- Hydrologic constraints specific to the crossing;
- Impacts to wetlands that would occur by improving the crossing;
- Potential to affect property and infrastructure; and
- Cost of replacement.

The impacts from these culvert replacements have been minimized and mitigation measures have been provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

Permit level design plans for each element are provided in Appendix A. Hydrodynamic modeling reports and geotechnical information can be provided if requested.

6.2.1 Chequessett Neck Road Bridge and Water Access Facility

Replacing the existing Chequessett Neck Road dike and culverts with a new bridge and electrically controlled sluice gates is the restoration project's main tidal restoration element. A portion of the existing earthen dike and three-bay culvert structure at Chequessett Neck Road will be removed, and a new 165-foot wide bridge with adjustable sluice gates will be installed. The new bridge and sluice gates will allow for the gradual transition from the current restricted tidal flushing regime to conditions more closely resembling the River's natural flow prior to construction of the Chequessett Neck Road dike. The increased tidal flow made possible by the bridge and WCS will improve the health and functioning of wetland resources identified as significant under M.G.L. 130 §40.

As described in Section 6.2.1, the bridge and sluice gate design was selected following an analysis of possible structural alternatives to replace the existing dike and tide gates and to determine which would be best suited to achieve the restoration objectives[12].

Based on this analysis, a new pre-cast box beam bridge structure equipped with adjustable sluice gates and removable panels was selected as the preferred design concept. This proposed

[12] An evaluation of design options, geotechnical analyses and scour/wave analyses can be found in Appendix K of the FEIS/FEIR (25% Engineering Design Report Herring River Tidal Restoration Project).

structure is comprised of two outer spans of approximately 49.5 feet and one center span of approximately 66 feet, for a total hydraulic opening potential of approximately 165 feet. There would be 4-foot wide piers at both ends of the bridge separating the inner and outer spans. The number of spans and their respective lengths were determined based on relative span length ratios required by the Massachusetts Department of Transportation (MassDOT) LRFD Bridge Manual. The design includes adequately sized stone armor embankment slope protection and channel bottom scour protection designed to resist scour and wave action. Plans for the innovative bridge/tide control structure are found in Appendix A.

The structure consists of multiple sluice gates[13] and panels including: slide gates, combination flap/slide gates, and removable concrete panels. Per the management and governance principles set forth in the MEPA Certificate on the FEIS/FEIR, restoration will be achieved through incremental removal/manipulation of these gates and panels would be opened incrementally according to in the decision analysis process reflected in the HRAMP (see Section 6.3 and Appendix L).

Several alternative gate types/configurations and operating scenarios were evaluated to determine the optimal number/type of gates to be constructed with the proposed structure (WHG 2013). Numerous gate types and configurations were also analyzed, each offering varied features, and functionality, and requiring varying levels of operation and maintenance. Based on the evaluation, it was determined that the preferred gate type, configuration, and operation would include:

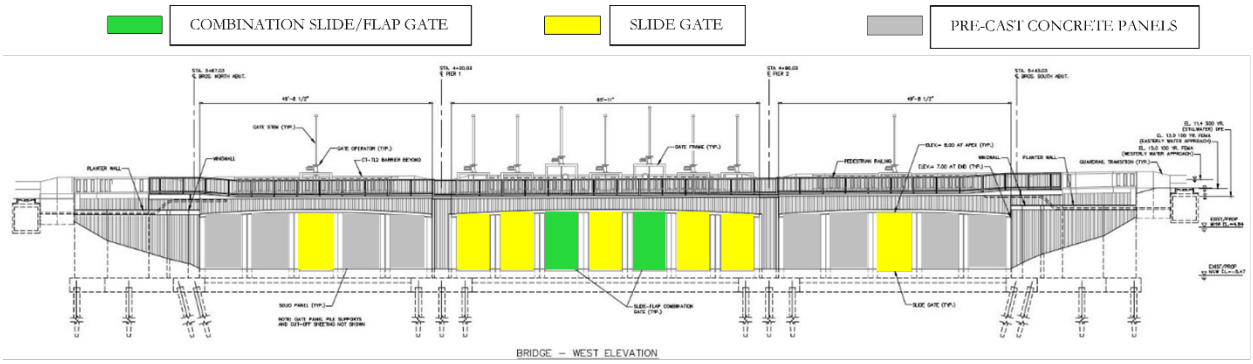
- A total of 2 combination slide/flap sluice gates (shown by the green areas in Figure 8). The combination gates would be 6 feet wide and 10 feet in height (at maximum hydraulic opening) and positioned in the center span. The combination gates provide increased control of the low water, mean tide level, and tidal range within the Herring River system. The combination gates allow for additional flow out of the system, providing the ability for non-linear exchange of water flux that can shift the mean tide level and allow for increased drainage capacity if desired. Additionally, the two combination flap/slide sluice gates will allow the new bridge structure to approximate existing conditions at the current dike, which consist of a single slide gate and two timber flap gates.

- A total of 7 slide gates (shown by the yellow areas in Figure 8). The slide gates would also be 6 feet wide and 10 feet in height (maximum hydraulic opening). Five of these gates would

[13] The sluice gate system consists of slide gates that are six feet wide by ten feet high and raised and lowered on a screw. When closed at their lowest setting, these gates are fixed in place and block both ebb and flood flows. When raised, the height of the opening determines the volume of water that can pass through in each direction. Seven of these gates are incorporated into the structure. Similar to the slide gates, combination slide-sluice gates are also raised and lowered on a screw; however the gates are mounted on hinges, opening toward the ocean side allowing ebb flows to drain even at their lowest setting. This means that no matter how the other gates are set, these gates will open during an ebbing tide and more water will flow out of the river into the harbor then will flow in. Two slide-sluice gates are incorporated into the structure. This definition applies to gates as shown on plan sets included in Appendix A.

be positioned in the center span, while one gate would be contained in each of the outer spans. Although only 6 gates would be required for necessary tidal control, a seventh gate has been added for redundancy and in case of operation failure of one of the other primary gates. This additional gate would also allow for continued operation of a damaged or compromised gate structure that is scheduled for, or undergoing, repair or maintenance.

- A total of 8 removable pre-cast concrete panels (shown by the gray areas in Figure 8). These panels would be approximately 12.5 feet wide. There would be 4 panels in each of the outer spans.



Source Fuss & O'Neill

Figure 8. Box Beam Bridge Layout with Tidal Control Structures for Preferred Alternative

This proposed configuration was developed by identifying the maximum and minimum water levels attainable within the Herring River system given the forcing tidal levels in Wellfleet Harbor using tidal control. The flexibility of this design model allows for any feasible water level to be attainable through the range of adjustable sluice gate openings and/or removed panels enabled by the proposed design configuration. A draft Operations and Maintenance (O&M) Plan is provided in Appendix H; the final O&M plan will be developed as part of final design. The selection of sluice openings will be guided by the HRAMP.

Like the existing Chequessett Neck Road dike, the new design is not proposed to serve as a designated FEMA flood control structure. The new bridge will have a final surface elevation similar to the existing dike (sloped between 11.7 and 12.6 feet, compared to the present 11.3 feet). According to the Flood Insurance Rate Maps (FIRM) released by FEMA, during 100-year storm event tides when the current CNR dike would be overtopped, floodwater also would enter the Herring River floodplain at other locations along Cape Cod Bay. Therefore, increasing the height of the Chequessett Neck Road structure would not prevent flooding in the estuary during a storm surge of this magnitude.

The proposed bridge/sluice gate structure has been reviewed by MassDOT and is designed to comply with the requirements of the MassDOT Load and Resistance Factor Design (LRFD) Bridge Manual and the American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design as well as the following design criteria:

- A 75-year design life with proper maintenance;
- To minimize temporary and long term environmental impacts;
- To provide a safe and secure mechanism for adjusting and controlling tidal flow;
- To allow for the reconfiguration of the bridge/sluice gate structure to provide maximum hydraulic opening measuring 10 feet in height by 165 feet in width;
- To provide a stream bed invert elevation of -4.0 feet;
- To provide a structure that can withstand, at a minimum, a potential sea level rise of up to 2.1 feet[14];
- To provide a structure capable of providing similar or enhanced public access;
- To provide a structure requiring minimal maintenance and low future costs;
- To design the bridge and sluice gate structures to withstand significant lateral loads from tidal fluctuations, storm surge events (such as the 100-year and 500-year frequency flood events), and to withstand a saltwater environment with wave action.

The new bridge will also include enhanced parking, pedestrian access, and viewing/fishing platforms, improved stormwater management, and improved aesthetics from burial of overhead utilities (Figure 9).

[14] With respect to sea level rise, because sluice gates will remain in place at the new Chequessett Neck Road dike throughout Phase 1, the project will maintain the ability to control water levels throughout the Herring River system irrespective of changes to tidal hydrology in Wellfleet Harbor and Cape Cod Bay. No matter how sea level rise is manifested in the region, high tide levels will be limited in the river during the Phase 1 period to the elevations cited on page 42/table 8. Future effects of sea level rise occurring if or when sluice gates are removed and tidal control is no longer possible will be addressed if or when permits are sought for subsequent project phases. Over a longer time frame, higher sea levels will need to be considered as the town plans for a replacement structure in 50 to 75 years.

Source: Fuss & O'Neill

Figure 9. Visualization of Chequessett Neck Road Bridge, viewing South

The addition of public water access facilities was also included in the design of the Chequessett Neck Road Bridge to provide safe portage of hand carried recreational watercraft between Wellfleet Harbor and Herring River. The public access will entail an ADA-compliant access from a new Duck Harbor Road parking area with stepped access structures from the bridge, as described in further detail below.

- This alternative proposes a permeable ADA-compliant ramp consisting of Turfstone™ or approved equal from the proposed off-road parking area to a point along the base of the Chequessett Neck Road embankment that is just above the approximate post-conditions MHW level (~El. 5.0). At this point, the ramp will transition to a relatively level ADA compliant raised/elevated boardwalk (to minimize impacts to on-site non-tidal Bordering Vegetated Wetlands (BVW), Salt Marsh, and Land Under Ocean) with slopes of five percent or less. To avoid potential concerns associated with installing timber boardwalk decking below the MHW level and seasonal maintenance concerns for floating dock structures, a fixed deck system consisting of precast concrete decking will be used (e.g. Permatrak™ or approved equal). The decking will be supported on timber piles. This type of elevated boardwalk system will result in less impact to resource areas.

- This alternative also proposes water access from the bridge via a set of non-ADA compliant two-step park style concrete stairs on both sides of the roadway embankment. Two-step park style stairs are stairs that are constructed with extra wide treads that result in a shallow

or gentler incline/decline (typical to stairs constructed in parks or recreational areas). Level landings are proposed at the top of the stairs that will be aligned with the proposed crosswalk; the Bridge's sidewalks will be extended to these stair landings; and an additional concrete transition post will be provided to allow an opening in the guardrail system for stair access.

- Due to limited space (and roadway guardrail clearance requirements), the proposed concrete steps (to the water) will project from the existing slope and be supported by concrete retaining walls along both sides. Stainless-steel railings will run along both sides of the steps. At the base of the stairs, a concrete landing will provide a launching surface located slightly above the post-conditions mean high water (MHW) level at an approximate elevation of ~El. 5.0.

- To provide access at water levels ranging between post-conditions MHW and a level slightly lower than the mean tide level, concrete landings (pitched to drain) are proposed at incremental elevations down to approximately 0.9 feet above the project mean low water level (MLW). The locations of the proposed stair/steps and launching platforms were selected to provide a reasonable distance from the proposed Bridge's gate inlets/outlets where velocities due to tidal flow are not expected to be dangerous for portage.

6.2.2 Mill Creek Water Control Structure

Phase 1 includes partial restoration of the Mill Creek sub-basin, up to approximately 21 acres of tidal wetlands. A water control structure equipped with slide/flap tide sluice gates will be constructed across Mill Creek near the entrance to Lower Herring River. This structure will enable a controlled re-introduction of tidal exchange while protecting structures on private properties. The proposed Mill Creek water control structure will allow for a significant improvement of tidal range, salinity, water quality, salt-marsh communities and aquatic and terrestrial animal habitat within the Mill Creek watershed.

The design of the structure and sluice gates was selected following an analysis of several design alternatives. Each alternative was evaluated based on environmental, constructability, aesthetic, sustainability, and cost factors. After evaluation of costs and benefits, a single sheet pile wall was selected. Design plans depicting the layout, dimension, sluice gate structure (capable of allowing controlled, bi-directional tidal exchange between the Herring River and Mill Creek), and access road are found in Appendix A. Design and layout for the structure was revised to be contained entirely within the Seashore boundary, with the exception of an approximately 70 linear-foot section at the entrance to the Mill Creek Water Control Structure access road.

The new Mill Creek water control structure will be constructed with a crest height of 9.5 feet. This is based on a maximum, storm-of-record water surface elevation of 7.5 feet on the downstream side of the structure, thereby providing two feet of freeboard against an extreme storm event. The structure will extend approximately 520 feet across Mill Creek; the design

contains five culverts or openings, each five feet wide, for a 25-foot wide opening in total. These openings will be outfitted with an adjustable combination slide/flap gate, as described below. The sluice gates can be completely closed to inflowing tidal water, if warranted, based on predicted severe storm conditions. In such a case, freshwater would still be able to drain out of Mill Creek as the tide recedes.

Heavy-gauge steel sheet piles are proposed, the most common material used for sheet pile walls due to its inherent strength, which increases service life, availability and familiarity to local contractors, which reduces costs. Since a steel sheet pile wall at this location would be subject to potential corrosion, the wall will be specified to use weathering steel or ASTM A-690 high-nickel steel with a sacrificial thickness. Sacrificial thickness is an accepted engineering method for providing corrosion protection in a marine environment. The sacrificial thickness will allow the wall to be subject to corrosive action over the life of the wall and not result in a structural failure of the sheet pile construction. This approach was selected to minimize future maintenance, operating efforts and costs.

A cantilevered steel walkway platform will be attached to the upstream side of the structure to provide a safe means for staff completing inspections, maintenance or other operating functions. This platform will be secured from access by unauthorized users and be designed to comply with relevant OSHA requirements.

Scour protection in the form of soil-filled, vegetated stone armor will be installed immediately upstream and downstream of the structure and its hydraulic opening. Soil-filled, vegetated articulated concrete block matting will be installed to provide a stable surface along the sheeting for equipment to access the hydraulic opening to remove debris and complete other required maintenance. These measures are critical to protect the foundation and stability of the structure, and to assure that maintenance staff can safely complete required activities to maintain unobstructed flow through the structure's hydraulic opening.

The structure's tidal control mechanism will consist of five electrically-operated, rising stem combination slide/flap gates, each opening measuring approximately five feet in width by six feet in height. The gates will be mounted to a cast-in-place concrete structure, which will be structurally integrated into the steel sheet structure. This concrete structure will be supported by a foundation of timber piles and will be configured with a narrow (less than three feet wide) concrete apron forming an invert where channel flow transits across the footprint of the structure, to avoid scour and other potential damage. Functional benefits provided by the gates include the following:

- Provide a safe and secure mechanism for adjusting and controlling flow into and out of the Mill Creek sub-basin.

- Provide mechanisms that are easily operated, allowing persons of varying technical background and physical ability to operate the gates.

Access to the water control structure will be provided by a 12-foot wide drive that will extend approximately 1,200 feet from Old Chequessett Neck Road to a location near the north end of the structure, where a turn-around area will be constructed to allow adequate room for operation/maintenance vehicle maneuvers. A security gate will be provided at the access drive's entrance to prevent access from unauthorized vehicles.

Proposed Project elements have been designed to meet the following objectives:

- Provide a 75-year design life with proper maintenance;
- Minimize temporary and long-term environmental impacts;
- Accommodate modifications to withstand potential future overtopping;
- Facilitate ease of operation and maintenance; and
- Minimize future maintenance costs.

Ancillary work includes grading and stabilization of the tidal channel immediately adjacent to the structure, dredging of accumulated sediment within existing tidal channels upstream and downstream of the structure, and removal of an earthen dike remnant on the north side of the channel upstream of the proposed structure. A draft O&M plan is provided in Appendix H. The final O&M plan will be developed as part of final design.

6.2.3 Removal of High Toss Road Causeway

The Herring River passes under the western portion of High Toss Road, the second road that crosses the river, approximately one mile upstream from Chequessett Neck Road (Figure 7). The western portion of the road is an earthen berm causeway that was built across the salt marsh in the 19th century. It is unpaved and infrequently traveled by vehicles. The river crosses the road through a five-foot diameter steel culvert. Hydrodynamic modeling has shown that the culvert will cause a major restriction when tidal flow is increased at Chequessett Neck Road. The causeway would be overtopped daily by seawater under any restoration scenario and would impede ebb tide drainage.

Project proponents considered several alternatives to protect the causeway portion of the road from tidal flow; these alternatives ranged from elevating the road above the level of the predicted high tides to removing it entirely. The Wellfleet Selectboard voted to support removal of the earthen causeway and culvert crossing of Herring River.[15]

[15] Wellfleet Selectboard motion 216-592, May 24, 2016

Complete removal of the earthen causeway and culvert crossing of Herring River at High Toss Road is a tide control component of the Project. A new Herring River channel will be excavated to its prior width of approximately 30 feet to match the natural channel width and depth above and below the roadway crossing for tidal water conveyance; the new banks of the River will be stabilized and treated appropriately to facilitate recovery of salt tolerant vegetation. Further channel modifications, as may be necessary to achieve Project goals, will be carried out under the HRAMP (Section 3.5).

Work along High Toss Road will then progress from west to east, with the fill within the floodplain of Herring River removed and stockpiled elsewhere within the work area. No over-excavation or soil amendments are proposed within the footprint of the earthen causeway. Upon reaching the proposed final grade, all disturbed areas will be treated appropriately for establishing salt marsh vegetation.

6.2.4 Pole Dike Road Water Control Structure

Based on hydrodynamic assessment of post-restoration conditions (WHG 2015), it was determined that by raising Pole Dike Road to a sufficient elevation and increasing the culvert opening, as described below, a sluice gate structure should be installed at the culvert to restrict flow into Upper Pole Dike Creek. Accordingly, the Pole Dike Road culvert has been designed to include a combination slide/flap gate to restrict flood tide flow. Therefore, Pole Dike Road will function similarly to a coastal levee during storm events up to the storm-of-record.

Slide/flap gates are structures that combine the features of a slide gate with the functionality of flap gate by allowing the sliding leaf to rotate on hinges at the top of the gate opening. This functionality is typically provided to allow storm flow drainage from a tidal estuary, while limiting tidal surge or high tides into an estuary that could otherwise result in damage to the built environment. For example, when the gate is partially open, the open area below the gate leaf allows for bi-directional flow, while the upper portion of the gate opening (where the leaf is located) restricts flow in one direction to a greater degree. As the gate moves to a more fully closed position, the open area (and bidirectional flow) decreases, resulting in the flow becoming predominately or entirely one-directional due to the function of the flap gate. Each gate will be able to be locked in a closed or open position for security.

The proposed design at the Pole Dike Road crossing is to raise the roadway at the crossing from 4.7 feet to 8.8 feet and to increase the size of the culvert from a 36-inch diameter pipe to an eight-foot high by seven-foot wide box culvert with a combination flap/slide gate (Appendix A). The proposed freeboard for this roadway segment is two feet. The combination flap/slide gate will be able to regulate tidal flow to the Upper Pole Dike sub-basin, thereby restricting flood tide flow and limiting water surface elevations. A draft O&M Plan is provided in Appendix H. The final O&M Plan will be developed as part of final design. This structure will protect against flooding when water elevations are up to two feet above the storm-of-record.

No tidal restoration is proposed for the Upper Pole Dike Creek sub-basin as part of Phase 1. Hydrodynamic models show that water levels (including under storm conditions) during Phase 1 will not affect the lowest-lying unprotected structure with the Pole Dike Road water control structure in place. Based on modeling, at full Phase 1 tidal flow, the peak water level during a combination 10-year storm and 100-year precipitation event is lower than existing conditions for the same event.

6.2.5 Low-lying Road Elevation and Culvert Replacements

The Project area consists of several low-lying roadways that are vulnerable to high tide water levels with restored tidal flow. Pole Dike, Bound Brook Island and Old County Roads form a generally north-south roadway extending between Wellfleet Center and South Truro, crossing Pole Dike Creek, Herring River, Bound Brook and tributaries. High Toss Road and Way #672 are unpaved roads that lie to the west (Figure 7).

To prevent overtopping during the storm-of-record, segments of these roadways will be elevated to a minimum of six inches above the predicted water surface elevation during the modeled storm-of-record. The preference of the Town and community is to retain the rural feel of the existing roads; therefore, Project designs maintain the existing open drainage system of swales, ridges, and slopes that fit the natural contour of the land. Design plans are presented in Appendix A.

Geotechnical investigations were conducted to assist in the development of construction plans. To accommodate the increase in road elevation, a side slope treatment of 3:1 (horizontal to vertical) ratio was selected to blend the side slopes into existing grades, and avoid abrupt, steep transitions between the road and adjacent land for the safety of pedestrians, cyclists, and equestrians. Subgrade materials will be installed within and along the sides of the road to achieve proposed elevations. Except as noted below, 3:1 side-slopes will be installed to provide an embankment that can be loamed and stabilized with native, non-invasive vegetation without concern about slope stability, and requiring limited scour protection. The replacement of vegetation disturbed by the roadwork will be designed to maintain and enhance the integrity of the natural vegetation.

Construction of the elevated road will require earthwork on both sides of the travelway to allow the raised travelway grades to meet the existing ground elevations. Where necessary, level spreaders – a shallow depression with a level lip - will be placed between the shoulder and adjacent cut slopes to capture seepage and runoff, reduce its velocity and encourage sheet flow prior to crossing the travelway surface. Level spreaders will be installed in accordance with the Massachusetts Stormwater Handbook. Runoff that does not overtop the lip of the level spreaders will infiltrate.

The Project will fully comply with Stormwater Management Standards requiring the development and implementation of a construction-period erosion and sedimentation control

(E&SC) plan, a pollution prevention plan, post-construction O&M Plans, and the prohibition of illicit discharges.

The draft O&M Plan for low-lying road culverts (Appendix H) includes stormwater management practices on low-lying roads. A final O&M Plan will be developed as part of final design.

6.2.5.1 Elevation of Pole Dike, Bound Brook Island and Old County Roads and Replacement of Associated Culverts

Pole Dike, Bound Brook Island and Old County Roads combined form approximately 24,500 linear feet of roadway within the historic floodplain. Of this total, approximately 10,850 linear feet of roadway will be raised. Elevating these roads also requires widening the road bases and replacing seven (7) existing culverts. The 10,850 linear feet (approximately two miles) of roadway is not continuous and is made of multiple smaller segments. While impacts to wetlands will be necessary to widen road bases, the impacts are far outweighed by the overall restoration of wetland functions associated with the Project as a whole. A traffic management plan will be implemented to minimize disruption to residents and businesses.

A geotechnical investigation of these existing low-lying road segments and associated culverts was conducted to assist in the development of construction plans, including the cut and fill operations. The existing road surface elevation in low-lying areas ranges from 2.0 to 5.2 feet, which will be elevated to between 5.3 and 8.8 feet. These final road surface elevations include an increment above the above the modeled elevation of storm-of-record (SOR) within these segments, which ranges between 3.72 to 6.82 feet; this “freeboard” level is generally 0.5 ft above the SOR elevation except in the vicinity of the Pole Dike Creek crossing, where the elevated roadway serves as a dike and 1.7 feet of freeboard is provided.

The existing roadway has an average lane width of 10.5 feet. For safety purposes, the proposed travel lane width was increased to 11 feet. The proposed alignment is based upon two (2) 11-foot paved travel ways and two (2) 3-foot unpaved shoulders. The proposed design maintains a consistent cross-section design for the elevated roads: two 11-foot travelways and two 3-foot unpaved shoulders. The MassDOT design criteria (2006) recommend a travel lane width of 10-foot to 12-foot.

As part of the roadway elevation, existing culverts will be replaced with upgraded pipes or box culvert structures. The box culverts are designed to include a headwall and wing walls; the wing walls are necessary due to the height of the culvert opening and slope down from the road towards the water surface. At the Bound Brook Island Road culvert at Herring River, the preferred 3:1 side slope ratio was not attainable; gabion basket walls are included in the design at this location on each side of the road, where the wing walls are set close to the edge of the road.

The criteria used to size the seven proposed replacement culverts were based upon recommendations from Woods Hole Group [WHG January 23, 2015] except for the culvert associated with access to a private property located off of Bound Brook Island Road. The WHG memo did not include specific sizing recommendations for the culverts at Paradise Hollow and Lombard Hollow because these two areas have a limited role in restoration due to the size of the basins and distance up into the system; however, the WHG recommended the culverts be increased to the 18-inch to 24-inch diameter range. In the absence of criteria, Louis Berger utilized MassDOT and Town standards for the design of the three culverts. MassDOT has a minimum recommended cross culvert dimension of 18-inches; and the recommended criteria for local, rural roads is to convey flows from 25- year storm event.

Data on the existing and proposed low-lying roadway culverts are presented in Table 9. As previously stated, the Pole Dike Road culvert at Pole Dike Creek has been designed to have a sluice gate.

Culverts will be replaced as part of road construction. The box culverts will be installed over a layer of geotextile fabric and 12 inches of crushed stone within common borrow and will be covered by 12 inches of select gravel and flexible pavement. The 24-inch reinforced concrete pipes will also be installed over geotextile fabric and 12 inches of crushed stone and will be overlaid with 24-inches of select gravel and flexible pavement. The Project will comply with applicable stream crossing standards to the maximum extent practicable. A draft O&M plan for culvert maintenance is provided in Appendix H. The final O&M Plan will be developed as part of final design.

A temporary bypass for water flow will be required at each stream crossing during culvert installation. The hydraulic capacity of the bypass conveyance will meet or exceed the capacity of the existing culverts. Dredging to install the replacement culverts, associated wing walls, gabion basket walls, riprap apron, and foundation support for each of these crossings include removal of existing material beneath the structure and riprap locations.

Construction will be performed in stages to manage traffic flow during construction. A Maintenance Protection of Traffic Plans was developed in accordance with the Federal Highway Manual Uniform Traffic Control Devices. The Detour and Traffic Plans, which show all required road closures and detours, are contained in Appendix A.

Table 9. Existing and Proposed Low Lying Roads Culvert Size and Elevation

Location	Existing Culvert	Existing Invert Elevation (ft)	Existing Road Elevation (ft)	Proposed Road Elevation (ft)	Proposed Culvert Height by Width (ft)	Proposed Invert Elevation (ft)	Proposed Crown Elevation (ft)	Annual High Water (ft)	Storm-of-Record (ft)
Pole Dike Road at	36-inch diameter	-1.2	4.7	8.8	8 by 7	-1.2	6.8	4.9	6.8

Location	Existing Culvert	Existing Invert Elevation (ft)	Existing Road Elevation (ft)	Proposed Road Elevation (ft)	Proposed Culvert Height by Width (ft)	Proposed Invert Elevation (ft)	Proposed Crown Elevation (ft)	Annual High Water (ft)	Storm-of-Record (ft)
Pole Dike Creek									
Bound Brook Island Road at Herring River	54-inch diameter	-2.7	4.5	7.7	8 by 6	-2.7	5.3	4.7	6.4
Bound Brook Island Road at Bound Brook	24-inch x 24-inch	-2.2	2.5	6.4	6 by 6	-2.2	3.8	4.1	5.5
Old County Road Paradise Hollow	12-inch diameter	0.7	3.3	6.5	24-inch	0.3	2.3	4.1	5.8
Old County Road Lombard Hollow (S)	Unknown	1.1	4.5	5.9	24-inch	1.0	3.3	2.9	3.7
Old County Rd Lombard Hollow (N)	Not Found	Not Found	4.7	5.4	24-inch	1.1	3.3	2.85	3.72
Residential Driveway off of Bound Brook Island Road	Not found	Not found	4.2	7.2	24-inch	0.0	2.3		6.70

Source: Louis Berger/WSP

Work in the Town of Truro

A total of 617 linear feet of roadway will be elevated in three sections; two of these sections of roadwork are within the boundary of the Seashore and include replacement of one culvert. The other section is on Town-owned and private property on the west side of Old County Road and within the ROW on the east side; work at this location includes replacement of one culvert.

The town-owned property is lot 59-66, 133 Old County Road. Proposed activities include elevation of the roadway and replacement of a culvert.

The privately-owned property is lot 59-108, 125A Old County Road. Proposed activities include grading the embankment associated with the elevated roadway in the adjacent ROW.

6.2.5.2 High Toss Road Elevation

Following removal of the causeway across the historic floodplain as described in Section 3.2.3, a portion of High Toss Road will be raised to prevent flooding of the roadway and to maintain access to four residential properties located on High Toss Road and Way #672. Approximately 1,100 linear feet of High Toss Road will be elevated to 0.5 feet above the elevation of the modeled storm of record of 7.0 feet, for a minimum travel way elevation of 7.5 feet at the proposed centerline.

Design standards for the High Toss Road were developed using the Wellfleet Subdivision Rules as the basis; these standards were reviewed by and received concurrence of the Wellfleet DPW in January 2016. The proposed road width of 15 feet is similar to the existing width, and the road will remain unpaved with no curbs. Roadway elevation will begin at the eastern edge of the wetland plain restored by the removal of the causeway, where it will transition up at a 3:1 slope to the saw-cut end of the High Toss Road travel way at Way #672. Elevation will proceed east past Hopkins Drive, then transition down at an 8:1 or gentler slope to meet the existing roadway surface.

The northern end of Hopkins Drive slopes down steeply to its intersection with High Toss Road, and runoff that currently is not collected runs across and erodes the gravel High Toss Road surface. Approximately 65 feet of Hopkins Drive will be raised approximately three feet to match the proposed elevation of High Toss Road. A stormwater management system was designed to improve conditions by reducing the volume of uncontrolled runoff and increasing retention of suspended solids. The infiltration capacity of the existing drainage system will be improved to capture and infiltrate the 10-year, Type III, 24-hour design storm event.

The four existing leaching catch basins at the bottom of Hopkins Drive will be replaced with four solid- bottom, deep sump catch basins equipped with hooded inlets. The four new catch basins will be connected to a ChamberMaxx® infiltration bed installed below the Hopkins Drive pavement via 10-inch HDPE header pipes at each end of the chamber. Three rows of chambers will be used, and the footprint of the chamber system and surrounding stone will be approximately 16 feet wide by 31 feet long (496 square feet). Two existing leaching catch basins located further up Hopkins Drive will also be replaced with solid, deep sump catch basins equipped with hooded inlets. The new catch basins will be connected to three 88-inch diameter dry wells. A draft O&M plan for Hopkins Drive drainage improvements is provided in Appendix H; the final O&M plan will be developed as part of final design.

6.2.6 Private Property Mitigation

6.2.6.1 Way #672 Road Elevation

As a result of the Project, storm-driven water surface elevations, as well as certain tide events, are expected to increase to a level that could temporarily overtop Way #672 at full restoration and affect access to two private residences located at 25 and 27 Way #672. Therefore, sections of Way #672 and of the driveways to the two residential properties require elevation to prevent flooding. In addition, a private water supply well serving 27 Way #672 would need to be relocated.

The road layout identified on the Town of Wellfleet's Tax Assessor's map as Rainbow Lane is approximately 350 feet long, 40 feet wide and terminates in an 80-foot diameter cul-de-sac that was never installed. The layout overlays an existing 10-foot wide unpaved road with vegetation on either side that continues south beyond the layout boundary, across a privately owned property onto NPS land. The entire dirt road is identified as Way #672 (also known as Snake Creek Road).

Approximately 440-feet of Way #672, from High Toss Road to just beyond 27 Way #672, as well as the western ends of the two residential driveways, will be elevated from existing grade (elevation 4.4 to 6.2 feet) to a minimum elevation of 7.5 feet at the centerline to match the proposed elevation of High Toss Road. The embankments will have a 3:1 side slopes, except for approximately 70 feet at the southern end of the elevated road; the western embankment will be steeper, and stabilized with a turf reinforcement mat that can be vegetated. A vehicular turn-around area meeting the requirements of the Wellfleet Fire Department is proposed at the base of and just south of the driveway to 27 Way #672. South of the turnaround, the road will be graded at a gentle 8:1 (horizontal to vertical) slope to match the existing road surface elevation.

The existing private water supply well serving 27 Way #672 is located on the west side of Way #672. This well will be subject to overtopping of the well casing by salt water after tidal flow is restored. Therefore, a new water supply well and necessary connections to the residence will be installed approximately 40 feet southwest of the residence at ground elevation 9.4 feet, and will be located at least 100 feet from the existing onsite septic system in accordance with Title V requirements. Following the installation, approval, and operation of the new well, the existing well will be disconnected and filled.

6.2.6.2 Chequessett Yacht and Country Club

CYCC is a semi-private club with a nine-hole golf course located in the Mill Creek sub-basin of the Herring River. (Figure 10) Currently, portions of the CYCC golf course experience occasional flooding by groundwater and surface water in the area of Mill Creek. Hydrodynamic modeling

also shows that under certain conditions and absent mitigation measures, portions of the CYCC golf course would be affected by the increased water levels in the Mill Creek sub-basin as currently proposed in Phase 1. To address this, for a number of years, representatives of the Project team and CYCC have engaged in dialogue to develop a detailed plan to: (1) see the restoration project succeed, and; (2) protect the CYCC golf course from potential adverse impacts that could directly result from project activities.

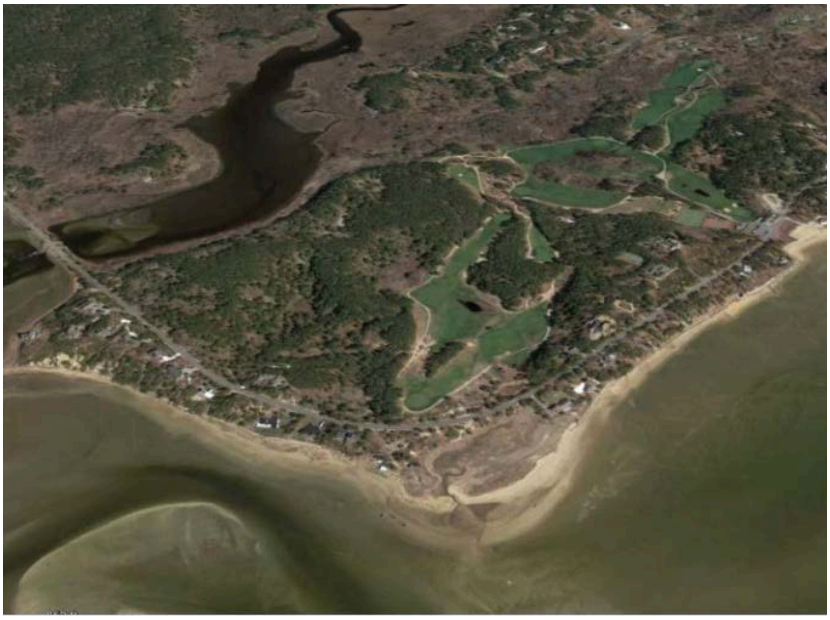


Figure 10. Aerial view of CYCC golf course

A key element of this multi-year effort is a plan to elevate low golf course holes. This plan includes:

- Raising and renovating portions of the five lower fairways, tees, greens, roughs, sand traps and cartpaths (Holes #s 1, 6, 7, 8 & 9) to mitigate against water levels up to the elevation 6.7 feet NAVD 88. This elevation represents the maximum water level that would occur under storm-of-record conditions with sluice gates in the Mill Creek water control structure open 3 feet high and all gates in the Chequessett Neck Road water control structure open 10 feet high, and full Project restoration (beyond Phase 1) has occurred;

- Excavation and then reconstruction of one upland CYCC golf course hole (Hole #2), which will provide a portion of fill needed for the Project (approximately 180,000 cubic yards), to be used in raising the five lower holes of the golf course. Approximately 73,000 cubic yards of fill will be used for other Project-related needs outside of the CYCC Property. The total amount of fill removed from hole #2 and other areas totals approximately 253,000 cubic yards;

- Installation of new irrigation on Holes #s 1, 2, 6, 7, 8 & 9 and relocation of the practice area to an upland portion of the CYCC Property; and

- Clearing channels and managing natural vegetation on the course as may be needed to improve drainage and augment restoration. Some channels will be identified and cleared mechanically to improve drainage, and others will be cleared naturally as restoration proceeds.

In addition, the plan includes improvements on holes #2, 3, 4 and 5, which are not impacted by inundation, to make them compatible with other re-constructed holes. Plans for the golf course work are contained in Appendix A.

CYCC and Project representatives have jointly acknowledged that the regulatory approvals and funding to implement the golf course work are dependent on actions beyond the control of either party. Accordingly, this work and other potential aspects of mitigation, including but not limited to contingency measures that may be employed and would be necessary if permits and funding for the golf course work described above are not secured, remain under discussion between CYCC, the Town and Seashore.

6.2.6.3 Bound Brook Island Road

The proposed work on private property consists of elevating and relocating the existing gravel driveway serving the secondary dwelling on the property, and installing a water barrier to the lower entrance of the same dwelling to prevent inundation. Construction on the property will likely not occur in phases. The driveway and patio may be constructed simultaneously. The United States is fee owner of the land underlying the driveway from Bound Brook Island Road; however, a private landowner holds an access easement over the road to reach their private inholding.

6.3 Adaptive Management Plan

This Project proposes to use a rigorous form of adaptive management to guide the restoration of tidal flow in the Herring River system. Adaptive management is a valuable and versatile approach for many environmental restoration projects implemented over a long timeframe.

Adaptive management provides the framework within which alternative management actions can be systematically evaluated during consideration of multiple project objectives, thereby allowing for informed local management decisions. Following adaptive management guidelines, the Project will restore tidal flow incrementally while water quality, vegetation, tide levels, salinity, sediment movement and many other environmental factors are monitored and compared with pre-restoration conditions and expected changes. The rate of tidal restoration can be slowed, reversed, or increased based on the system response as indicated by monitoring data.

The HRAMP was developed by the project team in collaboration with the US Geological Survey (USGS). The HRAMP establishes the framework for decision making on how to operate adjustable sluice gates at a new CNR Bridge to maximize the ecological benefits of restoring tides to the Herring River estuary while minimizing adverse impacts.

The comprehensive Herring River Adaptive Management Plan (HRAMP) is contained in Appendix L.

Among other aspects of the HRAMP, Appendix L describes the governance and administrative structure for implementing the HRAMP, including the adoption of a sluice gate management policy during restoration. This governance structure is based on MOU-IV between the Seashore and the Town of Wellfleet.

6.3.1 Initial Tide Gate Management Policy

The configuration of sluice gates at the proposed Chequessett Neck Road bridge and water control structure is the primary means of regulating the amount of tidal exchange in Herring River and, therefore, the pace of habitat restoration.

The broad range of options available for restoring tidal flow to the Herring River could allow the Project to proceed along a conservative timeline, where tide gate changes are small and spread over a longer timeline, or with a more aggressive process with larger changes made more frequently. Numerous other approaches could be formulated between these two extremes. The selection of the preferred approach should reflect an understanding of whether the outcomes of that approach will achieve the Project's stated objectives.

To determine the preferred approach to tide gate management, the Project team, in consultation with United States Geological Survey (USGS), Woods Hole Group (WHG), and others, developed a decision-analysis system of tools and methods that facilitated detailed evaluation of several tide gate management strategies with respect to their effect on the suite of ecological and socioeconomic objectives for the project at varying temporal, spatial, and thematic scales. The system applied the basic concepts of structured-decision making and is the core of the project's adaptive management and decision-analysis program (Smith et al. 2020).

The USGS and Project team developed a series of seven potential restoration trajectory scenarios for the full Project, referred to as "platform policies", that encompass a representative range of restoration timelines, frequency and size of gate adjustments, and management priorities.

These tide gate management policies were analyzed based on how each performs relative to the Project's objectives, which include:

• Restoring natural hydrography, including tide range and topography / bathymetry;
• Restoring ecological function and integrity, including salinity, water quality, and aquatic habitat quality;
• Minimizing adverse impacts to ecological, cultural, and socioeconomic resources;
• Maximizing ecosystem services (i.e., benefits people receive from the estuary); and
• Minimizing costs of restoration.

The Project team developed analytical tools including a specialized Decision Support Tool software application to assist decision-makers with choosing the most effective management policy based predictive data, trade-off analyses, and monitoring data. The Herring River Technical Team (HRTT) continues to perform analyses and provide results and information to the Herring River Executive Council (HREC) to support their deliberations and decision-making process.

The output of the Decision Support Tool was used by the HREC to evaluate three components of the initial tide gate management policy at their July 15, 2021 meeting. The first decision made by the HREC was to limit the tide gate management policy to the first three years of implementation. A second decision made by the HREC concerns the pace of change in the first year of restoration. The mean high tide elevation of 1.8 feet in the Lower Herring River (all elevations are NAVD88) at the end of year 1 is a critical water level threshold where tides overflow stream/creek banks and begin to flood marsh surfaces. Rather than achieve the increase with a single gate opening, the HREC opted for a transition during year 1 (increasing the Mean High Water elevation from 0.4 ft to 1.8 ft in Lower Herring River) to occur in a gradual stepwise process over a 12-month period. With this approach, a significant amount of restoration would be achieved in a relatively short time, while concurrent monitoring generates data describing short-term changes under varying conditions. The tidal monitoring data collected during this period would be used to validate existing and improve future modeled predictions. The third consideration weighed by the HREC was to maintain the high tide level of 1.8 feet in years 2 and 3. This would establish a relatively stable tidal condition that is significant enough to allow restoration to proceed and initiate some long-term changes in the Herring River, while also limited enough to avoid virtually any risk of problematic flooding and to facilitate vegetation clearing and other marsh management measures needed to enhance restoration efforts.

This conservative approach allows opportunities for data collection and model updates to be used to develop policies for longer-term restoration. The high tide elevation of 1.8 feet is equivalent to having five of the sluice gates opened at Chequessett Neck Road Bridge to a height of two feet. At this high tide elevation, the corresponding spring High Tide would be 2.5 feet and the storm of record elevation would be 3.0 feet, which is more than one foot lower than the current elevation of the lowest structure and roads in the Phase 1 restoration area. The restored

intertidal area under this scenario is approximately 218 acres, compared with 570 acres to be achieved at the end of Phase 1.

A significant benefit of the initial tide gate management policy is that it maximizes the value of monitoring and data analyses, which will provide a real time assessment of system responses to the reintroduction of tidal flows. The data will be incorporated into modeling to enhance its predictive value in selecting tide gate management policies to govern beyond year three.

The HREC continues to receive regular monitoring updates and will review and revise the tide gate management policy as needed.

6.3.2 Secondary Management: Vegetation

During Phase 1, vegetation management on federally owned Seashore property will be needed to enhance restoration. Because this work is to be conducted by the National Park Service on federally owned land, it does not require Conservation Commission authorization. For informational purposes, the proposed vegetation management on federally owned land is described below and in Appendix C.

Vegetation management during the initial tidal restoration implementation period described in 6.3.1 above will involve removing trees, shrubs, and Phragmites in current and future brackish and saltwater habitats. Phase 1 vegetation management involves 348 acres or 62% of the Phase 1 area.

The focus of vegetation management efforts are removal of Phragmites (up to 45 acres), removal of shrublands (179 acres), and removal of woodlands (126 acres) as follows:

- Year 0 - Phragmites mowing in up to 45 acres; Tree removal in up to 42 acres;
- Year 1 - Tree removal in up to 42 acres; Shrub cutting in up to 39 acres;
- Year 3 - Tree removal in up to 42 acres; Shrub cutting in up to 39 acres.

The primary purposes of vegetation management are to:

- Enhance/promote growth of salt marsh vegetation
- Avoid accumulation of dead material in tidal creeks and channels
- Improve/manage aesthetics through removal of dead above ground vegetation
- Promote Blue Carbon Benefits; Retain Carbon Within the Marsh Soil

Work will occur using a number of methods:

- Land Clearing Contractor(s) and HR-Specific Field Crew (e.g. “AmeriCorps Cape Cod”)
- Mowing, Machine-mounted “Brush Hog”; Specialized for Low Ground Pressure
- Hand Removal: Powered (i.e. Brush Saw) and Non-Powered Equipment
- Standard Forestry Practices, Single Trees

- Full-Tree “Fecon”/”Brontosaurus” Mulchers

Various means are being considered for managing brush, vegetation debris and slash, etc., depending on the type of material and location, among other factors.

If the need for additional vegetation management on private property arises during Phase 1, Project Proponents will confer with the Conservation Agent to determine the appropriate authorization for the proposed work. Any such work will be designed to be consistent with the Project’s Adaptive Management Plan and the NHESP-approved Habitat Restoration and Monitoring Plan.

6.3.3 Secondary Management: Marsh Surface, Channel Restoration and Sediment

In addition to additional vegetation management, secondary marsh management actions such as marsh drainage and fill will be needed to enhance restoration. However, the precise location, timing and methods for this work will depend in part on the system response to the return of tidal flow. Accordingly, this work is not included for authorization in this NOI. Many of the locations where marsh management work could potentially be necessary are remote and currently either covered in dense, shrubby vegetation or under water. The work is also dependent on specific vegetation, microtopography, and tidal flow characteristics. Attempting to evaluate potential treatment sites and design future marsh surface restoration actions based on existing conditions is not appropriate since these conditions will change as tidal exchange is restored. Conditions will also vary greatly among locations and for different stages of the restoration process.

As the need for these secondary management actions arises, Project Proponents will confer with the Conservation Agent to determine the appropriate authorization for the proposed work.

7.0 Alternatives Analysis

The Project team extensively evaluated a variety of comprehensive project alternatives to accomplish the restoration of Herring River estuary during the MEPA and NEPA processes, and this is described in Section 6.1 below. In addition, alternatives were evaluated for each class 1 project element to minimize wetland resource impacts necessary to achieve restoration objectives. For brevity, design alternatives vetted for each Class 1 element in the FEIR are summarized in Appendix M. The extensive assessment of restoration alternatives, and the assessment of design alternatives for each class 1 element demonstrate that there are no practicable alternatives to the Project that are capable of achieving the proposed extent of wetland restoration, with fewer adverse impacts on wetland Resource Areas**.**

7.1 Assessment of Restoration Alternatives

A comprehensive assessment of restoration alternatives is described in Chapter 2 of the Final Environmental Impact Statement/Environmental Impact Report (2016). The assessment of restoration alternatives contained in the FEIS/FEIR was designed to address the requirements of federal and state environmental protection regulations. The FEIS/FEIR received a Certificate of Compliance (EEA #14272) from the Commonwealth of Massachusetts Secretary of Energy and Environmental Affairs, and was issued a Record of Decision from the National Park Service demonstrating compliance with requirements under MEPA and NEPA, respectively, including those requirements that pertain to the assessment of alternatives. The FEIS/FEIR is posted at http://www.herringriver.org/EID; the MEPA Certificate is provided in Appendix E.

The FEIS/FEIR selected a preferred alternative that forms the basis of the Herring River Restoration Project. The selected alternative is supported by extensive assessment of existing conditions as well as modeling and predictions for restored ecological conditions. The scientific basis for the FEIS/FEIR was largely drawn from a series of studies conducted by NPS researchers and others, beginning in the 1980s and summarized in the Herring River Conceptual Restoration Plan in 2007. A two-dimensional hydrodynamic model was developed that established the feasibility of tidal restoration and analyzed the effects of restoring tidal flow to different parts of the estuary. This included three different scenarios for sea level rise over the next 50 years and analysis of numerous combined storm events. The model was also used to develop and analyze alternatives for the FEIS/FEIR based on balancing degrees of tidal restoration with necessary measures to avoid significantly increasing flooding or storm damage impacts to the built environment. Since the completion of the FEIS/FEIR, the Project Partners have engaged additional input from stakeholders, abutters, and technical experts, which has helped to refine Project plans.

The alternatives assessment in the EIR/EIS examines potential impacts to a wide range of environmental and socio-economic factors associated with the following alternatives:

A. No action - retain existing tide control structure at Chequessett Neck Road

B. Construct a new tide control structure at Chequessett Neck Road, with no structure at Mill Creek

C. Construct a new tide control structure at Chequessett Neck and a dike at Mill Creek that excludes tidal flow

D. Construct a new tide control structure at Chequessett Neck and a water control structure at Mill Creek that partially restores tidal flow

To identify the preferred alternative, each feasible alternative was evaluated based on its ability to meet the restoration plan objectives (FEIS/EIR, Chapter 2: Alternatives) and their potential impacts on the environment (FEIS/EIR, Chapter 4: Environmental Consequences). An initial screening of the alternatives was accomplished by the project team through the Value Analysis/Choosing by Advantages process (Kirk Associates 2011). This process considered the advantages of the three proposed action alternatives, including the Mill Creek options for Alternatives B, C, and D. Each of the three alternatives was evaluated against three factors:

- Restore natural and cultural resources,
- Improve operational efficiency, reliability, and sustainability,
- Enhance and maintain socioeconomic benefits.

The Project team evaluated the benefit or "importance of advantage" for each of the alternatives. Not considering the cost, Alternative D, with Mill Creek Option 2 which includes installation of new tidal control structure at Chequessett Neck and a dike at Mill Creek that partially restores tidal flow and elevates the fairways at the CYCC, would provide the greatest importance of advantage based on benefit points. Relative initial cost estimates for the alternatives were developed and the relative benefits and costs were graphed. This cost-benefit ratio also showed that Alternative D with Mill Creek Option 2, elevation of the CYCC golf course, would offer the best value, with the highest benefit to cost ratio. Thus, in the Value Analysis/Choosing by Advantages process, Alternative D with elevation of the CYCC golf course was selected as the preferred alternative.

In accordance with Director's Order 12, the NPS is required to identify the environmentally preferred alternative in its NEPA documents for public review and comment. The NPS identified Alternative D as the environmentally preferred alternative that "causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural and natural resources." Alternative D reflects the Project outlined in this application for Water Quality Certification: a new bridge and sluice gates at Chequessett Neck Road and a water control structure at Mill Creek that partially restores tidal flow. Alternative D also included

the removal of the High Toss Road causeway and installation of sluice gates at the Pole Dike Road crossing.

The assessment of restoration alternatives contained in the EIS/EIR was designed to address the requirements of federal and state environmental protection acts.

Figure 11. Existing Chequessett Neck Road Dike (Source: NPS 2011)

7.2 Design Alternatives for Project Elements

As noted above, the selection of restoration alternative was influenced by the severity of degradation that needs to be addressed. Upon implementation, the preferred alternative has the potential to restore 570 acres of a native tidal ecosystem at the end of Phase 1, with attendant improvements in wetland functions and water quality. The preferred alternative, which will restore the natural capacity of resource areas within the Herring River estuary to protect and sustain the interests identified in M.G.L. c. 131, § 40 that were degraded or destroyed by anthropogenic influences, provides all tidal control infrastructure needed for full restoration of 890 acres of a native tidal ecosystem, pending additional permits and property owner agreements.

The individual tidal control and mitigation measures needed to achieve the restoration benefits have been designed to minimize impacts on wetland resources and functions without significant increase in flooding or storm damage impacts to the built environment. The construction of these elements will result in some permanent wetland impacts (Section 9.0). However, the magnitude of impacts is far outweighed by the restoration benefits they enable. The design of each tide control measure and protective mitigation action is based on an alternatives assessment to select the measures capable of supporting restoration objectives while avoiding or minimizing impacts to wetland resources in order to protect and sustain the interests identified in M.G.L. c. 131 § 40. Each of the tide control structures is necessary to implement the

restoration of tidal flow incrementally while avoiding harm to resource areas and private and public structures. Similarly, the mitigation measures are needed to protect public and private structures from potential adverse impacts associated with the return of tidal flow.

The design approaches selected reflect the designs deemed most effective at achieving restoration goals while avoiding or minimizing adverse impacts, including avoidance and minimization of alteration to wetland resource areas and buffers. Selected designs have been further modified to avoid or minimize alteration of wetland impacts to the maximum extent possible. E&SC including siltation controls for in-water work and other structural and non-structural construction-phase best management practices designed to prevent adverse impacts to resources are described in Section 8.0.

8.0 Construction Methods and Sequence

The construction methods and sequencing for each Class 1 project element is provided below, in compliance with Ecological Restoration Limited Project provisions at 310 CMR 10.24(8)(d)3 and 10.53(4)(d)3.

8.1 Chequessett Neck Road Bridge

The bridge will be constructed in phases to allow portions of the new structure to be built while the existing embankment, or portions of it, remains in place. This approach will allow for continuous hydraulic connectivity between Wellfleet Harbor and Herring River throughout construction. This approach will also accommodate traffic movement through the site at all stages of construction. Bridge construction work will occur with wetland resource areas, and construction practices will be employed to avoid or minimize disturbance of resources.

National Seashore property and several residential structures are located on Griffin Island Road to the north of Chequessett Neck Road. NPS staff and visitors, residences, emergency vehicles, and municipal and utility vehicles rely on Chequessett Neck Road for access to and from Griffin Island Road, as it is the only paved route to this area. During construction, a temporary bridge is proposed along the eastern (Herring River) side of the embankment (see Figure 12 and Sheet CT-401 – Temporary Traffic Control Plan of the Project Plans) to maintain traffic flow and pedestrian access. The advantage to this approach is that traffic is moved to the side, outside of the footprint of the proposed new structure, allowing the contractor greater flexibility. Due to the relatively low traffic volumes, it was determined that a one-lane signalized alternating two-way traffic setup would be adequate to regulate traffic flow during construction. Since Chequessett Neck Road is a two-lane roadway (with one lane in each direction), stop bars will be provided at the entrances to the bypass route from both directions along with pre-timed signals.

The temporary bypass will be a multi-span bridge consisting of prefabricated modular steel components (e.g., fabricated by Acrow, or comparable). The structure will span approximately 600 feet across Herring River to facilitate bypass of surface water around respective active work areas and minimize impacts to wetland resources. Temporary sheeting will be installed to form embankments to serve as the temporary bridge's abutments as well as northbound and southbound approaches from portions of the existing roadway, and remain outside of the construction area. The geometric layout of the bypass route was designed to accommodate the turning movements of a WB-62 vehicle.

A cantilevered walkway platform will be included with the temporary bridge to provide a separate bypass route for pedestrians and dismounted bikers. Guardrail systems will be provided on both sides of the bypass roadway on the approaches. This will protect vehicles from the adjacent sheeting and provide separation from the pedestrian/biker path. A handrail system will be provided on the upstream side of the approaches to protect pedestrians/bikers from the sheeting and associated fall hazard. Overhead utilities will also be temporarily routed along this

bypass route, supported by temporary poles set in the backfill material placed to form the two approaches to the temporary bridge structure.

As reflected on Sheet CS-120, Construction Sequence & Water Control Plan, the Chequessett Neck Road bridge will be constructed in five stages:

- Stage 1A: This stage will include the preparation necessary for installation of the temporary bypass/ traffic diversion roadway. E&SC will be installed along with temporary steel sheeting required to construct the approach embankments for the temporary bypass bridge and water control cofferdams. Stone channel bottom scour protection will also be installed on the eastern side of the temporary sheeting at the bridge opening/exit area. This stage of construction is expected to last 4-6 weeks.

- Stage 1B: This stage will consist of the installation of the temporary bypass/traffic diversion bridge and the completion of its approach embankments (within the limits of temporary sheeting). Overhead electrical utilities will be temporarily diverted during this stage along the temporary bypass route. At the end of this stage of construction, traffic flow will be diverted from Chequessett Neck Road onto the bypass bridge. This stage of construction is expected to last 4-6 weeks.

- Stage 2: This stage will consist primarily of the installation of temporary steel sheeting along the harbor side of the Dike; the construction of the proposed southern bridge pier, abutment, and wingwalls; the installation of stone channel bottom scour protection within the bridge's southern span as well as the bridge's western entrance/exit approach area; the installation of stone armor embankment protection along both sides of the bridge's southern approach; and the installation of the concrete stairway on the eastern side of the roadway embankment. Additionally, temporary tide gates will be installed on the harbor side of the southern bridge span to control flow for Stage 3. This stage of construction is expected to last 8-10 weeks.

- Stage 3: This stage will consist primarily of the installation of the construction of the proposed northern bridge pier, abutment, and wingwalls; the installation of stone channel bottom scour protection within the bridge's northern and centers spans; the installation and stone armor embankment protection along both sides of the bridge's northern approach; the removal of temporary sheeting on the western side of the embankment; and the installation of the access stairway on the western side of the roadway embankment and the upper portion of the access stairway on the eastern side of the roadway embankment. This stage of construction is expected to last 10-12 weeks.

- Stage 4: This stage will consist primarily of the installation of the bridge's superstructure, approach slabs, and recreational/viewing platforms; the removal of any remaining temporary cofferdams that were installed for diverting tidal flows; the

construction of the new roadway (including roadway base course), its associated improvements, and guardrail system; the installation of new electric and telecommunication utilities; the installation of tide gates/panels; and the installation of the project's new stormwater management system including pre-treatment catch basins and stormwater planters. This stage of construction is expected to last 14-16 weeks.

- Stage 5: This stage will consist primarily of the removal of temporary utilities along the temporary bypass route; the redirection of traffic onto the new bridge and the removal of temporary signal; the installation of the lower portion of the access stairway on the eastern side of the roadway embankment and portion of the boardwalk within the limits of sheeting; the removal of the temporary bridge structure; and the restoration of the Project Site. This stage of construction is expected to last 6-8 weeks.

Staging areas for the bridge construction are shown on Sheet CN-002 of the bridge plan set (Appendix A). The Project's primary staging area on property owned by the Seashore will be located within the project's limits of disturbance (LOD) on the northern side of the River. The majority of this area consists of upland wooded area. Other off-site staging areas to the north of the project site are deemed provisional and subject to revision or exclusion pending initiation and completion of discussions with respective property owners (as to the extent, type, and seasonality of potential staging/storage activities associated with the project). In addition to the specific locations shown within the Project Plans, additional off-site staging areas may be utilized, subject to discussion and agreement with respective property owners, the Town of Wellfleet, and the Seashore. These include a public parking area at the end of Duck Harbor Road, a former borrow pit on Pole Dike Road (currently owned by the Town of Wellfleet), and a parking area on Griffin Island Road (also owned by the Town of Wellfleet).

Barges will be mobilized to the site for additional staging of materials (e.g., steel sheeting, pipe piles) and to provide operating platforms for crane equipment at various stages of construction. It is expected that the majority of barges, if not all barges, will be located on the harbor-side of the embankment, however one or more barges may be deployed on the river-side of the embankment, subject to the engineer's review and acceptance of the contractor's proposed access plan submittal prior to construction. Any barges mobilized to the site will be required to be cleaned immediately prior to transport, be equipped with spuds to secure the barge from waves, currents, and tidal fluctuations, and be provided with a site-specific fueling protocol, spill control and countermeasure plan and appropriate spill containment/cleanup materials.

Construction of the bridge and associated water access is expected to last 12 months pending time of year restrictions and weather conditions. The regular daily schedule for work will be between the hours of 7:00 AM and 5:00 PM, Monday through Friday. No work will be performed outside of these hours without approval from the Town of Wellfleet and the Project representative.

8.2 Mill Creek Water Control Structure

The Mill Creek Water Control Structure will be built by the National Park Service on federal land within the Cape Cod National Seashore, in accordance with established applicable federal construction management requirements and policies.

The anticipated construction sequence follows. Note that some activities may occur concurrently, and/or be adjusted to facilitate the contractor's means and methods:

1. Clear site according to the limits of clearing shown on plans and install E&SC measures.

2. Prepare subgrades and place earthen fill materials to establish gravel construction access drive to area of proposed water control structure and install retaining walls as necessary for access.

3. Clear marsh area and develop access to upstream and downstream channels using temporary interlocking composite mats on one side of the channel.

4. Conduct channel deepening within existing channel width (tidal channel drainage improvements) and remnant earthen dike excavation work.

5. Restore disturbed areas along the upstream and downstream channel and in area of the remnant earthen dike.

6. Begin to drive steel sheeting along proposed alignment of the water control structure.

7. Install temporary cofferdam, dewatering basin, and temporary bypass for temporary flow bypass and begin to install cast-in-place concrete water control structure and cantilevered steel walkway.

8. Install sluice gates, electric power/control cabinets and conduits. Complete gate operation and testing.

9. Conduct channel grading around the water control structure and install vegetated stone armor apron and sediment filled stone armor apron.

10. Install permanent access road, truck turnaround, and articulated concrete block matting on the upstream and downstream side of the water control structure and in the swale of the permanent access road.

11. Place loam and seed over articulated concrete block matting and other disturbed areas. Provide maintenance of seeded areas for one year after installation.

12. Complete final restoration of all disturbed areas.

8.3 Pole Dike Water Control Structure and Low Road Elevations

Construction will be performed in stages to manage traffic flow during construction. Construction sequence notes can be found on Sheet G02 of the Low-lying Road and Culvert Replacement plan set. A Maintenance Protection of Traffic Plans was developed in accordance with the Federal Highway Manual Uniform Traffic Control Devices.

In many areas, the existing roadways are too narrow to maintain even a single lane of traffic during construction. Therefore, each roadway segment will require closure. The general approach for traffic management is to break up the roadway segments into construction phases and work zones. During each construction phase, the road undergoing construction will be closed. Longer roadway segments will be open to local traffic and closed to through traffic. The active work zone will be limited to ensure that access to residences and/or adjacent properties is maintained during construction. No driveway will be isolated during construction. It may be necessary to access some properties via an unpaved roadway for a period of time. The Detour Plans and MPOT, which show all required road closures and detours, are contained in the plan set (Appendix A).

Proposed typical temporary staging areas are depicted on Sheets 34 through 50 of the plan set. Prior to construction, the contractor will submit a final staging plan for approval. This staging plan will identify staging area locations, construction access, E&SC measures and details, refueling site details, and stabilized construction entrance details. The contractor will be responsible for restoring staging areas prior to completion of construction.

The types of equipment to be used will be typical for road construction and culvert installation projects. Most contractors have a fleet of vehicles which include loaders, dump trucks, concrete delivery trucks, excavator, dozer, roller for earthwork compaction, grader for fine road grading, and asphalt paving equipment (asphalt spreader, rollers, etc.).

The site will be restored to existing conditions following construction. Existing signage will be restored as necessary. Seeding and soil stabilization measures will be installed along roadways in accordance with planting plants, details and specifications. Project soil stabilization and plantings include use of salt tolerant seed mix along the roadways, as well as low marsh plantings (Spartina alterniflora plugs) and high marsh plantings (Spartina patens and Distichlis spicata plugs) at specific wetland elevations disturbed within the vicinity of the three box culverts openings. Refueling sites and materials will be removed from staging areas, which will be restored to original conditions. Final pavement restoration will be conducted, and all remaining disturbed areas will be restored.

The Project will not generate hazardous waste, which require disposal. Asphalt paving removed from the existing roadways will be taken to an asphalt recycling plant to be recycled. Existing

concrete culverts to be removed will be taken to a Construction and Demolition recycling facility for crushing.

The work will likely be constructed in phased sections, which will be determined in final design. The regular daily schedule for work will be between the hours of 7:00 AM and 5:00 PM, Monday through Friday. No work will be performed outside of these hours without approval from the Towns of Truro and Wellfleet, respectively, and the project representative.

8.4 High Toss Road Causeway Removal and Elevation of High Toss Road and Way 672

All construction vehicles and personnel will access the work area via Pole Dike Road, on the eastern end of High Toss Road. Work will begin on the western end of High Toss Road, where traditional construction equipment including excavators and bulldozers will be used to remove the roadbed fill from the floodplain and the Herring River culvert. Work along High Toss Road will then progress from west to east, with the fill within the floodplain of Herring River removed and stockpiled elsewhere within the work area. Or, when it is transported away from the portion that crosses the floodplain, it could be placed and spread directly onto the portion of High Toss Road that is to be elevated. After the removal of roadbed fill within the floodplain has been completed and final design grades have been achieved, elevation of High Toss Road will begin in areas as shown on the project plans (Appendix A, Drawings C-6 to C-10). Construction equipment will be used to transport fill material to be added to the road surface in areas that are currently below the minimum target elevation until the entire remaining road surface is above elevation 7.5 feet. The culvert on the unnamed stream on the eastern end of High Toss Road will be removed and replaced with a new culvert as shown on sheet C-6 of the High Toss Road plan set (Appendix A).

Following the completion of construction work, all disturbed areas will be graded and stabilized. All construction vehicles, equipment, and materials, including E&SC, will be removed from the site, and these areas will be restored to pre-construction conditions.

The first phase of activity will involve stabilization of the construction egress area and the installation of E&SC in the work areas as well as temporary staging locations. Suitable material removed from the causeway will be used to elevate the travelway, while the means and methods of construction will be determined by the selected contractor, it is envisioned that work will begin at the causeway. The suitable earth material will be stockpiled at the new western end of the travelway or at a location to be determined, and then used on the travelway. Work on the causeway and travelway is likely to proceed simultaneously once sufficient material has been removed from the causeway to start work on the travelway. The filling operation for the travelway will proceed from west to east to minimize the haul distance for material

removed from the causeway. Once the causeway work and the filling operation for the travelway are complete, the elevated portion of the road will be brought to final grade and stabilized with gravel material. After the area is stabilized, E&SC will be removed, and construction will be complete. It is anticipated that construction activities related to the travelway and causeway could be completed in one construction season. High Toss Road is a very low volume road; hence large-scale traffic management measures will not be required. Appropriate construction signage and barriers will be implemented and maintained by the selected contractor. Police details or flagmen will be used as deemed appropriate in consultation with Town officials. High Toss Road provides access to private residences; therefore, the ability to pass over High Toss Road will be maintained to the maximum extent possible. The option to use detours around High Toss Road construction activities is limited since only one road intersecting High Toss Road (Hopkins Drive) is a through road connecting to other roads. Hopkins Drive can be used as a detour during travelway construction activities between Pole Dike Road and Hopkins Drive. West of Hopkins Drive, the ability for abutters to access their properties via High Toss Road shall be maintained during construction. There are no driveways along the section of Hopkins Drive within the proposed LOD. Hopkins Drive residents will exit onto Old Chequessett Neck Road during the construction of improvements to this area.
Since High Toss Road is narrow, there are few areas where construction staging/laydown areas can be established. It is likely that the selected contractor will need to find an appropriate staging/laydown area in the vicinity of High Toss Road; however, limited staging and laydown may occur along High Toss Road where feasible. Stockpiles of suitable material removed from the causeway will be placed at the western end of the travelway to facilitate movement of the material from the causeway to the travelway. The DPW sand pit facility at the intersection of High Toss Road and Pole Dike Road is one potential location for construction staging and laydown.

Way #672

The proposed construction sequence for elevation of Way #672 is as follows:

1. install signage for traffic detour, as applicable.
2. Install erosion and sediment controls (E&SC) and perimeter controls at the limits of construction, around staging areas, as indicated on the plans.
3. Construct staging area and stabilized construction entrances to non-paved staging areas as needed.
4. Construct refueling area within the staging area as required/directed by the project representative.
5. Relocate utilities (water, telecommunications, etc.) as needed. Coordinate work with utility owner.
6. Remove and store existing signage within the project area.
7. Backfill and compact with existing material to contract specifications.

8. Install plantings and soil stabilization measures, in accordance with the planting
9. Install subgrade material within road and along sides of road to proposed details and specifications
10. Construct roadway as applicable.
11.Restore existing signage as necessary.
12. Install seeding and soil stabilization measures along roadway, in accordance with planting plans, details and specifications.
13. Remove refueling site from staging areas.
14.Remove all material from the staging areas.
15. Restore the staging areas to existing conditions.
16. Restore remaining disturbed areas and salt marsh areas as directed.

The proposed construction sequence for properties along Way #672 is as follows:

<u>25 Way #672 (Hirsch/Meek):</u>
1. Install erosion and sediment controls (E&SC) and perimeter controls at the limits of construction, around staging areas, as indicated on plans.
2. Remove and store existing signage and all other items within the project area as applicable.
3. Relocate utilities (water, telecommunications, etc.) as needed. Coordinate work with utility owner.
4. Install subgrade material within driveway and along sides of driveway to proposed elevations in accordance with plans, details and specifications. Backfill and compact with existing material to contract specifications.
5. Construct driveway as applicable.
6. Restore existing signage, as necessary.
7. Install seeding and soil stabilization measures along driveway in accordance with planting plans details and specifications.
8. Restore remaining disturbed areas as directed.

<u>27 Way #672 (Ellis):</u>
1. Install erosion and sediment controls (E&SC) and perimeter controls at the limits of construction, around staging areas, as indicated on plans.
2. Remove and store existing signage and all other items within the project area as applicable.
3. Install proposed utilities (water well, electrical power, etc.) Installation of new well to be made by verified Massachusetts well driller. All work to be certified by contractor including chlorination work to meet state drinking water standards. All well work is to be approved by the local Board of Health upon completion. Coordinate work with property owner.
4. Remove and dispose of existing wellhead, abandon existing piping and electrical service after new water connection is installed and accepted.

5. Install subgrade material within driveway and along sides of driveway to proposed elevations in accordance with plans, details and specifications. Backfill and compact with existing material to contract specifications.
6. Construct driveway as applicable.
7. Restore existing signage, as necessary.
8. Install seeding and soil stabilization measures along driveway, in accordance with planting plans, details and specifications.
9. Restore remaining disturbed areas as directed.

8.5 CYCC Golf Course Reconfiguration

The following list presents the construction activities associated with reconfiguration of the CYCC golf course. All work will be conducted in accordance with the Project's Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will address site clean-up and stabilization measures, hazardous and/or solid wastes management, and equipment to be used. Specific construction activities are listed below. In many cases the listed activities are in process and completed simultaneously.

1. Haul Road Survey: Civil survey and staking of curb cut, haul road layout, practice area layout.

2. Golf Course Survey: Civil survey of centerlines of golf holes along with staking of all tees, turn/landing areas, and greens. Establish various benchmarks with datum elevation for contractor use.

3. Golf Course Contractor Mobilization (equipment, manpower and material resources).

4. Establish Erosion Control Measures with project long maintenance and repair.

5. Clearing for haul road and practice area to include tree cutting, stumping, grubbing and disposal.

6. Construct haul road including grade cuts and fills, base installation, compaction and construction entrance and gate installation.

7. Construction staging area establishment, organization of site for initial construction, preliminary staking for fill and erosion control layout.

8. Tree cutting, stumping, grinding, grubbing and root clearing.

9. Tilling: lower holes to break turf surfaces prior to fill distribution and upper holes in preparation of renovation changes and reseeding.

10. Establish temporary construction access over Mill Creek.

11. Excavation within borrow areas and distribution to fill areas.

12. Irrigation pond and well establishment along with pump installation: Fertigation equipment to provide nutrient application through irrigation at very low levels during grow-in when normal fertilization cannot be completed on the surface of unstable and newly seeded surfaces.

13. Fill on low holes to be rough shaped to plan and compacted to limit settling.

14. Rough shaping of Fairways, Green complexes, Tee complexes, Bunkers, Cart Paths and all support areas.

15. Install drainage structures by design.

16. Undertake drainage improvements within Mill Creek and tributaries.

17. Construct retaining wall at Hole #4 Tee complex.

18. Install remaining irrigation equipment components.

19. Winter Crop Seeding as necessary for stabilization and organic nutrient incorporation in spring during finish.

20. Fortify erosion control measures in preparation for winter.

21. Install Timber Bridges.

22. Surface all new cart paths per design.

23. Shape greens for final contours, coring of green well, drainage installation, drainage stone layer, install top mix and float.

24. Shape tees for final layout of tee complex, tee mix installation and laser level final surface prior to seeding.

25. Core final bunker pockets, install drainage sumps with stone and install bunker sand.

26. Irrigation system will be activated and tested throughout the installation once holes are complete and irrigation mains on-line.

27. All playing surfaces floated and power raked for seedbed preparation, hand raked to 0.5 inch minus.

28. Soil amendments added when specified as a result of soil testing for recommended grow-in nutrients deficiencies.

29. Sod installed for tee, green and bunker surrounds as specified.

30. Green & Tee Seeding: Specified Seed dropped seeded and dimpled for stabilization.

31. Fairway Seeding: Specified Seed mechanically drilled and rolled.

32. Pollinator seeding and shrub plantings installed within out-of-play disturbed areas.

33. Seeded areas hydro mulched with paper mulch fortified with polymers for tacking, moisture retention and germination efficiency.

34. Grow-in period: Process of maintaining optimal conditions for seed germination and turf growth. To grow the golf course in the shortest period, includes thorough irrigation, fertigation, additional amendments, mowing and other cultural practices.

35. Preparation of As-Built Plans used with irrigation technology and long-term maintenance record keeping.

Construction Sequence Notes are provided on Sheet G02 of the CYCC plan set. Work would begin in late summer or early fall to take advantage of dry weather conditions. A construction

timeline of 12 to 18 months is estimated. Work schedules would be coordinated with CYCC golf course management.

8.6 Low-lying Property Impact Prevention on Bound Brook Island Road

The following is the construction sequence information provided on Sheet G02 of the Miller Frederiksen project plan set. Note that elevation of the access driveway from Bound Brook Island Road and the associated culvert replacement are part of the Low-lying Road Elevation and Culvert Replacement project element.

1. Install erosion and sediment controls (E&SC) and perimeter controls at the limits of construction, as indicated on the plans.

2. Clear and grub within limit of disturbance, remove trees as needed to construct new driveway.

3. Install subgrade material within driveway and along sides of driveway to proposed elevations in accordance with plans, details and specifications. Backfill and compact with existing material to contract specifications.

4. Construct driveway as applicable.

5. Install seeding and soil stabilization measures along driveway, in accordance with planting plans, details and specifications.

6. Construct block wall and patio as applicable.

7. Restore remaining disturbed areas as directed.

9.0 Construction-related Impacts to Resource Areas

9.1 Chequessett Neck Road Bridge and Water Access Facility

Table 10. Summary of Chequessett Neck Road Bridge and Water Access Facility Construction-related Resource Impacts

Resource Area*	Permanent (sf)	Temporary (sf)
Land Under Ocean / Fish Run**	15,380	18,315
Tidal Flats	8,070	980
Salt Marsh	13,266	4,290
Land Containing Shellfish	36,716	23,585
Bordering Vegetated Wetlands	953	2,466
Coastal Bank (LF)	1,419	505
Land Subject to Coastal Storm Flowage	92,826	115,465
Riverfront Area	11,421	40,718
- 0 – 100 Foot Riverfront Area	4,483	6,976
- 100 – 200 Foot Riverfront Area	6,938	33,742
100-foot Buffer Zone	25,135	21,075

(Source: project drawing set Sheet CS-118)
*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.
** 3,096 CY dredging is proposed in Land Under Ocean/Fish Run.

9.1.1 Temporary Impacts

The following activities are expected to account for temporary impact to 18,315 sf of Land Under Ocean: Installing, maintaining and removing temporary erosion and sedimentation controls; installing/removing the temporary bypass bridge (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches, and timber piles supporting the temporary bridge deck with utility poles, guardrails and pedestrian fencing), temporary floating turbidity curtain and temporary removable cofferdam; driving/extracting temporary steel sheeting cofferdam; foot, construction vehicles/equipment and/or temporary support barges/watercraft access for laborers constructing respective temporary and permanent project elements.

Tidal Flats
The following activities are expected to account for temporary impact to 980 sf of Tidal Flats: Installing, maintaining and removing temporary erosion and sedimentation controls; driving/extracting temporary sheeting cofferdam, and Installing/removing floating turbidity

curtain; pedestrian construction vehicles/equipment and/or temporary support barges/watercrafts access for laborers constructing respective temporary and permanent project elements.

Salt Marsh
The following activities are expected to account for temporary impact to 4,290 sf of Salt Marsh: Installing, maintaining and removing temporary erosion and sedimentation controls; installing/removing temporary bypass bridge (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches, and timber piles supporting the temporary bridge deck with utility poles, guardrails and pedestrian fencing), temporary floating turbidity curtain, and temporary removable cofferdam; driving/extracting temporary sheeting cofferdam; foot, construction vehicles/equipment and/or temporary support barges/watercrafts access for laborers constructing respective temporary and permanent project elements.

Land Containing Shellfish
The following activities are expected to account for temporary impact to 23,585 sf of Land Containing Shellfish: Installing, maintaining and removing temporary erosion and sedimentation controls; installing/removing temporary bypass bridge (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches, and timber piles supporting the temporary bridge deck with utility poles, guardrails and pedestrian fencing), temporary floating turbidity curtain and temporary removable cofferdam; driving/removing temporary sheeting cofferdam; foot, construction vehicles/equipment and/or temporary support barges/watercrafts access for laborers constructing respective temporary and permanent project elements.

Bordering Vegetated Wetlands (BVW)
The following activities are expected to account for temporary impact to 2,466 sf of BVW: Installing, maintaining and removing temporary erosion and sedimentation controls; Installing long-term biodegradable erosion control blanketing; Installing/removing temporary bypass causeway (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches), floating turbidity curtain and temporary removable cofferdam; driving/extracting temporary sheeting cofferdam; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Coastal Bank
The following activities are expected to account for temporary impact to 505 linear feet of Coastal Bank: Installing, maintaining and removing temporary erosion and sedimentation controls; Installing long-term biodegradable erosion control blanketing; Installing/removing

temporary construction dewatering basin, catch basin inlet protection, and temporary bypass causeway (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches), and temporary floating turbidity curtain; driving/extracting temporary sheeting cofferdam; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Land Subject to Coastal Storm Flowage

The following activities are expected to account for temporary impact to 115,465 sf of Land Subject to Coastal Storm Flowage: Installing, maintaining and removing temporary erosion and sedimentation controls; Installing long-term biodegradable erosion control blanketing; Installing/removing temporary construction dewatering basin, catch basin inlet protection, temporary bypass bridge (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches, and timber piles supporting the temporary bridge deck with utility poles, guardrails and pedestrian fencing), temporary floating turbidity curtain and temporary removable cofferdam; driving/extracting temporary sheeting cofferdam; Temporary stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of construction activities; foot, construction vehicles/equipment and/or temporary support barges/watercrafts access for laborers constructing respective temporary and permanent project elements.

Riverfront Area

The following activities are expected to account for temporary impact to 40,718 sf of Riverfront Area: Installing, maintaining and removing temporary erosion and sedimentation controls; Installing long-term biodegradable erosion control blanketing; Installing/removing temporary construction dewatering basin, temporary bypass causeway (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches), and catch basin inlet protection; driving/extracting temporary sheeting cofferdam; temporarily stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of construction activities; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Buffer Zone

The following activities are expected to account for temporary impact to 21,075 sf of 100-ft Buffer Zone: Installing/maintaining/removing perimeter erosion and sediment controls; Installing long-term biodegradable erosion control blanketing; installing/removing temporary construction dewatering basin, temporary bypass causeway (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary

bridge approaches), and catch basin inlet protection; temporary stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of construction activities; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

9.1.2 Permanent Impacts

Land Under Ocean
The following activities are expected to account for permanent impact to 15,380 sf of Land Under Ocean: Demolishing/removing the existing culvert/gate structures, excavating/dredging/regrading within the existing channel/earthen causeway to facilitate the installation of the soil-filled stone armor channel bottom, pier/abutment scour protection and bridge/gate structure aprons and footings; driving of steel cut-off sheeting, steel tube piles, and timber piles; pouring concrete for the bridge/gate structure aprons and footings and canoe/kayak portage steps; placing soil-filled stone armor channel bottom and pier/abutment scour protection.

Tidal Flats
The following activities are expected to account for permanent impact to 8,070 sf of Tidal Flats: Demolishing/removing the existing gate structure, Excavating/regrading within the existing earthen causeway to facilitate the installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, bridge/gate structure aprons and footings, and stormwater planters; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving steel tube piles and timber piles; pouring concrete for the bridge/gate structure aprons and footings and stormwater planters; placing topsoil and restoring the site with the specified seed mix.

Salt Marsh
The following activities are expected to account for permanent impact to 13,266 sf of Salt Marsh: grubbing within the limit of disturbance; excavating/regrading within the existing causeway to facilitate the installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, bridge/gate structure aprons and footings and stormwater planters; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving of steel cut-off sheeting, steel tube piles, timber piles; pouring concrete for the bridge/gate structure aprons and footings, canoe and kayak portage steps, and stormwater planters; placing topsoil and restoring the site with the specified seed mix.

Land Containing Shellfish

The following activities are expected to account for permanent impact to 36,716 sf of Land Containing Shellfish: Demolishing/removing the existing culvert/gate structures; grubbing within the limit of disturbance; excavating/dredging/regrading within the existing channel and earthen causeway to facilitate the installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, bridge/gate structure aprons and footings, and stormwater planters; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving of steel cut-off sheeting, steel tube piles, timber piles; pouring concrete for the bridge/gate structure aprons and footings, canoe and kayak portage steps, and stormwater planters; placing topsoil and restoring the site with specified seed mix.

Bordering Vegetated Wetlands (BVW)

The following activities are expected to account for permanent impact to 953 sf of BVW: Clearing of trees/brush/stumps/roots within the limit of disturbance; excavating/dredging/regrading within the existing causeway to facilitate the installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, and stormwater planters; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving of timber piles; pouring concrete for the canoe and kayak portage steps, and stormwater planters; placing topsoil and restoring the site with specified seed mix.

Coastal Bank

The following activities are expected to account for permanent impact to 1,419 linear feet of Coastal Bank: clearing of trees/brush/stumps/roots within the limit of disturbance; excavating/regrading within the existing causeway to facilitate the installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, bridge/gate structure aprons and footings; constructing permeable public access path and permeable parking lot and driveway; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving of steel cut-off sheeting, steel tube piles, timber piles; pouring concrete for the bridge/gate structure aprons and footings, canoe and kayak portage steps, and stormwater planters; installing steel-backed timber guardrail, proposed pavement structure and sidewalks; installing utility manholes and conduits, cabinets; and placing topsoil and restoring the site with the specified seed mix.

Land Subject to Coastal Storm Flowage

The following activities are expected to account for permanent impact to 92,826 sf of Land Subject to Coastal Storm Flowage: Demolishing/removing the existing culvert/gate structures, clearing of trees/brush/stumps/roots within the limit of disturbance; removing/reinstalling

pavement within the existing roadway, excavating/dredging/regrading within the existing channel and earthen causeway to facilitate the installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, bridge/gate structure aprons and footings, permeable public access path, and permeable parking lot/driveway; constructing permeable public access path and permeable parking lot/driveway; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving of steel cut-off sheeting, steel tube piles, timber piles; pouring concrete for the bridge/gate structure aprons and footings, canoe and kayak portage steps, and stormwater planters; installing steel-backed timber guardrail, proposed pavement structure and sidewalks; installing utility manholes and conduits, cabinets; and placing topsoil and restoring the site with specified seed mix.

Riverfront Area
The following activities are expected to account for permanent impact to 11,421 sf of Riverfront Area: clearing of trees/brush/stumps/roots within the limit of disturbance; removing/reinstalling pavement within the existing roadway, excavating/regrading within the existing earthen causeway to facilitate the installation of installation of the soil-filled stone armor channel bottom and pier/abutment scour protection, stone revetment armor slope protection, permeable public access path, and permeable parking lot/driveway; constructing permeable public access path and permeable parking lot and driveway; placing soil-filled stone armor channel bottom and pier/abutment scour protection and stone revetment armor slope protection; driving timber piles; installing steel-backed timber guardrail proposed pavement structure and sidewalks; placing topsoil and restoring the site with specified seed mix.

Buffer Zone
The following activities are expected to account for permanent impact to 25,135 sf of 100-ft Buffer Zone: clearing of trees/brush/stumps/roots within the limit of disturbance; removing/reinstalling pavement within the existing roadway, excavating/regrading within the existing earthen causeway to facilitate the installation of the bridge/gate structure aprons and footings, stormwater planters, and permeable public access path; constructing permeable public access path; driving steel cut-off sheeting, steel tube piles, and timber piles; pouring concrete for the bridge/gate structure aprons and footings, and stormwater planters; installing proposed utility structures and conduits, cabinets; installing steel-backed timber guardrail proposed pavement structure and sidewalks; and placing topsoil and restoring the site with specified seed mix.

9.1.3 Maintenance of Fish Passage
The description of how fish passage will be maintained throughout construction is based on the anticipated construction sequencing and methodologies for the proposed sequence of construction indicated on Sheet CS-120 – Construction Sequence and Water Control Plan of the

August 2021 NOI project drawing set. The sequence and methods described herein are consistent with accepted standards of engineering and fish passage in a coastal environment.

It is anticipated that tidal exchange through the work area will be maintained throughout the duration of construction, with the only exception as noted below when the first flow transition is established. The contractor will be required to develop and submit a detailed construction sequence and schedule generally corresponding to the sequence indicated on Sheet CS-120, for review and acceptance by the engineer prior to the start of construction. The engineer's review will confirm that fish passage will be effectively and safely be established and maintained in accordance with Sheet CS-120, the description provided herein and additional requirements contained in permit authorizations issued from respective regulatory agencies.

Descriptions of respective "stages" below correspond to those depicted on Sheet CS-120.

Stages 1A & 1B
Flow will be maintained through the existing three culvert barrels during this phase of construction. Fish passage will be affected during the installation of stone scour protection at the bridge on the upstream (east) side of the embankment. A turbidity curtain will be deployed at this work area to prevent/minimize turbid water from leaving the work area. The turbidity curtain will be deployed to enclose two of the three culvert barrels during initial placement of the stone scour protection on one side of the work area, allowing unaffected tidal flow to be maintained through the third culvert. After this initial installation is completed, the turbidity curtain will be redeployed to enclose the remaining area to receive stone scour protection adjacent to the third culvert barrel, while flow is diverted to the other two culvert barrels. The turbidity curtain will be removed from around the area adjacent to the third culvert barrel once the stone scour protection has been installed, at which point all three culvert barrels convey flow and provide fish passage as under existing conditions.

Stage 2:
Flow will be maintained through the existing culvert barrels during this phase of construction. Fish passage will be managed during the installation of stone scour protection at the existing culvert on the downstream (west) side of the embankment immediately adjacent to the existing culvert. Flow and the turbidity curtain will be alternated between respective culvert barrels consistent with the approach described above for Stages 1A and 1B during installation. The turbidity curtain will be removed once the stone scour protection has been installed, allowing flow and fish passage through all three culvert barrels. During this stage, the structure(s) that will convey flow in Stage 3 (in the southern-most bay of the proposed bridge) will be constructed, including stone scour protection on both sides of the causeway. The hydraulic opening size and configuration of the structure to convey flow will be established through the

engineer's review of the contractor's submittal to provide safe and effective fish passage through Stage 3.

Stage 3:
Flow will be diverted from the existing culvert barrels to the conveyance structure(s) constructed in Stage 2. A 50-foot section of the temporary steel sheeting cofferdam will be removed or cut downstream of the east side bridge span. The upstream temporary cofferdam will be removed to allow for flow to pass through the southern bay of the proposed bridge structure, allowing conveyance of flows and fish passage through the work area. Similar to Stage 2, the engineer's review of the contractor's submittal will evaluate provisions to provide safe and effective fish passage.

Stages 4 & 5:
Flow will be completely restored to the channel through the full width of the proposed bridge during these last two phases of construction. Certain installed slide gates will be partially opened as indicated by the project's Operation and Management Plan to provide a total hydraulic opening that is equivalent to that provided by the existing concrete culvert while also providing safe and effective fish passage. All cofferdams and turbidity curtains will be removed and remaining temporary and permanent elements of construction affecting fish passage will be removed, allowing unrestricted flows providing safe and effective fish passage for through the site following the end of construction.

9.1.4 Avoidance and Minimization of Impacts

The following measures were applied to the layout and/or design of the Chequessett Neck Road bridge to minimize impacts to on-site wetland resource areas while still achieving project goals:

- The alignment of the reconstructed portion of the Dike was maintained to the maximum extent practical. Where possible, the steepest embankment slopes were proposed that would still remain stable under the various environmental exposure conditions (including wave action). For example, 2(H):1(V) slopes are proposed on the harbor side of the embankment while 1.5(H):1(V) slopes are proposed on the upstream side of the embankment.

- The minimum allowable lane and shoulder widths for this type of roadway were proposed for this work. MassDOT required a design exception from the required four-foot shoulders for this type of roadway. Roadway shoulders are not proposed. Travel lanes ranging between 10-feet to 11-feet are proposed.

- To minimize wetland resource impacts, a significant portion of the proposed temporary on-site traffic by-pass will span over the Herring River.

- A section of the new access path from the proposed permeable parking area along Duck Harbor Road is proposed as a raised boardwalk that will span above non-tidal BVW and Salt Marsh on the northern side of the Herring River rather than an at-grade walkway that would require more grading and disturbance.

- To avoid potential impacts to resource areas associated with installing timber boardwalk decking below the MHW level and seasonal maintenance concerns for floating dock structures, a fixed deck system consisting of precast concrete decking is proposed (e.g., Permatrak™ or approved equal).

- Sheeting is proposed to encompass project work areas to not only limit the amount of sedimentation discharged into adjacent resource areas during construction, but also to limit the amount of temporary disturbance to resource areas during construction. The limits of this sheeting were held tight to the limits of proposed improvements.

- The design incorporates a new stormwater management system that will improve the quality of stormwater discharged to Herring River and Wellfleet Harbor. (See Section 7).

Figure 12. Potential Temporary Bypass Bridge Over Herring River

Temporary Bridge Crossing Over Herring River

Installing a temporary bridge adjacent to Chequessett Neck Road, which would cross the Herring River and connect traffic on both sides of the existing Dike (Figure 12) will result in less of a temporary impact to on-site wetland areas as compared to the non-preferred alternatives. The other major advantage to this approach is that traffic is moved to the side, outside of the proposed structure's footprint, allowing the contractor greater flexibility during construction. This would result in a shorter duration of construction as compared to a phased construction approach that utilized one lane (per phase) of the existing Dike to pass traffic throughout the construction period. A shorter duration of construction would result in less of a temporary impact to on-site wetland resource areas.

In order to minimize increases in the project's limit of disturbance to on-site wetland resource areas as a result of this method of traffic management, the temporary by-pass bridge layout was designed to just meet the minimum radius requirements to safely accommodate the turning movements of a WB-62 (truck) vehicle while staying within the limits of scour protection recommended by WHG. To further minimize impacts to on-site wetland resources, the temporary bridge system has been designed with a temporary bridge superstructure system that will span above a significant section of the river. To achieve this, substructure elements consisting of piers/pile bents will be used to elevate a significant portion of the superstructure while earthen abutments encompassed by steel sheeting will be used to create temporary approaches.

While the preferred approach will require the rental of a temporary bridge system and construction of temporary piers/pile bents to support the superstructure, this on-site alternative to traffic management will result in less of an impact on wetland resources compared to the off-site alternative of making improvements to Duck Harbor Road to accommodate diverted traffic.

Water Access and Portage
An ADA-compliant access from a new Duck Harbor Road parking area with stepped access structures from the bridge was selected as the preferred alternative in part because impacts are minimized. A ramp is proposed from the off-road parking area to a point along the base of the Chequessett Neck Road embankment that is just above the approximate post-conditions MHW level. At this point, the ramp will transition to a relatively level elevated boardwalk to minimize impacts to BVW, Salt Marsh and Land Under Ocean.

To avoid potential concerns associated with installing timber decking below the MHW level and seasonal maintenance concerns for floating dock structures, a fixed deck system consisting of precast concrete decking supported on timber piles is proposed; this type of elevated boardwalk system would result in additional cost compared to a conventional grade-supported walkway but would result in less impact to resource areas.

See Sheet CN-001 for detailed notes about Control of Water and Protection of Work, Erosion & Sediment Control (E&SC) and Work Area Maintenance. E&SC and Site Restoration are shown on Sheets CS-104 & -105 and CS-116 & -117, respectively.

9.2 Mill Creek Water Control Structure

Table 11. Summary of Mill Creek Water Control Structure Construction-related Resource Impacts

Resource Area*	Permanent (sf)	Temporary (sf)
Land Under Ocean**	6,426	873
Salt Marsh	5,599	26,883
Bordering Vegetated Wetlands	10,021	9,817
Coastal Bank (LF)	0	828
Riverfront Area	29,832	36,516
0-100 Foot Riverfront Area	13,082	32,263
100-200 Foot Riverfront Area	16,750	4,253
Land Subject to Coastal Storm Flowage	53,355	58,195
100-Foot Buffer Zone	22,979	6,302

(Source: project drawing set Sheets RC-101 – RC-104)
*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.
** 466 CY dredging is proposed in Land Under Ocean

9.2.1 Temporary Impacts

The following activities are expected to account for temporary impact to 873 sf of Land Under Ocean: installing/removing temporary cofferdams, temporary flow bypass provisions for the construction of the water control structure, and temporary dewatering basin; and foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project.

Salt Marsh
The following activities are expected to account for temporary impact to 26, 883 sf of Salt Marsh: Installing, maintaining and removing temporary erosion and sedimentation controls; Installing/removing temporary bypass bridge (including steel sheeting, earthen fill, pavement, utility poles, guardrails and pedestrian fencing associated with the temporary bridge approaches, and timber piles supporting the temporary bridge deck with utility poles, guardrails and pedestrian fencing), temporary floating turbidity curtain, and temporary removable cofferdam; driving/extracting temporary sheeting cofferdam; and foot, construction vehicles/equipment and/or temporary support barges/watercrafts access for laborers constructing respective temporary and permanent project elements.

Bordering Vegetated Wetlands (BVW)
The following activities are expected to account for temporary impact to 9,817 sf of BVW: installing, maintaining and removing temporary erosion and sedimentation controls; installing/removing temporary cofferdams, temporary flow bypass provisions for the construction of the water control structure, temporary dewatering basin, and temporary stone armor for bordering vegetative wetland crossing; placing/relocating temporary interlocking composite mats for the dredging of the existing tidal channel; and installing temporary construction access; and foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Coastal Bank
The following activities are expected to account for temporary impacts to 828 linear feet of Coastal Bank: installing, maintaining and removing temporary erosion and sedimentation controls; installing temporary construction access; temporary stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of construction activities; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Land Subject to Coastal Storm Flowage
The following activities are expected to account for temporary impacts to 58,195 sf of Land Subject to Coastal Storm Flowage: installing, maintaining and removing temporary erosion and sedimentation controls; installing temporary construction access; Installing/removing temporary cofferdams, temporary dewatering basin and temporary flow bypass provisions for construction of the water control structure; placing/relocating temporary interlocking composite ground protection mats for the dredging of the existing tidal channel; temporary stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of construction activities; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Riverfront Area
The following activities are expected to account for temporary impacts to 36,516 sf of Riverfront Area: installing, maintaining and removing temporary erosion and sedimentation controls; installing temporary construction access; Installing/removing temporary cofferdams and temporary dewatering basin for construction of the water control structure; placing/relocating temporary interlocking composite ground protection mats for the dredging of the existing tidal channel; temporary stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of

construction activities; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

Buffer Zone
The following activities are expected to account for temporary impacts to 6,302 sf of 100-ft Buffer Zone: installing, maintaining and removing temporary erosion and sedimentation controls; installing temporary construction access; installing/removing temporary dewatering basin for construction of the water control structure; temporarily stockpiling/staging/storing temporary and permanent equipment, products, materials, job trailers, sanitary facilities, and other necessary incidental items in support of construction activities; foot and/or construction vehicles/equipment access for laborers constructing respective temporary and permanent project elements.

9.2.2 Permanent Impacts

Land Under Ocean
The following activities are expected to account for permanent impacts to 6,426 sf of Land Under Ocean: Dredging/regrading within the existing channel for the tidal channel drainage improvements and construction of the water control structure; driving of steel sheeting/timber piles for the proposed water control structure; placing sediment filled stone armor around the water control structure and pouring concrete for the water control structure.

Salt Marsh
The following activities are expected to account for permanent impacts to 5,599 sf of Salt Marsh: excavating/regrading within the existing channel for the construction of the water control structure and deepening/widening of the existing tidal channel; driving of steel sheeting/timber piles for the proposed dike and water control structure, placing sediment filled stone armor around the water control structure and pouring concrete for the water control structure.

Bordering Vegetated Wetlands (BVW)
The following activities are expected to account for permanent impacts to 10,021 sf of BVW: clearing of trees/brush/stumps/roots; installing vegetated articulated block matting; placing electric conduit associated with the power/control system for the water control structure; excavating/grading the remnant dike area; excavating/regrading for the construction of the water control structure; driving of steel sheeting/timber piles for the proposed water control structure; placing sediment filled stone armor; pouring concrete for the water control structure; and placing topsoil and restoring the site with specified seed mix.

Land Subject to Coastal Storm Flowage

The following activities are expected to account for permanent impacts to 53,355 sf of Land Subject to Coastal Storm Flowage: clearing of trees/brush/stumps/roots; placing compacted gravel and geotextile fabric for the construction and maintenance access route; constructing block retaining walls where necessary to install construction access road; placing structural fill in areas where the vegetated articulated concrete block matting will be installed to establish proposed grades; installing vegetated articulated block matting where the access drive crosses the bordering vegetated wetlands and adjacent to the water control structure; placing electric conduit associated with the power/control system for the water control structure; excavating/grading the remnant dike area; excavating/dredging/regrading for the installation of the water control structure and deepening/widening the existing tidal channel; driving of steel sheeting/timber piles for the proposed water control structure; placing sediment filled stone armor around the water control structure, pouring concrete for the water control structure; and placing topsoil and restoring the site with specified seed mix.

Riverfront Area

The following activities are expected to account for permanent impacts to 29,832 sf of Riverfront Area*:* Clearing of trees/brush/stumps/roots, placing compacted gravel and geotextile fabric for the construction and maintenance access road; constructing block retaining walls where necessary to install construction access road; placing structural fill in areas where the vegetated articulated concrete block matting will be installed to establish proposed grades; installing vegetated articulated block matting adjacent to the water control structure; placing electric conduit associated with the power/control system for the water control structure, excavating/grading the remnant dike area; excavating/regrading for the installation of the water control structure; driving of steel sheeting/timber piles for the proposed water control structure; placing sediment filled stone armor around the water control structure; pouring concrete for the water control structure; and placing topsoil and restoring the site with specified seed mix.

Buffer Zone

The following activities are expected to account for permanent impacts to 22,979 sf of 100-ft Buffer Zone: clearing of trees/brush/stumps/roots; placing compacted gravel and geotextile fabric for the construction and maintenance access road; constructing block retaining walls where necessary to install construction access road; placing structural fill in areas where the vegetated articulated concrete block matting will be installed to establish proposed grades; installing vegetated articulated block matting adjacent to the water control structure; placing electric conduit associated with the power/control system for the water control structure; excavating/grading the remnant dike area; excavating/regrading for the installation of the water control structure; driving of steel sheeting, and placing topsoil and restoring the site with specified seed mix.

9.2.3 Avoidance and Minimization of Impacts

The following measures were or will be implemented to minimize impacts to the wetland resource areas.

- The limit of disturbance (LOD) was minimized to the extent practicable. For instance, the proposed access drive is 12 feet, which is the minimum width necessary to accommodate heavy construction vehicles. Retaining walls are proposed at multiple locations to avoid the extent of grading that would be necessary in order to match existing grades where excavation or placement of fill will be completed.
- The LOD will be flagged prior to construction activity. This step will reduce the likelihood of inadvertent disturbance of areas outside the project limits, particularly in wetland resource areas.
- Materials for the dike were chosen to accommodate a smaller construction footprint within wetland resource areas. For instance, heavy-gage steel sheet piles were selected in lieu of an earthen dike, which would require a significantly larger footprint.
- The proposed access drive alignment was selected after conducting an alternatives analysis against two other options. The selected alignment had shorter length than one alternative (including avoiding larger wetland areas) and avoided impacts to abutting property owners that would have resulted upon implementation of the other access alternative.

See Sheet CN-001 for detailed notes about Control of Water and Protection of Work, E&SC, and Work Area Maintenance. E&SC and Site Re-vegetation are shown on Sheets CS-104 - CS-106 and LP-101 - LP-103, respectively.

9.3 High Toss Road Causeway Removal and Elevation of High Toss Road and Way #672

Table 12. Summary of High Toss Road Construction-related Resource Impacts

Resource Area*	Permanent (sf)	Temporary (sf)
Bank (lf)	68	14
Bordering Vegetated Wetland	16,490	8,224
Land Under Water** / Fish Run	917	141
Riverfront Area	10,039	1,780
Land Subject to Coastal Storm Flowage	80,482	12,741
100-Foot Buffer Zone	63,995	6,965

Source: project drawing set Sheets C-1 and C-10 – C-12)

*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.

**Includes 185 CY of dredging in Land Under Water/ Fish Run

Table 13. Summary of Way #672 Construction-related Resource Impacts

Resource Area*	Permanent (sf)	Temporary (sf)
Bordering Vegetated Wetland	105	327
Land Subject to Coastal Storm Flowage	10,493	2,906
100-Foot Buffer Zone	10,622	1,748

(Source: project drawing set Sheet C09)

*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.

9.3.1 Temporary Impacts

On High Toss Road and Way #672, temporary wetland impacts are anticipated to occur in the zone between the permanent wetland impact limit and the proposed limit of work. These short-term, temporary impacts may include, but are not limited to, installing erosion controls, removing vegetation, establishing work areas, and installing temporary structures. Generally, temporary impacts consist of a 3-foot temporary work zone beyond the limits of the proposed grading, and these areas of temporary impact will be restored to preconstruction conditions after work is completed. Temporary impacts include 8,224 SF of impact to BVW, 141 SF of impact to Land Under Waterbodies and Waterways, 12,741 SF of impact to LSCSF, and 6,965 SF of impact to the 100-foot buffer zone.

9.3.2 Permanent Impacts

Increased tidal range would restore an estuarine salinity gradient and allow for colonization of native tidal marsh plants. However, elevating High Toss Road and Way #672 to protect them from increased tidal elevations will result in permanent impacts to wetlands located on the north side of High Toss Road and both sides of the causeway and the west side of Way #672. Permanent impacts are limited to placement of fill required to elevate the roadways, removal of fill from the causeway and removal of the existing culvert at Herring River.

On High Toss Road, permanent impacts to wetland resources include a total of 68 sf of impact to River Bank, 16,490 sf of impact to BVW, 917 sf of impact to Land Under Waterbodies and Waterways, 80,482 sf impact to Land Subject to Coastal Storm Flowage, and 63,995 sf to the 100-foot Buffer Zone.

Removal of the High Toss Road causeway will alter 10,039 sf of the 200-foot Riverfront Area associated with Herring River (Inland) waterway, of which 7,581 sf is within 100-feet of the Riverfront Area and 4,238 sf is between 100 and 200-feet. A total of 185 cubic yards will be dredged from the Land Under Waterbodies and Waterways, which part of the Fish Run

associated with the Herring River waterway for removal of the Herring River culvert and restoration of the channel to match adjacent conditions.

Elevating Way #672 to protect it from increased tidal elevations will result in permanent impacts to wetlands located on the west side of the roadway. Permanent impacts to BVW, (105 sf) Land Subject to Coastal Storm Flowage (10,439 sf), and buffer zones are limited to fill required to elevate the roadways and ends of the two residential driveways.

9.3.3 Maintenance of Fish Passage

The High Toss Road project work will include removal of fill from the causeway and removal of the existing culvert at the end of the causeway connecting at Duck Harbor Road. The existing culvert will be removed to provide improved flow in Herring River into the upper marsh reaches north of the causeway and the spawning grounds in the upper watershed ponds. During the work associated with the culvert removal and riverbank restoration, silt curtains will be installed in the water immediately upstream and downstream of the work within the project Limit of Disturbance boundaries. The silt curtains will effectively prevent potential fish passage at that location during the progress of the work. To minimize the impact to fish passage, the work will be done in accordance with suitable Time of Year (TOY) Restrictions that correspond primarily with river herring and eel runs, as applicable. The work will also be conducted in a continuous fashion, with work, once started, to remain ongoing in the riverbank area until completed to reduce the length of time related to any construction impact. At that point, the silt curtains will be removed, and fish passage restored, as applicable.

9.3.4 Avoidance and Minimization of Impacts

Impact avoidance and minimization measures are proposed to offset potential negative impacts associated with elevation of High Toss Road and Way #672.

- Non-structural management practices have already been implemented in the form of an alternatives analysis that gave great weight to environmental considerations; the selected option for the causeway will avoid the permanent resource area impacts associated with those alternatives, which would maintain pedestrian access to Duck Harbor Road.

- Other non-structural measures to avoid impacts will include construction sequencing to minimize soil exposure and designating specific areas away from protected resource areas for activities with a higher potential for pollution (e.g., refueling and vehicle maintenance).

- E&SC installed and maintained at the limits of work will minimize the potential for sedimentation of resource areas bordering the project site. Prior to the start of work, all delineated vegetated wetland boundaries will be re-flagged to ensure that these markers are visible in the field during construction operations. All vehicle and equipment staging and laydown areas will be located outside of vegetated wetlands, and, if feasible, outside of the 100-foot buffer zone. Vehicle access will be limited to the existing and proposed alignment

of High Toss Road to minimize tracking of sediment; vehicle access into other areas, including wetlands along High Toss Road, will be restricted.

- Side slopes will be designed to minimize encroachment into wetlands to the greatest extent practicable. To accommodate the increase in road elevation, a side slope treatment of 3:1 (horizontal to vertical) ratio was selected to blend the side slopes into existing grades and provide a slope that can be stabilized with natural vegetation without concerns to slope stability.

- Inactive stockpiles will be temporarily stabilized; other stored materials (if any) will be prevented from migrating as appropriate. Soil stabilization in disturbed areas will be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.

- All in-stream work will be timed to take place during periods of low flow if possible. Silt curtains will be installed during in-stream work to avoid any noticeable increase in turbidity downstream of construction activity.

Way #672 Road and Driveway Elevations
Impacts to wetlands have been minimized to the extent practicable by limiting fill quantities to what is necessary to elevate Way #672 to the required elevation. In an effort to minimize impacts to the adjacent jurisdictional wetland and its setback, both 2:1 (horizontal to vertical) and 3:1 slopes along either side of road as well as altering the alignment of the road were analyzed. Restoration with riprap would be required for 2:1 side slopes and restoration with loam and seed would be used for all gentler side slopes. The use of a 3:1 slope is generally preferred for this application when other constraints such as wetland and private property impacts are not a consideration. A 3:1 slope can be stabilized with native plantings without concerns to slope stability. Steeper slopes (2:1) would require stone armor or geotechnical stabilization, while more gradual slopes (4:1) would result in significantly more fill and associated wetland impacts. The proposed layout utilizes a minor shift in the road alignment and 3:1 side slopes, thus eliminating the need for riprap. There is a 70 linear foot section of embankment at the southern end of the affected roadway that has a slope as steep as 1.5:1; a turf reinforcement mat is proposed for a vegetated surface. This raised road layout minimizes impacts to jurisdictional wetlands (105 square feet).

E&SC and Planting notes and details are shown on Sheets C-1, D-1 & D-2 for Hight Toss Road and Sheets G02, C07 & C08 for Way #672.

Following construction and site restoration, the project area will be very similar to existing conditions. High Toss Road will be elevated, and mostly follow the existing alignment to the intersection with Way #672, resulting in limited impacts to adjacent wetlands. The intersection at Hopkins Drive will also be elevated, and stormwater BMPs will be updated. No change in use

will occur within or adjacent to the project area as a result of roadway elevation. No detrimental effects on use of the project area are anticipated, and the beneficial effects of eliminating a tidal restriction and reduced flooding are permanent. The causeway that is in place beyond the Way 672 intersection will be lowered and the existing culvert in Herring River will be removed, with the banks restored to adjacent conditions.

Way #672 will be elevated and slightly widened, resulting in limited impacts to adjacent wetlands. The Ellis and Hirsh-Meek driveways will also be elevated, and the existing well at the Ellis property will be relocated. No change in use will occur within or adjacent to the project area as a result of roadway elevation. No detrimental effects on use of the project area are anticipated, and the beneficial effects of reduced flooding are permanent.

9.4 Pole Dike Road Water Control Structure and Low-lying Road Elevation and Culvert Replacements

Table 14. Summary of Pole Dike Water Control Structure, Low-lying Road Elevation and Culvert Construction-related Resource Impacts in Wellfleet

Resource Area*	Permanent (sf)	Temporary (sf)
Bank (lf)	400	77
Bordering Vegetated Wetland	113,279	31,299
Land Under Water**	3,481	535
Riverfront Area	108,611	15,451
Land Subject to Coastal Storm Flowage	454,851	67,182
100-Foot Buffer Zone	337,688	34,897

(Source: project drawing set Sheet G02, C-61-69 and C75-77)
*Reflects impacts within limit of disturbance.
There is overlap among impacts recorded for resource area types.
**Includes 289 CY of dredging in Land Under Water, of which 194 CY is dredging in the Herring River fish run.

Table 15. Summary of Low-lying Road Elevation and Culvert Replacement Construction-related Resource Impacts in Truro

Resource Area*	Permanent (sf)	Temporary (sf)
Bank (lf)	58	12
Bordering Vegetated Wetland	2,957	4,524
Land Under Water**	180	35
Riverfront Area	9,439	3,102
Land Subject to Coastal Storm Flowage	22,632	8,061
100-Foot Buffer Zone	19,426	3,329

(Source: project drawing set Sheet G02 and C70-74)
*Reflects impacts within limit of disturbance.
There is overlap among impacts recorded for resource area types.
**Includes 15 CY of dredging in Land Under Water.

9.4.1 Temporary Impacts

Temporary wetland impacts are anticipated to occur in the zone between the permanent wetland impact limit and the proposed limit of work. These short-term, temporary impacts may include, but are not limited to, installing ES&C, removing vegetation, establishing work areas, and installing temporary structures. Generally, temporary impacts consist of a 3-foot temporary work zone beyond the limits of the proposed grading; these areas of temporary impact will be restored to preconstruction conditions after work is completed.

9.4.2 Permanent Impacts

Elevating roadways to protect from increased tidal elevations will result in permanent impacts to wetlands adjacent to the roadways proposed for elevation due to widening the embankments as well as from replacing the existing culverts. Permanent impacts to the Banks, BVW, Riverfront Areas, Fish Runs, Land Subject to Coastal Storm Flowage, and Buffer Zones is limited to fill required to elevate the roadways. Permanent impacts to these resource areas as well as Land Under Water will result from replacing the existing culverts and installing the Pole Dike Creek water control structure.

Permanent impacts to wetland resources include a total of 458 sf of impact to River Bank; 116,236 sf of impact to BVW; 3,661 sf of impact to Land Under Waterbodies and Waterways; 477,483 sf impact to LSCSF; and 357,144 sf to the 100-foot buffer zone. Temporary impacts include 89 sf of impact to Bank; 35,823 sf of impact to BVW; 570 sf of impact to Land Under Waterbodies and Waterways; 75,243 sf of impact to Land Subject to Coastal Storm Flowage; and 38,226 sf of impact to the 100-foot buffer zone.

The project will alter a combined total of 136,603 sf of the 200-foot Riverfront Area associated with Pole Dike Creek, Herring River, Bound Brook and one of its perennial tributaries, of which 92,975 sf of impact to Riverfront Area is within 100-feet of the rivers and 43,628 sf is between 100 feet and 200 feet. A total of 304 cubic yards will be dredged from the Land Under Waterbodies and Waterways, of which 194 cubic yards is considered to be located within the Fish Run associated with the Herring River waterway.

9.4.3 Maintenance of Fish Passage

The low-lying roads work will include removal and replacement of the existing Herring River culvert on Bound Brook Island Road to provide improved flow in Herring River into the upper marsh reaches upstream of the road crossing and the spawning grounds in the upper watershed. To minimize the impact to fish passage, work associated with the culvert removal and replacement in the fish run will be done in accordance with suitable Time of Year (TOY) Restrictions that correspond primarily with river herring and eel runs, as applicable. The Bank restoration work will follow along the same sequence of work after the replacement culvert is installed. The work will also be conducted in a continuous fashion, with work, once started, to remain ongoing until completed to reduce the length of time related to any construction impact.

Following construction and site restoration, the Project area will be very similar to existing conditions. Existing roadways will be elevated and widened in places, resulting in limited impacts to wetlands adjacent to roads; however, no change in use will occur within or adjacent to the Project area as a result of roadway elevation. No detrimental effects on use of the Project area are anticipated, and the beneficial effects of increased flow capacity and reduced inundation are permanent. Low Lying Roads (LLR) work is designed to accommodate full restoration.

9.4.4 Avoidance and Minimization of Impacts

Impacts to wetlands have been minimized to the extent practicable by limiting fill quantities to what is necessary to elevate roadways to the required elevations. A 3:1 slope is being used in most locations. This 3:1 slope can be stabilized with native plantings without concerns to slope stability, and is not a barrier to wildlife passage. Steeper slopes (2:1) would require stone armor or geotechnical stabilization mat, while more gradual slopes (4:1) would result in significantly more fill and associated wetland impacts. Riverbanks adjacent to culverts at certain locations will be designed at 2:1 slope when needed to reduce impacts to adjacent wetlands. Riprap will be installed at these locations. Shifting the existing roadway centerline was also considered. By shifting the road alignment away from the wetland, the resource area impacts could be minimized while impacts to private properties would increase. However, this shift would result in a significant increase in project cost. Specifically, the current road alignment is cut along steep grades, generally at the toe of natural embankments. In some areas, the existing slope is 1.5:1 with the toe of slope at the pavement cross-section. A shift of the centerline would require significant cuts into adjacent naturally stabilized embankments and require the construction of

retaining walls. These retaining walls would be significant structures with varying heights depending on roadway alignment. In addition, construction would require clearing significant portions of the slope, which could result in the overall instability of the slope. A detailed engineering analysis would be required to maintain slope stability during construction.

Shifting the roadway centerline away from natural embankments would reduce the need for cutting into slopes on the east side of the alignment and thereby reduce costs. This option, though more cost beneficial, would result in greater impacts to the adjacent resource areas. For this reason, to compromise between cost and wetlands impact, it was decided to keep the proposed road alignment at the current centerline of the road. E&SC and Planting notes and details are provided on Sheets G02, C78, C79 and C85.

9.5 Private Property Mitigation

9.5.1 Chequessett Yacht and Country Club Reconfiguration

Table 16. Summary of CYCC Reconfiguration Construction-related Resource Impacts

Resource Area*	Temporary (sf)	Permanent (sf)
Land Under Water	340	3,893**
Bank (lf)	510	2,468
Bordering Vegetated Wetlands***	59,922	490,551
Coastal Bank (lf)	NA	6,103
Riverfront Area	12,691	301,213
Land Subject to Coastal Storm Flowage	53,723	1,162,030
100-Foot Buffer Zone****	25,997	961,095

(Source: project drawing set Sheet N-1)
*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.
** Includes 224 cubic yards dredging in Land Under Water
***Includes 486,505 sf of altered historic wetlands (labeled as hydric soils) on an actively managed golf course.
****Includes impacts to the 100-ft Buffer Zone associated with hydric soils, which are regulated separately at the local level.

9.5.1.1 Temporary and Permanent Impacts

Temporary impacts are primarily associated with the installation of the haul road in the vicinity of hole 3 and the areas of drainage improvements within the tidal network associated with the main channel of Mill Creek, Mill Creek Channel Extension C, Mill Creek Tributary A1 and Mill Creek Tributary A2. These areas of temporary impact will be restored to pre-construction conditions after work is completed, with permanent improvements as noted above.

Temporary impacts may include, but are not limited to installing E&SC, the installation of the haul road, removing vegetation, establishing work/staging areas, installing temporary structures, excavation, re-establishment of vegetation and restoration of disturbed areas to their pre-construction condition.

Temporary impacts to resource areas include 59,922 square feet (sf) of disturbance and 917 within BVW, 510 lf of inland Bank, 340 sf of disturbance to Land Under Water, 25,997 sf of disturbance to 100-foot buffer, 53,723 sf of disturbance to Land Subject to Coastal Storm Flowage, and 498 linear feet (lf) of disturbance to inland Bank. Temporary impacts of 12,691 sf of disturbance are expected within the 200-foot of the Riverfront Area associated with Mill Creek; all temporary impacts currently proposed are between 100 feet and 200 feet away from Mill Creek and perennial tributaries.

Permanent impacts to wetland resource areas are primarily associated with the raising and rebuilding of the five low-lying holes and drainage improvements within Mill Creek.

Some temporary impacts noted above and included on Table 15 result from construction-phase alterations that are referenced on the plans. Additional temporary impacts may stem from delivery of fill material to holes 7 and 8 but are not reflected above; these cannot be estimated due to the broad range of options that will be the purview of the selected contractor. Information about the preferred approach will be provided to the Conservation Agent for review and guidance.

Permanent impacts to wetland resource areas are primarily associated with the raising and rebuilding of the five low-lying holes and drainage improvements within Mill Creek.

Permanent impacts to resource areas may include, but are not limited to, elevating low-lying fairways, construction of new tees, greens and practice areas, substantial reconfiguration of Hole #2, partial renovation of the three remaining holes, relocation of the practice range, removal of a culvert, significant irrigation system improvements, improvements within the tidal creek network, grassing and revegetation of disturbed lands, drainage habitat enhancements within wetlands and pollinator seeding and shrub plantings within upland out-of-play areas.

Permanent impacts include 490,551 sf of BVW, 3,893 sf of Land Under Water, 961,095 sf of 100-foot Buffer Zone, 1,162,030 sf of Land Subject to Coastal Storm Flowage, 6,103 lf of Coastal Bank, and 2,468 lf of inland Bank. Permanent impacts of 301,213 sf are expected within the 200-foot Riverfront Area associated with Mill Creek and perennial tributaries; this includes 180,492 sf within 100 feet and 200 feet. Permanent impacts also include 224 cubic yards of dredging in LUW.

9.5.1.2 Avoidance and Minimization of Impacts

The following measures were applied to the golf course reconfiguration to minimize impacts to on-site wetlands while also achieving the project's goal of protecting the course from increased tidal range and inundation risk resulting from the restoration of the Herring River:

- The limit of disturbance is being minimized to the extent practicable. For instance, the raising of low-lying holes was configured to avoid and minimize impacts to BVW. In addition to the overall layout of the raised fairways, side slopes were steepened to the extent possible to maintain a well-vegetated transition to the marsh restoration zones.

- The limit of disturbance will be flagged prior to construction activity. This step will reduce the likelihood of inadvertent disturbance of areas outside the project limits, particularly in wetland resource areas.

- The golf course will implement BMPs identified in an Integrated Golf Course Management Plan. The plan includes natural conservation and land use practices addressing the management objectives for the entire property by CYCC. The integrated approach is designed with the use of BMPs so that all management techniques are exhausted prior to integrating turfgrass chemicals into management for control. These practices are intended to create an ecological balance between pests and their naturally occurring predators and provide additional safeguards near protected wetland resource areas.

E&SC, Revegetation and Wetland Restoration notes and plans are provided on Sheets N-1, RV-1 – RV-5, D-1 and D-2.

9.5.2 Low-lying Property Impact Prevention at 695 Bound Brook Island Road

Table 17. Summary of Private Property on Bound Brook Island Road

Construction-related Resource Impacts

Resource Area*	Permanent (sf)	Temporary (sf)
Land Subject to Coastal Storm Flowage	4,818	1,147
100-Foot Buffer Zone	4,841	1,186

(Source: project drawing set Sheet C-05)

*Reflects impacts within limit of disturbance. There is overlap among impacts recorded for resource area types.

9.5.2.1 Temporary and Permanent Impacts

Temporary wetland impacts are anticipated to occur in the zone between the permanent resource area impact limit and the proposed limit of work. These short-term, temporary impacts may include, but are not limited to, installing E&SC, removing vegetation, establishing work areas, and installing temporary structures. Generally, temporary impacts consist of a 3-foot temporary work zone beyond the limits of the proposed grading, and these areas of temporary impact will be restored to preconstruction conditions after work is completed.

Following construction and site restoration, the Miller-Frederiksen property will be very similar to existing conditions. The driveway will have been relocated, and floodwalls installed around the lower entrance to the secondary residence. No change in use will occur within or adjacent to the property as a result of installation of mitigation measures. No detrimental effects on use of the property are anticipated, and the beneficial effects of reduced flooding are permanent.

There will be no impact to BVW from work at the subject property; however, relocating the driveway to the secondary dwelling and installing flood barriers will result in permanent impacts to other resource areas. Permanent impacts to Land Subject to Coastal Storm Flowage, 100-foot Buffer Zone is limited to fill required to relocate the driveway and to install the flood barriers and patio

Permanent impacts to wetland resources include 4,818 sf to the Land Subject to Coastal Storm Flowage, and 4,841 sf to the 100-foot buffer zone. Temporary impacts include 1,147 sf of impact to Land Subject to Coastal Storm Flowage, and 1,186 sf to the 100-foot buffer zone.

9.5.2.2 Avoidance and Minimization of Impacts

E&SC and Planting notes and Details are provided on Sheets G02, C05 and C06.

10.0 Post Construction Monitoring and Maintenance Plans

10.1 Operation and Maintenance Plans

Appendix H contains draft operation and maintenance plans for all water control infrastructure, stormwater infrastructure and culverts. These operation and maintenance plans, listed below, will be finalized along with final design drawings and included with bid specifications.

Chequessett Neck Road Bridge and Water Access Facility Construction Operation and Maintenance Plan
Prepared by Fuss & O'Neill, Draft, March 2021

Mill Creek Water Control Structure and Drainage Improvement Operation and Maintenance Plan
Prepared by Fuss & O'Neill, Draft March 2021

Stormwater Operation & Maintenance Plan High Toss Road & Hopkins Drive
Prepared by ESS Group, June 2017, revised 2021

Operation & Maintenance Plan Pole Dike Creek Water Control Structure, Associated Culverts and Drainage Facilities
Prepared by WSP, Draft, March 2021

10.2 Ongoing Monitoring and Adaptive Management

The proposed adaptive management plan (Section 6.3 and Appendix L) is a rigorous science-based process of predicting system responses to restoration actions; monitoring system conditions before, during and after management actions are implemented; comparing the predicted and observed system responses to update the understanding of the system response to management actions; and using the results to inform and refine management actions. Information obtained from monitoring improves the ability to predict future outcomes and make better 'adaptive' decisions regarding the selection of appropriate management actions throughout the course of implementation.

Extensive monitoring is underway or is being planned to document baseline conditions and, once implementation begins, measure ongoing system responses to restoration of tidal flow. Table 8.B-1 found in Appendix L of this application provides a summary of the performance measures, prediction tools and monitoring methods that will be employed for each restoration objective and sub-objective.

By way of example to demonstrate how achievement of a particular restoration goal will be monitored, shellfish issues are described below.[16] Restoration objectives include maximizing habitat quality for native estuarine animals, including shellfish, and also minimizing adverse impacts to shellfish beds in Wellfleet Harbor. Extensive monitoring will occur during implementation to measure enhancements to shellfish resources and to protect against unanticipated impacts to shellfish resources. Monitoring activities have been presented in multiple public forums co-sponsored by FHR and the Wellfleet Shellfish Advisory Board.[17]

Recent and ongoing monitoring efforts to address shellfish habitat objectives are described below. Each of these, along with additional work that is still under consideration, will continue or will be repeated at the appropriate stage after the restoration project begins.

- National Seashore Monthly Water Quality Monitoring: Since 2005, scientists from the National Seashore have sampled water quality at 6 - 11 stations from Route 6 to Wellfleet Harbor each month. Variables analyzed include dissolved oxygen, pH (acidity), nitrogen, phosphorus, silica, iron, chlorophyll, and suspend sediment. The data provide a long-term trend of water quality throughout the Herring River floodplain.

- Continuous Real-Time Water Level and Water Quality Network: In 2017 Friends of Herring River installed 5 stations (4 in Herring River, 1 in Wellfleet Harbor) equipped with instruments that measure water level, salinity, temperature, dissolved oxygen, and pH at 15-minute intervals. The data provide both long-term trends (months to years) and short-term changes (hours to days) at each location. Data can be viewed on a public website to allow anyone to track changes as the Project is implemented. (https://v2.wqdatalive.com/public/820)

- 2013-2015 Water Quality and Estuarine Habitat Assessment from High Toss to the Harbor: The National Seashore conducted two studies between 2013 and 2015; one to assess movement of nutrients, carbon, and sediment in the downstream and upstream reaches of the river, and the other to study baseline inventories of benthic invertebrates and food webs. These studies provide information on nutrient status and particle movement from the river to the harbor and will be repeated as the restoration project is implemented. A NPS publication documenting this work is under review.

- USGS Water Quality Monitoring: The U.S. Geological Survey collected data at the Chequessett Neck Road dike from 2015 into 2018. Data collection will be reinitiated in 2020. This study uses an automated device to sample water passing through the dike during ebb

[16] Monitoring efforts for other restoration objectives and sub-objectives are summarized in Table 8B-1 of the Herring River Adaptive Management Plan, found in Appendix L.
[17] Video recordings of these meetings can be seen at http://www.friendsofherringriver.org/Videos.

and flood tides to separately analyze water moving in and out of the river and during varied tidal events. Samples are analyzed for nutrients and suspended sediment. A USGS report covering data collected so far is currently under review and will be released in 2020.

- Surficial Sediment Samples in Aquaculture Areas: Samples of the top 2-3 inches of sediment were taken at multiple sites near Mayo Beach, Egg Island, and Powers Landing by National Seashore scientists in 2006, 2010, and 2017. The samples analyzed the percent of organic material and the amounts of fine and coarse sediment. Describing these baseline sediment characteristics of Wellfleet Harbor is key to understanding current sedimentation trends to inform how the system may respond to reconnection with the Herring River.

- Harbor Sediment and Bathymetric Mapping: In 2019 the National Seashore, Friends of Herring River, and Center for Coastal Studies began a multi-parameter study to describe the sediment characteristics and seafloor elevation in aquaculture areas close to the river. This study involves high resolution and highly accurate data obtained by GPS-based ground survey, drone-based aerial photography, and boat-based side-scan sonar. The data product will be a detailed map of the area depicting bottom elevations, channel dimensions, tidal shoals, and flats that will show how Wellfleet Harbor changes from season-to-season and as the restoration project is implemented.

- Characterization of Herring River Sediment: Similar to the harbor mapping project, the National Seashore is examining sediment from the river and floodplain upstream of Chequessett Neck Road and is surveying elevations across the marsh to understand the pre-restoration conditions and assess how sediment may migrate throughout the system when the restoration project is underway.

- Fecal Coliform: National Seashore and cooperating scientists collected data that were published in 2009 that documented how the restoration project would improve water quality in shellfishing areas that are now closed to harvest due to bacterial contamination. The sampling conducted for this research will be repeated at least once prior to the beginning of the restoration project and will be repeated again throughout the implementation period to quantify and confirm the conclusions cited in the publication (Portnoy and Allen 2009).

11.0 Stormwater Management

11.1 Compliance with Stormwater Management Standards

Pursuant to the Stormwater Management Standards at 310 CMR 10.05(6)(k), stormwater runoff from all Phase 1 Project construction sites as well as post-construction runoff from Project infrastructure proposed in this application will be handled using stormwater best management practices (BMPs) to attenuate pollutants and to provide a setback from the receiving waters and wetlands. For the Project elements that incorporate stormwater BMPs in their respective design, Stormwater Management Reports (SWMR), including Stormwater Report Checklists, were prepared in accordance with the Stormwater Management Handbook. Draft versions of the SWMR are provided in Appendix I. Design calculations and recommendations in the draft SWMR are based on permit-level design; the SWMR will be finalized and stamped by a MA-licensed Professional Engineer as part of construction-level design. Similarly, Appendix I Stormwater Pollution Prevention Plans (SWPPP) and Appendix H O&M Manuals, provided as drafts to demonstrate compliance with Standards 8 and 9, respectively, will be finalized prior to construction. Construction-phase runoff and discharges are also regulated under CWA Section 402, National Pollutant Discharge Elimination System (NPDES).

11.1.1 Redevelopment Projects

The following Class 1 elements are subject to the standard for redevelopment under the MassDEP Stormwater Management Standards:

- Chequessett Neck Road Bridge
- Mill Creek Water Control Structure access road
- High Toss Road elevation
- Elevation of Old County, Bound Brook Island and Pole Dike Road and associated culverts and/or water control structure
- Elevation of Way #672
- CYCC elevation

Each applicable Class 1 element has been designed to meet the standards to the maximum extent practicable in accordance with Standard 7 Redevelopment. A synopsis of how each standard is met is provided below. Note that Standard 7 is presented first because its provisions affect the other standards.

Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and

the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

For purposes of the Stormwater Management Standards, redevelopment projects are defined to include maintenance and improvement of existing roadways, including improving existing drainage systems. Therefore, the following Class 1 elements of the HRRP meet the definition of redevelopment: CNR Bridge, High Toss Road, Low Lying Roads, CYCC Reconfiguration, and Low Lying Properties. As described below, the redevelopment portion of the Project meet the requirements of Standards 1, 2, 3, 4, 5, and 6 to the maximum extent practicable.

The two primary constraints for this Project are the limited right of way, shallow groundwater and adjacent resource areas. Practices that would require either additional resource area impacts or impacts to private property would be defined as not practicable for the purposes of stormwater compliance. The stormwater management plan attempts to meet each of the standards, adequately document standards that could be met, and is designed at a minimum to improve existing conditions.

Standard 1: No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

None of the Class 1 Project elements include any new stormwater conveyances that may discharge untreated stormwater to or cause erosion in wetlands or waters.

Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

The Class 1 elements of the Project are all located within Land Subject to Coastal Storm Flowage. In addition, once the Herring River restoration is implemented, the inland wetlands along many of the Class 1 elements will be subject to daily tidal action. For these reasons, the Proejct is not required to match post-development peak discharge rate to the pre-development peak discharge rate. However, where possible, the design seeks to maintain or improve post-development peak discharge rates to the maximum extent practicable.

Standard 3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from the pre-development site conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate

the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The proposed stormwater management system for the CNR Bridge has been designed to comply with the requirements of Standard 3 (for groundwater recharge) to the maximum extent practical.

Due to high groundwater and a constrained limit of work associated with the Low-Lying Roads Class 1 element, infiltration BMPs cannot be incorporated into the LLR design. Similar conditions exist along High Toss Road. The level spreaders proposed along High Toss Road and the catch basin and infiltration improvements on Hopkins Drive are designed to meet this standard to the maximum extent practicable. Infiltration from the BMPs will further aid in groundwater recharge as ground conditions permit.

The CYCC Reconfiguration Class 1 element would not involve new impervious areas. Therefore, the post-development site will approximate the annual recharge from the pre-development site conditions.

Standard 4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when: (a.) Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained; (b.) Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and (c.) Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

The CNR Bridge proposed stormwater management system has been designed to comply with the requirements of Standard 4 (for 80% TSS removal). The stormwater management system will consist of a "treatment train" approach that will remove 80% TSS prior to discharge to the River/Harbor. Under post-improvement conditions, runoff generated by the proposed northbound and southbound approaches (as well as the new bridge) will be captured by proprietary vortex separator inlet units (First Defense™ High Capacity FD-4HC units as manufactured by HydroInternational or approved equal) that will function as the first level of pretreatment prior to discharging to stormwater planter/filter areas. These pretreatment units will remove sediment/total suspended solids (TSS), floating trash/debris, oils, and hydrocarbons from the stormwater runoff without washing out previously captured pollutants.

Treated flow from these BMPs will then be conveyed by new drain piping to stormwater planters/filters located on each side of the bridge that will function as a secondary level of pretreatment. Runoff discharged to these planters will be filtered by approximately 24 inches of soil media prior to percolating into the underlying soils or through the weep holes proposed along the walls of the planters. The surface area of the planters, depths of filter media, and depths of ponding above the surface of the media were designed to fully contain runoff

generated by contributing drainage areas during storm events up to, and including, the water quality storm event (without overtopping the walls of the planters).

Storm events of a greater magnitude than the water quality storm event will overtop the planter walls onto the adjacent armored embankment slopes. Since this is a redevelopment project that involves components of new construction (i.e. the creation of a parallel parking lane on the bridge), the water quality volume discharged to each planter was computed by multiplying 1-inch over new pavement area (or pavement area equivalent to the net increase in impervious surface as compared to existing conditions) and by multiplying ½-inch over existing pavement area (equivalent to existing conditions) in accordance with Section 2.2.3 in accordance with the MassHighway StormWater Handbook for Highways and Bridge (May 2004).

Infiltration Stormwater BMPs with a minimum of 80 percent TSS removal rates were selected for use on the Hopkins Drive intersection with High Toss Road. This removal rate is accomplished with a treatment train comprising a deep sump catch basin pretreatment (25 percent TSS removal) dry wells, and ChamberMaxx storm chambers. The treatment train will provide the required water quality volume. Stormwater runoff along the High Toss Road travelway will either sheet flow across the travelway as it does in the existing condition or naturally infiltrate on the landward side of the travelway.

There is currently no stormwater management in place along the Low Lying Road segments. The primary constraints for stormwater management along the low-lying roadways are the limited right-of-way, shallow groundwater table, and immediately adjacent resource areas. Stormwater management practices that will require either additional resource area impacts or impacts to private property were excluded for the purposes of stormwater compliance.

To meet the Town's objective to elevate the road while maintaining its current rural character, the stormwater management system for the low-lying roadways was designed to mimic existing conditions through the inclusion of vegetated swales along the constructed road sections where feasible, taking into account the transverse pitch of the road, land available along the roadside, and other physical features. Due to high elevation of groundwater, the swales will be conveyance swales, not bio-infiltration swales. Vegetated swales have been added to sections of the roadway along the marsh wherever possible to reduce the amount of uncontrolled runoff directly into the wetlands.

No new permanent impervious areas have been proposed on the CYCC property. Therefore, structural best management practices (BMP) are not warranted. A low impact management program based on Integrated Pest Management has been developed to minimize the use of pesticides and herbicides. The long-term pollution prevention plan is described in the Integrated Golf Course Management Plan.

Standard 5: For land uses with higher potential pollutant loads source control and pollution prevention shall be implemented. The use of infiltration practices without pretreatment is prohibited.

Standard 5 is not applicable. The Project does not involve land uses with higher potential pollutant loads.

Standard 6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas.

Chequessett Neck Road Bridge - Although the bridge is not located within a Zone II or Interim Wellhead Protection Area of a public water supply, Herring River and Wellfleet Harbor are considered shellfish growing areas and critical areas of Outstanding Resource Areas for ACECs. Therefore, the proprietary treatment devices will meet the requirement of treating 44% of TSS prior to discharge to the stormwater planters/filters.

The proposed stormwater management system also meets Stormwater Standard 6 via the incorporation of proprietary treatment devices that will remove approximately 50% TSS (as verified by NJCAT and certified by NJDEP) prior to discharging to stormwater planters that will then function as secondary filtration BMPs resulting in the overall removal of 80% TSS prior to infiltrating and/or discharging to the River/Harbor.

High Toss Road - No discharges associated with the High Toss Road elevation are proposed within the Zone II or Interim Wellhead Protection Area of a public water supply. No new discharges are proposed to the ORW. The High Toss Road travelway will be elevated along its existing alignment and the existing stormwater system at the lower end of Hopkins Drive will be upgraded to reduce sheet flow runoff across High Toss Road to the wetlands. This Class 1 element will provide stormwater management improvements where possible and therefore will not adversely affect wetland resources areas.

Low-lying road elevation - No discharges associated with the elevation of low-lying road segments are proposed within the Zone II or Interim Wellhead Protection Area of a public water supply. No new discharges are proposed to the ORW. With the exception of catch basins on Hopkins Drive, these roadways currently do not have stormwater treatment in place. The project will add vegetated swales to sections of the roadway at Herring River and Bound Brook for stormwater BMPs.

CYCC - Portions of the CYCC property are located within a Zone I and an Interim Wellhead Protections Area. No new structural stormwater discharges are proposed. Therefore structural BMPs are not warranted.

Standard 8: A plan to control construction related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

A comprehensive system of erosion and sedimentation controls will be implemented during construction to minimize short-term, construction-related impacts as well as stabilize conditions for permanent operation of the development. Structural measures include silt fence and/or silt sock placement along disturbed areas of the property, turbidity control and dewatering plans for in-water work, prompt site stabilization, and a stabilized construction entrances as well as non-structural practices such as phasing activities to minimize the soil exposure and good housekeeping measures such as designating areas for equipment maintenance and concrete chute wash-out. An online registration and Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NPDES Construction General Permit will be submitted prior to construction. The SWPPP will be modified as needed throughout construction to address changing conditions.

Standard 9: A long term operation and maintenance plan shall be developed and implemented.

An operations and maintenance plan for any proposed stormwater BMPs has been prepared (See Appendix H).

Standard 10: All illicit discharges to the stormwater management system are prohibited.

No known illicit discharges currently exist in the Project Area. The Project will not allow any illicit discharges into the upgraded stormwater management systems.

11.1.2 Non-Redevelopment Projects

The Mill Creek water control structure is not classified as redevelopment, but increase in impervious area is minimized by incorporation of soil-filled vegetated stabilization BMPs in the design. Any stormwater discharge shall be provided with BMPs, as described in the attached SWMR, and no new stormwater conveyance will discharge directly into or cause erosion in wetlands or waters of the Commonwealth.

Access to the Mill Creek water control structure will be provided by a 12-foot wide drive that will extend approximately 1,200 feet from Old Chequessett Neck Road to a location near the north end of the dike structure, where a turn- around area will be constructed to allow adequate room for operation/maintenance vehicle maneuvers. A wider section of the access drive will be constructed along both sides of the northern portion of the dike structure to provide a stable surface for larger vehicles and heavy equipment to access the channel opening and sluice gates. This widened access drive will extend laterally up to approximately 20 feet from the dike structure, and will be stabilized by soil-filled, vegetated articulating concrete block matting. Retaining wall structures will be incorporated to minimize the footprint of the drive where it is elevated more than 30 inches above existing grades; these walls will be constructed

of segmental blocks that will allow plants to grow, as “living wall” structures. A portion of the drive will be constructed of soil-filled, vegetated articulating concrete block matting where stormwater runoff will be allowed to cross the at-grade roadway without a culvert or causing erosion damage to the drive’s surface.

11.2 Compliance with §30 of Article VI Town of Wellfleet General Bylaw

As described above, all low road work will improve stormwater management over current conditions, and erosion control measures will be installed to prevent impacts to wetland resource areas during construction. In compliance with §30 of the Town’s General Bylaw, “no road or other surface shall be re-graded, constructed, or maintained in such a manner as to divert or direct the flow of runoff, defined as including storm water or any other surface waters, excepting natural pre-existing water courses, into any wetland, as defined in Massachusetts General Laws Chapter 131, §40. Uncontaminated runoff shall be directed in such a way as to recharge the groundwater within the lot where it originates and in such a manner as not to alter natural runoff into any wetland, nor to cause erosion, pollution or siltation into or towards any wetland.”

12.0 Sources

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U.S. Department of the Interior, National Park Service. 2016. Record of Decision for the Herring River Restoration Project Final Environmental Impact Statement/Environmental Impact Report.

USGS New England Water Science Center

13.0 Appendices

A. Project Design Plans (provided in paper & electronic format)

Herring River Restoration Project, Chequessett Neck Road, Wellfleet, Massachusetts, Chequessett Neck Road Bridge and Water Access Facility Construction, Permitting Drawing Set, August 2021, Prepared for Friends of Herring River and Town of Wellfleet by Fuss & O'Neill (53 sheets), scale 1" = 30' or as noted, stamped by Dean E. Audet (civil # 45977), Kevin M. Sullivan (electrical # 47127) and Stuart N. Harris (structural #38323)

Herring River Restoration Project, Old Chequessett Neck Road, Wellfleet, Massachusetts, Mill Creek Water Control Structure and Drainage Improvements, Permitting Drawing Set, August 2021, Prepared for Friends of Herring River and U.S. Department of Interior National Park Service Cape Cod National Seashore by Fuss & O'Neill (36 sheets), scale 1" = 20' or as noted, stamped by Dean E. Audet (civil # 45977), Kevin M. Sullivan (electrical # 47127) and Stuart N. Harris (structural #38323)

Herring River Restoration Project, Wellfleet and Truro, Massachusetts, High Toss Road Notice of Intent Plans, November 17, 2021, Prepared for Friends of Herring River by WSP (16 sheets), scale 1" = 30', stamped by Clayton Carlisle (#45839).

Herring River Restoration Project, Engineering Design to Elevate Low-Lying Roadways and Replace Associated Culverts, Wellfleet and Truro, Massachusetts, Notice of Intent Plans, November 17, 2021, Prepared for Friends of Herring River by WSP (91 sheets), scale 1" = 40' or as noted, stamped by Clayton Carlisle (#45839).

Herring River Restoration Project, Permit Level Design Plans for Low-Lying Property Impact Prevention, Way #672, Hirsch-Meek Property (25 Way #672), & Ellis Property (27 Way#672), Wellfleet, Massachusetts, Notice of Intent Plans Not For Construction, November 17, 2021, Prepared for Friends of Herring River by WSP (11 sheets), scale 1" = 20", stamped by Clayton Carlisle (#45839).

Chequessett Yacht and Country Club Reconfiguration Notice of Intent Plans, Herring River Restoration Project, Wellfleet and Truro, Massachusetts, 680 Chequessett Neck Rd, AP 19 Lots 81, 81-2, 173, 11-1, and 12-1, November 18, 2021, Prepared for Friends of Herring River by ESS Group and Howard Maurer Golf Course Design (37 sheets) | scale 1" = 50' or as noted, stamped by Payson R. Whitney III (Civil # 41706).

Herring River Restoration Project, Permit Plans for Low-Lying Property Impact Prevention Miller-Frederiksen Property (695 Bound Brook Island Road) Wellfleet, Massachusetts, Notice of Intent Plans – Not for Construction, November 17, 2021, Prepared for Friends of Herring River by WSP (9 sheets), scale 1" = 30" or as noted, stamped by Clayton Carlisle (#45839).

B. Agency Correspondence:

- MA DFW Waiver Determination and Recommended Practices (2018)
- MA DMF Determination and TOYs (2018) and FEIR Comment Letter (2016)
- NHESP FEIR Comment Letter (2016)
- NOAA NMFS Essential Fish Habitat Conservation Recommendations (2020)
- USFWS ESA Section 7 Compliance (2021)

C. Herring River Restoration Project Habitat Restoration & Monitoring Plan

D. List of Permits Required by Project

E. Wetland Delineations

F. Combined Permit/401 Water Quality Certification

G. Stream Crossing Photos

H. Operation and Maintenance Plans

I. Stormwater Reports

J. Hydrodynamic Studies

K. Groundwater Studies

L. Herring River Adaptive Management Plan

M. Design Alternatives for Class 1 Project Elements

N. Inland Wetland Restriction Order (Truro)