Coastal Habitat and Water Quality Grant Program FY 2024
RfR ENV 24 CZM 01

SECTION 1: COVER PAGE

Applicant:	Mattapoisett Land Trust, Inc. (MLT)
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Title:	***Habitat Restoration Plan for the Mattapoisett Neck Salt Marshes***
Category:	2 (d): Comprehensive habitat restoration planning
Partners:	Town of Mattapoisett (Select Board, Highway Surveyor, Conservation Commission) Buzzards Bay Coalition (BBC) Plymouth County Mosquito Control Project (PCMCP)
Subcontractors to MLT:	Woods Hole Group, Inc. (WHG) Greenman Pedersen, Inc. (GPI)
Grant requested:	**$82,856**
Match amount:	**$20,714**
Total Project Budget:	**$103,570**

Summary:

Mattapoisett Land Trust, Inc. (MLT) and the Town of Mattapoisett (Town) propose to work together to prepare a comprehensive salt marsh habitat restoration plan for the tidal marshes west of Mattapoisett Neck Road. The 245-acre study area shown on Map 1 includes 106 acres of damaged and degrading salt marsh as well as 139 acres of surrounding buffer zone and forest, most of which will support future marsh migration. This contiguous marsh area is one of the largest on the western shore of Buzzards Bay, and is highly valued for the ecological, recreational and scenic benefits provided to residents and visitors.

The restoration plan will include four parts: (1) assessment of existing conditions in the project area; (2) projection of future marsh conditions in view of sea level rise, growing intensity of coastal storms and rainfall, and similar factors; (3) evaluation of possible marsh restoration actions, then prioritization based on efficacy, feasibility, ability to permit, and cost; and (4) selection of two to four specific restoration actions for detailed technical designs including drawings, implementation schedule, permit pathway and cost estimates. We expect that a 25% engineering design for replacement of the tidally-restrictive Molly's Cove culvert, and technical designs for draining areas of tidal ponding on the marsh shelf using runnels will be two of the specific actions selected for further work. The engineering design for culvert replacement will draw on a companion study of the hydraulics and hydrology (H&H) of the Mattapoisett Neck marshes being conducted by the Buzzards Bay Coalition using funds from the Massachusetts Division of Ecological Restoration (MA DER.) Results of the H&H study will prove useful to other aspects of restoration planning as well.

SECTION 2: PROBLEM STATEMENT

The problem to be addressed is the continuing severe degradation of salt marsh to the west of Mattapoisett Neck Road in Mattapoisett, Massachusetts. Map 1 shows the study area, which includes salt marsh, tidal channels and ditches, and surrounding buffer zone and forest. The area shown totals 245 acres, not including an additional ~20 acres of open water and mudflat at the southern end. Map 2 locates the study area in the southwestern corner of Mattapoisett along the shores of Mattapoisett Harbor and Brandt Island Cove. Both bodies of water are tidal and connect directly to Buzzards Bay.

Exhibit 1 includes photographs showing salt marsh damage in the study area along the banks of tidal creeks and ditches, scour holes at the culverts under Mattapoisett Neck Road, and areas of vegetation dieback due to ponding of water on the marsh shelf particularly in the upper left corner of Photo 3. Aerial images are used to show the large scale of damage to the marsh. As shown, the marsh damage in the study area is extensive. More photographs or a site visit can be provided upon request.

The climate resiliency of Mattapoisett Neck Road was the subject of a CZM-funded study in 2020 and 2021 conducted by Fuss & O'Neill and subcontractors for the Town of Mattapoisett (Town). Several partners or subcontractors applying for this grant were involved in the 2021 study, including Woods Hole Group (WHG), Buzzards Bay Coalition (BBC) and Mattapoisett Land Trust (MLT). There is a wealth of useful information in the Fuss & O'Neill 2021 report.

As reported in Fuss & O'Neill 2021 the hydrology of the study area is complex, with tidal flow entering through three culverts under Mattapoisett Neck Road at the northeast boundary, as well as overland from Brandt Island Cove to the south at higher tides. There also is some fresh water flow into the marsh from groundwater flows and intermittent streams, particularly on the more southerly eastern and western edges. The study area boundary shown in red on Map 1 was set generally at the 10-foot elevation contour (using LIDAR data, stated as NAVD 88) or along Mattapoisett Neck Road to the northeast (which acts as a dam except for the three culverts.) The study area as defined will contain all sea level rise projections and resulting tidal flows and marsh migration out to 2070.

The ecological importance of salt marshes is well-understood, but lest there be any doubt Map 3 shows that virtually the entire study area is valued by the state's Natural Heritage and Endangered Species Program (NHESP). The majority of the area is Priority Habitat of Rare Species and Core Habitat, with the remainder listed as Critical Natural Landscape. In view of the importance of the area for environmental, recreational and scenic uses MLT has worked over the past 20 years to place almost all of the study area in conservation, either through fee ownership by MLT or the Town, or using a Conservation Restriction held jointly by MLT and BBC. Map 4 shows all of these conserved parcels within and around the study area. Map 5 shows the private owners of salt marsh parcels within and near the study area.

The State's BIOMAP3 team worked with The Nature Conservancy to map undeveloped upland areas adjacent to salt marshes that are likely to see migration of marsh vegetation due to ongoing sea level rise. These "coastal adaptation zones" are shown on Map 6. These are areas of potential future salt marsh, and comparison with Map 4 shows almost all the adaptation zone already is conservation land. As part of this restoration planning effort, we will determine what actions make sense to enhance the migration of salt marsh vegetation into these adaptation zones. Speeding the creation of new marsh will offset the ecological, recreational and scenic services lost from lower marsh areas as they become inundated.

Maps 7, 8, and 9 provide further evidence of ongoing damage and future threat in the study area. Map 7 shows a preliminary analysis conducted by the Buzzards Bay National Estuary Project (BBNEP) showing marsh area lost between 2001 and 2022. The area lost amounts to 12.5 acres of the 2001 marsh acreage of 118.3. At present roughly 105.8 acres of the study area remains salt marsh.

Map 8 presents information on the unvegetated to vegetated ratios (UVVR) for marsh blocks in the study area. The UVVR are calculated by Dr. Neil Ganju and team at the U.S. Geological Survey and show

the relative areas of mudflat and water surface compared to vegetation in the marsh. Ratios over 0.15 indicate higher potential for further marsh loss. As shown on Map 8, a large portion of the study area is shown in the reddish hues indicating UVVR greater than 0.166. This suggests greater potential for continuing marsh loss. For more information, see Ganju, N. et al., (2020) *Are elevation and open-water conversion of salt marshes connected?*

Map 9 presents projections of future habitat types in the study area generated by the Sea Level Affecting Marshes Model (SLAMM). SLAMM was developed specifically to evaluate the potential impacts to coastal wetlands from sea-level rise and incorporates important parameters, such as elevation, wetland classifications, sea-level rise, tide range, and accretion and erosion rates for various habitat types to project wetland changes over time. SLAMM was utilized to complete the 2016 statewide study ("Modeling the Effects of Sea-Level Rise on Coastal Wetlands", Woods Hole Group and Massachusetts CZM, 2016) for the entire coastline of Massachusetts. The graphics displayed on Map 9 are taken from the 2016 study and reflect medium projections of sea level rise. As shown, much of the study area is predicted to convert from irregularly flooded marsh to tidal flat by 2070. While the SLAMM maps show limited marsh migration at the edges of the present marsh area, higher potential for marsh migration will be demonstrated in this project using more detailed local topography as proposed in Section 4.

Buzzards Bay Coalition began long-term monitoring of marsh health at 12 sites around Buzzards Bay in 2019. At each site annual monitoring of elevation, vegetation and fauna are conducted along multiple transects. In addition, loss of marsh area is evaluated back to 2001 (as in Map 7). One of the BBC marsh monitoring sites is directly west of the Molly's Cove culvert in the study area. Initial results published in February 2023 document that the Molly's Cove site has a relatively high proportion of low-lying and bare area, and ***has experienced the greatest percentage of marsh loss (23%) of any site considered.*** The project partners believe this is due to the long-standing tidal restriction caused by the undersized culvert at Molly's Cove. For more information, see Jakuba, R.W. et al. (2023) *Buzzards Bay Salt Marshes: Vulnerability and Adaptation Potential*.

All of this information suggests that the Mattapoisett Neck salt marshes are suffering ongoing damage from climate change. But these marshes also hold high potential for comprehensive habitat restoration. BBC, with funding from the MA Division of Ecological Restoration, recently developed the Buzzards Bay Ecological Restoration Potential Modeling (ERPM) study. The ERPM is a spatial-based tool used to aid the identification and prioritization of ecologically important restoration opportunities throughout the western shoreline of Buzzards Bay. Development of ERPM was a collaboration between Horsley Witten, Inc. and BBC, with input from stakeholders participating in the DER-supported Buzzards Bay Watershed Restoration Partnership (BBWRP). The Town and MLT both are members of the BBWRP.

In the ERPM analysis, the restoration potential of salt marshes is based on three factors: (1) elevation of the vegetated portion of the marsh platform, (2) amount of vegetative cover present on the salt marsh and (3) proximity and magnitude of adjacent undeveloped upland for marsh migration. The highest scoring salt marshes in ERPM will have moderate vegetative loss and potential for improvement using currently available restoration techniques, average to higher elevation on the marsh platform suggesting some resilience to near-term sea level rise, and location adjacent to potential marsh migration areas. The presence of tidal restrictions that might be remediated, such as the Molly's Cove culvert, is noted during the saltmarsh scoring process.

The Mattapoisett Neck salt marshes scored in the highest ERPM category based on these factors, suggesting high potential for ecological restoration. This is consistent with BBNEP identifying the culvert at Molly's Cove as an important tidal restriction in 2002 and again in 2014. The presence of the restrictive culvert plus the high restoration potential of the Mattapoisett Neck salt marshes results in one of the best salt marsh restoration opportunities in Buzzards Bay. Thus we are applying to CZM for assistance to create a comprehensive, data and science-based salt marsh restoration plan and to begin work on specific restoration actions, including replacing the culvert.

SECTION 3: GOALS

The ongoing degradation of the Mattapoisett Neck salt marshes is severe and causal factors such as sea level rise and the undersized culvert at Molly's Cove are well understood by the project partners. The question is ***what should be done to slow the damage and restore salt marsh areas?*** To answer this question we propose four specific goals for this project:

1. Prepare a data- and science-based comprehensive salt marsh habitat **restoration plan** for the study area. The plan will be developed as described in Section 4, and will be consistent with current scientific literature and best practices as they are evolving in salt marsh restoration. Success will be measured by acceptance of the final plan by all project partners and by CZM. We expect that the plan will set out success measures for all restoration actions proposed for implementation.

2. Create a **25% engineering design for replacement of the Molly's Cove culvert**. This culvert is both tidally restrictive and a barrier to wildlife due to high flow rates, poor invert elevations and poor design. The culvert has been prioritized for replacement by BBNEP for over 20 years. In addition, the culvert is failing structurally and is vulnerable to storm damage so it is a priority for the Town. Success will be measured by acceptance of the 25% design by Town and State highway officials, and by acquisition of grant and other funds to replace the culvert within three years of acceptance of the 25% design plans.

3. Create a **technical plan for using small drainage channels ("runnels") to drain areas of ponding on the marsh shelf** caused by moon tides. These ponding areas result in vegetative dieback and creation of mud surfaces on top of the marsh. Recent results at BBC test sites as well as others reported in the literature suggest that runnels can quickly restore healthy vegetation on the marsh shelf and add further years of health to marshes. We see a number of locations in the study area that appear promising for runnels. The technical plan will describe what is to be done at specific locations, who will conduct the work, costs, and permitability. Success will be measured by acceptance of the plan by all project partners and CZM, and implementation of the planned work within one year of technical plan acceptance.

4. Create one or two **additional technical plan(s)** for marsh restoration actions. These could include steps to encourage migration of salt marsh vegetation into nearby buffer areas using methods such as: (1) acquisition of additional private lands in the BIOMAP3 coastal adaptation zone, and (2) on the ground alterations as needed to ease the transition to salt marsh by removing physical barriers, controlling invasive species, plantings of desired species, and other methods shown to work at other sites. Other restoration actions might include control of crab populations, creation of marsh public access points that minimize damage to the marsh surface, or similar actions. Success for this goal will be measured by acceptance of the restoration action plan(s) by all project partners and CZM, and implementation of the planned work within two years of technical plan acceptance.

SECTION 4: APPROACH

MLT's approach to developing a comprehensive salt marsh habitat restoration plan includes four steps, and follows the requirements set forth as points i through iv under 2.B.2.d. on pages five and six of the RfR:

Task 1: Site Evaluation and Delineation of Natural Resources
Task 2: Comprehensive Evaluation of Existing & Future Conditions
Task 3: Restoration Actions and Prioritization, and
Task 4: Salt Marsh Restoration Plan, including detailed plans for two to four restoration actions.

The work needed to complete these tasks will be performed by two subcontractors working under the direction of MLT: Woods Hole Group, Inc. (WHG) and Greenman Pedersen, Inc. (GPI.) In addition, the Buzzards Bay Coalition, Inc. (BBC) and the Plymouth County Mosquito Control Project (PCMCP) each will provide expertise. The responsibilities of each project partner are described below.

At the outset of work, MLT will organize a project initiation meeting with all project partners. The purpose of the meeting will be to review assigned tasks and schedules, set up communication channels among partners, and share relevant information already in hand. MLT, BBC and WHG already hold information relevant to the study area including drone imagery, photographs, results from BBC's marsh monitoring site just west of Molly's Cove, and data sets from WHG's work in support of the Fuss & O'Neill 2021 study. All existing information and data will be shared among the project partners. Further, MLT will invite staff from BBNEP to attend this meeting to share information, and we expect a representative of the H&H study being funded by MA DER through BBC to attend as well.

Task 1: Site Evaluation and Delineation of Natural Resources

1.1: Capture & Review Aerial Imagery

MLT will ask Woods Hole Group to commission a drone flight to capture high-resolution aerial imagery of the marsh surface within the study area shown on Map 1. The imagery will be reviewed prior to mobilizing for an on-the-ground resource area delineation to identify any data gaps in the existing wetland classification maps and to identify environmental damage (areas of die back, persistent ponding, evolving mudflat, active channel erosion, etc.) that should be surveyed on the ground during the delineation. This aerial imagery also will serve as a baseline condition that can be monitored during aerial flights in subsequent years and/or after the implementation of restoration actions to track changes in the marsh over time. Mosaic photos of the site will be furnished in Massachusetts State Plane ft. – NAVD88 ft. to allow for seamless, referenced integration into ArcMap figures.

1.2: Resource Area Delineation

Once the drone flight is completed and aerial imagery reviewed, MLT will authorize WHG to delineate the extent of all coastal resource areas found throughout the project area, except for areas immediately upstream and downstream of Mattapoisett Neck Road, which were delineated during the Fuss & O'Neill 2021 study.

All resource areas will be surveyed using a Real-Time-Kinematic-(RTK)-GPS. During the delineation, damaged areas identified in the aerial imagery will be surveyed closely on the ground. While in the field, WHG staff will note dominant plant species, as well as any other unique conditions present on-site (e.g. density of crab burrows, bank damage from rapid flow or ice). Photographs will be taken to document the existing condition of each resource area and the overall study area. Following the site visit, a final verified cover type map will be generated in ArcGIS. Findings of the delineation and review of aerial imagery will be summarized in a technical memo. Existing conditions delineated in Task 1 will serve as the primary inputs for all supplementary SLAMM modeling described in Task 2.

Task 2: Comprehensive Evaluation of Existing & Future Conditions

2.1: Review Existing Documentation

To build on Task 1 results and the datasets identified at the project initiation meeting, MLT will ask WHG to conduct a comprehensive review of existing datasets, including overall watershed characteristics, visible storm water inputs, adjacent infrastructure, and existing reports, imagery, and evaluations of the study area held by the BBNEP, Town, BBC, independent researchers and others. Existing data and studies will be reviewed to ascertain all data available and where data gaps exist. Data will be sought regarding historic or recurring events with impacts on the study area such as floods, algal blooms, fish kills, and wildfires. Data will be collected about land use changes and use restrictions (i.e., conservation status, easements, etc.), recreational areas, public access points, mosquito control activities, nearby shellfish or aquaculture areas, and restoration activities. Information about current management practices will be elicited from property managers through direct inquiries. Information about site history and existing conditions will provide lessons learned and guide future management and restoration actions.

2.2: Site-Specific SLAMM Modeling & MC-FRM Imagery

MLT will ask WHG to utilize the Sea Level Affecting Marshes Model (SLAMM) to evaluate future wetland habitat conditions in the study area. SLAMM was developed specifically to evaluate the potential impacts to coastal wetlands from sea-level rise, and incorporates important parameters, such as elevation, wetland classifications, sea-level rise, tide range, and accretion and erosion rates for various habitat types to project wetland changes over time. This task will re-run SLAMM using a high-resolution modeling grid developed specifically for the study area as part of Task 1. We expect to see resolution of roughly 3 feet for this effort compared to resolution of 15 to 20 feet in the 2016 SLAMM results. This improved accuracy will be important to inform the development of restoration actions described in Tasks 3 and 4.

As part of this Task, WHG also will leverage the results of the Massachusetts Coast Flood Risk Model (MC-FRM) and site-specific tidal data collected as part of the Fuss & O'Neill 2021 study to develop a series of sea level rise inundation maps and figures to illustrate future flood risk through the 2070 planning horizon within the study area. The MC-FRM simulates a full suite of processes that affect coastal water levels, including tides, waves, winds, storm surge, sea level rise, and wave set-up at a fine enough resolution to evaluate individual assets on a parcel-by-parcel level. Since the MC-FRM domain includes the Town of Mattapoisett, this model is ideally suited to assess the risk of coastal flooding to the Mattapoisett Neck salt marsh system. Particular attention will be paid to potential flooding of developed private properties in the study area, including those fronting on Mattapoisett Neck Road just to the northwest of the Molly's Cove culvert. The results of the site-specific SLAMM modeling and sea level rise mapping will be summarized in a Technical Memo prepared by WHG.

Task 3: Restoration Actions and Prioritization

3.1: Development of Restoration Actions

MLT, BBC, WHG and other project partners are knowledgeable about the research and applied literature describing methods for restoration of salt marshes. The bibliography provided in Section 13, Exhibit 2 provides an illustration of the research known to us. In addition, we are familiar with present conditions and recent history in the study area. Using this knowledge, we have identified two restoration actions that hold high promise in the study area:

Action 1: restoration of full tidal flow by replacing the Molly's Cove culvert, and
Action 2: installation of runnels to drain areas of ponding on the marsh shelf.

In addition, we have identified a number of additional actions that merit further consideration. These include methods to enhance the migration of salt marsh vegetation into low lying areas adjacent to existing marsh, control of *Phragmites* and other invasive vegetation, control of marsh crabs, and planning for acquisition of additional private land to allow future migration of salt marshes.

Using this knowledge as well as the results of Tasks 1 and 2, MLT will lead the project partners to establish clearly defined restoration goals and a final suite of restoration actions. The list of restoration actions to consider will be based on the partners' existing knowledge as well as primary publications reflecting the best available science. In addition MLT, BBC and WHG may consult with additional experts outside the project team to learn about current best management practices and lessons learned from recent salt marsh restoration efforts. These consultations also will solicit feedback on the selection and prioritization of restoration actions for the Mattapoisett Neck salt marsh system that are feasible, permittable, and likely to provide the greatest ecological benefits.

3.2: Alternatives Analysis and Prioritization of Restoration Actions

Once the list of restoration actions is finalized, MLT will ask WHG to develop a restoration action prioritization matrix which compares the selected actions. The attributes to consider will include impacts to resource area(s), sensitive species benefit/impact, permitting feasibility, construction feasibility, relative construction costs, and community benefit. MLT and WHG will work closely with BBC on this task and utilize lessons learned from ERPM. A final prioritization matrix will rank order the top restoration actions for further planning and implementation. The results of Tasks 3.1 and 3.2 will be provided in a Technical Memo prepared by WHG.

Task 4: Salt Marsh Restoration Plan, and Restoration Action Plans

4.1: Salt Marsh Restoration Plan

A salt marsh restoration plan will be drafted summarizing the results of Tasks 1 through 3 and detailing the results of field data collection, site-specific modeling, and restoration actions development and prioritization. Additional sections outlining order-of-magnitude costs, permitting requirements, implementation timelines, and monitoring protocols will be included. MLT will ask WHG to take the lead role in drafting the plan, with input and review from all project partners.

4.2: Detailed Planning of Selected Restoration Actions

As described in Section 3 we have selected two restoration actions for detailed planning: replacement of the Molly's Cove culvert, and use of runnels to drain areas of ponding on the marsh shelf. Each of these actions is described below.

4.2.1 Engineering Design for Replacement of the Molly's Cove Culvert

MLT will ask Greenman-Pedersen, Inc. (GPI) to prepare a 25% engineering design for a new culvert under Mattapoisett Neck Road at Molly's Cove. GPI envisions using a large box culvert perhaps combined with one or more additional pipes to eliminate the present tidal restriction and create a stronger structure that is resistant to future flooding and more intense storms. Design documents will include preliminary bridge plans, design calculations, description of the permits needed to replace the culvert, an implementation strategy to maintain access via the road during construction, a construction schedule, and a construction cost estimate. Details of GPI's approach and budget are presented in their letter proposal in Section G.

GPI has worked with the Town on a number of culvert and highway projects since 2015. Their work is excellent and well accepted by the Town and town residents. The qualifications and experience of the personnel proposed to develop the 25% design are described in the GPI proposal in Section 13.

The Fuss & O'Neill 2021 study documented the tidal restriction created by the existing Molly's Cove culvert, and detailed the need for a full hydrology and hydraulics (H&H) study of the marsh before a larger culvert could be safely designed. A full H&H model is needed to allow engineers to calculate the tidal restriction caused by replacement culverts of various designs and sizes, and also to ensure that a larger culvert will not cause flooding or other harm to public infrastructure or private property in the study area.

The necessary H&H study for the Mattapoisett Neck marshes presently is being procured by BBC using funds provided by the MA Division of Ecological Restoration (DER), and full results will be available to GPI. Contractor proposals for the H&H study are due to BBC on June 23rd and a contract is expected to be in place with the selected H&H contractor in early July. BBC envisions having H&H results ready for use by GPI in November or December 2023. This will allow ample time for GPI to develop the 25% design by April 30, 2024. BBC is budgeting between $50,000 to $70,000 for the H&H study due to the hydraulic complexity of the Mattapoisett Neck marshes and the prospect of significant sea level rise in the coming years. This constitutes a major contribution to restoration planning for the Mattapoisett Neck marshes by MA DER and BBC. For further information about the H&H study please contact Jason Clermont at BBC, Clermont@savebuzzardsbay.org.

4.2.2 Technical Plan for using Runnels

MLT will work with BBC, Plymouth County Mosquito Control Project (PCMCP) and WHG to develop a technical plan to install small drainage ditches called runnels to drain areas of ponding on the marsh shelf. These pond areas are filled by moon tides and then do not drain for several weeks, creating areas of vegetative dieback and resulting mud flat. BBC and other organizations (such as Rhode Island's Save The Bay) have successfully used runnels to drain these ponding areas after each tidal cycle, resulting in no standing water on the marsh shelf and reemergence of marsh vegetation. Exhibit 3 shows before and after photographs of a runnel test site utilized by BBC at Little Bay in Fairhaven. The regrowth in marsh vegetation is clear over several growing seasons after runnels are installed. The Little Bay site is similar to the Mattapoisett Neck marshes, and in fact is only 2.5 miles west of our study area. Studies reporting additional success using runnels are included in the bibliography in Exhibit 2.

The Technical Plan will identify specific ponding areas proposed for installation of runnels, together with a plan showing proposed paths for the runnels to drain the ponds to a nearby tidal creek or mosquito ditch. Recent runnels installed in Barnstable and Bristol Counties have been implemented by the mosquito control projects in those counties. Plymouth County Mosquito Control Project (PCMCP) is excited to work with the project partners to finalize design and then install runnels as needed in the study area. The Technical Plan will identify any costs, necessary permits and an installation schedule for each runnel site. WHG will prepare design plan sheets showing the location(s) and routing of proposed runnels. Plan sheets will be drafted in *Illustrator* in 11x17 format, which may be adapted to AutoCAD to support any necessary engineering design work.

4.2.3 Additional Technical Plans

MLT and the project partners will develop one or two technical plans for additional restoration options to be selected as part of Task 4.1. Possible actions include (1) acquisition of additional private lands in the BIOMAP3 coastal adaptation zone, (2) on the ground alterations to ease the transition to salt marsh by removing physical barriers or controlling invasive species, (3) control of crab populations to reduce burrowing and undermining of the marsh shelf and banks, (4) creation of marsh public access points that minimize damage to the marsh surface, and (5) similar actions. Each technical plan will include a complete description of the proposed action, implementation location(s), schedule, necessary permits and cost. If necessary, WHG will provide design plan sheets for these additional actions.

Note that while much of the study area already is protected conservation land as shown in Map 4, there are salt marsh areas in private ownership at the southern boundary of the study area (shown in Map 5)

and also additional private marsh holdings further south of the study area, as shown circled in yellow on Map 10. As part of developing additional restoration actions, MLT will contact these private marsh owners to determine willingness to consider restoration actions on their land, and land conservation options such as conservation restrictions or purchase by MLT or another conservation organization. Plans for future land protection to allow additional marsh migration could become a recommended restoration action.

SECTION 5: CLIMATE CHANGE

Consideration of climate change impacts is included fundamentally in all aspects of this application. As set forth in Section 4, Task 2 will comprehensively evaluate future conditions in view of climate change, using the SLAMM model, the MC-FRM coastal flood model, and on-site survey and resource delineation data developed by the project team. These tools have been developed by the state to ensure projects have a solid basis to consider all effects of climate change. The project team will utilize these tools and other similar data sets and models fully. Climate change impacts will be fully considered in development of the restoration plan, and in all technical plans for restoration actions developed under this grant.

SECTION 6: ENVIRONMENTAL JUSTICE

The project partners believe that all people have a fundamental right to live in and enjoy a clean and healthful environment. All of the study area lands are open to the public for passive outdoor recreation and are easily accessible via the MLT hiking trail system on the west side and via the lengthy frontage along Mattapoisett Neck Road on the northeastern edge. We observe many social trails leading from the shoulder of Mattapoisett Neck Road into the salt marsh, and often observe people fishing, crabbing, hunting, bird watching, gathering bait and pursuing similar activities. Although it is hard to know, we suspect many of these people are from communities outside of Mattapoisett. We welcome all people to enjoy MLT lands.

Mattapoisett does not have any Environmental Justice (EJ) areas within the town, but Map 11 shows numerous EJ areas in nearby communities. In addition, as shown Mattapoisett has two Title 1 schools that receive food subsidies and other services based on housing a population of lower-income students who qualify for this aid. Public open space is particularly valuable for citizens with less income and therefore less ability to own a boat, or rent or buy properties on or near open space and shorelines. We believe that restoration and protection of the Mattapoisett Neck salt marshes will have benefits for nearby EJ communities as well as for lower income residents of Mattapoisett.

(SECTIONS 7 and 8 are not required)

SECTION 9: RESULTS

The project will produce the deliverables listed below on the estimated dates shown. These dates assume we are able to start work on October 1, 2023. Note that there are mid-day low tides that would be ideal for the drone imagery proposed in Task 1.1 during the last few days of September. Thus it would be preferable to begin work on or before September 15, 2023 if it is possible to have grant paperwork in place by that date.

Task 1: Aerial Imagery and Resource Delineation Technical Memo	November 30, 2023
Task 2: Evaluation of Existing & Future Conditions Technical Memo	December 31, 2023
Task 3: Restoration Actions: Descriptions and Prioritization Technical Memo	March 15, 2024
Task 4: Restoration Plan (draft)	April 19, 2024
Restoration Plan (final)	May 15, 2024
Task 4: Restoration Action Detailed Plan 1 (25% Design for replacement of Molly's Cove culvert)	April 30, 2024
Task 4: Restoration Action Detailed Plan 2 (Design, location, costs to install runnels)	May 30, 2024
Task 4: One to two additional Restoration Action Detailed Plans as determined by the project partners with CZM	June 30, 2024

More details on the schedule are shown as part of the subcontractor proposals for Woods Hole Group and Greenman Pedersen included in Section 13.

These deliverables tie directly back to the four goals listed in Section 3. The final Restoration Plan (May 15, 2024) will meet Goal 1. The 25% Plan for Culvert Replacement (April 30, 2024) will meet Goal 2. The Technical Plan for using runnels (May 30, 2024) will meet Goal 3. And the creation of one or two additional technical plans for restoration actions (June 30, 2024) will fulfill Goal 4.

SECTION 10: LOCAL COMMITMENT

There is a very high level of local commitment for this project, as shown by the letters of support listed in Section 13 from Town officials and partner organizations. The Town was accepted as a MVP community in 2018, and our MVP Plan lists "projects to strengthen climate-impacted access roads (such as Mattapoisett Neck Road)" as a Highest Priority. Beginning in 2015 Mattapoisett has received eight MA CZM grants to help build resilience of our ecosystems and infrastructure. One of those grants funded the Fuss & O'Neill 2021 study that provides valuable supporting information for this project. In addition, the 2021 study created a citizen review committee largely comprised of Mattapoisett Neck residents. We expect this group will be interested in the proposed salt marsh restoration plan and actions.

To keep the public informed about work on this project, MLT and the Town will create a project page on the Town's website. We have done this for the CZM-funded Old Slough Road project and the web page has been effective in keeping the public up to date on project status and findings. In addition, MLT with our project partners will host two public meetings to discuss the findings of the study. These meetings are scheduled for the third week of January 2024 and the fourth week of May 2024. The meetings will be held in the large training room at the Mattapoisett Fire Station. The first will report results of Tasks 1 and 2, and initial thoughts on possible restoration actions. The second meeting will present the Comprehensive Salt Marsh Restoration Plan, and the plans for restoration actions to be implemented.

SECTION 11: PROJECT BUDGET

The details of the of the project budget can be available to members of the public upon request.

The overall project will be managed and coordinated by Mike Huguenin, MLT's President who serves on a volunteer basis. Huguenin is a retired businessman and consultant with more than 40 years of experience in environmental and natural resource matters, including major environmental restoration efforts at hazardous waste sites and following major oil spills. During his career he routinely managed multiple subcontractor projects with seven figure budgets for clients such as the U.S. Department of Justice, EPA, NOAA, U.S. Fish & Wildlife Service, state environmental agencies and attorneys general, and the United Nations Security Council.

GRANT FUNDS REQUESTED FROM CZM **$ 82,856**

SECTION 12: DISCLOSURE

MLT and the project partners are not applying for and do not expect to receive any additional funding to support this project. Match funds offered by MLT and the Town will come from each organization's existing financial resources. As described previously, project partner BBC is funding an important H&H study for the Mattapoisett Neck salt marshes using funding from MA Division of Ecological Restoration. The results of the H&H study will be important for the restoration planning effort proposed herein, and are critical for the development of the 25% engineering design for replacement of the Molly's Cove culvert.

SECTION 13: SUPPORTING MATERIALS

Letters of Commitment

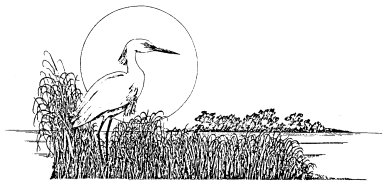
Mattapoisett Land Trust, Inc. (MLT)
Town of Mattapoisett Select Board
Town of Mattapoisett Highway Surveyor
Town of Mattapoisett Conservation Commission
Plymouth County Mosquito Control Project (PCMCP)
Buzzards Bay Coalition, Inc. (BBC)
William D. Field and family (owners of salt marsh and grantors of CR to MLT and BBC)

Exhibits

Exhibit 1: Photographs of Marsh Damage
Exhibit 2: Partial Bibliography of Salt Marsh Restoration Technical Literature
Exhibit 3: Example of Marsh Restoration using Runnels

Maps

Map 1: Study Area
Map 2: Project Locus
Map 3: NHESP Data
Map 4: Conservation Land in Study Area
Map 5: BIOMAP3 Coastal Adaptation Analysis
Map 6: Changes in Marsh Area 2001-2022
Map 7: Unvegetated to Vegetated Ratio of Marsh Units
Map 8: Sea Level Affecting Marshes Model (SLAMM) Results
Map 9: Private Ownership of Salt Marshes in and around Study Area
Map 10: Enlarged Area for Consideration of Additional Marsh Acquisitions
Map 11: Environmental Justice Neighborhoods and Title 1 Schools Near Study Area



Mattapoisett Land Trust, Inc.

June 12, 2023

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th Floor
Boston, MA 02114
sean.duffey@mass.gov

Subject: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01)
Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett
Comprehensive Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

Dear Mr. Duffey:

Mattapoisett Land Trust, Inc. (MLT) is a 501(c)(3) charitable organization dedicated to land conservation. Since it's founding in 1974 MLT has preserved over 900 acres on more than 30 properties in Mattapoisett and Rochester. MLT owns the fee interest or holds Conservation Restrictions on almost all of the salt marsh and adjoining buffer and forest proposed for study in this application.

MLT employs one full-time staff member and is supported by 300 members, with approximately 50 members serving as active volunteers. MLT's affairs are managed by a 16 person Board of Directors who elect officers including a President, Vice President, Clerk, Treasurer and Assistant Treasurer. More information is available at www.mattlandtrust.org.

MLT's Board of Directors met on May 9, 2023 and voted unanimously to authorize the undersigned to submit this grant application. MLT has the necessary financial resources and accounting systems to manage the grant and coordinate with all project partners, as described in our application. MLT acknowledges that funding will be provided on a cost reimbursement basis only, and hereby commits to provide our share of the cash match ($10,357) from MLT funds. All work on the project will be completed before June 30, 2024 and thus will fall into FY2024.

On behalf of our membership, MLT urges the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project. Please contact the undersigned with any questions or for further discussions.

Sincerely,

Mike Huguenin

Mike Huguenin
President

Town of Mattapoisett
Office of the Selectmen
Tel: (508) 758-4100
Fax: (508) 758-3030
16 Main Street • P.O. Box 435
Mattapoisett, Massachusetts 02739

June 12, 2023

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th Floor
Boston, MA 02114
sean.duffey@mass.gov

Subject: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01)
Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett
Comprehensive Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

Dear Mr. Duffey:

The Town of Mattapoisett's Select Board met in public session on May 23, 2023 and discussed the above referenced project. The Board is concerned about ongoing climate-related damage to Mattapoisett's salt marshes as well as the undersized and deteriorating culvert under Mattapoisett Neck Road at Molly's Cove. This project would address these problems and is in line with the Town's MVP Plan and supports other Town conservation, capital and master planning documents. The Town is prepared to work closely with the Mattapoisett Land Trust (MLT) and the other project partners on the project. The Board designated Mike Lorenco, Town Administrator, to be the Town's official representative on the project.

The Town of Mattapoisett commits to provide match funds totaling $10,357 to MLT as set forth in this application. The Town's portion of match funds will be drawn from discretionary funds and does not require approval at Town Meeting.

The Mattapoisett Select Board strongly urge the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project to MLT. If you have any further questions, Mr. Lorenco may be reached at 508-758-4100, extension 4 or at mlorenco@mattapoisett.net.

Sincerely,

R. Tyler Macallister
Chairman

Town of Mattapoisett
Highway Department
5 Mendell Rd.
P.O. Box 424
Mattapoisett, MA 02739

Phone: (508) 758-4181 Fax: (508) 758- 4113
mattapoisetthighwaydepartment@comcast.net
Garrett Bauer
Highway Surveyor

June 9, 2023

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th Floor
Boston, MA 02114
sean.duffey@mass.gov

Subject: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01)
Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett
Comprehensive Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

Dear Mr. Duffey:

I serve as the elected Highway Surveyor in the Town of Mattapoisett. In this position I manage the Town's Highway Department. My department and I strongly support the above-referenced application by the Mattapoisett Land Trust, Inc. (MLT) and Town of Mattapoisett (Town.) My department is well aware of the steady degradation in salt marshes around Mattapoisett, in part due to an undersized and failing culvert under Mattapoisett Neck Road at Molly's Cove. We have worked with MLT over the past several years on plans to replace this culvert, and we look forward to working with MLT and the Town on possible restoration actions for the Mattapoisett Neck salt marshes.

I strongly urge the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project. Please contact the undersigned with any questions or for further discussions. Thank you for your consideration.

Sincerely,

Garrett M. Bauer
Highway Surveyor

June 12, 2023

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th Floor
Boston, MA 02114
sean.duffey@mass.gov

Subject: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01)
Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett
Comprehensive Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

Dear Mr. Duffey:

The Town of Mattapoisett Conservation Commission strongly supports the above-referenced application by the Mattapoisett Land Trust, Inc. (MLT) and Town of Mattapoisett (Town.) The Commission is well aware of the steady degradation in salt marshes around Mattapoisett. We have worked with MLT over the past five years on control of invasive vegetation at a salt marsh property on Mattapoisett Harbor, and we look forward to working with MLT and the Town on possible restoration actions for the Mattapoisett Neck salt marshes.

At a public meeting held on May 22, 2023 the Commission voted unanimously to support this application.
We strongly urge the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project. Please contact the undersigned with any questions or for further discussions. Thank you for your consideration.

Sincerely,

Michael King
Chair, Mattapoisett Conservation Commission
(508) 758-4100 Ext. 215

THE COMMONWEALTH OF MASSACHUSETTS
THE STATE RECLAMATION & MOSQUITO CONTROL BOARD

PLYMOUTH COUNTY
MOSQUITO CONTROL PROJECT

272 SOUTH MEADOW RD, PLYMOUTH, MA 02360
TELEPHONE (781) 585-5450 FAX (781) 582-1276
www.plymouthmosquito.org

Commissioners:
John Sharland, Chairman
Ann Motyka, Vice Chairman/Secretary
Michael F. Valenti
Thomas Reynolds
Elaine Fiore

Ross Rossetti – Superintendent/Pilot
Matthew McPhee - Asst. Superintendent
Ellen Bidlack – Entomologist
Denise DeLuca – Administrative Assistant

June 6, 2023

via email

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th Floor
Boston, MA 02114
sean.duffey@mass.gov

Subject: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01)
Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett
Comprehensive Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

Dear Mr. Duffey:

The Plymouth County Mosquito Control Project (PCMCP) strongly supports the above-referenced application by the Mattapoisett Land Trust, Inc. (MLT) and Town of Mattapoisett (Town.) Our airborne treatments above and around the Mattapoisett Neck salt marshes over many years have allowed us to witness and photograph the growing degradation of marsh vegetation, stream channel banks and mosquito control ditches in this area. We have been in contact with both MLT and the Town over the past 10 years to discuss what we are seeing and ways we might assist with marsh restoration. In addition, we have assisted MLT, the Town and other Mattapoisett property owners in recent years to control invasive species such as *phragmites* at salt marsh properties by restoring tidal flow and salinity levels.

PCMCP is committed to partnering with MLT and the Town on this project. We will support the project by offering our knowledge and experience about working on the marsh surface as the project considers restoration actions such as small drainage ditches ("runnels") and removal of obstacles, if any, to marsh migration brought on by sea level rise. When the restoration plan is completed and implementation begins, PCMCP intends to offer our expertise and services for marsh surface excavation and other actions as required and permitted.

We strongly urge the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project. Please contact the undersigned with any questions or for further discussions. Thank you for your consideration.

Sincerely,

Ross Rossetti

Ross Rossetti
Superintendent

June 6, 2023

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th floor
Boston, MA 02114

Re: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01) - Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett Comprehensive for Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

To Mr. Duffey,

The Buzzards Bay Coalition (BBC) enthusiastically supports the above-referenced application by the Mattapoisett Land Trust, Inc. (MLT) and Town of Mattapoisett (Town). The proposed restoration planning effort will augment and advance previous work funded through a 2021 CZM Coastal Resilience grant to evaluate climate resilience strategies for Mattapoisett Neck Road. The 2021 study developed important data and projections for sea level rise and storm surge in the Mattapoisett Neck area, as well as resource delineation, survey and geotechnical information. Importantly, tidal gauge data in the 2021 study show the high degree of tidal restriction caused by the existing, failing culvert at Molly's Cove. Nearby salt marsh conditions are degraded by this tidal restriction, and installation of a larger culvert will be one of the restoration actions advanced during the proposed project.

Over the past year, BBC has conducted the Buzzards Bay Watershed Restoration Potential Assessment using funding provided by MA Division of Ecological Restoration (DER). The Mattapoisett Neck saltmarsh complex and undersized culvert at Molly's Cove are identified through the assessment as having ***very high ecological restoration potential***. Alleviating the tidal restriction caused by the culvert, and using other techniques to increase vegetative cover on existing as well as new salt marsh acreage will create large ecological and coastal resilience benefits.

BBC is committed to partnering with MLT and the Town on this project. Our support for the project will come in two forms. First, BBC presently is funding a Hydrologic and Hydraulic (H&H) analysis on the culvert at Molly's Cove through the DER Restoration Partnership. The results of the H&H study will be provided to MLT and the Town to inform the proposed 25% engineering design for a replacement culvert at Molly's Cove. Second, BBC will provide assistance to MLT and the Town in assessing current and potential future conditions in the marsh and technical expertise in planning and evaluating ecological restoration actions, including emerging restoration techniques currently being tested by BBC and other salt marsh restoration practitioners.

We strongly urge the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project. Thank you for your consideration.

Sincerely,

Mark Rasmussen
President

William D. Field
100 Mattapoisett Neck Road
Mattapoisett, MA 02739

June 10, 2023

Sean Duffey
Executive Office of Energy & Environmental Affairs
Massachusetts Office of Coastal Zone Management
100 Cambridge Street, 9th Floor
Boston, MA 02114
sean.duffey@mass.gov

Subject: Coastal Habitat and Water Quality Grants FY24 (ENV 24 CZM 01)
Application of Mattapoisett Land Trust, Inc. and Town of Mattapoisett
Comprehensive Habitat Restoration Planning, Mattapoisett Neck Salt Marshes

Dear Mr. Duffey:

My family and I own a large acreage of salt marsh lying west of Mattapoisett Neck Road in the Town of Mattapoisett, as part of assessor's parcels 12-46 and 15-2. All of our salt marsh area and surrounding forest is subject to a Conservation Restriction granted to the Buzzards Bay Coalition and Mattapoisett Land Trust. Our family is concerned about the steady degradation in salt marshes on our property. We strongly support the above-referenced application by the Mattapoisett Land Trust, Inc. and Town of Mattapoisett. We look forward to working with the applicants on their evaluation of present and future conditions in the marsh, and their development of possible restoration actions for the Mattapoisett Neck salt marshes.

We strongly urge the Coastal Habitat and Water Quality Program to provide the grant funding necessary to advance this important project. Please contact the undersigned with any questions or for further discussions. Thank you for your consideration.

Sincerely,

William D. Field

William D. Field

Exhibit 1, page 1
Photographs of Marsh Damage
(Drone images taken by Marc Anderson (MLT) on June 2, 2023
for illustrative purposes, images not geo-referenced)

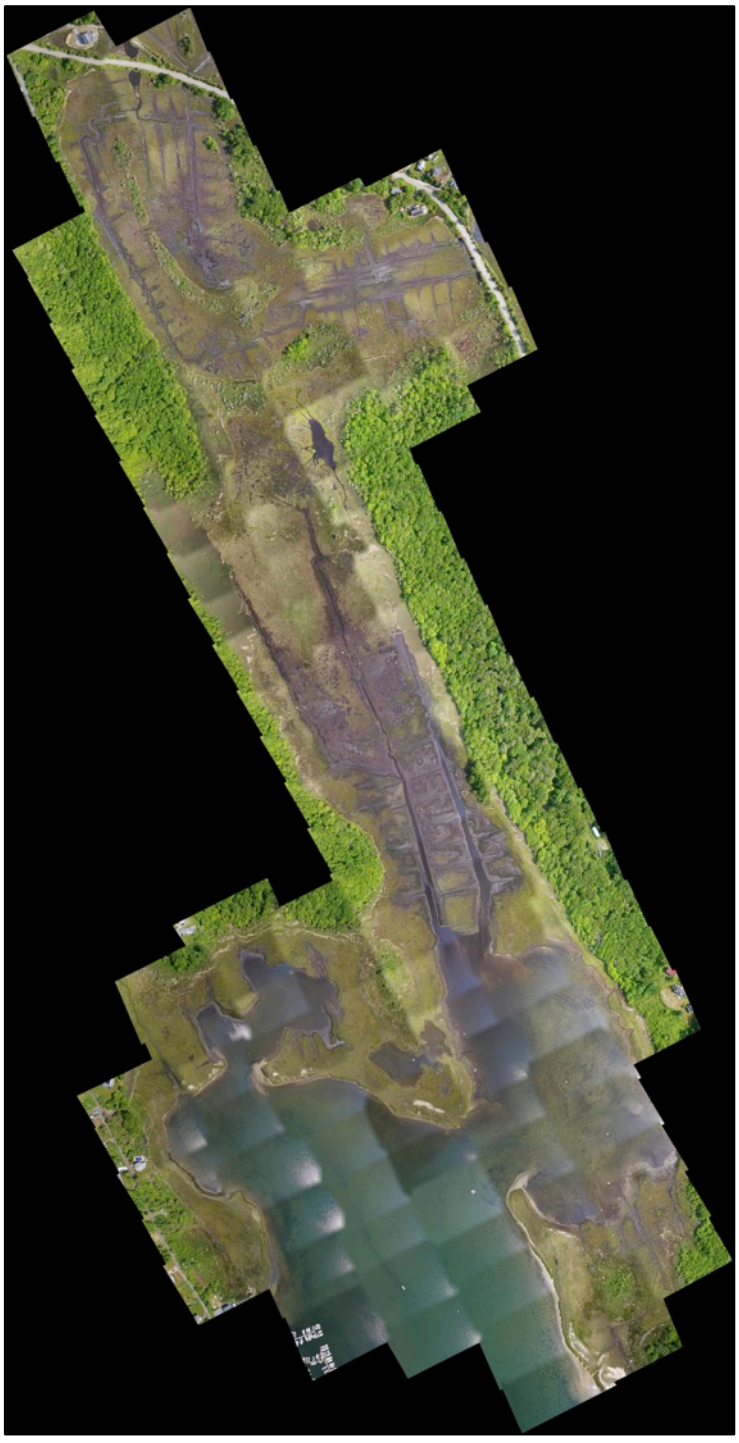


Photo 1: Mosaic Overview of Study Area

Exhibit 1, page 2
Photographs of Marsh Damage

Photo 2: Molly's Cove culvert

Photo 3: Northern culverts

Exhibit 1, page 3
Photographs of Marsh Damage

Photo 4: Southern end of study area

Photo 5: Looking north at eastern channel, southern end of study area (February 2018, photo by M. Huguenin)

Exhibit 2
Partial Bibliography of Salt Marsh Restoration Technical Literature

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Exhibit 3
Example of Marsh Restoration using Runnels
Little Bay Fairhaven Test Site
(photographs courtesy of Buzzards Bay Coalition)

2020-11-20 b

2021-07-22

2021-09-21

2022-08-03

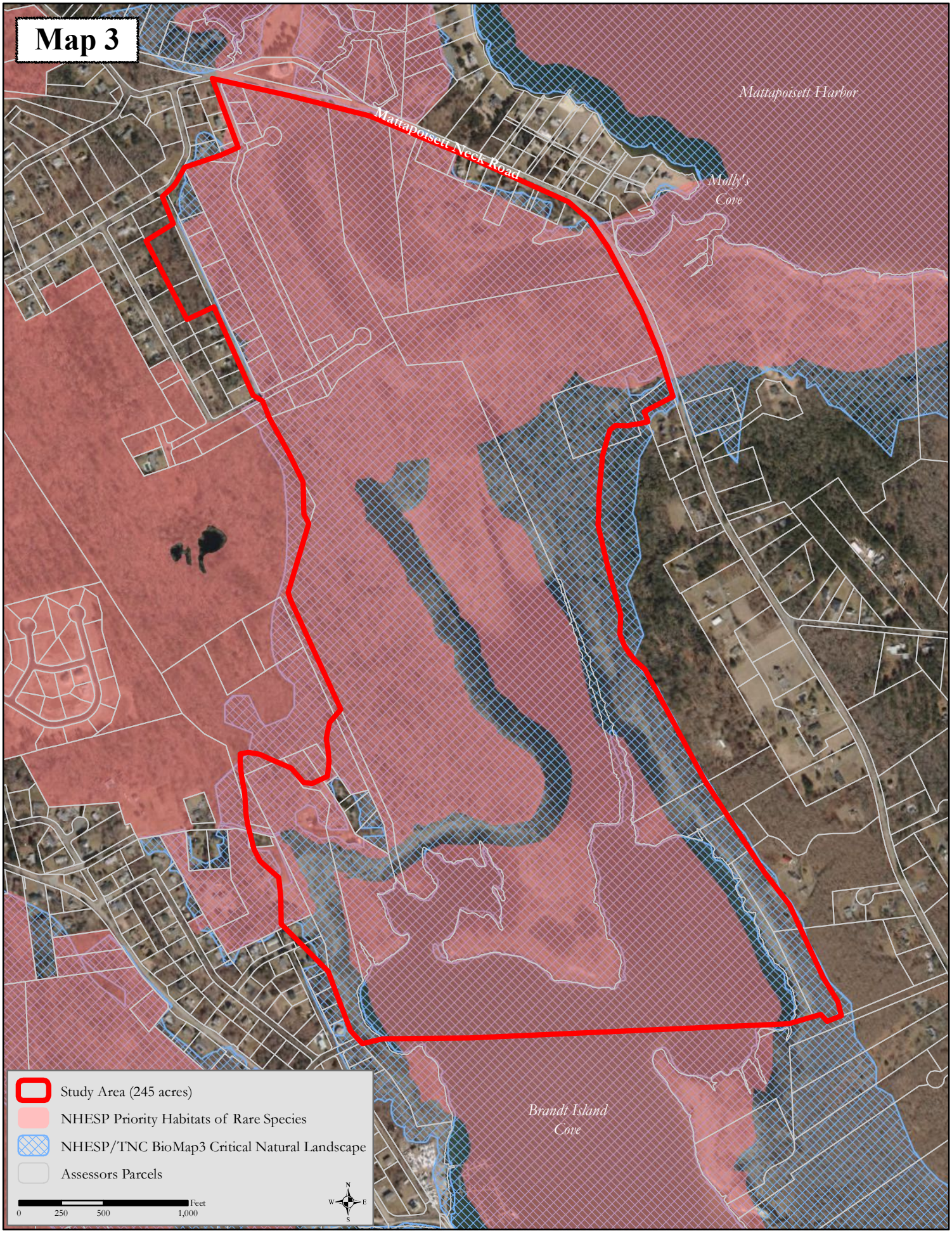
Mattapoisett Neck Salt Marshes - Study Area

Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. May 24, 2023

Mattapoisett Neck Salt Marshes - Project Locus

Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. May 24, 2023

Mattapoisett Neck Salt Marshes - NHESP Data



Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. May 24, 2023

Mattapoisett Neck Salt Marshes - Conservation Land

Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. May 24, 2023

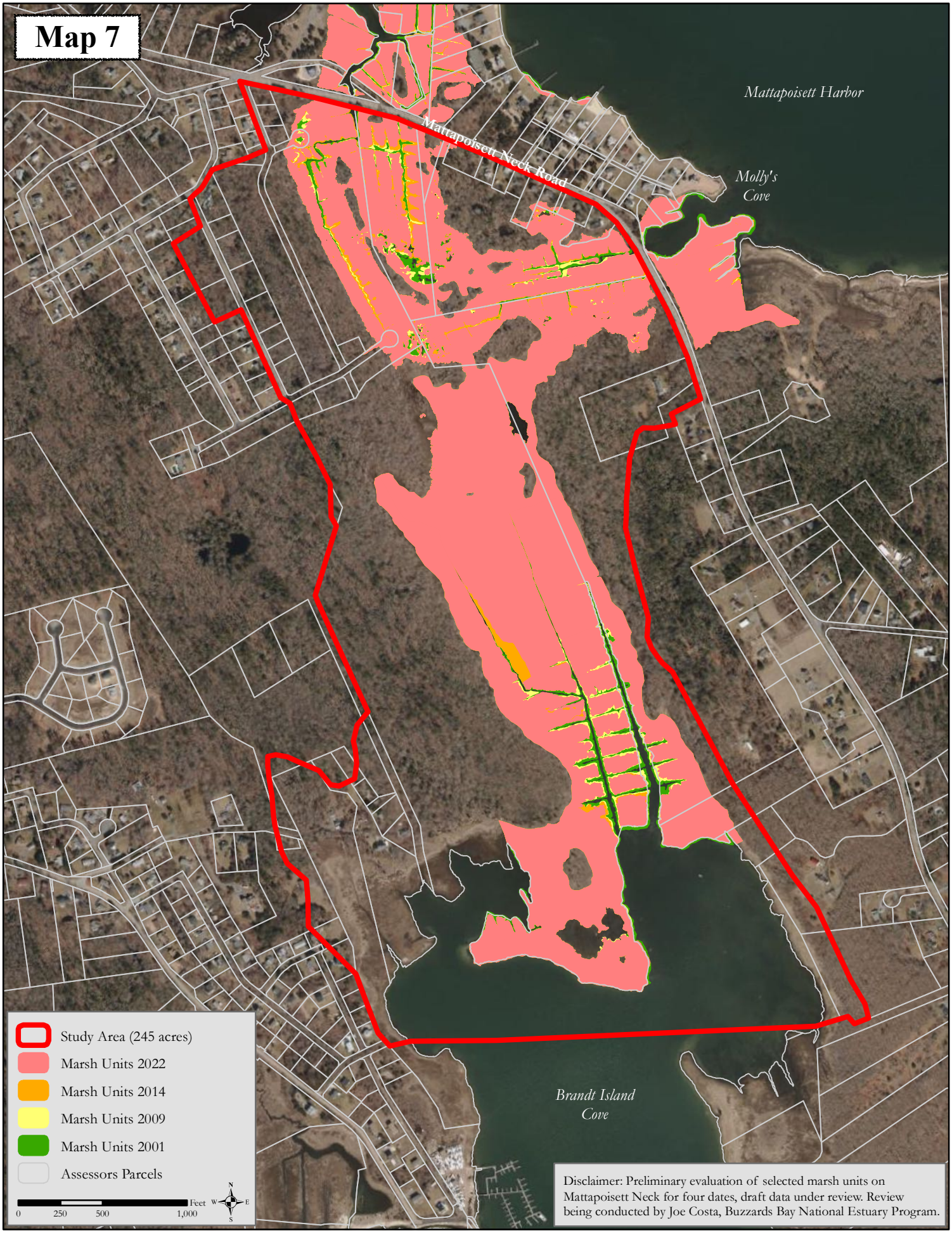
Mattapoisett Neck Salt Marshes - Private Ownership

Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. June 8, 2023

Mattapoisett Neck Salt Marshes - NHESP/TNC BioMap3 Coastal Adaptation Analysis

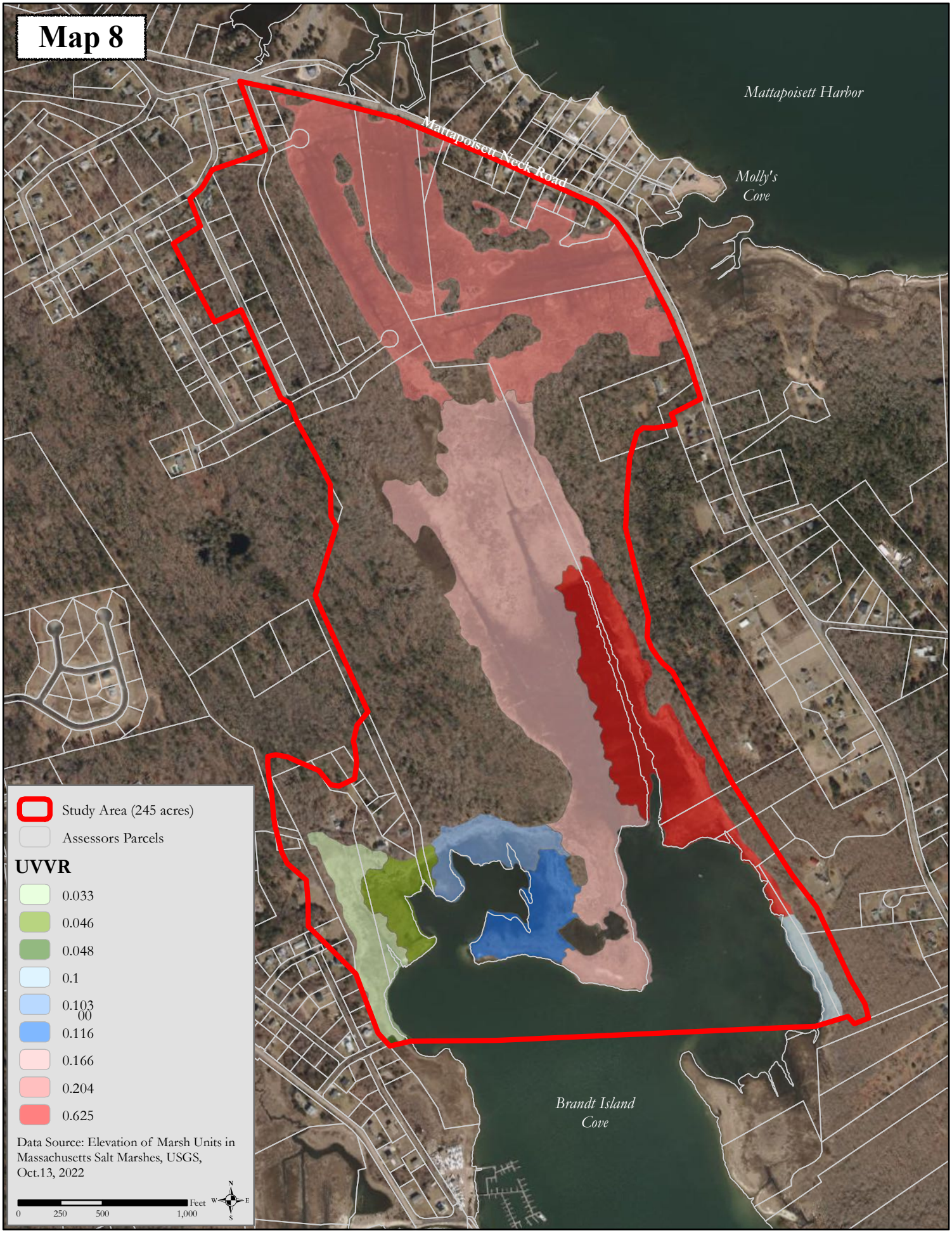
Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. May 24, 2023

Mattapoisett Neck Salt Marshes - Changes in Marsh Area 2001-2022

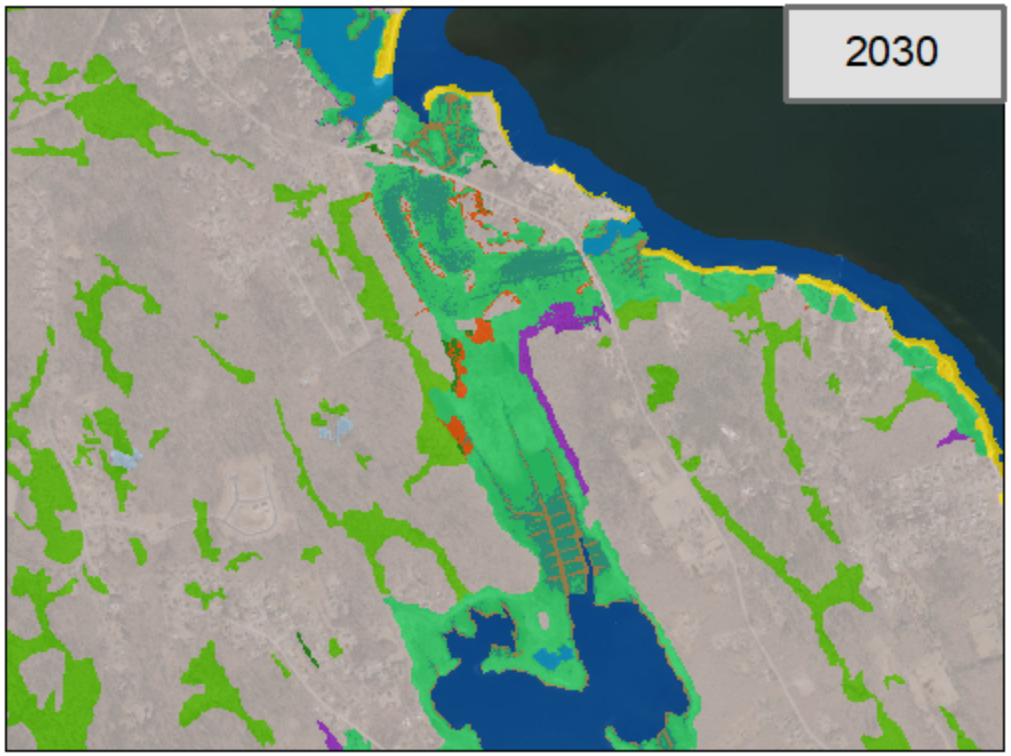


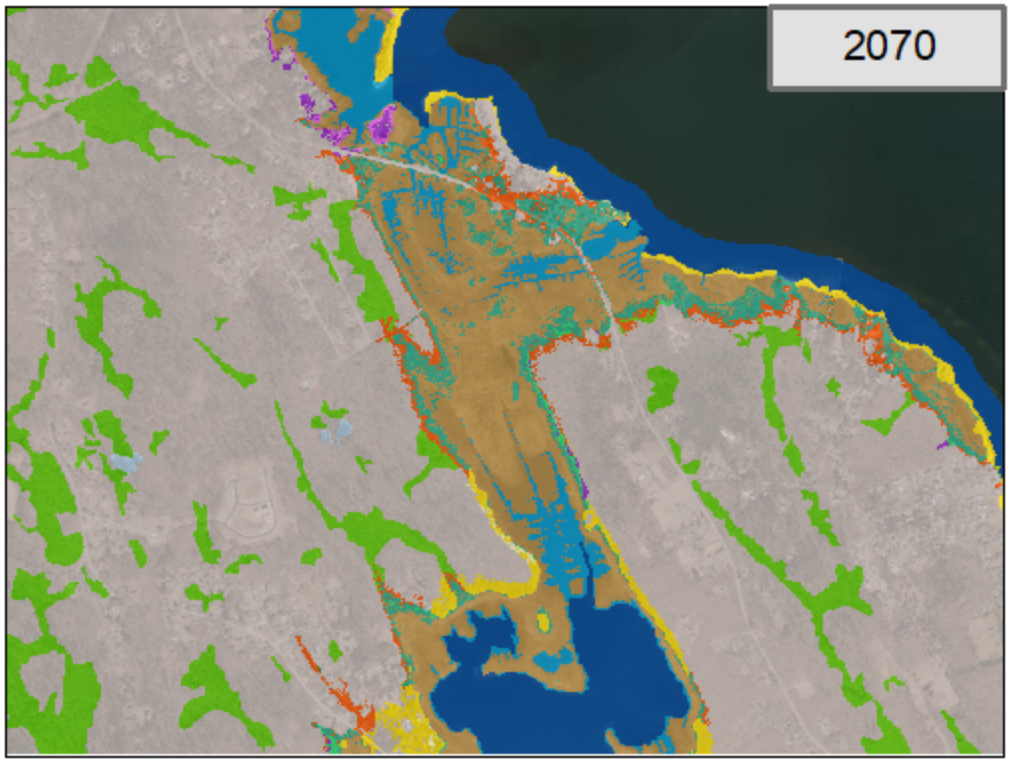
Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. June 7, 2023

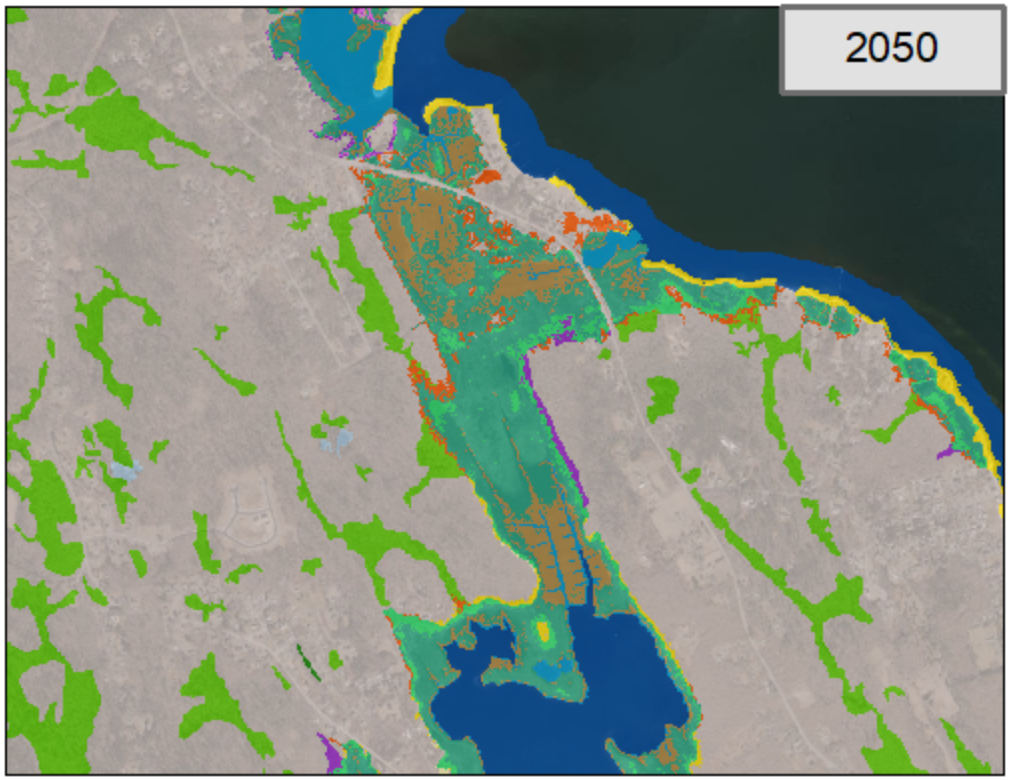
Mattapoisett Neck Salt Marshes - Unvegetated to Vegetated Ratio of Marsh Units (UVVR)

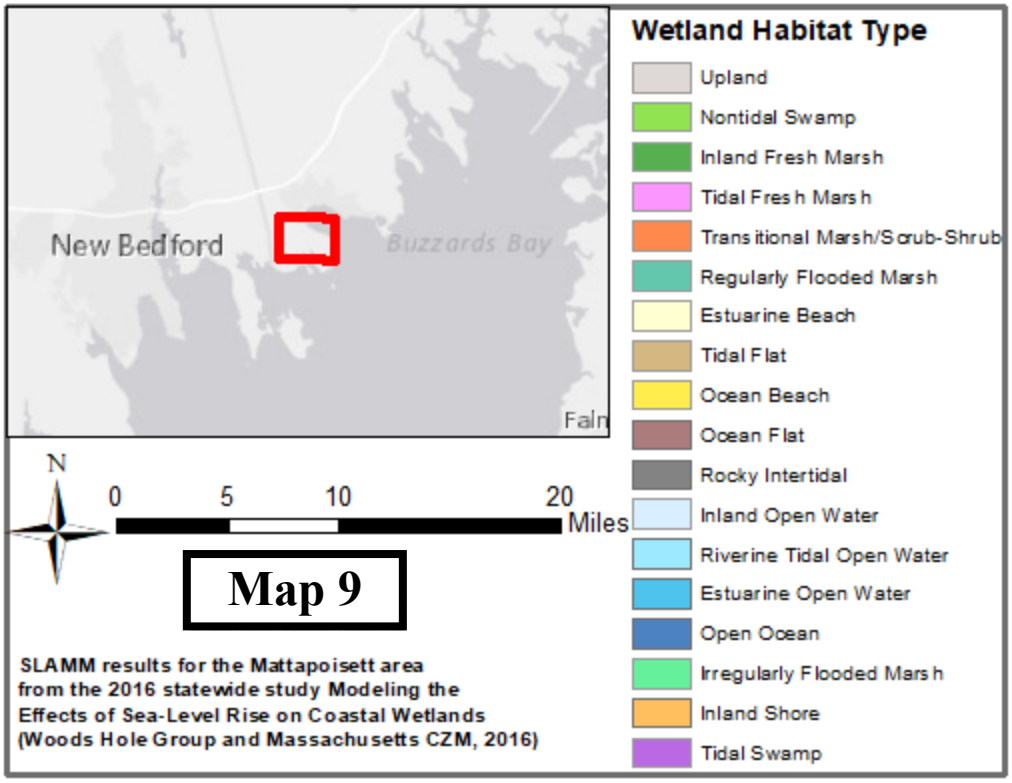


Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. May 31, 2023


2030


2070

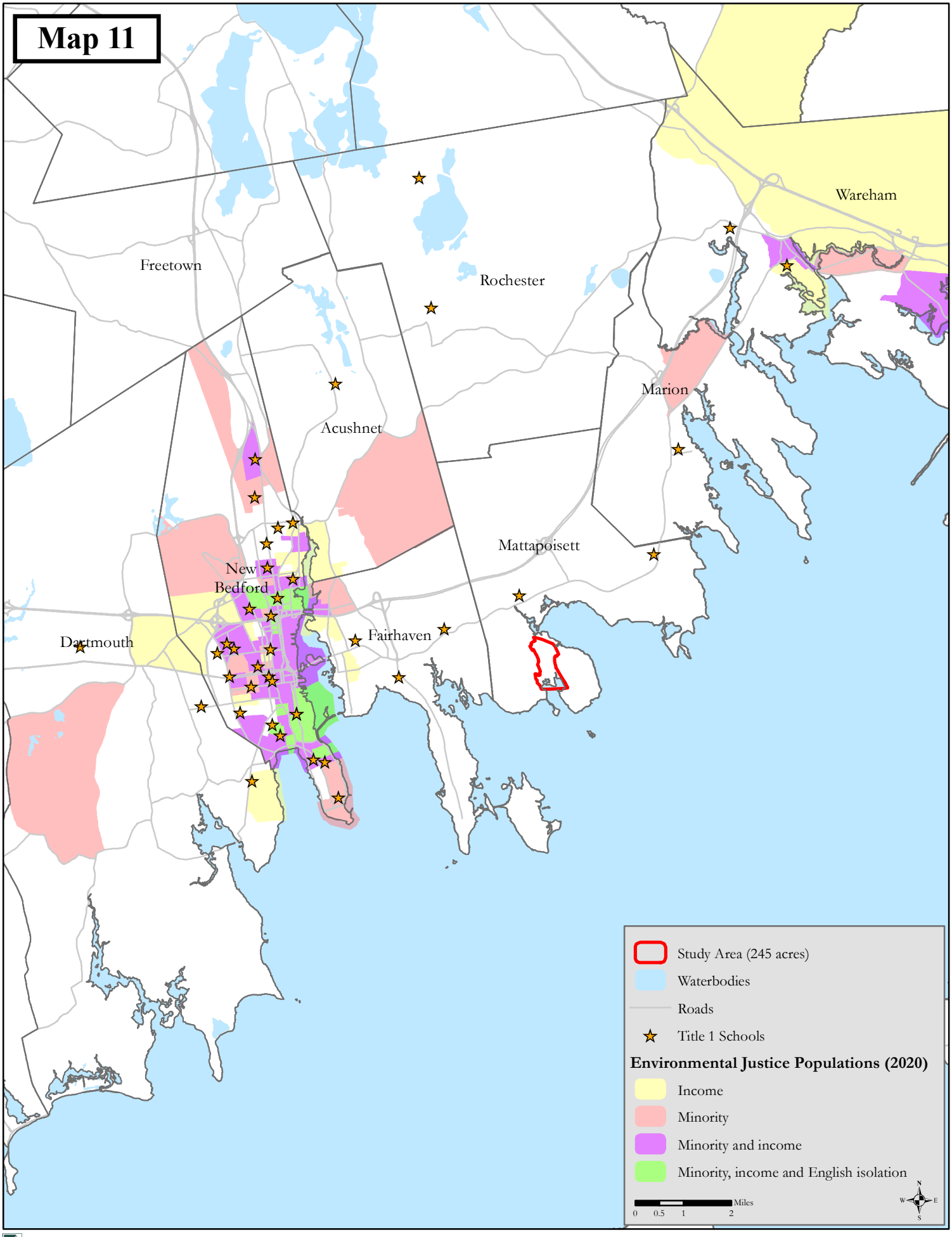

2050


New Bedford
Buzzards Bay
N
0
5
10
20
Miles
Map 9
SLAMM results for the Mattapoisett area from the 2016 statewide study Modeling the Effects of Sea-Level Rise on Coastal Wetlands (Woods Hole Group and Massachusetts CZM, 2016)
Wetland Habitat Type
Upland
Nontidal Swamp
Inland Fresh Marsh
Tidal Fresh Marsh
Transitional Marsh/Scrub-Shrub
Regularly Flooded Marsh
Estuarine Beach
Tidal Flat
Ocean Beach
Ocean Flat
Rocky Intertidal
Inland Open Water
Riverine Tidal Open Water
Estuarine Open Water
Open Ocean
Irregularly Flooded Marsh
Inland Shore
Tidal Swamp

Mattapoisett Neck Salt Marshes - Enlarged Area for Potential Land Acquisition

Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. June 8, 2023

Mattapoisett Neck Salt Marshes - EJ Areas in Nearby Communities



Map prepared by: Buzzards Bay National Estuary Program, 81B County Road, Suite E, Mattapoisett, MA 02739. www.buzzardsbay.org. June 9, 2023