Atlas of
Tidally Restricted Salt Marshes
in the Buzzards Bay Watershed
Massachusetts

June 2002

Commonwealth of Massachusetts
Jane Swift, Governor

Executive Office of Environmental Affairs
Bob Durand, Secretary

Buzzards Bay Project National Estuary Program
Joseph E. Costa, Ph.D., Executive Director

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Prepared by

Buzzards Bay Project National Estuary Program
Massachusetts Office of Coastal Zone Management
2870 Cranberry Highway
East Wareham, Massachusetts 02538
(508) 291-3625
www.buzzardsbay.org

Joseph Costa, *Executive Director*
John Rockwell, *Wetlands Specialist*
Sarah Wilkes, *Land Use Analyst*

with assistance from:
Aria Brissette, *Natural Resource Planner*
Mary Johnson, *Intern*
David Tanguay, *Intern*
Bernadette Taber, *NRCS Soil Conservationist*
Tracy Warncke, *Administrative Assistant*

Funded in part by, and prepared at the request of

Massachusetts Wetlands Restoration Program
Executive Office of Environmental Affairs
One Winter Street, 5th Floor
Boston, Massachusetts 02108
(617) 626-1177

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Dear Friend of the Environment:

We are all familiar with the salt marshes along our shores. They are wonderful places to watch birds or to walk alongside and view nature's beauty. Salt marshes are diverse in marine life and are a habitat and nursery for birds, mammals, turtles, finfish, shellfish, and crustaceans. They help reduce coastal pollution by filtering and removing pollutants from upland activities as water flows through the marsh vegetation. Salt marshes also minimize the damage of coastal floods and reduce coastal erosion.

It is for these reasons that salt marshes are our most valued and protected coastal resources. It is also why the Executive Office of Environmental Affairs has been making efforts to restore tidally restricted salt marshes around the state. The construction of roads and paths in the past has blocked or restricted the flow of salt water into these ecosystems, which has led to an unhealthy habitat and the loss of some salt marshes.

This "Atlas of Tidally Restricted Salt Marshes in Buzzards Bay," created by the Buzzards Bay Project National Estuary Program, inventories 257 tidal restrictions to salt marshes around Buzzards Bay. This document is intended to provide information on the effects a tidal restriction can have on a salt marsh, and to help municipal officials, state agencies, and environmental organizations identify potential restoration projects.

I applaud this collaborative effort and the team that developed this Atlas. It is my hope that it will serve as a catalyst to initiate salt marsh restoration projects around Buzzards Bay.

Bob Durand

Bob Durand
Secretary of Environmental Affairs
Commonwealth of Massachusetts

Acknowledgments

The *Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed* is the result of a multi-agency cooperative study of tidal wetlands along the coast of Buzzards Bay in southeastern Massachusetts. The project was funded by the Massachusetts Executive Office of Environmental Affairs Wetlands Restoration Program (MWRP) and the Massachusetts Environmental Trust. Additional funding was provided by the Massachusetts Department of Environmental Protection (DEP 99-04/319).

Methodology, maps and data summaries published in this Atlas were developed and produced by the Buzzards Bay Project National Estuary Program, a unit of the Massachusetts Office of Coastal Zone Management. The format and text of the Atlas was adapted from the *Atlas of Tidally Restricted Marshes - North Shore of Massachusetts* (MWRP, 1999) and the *Cape Cod Atlas of Tidally Restricted Salt Marshes - Cape Cod, Massachusetts* (CCC, 2001).

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About This Atlas

Study Purpose

This study was undertaken to identify salt marsh vegetation impaired by tidal flow restrictions along the coast of Buzzards Bay, Massachusetts. Of particular concern were salt marshes that had been impacted by transportation related facilities such as roads, causeways and footpaths. These restrictions result in diminished tidal exchange in the upper reaches of a wetland system and ultimately impact the health of a salt marsh by decreasing salinity levels.

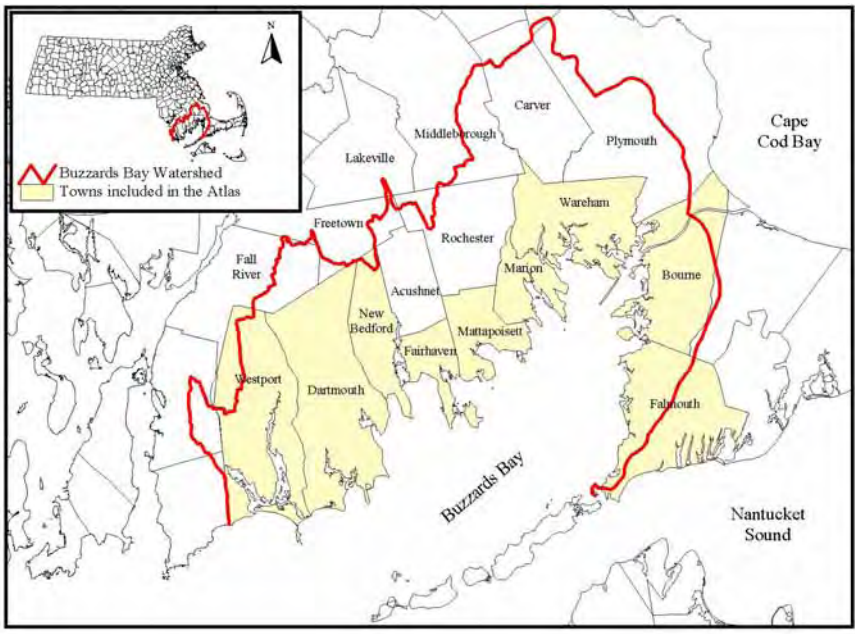

Figure 1: The study area included the coastal portions of towns (shaded) within the Buzzards Bay Watershed

The purpose of this Atlas is to aid state and municipal officials in identifying tidal restrictions. Such a listing will help government officials identify potential remediation opportunities when road and bridge work is being contemplated. Although the Buzzards Bay Project made considerable efforts to locate all tidal restriction sites in Buzzards Bay, we recognize some sites may have been overlooked, and our list should not be considered definitive.

The scoring system included in this report is for planning purposes only. It is meant to assist managers in identifying sites most likely to warrant consideration and is not meant to be a complete evaluation of the suitability of any particular site for restoration. Our cost of remediation was based on a simplified costing model, and was considered approximate for the purposes of establishing cost scores. Actual costs may be either greater or less than our estimates depending upon the many variables particular to each site.

Information in the Atlas

The study area for this project encompassed the southeastern coast of Massachusetts, extending from the border of Rhode Island, to the southwestern tip of Cape Cod at Woods Hole (See Figure 1). The following nine Buzzards Bay municipalities were included: Westport, Dartmouth, New Bedford, Fairhaven, Mattapoisett, Marion, Wareham, Bourne, and Falmouth. Portions of the towns of Bourne and Falmouth fall outside the Buzzards Bay watershed. Tidal restrictions in these areas are not documented in this Atlas but, information on these areas can be found in the Cape Cod Commission's *Cape Cod Atlas of Tidally Restricted Salt Marshes - Cape Cod, Massachusetts*.

The *Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed* contains the following information:

- Maps showing locations of salt marsh tidal restrictions within the Buzzards Bay watershed
- Background information on tidal restrictions and methods to restore adequate tidal flow
- Detailed information on tidal restrictions falling within the top 10% of all sites based on a scoring system developed by the Buzzards Bay Project

How to Use the Information in the Atlas

The *Atlas of Tidal Restricted Salt Marshes in the Buzzards Bay Watershed* documents salt marshes that have been adversely impacted by human activities, especially transportation related facilities, along the coast of Buzzards Bay in Massachusetts. This Atlas was designed for use by municipalities, state agencies, and other organizations to initiate salt marsh restoration activities at these sites when appropriate. Municipal public works departments are particularly encouraged to check this Atlas when road or bridge work is being considered. In some instances, an act as simple as replacing an old structure will have a positive environmental restoration effect. The Atlas also serves as a source of information for projects under consideration as part of the Regional Transportation Plan and those eligible for state and federal transportation funding.

Distribution of the Atlas

Distribution of the Atlas included single copies to the public library of each coastal community and municipal Conservation Commission. Additional copies were provided to the following municipal agencies of each community in the study area: municipal executive (mayor, town manager, selectmen), planning board, and department of public works. It was also made available to local environmental groups and other interested parties.

Additional black and white copies of this Atlas may be obtained by writing to the Buzzards Bay Project, 2870 Cranberry Highway, East Wareham, MA 02538. The Atlas is also available on the Buzzards Bay Project's website: *www.buzzardsbay.org*.

Background

Coastal wetlands are primarily comprised of tidal marshes and associated intertidal habitats (e.g., mud flats, sandy beaches, and rocky shores) that occur along tidal rivers and estuarine embayments. Salt marshes are one of the most familiar and abundant type of tidal wetland. Salt marshes are regularly flooded by salt water with the lunar tidal cycle. For a few days each month, during spring tides (extra high tides that occur near full and new moons), tidal waters rise to flood the upper limits of the salt marsh. Plants growing in these wetlands have developed special adaptations for the conditions that occur during the regular flooding of saltwater. Some of these halophytes or "salt-loving plants" are listed in the Appendix. It is because of these specific environmental conditions that tidal restrictions (such as a road culvert that is too small) cause a threat to upstream salt marsh habitat. When the marsh vegetation above a tidal restriction doesn't receive the normal amount of tidal flushing, it begins to die and other more invasive species take over.

Figure 2. A healthy, unrestricted salt marsh

Coastal wetlands are among the Commonwealth's most valuable natural resources. Tidal flushing has created a highly productive environment that provides food and habitat for many creatures. Often called the ocean's farmlands, coastal wetlands provide the foundation of a detritus-based food web that ultimately supports many coastal fish and bird species. In addition, these wetlands provide habitat along the Atlantic Flyway for migratory waterfowl and serve as important breeding areas for many of these species. For black ducks, wetlands are used as critical overwintering areas. Tidal wetlands serve as vital nursery and spawning grounds for many commercially and recreationally important fish and shellfish species (see Appendix). Coastal wetlands also buffer the land against erosive storm-generated waves and frequently store temporary flood waters. In colonial times, salt marshes provided salt hay, which was used for fodder, mulch, insulation, packaging, and other purposes. Today there is less of a demand for the weed-free salt hay which is mainly used as mulch in suburban gardens.

Recognizing the value of salt marsh functions, the Commonwealth of Massachusetts passed the "Jones Act" in 1963 to protect salt marshes. This was the first law in the country adopted to protect coastal wetlands from dredging, filling, and other impacts. Prior to this time, many salt marshes were used to dispose of dredged material or filled for port development, industrial facilities, and housing. Many remaining salt marshes have been additionally degraded by minor filling, mosquito ditching, and restriction of tidal flow.

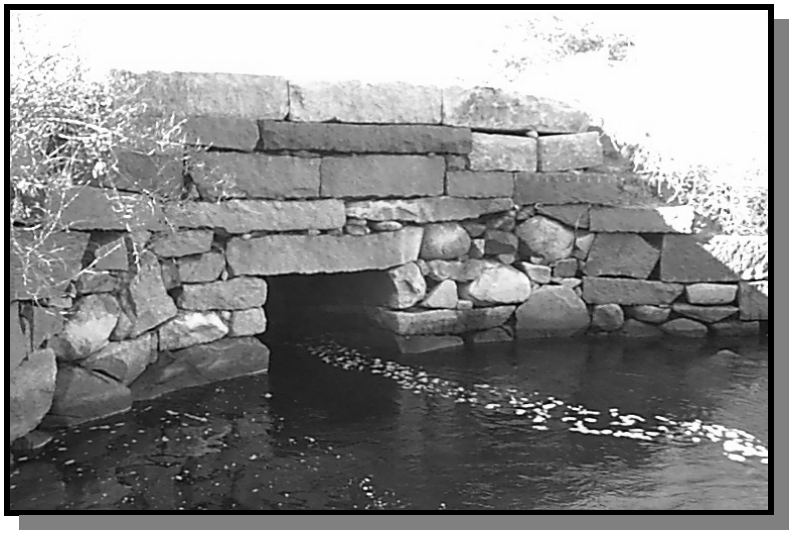

Figure 3. Tidal Restriction Site MT10 Old access to beach, Mattapoisett

Since the 1960s, new impacts to the Commonwealth's salt marshes have been strictly controlled. In the 1970s, Massachusetts adopted the Wetlands Protection Act, which forbids development in inland or coastal wetlands unless approved by the municipal Conservation Commission, with oversight from the Department of Environmental Protection (DEP). Strict regulations under this law virtually prohibit direct adverse impacts to salt marshes. These regulatory efforts have halted most newly contemplated alterations of salt marshes in the Commonwealth. Still, there are some indirect impacts that are difficult to control, and others that may be allowed.

The importance of coastal and inland wetlands was recognized in the Buzzards Bay Comprehensive Conservation and Management Plan, a watershed plan which was approved in 1991 by the Commonwealth of Massachusetts as state policy, as well as by the US EPA. This watershed management plan established the goal of a "**Long-term increase of high-quality wetlands and coastal habitat in Buzzards Bay."** This goal was to be met through several mechanisms, including the restoration of impaired wetlands.

Until recently, there was no program in Massachusetts to address the historic destruction and degradation of these vital resources. In 1994 the Secretary of the Executive Office of Environmental Affairs established the Massachusetts Wetlands Restoration Program (MWRP). The purpose of the program was to further implement the state's new policy of "no net loss of wetlands in the short-term and a net gain in the long-term."

Unlike wetland replication required under permits to compensate for wetland destruction (caused by construction and other activities), MWRP's pro-active wetland restoration projects may be initiated by project sponsors who simply want to bring back our wetland heritage, or who want to help address community water quality and flooding problems or restore wildlife habitat.

This Atlas, prepared by the Buzzards Bay Project, along with similar documents covering the North Shore and Cape Cod, are part of MWRP's pro-active wetland restoration efforts. MWRP continues to work with environmental groups, state and federal agencies, municipalities and others on an ongoing basis to implement priority wetland restoration projects identified in these studies. The Buzzards Bay Project often acts as a facilitator of these efforts.

Both the Buzzards Bay Project and the Massachusetts Wetlands Restoration Program provide financial and technical support for the efforts of municipalities, landowners, and other agencies and groups that wish to undertake wetland restoration projects. Individual wetland restoration projects

may be initiated under MWRP's GROWetlands (Groups Restoring Our Wetlands) initiative. MWRP has also organized the Wetlands Restoration Assistance Team (WetRATs), a network of volunteer wetlands scientists, to assist GROWetlands project sponsors in evaluating the restoration potential of wetland sites, designating work plans, and monitoring pre- and -post construction project sites. MWRP helps GROWetlands sponsors develop goals and a work plan for restoration projects, secure project funding, organize volunteers, use restoration sites as learning laboratories for schools and groups, and to monitor restored wetlands to ensure success. Please see the Appendix for a more complete description of GROWetlands and a Project Nomination Form. Buzzards Bay Project Wetland Restoration Grants are subject to funding availability.

Impacts to Salt Marshes and Restoration Approaches

What Is a Tidally Restricted Salt Marsh?

Many salt and brackish marshes are crossed by highways, local roads, and railroads of various dimensions. These transportation routes may cross tidal creeks or rivers at one or more locations. Bridges are required to span rivers and broad creeks, and the roadways leading to bridges are built on fill deposited in wetlands. These thoroughfares are sometimes called causeways. Historically, many shorter spans have been filled, with culverts installed under the roadway to allow drainage or tidal flow. Roads crossing small creeks may have the streams channeled through box culverts, some of which are too small to pass full tidal flows necessary to maintain natural salt marsh vegetation upstream.

Culverts may be fitted with tide gates that could further restrict tidal flow or flapper valves which allow fresh water to leave the marsh but will not allow tidal flow to enter the marsh. Bridges may have similar affects if the openings are not wide enough to pass sufficient tidal water to maintain salt and brackish marshes further upstream. At some road crossings no culvert is provided and tidal flow is eliminated altogether. These hydrologic changes significantly alter the chemical integrity of the upstream salt marsh. The once strongly saline environment changes to one that is brackish or fresh water. This freshening of the salt marsh causes a major transformation in the vegetation as salt marsh grasses and rushes are displaced by common reed (Figure 4). Common reed often forms a monoculture, with plants growing up to, and in excess of, 12 feet. This decrease in plant diversity and the change in vegetative structure (from a low grassy meadow to a tall reedy thicket) causes a major shift in wildlife use as typical salt marsh inhabitants are replaced by fewer species. Despite some use of the reeds by more common generalist species, it is not preferred by any

Figure 4. *Phragmites australis* stand in a salt marsh.

species. This is in marked contrast to salt marsh vegetation which is preferred over other habitats by many wildlife species, including some of our rarer salt marsh specialists.

Restoring Tidal Flow

Where tidal flow is restricted, the main objective of salt marsh restoration is to improve tidal flow to the affected marsh. In many cases, restoration is easily accomplished by removing the restrictive feature or by providing an opening sufficient enough to allow adequate tidal flow. For example, where tidal flow is reduced by undersized culverts (too small to pass the full spring tide), simply replacing the culverts with larger ones, generally the width of the original channel, and ones of appropriate height, may be enough to restore tidal flow.

In other cases, development has taken place in low-lying areas surrounding the marsh and sometimes on fill in the marsh itself. Due to flood risk, restoring full tidal flow to these areas is not possible. However, restoration of sufficient tidal flow to flood a lower portion of the marsh on a regular basis may be possible if it can be shown that this will not increase the risk of flooding to adjacent structures. Allowing for frequent tidal flooding should be sufficient to promote the return of salt marsh vegetation in areas of high salinity (greater than 18 parts per thousand). In areas of lower salinity, improved tidal exchange (by reconnecting the marsh to the adjacent estuary) is still beneficial. Improving tidal flow to the marsh while preventing property flooding can be accomplished by expanding the culvert size and adding a protective device, such as a self-regulating tide gate or a manually or electronically operated tide gate. These gates can establish an opening that allows passage of normal tides, but prevents entry of storm tides. Some structures can be completely closed, if necessary, to facilitate storm protection. Each proposed salt marsh restoration site should be evaluated to consider potential adverse impacts such as flooding before work is begun.

Methods

Site Selection

The first phase of this project identified salt marshes where tidal restrictions were suspected to exist. Potential restriction sites were located by looking at aerial photographs of the Buzzards Bay coastline (false-color infra-red and black and white photos). In these photos it was possible to see subtle color and texture changes in the vegetation around the salt marsh. These photo signatures were verified by looking at a photograph of a known area or by "ground-truthing" (i.e. visiting the site in the photo and comparing what was on the ground with what appeared in the aerial photograph). The study used DEP Wetland Conservancy color infrared aerial photos from spring 1993 (scale 1:12,000) acquired by the James W. Sewall Company. This photography was supplemented with 1:5,000 black and white orthographic Wetlands Conservancy maps captured in 1990 and in some instances other aerial photographs from various sources.

The presence of a road or railroad embankment with common reed on the upstream side and typical salt marsh vegetation on the seaward side was used as a marker of a likely restriction. In other cases, the presence of a scouring basin on one or both sides of the embankment suggested uneven flows (e.g. too much water collecting around the restriction and increased outflows with high erosive potential). Bridges with short spans, that is where the channel was considerably narrowed by the bridge, were also viewed as potential restricting structures and scouring basins were usually evident. Common reed stands were also photo interpreted. Narrow marginal bands of common reed along the upland border of salt marshes and very small stands were not identified as they were not considered strongly indicative of a tidal restriction. The potential restoration sites that were identified in the aerial photographs were field checked to verify the existence of a restriction and to collect information about the restricting structure and the affected salt marsh. Field work was limited to sites with public access, with field data sheets being prepared for all 257 restriction sites. A sample of a blank 2-sided field data collection form is shown in the Appendix. Information from the data sheets was used to create a database of all the restrictions. Figure 5 defines some of the parameters identified in the database.

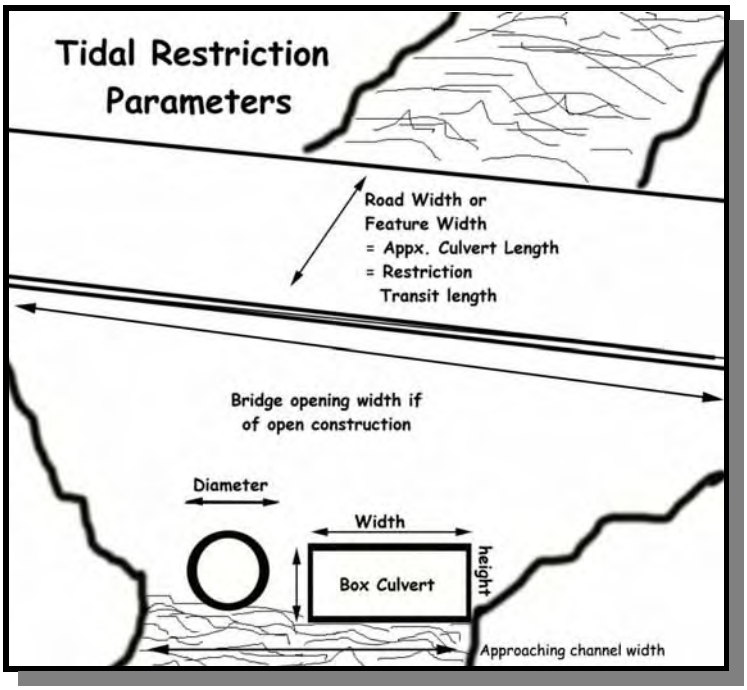

Figure 5. Generalized view of a culvert tidal restriction showing selected parameters inventoried in the tidal restriction database.

On-site observation of one or more of the following conditions were considered evidence of a tidal restriction and were recorded on the data sheets: seaward scouring basin; low marsh slumping; culvert invert problem detected; *Phragmites australis*; ponded water on seaward side of dike or road; ponded water on upstream side of dike or road; seaward culvert opening submerged at mean high tide; upstream scouring basin; culvert broken; vegetation die back; *Lythrum salicornia*; bank erosion; or culvert clogged with debris.

Photographs of most restrictions were taken with a digital camera to document existing conditions and to show the range in conditions of the restricting structures. The condition of the restricting structure was rated as excellent, good, fair, or poor in relation to these examples. The data collected in the field visits was then transferred into a Geographic Information System (GIS) database. The database was constructed by adding the locations of potential tidal restrictions and tidally restricted wetlands and common reed-dominated stands in tidal marshes to an existing wetland map database and transferred to USGS quadrangles. The resulting maps are used throughout this report.

The distribution of common reed (*Phragmites australis)* was mapped by creating a sketch of the area covered by *Phragmites* on a copy of the black and white 1:2500 orthographic sheet while in the field. Later the map was transferred by eye to 1:2500 digital orthophotos in ArcView™ using Wetlands Conservancy Program wetland lines as a guide. The size of these polygons was calculated by the ArcViewTM ™ software.

Scoring Methodology

Cost Prediction Assumptions

Due to the fact that it would not be cost effective to perform detailed cost analyses for the remediation of all 257 tidal restrictions identified in this Atlas, a simplified method was developed for approximating costs for each site. It should be noted that all costs listed in this Atlas are simply estimates and actual costs may either exceed or fall below these estimates, depending on the many variables at each restoration site.

The basis of our cost analysis was the assumption that the cost of remediation was roughly a function of the size of the new culvert and its length. Culvert length was assumed to be 20% longer than road width or from actual measurement. In calculating the size of the replacement culvert, we used the following assumptions:

1.) Culverts <=15" diameter (i.e. <1.25 sq.ft. cross section) would be tripled in diameter.

2.) Culverts >15" diameter or box culverts would be doubled in diameter.

Simplified cost estimates for culvert replacement are shown in Figure 6. However, these estimates do not account for practical costs. For example, whether or not the culvert passed under a road, whether or not the road was paved, whether utilities must be moved, and other factors are important determinants of cost. Design and permitting costs must also be considered.

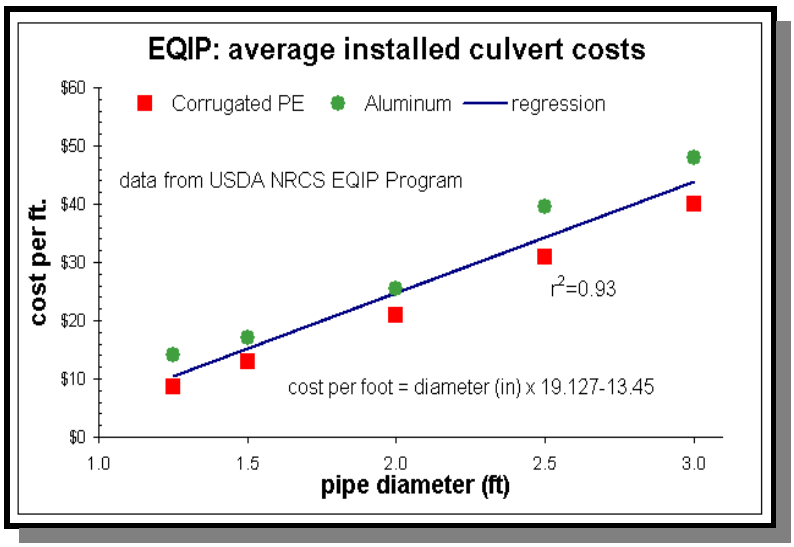

Figure 6. Simplified cost assumptions for culvert installation based on USDA-NRCS model for farm applications (i.e. not typically paved roads)

In Figure 7, we show a similar plot based on actual projects in Buzzards Bay. The plot includes eight actual projects and five hypothetical variations of two of the actual projects. For example, one of the projects involved the replacement of a dilapidated culvert with a new concrete 4-foot by 8-foot box culvert under a paved 25-foot wide rural road, with some of the replacement tasks being handled by a municipal DPW and some by a private contractor. The hypotheticals for this project were made by assuming the new culvert had dimensions of 4-feet by 8-feet and 4-feet by 10-feet, respectively, since that cost was well known and other project costs were held static. Similarly, another project represents the hypothetical estimates of the replacement of a 1-foot culvert with a 3-foot culvert on a coastal road in paved and unpaved conditions.

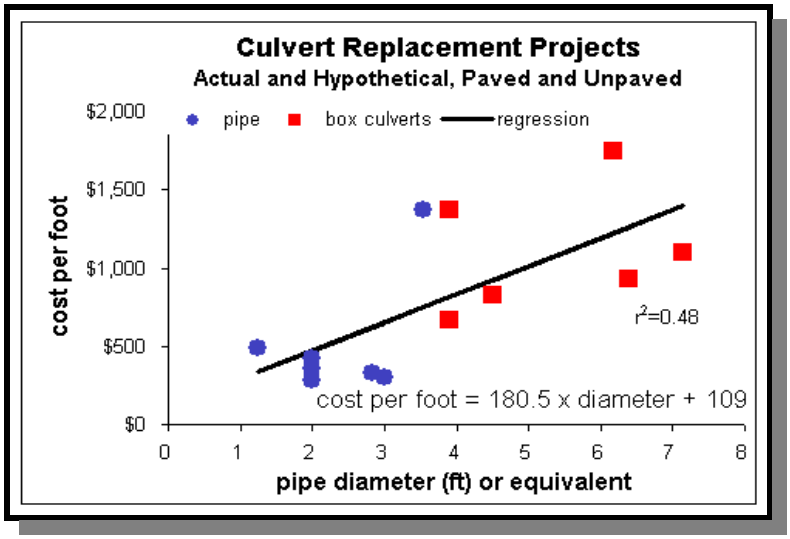

Figure 7. Actual cost of culvert replacement projects in Buzzards Bay including design, permitting, and road repaving costs. Five points represent theoretical variations of projects.

Although there is considerable variation in costs per foot for installation (r2 =0.48), it is apparent that real costs typically range from $200 to $1500 per linear foot, depending upon the diameter or cross section of the culvert, and the length of the culvert installed.

A better relationship was observed between total project cost, and the volume of the new tidal restriction (cross sectional area x culvert length; Figure 8, r2=0.71). Based on this data, the regression curve equation was employed to predict remediation costs using Equation 1. If the work

Equation 1: Total cost = restriction volume (cu. ft.)*41.0 + $10,150

was to be undertaken under a dirt road, the estimate of Equation 1 was halved. If work was under a railroad or road bridge with a culvert, the cost estimate in Equation 1 was tripled.

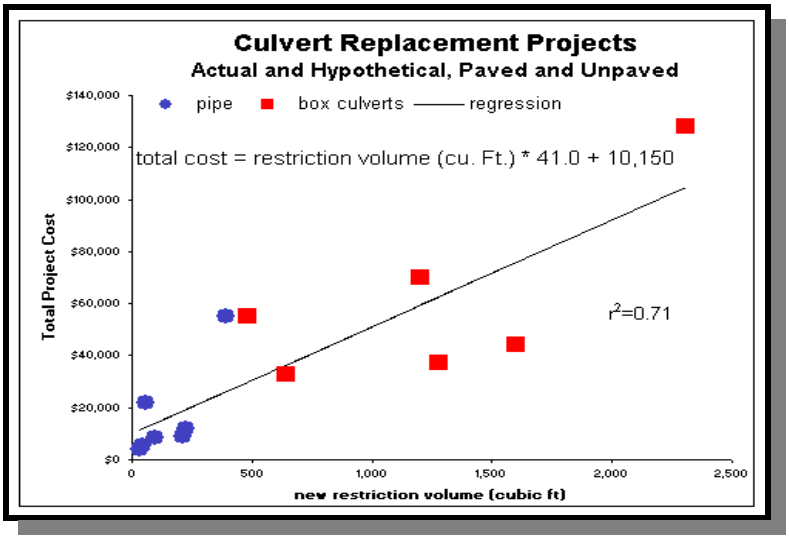

Figure 8. Total Project costs related to volume of the new tidal restriction (culvert cross section x length).

Some of the estimates in Figure 8 may underestimate project costs because some tasks were completed by municipal DPWs. In general, any project undertaken solely by a DPW may be completed for only one half of the prediction of Equation 1. Conversely, projects wholly completed by private contractors may cost twice as much or more. Our cost equation may represent the intermediate case.

Equation 1 was used only for projects with a restriction having a width of less than 10 feet. Larger restrictions may involve more complicated remediation strategies such as dredging filled-in channel entrances and under bridges, as well as bridge repairs or modification. For bridge repair work that would involve expanding the opening under the bridge, $10,000 per foot was used for bridges with a channel width greater than 20 feet. Additionally, for bridge projects with a channel width greater than 20 feet, $10,000 per channel foot width was used to approximate dredging and/or construction costs. For bridge projects with a channel width between 10 and 20 feet, $3,000 per channel foot width was used to approximate dredging and/or construction costs. These values may overestimate costs for projects where dredging alone is employed, because such costs may be as little as $500 per foot of channel.

Finally, our costs were sent to area DPWs to review, with the offer to change the estimates in the Atlas if the DPWs could provide better cost figures. However, no municipality was able to provide these estimates without specific engineering plans in hand.

Criteria for Scoring and Rationale

There are many potential ways of ranking tidal restriction sites for remediation. The Buzzards Bay Project developed a strategy for assigning scores to sites based on cost, acreage of wetlands potentially affected, acreage of *Phragmites*, and the presence of important habitat types. These and other criteria used in this study are described below. Using the adopted scoring system, every site had the potential of receiving 29 points. The sites with scores falling within the top 10% are profiled in a separate section of this report.

Wetland Size Scoring (4 points)

Independent of the degree of impairment, or the cost effectiveness (cost per acre of a project), some consideration of wetland size is important. That is to say, it may be more desirable to restore a 100 acre wetland site, even if it only contains 10% *Phragmites*, than to restore a ½ acre site, even if it is composed of 40% *Phragmites*. All upstream wetland areas are potentially affected by tidal restrictions, including habitat under and within surface waters. This is because elimination of a restriction may also improve shellfish habitat, fish habitat, water quality, salt marsh habitat, and other valuable resources that should not be overlooked. Consequently all upstream wetland areas, including surface waters, were included in the basis of this scoring. Upstream wetland areas were calculated using ArcViewTM ™ software and coverages from Mass GIS based on Wetland Conservancy Orthophotograph maps. Only wetlands areas likely to be affected by a tidal restriction were included in the calculations.

Below are the scoring criteria for this parameter and Figure 9 shows the distribution of the resulting scores for each restriction.

Wetland Size (acres)	Points
< 1 acres	0
≥1 acres	1
≥5 acres	2
≥25 acres	3
≥125 acres	4

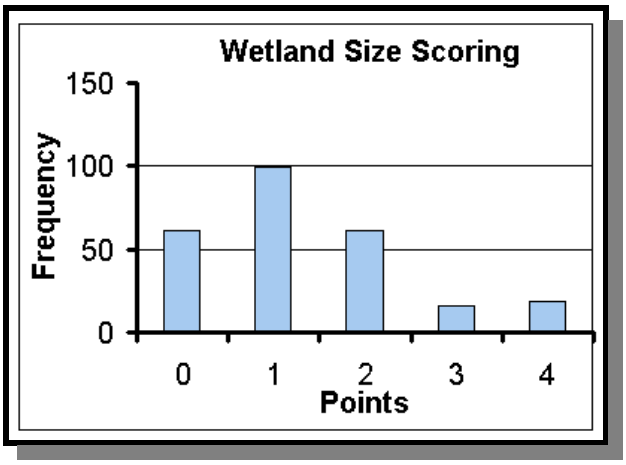

Figure 9. Frequency of scores for wetland size criteria

Cost-Effectiveness Scoring (5 points)

The cost effectiveness of a project was determined by dividing the cost estimate by the total number of acres (excluding surface waters) of wetland area affected by the restriction. When developing this criteria, potential scoring schemes, such as cost per acre of *Phragmites,* was not chosen because the presence of *Phragmites* is just one manifestation of adverse effects of a tidal restriction and may not always be present in tidally restricted sites. On the other hand, it was felt that the inclusion of surface waters created more bias to large bridge projects, as wetland size already incorporated surface water area in tidal areas affected. Therefore, this scoring was based on the estimated cost of a project divided by vegetated wetlands potentially affected by the restriction. Below are the scoring criteria for this parameter and Figure 10 shows the distribution of the resulting scores for each restriction.

Cost effectiveness	Points
≤ $1, 000 per acre	6
≤ $2, 000 per acre	5
≤ $4, 000 per acre	4
≤ $8, 000 per acre	3
≤ $16, 000 per acre	2
≤ $35,000 per acre	1
> $35,000 per acre	0

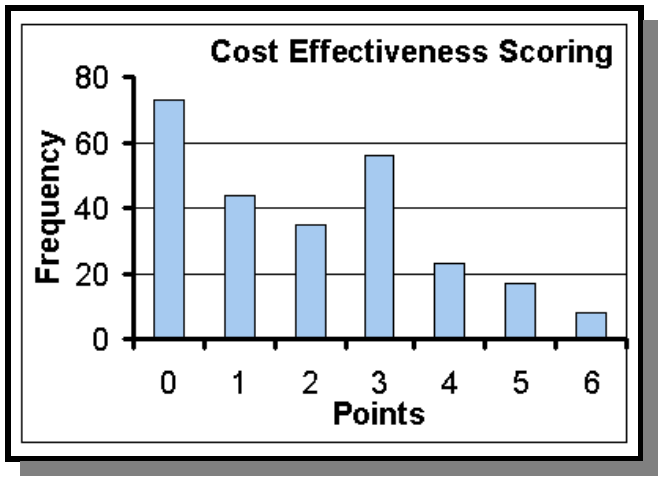

Figure 10. Frequency of scores for cost effectiveness based on dollars per acre criteria.

Wetland Impairment Scoring (5 points)

In this study, it was presumed that impairment caused by a restriction could be characterized by the degree of cover of the invasive nuisance species *Phragmites*, which tends to replace salt marsh vegetation in areas that are experiencing restricted tidal flow. The *Phragmites* impairment was quantified as the percent of vegetated wetlands composed of *Phragmites*. This is not an ideal characterization of impairment because the presence of *Phragmites* is just one manifestation of impairment, and it is not always present in tidally restricted areas. Nonetheless, *Phragmites* coverage was chosen because it was the only impairment measure that could be made easily for all sites, and the species is widely recognized as a nuisance species. To calculate a percentage, *Phragmites* acreage was divided by acreage of all wetlands that were likely to be affected by the restriction. This latter wetland area was calculated using coverages from MassGIS that were based on Wetlands Conservancy Orthophotograph maps. Below are the scoring criteria for this parameter and Figure 11 shows the distribution of the resulting scores for each restriction.

% vegetated wetland as *Phragmites*	Points
≤ 1%	0
≤ 10%	1
≤ 20%	2
≤ 50%	3
≤ 90%	4
≥90%	5

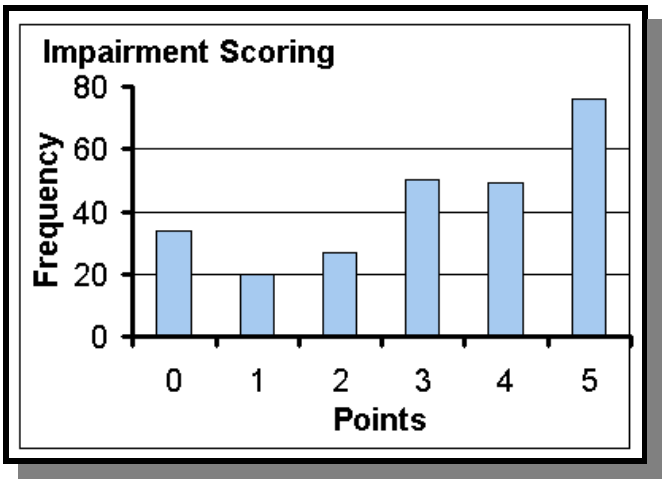

Figure 11. Frequency of scores for wetland impairment. Impairment was based on percent coverage of the marsh by the invasive species *Phragmites*.

Tidal Restriction Size Scoring (5 points)

It is likely that there is some relationship between the degree of wetland impairment by a tidal restriction and the cross sectional area of the tidal restriction. Specifically, inferences may be drawn between the cross sectional area of a restriction and the upstream acreage of wetlands potentially affected. While we do not believe there is any single ideal ratio between restriction cross sectional area and upstream acreage (e.g. very elongated systems may require a different ration compared to a situation where wetlands are clustered immediately behind the restriction), clearly some restrictions have too small a cross sectional area, and others appear ample for flushing.

Below are the scoring criteria selected for this parameter and Figure 12 shows the distribution of the resulting scores for each restriction. Because the amount of water needed to pass through a restriction depends upon the area of surface water behind the restriction, surface water was included in the calculation of upstream wetlands.

Restriction Size	Points
≤.05 sq. ft. per acre	5
≤.25 sq. ft. per acre	4
≤1 sq. ft. per acre	3
≤5 sq. ft. per acre	2
≤10 sq. ft. per acre	1
>10 sq. ft. per acre	0

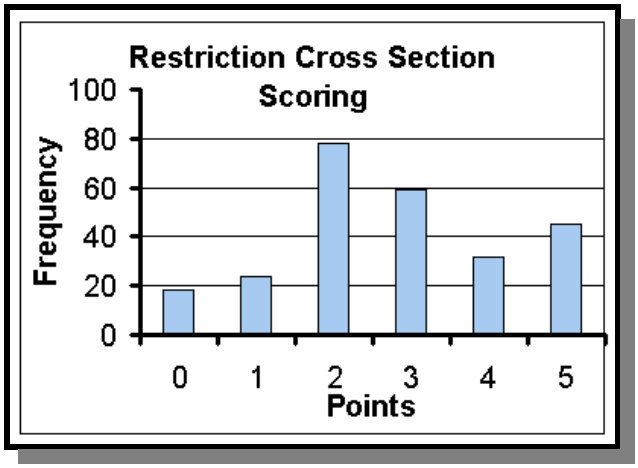

Figure 12. Frequency of scores based on the ration of cross sectional area of the tidal restriction to size of wetland impaired.

Other Criteria

Other scoring criteria were as follows:

The scoring of adverse impacts to special resources was based on best professional judgement. While increases in salinity by definition will result in the loss or death of certain freshwater species, it is undesirable to increase salinity where habitat for freshwater endangered species are found, where the salinity of a pond will change, or where anadromous fish spawning areas are lost. These and other reasons are justification for the subtraction of five points in the scoring system.

Restriction on public road/property	3 points - town road or land 2 points - state road or land 3 points - federal road or land
Benefits a public wetland	1 point
Benefits anadromous fish run	4 points (only applied to culverts, not bridge restrictions)
Designated rare/endangered sp. habitat	2 point
Adverse impacts to special resources	-5 points

The awarding of points for enlarging restrictions under public property (0 points for private, 3 points for municipal or federal, 2 points for state property) was based on the fact that it is far easier to remediate a publicly owned site because of logistical, cost, permitting, and funding reasons. Town owned land was considered the easiest to permit, but federal lands received an equivalent number of points because of the availability of federal funds and support. In practical terms, however, only a handful of sites were on federal property. Small culverts can greatly affect anadromous fish runs, so the highest number of bonus points (4) are given for this criteria. If the structure was a bridge, or did not actually impair a herring run, no points were given in this category. If remediation of the restriction would benefit a publicly owned wetland it was given 1 point. Areas designated as rare or endangered species habitat by the Massachusetts Natural Heritage and Endangered Species Program were given 2 points.

Results

The scoring system used in this report is, of course, subjective. In practical terms, work at any of the sites is justified if a property owner is willing to undertake the work, costs are low, or special opportunities arise. The purpose of the scoring system was to assist in identifying sites for further study, not as a final evaluation of which sites are most appropriate or most suitable for remediation. Scores for all 257 sites can be found in Table 4 as well as in the Appendix of this document.

Table 1, below, shows the number of tidal restrictions per municipality. Additionally, information has been included on the number of sites that have already been restored and those that currently have design plans for remediation in development.

Table 1. Number of Tidal Restrictions per Municipality

	Bourne	Dartmouth	Fairhaven	Falmouth	Marion	Mattapoisett	New Bedford	Wareham	Westport
Total Sites	35	31	27	46**	21	37	7	39	20
Sites already restored	2*	1	4	0	3	0	0	0	0
Restoration designs in development	0	3	0	0	0	2	0	0	0

** One of the tidal restriction sites remediated in Bourne was located in Scusset, which is outside of the Buzzards Bay watershed.*
*** Eight of the tidal restrictions included in this total number are located outside the Buzzards Bay watershed, therefore information on them is not included in this Atlas. For complete documentation please refer to the Cape Cod Atlas of Tidal Restricted Salt Marshes produced by the Cape Cod Commission.*

Given the large number of tidal restrictions identified in Buzzards Bay, it was decided that detailed profile pages would only be included for sites with a score that was roughly within the top 10% of all sites (16 or greater). Table 2, on the following page, lists the sites profiled in the next section, and Table 3 displays a breakdown of all 257 restrictions by type. General locations of all restrictions can be found in map form in Figure 13 as well as in the section entitled "USGS Topographic Maps of Tidal Restrictions in the Buzzards Bay Watershed". Specific details for all sites can be located in Table 4 and in the Appendix.

Table 2. Tidal Restrictions Profiled in the Atlas (score of 16 or greater)

Site #	Town	Restricting Feature	Score	Estimated Cost	Cost per Acre
FA05	Falmouth	Culvert: Road	20	$19,300	$1,300
DA04	Dartmouth	Culvert: Nonquitt Marsh	20	$21,300	$500
FA02	Falmouth	Wall: Rock wall, Mill Pond	19	$13,900	$900
FH18	Fairhaven	Culvert/road: Fir Street	19	$18,800	$2,200
MT17	Mattapoisett	Wall, rock: Rock wall	18	$12,500	$2,700
WH40	Wareham	Dike: Red Brook Rd., old road	18	$13,900	$6,900
DA02	Dartmouth	Bridge: Gulf Road	18	$500,000	$2,500
DA09	Dartmouth	Bridge: Little River Rd., Little River	18	$600,000	$3,300
DA17	Dartmouth	Culvert: Old road	17	$6,200	$900
WH11	Wareham	Culvert: Allen Road	17	$11,300	$600
MN22	Marion	Culvert: 13th hole, Kitansett Golf Club	17	$13,500	$700
FA10	Falmouth	Road: Woodneck Road	17	$14,900	$7,900
BN28	Bourne	Dike: MBTA Railroad	17	$21,500	$21,000
MT06	Mattapoisett	Culvert: Old Mattapoisett Neck Road	17	$43,500	$1,100
DA11	Dartmouth	Culvert/road: Little Beach Rd., Allen's Pond	16	$7,600	$1,200
DA06	Dartmouth	Culvert/road: Cow Yard Marsh	16	$9,200	$1,000
DA07	Dartmouth	Culvert/road: Cow Yard Marsh	16	$9,200	$1,000
WP17	Westport	Road: Driveway	16	$9,700	$1,000
MT15	Mattapoisett	Culvert: Private beach road	16	$11,600	$2,500
DA15	Dartmouth	Culvert: Old road	16	$12,200	$1,100
DA27	Dartmouth	Dike: Path to beach	16	$13,900	$6,100
WH27	Wareham	Road: Pilgrim Avenue	16	$27,000	$2,400
WH33	Wareham	Road: Road	16	$27,500	$5,300
MT04	Mattapoisett	Culvert: Mattapoisett Neck Road	16	$43,500	$1,100
FA41	Falmouth	Culvert: Millfield Street	16	$64,500	$4,300
MT09	Mattapoisett	Old Railroad bridge: Eel Pond	16	$123,500	$4,900
DA12	Dartmouth	Culvert: Georges Pond	16	$128,800	$13,900
WH17	Wareham	Bridge: Sandwich Rd/Rte. 6, Agawam River	16	$350,000	$24,500
DA01	Dartmouth	Bridge/road: Bridge St., Apponagansett Bay	16	$1,100,000	$4,300
NB08	New Bedford	Dike: Shaws Cove Drive, New Bedford Harbor	16	$2,750,000	$33,000
WP06	Westport	Bridge: Hix Bridge, Westport River	16	$2,800,000	$13,600

Table 3. Count of Restriction Structure Types

Restriction Structure Type	Total
barrier beach	6
beach	1
berm, culvert with tidegate	1
berm	5
bridge	8
bridge/road	1
causeway	1
cement bank	1
channel through dike	1
culvert	6
culvert, bridge and road	1
debris	1
dike	34
driveway	8
footpath	1
path	12
railroad	14
remains of earthen/stone dam	1
road	139
rock wall, broken in places	1
rocks	1
stone wall	3
tide gate	1
wall	4
wooden path	1
(blank)	4
Grand Total	**257**

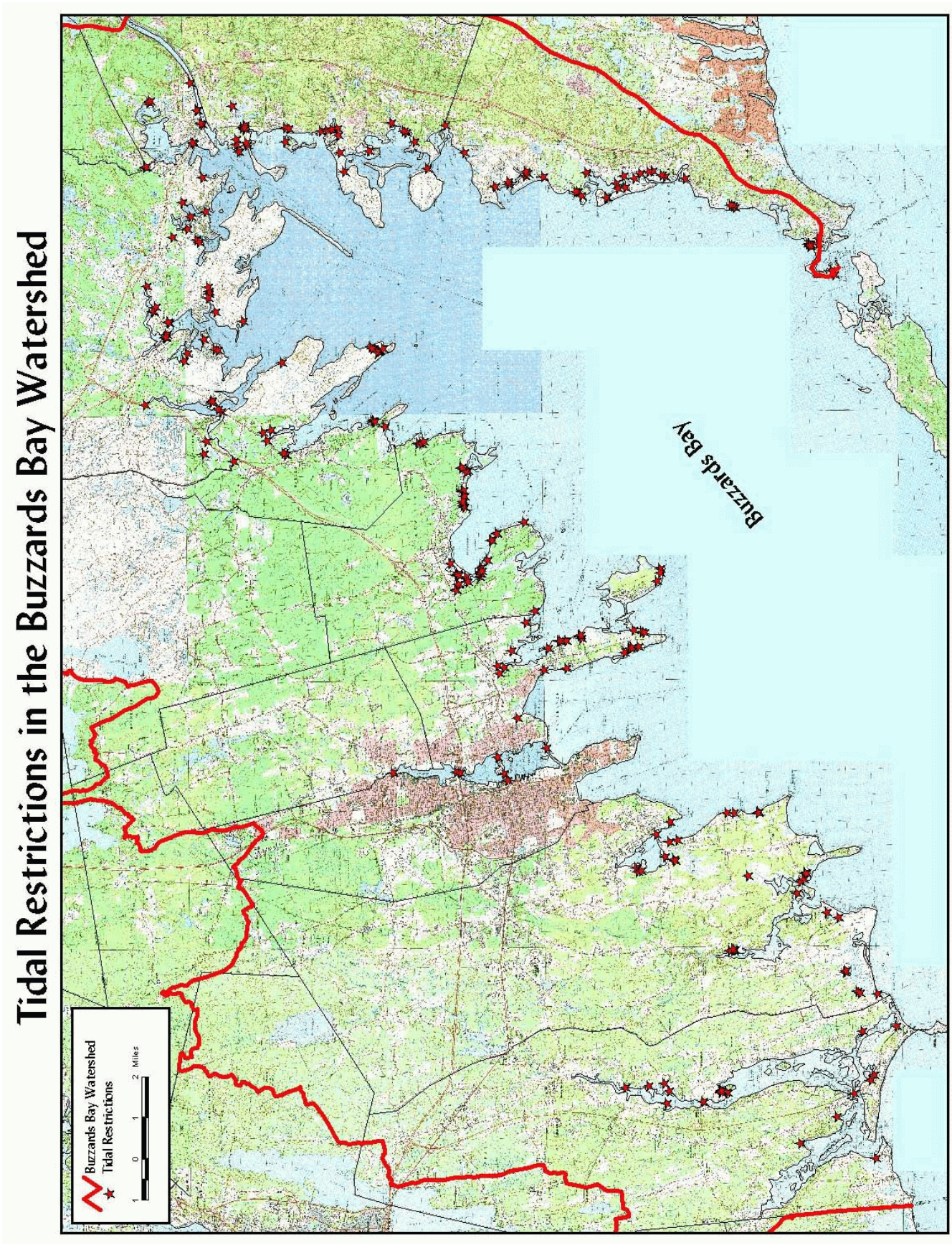
Tidal Restrictions in the Buzzards Bay Watershed
Buzzards Bay
Buzzards Bay Watershed
Tidal Restrictions
0
1
2 Miles

Table 4: Results: Summary of all tidal restriction sites sorted by municipality

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
BN01	Bourne	9	$53,900	$112,400	railroad culvert	N	0.0	0.5	0.48	0.48	100%	5	0	0	2	2	0	0	0	0
BN02	Bourne	5	$42,900	$24,300	Road	N	4.4	1.8	6.14	0	0%	0	2	1	2	0	0	0	0	0
BN03	Bourne	10	$3,500,000	$94,900	bridge	N	459.2	36.9	496	1.74	5%	1	4	0	2	2	1	0	0	0
BN04	Bourne	10	$2,500,000	$67,800	bridge	N	461.5	36.9	498	1.74	5%	1	4	0	2	2	1	0	0	0
BN06	Bourne	11	$319,100	$106,700	road	N	0.0	3.0	2.99	2.99	100%	5	1	0	2	3	0	0	0	0
BN07	Bourne	6	$9,700	$5,700	culvert	N	0.0	1.7	1.69	0	0%	0	1	3	2	0	0	0	0	0
BN08	Bourne	11	$453,000	$43,800	road	N	0.0	10.4	10.4	4.98	48%	3	2	0	3	3	0	0	0	0
BN09	Bourne	14	$560,000	$7,400	bridge	N	70.4	75.4	146	10	13%	2	4	3	2	3	0	0	0	0
BN10	Bourne	13	$510,000	$6,700	bridge	N	71.2	76.4	148	10	13%	2	4	3	2	2	0	0	0	0
BN11	Bourne	13	$19,600	$5,800	tide gate	N	0.0	3.4	3.39	0	0%	0	1	3	2	3	0	4	0	0
BN12	Bourne	13	$11,700	$6,900	culvert	N	2.5	1.7	4.17	0.24	14%	2	1	3	2	2	1	0	2	0
BN13	Bourne	7	$1,167,700	$116,774,400	railroad culvert	N	1.2	0.0	1.18	0	0%	0	1	0	0	2	0	4	0	0
BN14	Bourne	14	$450,000	$9,200	bridge	N	20.9	49.1	70	2.64	5%	1	3	2	2	3	1	0	2	0
BN15	Bourne	13	$35,600	$4,500	culvert	N	0.0	8.0	8	1.57	20%	2	2	3	3	3	0	0	0	0
BN16	Bourne	15	$21,000	$5,600	culvert	N	0.0	3.8	3.76	3.76	100%	5	1	3	3	3	0	0	0	0
BN17	Bourne	6	$15,200	$29,100	dike	N	0.0	0.5	0.52	0.17	33%	3	0	1	2	0	0	0	0	0
BN21	Bourne	10	$13,500	$19,300	road	N	0.0	0.7	0.7	0.62	89%	4	0	1	5	0	0	0	0	0
BN24	Bourne	9	$35,200	$6,400	road	N	0.0	5.5	5.52	0.72	13%	2	2	3	2	0	0	0	0	0
BN25	Bourne	8	$20,600	$38,800	road	N	0.0	0.5	0.53	0.12	23%	3	0	0	2	3	0	0	0	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
BN26	Bourne	11	$31,000	$24,200	dike	N	0.0	1.3	1.28	0.22	17%	2	1	1	3	2	0	0	2	0
BN27	Bourne	12	$12,500	$12,900	driveway	N	0.0	1.0	0.97	0.97	100%	5	0	2	5	0	0	0	0	0
BN28	Bourne	17	$21,500	$21,000	dike	N	0.0	1.0	1.02	1.02	100%	5	1	1	5	2	1	0	2	0
BN29	Bourne	12	$35,200	$28,800	railroad	N	0.0	1.2	1.22	1.22	100%	5	1	1	3	2	0	0	0	0
BN30	Bourne	9	$27,500	$10,000	dike	N	0.0	2.7	2.74	0.55	20%	3	1	2	3	0	0	0	0	0
BN32	Bourne	9	$119,400	$20,600	bridge	N	0.4	5.8	6.19	2.99	52%	4	2	1	2	0	0	0	0	0
BN33	Bourne	11	$2,500,000	$54,000	railroad bridge	N	12.5	46.3	58.7	2.4	5%	1	3	0	2	2	1	0	2	0
BN34	Bourne	9	$31,000	$91,200	dike	N	0.0	0.3	0.34	0.34	100%	5	0	0	1	3	0	0	0	0
BN35	Bourne	10	$15,900	$45,200	dike	N	0.0	0.4	0.35	0.35	99%	5	0	0	2	3	0	0	0	0
BN36	Bourne	10	$31,000	$52,600	dike	N	0.0	0.6	0.59	0.59	100%	5	0	0	2	3	0	0	0	0
BN37	Bourne	9	$27,900	$47,200	dike	N	0.0	0.6	0.59	0.59	100%	5	0	0	1	3	0	0	0	0
BN38	Bourne	15	$93,600	$11,500	road	N	0.0	8.2	8.16	0.48	6%	1	2	2	3	3	0	4	0	0
BN39	Bourne	15	$15,900	$3,800	dike	N	0.0	4.2	4.16	3.02	73%	4	1	4	4	0	0	0	2	0
BN40	Bourne	8	$55,600	$31,200	dike	N	0.0	1.8	1.78	1.7	96%	5	1	1	1	0	0	0	0	0
BN43	Bourne	11	$73,100	$8,000	dike	N	0.0	9.1	9.1	4.95	54%	4	2	2	3	0	0	0	0	0
BN44	Bourne	4	$536,500	$1,625,900	railroad	N	0.2	0.3	0.5	0	0%	0	0	0	2	2	0	0	0	0
DA01	Dartmouth	16	$1,100,000	$4,300	bridge/road	N	338.8	256.9	596	97	38%	3	4	3	3	3	0	0	0	0
DA02	Dartmouth	18	$500,000	$2,500	bridge	N	24.0	199.3	223	95.1	48%	3	4	4	3	3	1	0	0	0
DA03	Dartmouth	14	$22,700	$3,000	road	N	0.0	7.5	7.54	0.55	7%	1	2	4	4	3	0	0	0	0
DA04	Dartmouth	20	$21,300	$500	culvert	N	33.5	38.8	72.3	20.7	53%	4	3	6	5	0	0	0	2	0
DA05	Dartmouth	15	$180,200	$4,600	culvert	N	33.5	38.8	72.3	20.7	53%	4	3	3	3	0	0	0	2	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
DA06	Dartmouth	16	$9,200	$1,000	road	N	0.0	9.0	8.96	4.45	50%	3	2	5	4	0	0	0	2	0
DA07	Dartmouth	16	$9,200	$1,000	road	N	0.0	9.0	8.96	4.45	50%	3	2	5	4	0	0	0	2	0
DA08	Dartmouth	15	$90,100	$11,600	culvert	N	0.0	7.8	16.7	7.6	98%	5	2	2	4	0	0	0	2	0
DA09	Dartmouth	18	$600,000	$3,300	bridge	N	87.3	181.3	269	11.3	6%	1	4	4	3	3	1	0	2	0
DA11	Dartmouth	16	$7,600	$1,200	road	N	0.3	6.3	6.56	2.17	35%	3	2	5	4	0	0	0	2	0
DA12	Dartmouth	16	$128,800	$13,900	culvert	N	11.7	9.3	21	5.31	57%	4	2	2	3	2	1	0	2	0
DA13	Dartmouth	11	$5,900	$4,100	dike	N	0.7	1.4	2.11	0	0%	0	1	3	5	0	0	0	2	0
DA14	Dartmouth	13	$51,900	$7,600	culvert	N	0.2	6.8	7	0.75	11%	2	2	3	2	3	1	0	0	0
DA15	Dartmouth	16	$12,200	$1,100	culvert	N	0.5	11.0	11.6	2.09	19%	2	2	5	3	3	1	0	0	0
DA16	Dartmouth	11	$10,600	$1,200	culvert	N	0.0	8.9	8.91	0.38	4%	1	2	5	3	0	0	0	0	0
DA17	Dartmouth	17	$6,200	$900	culvert	N	0.0	6.8	6.79	0	0%	0	2	6	5	3	1	0	0	0
DA18	Dartmouth	11	$6,600	$2,600	culvert	N	0.0	2.6	2.58	0.49	19%	2	1	4	4	0	0	0	0	0
DA19	Dartmouth	11	$10,600	$5,600	wall	N	0.0	1.9	1.89	0.49	26%	3	1	3	4	0	0	0	0	0
DA20	Dartmouth	9	$24,100	$267,300	culvert	N	0.0	0.1	0.09	0.09	100%	5	0	0	1	3	0	0	0	0
DA21	Dartmouth	11	$10,900	$34,100	rocks	N	0.0	0.3	0.32	0.32	100%	5	0	1	5	0	0	0	0	0
DA22	Dartmouth	10	$49,400	$29,900	culvert	N	0.0	1.7	1.65	0.45	27%	3	1	1	5	0	0	0	0	0
DA23	Dartmouth	15	$12,000	$700	dike	N	0.0	18.2	18.2	0.14	1%	0	2	6	5	0	0	0	2	0
DA24	Dartmouth	14	$12,800	$6,400	dike	N	0.0	2.0	2	0.83	42%	3	1	3	5	0	0	0	2	0
DA25	Dartmouth	14	$13,500	$6,800	dike	N	0.0	2.0	2	0.83	42%	3	1	3	5	0	0	0	2	0
DA26	Dartmouth	14	$12,800	$6,400	dike	N	0.0	2.0	2	0.83	42%	3	1	3	5	0	0	0	2	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
DA27	Dartmouth	16	$13,900	$6,100	dike	N	0.0	2.3	2.29	2.29	100%	5	1	3	5	0	0	0	2	0
DA28	Dartmouth	14	$10,700	$13,100	dike	N	0.0	0.8	0.82	0.82	100%	5	0	2	5	0	0	0	2	0
DA29	Dartmouth	14	$10,700	$13,100	dike	N	0.0	0.8	0.82	0.82	100%	5	0	2	5	0	0	0	2	0
DA30	Dartmouth	13	$12,000	$41,500	dike	N	1.8	0.3	2.09	0.29	100%	5	1	0	5	0	0	0	2	0
DA31	Dartmouth	13	$10,900	$37,600	wall	N	1.8	0.3	2.09	0.29	100%	5	1	0	5	0	0	0	2	0
DA32	Dartmouth	11	$45,000	$6,400	bridge	N	0.0	7.0	7.02	1.79	25%	3	2	3	1	0	0	0	2	0
FA01	Falmouth	15	$6,000	$1,700	culvert	N	0.0	3.6	3.62	3.62	100%	5	1	5	4	0	0	0	0	0
FA02	Falmouth	19	$13,900	$900	wall	N	2.3	14.8	17	14.8	100%	5	2	6	5	0	1	0	0	0
FA03	Falmouth	9	$12,000	$26,700	culvert	N	0.0	0.5	0.45	0.45	100%	5	0	1	3	0	0	0	0	0
FA04	Falmouth	8	$7,200	$22,400	culvert	N	0.0	0.3	0.32	0.32	100%	5	0	1	2	0	0	0	0	0
FA05	Falmouth	21	$19,300	$1,300	culvert	N	2.3	14.6	16.8	14.6	100%	5	2	5	5	3	1	0	0	0
FA06	Falmouth	10	$19,300	$101,700	culvert	N	0.0	0.2	0.19	0.19	100%	5	0	0	1	3	1	0	0	0
FA07	Falmouth	13	$36,200	$4,200	tide gate	N	0.4	8.7	9.1	7.31	84%	4	2	3	4	0	0	0	0	0
FA08	Falmouth	15	$11,200	$1,400	culvert	N	0.4	8.2	8.56	6.77	83%	4	2	5	4	0	0	0	0	0
FA09	Falmouth	13	$22,300	$3,600	culvert	N	0.4	6.2	6.62	4.82	77%	4	2	4	3	0	0	0	0	0
FA10	Falmouth	17	$14,900	$7,900	road	N	4.2	1.9	6.06	1.88	100%	5	2	3	5	0	0	0	2	0
FA11	Falmouth	9	$42,000	$9,400	bridge	N	3.2	4.5	7.68	1.63	36%	3	2	2	2	0	0	0	0	0
FA12	Falmouth	8	$60,000	$20,000	bridge	N	4.5	3.0	7.47	1.63	54%	4	2	1	1	0	0	0	0	0
FA13	Falmouth	8	$44,900	$115,200	culvert	N	0.9	0.4	1.33	0.39	100%	5	1	0	2	0	0	0	0	0
FA14	Falmouth	9	$1,200,000	$61,400	bridge	N	6.0	19.6	25.6	3.89	20%	2	3	0	0	3	1	0	0	0
FA15	Falmouth	9	$250,000	$28,800	bridge	N	4.3	8.7	13	3.92	45%	3	2	1	0	3	0	0	0	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
FA16	Falmouth	9	$1,200,000	$161,300	bridge	N	18.8	7.4	26.3	2.36	32%	3	3	0	0	3	0	0	0	0
FA17	Falmouth	10	$226,000	$59,800	culvert	N	6.8	3.8	10.5	2.36	62%	4	2	0	2	2	0	0	0	0
FA18	Falmouth	7	$30,400	$338,100	culvert	N	0.1	0.1	0.22	0.09	100%	5	0	0	2	0	0	0	0	0
FA19	Falmouth	15	$18,900	$5,800	culvert	N	2.3	3.3	5.56	0.71	22%	3	2	3	4	3	0	0	0	0
FA20	Falmouth	12	$124,000	$56,600	culvert	N	2.2	2.2	4.38	2.19	100%	5	1	0	4	2	0	0	0	0
FA21	Falmouth	11	$124,000	$50,200	culvert	N	0.0	2.5	2.47	2.47	100%	5	1	0	3	2	0	0	0	0
FA22	Falmouth	1	$34,700	$1,400	culvert	N	7.6	25.5	33.1	0	0%	0	3	5	3	0	0	0	0	-10
FA25	Falmouth	5	$24,100	$50,100	culvert	N	0.0	0.5	0.48	0	0%	0	0	0	2	3	0	0	0	0
FA26	Falmouth	12	$12,500	$3,400	culvert	N	0.7	3.7	4.38	0.21	6%	1	1	4	3	0	0	0	2	1
FA27	Falmouth	13	$8,200	$2,900	culvert	N	0.0	2.9	2.85	0.82	29%	3	1	4	3	0	0	0	2	0
FA28	Falmouth	12	$74,600	$19,500	dike	N	1.4	3.8	5.21	1.04	27%	3	2	1	3	2	1	0	0	0
FA28A	Falmouth	10	$160,700	$42,100	dike	N	1.4	3.8	5.21	1.04	27%	3	2	0	2	2	1	0	0	0
FA29	Falmouth	10	$12,000	$3,700	culvert	N	0.0	3.2	3.23	0.29	9%	1	1	4	4	0	0	0	0	0
FA30	Falmouth	9	$12,600	$5,300	culvert	N	0.7	2.4	3.09	0.14	6%	1	1	3	4	0	0	0	0	0
FA31	Falmouth	7	$10,600	$4,500	culvert	N	0.7	2.4	3.09	0.14	6%	1	1	3	2	0	0	0	0	0
FA32	Falmouth	13	$16,400	$3,200	culvert	N	0.0	5.2	5.17	4.4	85%	4	2	4	3	0	0	0	0	0
FA33	Falmouth	12	$8,200	$4,100	culvert	N	0.0	2.0	1.99	1.99	100%	5	1	3	3	0	0	0	0	0
FA34	Falmouth	15	$57,200	$8,400	culvert	N	0.5	6.9	7.36	5.85	85%	4	2	2	4	3	0	0	0	0
FA35	Falmouth	2	$21,400	$76,500	culvert	N	0.0	0.3	0.28	0	0%	0	0	0	2	0	0	0	0	0
FA36	Falmouth	5	$31,000	$25,800	culvert	N	0.0	1.2	1.2		0%	0	1	1	3	0	0	0	0	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
FA37	Falmouth	5	$19,600	$31,100	dike	N	0.0	0.6	0.63	0.28	44%	3	0	1	1	0	0	0	0	0
FA38	Falmouth	12	$24,600	$7,500	dike	N	0.0	3.3	3.27	1.7	52%	4	1	3	4	0	0	0	0	0
FA39	Falmouth	15	$227,500	$19,700	culvert	N	0.0	11.5	11.5	11.4	99%	5	2	1	3	3	1	0	0	0
FA40	Falmouth	15	$68,100	$4,500	culvert	N	2.3	15.0	17.3	15	100%	5	2	3	4	0	1	0	0	0
FA41	Falmouth	16	$64,500	$4,300	culvert	N	2.3	15.0	17.3	15	100%	5	2	3	5	0	1	0	0	0
FH01	Fairhaven	7	$7,200	$7,000	culvert	N	0.0	1.0	1.02	0	0%	0	1	3	3	0	0	0	0	0
FH02	Fairhaven	13	$12,600	$9,700	culvert	N	0.0	1.3	1.3	1.3	100%	5	1	2	2	3	0	0	0	0
FH03	Fairhaven	7	$350,000	$20,500	bridge	N	1.4	17.1	18.5	3	18%	2	2	1	2	0	0	0	0	0
FH04	Fairhaven	9	$502,800	$359,100	bridge/culvert	N	0.0	1.4	1.4	1.4	100%	5	1	0	0	3	0	0	0	0
FH05	Fairhaven	9	$65,800	$73,900	culvert	N	0.0	0.9	0.89	0.89	100%	5	0	0	1	3	0	0	0	0
FH06	Fairhaven	8	$25,100	$8,900	road	N	0.0	2.8	2.82	0.71	25%	3	1	2	2	0	0	0	0	0
FH07	Fairhaven	10	$25,100	$4,700	road	N	0.0	5.4	5.38	1.25	23%	3	2	3	2	0	0	0	0	0
FH08	Fairhaven	11	$18,100	$11,500	barrier beach	N	0.0	1.6	1.58	1.58	100%	5	1	2	3	0	0	0	0	0
FH08A	Fairhaven	5	$143,800	$81,700	bridge	N	0.0	1.8	1.76	0.98	56%	4	1	0	0	0	0	0	0	0
FH09A	Fairhaven	10	$26,800	$44,700	road	N	0.0	0.6	0.6	0.6	100%	5	0	0	2	3	0	0	0	0
FH09B	Fairhaven	8	$7,200	$28,600	culvert	N	0.0	0.3	0.25	0.25	100%	5	0	1	2	0	0	0	0	0
FH10	Fairhaven	14	$26,800	$13,800	culvert	N	0.0	1.9	1.94	1.94	100%	5	1	2	3	3	0	0	0	0
FH11	Fairhaven	12	$121,400	$18,200	culvert	N	0.0	6.7	6.68	5.56	83%	4	2	1	2	3	0	0	0	0
FH12	Fairhaven	7	$7,600	$47,400	culvert	N	0.0	0.2	0.16	0.16	100%	5	0	0	2	0	0	0	0	0
FH13	Fairhaven	8	$15,200	$28,600	culvert	N	0.0	0.5	0.53	0.53	100%	5	0	1	2	0	0	0	0	0
FH14	Fairhaven	3	$16,400	$31,000	culvert	N	0.0	0.5	0.53	0	0%	0	0	1	2	0	0	0	0	0

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FH15	Fairhaven	4	$7,600	$14,300	culvert	N	0.0	0.5	0.53	0	0%	0	0	2	2	0	0	0	0	0
FH16	Fairhaven	15	$76,900	$6,600	culvert	N	0.0	11.7	11.7	1.2	10%	2	2	3	3	3	0	0	2	0
FH17	Fairhaven	12	$16,400	$9,100	footpath	N	0.0	1.8	1.8	0	0%	0	1	2	3	3	1	0	2	0
FH18	Fairhaven	19	$18,800	$2,200	culvert	N	0.0	8.7	8.67	4.43	51%	4	2	4	4	3	0	0	2	0
FH19	Fairhaven	15	$32,400	$20,500	culvert	N	0.0	1.6	1.58	1.58	100%	5	1	1	3	3	0	0	2	0
FH20	Fairhaven	12	$13,000	$4,500	culvert	N	0.0	2.9	2.9	2.4	83%	4	1	3	4	0	0	0	0	0
FH21	Fairhaven	12	$13,000	$5,100	culvert	N	0.0	2.6	2.58	2.11	82%	4	1	3	4	0	0	0	0	0
FH21A	Fairhaven	11	$13,000	$9,900	culvert	N	0.0	1.3	1.32	1.32	100%	5	1	2	3	0	0	0	0	0
FH22	Fairhaven	13	$20,600	$2,300	culvert	N	0.0	9.1	9.08	4.31	47%	3	2	4	4	0	0	0	0	0
FH23	Fairhaven	9	$62,300	$53,200	barrier beach	N	0.0	1.2	1.17	1.17	100%	5	1	0	3	0	0	0	0	0
FH24	Fairhaven	6	$44,900	$50,500	barrier beach	N	0.0	0.9	0.89	0.37	42%	3	0	0	3	0	0	0	0	
MN02	Marion	9	$15,900	$6,400	culvert	N	0.0	2.5	2.48	0.56	23%	3	1	3	2	0	0	0	0	0
MN05	Marion	7	$15,200	$17,600	culvert	N	0.0	0.9	0.86	0.36	42%	3	0	1	3	0	0	0	0	0
MN06	Marion	6	$22,500	$26,200	culvert	N	0.0	0.9	0.86	0.36	42%	3	0	1	2	0	0	0	0	0
MN07	Marion	9	$22,500	$12,000	culvert	N	0.0	1.9	1.87	0.36	19%	2	1	2	2	0	0	0	2	0
MN08	Marion	9	$38,500	$34,700	culvert	N	0.0	1.1	1.11	0.84	76%	4	1	1	1	2	0	0	0	0
MN09	Marion	10	$81,000	$12,600	culvert	Y	0.0	6.5	6.45	0.47	7%	1	2	2	2	3	0	0	0	0
MN10	Marion	10	$17,600	$12,500	culvert	N	0.0	1.4	1.41	0	0%	0	1	2	1	3	1	0	2	0
MN12	Marion	12	$8,800	$2,600	culvert	N	0.0	3.4	3.43	2.84	83%	4	1	4	3	0	0	0	0	0
MN13	Marion	11	$11,700	$5,800	culvert	N	0.0	2.0	2.02	1.85	92%	5	1	3	2	0	0	0	0	0

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MN14	Marion	12	$6,700	$4,800	culvert	N	0.0	1.4	1.41	1.41	100%	5	1	3	3	0	0	0	0	0
MN15	Marion	12	$11,600	$8,300	culvert	N	0.0	1.4	1.41	1.41	100%	5	1	2	4	0	0	0	0	0
MN16	Marion	10	$17,600	$12,500	culvert	N	0.0	1.4	1.41	1.41	100%	5	1	2	2	0	0	0	0	0
MN17	Marion	11	$6,700	$6,000	culvert	N	0.0	1.1	1.12	1.12	100%	5	1	3	2	0	0	0	0	0
MN18	Marion	10	$16,100	$14,400	culvert	N	0.0	1.1	1.12	1.12	100%	5	1	2	2	0	0	0	0	0
MN19	Marion	10	$13,500	$12,000	culvert	N	0.0	1.1	1.12	1.12	100%	5	1	2	2	0	0	0	0	0
MN20	Marion	6	$13,500	$48,200	culvert	N	0.0	0.3	0.28	0.28	100%	5	0	0	1	0	0	0	0	0
MN21	Marion	7	$15,200	$72,200	culvert	Y	0.0	0.2	0.21	0.21	100%	5	0	0	2	0	0	0	0	0
MN22	Marion	17	$13,500	$700	culvert	Y	0.0	20.3	20.3	20	99%	5	2	6	4	0	0	0	0	0
MN29	Marion	9	$6,500	$6,000	dike	N	0.4	1.1	1.44	0	0%	0	1	3	5	0	0	0	0	0
MN30	Marion	9	$10,200	$46,100	wall	N	0.0	0.2	0.22	0.15	68%	4	0	0	5	0	0	0	0	0
MN31	Marion	8	$10,200	$46,100	wall	N	0.0	0.2	0.22	0.11	50%	3	0	0	5	0	0	0	0	0
MT01	Mattapoisett	13	$7,200	$1,700	culvert	N	0.0	4.2	4.18	1.3	31%	3	1	5	4	0	0	0	0	0
MT02	Mattapoisett	13	$7,200	$1,700	culvert	N	0.0	4.2	4.18	1.3	31%	3	1	5	4	0	0	0	0	0
MT03	Mattapoisett	15	$143,600	$3,600	culvert	N	0.0	40.0	40	3.83	10%	1	3	4	3	3	1	0	0	0
MT04	Mattapoisett	16	$43,500	$1,100	culvert	N	0.0	40.0	40	3.83	10%	1	3	5	4	3	0	0	0	0
MT05	Mattapoisett	13	$218,700	$5,500	culvert	N	0.0	40.0	40	3.83	10%	1	3	3	3	3	0	0	0	0
MT06	Mattapoisett	17	$43,500	$1,100	culvert	N	0.0	40.5	40.5	4.49	11%	2	3	5	4	3	0	0	0	0
MT07	Mattapoisett	13	$600,000	$22,700	bridge	N	12.4	26.5	38.9	5.59	21%	3	3	1	2	3	1	0	0	0
MT08	Mattapoisett	9	$34,900	$33,900	culvert	N	0.0	1.0	1.03	1.03	100%	5	1	1	2	0	0	0	0	0
MT09	Mattapoisett	16	$123,500	$4,900	culvert	N	18.8	25.1	43.9	6.19	25%	3	3	3	3	3	1	0	0	0

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MT10	Mattapoisett	12	$13,000	$6,700	culvert	N	0.0	1.9	1.94	1.87	96%	5	1	3	3	0	0	0	0	0
MT11	Mattapoisett	11	$9,500	$3,200	culvert	N	0.0	3.0	2.96	2.46	83%	4	1	4	2	0	0	0	0	0
MT12	Mattapoisett	12	$66,900	$11,900	culvert	N	0.0	5.6	5.6	3.62	65%	4	2	2	3	0	1	0	0	0
MT13	Mattapoisett	15	$18,000	$2,200	culvert	N	0.2	8.3	8.52	4.77	58%	4	2	4	4	0	1	0	0	0
MT14	Mattapoisett	5	$195,500	$78,800	culvert	N	0.0	2.5	2.48	0	0%	0	1	0	1	3	0	0	0	0
MT15	Mattapoisett	16	$11,600	$2,500	culvert	N	0.0	4.6	4.58	2.89	63%	4	1	4	3	3	1	0	0	0
MT16	Mattapoisett	9	$19,900	$35,500	culvert	N	0.0	0.6	0.56	0.56	100%	5	0	0	1	3	0	0	0	0
MT17	Mattapoisett	18	$12,500	$2,700	wall	N	0.0	4.6	4.56	2.89	63%	4	1	4	5	3	1	0	0	0
MT18	Mattapoisett	12	$12,500	$6,300	culvert	N	0.0	2.0	1.98	1.48	75%	4	1	3	4	0	0	0	0	0
MT19	Mattapoisett	10	$22,500	$7,300	culvert	N	0.0	3.1	3.09	2.13	69%	4	1	3	2	0	0	0	0	0
MT20	Mattapoisett	10	$12,000	$100,300	path	N	0.0	0.1	0.12	0.12	100%	5	0	0	5	0	0	0	0	0
MT21	Mattapoisett	7	$12,000	$52,200	culvert	N	0.0	0.2	0.23	0.23	100%	5	0	0	2	0	0	0	0	0
MT22	Mattapoisett	9	$7,700	$4,400	culvert	N	0.0	1.8	1.75	0.5	29%	3	1	3	2	0	0	0	0	0
MT23	Mattapoisett	14	$8,800	$4,300	culvert	N	0.0	2.1	2.05	2.05	100%	5	1	3	2	2	1	0	0	0
MT24	Mattapoisett	9	$12,000	$4,900	dike	N	0.0	2.5	2.48	0	0%	0	1	3	5	0	0	0	0	0
MT25	Mattapoisett	7	$5,900	$18,000	culvert	N	0.0	0.3	0.33	0.1	30%	3	0	1	3	0	0	0	0	0
MT26	Mattapoisett	5	$6,700	$41,900	culvert	N	0.0	0.2	0.16	0.04	25%	3	0	0	2	0	0	0	0	0
MT27	Mattapoisett	6	$6,900	$29,900	culvert	N	0.0	0.2	0.23	0.1	43%	3	0	1	2	0	0	0	0	0
MT28	Mattapoisett	6	$16,200	$269,700	road	N	0.0	0.1	0.06	0.06	100%	5	0	0	1	0	0	0	0	0
MT29	Mattapoisett	4	$34,900	$71,200	wooden path	N	0.0	0.5	0.49	0.43	88%	4	0	0	0	0	0	0	0	0

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MT30	Mattapoisett	9	$15,700	$17,500	culvert	N	0.0	0.9	0.9	0.83	92%	5	0	1	3	0	0	0	0	0
MT31	Mattapoisett	5	$37,500	$536,000	bridge	N	0.0	0.1	0.07	0	0%	0	0	0	5	0	0	0	0	0
MT32	Mattapoisett	6	$11,700	$36,600	ditch	N	0.0	0.3	0.32	0.01	3%	1	0	0	5	0	0	0	0	0
MT33	Mattapoisett	4	$25,800	$171,900	culvert	N	0.0	0.2	0.15	0.04	27%	3	0	0	1	0	0	0	0	0
MT35	Mattapoisett	7	$24,100	$21,300	culvert	N	0.0	1.1	1.13	0.35	31%	3	1	1	2	0	0	0	0	0
MT36	Mattapoisett	7	$24,100	$21,300	culvert	N	0.0	1.1	1.13	0.35	31%	3	1	1	2	0	0	0	0	0
MT37	Mattapoisett	4	$11,700	$146,200	culvert	N		0.1	0.08	0.01	13%	2	0	0	2	0	0	0	0	0
MT38	Mattapoisett	12	$14,700	$70,000	road	N	0.0	0.2	0.21	0.15	71%	4	0	0	5	3	0	0	0	0
NB02	New Bedford	7	$5,000,000	$256,400	bridge	N	3.7	19.5	23.2	0.82	4%	1	2	0	0	3	1	0	0	0
NB03	New Bedford	13	$1,000,000	$12,000	bridge	N	221.0	83.4	304	12	14%	2	4	2	1	3	1	0	0	0
NB04	New Bedford	9	$4,000,000	$48,000	bridge	N	237.0	83.4	320	12	14%	2	4	0	0	2	1	0	0	0
NB05	New Bedford	9	$18,000,000	$215,800	bridge	N	556.0	83.4	639	12	14%	2	4	0	0	2	1	0	0	0
NB06	New Bedford	9	$8,000,000	$95,900	bridge	N	556.0	83.4	639	12	14%	2	4	0	0	2	1	0	0	0
NB07	New Bedford	9	$8,000,000	$95,900	bridge	N	556.0	83.4	639	12	14%	2	4	0	0	2	1	0	0	0
NB08	New Bedford	16	$2,750,000	$33,000	dike	N	1012.0	83.4	1095	12	14%	2	4	1	1	3	1	4	0	0
WH01	Wareham	14	$1,500,000	$24,500	bridge/road	N	221.8	61.3	283	57.7	94%	5	4	1	1	2	1	0	0	0
WH01B	Wareham	15	$1,000,000	$6,200	bridge	N	221.8	161.3	383	57.7	36%	3	4	3	2	2	1	0	0	0
WH02	Wareham	4	$360,000	$3,600,000	bridge	N	2.2	0.1	2.27	0	0%	0	1	0	0	0	1	0	2	0
WH03	Wareham	7	$119,000	$31,900	bridge/road	N	0.0	3.7	3.73	0.14	4%	1	1	1	1	3	0	0	0	0
WH04	Wareham	11	$13,900	$17,600	fill	N	0.0	0.8	0.79	0.79	100%	5	0	1	5	0	0	0	0	0
WH05	Wareham	12	$2,000,000	$27,300	bridge	N	113.4	73.2	187	20.7	28%	3	4	1	0	3	1	0	0	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
WH06	Wareham	11	$1,000,000	$16,100	bridge	N	51.6	62.3	114	9.78	16%	2	3	1	1	3	1	0	0	0
WH07	Wareham	12	$25,000	$2,200	culvert	N	0.0	11.5	11.5	3.83	33%	3	2	4	3	0	0	0	0	0
WH08	Wareham	9	$7,200	$1,800	culvert	N	0.0	3.9	3.91	0	0%	0	1	5	3	0	0	0	0	0
WH09	Wareham	11	$6,200	$1,600	road	N	0.0	3.9	3.91	0	0%	0	1	5	5	0	0	0	0	0
WH10	Wareham	15	$60,200	$4,800	Road	N	0.0	12.5	12.5	7.21	58%	4	2	3	3	3	0	0	0	0
WH11	Wareham	17	$11,300	$600	culvert	N	0.0	19.3	19.3	3.32	17%	2	2	6	4	3	0	0	0	0
WH12	Wareham	10	$217,700	$369,000	railroad culvert	N	0.6	0.6	1.18	0.59	100%	5	1	0	2	2	0	0	0	0
WH13	Wareham	11	$85,700	$68,600	road	N	1.4	1.3	2.6	0.88	70%	4	1	0	2	3	1	0	0	0
WH14	Wareham	13	$1,750,000	$17,000	bridge	N	189.5	102.7	292	66	64%	4	4	1	1	2	1	0	0	0
WH14B	Wareham	12	$500,000	$4,900	bridge	N	189.5	102.7	292	66	64%	4	0	3	2	2	1	0	0	0
WH15	Wareham	10	$1,000,000	$9,700	bridge	N	189.5	102.7	292	66	64%	4	0	2	1	2	1	0	0	0
WH16	Wareham	12	$70,200	$13,500	culvert	N	0.0	5.2	5.2	3.76	72%	4	2	2	2	2	0	0	0	0
WH17	Wareham	16	$350,000	$24,500	bridge	N	23.4	14.3	37.6	14.2	100%	5	3	1	2	2	1	0	2	0
WH20	Wareham	7	$2,000,000	$146,500	bridge	N	0.0	13.7	13.7	2.78	20%	3	2	0	0	2	0	0	0	0
WH21	Wareham	7	$1,500,000	$570,300	bridge	N	5.9	2.6	8.52		0%	0	2	0	0	2	1	0	2	0
WH23	Wareham	12	$65,800	$7,600	dike	N	0.0	8.6	8.6	5.8	67%	4	2	3	3	0	0	0	0	0
WH24	Wareham	11	$213,600	$577,400	railroad	N	1.8	0.4	2.17	0.37	100%	5	1	0	2	3	0	0	0	0
WH25	Wareham	6	$12,000	$52,300	road	N	0.0	0.2	0.23	0.04	17%	2	0	0	2	0	0	0	2	0
WH26	Wareham	9	$12,000	$52,300	dike	N	0.0	0.2	0.23	0.04	17%	2	0	0	5	0	0	0	2	0
WH27	Wareham	16	$27,000	$2,400	road	N	0.0	11.5	11.5	2.45	21%	3	2	4	4	3	0	0	0	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
WH28	Wareham	13	$12,000	$9,200	driveway	N	0.0	1.3	1.31	1.31	100%	5	1	2	5	0	0	0	0	0
WH29	Wareham	15	$28,500	$4,700	road	N	0.0	6.1	6.1	5.8	95%	5	2	3	3	2	0	0	0	0
WH30	Wareham	9	$43,500	$4,000	dike	N	0.0	10.9	10.9	0	0%	0	2	4	3	0	0	0	0	0
WH31	Wareham	15	$9,500	$1,000	road	N	0.0	9.5	9.53	5.96	63%	4	2	6	3	0	0	0	0	0
WH32	Wareham	7	$6,100	$9,300	road	N	1.9	0.7	2.56	0	0%	0	1	2	4	0	0	0	0	0
WH33	Wareham	16	$27,500	$5,300	road	N	0.0	5.2	5.19	5.19	100%	5	2	3	3	2	1	0	0	0
WH34	Wareham	12	$29,000	$4,500	dike	N	0.0	6.5	6.5	5	77%	4	2	3	3	0	0	0	0	0
WH35	Wareham	13	$12,000	$4,900	dike	N	0.0	2.5	2.48	2	81%	4	1	3	5	0	0	0	0	0
WH36	Wareham	10	$12,000	$3,000	dike	N	0.0	4.0	3.98	0	0%	0	1	4	5	0	0	0	0	0
WH37	Wareham	6	$169,200	$248,800	road	N	0.0	0.7	0.68	0.4	59%	4	0	0	2	0	0	0	0	0
WH39	Wareham	13	$155,400	$94,500	culvert	N	0.0	1.7	1.7	1.58	93%	5	1	0	2	3	0	0	2	0
WH40	Wareham	18	$13,900	$6,900	dike	N	0.0	2.0	2.03	2.73	134%	5	1	3	5	0	0	4	0	0
WH41	Wareham	9	$350,000	$150,200	bridge/old wall	N	0.0	2.3	2.33	2.73	117%	5	1	0	0	3	0	0	0	0
WP01	Westport	14	$32,400	$2,800	culvert	N	100.2	11.4	112	7.38	65%	4	3	4	5	3	1	4	0	-10
WP02	Westport	7	$16,100	$24,800	culvert	N	0.0	0.7	0.65	0.58	89%	4	0	1	0	0	0	0	2	0
WP03	Westport	13	$9,200,000	$12,100	bridge	N	1910.0	760.5	2670	0	0%	0	4	2	2	2	1	0	2	0
WP04	Westport	10	$26,800	$13,600	culvert	N	0.0	2.0	1.97	1.36	69%	4	1	2	3	0	0	0	0	0
WP05	Westport	6	$10,600	$5,900	culvert	N	0.0	1.8	1.8	0	0%	0	1	3	2	0	0	0	0	0
WP06	Westport	16	$2,800,000	$13,600	bridge	N	311.6	205.5	517	136	66%	4	4	2	2	3	1	0	0	0
WP07	Westport	13	$13,000	$7,700	dike	N	0.0	1.7	1.69	1.36	80%	4	1	3	5	0	0	0	0	0
WP08	Westport	13	$14,900	$10,200	dike	N	0.0	1.5	1.45	1.48	102%	5	1	2	5	0	0	0	0	0

Site #	Town	Remediation score	Estimated cost	Cost per vegetated acre	Restriction structure type	Remediated? (yes or no)	Surface water acres behind	Vegetated wetland acres	Total wetland with surface	Phragmites acres	% Phragmites	Score for % Phragmites	Score for wetland acreage	Score remediation cost per	Score for cross section per	Score for public restriction	Score for public wetland	Score anadromous fish run	Score rare/endangered	Score adverse restoration
WP09	Westport	9	$17,100	$11,100	culvert	N	0.2	1.5	1.69	0	0%	0	1	2	2	3	1	0	0	0
WP10	Westport	11	$7,000	$4,100	road	N	0.0	1.7	1.7	0.24	14%	2	1	3	5	0	0	0	0	0
WP11	Westport	9	$13,900	$44,900	dike	N	0.0	0.3	0.31	0.24	77%	4	0	0	5	0	0	0	0	0
WP12	Westport	14	$13,800	$1,800	culvert	N	0.5	7.7	8.2	3.67	48%	3	2	5	4	0	0	0	0	0
WP13	Westport	15	$12,400	$1,700	rocks	N	0.2	7.3	7.54	2.93	40%	3	2	5	5	0	0	0	0	0
WP14	Westport	-2	$25,800	$7,300	dike	N	3.4	3.5	6.95	0	0%	0	2	3	3	0	0	0	0	-10
WP15	Westport	5	$12,000	$80,200	wall	N	0.0	0.2	0.15	0	0%	0	0	0	5	0	0	0	0	0
WP16	Westport	5	$12,000	$133,700	wall	N	0.0	0.1	0.09	0	0%	0	0	0	5	0	0	0	0	0
WP17	Westport	16	$9,700	$1,000	road	N	0.0	9.7	9.71	3.61	37%	3	2	6	3	0	0	0	2	0
WP18	Westport	5	$14,000	$63,700	road	N	0.1	0.2	0.36	0.01	5%	1	0	0	2	0	0	0	2	0
WP19	Westport	12	$62,700	$49,000	road	N	0.0	1.3	1.28	0.67	52%	4	1	0	2	2	1	0	2	0
WP20	Westport	8	$62,700	$174,100	road	N	0.0	0.4	0.36	0.04	11%	2	0	0	1	2	1	0	2	0

Tidal Restriction Site Profiles
Buzzards Bay Watershed

Bourne
Dartmouth
Falmouth
Fairhaven
Marion
Mattapoisett
New Bedford
Wareham
Westport

Note: The sites detailed in this section represent the top 10% of all Buzzards Bay sites based upon the scoring system developed by the Buzzards Bay Project. While these sites earned the highest scores, this section is not meant to imply that remediation efforts at other sites in the Atlas are not appropriate. Remediation at any site is justified if suitable

BOURNE: MBTA Railroad, North of Pocasset River

Tidal Restriction Site BN28

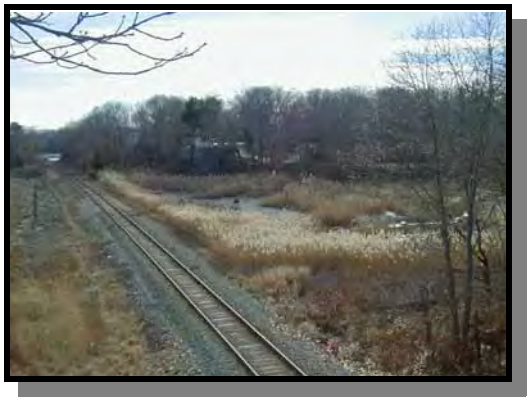
Site Description

BN28 is one of a number of restrictions that was created by the MBTA rail line that extends from the Cape Cod rail road bridge to Falmouth Village. This restriction is located on Bennets Neck just north of the Pocasset River (see map on page 72). There is no apparent hydraulic connection under the rail road bed and the absence of tidal flow has resulted in a die-off of most of this marsh. The rail tracks are at a low elevation relative to the marsh.

General Information

Designated rare and endangered species habitat
State owned restriction, public wetland

Culvert condition: no culvert – dike
Restriction width: 60 feet
Proposed culvert length: 72 feet
Acres of wetlands affected: 1.0 acres
Acres of *Phragmites* present: 1.0 acres



View of railroad tracks

Estimated Remediation Cost

Total estimated cost: $21,500
Cost per acre: $21,000

Comments

A culvert could be installed under the tracks to allow tidal flow to the wetland to the West. The low elevation of the tracks relative to the salt marsh make this an affordable railroad bed project.

DARTMOUTH: Bridge Street/Apponagansett Bay

Tidal Restriction Site DA01

Site Description

Bridge Street is on a long (1800 foot) causeway connecting Padanaram Village with South Dartmouth (see map on page 78). This very old road has severely restricted tidal flows into upper Apponagansett Bay. The lower section of the road abutments are constructed with cut granite blocks.

General Information

State-owned bridge affecting private and public wetlands
2-lane paved road and bridge

Bridge condition: good
Road width: 30 feet
Total restriction width: 36 feet
Acres of wetlands affected: 256.9 acres
Acres of *Phragmites* present: 97.0 acres

Looking south

Estimated Remediation Cost

Total estimated cost: $1,100,000
Cost per acre: $4,300

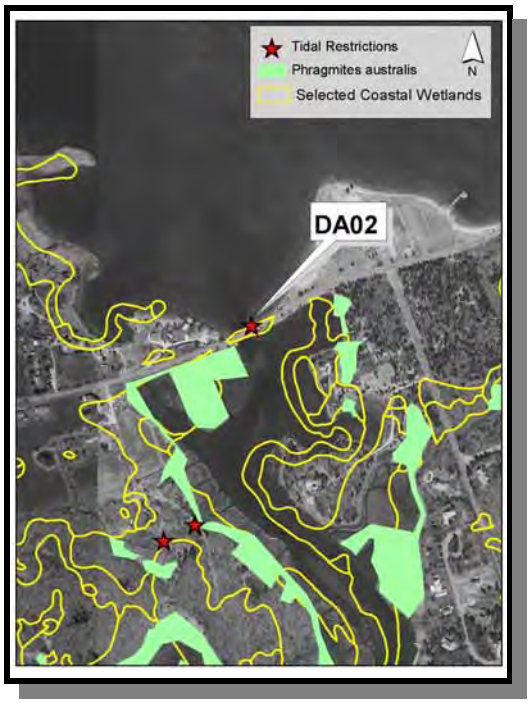
Comments

This bridge was recently rebuilt. It might be more cost effective to install new culverts under selected areas of Bridge Street rather than to expand the opening of the bridge or deepen the channel.

View of bridge and road

DARTMOUTH: Gulf Road in Apponagansett Bay

Tidal Restriction Site DA02



Site Description

This restriction is located on the southwest corner of inner Apponagansett Bay (see map on page 78). The bridge on Gulf Road controls tidal flow to a large wetland over a mile to the south.

General Information

Locally-owned bridge affecting a public wetland
2-lane paved road and bridge

Bridge condition: good
Road width: 30 feet
Total restriction width: 36 feet
Acres of wetlands affected: 199.3 acres
Acres of *Phragmites* present: 95.1 acres

Estimated Remediation Cost

Total estimated cost: $500,000
Cost per acre: $2,500

Comments

This bridge was originally built in 1938, and it has recently been rebuilt. Deepening of the channel or adding additional culverts may improve flushing upstream.

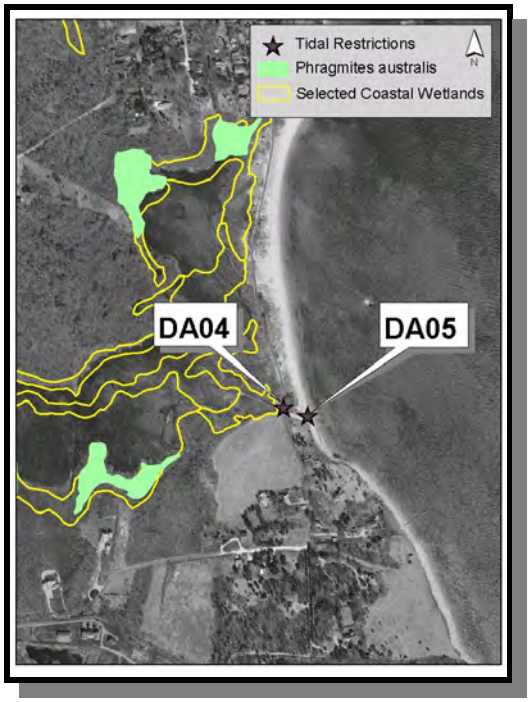
View of bridge

DARTMOUTH: Nonquitt Marsh, near Round Hill

Tidal Restriction Site DA04

Site Description

This restriction consists of a concrete culvert under a road in Nonquitt, a private gated community. The affected salt marsh is owned by the non-profit land conservation trust, Dartmouth Natural Resources Trust. Tidal waters must first flow through a pipe under the barrier beach (DA05) to reach this restriction (see map on page 79).



General Information

Private road (owned by Nonquitt Association), private marsh (owned by land trust)

Culvert condition: fair
Road width: 15 feet
Culvert length: 18 feet
Acres of wetlands affected: 38.8 acres
Acres of *Phragmites* present: 20.7 acres

Estimated Remediation Cost

Total estimated cost: $21,300
Cost per acre: $500

Comments

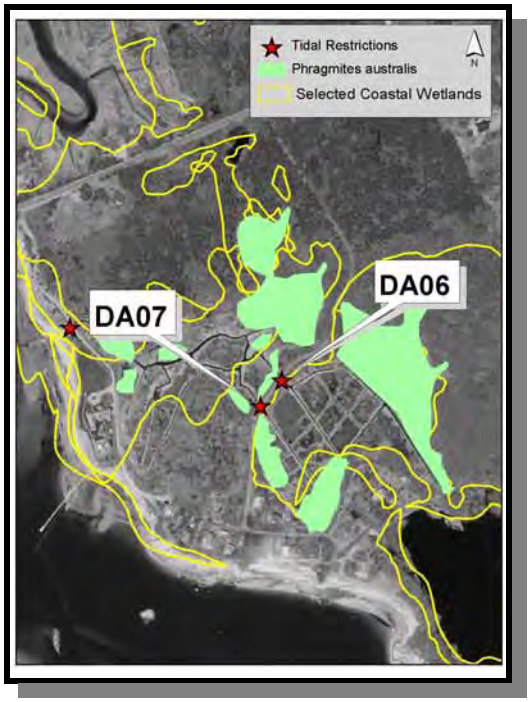
This site has been selected for remediation by the New Bedford Harbor Trustees Council along with DA05.

Culvert under road

View of marsh

DARTMOUTH: Cow Yard Marsh at Little River

Tidal Restriction Site DA06 & DA07



Site Description

Sites DA06 and DA07 are two culverts located under a gravel road crossing through a marsh in the lower portion of the Little River estuary (see map on page 80). The road provides access to a group of summer cottages commonly referred to as "The Cowyard". The surrounding marsh is owned by the non-profit land conservation trust, Dartmouth Natural Resources Trust. This marsh is also restricted by DA08, which is currently a GROWetlands project.

General Information

Private restriction, private marsh (owned by land trust)
Rare and endangered species habitat

Culvert condition: both good
Road width: 20 feet
Culvert length: each is 24 feet
Acres of wetlands affected: 9.0 acres
Acres of *Phragmites* present: 4.5 acres

Gravel road passing over restriction DA06

Estimated Remediation Cost

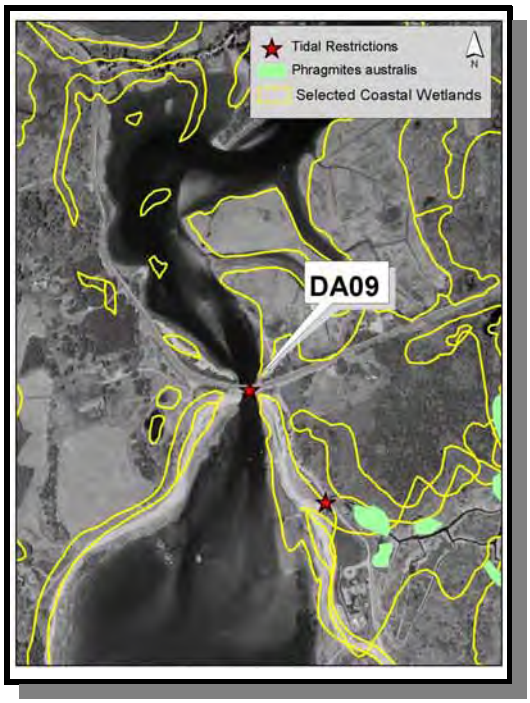
Total estimated cost: $9,200 (for each)
Cost per acre: $1,000 (for each)

Comments

The major restriction to this marsh system, DA08, will be replaced with a larger culvert in the near future as part of a GROWetlands project. As there are some low lying developed areas above DA06 and DA07, further study may be warranted prior to initiating further remediation efforts at this marsh. Due to the fact that the driveway is not paved and the culverts are not far below the road surface, these restrictions would be easy to fix. DA07 is partially buried in mud.

DARTMOUTH: Little River Road

Tidal Restriction Site DA09



Site Description

Tidal restriction DA09 is the Little River Bridge in Dartmouth (see map on page 80). Located at the mouth of Little River, this bridge has cracks and spalling in many areas and may need reconstruction in the future.

General Information

2-lane paved road and bridge
Town-owned bridge, public wetland
Rare and endangered species habitat

Bridge condition: poor
Road width: 25 feet
Restriction length: 50 feet
Acres of wetlands affected: 181.3 acres
Acres of *Phragmites* present: 11.3 acres

South side of bridge looking upstream

Estimated Remediation Cost

Total estimated cost: $600,000
Cost per acre: $3,300

Comments

The plunge pool created by tidal scouring is a favorite spot for illicit bridge jumping. Although this site scored high for a number of reasons, further study would be required to determine if upstream impairments are caused by this restriction, and whether dredging of the channel or widening of the bridge during construction would mitigate these impacts.

DARTMOUTH: Little Beach Road/Allens Pond

Tidal Restriction Site DA11

Site Description

DA11 is on a barrier beach in the southeastern corner of Allens Pond (see map on page 83). It is located on property owned by the Massachusetts Audubon Society. The road provides access to the Allen's Pond barrier beach summer community. The road is low relative to the marsh and in a FEMA mapped velocity zone.

General Information

Private gravel road, private wetlands
Rare and endangered species habitat

Culvert condition: poor
Road width: 12 feet
Culvert length: 14.4 feet
Acres of wetlands affected: 6.3 acres
Acres of *Phragmites* present: 2.2 acres

Estimated Remediation Cost

Total estimated cost: $7,600
Cost per acre: $1,200

Comments

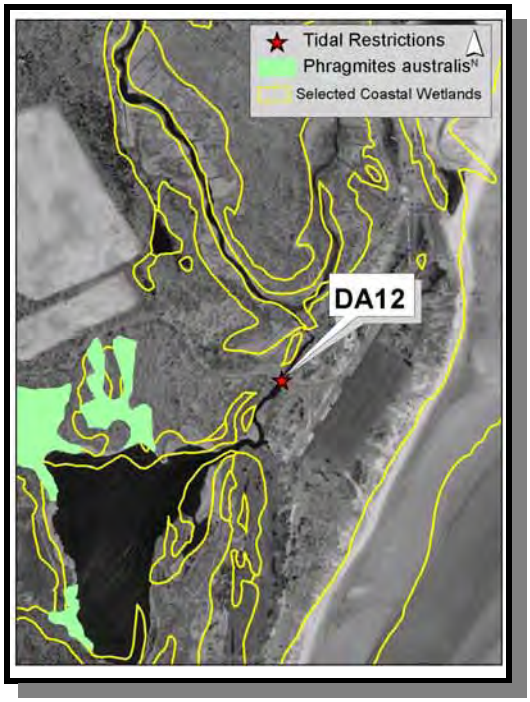
The Buzzards Bay Project has initiated discussions with the Massachusetts Audubon Society and the Town of Dartmouth concerning the replacement of the undersized culvert with two 24" culverts.

North side of culvert

South side of culvert

DARTMOUTH: Road at Georges Pond/Slocums River

Tidal Restriction Site DA12



Site Description

DA12 consists of two culverts under the access road to Demarest Lloyd State Park at the mouth of the Slocums River estuary (see map on page 82). The existing culverts drain George's Pond. Stabilization rocks for the sides of the access road have been thrown into the culverts, partially blocking them.

General Information

Paved state-owned road, public wetland
Rare and endangered species habitat

Culvert condition: excellent
Road width: 40 feet
Culvert length: 48 feet
Acres of wetlands affected: 9.3 acres
Acres of *Phragmites* present: 5.3 acres

Estimated Remediation Cost

Total estimated cost: $128,800
Cost per acre: $13,900

Comments

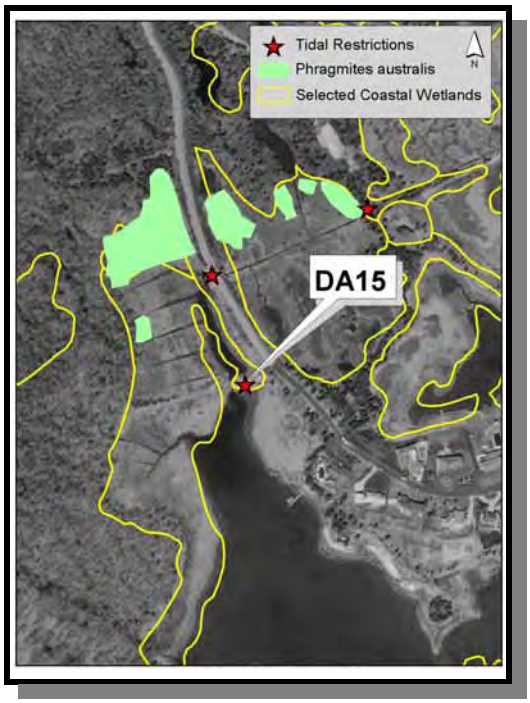
Buzzards Bay Project staff members have made arrangements with the Department of Environmental Management's park supervisor to remove the stones in the culvert. While removal of the obstructing stones within the existing culverts may improve flushing, a new culvert may be needed. The road edge at the culverts is crumbling due to the loss of the stabilizing rip rap.

South end of culverts

View of road edge

DARTMOUTH: Old Road/Star of the Sea Drive

Tidal Restriction Site DA15



Site Description
DA15 is the remainder of a stone box culvert which was under an old road that used to pass through a marsh in the northwest portion of Apponagansett Bay (see map on page 78). The road has been washed out to such and extent that water flows almost freely through at high tide. The surrounding marsh is owned by the Town of Dartmouth.

General Information
Town-owned old roadway and wetland

Culvert condition: poor
Restriction width: 20 feet
Restriction length: 24 feet
Acres of wetlands affected: 11.0 acres
Acres of *Phragmites* present: 2.1 acres

Estimated Remediation Cost
Total estimated cost: $12,200
Cost per acre: $1,100

Comments
The replacement of the existing stone path with a footbridge would increase the tidal flow yet still allow pedestrian access to the property.

Note: This restriction was remediated by the Town of Dartmouth in May 2002.

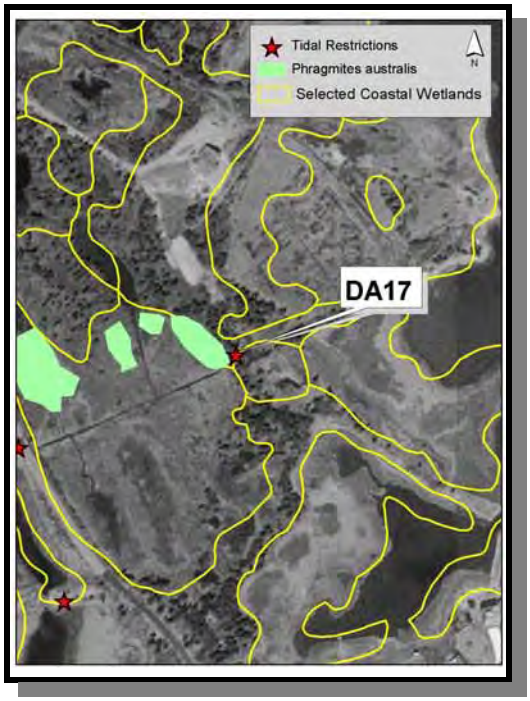
Old stone box culvert

Upstream view

DARTMOUTH: Old Road, Upper Apponagansett Bay

Tidal Restriction Site DA17

Site Description
DA17 is another restriction in the northwest corner of Apponagansett Bay (see map on page 78). It is an old stone box culvert that has completely collapsed. This was the original road location to access the upland area to the south. The wetland restricted by the culvert also receives tidal flushing through DA14, a restriction to the north of DA15. Much of this marsh was an old gravel pit.



General Information
Town-owned dirt road, public wetland

Culvert condition: poor
Restriction width: 12 feet
Restriction length: 14.4 feet
Acres of wetlands affected: 6.8 acres
Acres of *Phragmites* present: 0.8 acre


Downstream view

Estimated Remediation Cost
Total estimated cost: $6,200
Cost per acre: $900

Comments
Since this road is no longer used, the removal of the old road and culvert would be fairly simple.

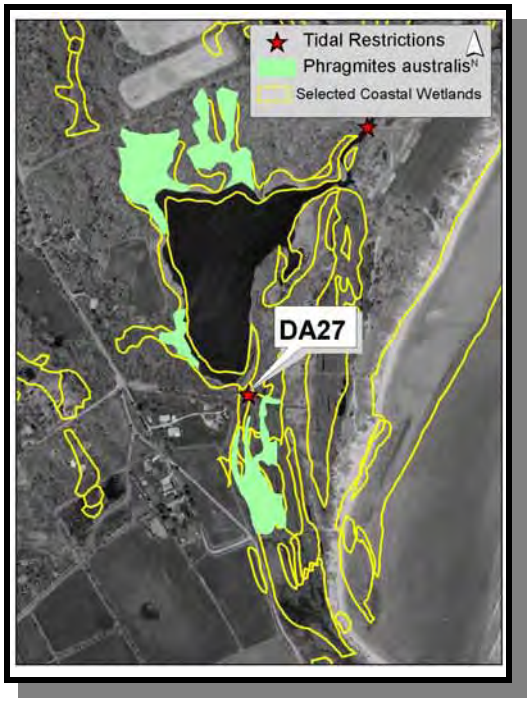

Upstream view

DARTMOUTH: Path to Beach at Demarest Lloyd State Park

Tidal Restriction Site DA27

Site Description

DA27 is a path owned by the Dartmouth Natural Resources Trust that accesses the south end of Demarest Lloyd State Park near the Slocums River (see map on page 82). This restriction consists of a 4-foot wide path to a beach. The marsh south of this point is fresh/brackish. There is no culvert.



General Information

Private path and private wetlands
Rare and endangered species habitat

Culvert condition: no culvert - breached dike
Path width: 4 feet
Proposed culvert length: 6 feet
Acres of wetlands affected: 2.3 acres
Acres of *Phragmites* present: 2.3 acres

View of path

Estimated Remediation Cost

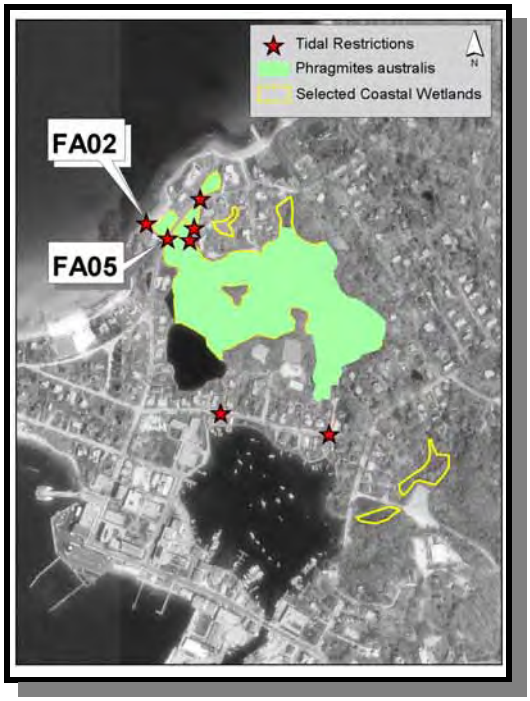
Total estimated cost: $13,900
Cost per acre: $6,100

Comments

A culvert needs to be installed at this site. This would be an excellent AmeriCorp project. All materials could be brought in by hand. All work could be performed with hand tools.

FALMOUTH: Rock Wall at Mill Pond

Tidal Restriction Site FA02



Site Description

FA02 is a seawall located east of Gardiner Road (see map on page 101). The seawall is on a barrier beach designed to prevent tidal and storm flows from entering the salt marsh and low lying areas north of Eel Pond in Woods Hole. The seawall has been recently repaired. Most of the marsh has been transformed into *Phragmites* except for the portion "reclaimed" as a ball field and now owned by the Town of Falmouth.

General Information

Private rock wall, public wetland

Culvert condition: culvert not visible
Stone wall width: 3 feet
Estimated culvert length: 24 feet
Acres of wetlands affected: 14.8 acres
Acres of *Phragmites* present: 14.8 acres

Estimated Remediation Cost

Total estimated cost: $13,900
Cost per acre: $900

Comments

Due to the low lying areas, this site should be investigated to determine if a self regulating tide gate is needed. The impacted marsh is the same area affected by FA03, FA04, FA05, FA06, FA40, and FA41. A study that looks at all restrictions affecting this marsh system is recommended.

View of rock wall

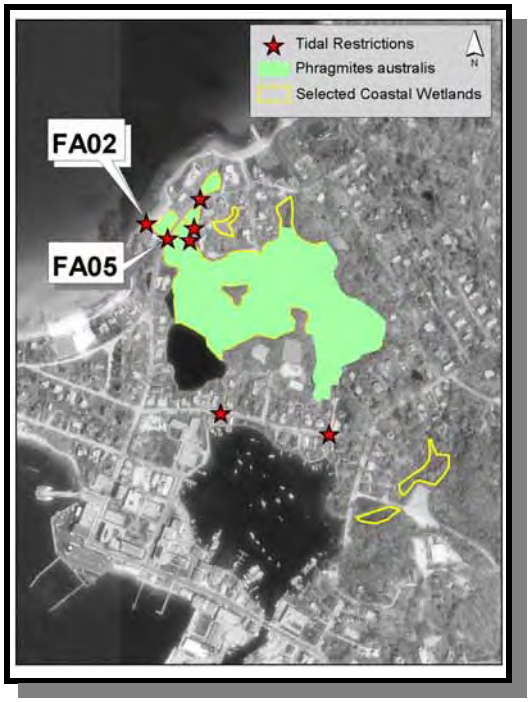
View from behind wall

FALMOUTH: Road at Mill Pond

Tidal Restriction Site FA05

Site Description

FA05 is a culvert under Gardiner Road in Woods Hole that conducts any tidal flow ponded by restriction FA02 (see map on page 101). Most of the marsh has been transformed into *Phragmites* except for the portion "reclaimed" as a ball field and now owned by the Town of Falmouth.



General Information

Paved town-owned road, public & private wetland

Culvert condition: fair
Road width: 22 feet
Culvert length: 26.4 feet
Acres of wetlands affected: 14.6 acres
Acres of *Phragmites* present: 14.6 acres

Restriction site FA05

Estimated Remediation Cost

Total estimated cost: $19,300
Cost per acre: $1,300

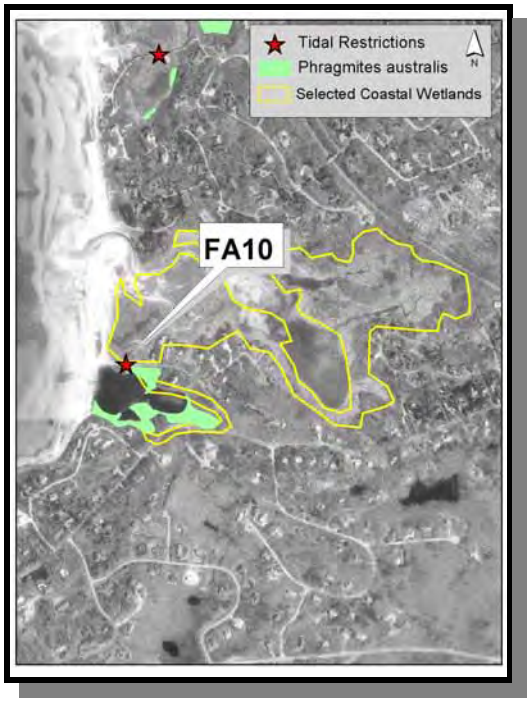
Comments

There is a lot of *Phragmites* on the upstream side of this culvert. The culvert has filled in on the east side with soil and is not visible, as it is covered by rocks. A larger culvert is required. The impacted marsh is the same area affected by FA02, FA03, FA04, FA06, FA40, and FA41. A study that looks at all restrictions affecting this marsh system is recommended.

Upstream view

FALMOUTH: Woodneck Road/Little Sippiwisset Marsh

Tidal Restriction Site FA10



Site Description

FA10 is a beach access road near Little Sippiwisset Marsh that was installed with no culvert (see map on page 99). The lack of a culvert has prevented tidal flows from the north and has caused ponding of water on the south side of the road.

General Information

Private paved road, private wetland
Rare and endangered species habitat

Culvert condition: no culvert
Road width: 15 feet
Proposed culvert: 30 feet
Acres of wetlands affected: 1.9 acres
Acres of *Phragmites* present: 1.9 acres

Estimated Remediation Cost

Total estimated cost: $14,900
Cost per acre: $7,900

Comments

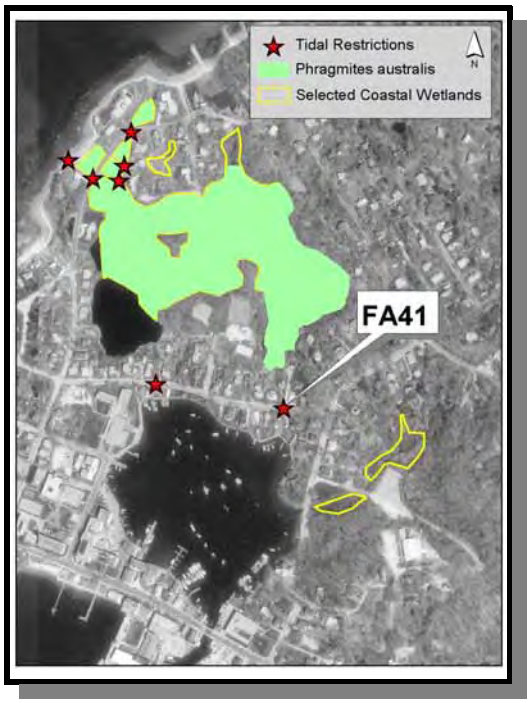
This is a barrier beach road with no culverts. The pond that formed on the blocked side may have created specialized habitat which may now deserve protection. This freshwater/brackish habitat should be studied before the installation of a culvert is considered.

View of marsh

View of road

FALMOUTH: Millfield Street in Woods Hole

Tidal Restriction Site FA41



Site Description

Tidal restriction FA41 is an approximately 342-foot long culvert running under two private properties and Millfield Street in Woods Hole. The culvert connects Eel Pond to Mill Pond (see map on page 101).

General Information

Private property
Town road, public wetland

Culvert condition: poor
Road width: 20 feet
Culvert length: 30 feet
Acres of wetlands affected: 15 acres
Acres of *Phragmites* present: 15 acres

Estimated Remediation Cost

Total estimated cost: $64,500
Cost per acre: $4,300

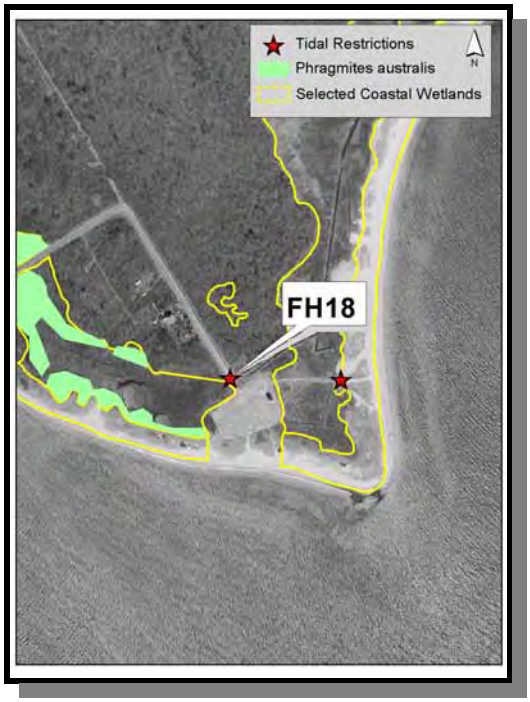
Mill Pond side of culvert

Comments

The culvert is 95% blocked at the Eel Pond end and not visible. In the spring of 2002 the culvert was broken during the reconstruction of the home on the Eel Pond side and covered over without being replaced. The length of the culvert and density of development will provide challenges to restoration. The impacted marsh is the same area affected by FA02, FA03, FA04, FA05 FA06, and FA40. A study that looks at all restrictions affecting this marsh system is recommended.

FAIRHAVEN: Fir Street on West Island

Tidal Restriction Site FH18



Site Description

Restriction FH18 was created by the construction of a parking lot, which is used for the town beach and the DEM State Reservation on West Island (see map on page 94). The salt marsh behind the barrier beach was filled to create the parking lot. In order to maintain drainage for the marshes on the west side of the road, a perimeter ditch was dug around the parking lot and a culvert was placed under Fir Street. The wetlands to the west and north are privately owned.

General Information

Town-owned road, private wetlands

Culvert condition: fair
Road width: 30 feet
Culvert length: 36 feet
Acres of wetlands affected: 8.7 acres
Acres of *Phragmites* present: 4.4 acres

Estimated Remediation Cost

Total estimated cost: $18,800
Cost per acre: $2,200

Comments

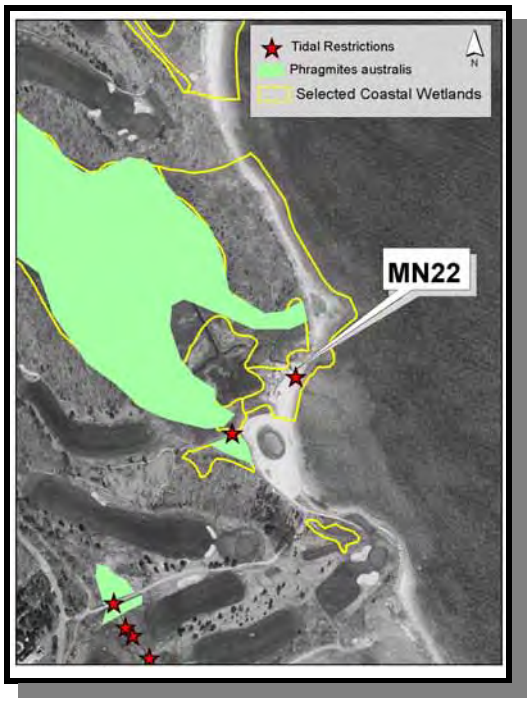
This site has generated interest among several state agencies. The ditch through the upland to FH18 should also be reshaped to handle an increased flow when the culvert is replaced with a larger one.

Downstream view

Upstream view

MARION: Kittansett Club on Sippican Neck

Tidal Restriction Site MN22



Site Description

MN22 is located at the end of Sippican Neck (see map on page 109). The Kittansett Club constructed the original seawall in 1927. It was repaired on a periodic basis until 1998 when a 50 foot section was removed. The removal now allows salt water to drain quickly following a hurricane or winter storm, as well as allowing daily tidal fluctuation to be restored.

General Information

Private seawall, private wetlands

Culvert condition: fair
Seawall width: 8 feet
Seawall breach: 50 feet
Acres of wetlands affected: 20.3 acres
Acres of *Phragmites* present: 20.0 acres

Section of wall that was removed

Estimated Remediation Cost

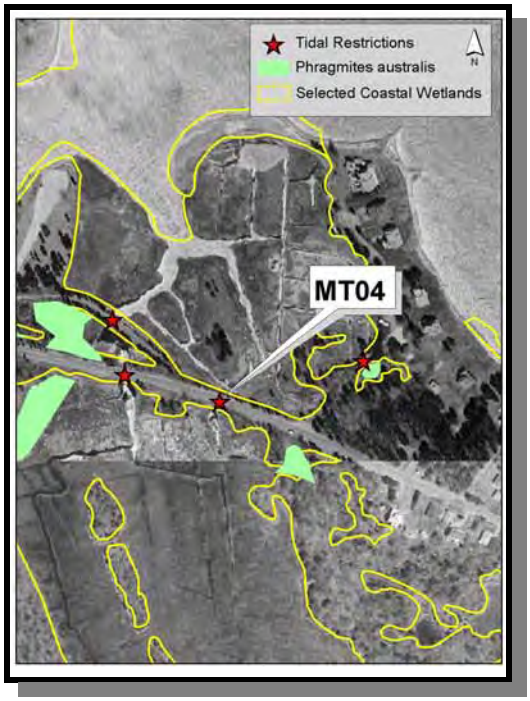
Total estimated cost: $13,500
Cost per acre: $700

Comments

Most of the *Phragmites* has died back since the restriction was partially removed in 1998. This site should be investigated further to determine if other improvements to flushing can be achieved.

MATTAPOISETT: Mattapoisett Neck Road

Tidal Restriction Site MT04



Site Description

MT04 is one of several restrictions that would need to be remediated as part of an over-all project to increase tidal flushing to the marsh south of Mattapoisett Neck Road (see map on page 116). Mattapoisett Neck Road is the only access to the houses on Mattapoisett Neck. MT04 is one of three culverts under the road. The salt marsh has a limited amount of *Phragmites* but many small dead spots.

General Information

Town-owned paved road, private wetlands

Culvert condition: poor
Road width: 45 feet
Culvert length: 54 feet
Acres of wetlands affected: 40.0 acres
Acres of *Phragmites* present: 3.8 acres

Estimated Remediation Cost

Total estimated cost: $43,500
Cost per acre: $1,100

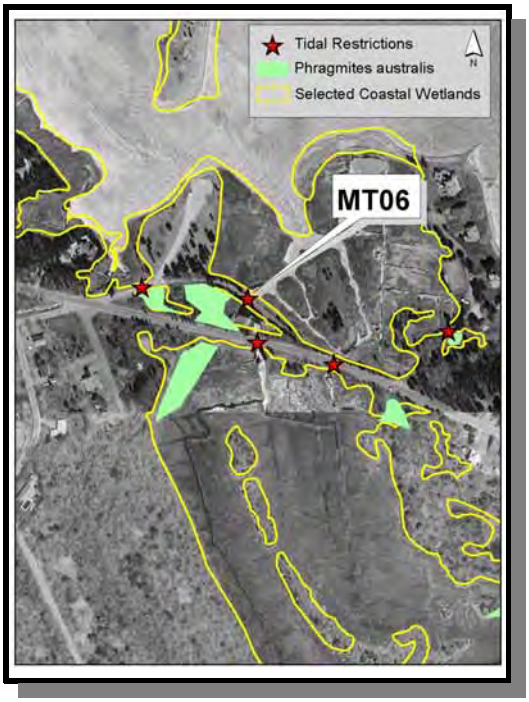
Comments

MT04 has been selected as a GROWetlands site. The Massachusetts Wetland Restoration Program has engaged an engineering firm to study this marsh and the three restrictions: MT03, MT04 & MT05.

View of south side of Mattapoisett Neck Road

MATTAPOISETT: Old Mattapoisett Neck Road

Tidal Restriction Site MT06



Site Description

MT06 is a culvert under an older section of Mattapoisett Neck Road near the mouth of the Mattapoisett River (see map on page 116). The culvert was put in place in 1954 after a hurricane. After the hurricane of 1956 this section of road was abandoned. This culvert cannot be removed until the existing water line for Mattapoisett Neck Road is relocated.

General Information

Town road, private wetland

Culvert condition: poor
Road width: 20 feet
Culvert length: 24 feet
Acres of wetlands affected: 40.5 acres
Acres of *Phragmites* present: 4.5 acres

Estimated Remediation Cost

Total estimated cost: $43,500
Cost per acre: $1,100

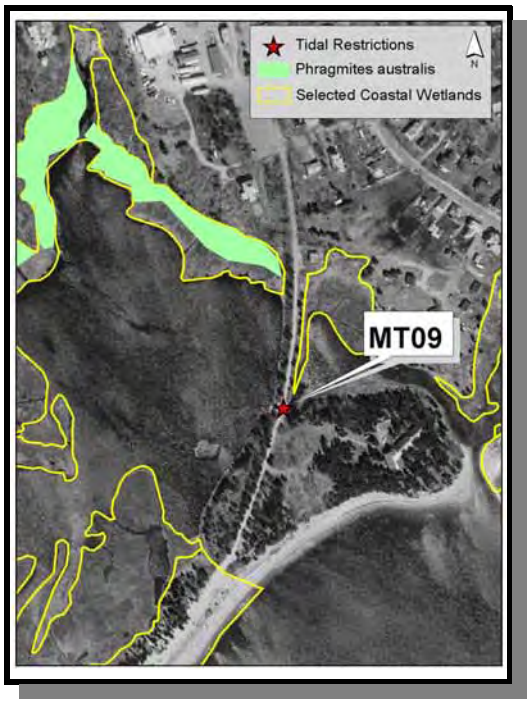
Comments

This culvert is broken in many places. Additionally, the road is broken up and two-thirds washed away. This site has been selected as a GROWetlands project. The Massachusetts Wetlands Restoration Program has secured an engineering firm to study the site.

Downstream side

MATTAPOISETT: Old Railroad Bridge/Eel Pond

Tidal Restriction Site MT09



Site Description

MT09 is an old New York-New Haven Railroad bridge over the entrance to Eel Pond in the upper portion of Mattapoisett Harbor (see map on page 116). The side slopes are quite steep and the road base is quite narrow. This is the only access to the house on Goodspeed Island.

General Information

Town-owned bridge, private wetland

Culvert condition: excellent
Road width: 30 feet
Culvert length: 36 feet
Acres of wetlands affected: 25.1 acres
Acres of *Phragmites* present: 6.2 acres

Restriction site MT09

Estimated Remediation Cost

Total estimated cost: $123,500
Cost per acre: $4,900

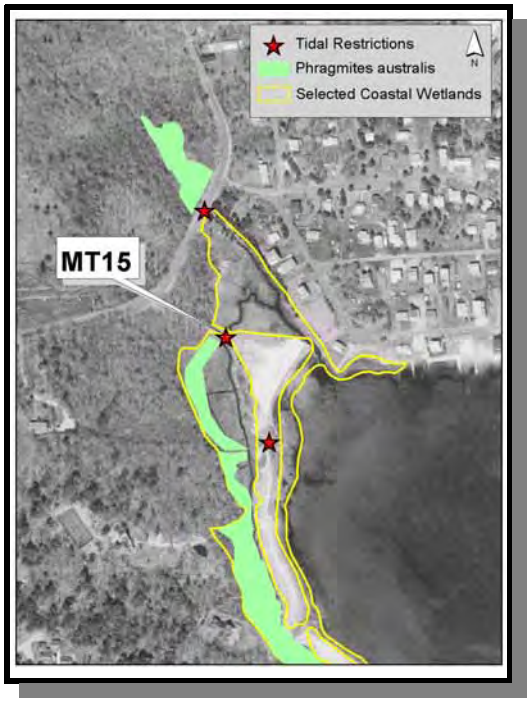
Comments

The culvert is submerged and Eel Pond has developed a breach in the barrier beach west of this site. The breach may provide adequate flushing to the pond. Further study of this issue is warranted prior to planning a secondary culvert.

MATTAPOISETT: Town Beach Road at Hiller Cove

Tidal Restriction Site MT15

Site Description
MT15 is under the access road to the town beach at Hiller Cove (see map on page 118). The access road is gravel and the grade is less than 3 feet above the culvert.



General Information
Town-owned roads, private wetlands

Culvert condition: good
Road width: 15 feet
Culvert length: 24 feet
Acres of wetlands affected: 4.6 acres
Acres of *Phragmites* present: 2.9 acres

Estimated Remediation Cost
Total estimated cost: $11,600
Cost per acre: $2,500

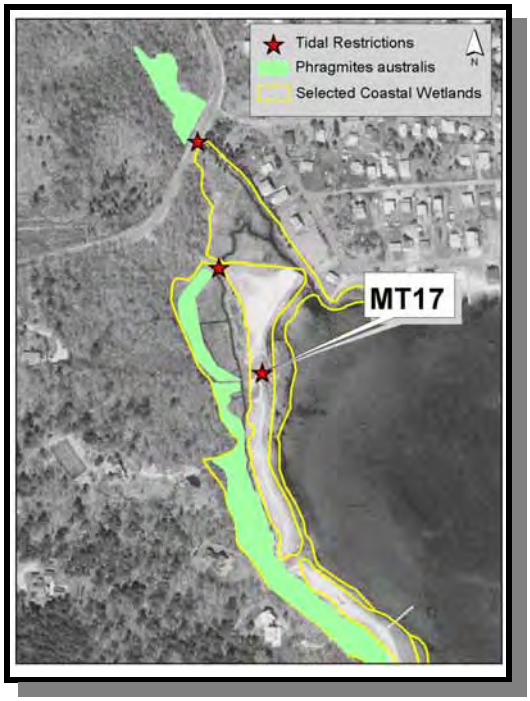
Comments
Due to the lack of paving and utilities and the shallow culvert depth, this culvert would be easy to replace. There has been somewhat of a breach in the barrier beach to the south at MT17, which allows tidal waters to the same wetland.

Entrance road to beach

Upstream end of culvert

MATTAPOISETT: Rock Wall at Hiller Cove

Tidal Restriction Site MT17



Site Description

MT17 is located on the town beach at Hiller Cove off of Aucoot Road (see map on page 118). It consists of a stonewall that was placed in the breach of a barrier beach to prevent tidal flows. Since the stones were placed, the barrier beach has retreated making the stone wall only partially effective. The reduced wave velocity behind the stone wall has caused the breach to clog with eelgrass that has washed ashore.

General Information

Town-owned restriction, public wetland

Culvert condition: no culvert
Breach width: 30 feet
Wall length: 25 feet
Acres of wetlands affected: 4.6 acres
Acres of *Phragmites* present: 2.9 acres

Stone wall on beach, looking south

Estimated Remediation Cost

Total estimated cost: $12,500
Cost per acre: $2,700

Comments

The rock wall has sunk and is clearly over washed. While the removal of this wall would provide only a marginal increase in tidal flooding, the project would be easy to complete.

NEW BEDFORD: New Bedford Hurricane Dike

Tidal Restriction Site NB08

Site Description

Restriction site NB08 is a hurricane dike that stretches for 3.5 miles along the South End of New Bedford to the Town of Fairhaven. Site NB08 is the opening into New Bedford Harbor, which allows boat passage (see map on page 123).

General Information

Federal restriction, public wetland
Anadromous fish run

Dike condition: excellent
Restriction width: 120 feet
Restriction length: 144 feet
Acres of wetlands affected: 83.4 acres
Acres of *Phragmites* present: 12.0 acres

Estimated Remediation Cost

Total estimated cost: $2,750,000
Cost per acre: $33,000

Comments

The New Bedford Harbor Trustees Council is investigating the possibility of increasing tidal flow to New Bedford Harbor. Rather than altering the hurricane barrier entrance, installation of a large culvert west of the entrance is being considered.

Opening in hurricane dike from the Fairhaven Shipyard & Marina

WAREHAM: Allen Road at Crooked River

Tidal Restriction Site WH11

Site Description

WH11 is a concrete culvert under a town road near Crooked River, off the Wareham River estuary (see map on page 130). The culvert is not far below the grade of the road. The marsh to the south of the culvert also has a natural opening at its southern end.

General Information

Town-owned, paved road, private wetlands

Culvert condition: fair
Road width: 30 feet
Culvert length: 36 feet
Acres of wetlands affected: 19.3 acres
Acres of *Phragmites* present: 3.3 acres

Estimated Remediation Cost

Total estimated cost: $11,300
Cost per acre: $600

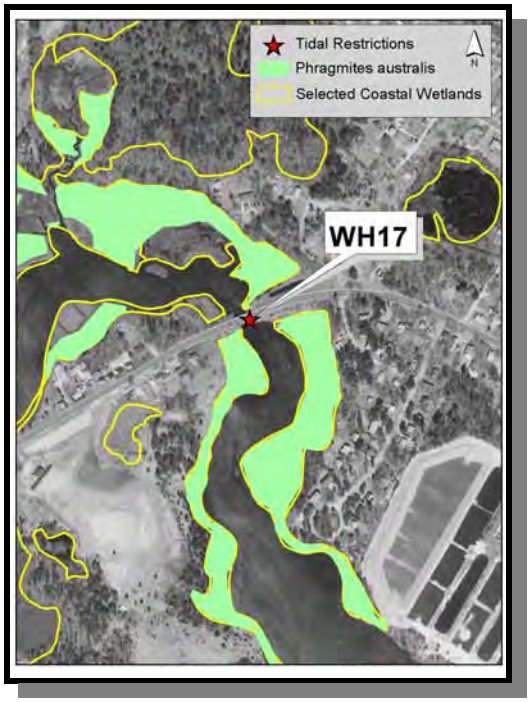
Tidal restriction WH11

Comments

There is a water main bleeder pipe discharging at the culvert which lowers the salinity in the area. Sediment washing off the road and low velocity through the culvert have caused sand to accumulate. Dredging of the ditch, along with installation of a larger culvert would be needed to improve flushing.

WAREHAM: Sandwich Road/Route 6 - Agawam River

Tidal Restriction Site WH17



Site Description

WH17 is a State Route 6 bridge/culvert located over the Agawam River (see map on page 132). While the bridge appears to have a considerable span from the surface, it actually has a rather small opening. This site is just downstream from the Town of Wareham's waste water treatment plant discharge.

General Information

State-owned, paved road, public wetland
Rare and endangered species habitat
Anadromous fish run

Bridge condition: good
Road width: 40 feet
Culvert length: 40 feet
Acres of wetlands affected: 14.3 acres
Acres of *Phragmites* present: 14.2 acres

North side of bridge

Estimated Remediation Cost

Total estimated cost: $350,000
Cost per acre: $24,500

Comments

This opening is very small for the size of the river. The river supports a herring run as well as sea run brown trout. Increased flushing may also improve water quality impairments caused by the wastewater treatment plant.

WAREHAM: Pilgrim Avenue at Broadmarsh River

Tidal Restriction Site WH27

Site Description

WH27 is a concrete culvert under Pilgrim Avenue, a town-owned road (see map on page 130). The marsh to the south of the culvert also has a natural opening at its southern end. Much of the flow through the pipe has been reduced by mud and rocks.

General Information

Town-owned, paved road, private wetlands

Culvert condition: good
Road width: 21 feet
Culvert length: 31 feet
Acres of wetlands affected: 11.5 acres
Acres of *Phragmites* present: 2.5 acres

Estimated Remediation Cost

Total estimated cost: $27,000
Cost per acre: $2,400

Comments

Due to the shallow culvert depth, this would be an easy culvert to replace. The location of any utilities (gas, water, and sewer are present in the street) could add appreciably to the final costs.

East end of pipe

WAREHAM: Abandoned Section of Route 6/Weweantic River

Tidal Restriction Site WH33

Site Description
This is a culvert under an older, abandoned section of State Route 6 (see map on page 128). Elevation of the culvert is difficult to determine because of the overgrowth of *Phragmites* and poison ivy.

General Information
State-owned restriction, public wetlands

Culvert condition: fair
Road width: 30 feet
Culvert length: 50 feet
Acres of wetlands affected: 5.2 acres
Acres of *Phragmites* present: 5.2 acres

Estimated Remediation Cost
Total estimated cost: $27,500
Cost per acre: $5,300

Comments
This project must be remediated in conjunction with WH29. Although there are no properties accessed by this section of road, the road contains water mains and active electric/telephone poles precluding road removal. The marsh to the south was flooded for several days by salt water after Hurricane Bob in 1991. All freshwater vegetation in the marsh was killed as a result of that flooding.

Old section of Route 6

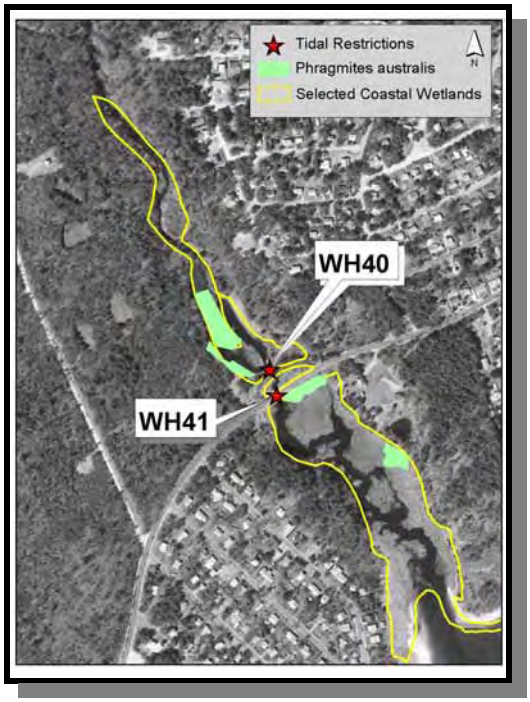
Phragmites at end of pipe

WAREHAM/BOURNE/PLYMOUTH: Red Brook Road

Tidal Restriction Site WH40

Site Description

WH40 is an old road with stone abutments, many of which have fallen into the brook. The restriction crosses Red Brook Road, leading to Buttermilk Bay, and is located at the intersection of the Bourne/Wareham/Plymouth town lines (see map on page 135).



General Information

Wetlands and restriction on private property
Anadromous fish run

Culvert condition: no culvert
Old road width: 20 feet
Acres of wetlands affected: 2.0 acres
Acres of *Phragmites* present: 2.7 acres

Estimated Remediation Cost

Total estimated cost: $13,900
Cost per acre: $6,900

Comments

Improvements to flushing under this old road, should be done in conjunction with improvements at WH41. The removal of this old road remnant would be fairly easy to accomplish as there is ready access for heavy equipment. Due to the site topography it would not be necessary to remove the material off-site. Wetland Protection Act permits must be issued by both Wareham and Plymouth.

Downstream view from WH40, looking at WH41

Upstream view, above WH40

WESTPORT: Hix Bridge/Westport River

Tidal Restriction Site WP06

Site Description

This tidal restriction is caused by fill material deposited under Hix Bridge, which impedes tidal flow and creates a damming effect (see map on page 141). Large granite blocks were toppled in the river as a result of the destruction of the old Hix Bridge by the Hurricane of '38 and from the demolition of the bridge in 1939.

General Information

Town-owned bridge, public wetland

Bridge condition: fair
Restriction width: 25 feet
Restriction length: 30 feet
Acres of wetlands affected: 205.5 acres
Acres of *Phragmites* present: 135.9 acres

Estimated Remediation Cost

Total estimated cost: $2,800,000
Cost per acre: $13,600

Comments

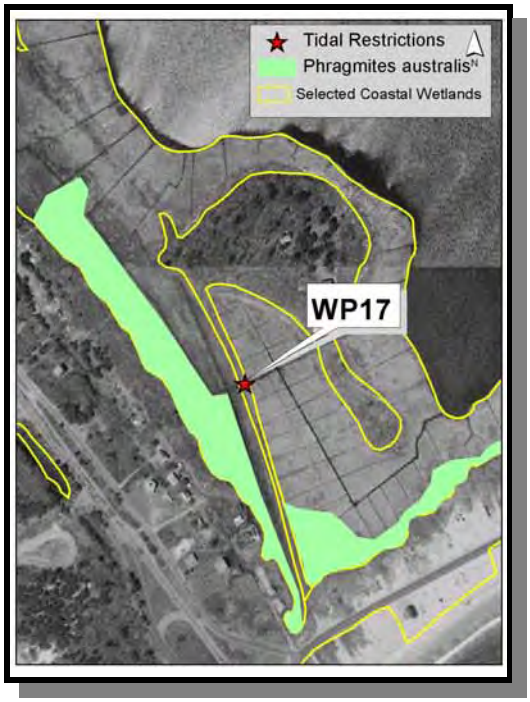
The Town of Westport is planning to rebuild this bridge. The U.S. Army Corps of Engineers is conducting a tidal flushing study to determine the benefits of increased tidal flushing. There may be problems associated with the removal of the granite blocks. A detailed report on this site is available on the Buzzards Bay Project's website, *www.buzzardsbay.org*.

View of Hix Bridge, looking North

Close up view

WESTPORT: Driveway at the Let/Westport River

Tidal Restriction Site WP17



Site Description
WP17 is under a very long, low driveway to an upland area known as the Let on the lower East Branch of the Westport River (see map on page 140). The low driveway restricts the size of possible additional culverts.

General Information
Private, gravel driveway, private wetlands

Culvert condition: good
Road width: 12 feet
Culvert length: 15 feet
Acres of wetlands affected: 9.7 acres
Acres of *Phragmites* present: 3.6 acres

Estimated Remediation Cost
Total estimated cost: $9,700
Cost per acre: $1,000

Comments
The addition of new culverts at the site may require new mosquito ditching. Any new culverts would be fairly easy to place. If the driveway is improved by an increase of fill, new ditching may not be required.

View of driveway

USGS Topographic Maps of Tidal Restrictions in the Buzzards Bay Watershed

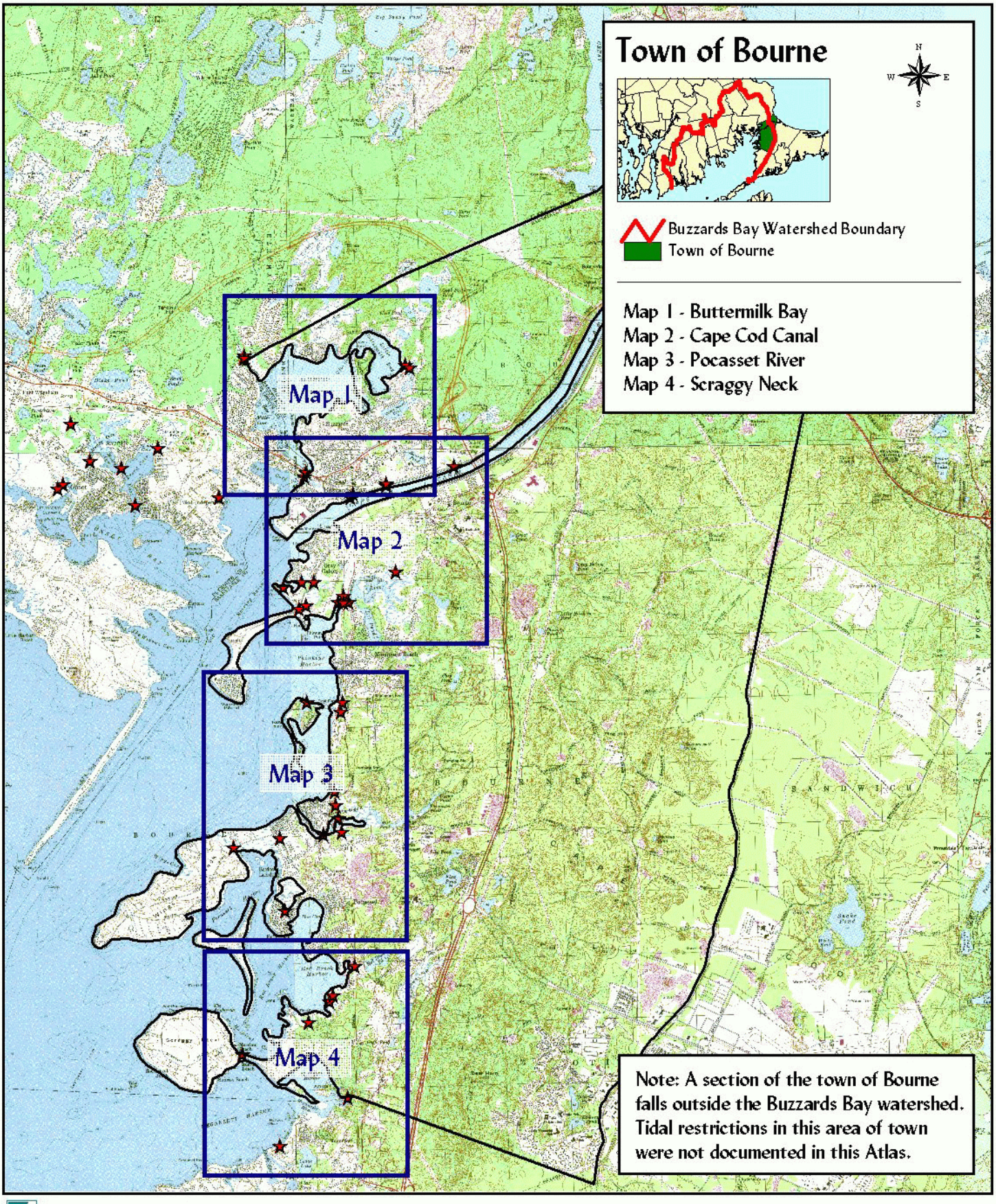
Two-hundred and fifty-seven (257) sites were identified by the Buzzards Bay Project staff as causing restrictions to tidal flow in salt marshes located within the Buzzards Bay Watershed. The following section contains a series of USGS Topographic maps showing the locations of all potential restriction sites along with the approximate locations of stands of common reed (*Phragmites australis*).

The Topographic maps are arranged alphabetically by town, with each section beginning with a locus map of the town. Individual sites in the Atlas were identified using a two-letter town code and a two- digit number code. For example, all sites within the Town of Mattapoisett begin with the letters MT, followed by a two digit site number. These codes may be used to access information about individual sites from Table 4 in the Results Section or in the Appendix of this document. Additionally, the complete database can be found on the Buzzards Bay Project's website, *www.buzzardsbay.org*.

It should be noted that sections of the Towns of Bourne and Falmouth fall outside the Buzzards Bay watershed. While tidal restrictions may exist in these areas they have not been documented in this Atlas. The Cape Cod Commission identified eight restrictions located outside the Buzzards Bay watershed in Falmouth and zero in Bourne. Please consult the *Cape Cod Atlas of Tidally Restricted Salt Marshes - Cape Cod, Massachusetts* for more information.

Town of Bourne

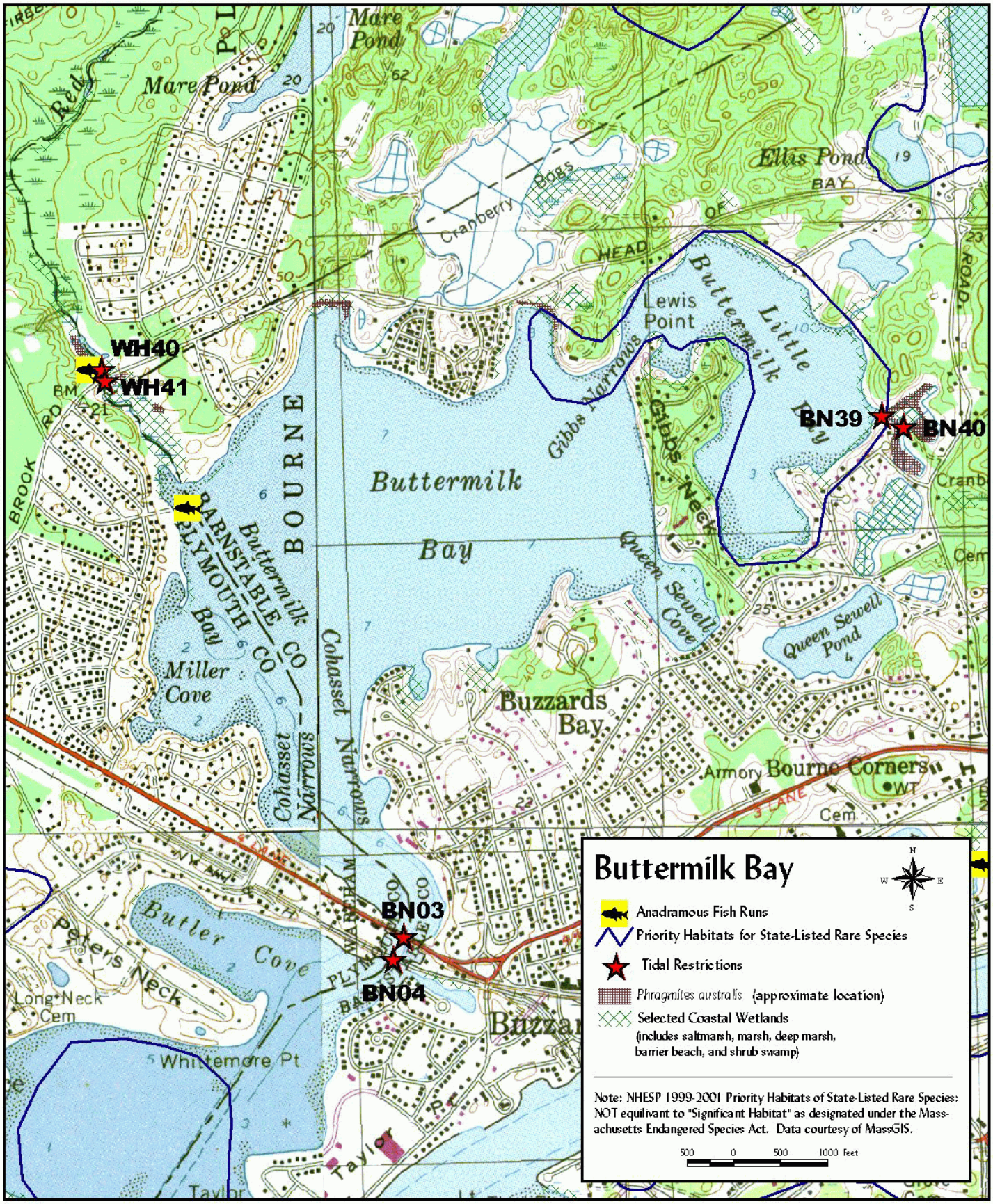
Bourne Locus Map



Prepared by Buzzards Bay Project National Estuary Program
2870 Cranberry Highway, E. Wareham, MA 02538

Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Bourne - Map 1



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Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

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Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Bourne - Map 3

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Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

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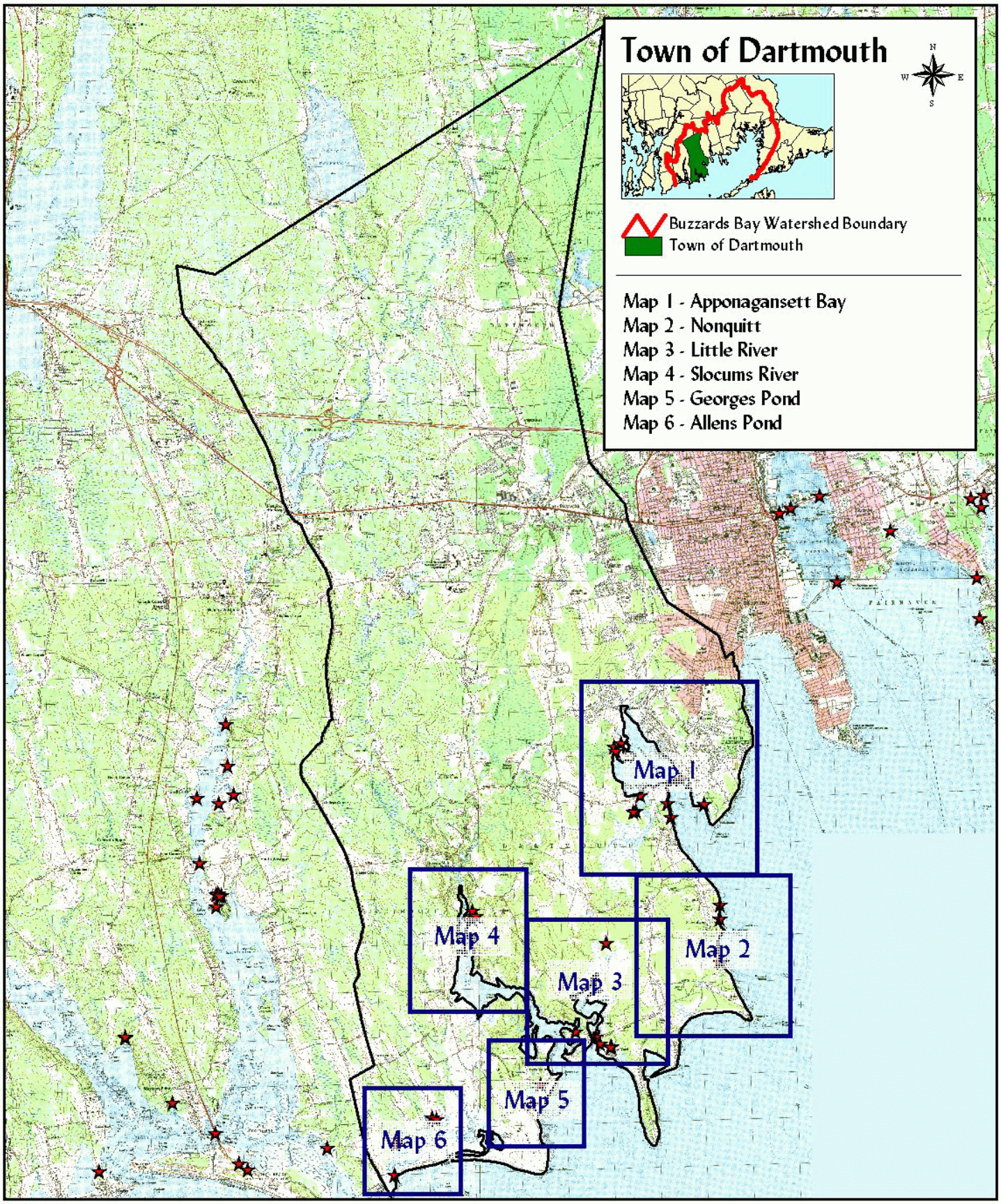
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Town of Dartmouth


Dartmouth Locus Map
Town of Dartmouth
N
W
E
S
Buzzards Bay Watershed Boundary
Town of Dartmouth
Map 1 - Apponagansett Bay
Map 2 - Nonquitt
Map 3 - Little River
Map 4 - Slocums River
Map 5 - Georges Pond
Map 6 - Allens Pond
Map 1
Map 2
Map 3
Map 4
Map 5
Map 6
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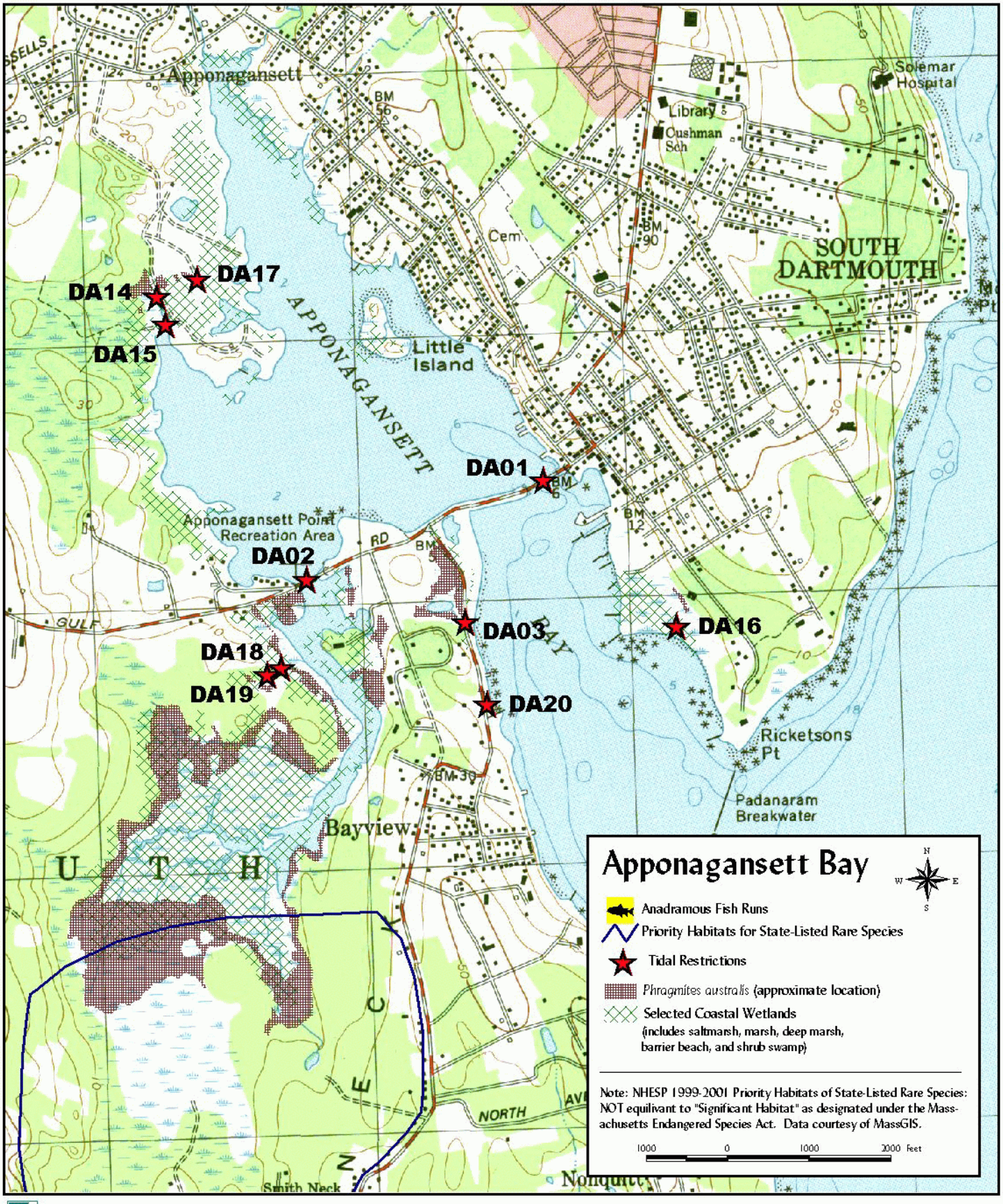
2870 Cranberry Highway, E. Wareham, MA 02538
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Dartmouth - Map 1



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Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

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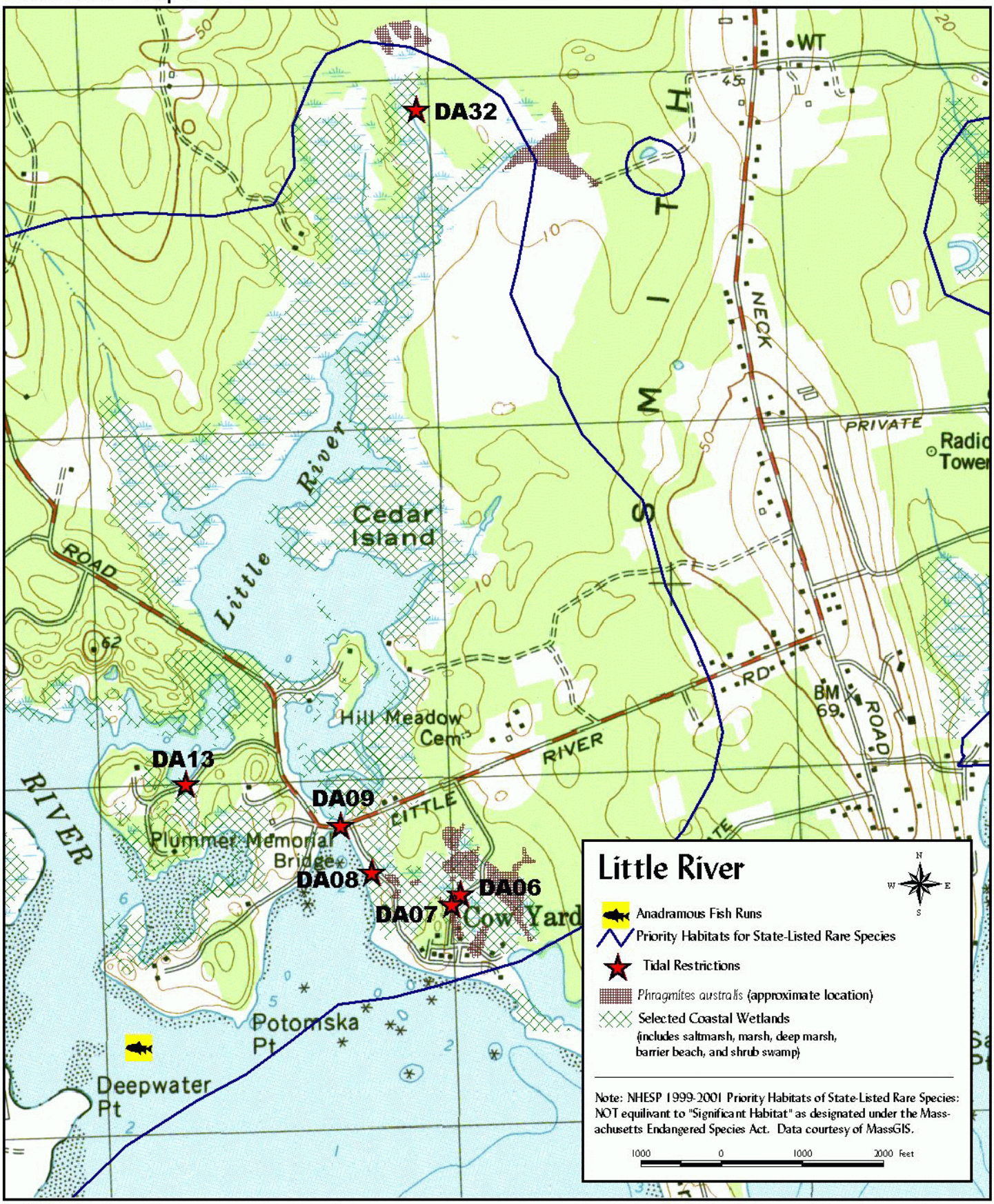
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Dartmouth - Map 3



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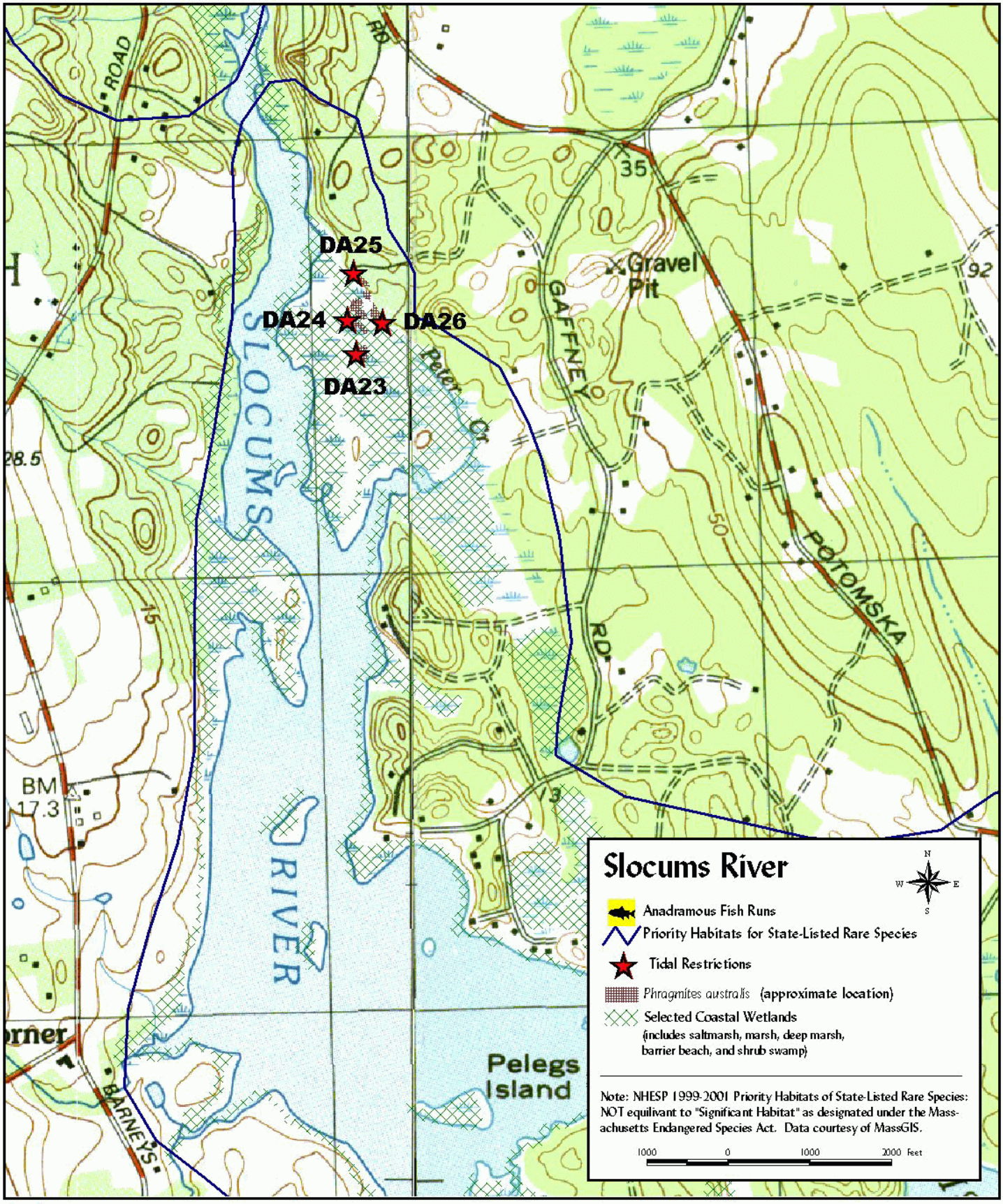
March 2002



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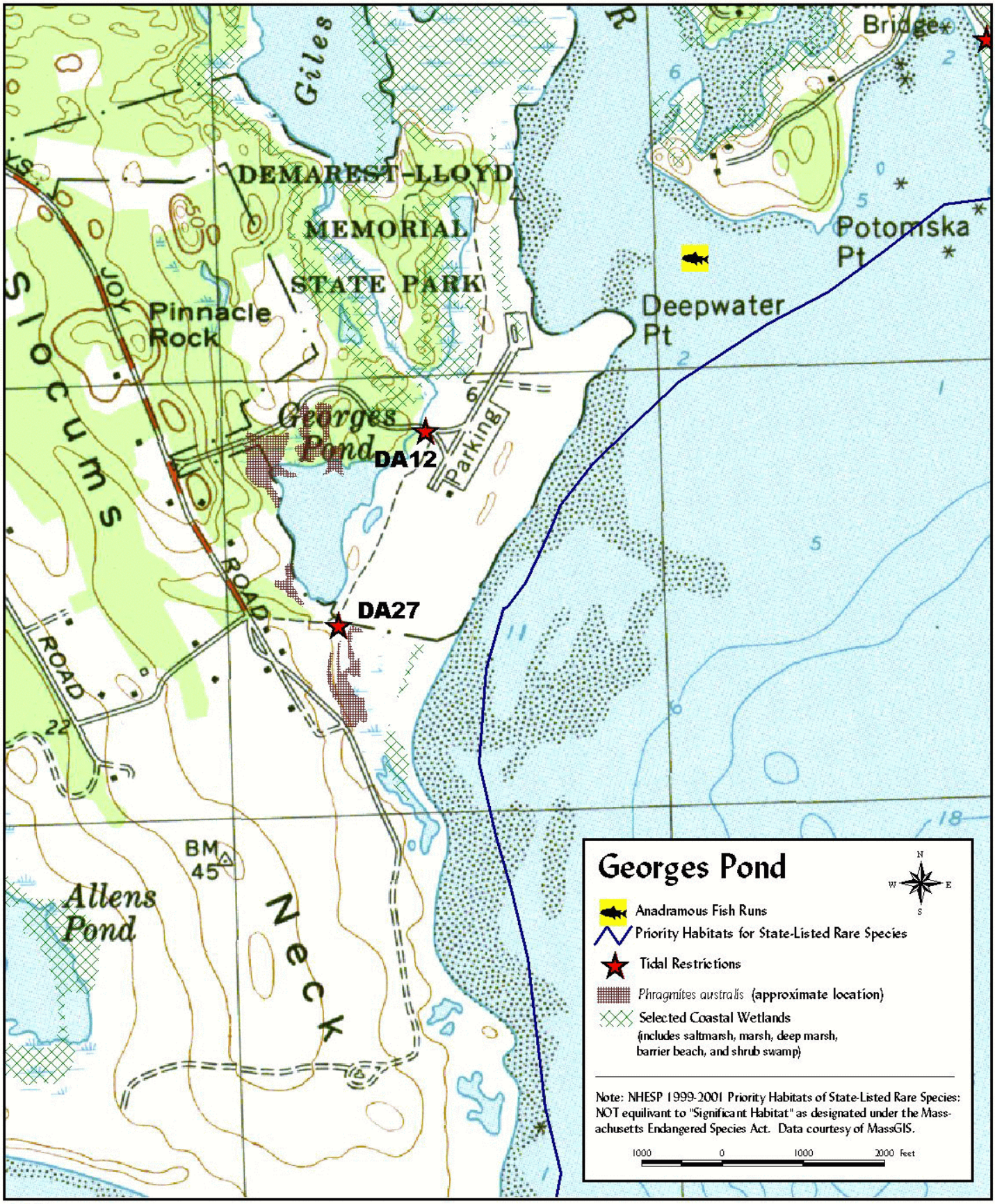
Dartmouth - Map 5



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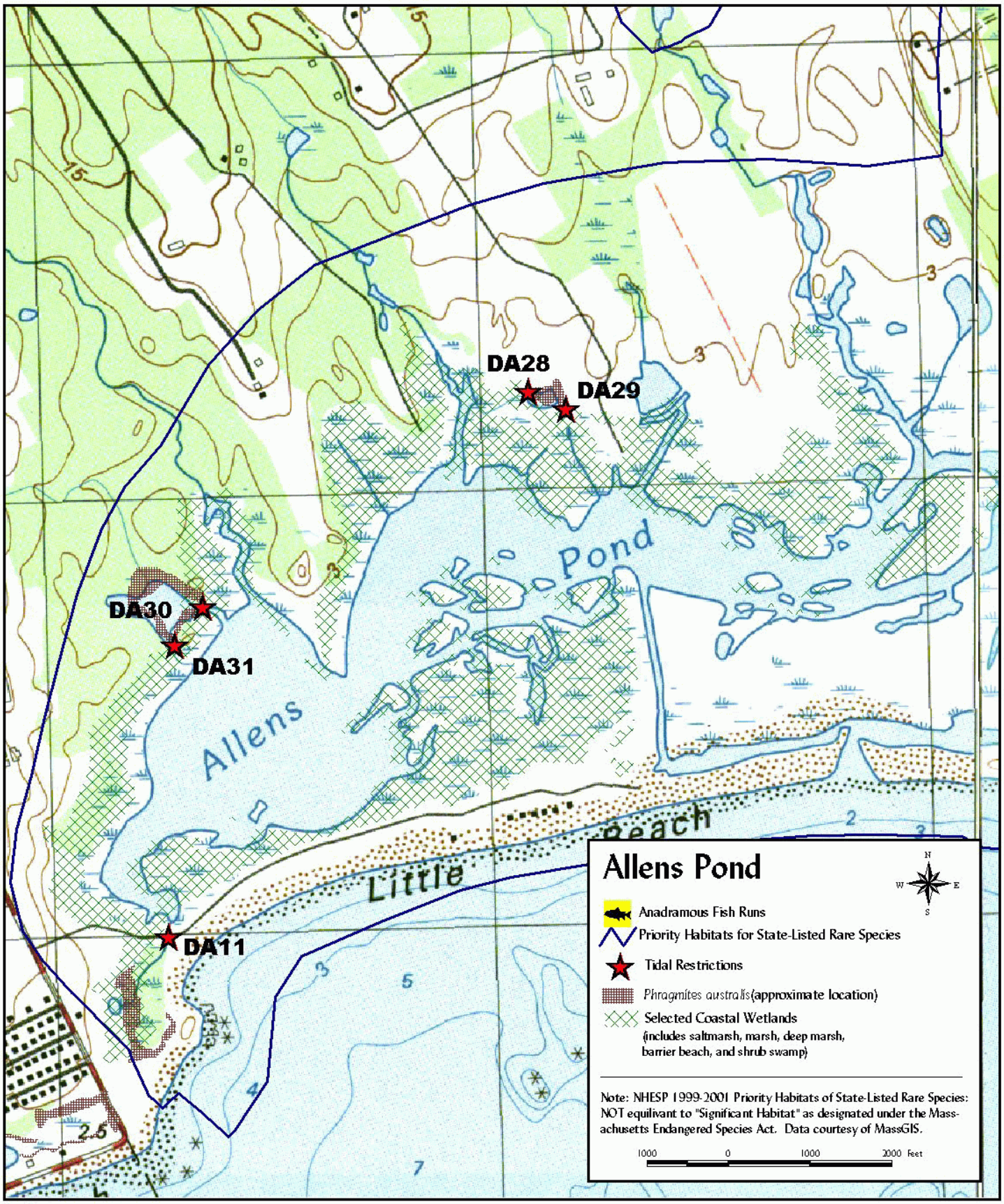
March 2002



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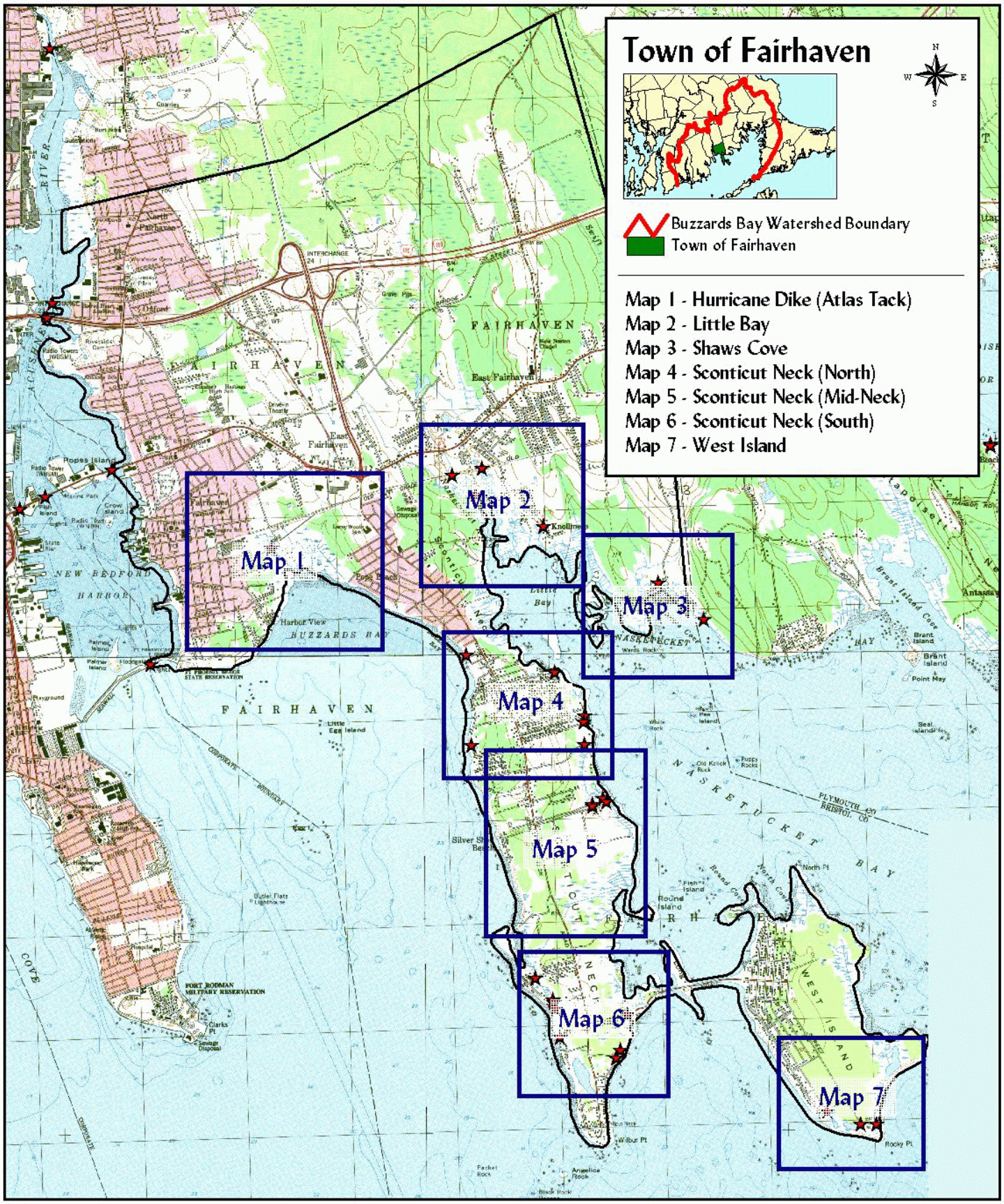
March 2002

Town of Fairhaven

Fairhaven Locus Map



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Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Fairhaven - Map 1

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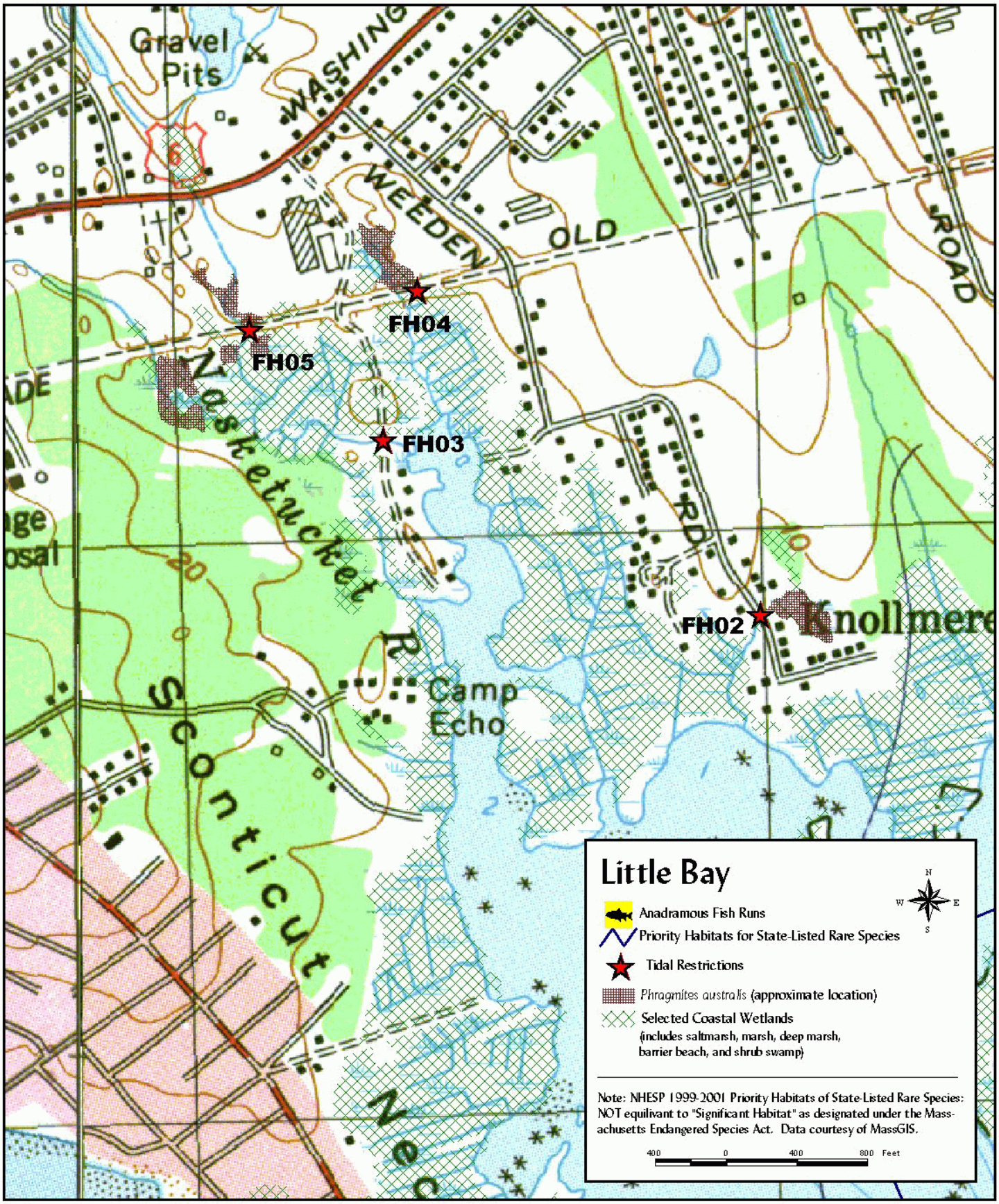
March 2002



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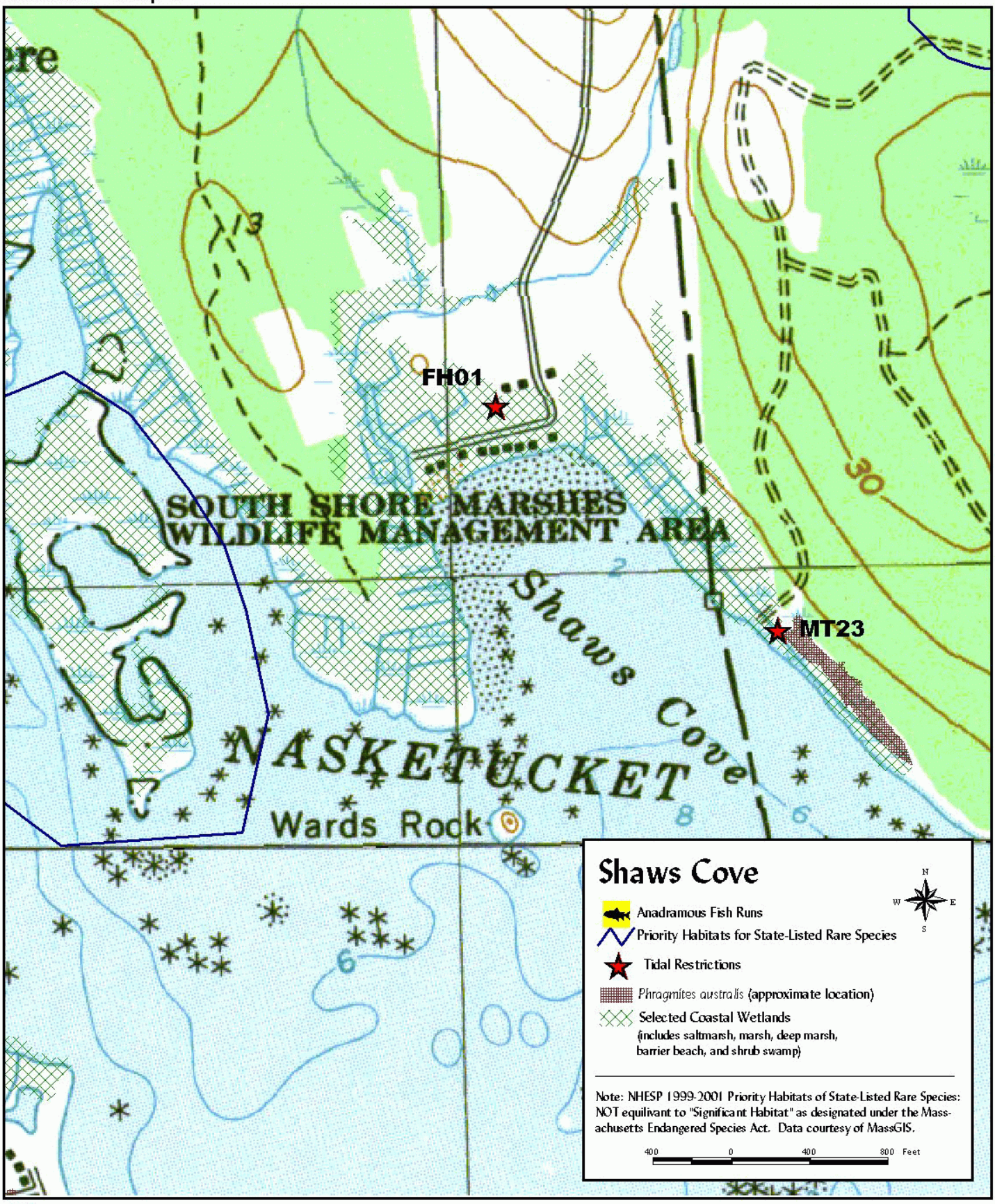
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Fairhaven - Map 3



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March 2002

Fairhaven - Map 5

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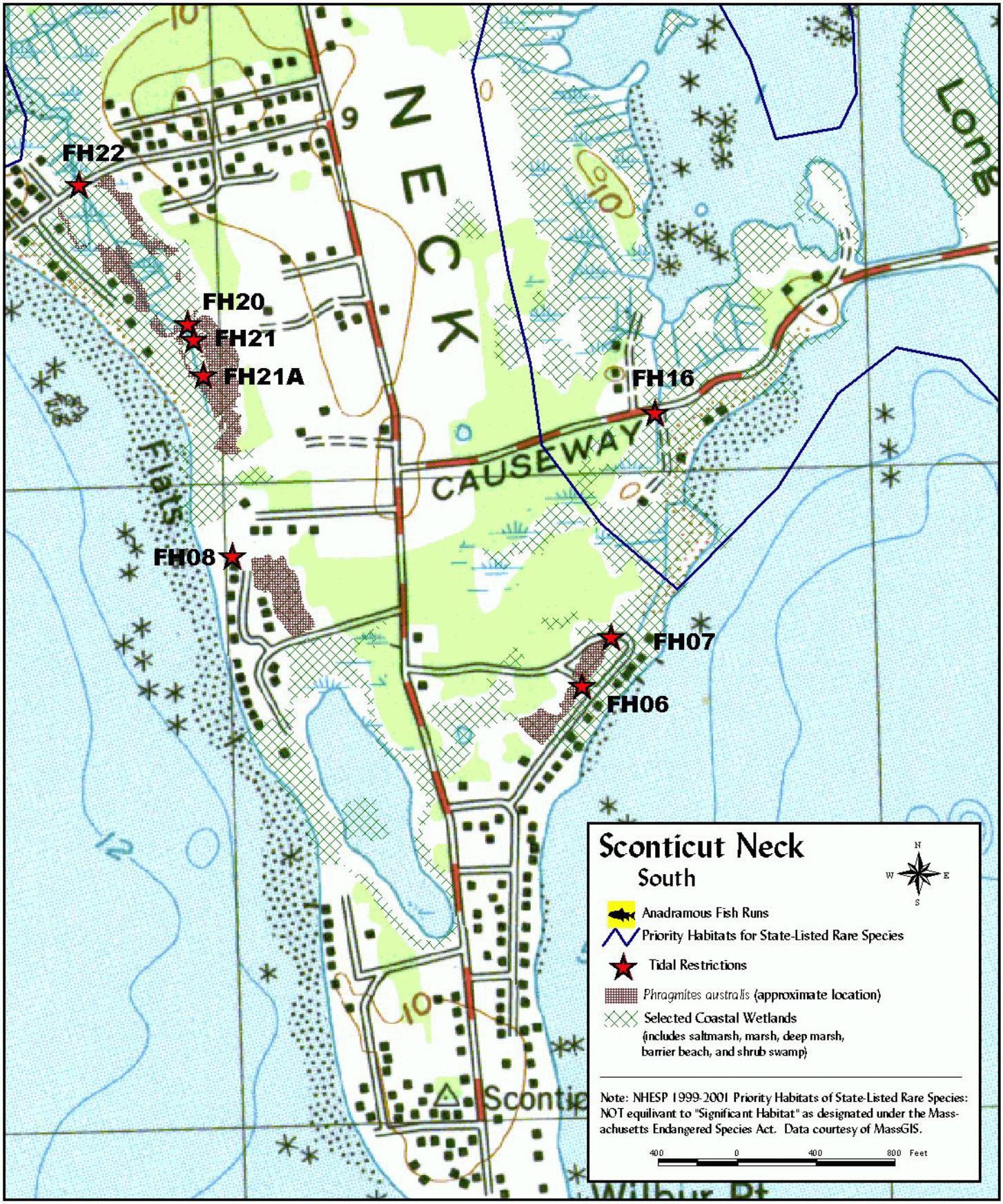
March 2002



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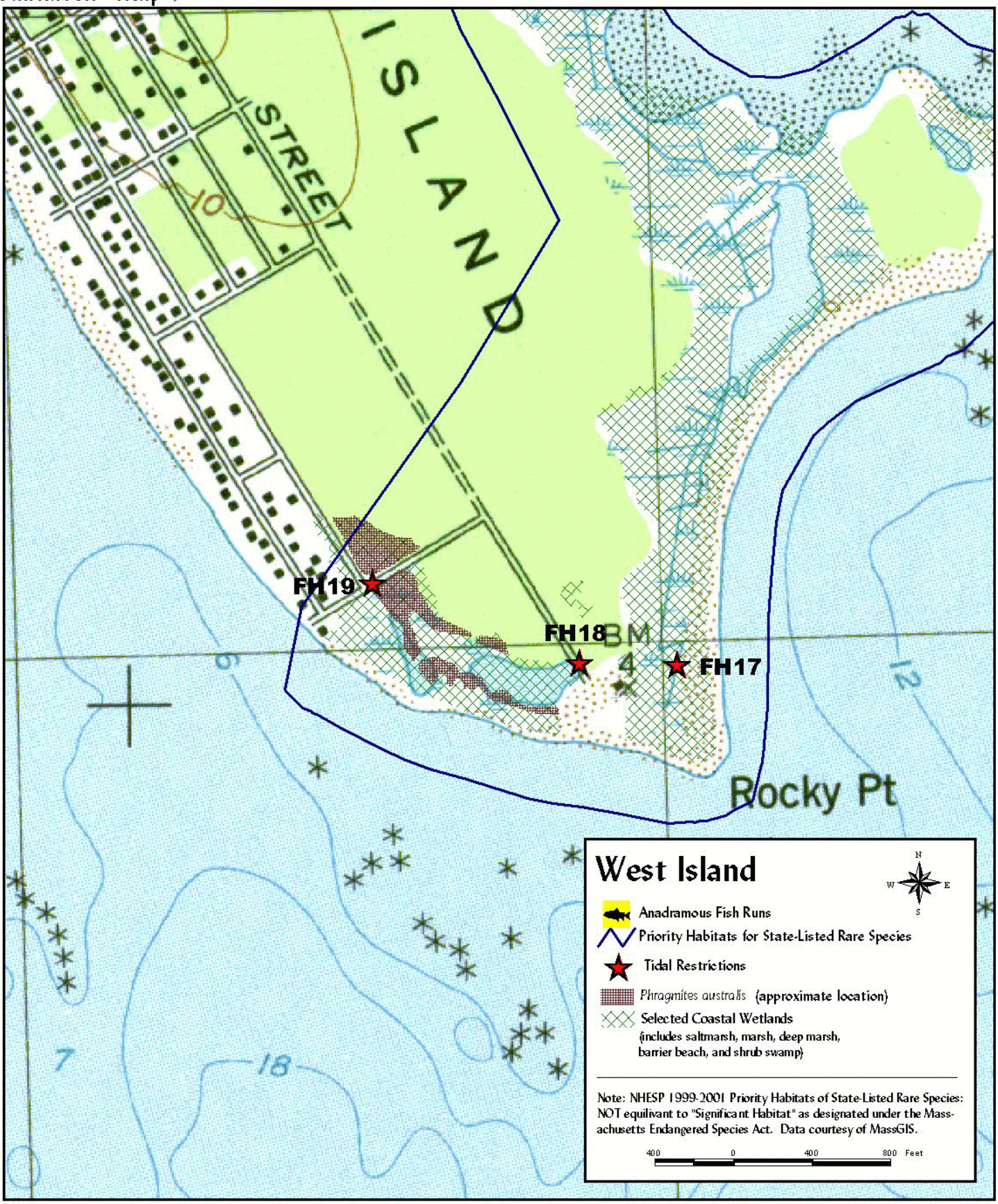
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Fairhaven - Map 7



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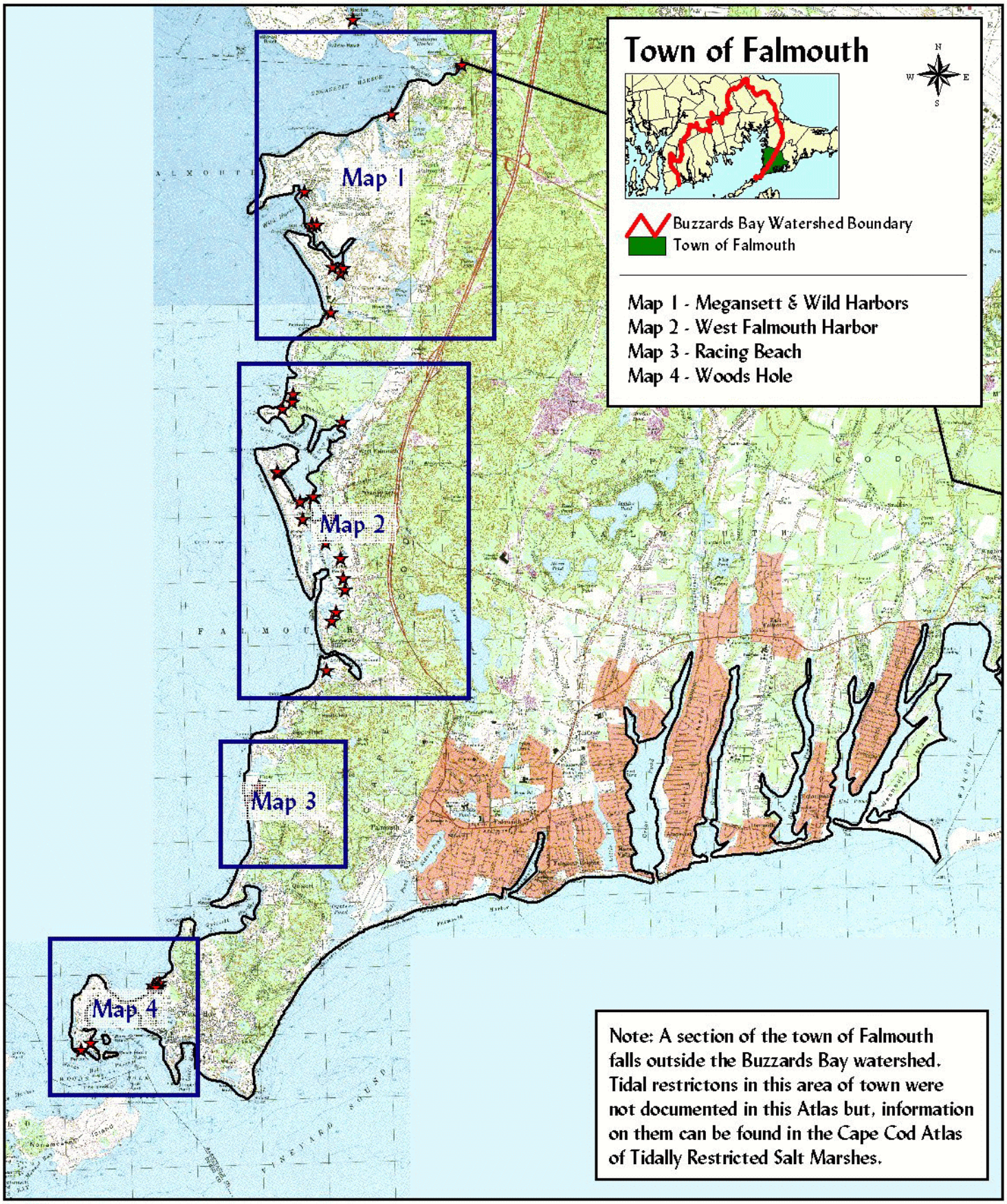
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Town of Falmouth



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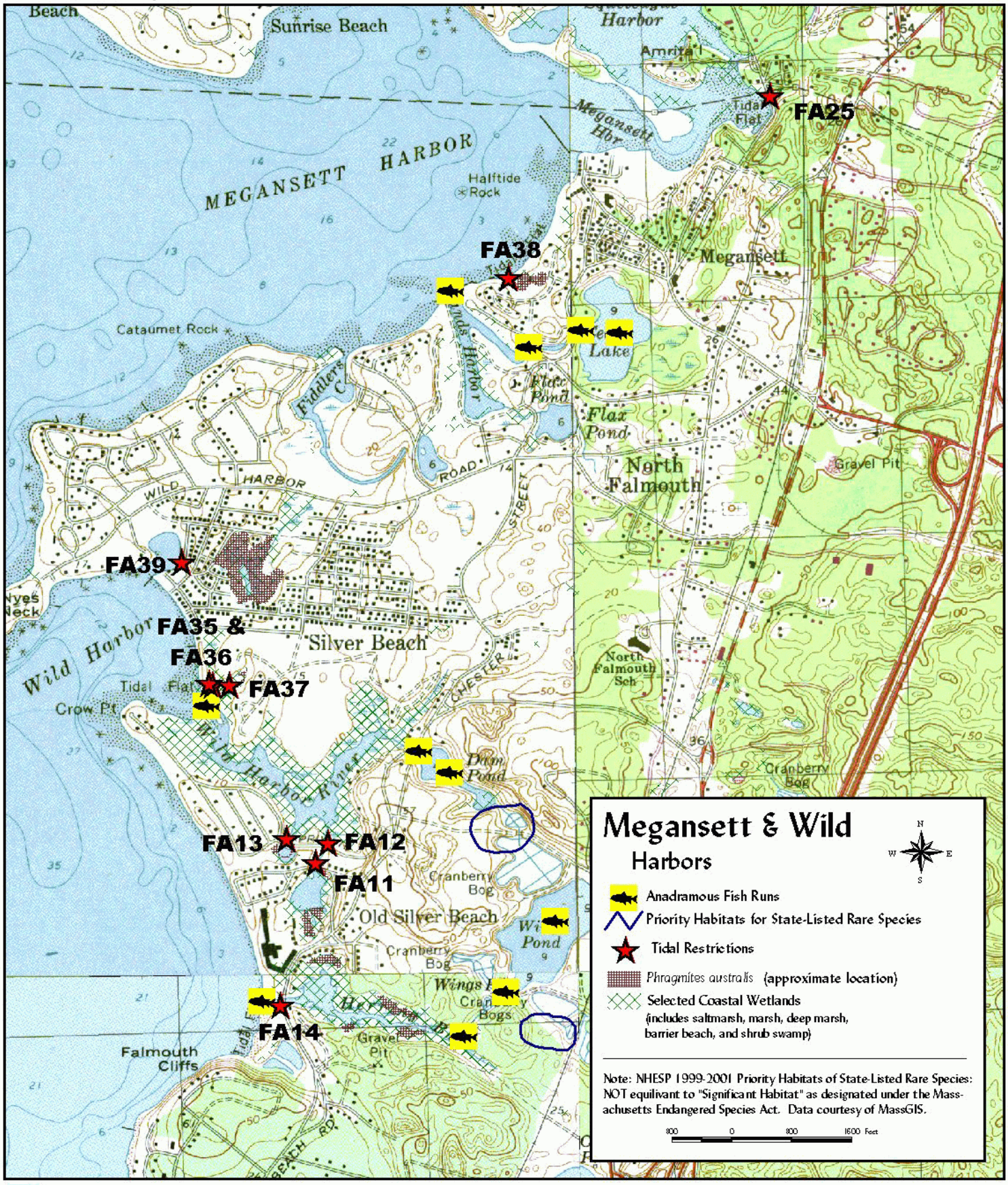
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Falmouth - Map 1



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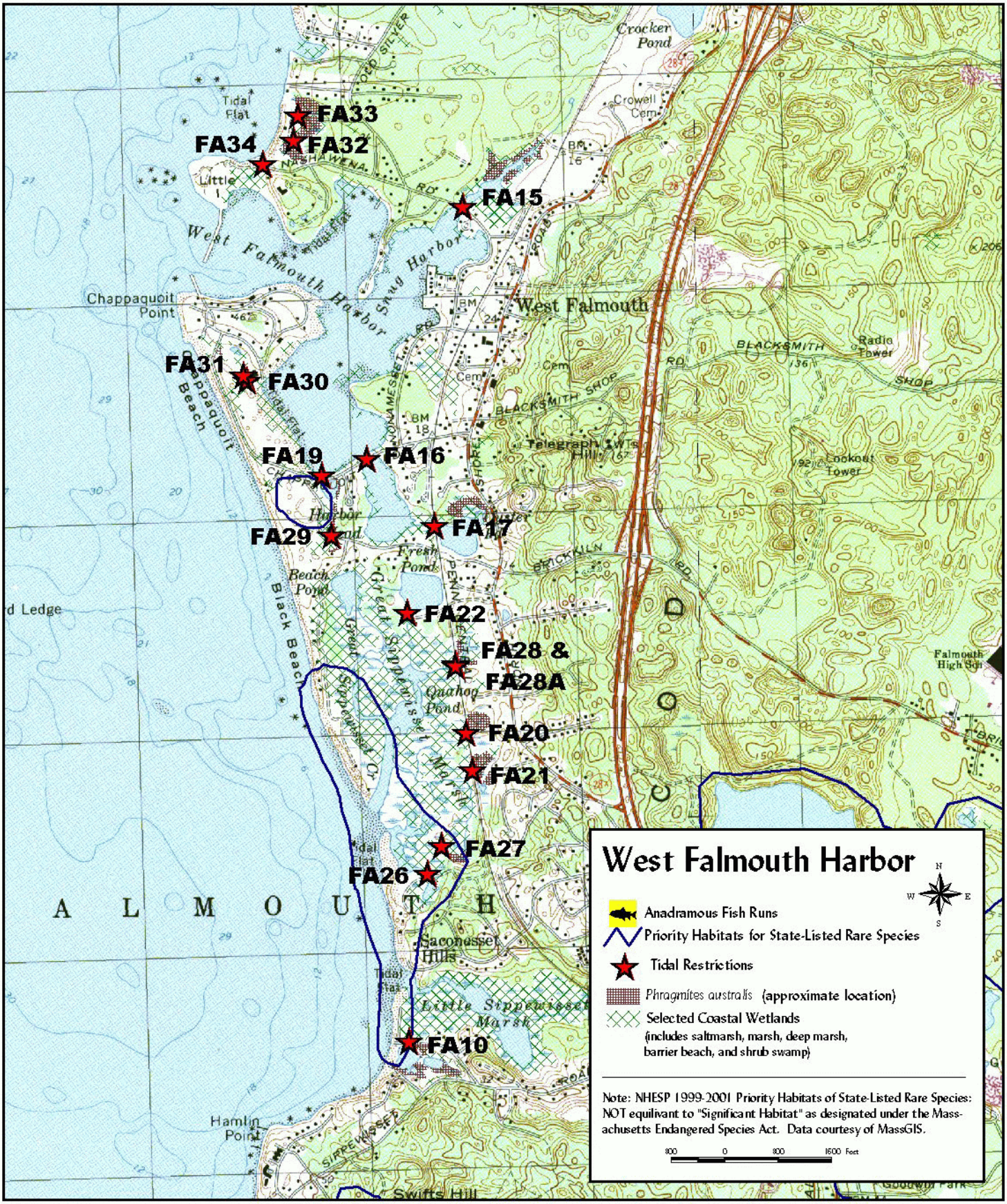
March 2002



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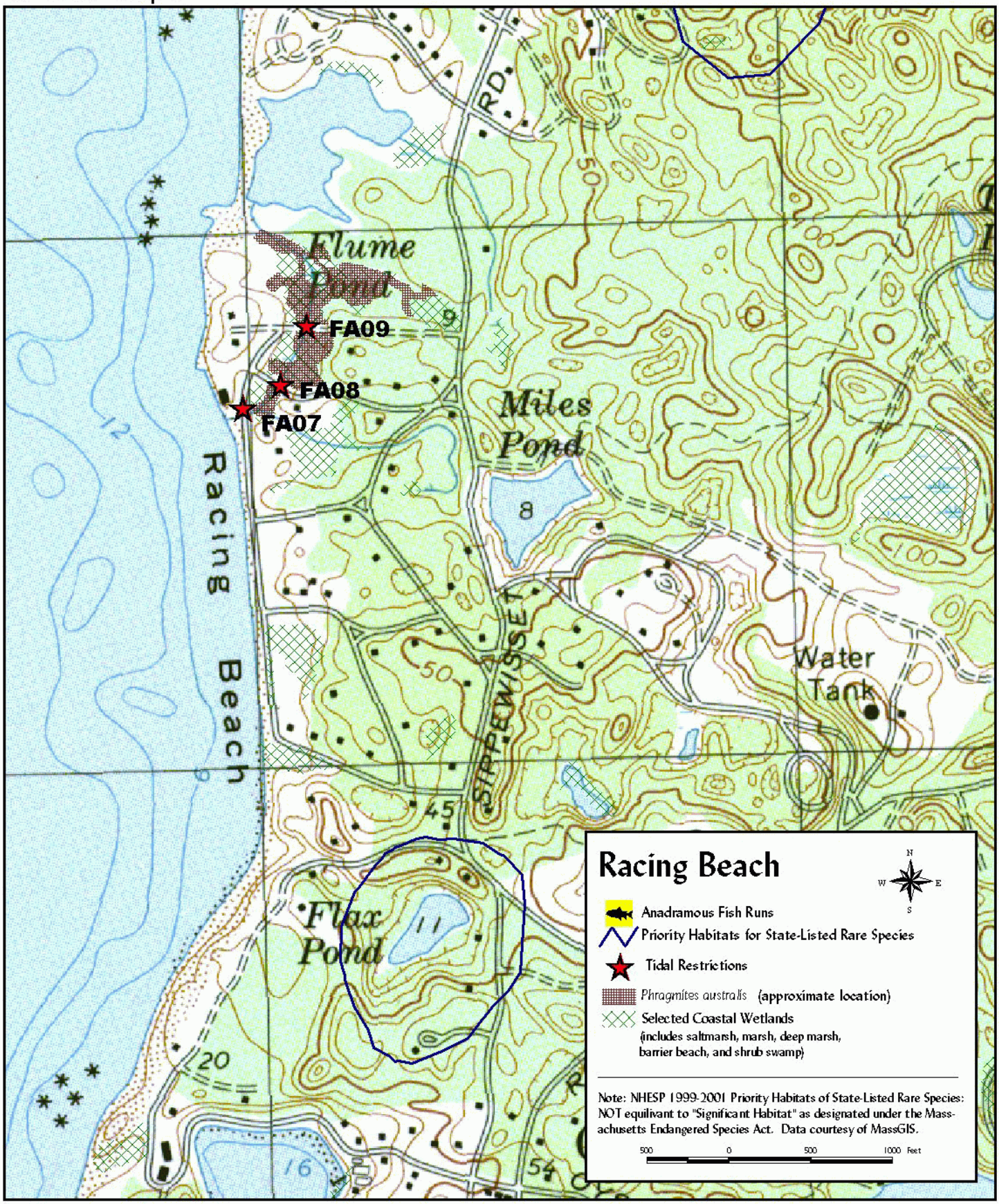
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Falmouth - Map 3



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March 2002

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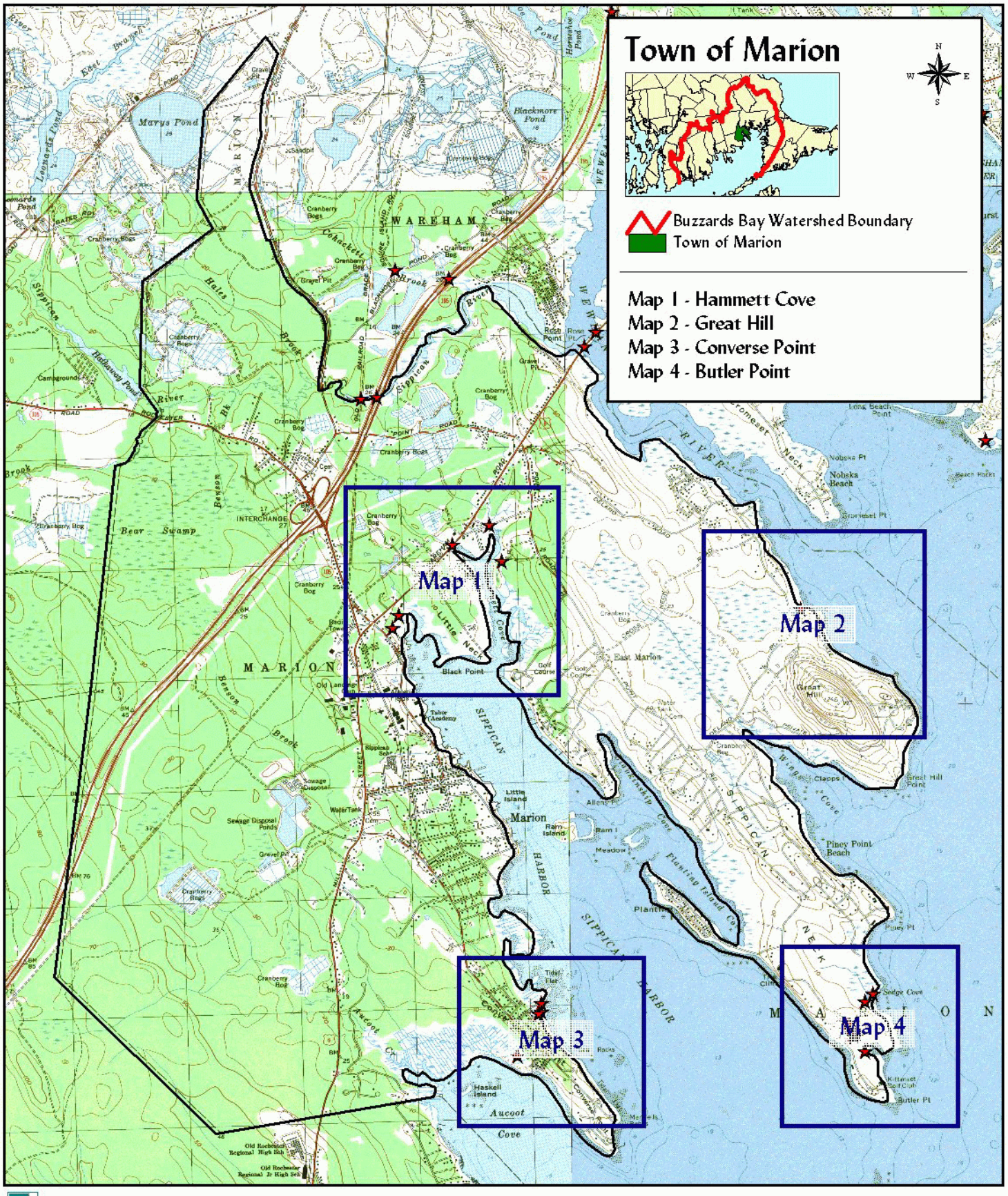
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Town of Marion

Marion Locus Map



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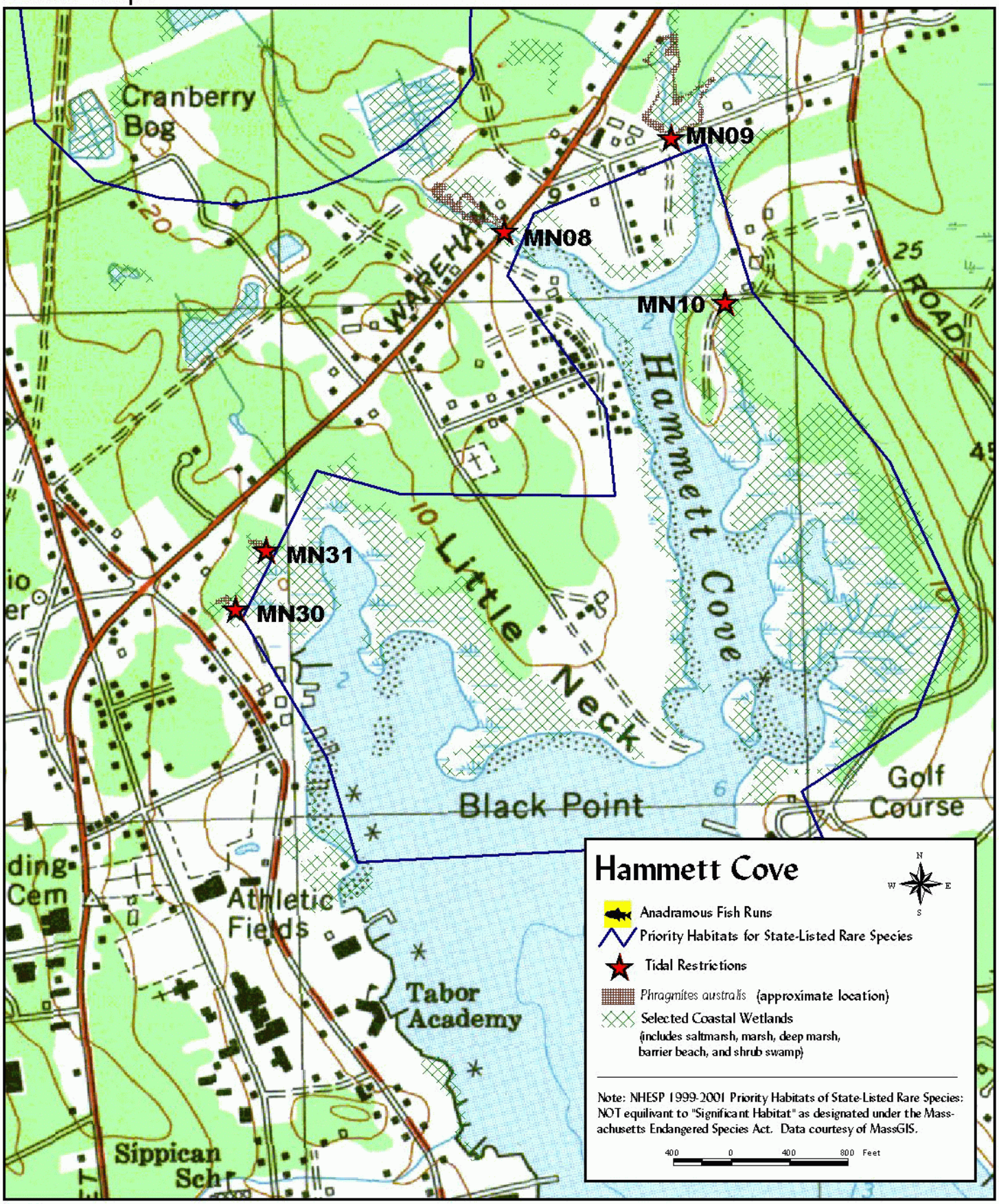
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Marion - Map 1



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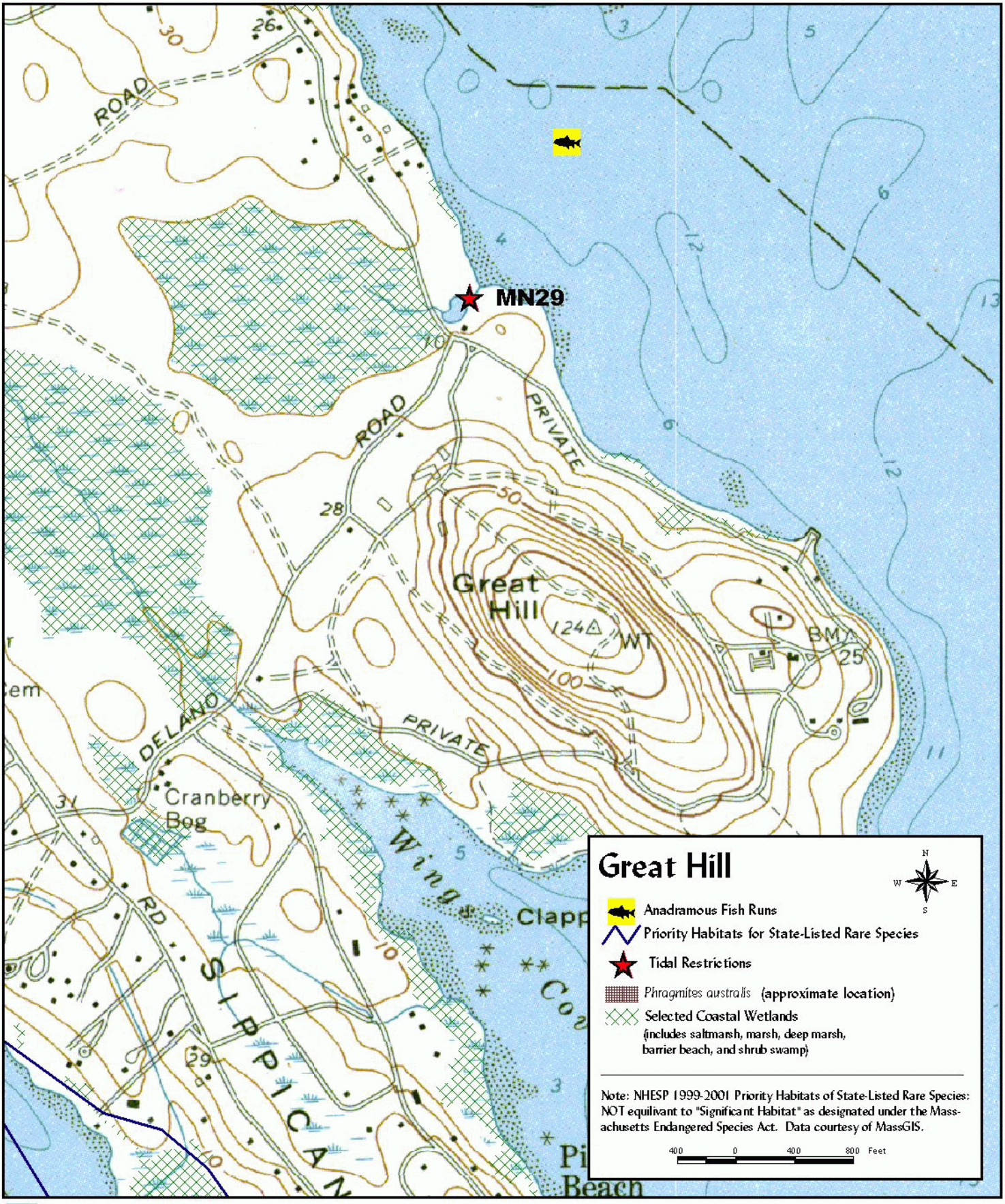
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002



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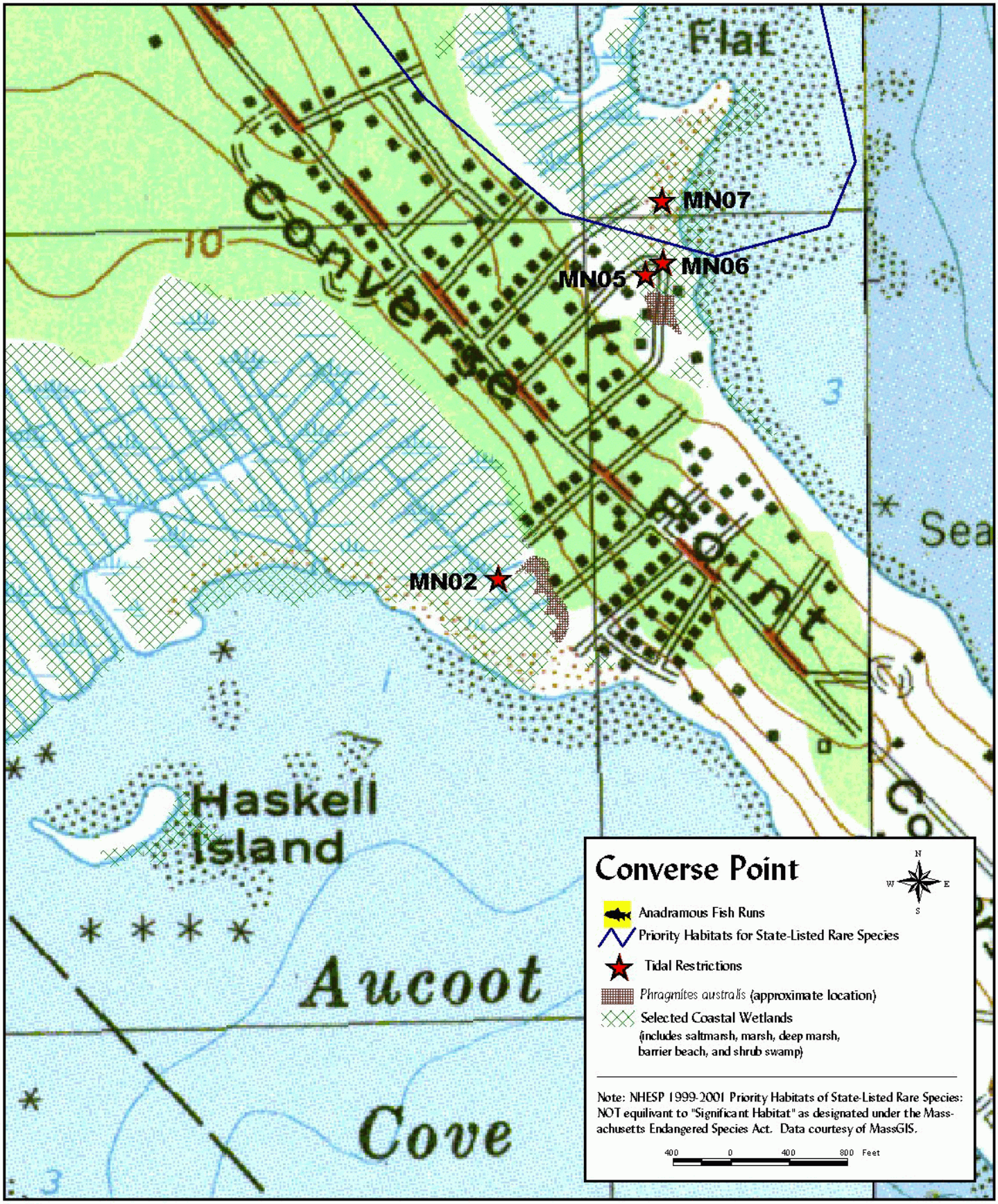
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Marion - Map 3



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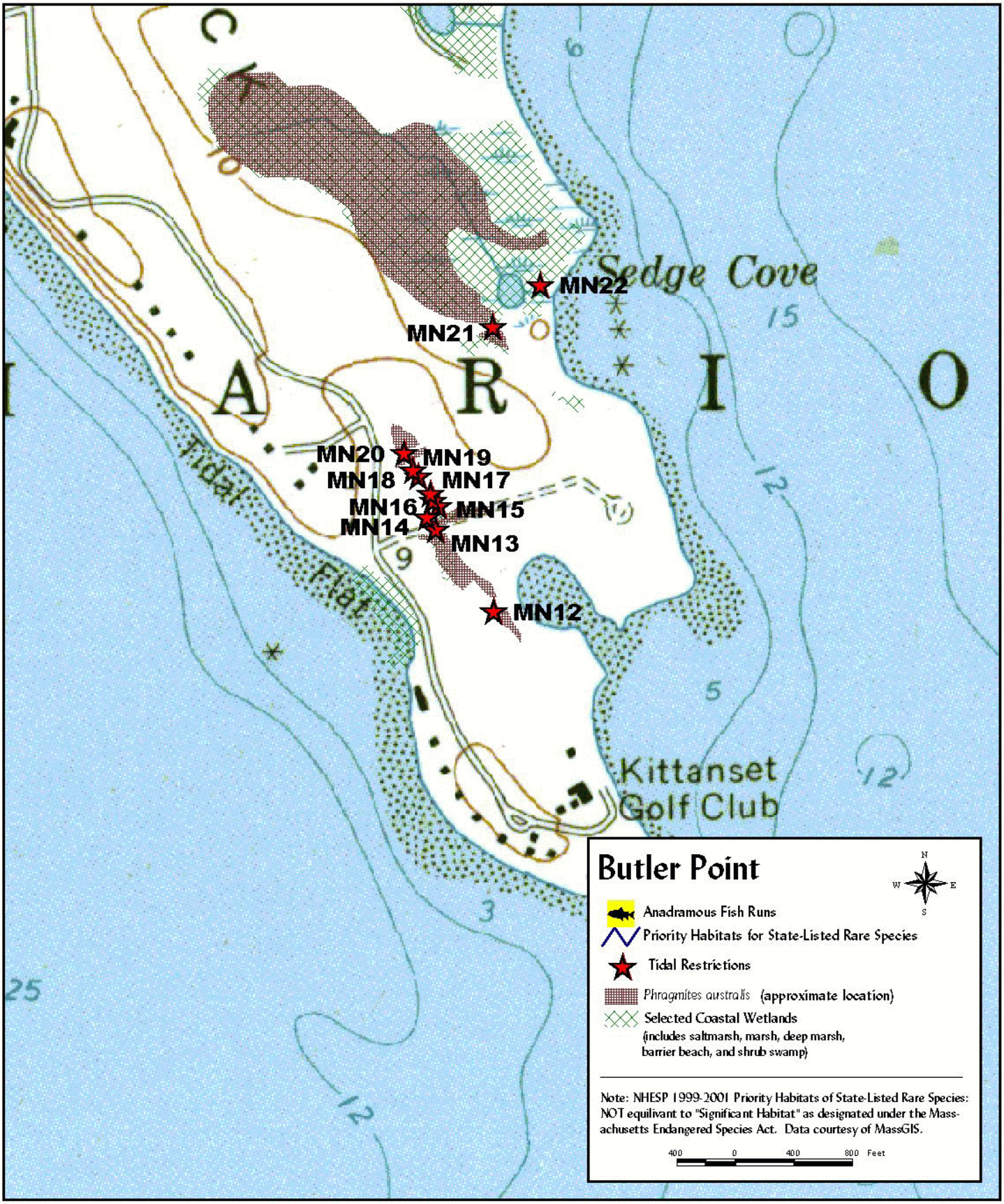
March 2002



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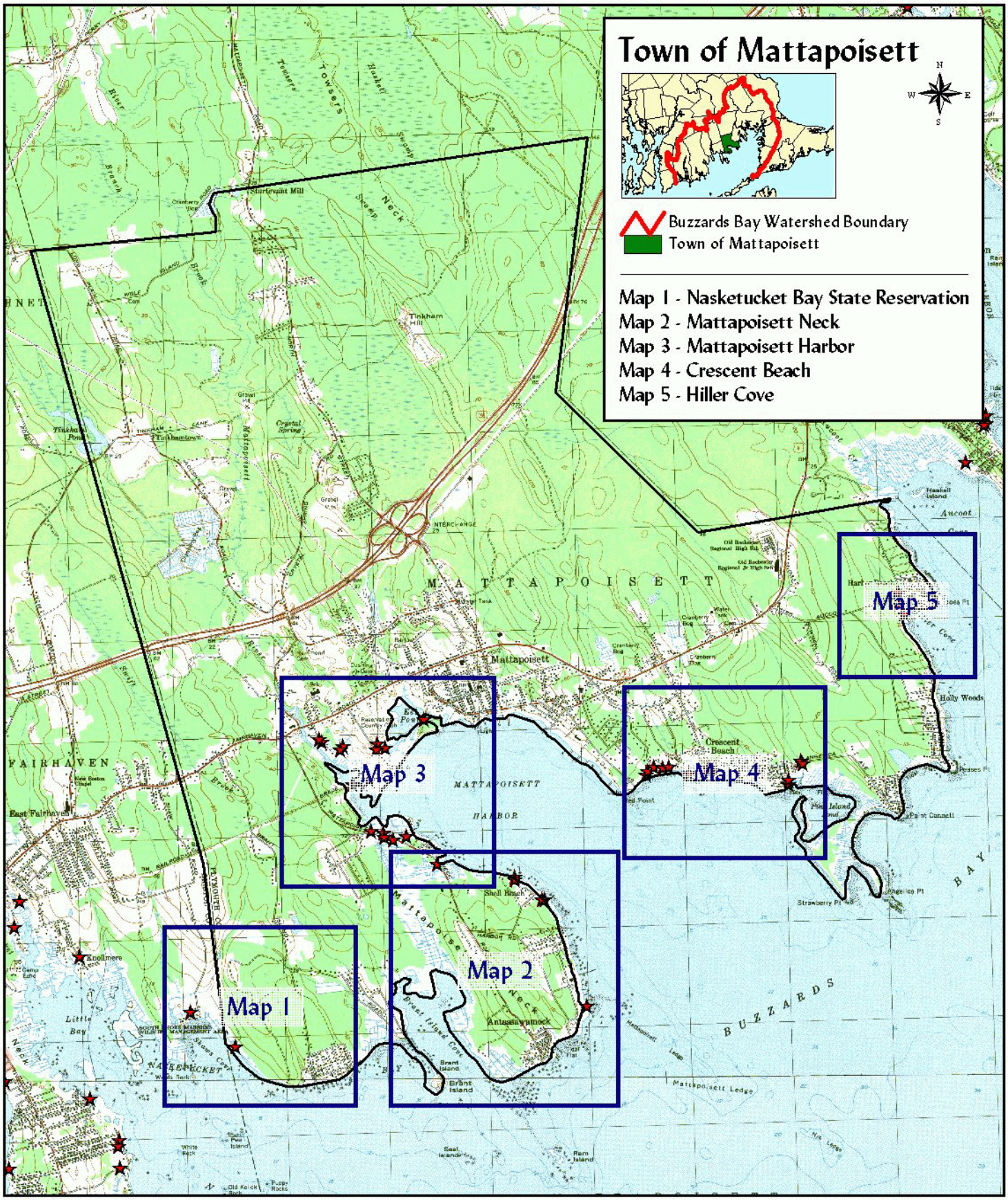
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Town of Mattapoisett



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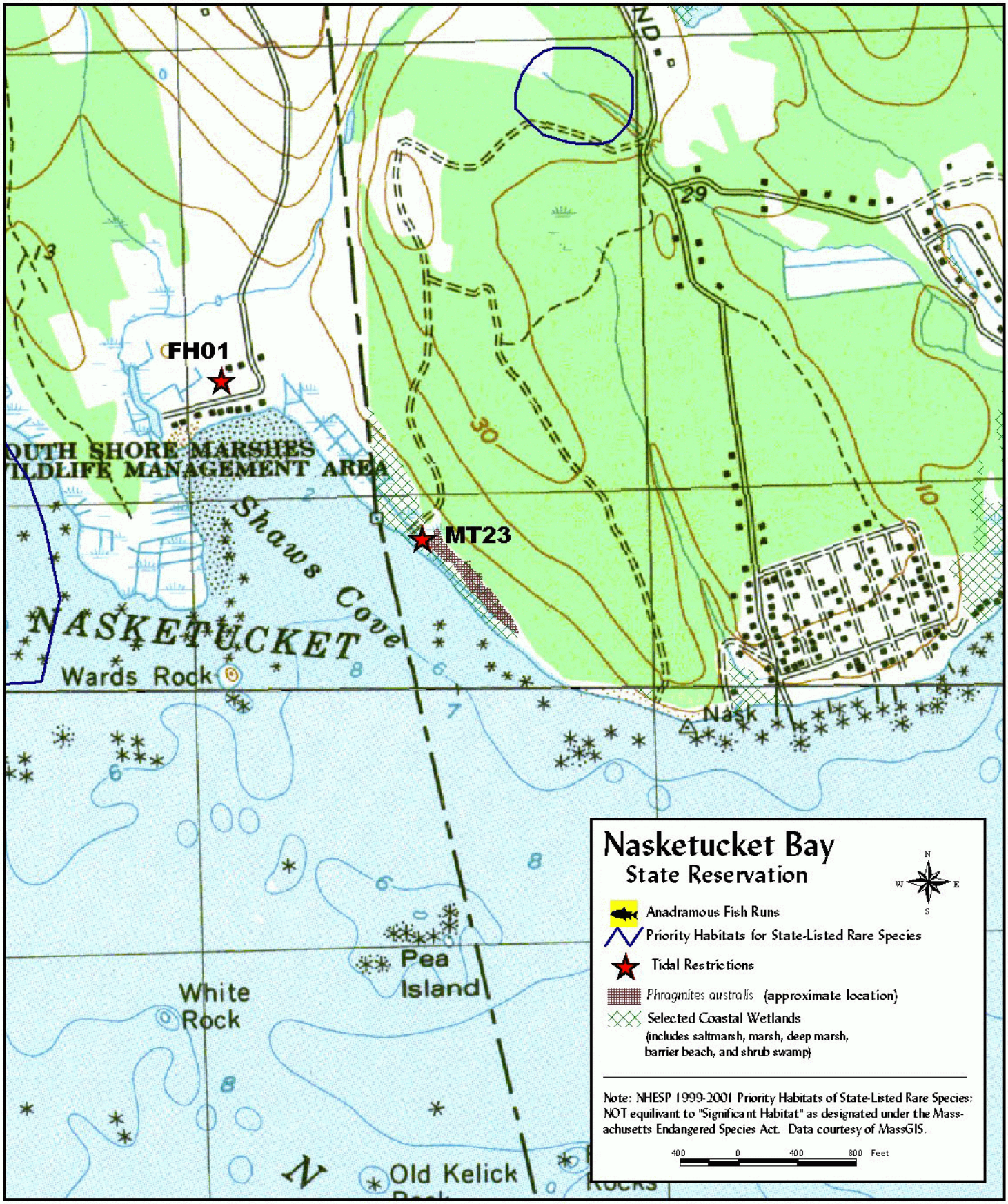
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Mattapoisett - Map 1



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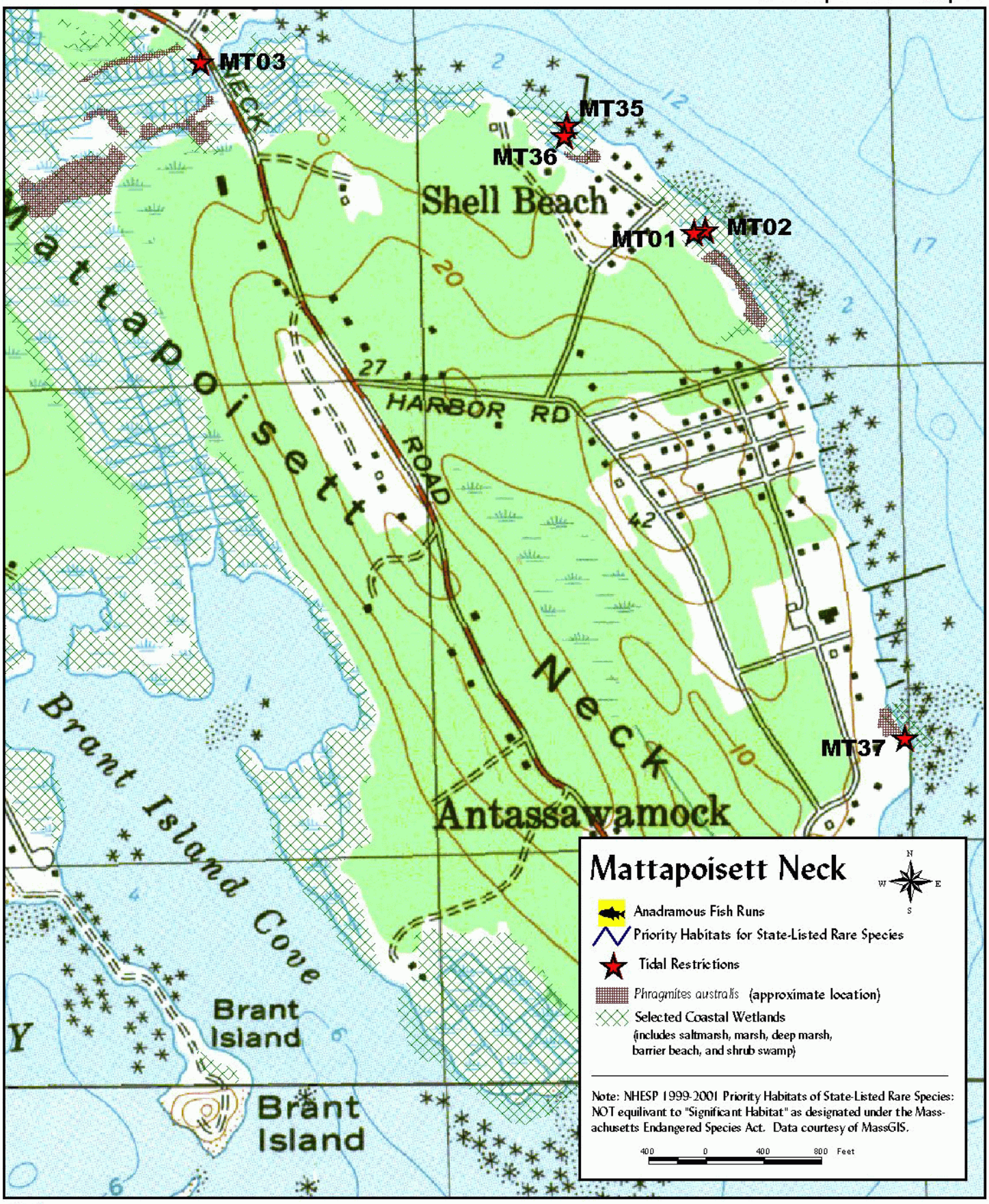

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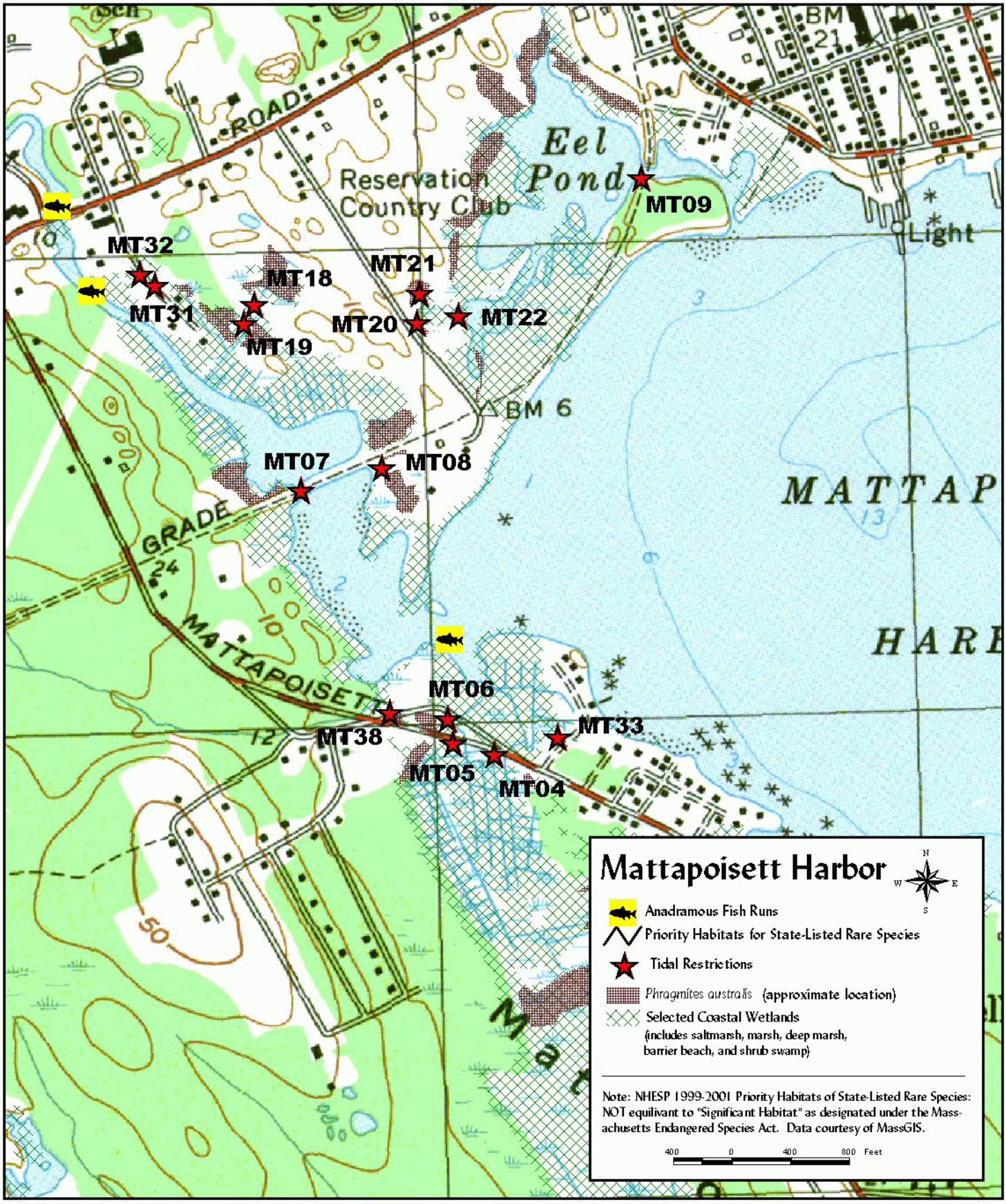
March 2002

Mattapoisett - Map 3



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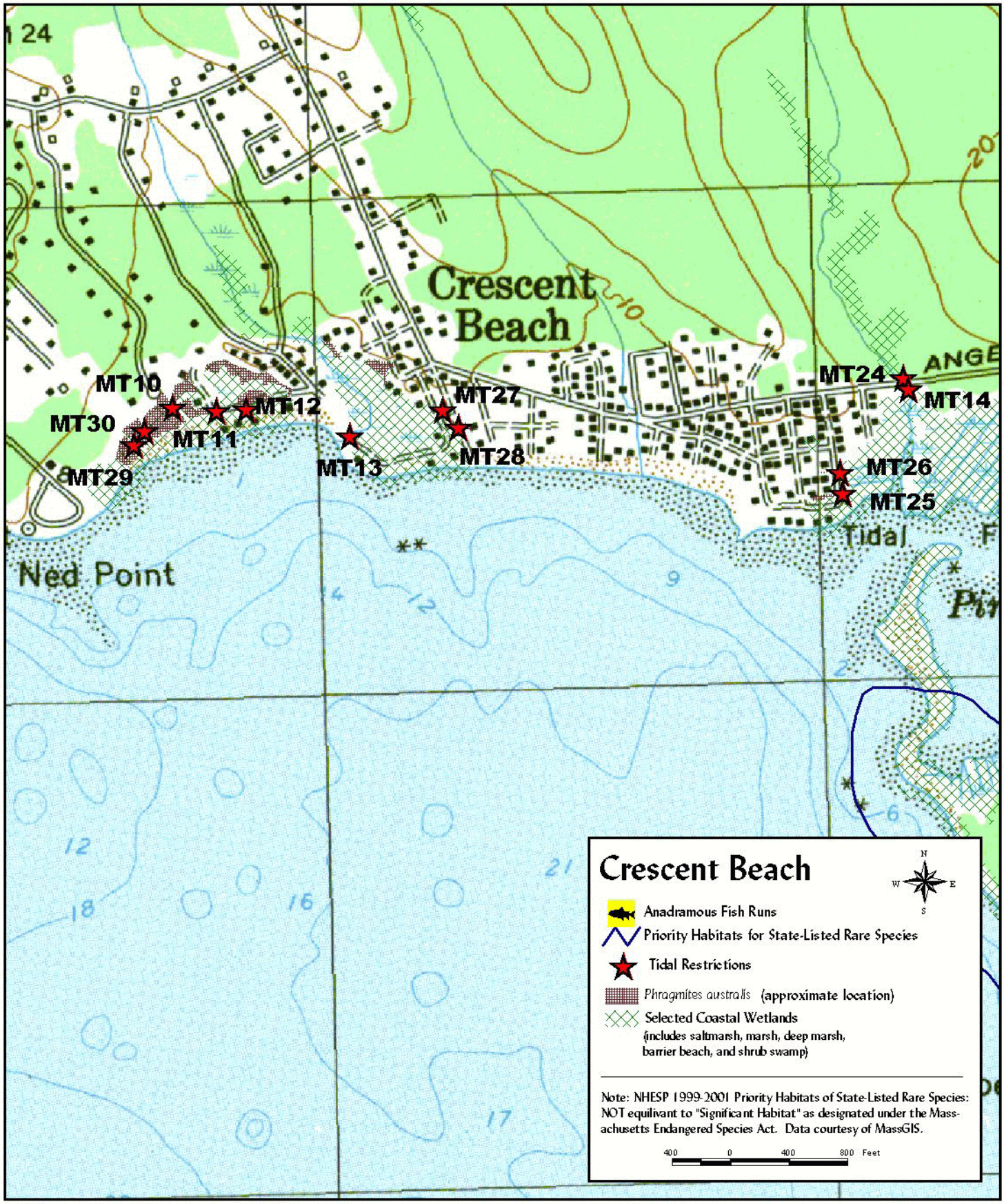

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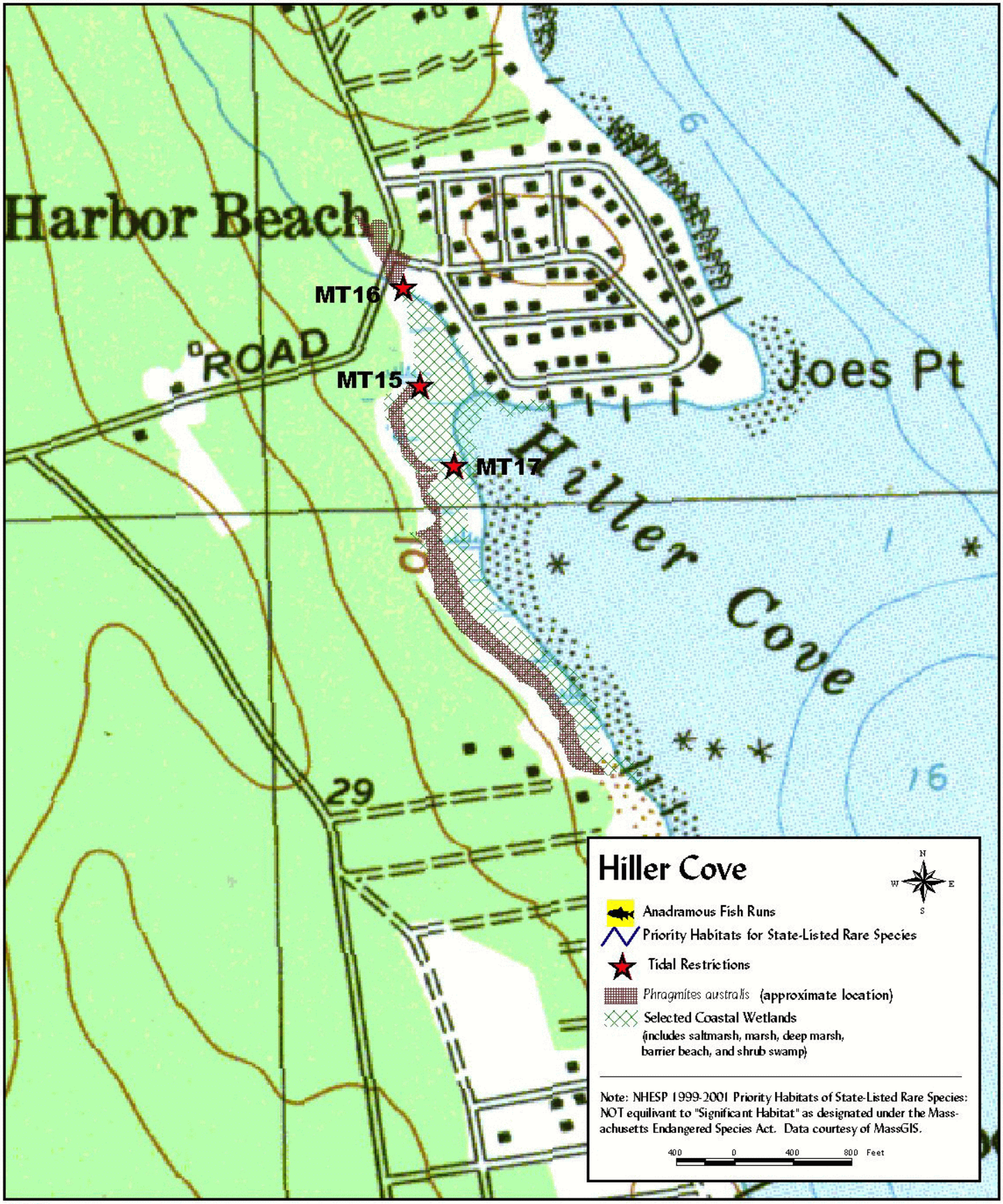
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

Mattapoisett - Map 5



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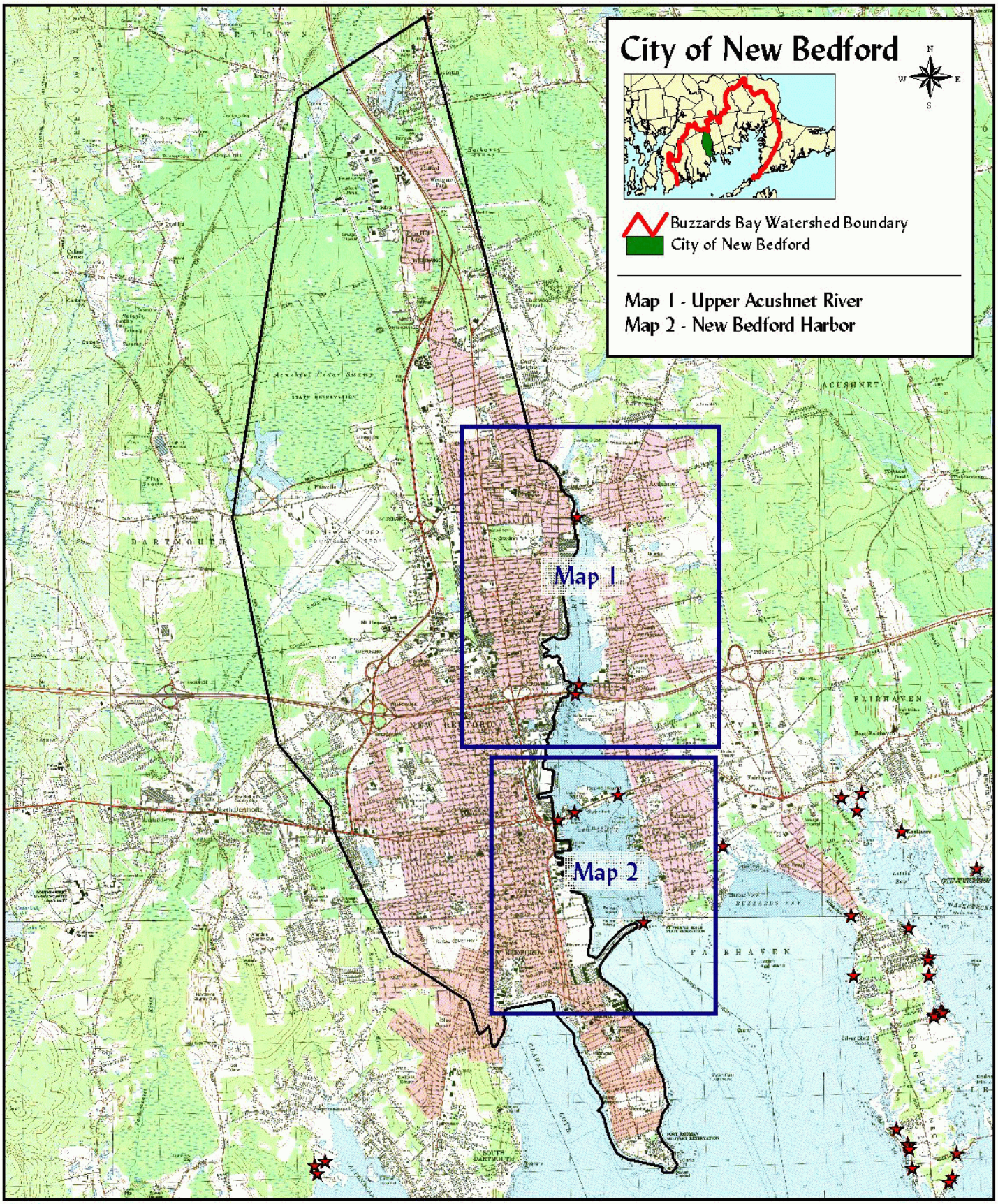
Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

City of New Bedford

New Bedford Locus Map



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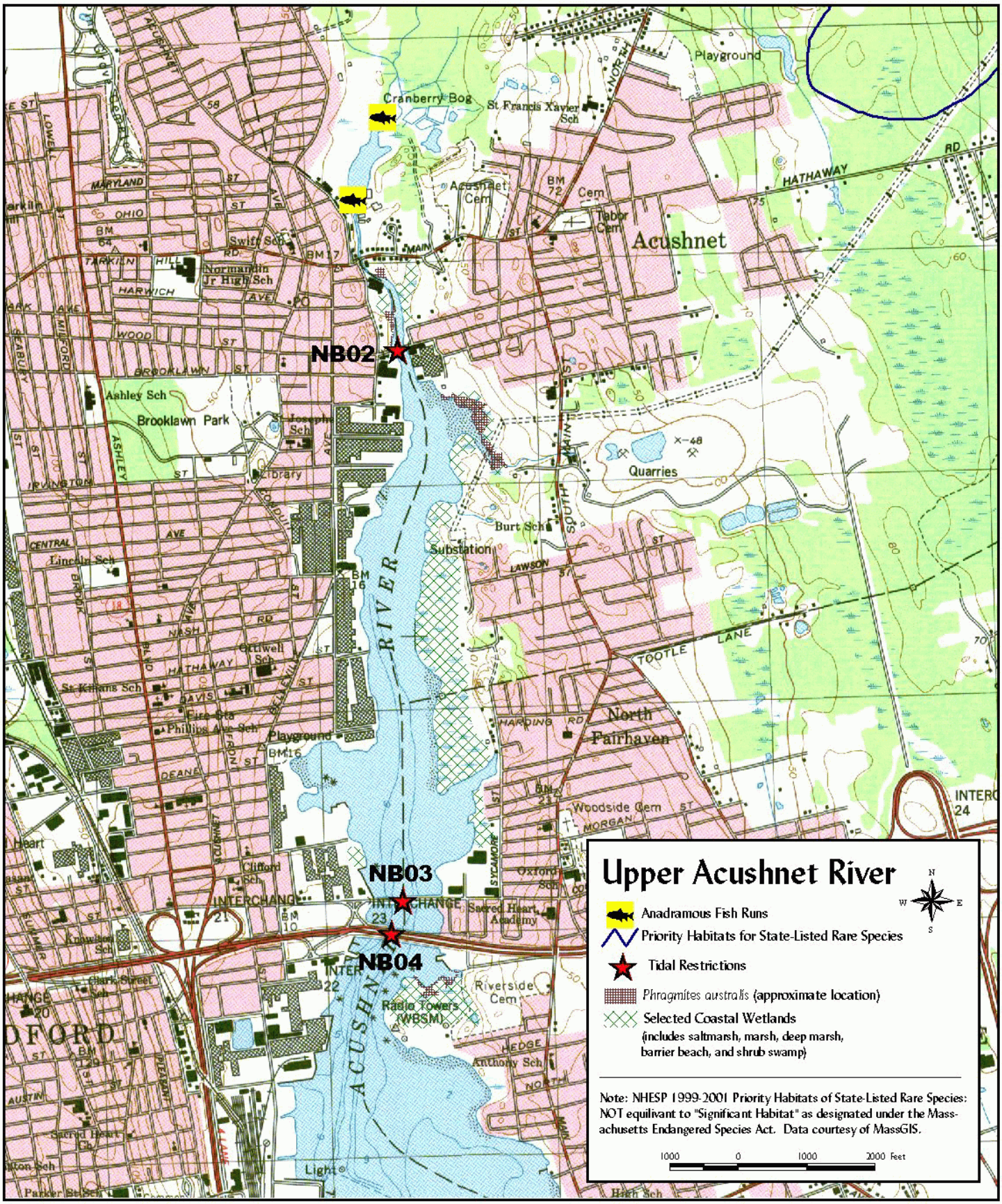
March 2002

New Bedford - Map 1



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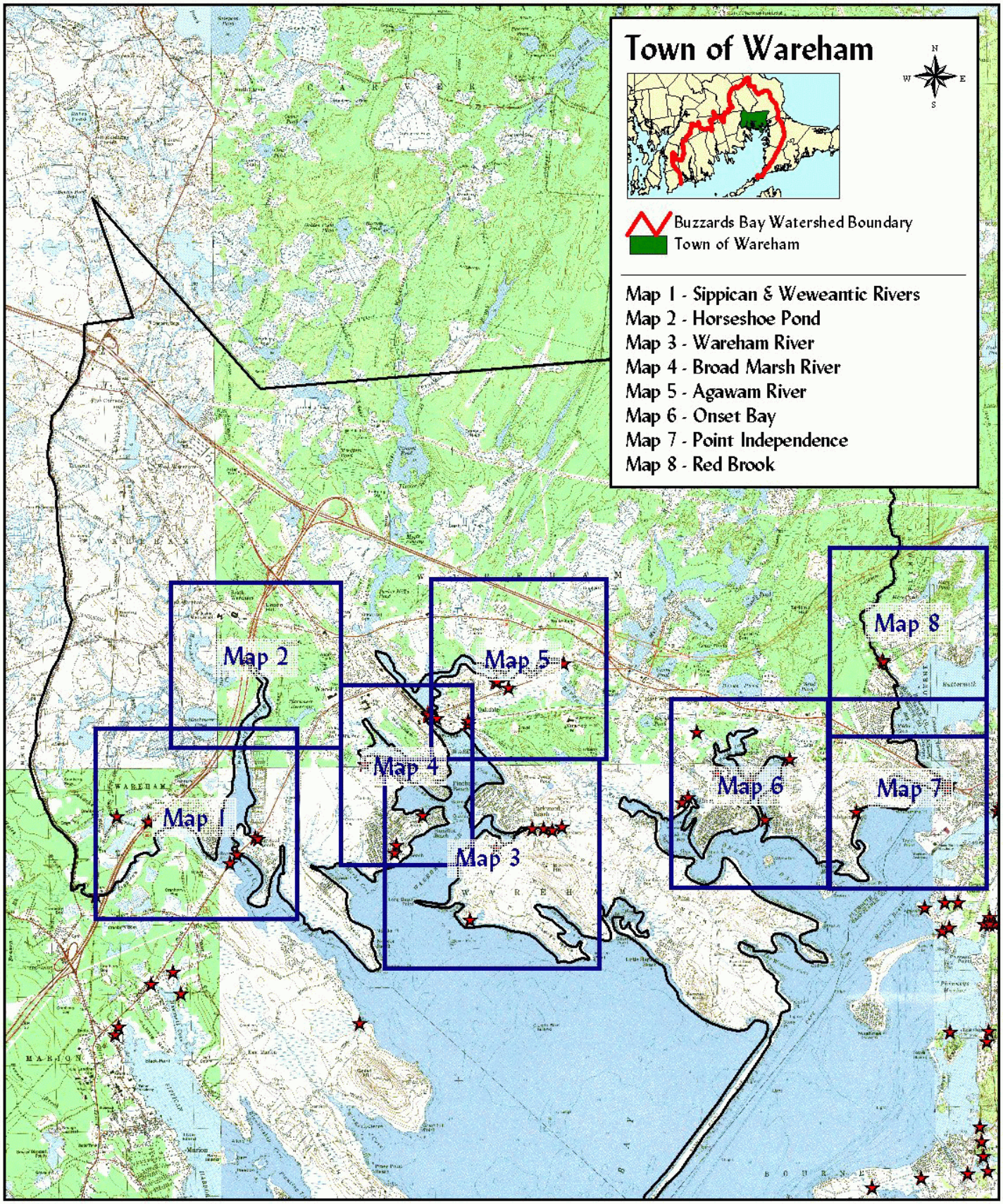
March 2002

Town of Wareham

Wareham Locus Map



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March 2002

Wareham - Map 1

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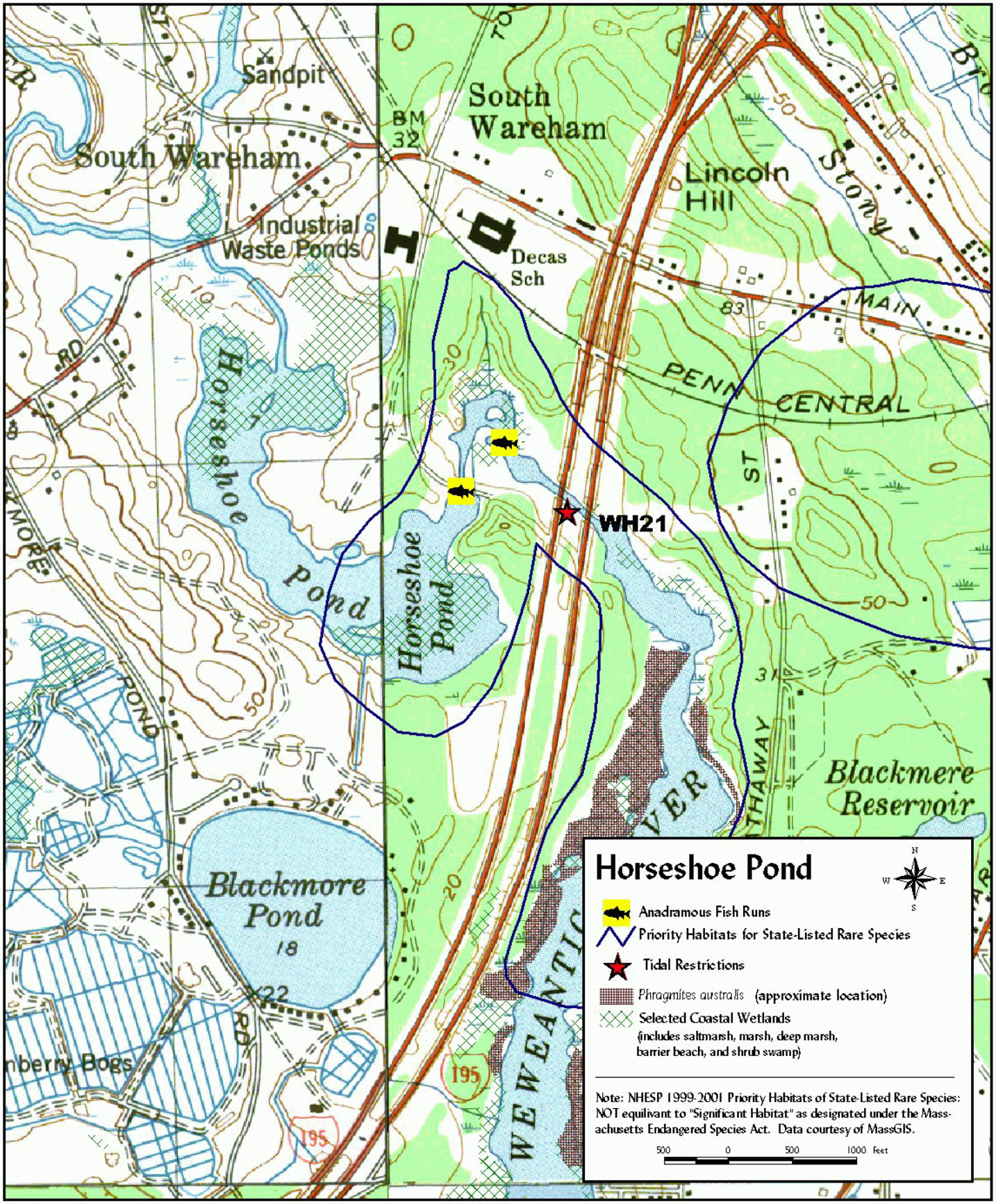
March 2002



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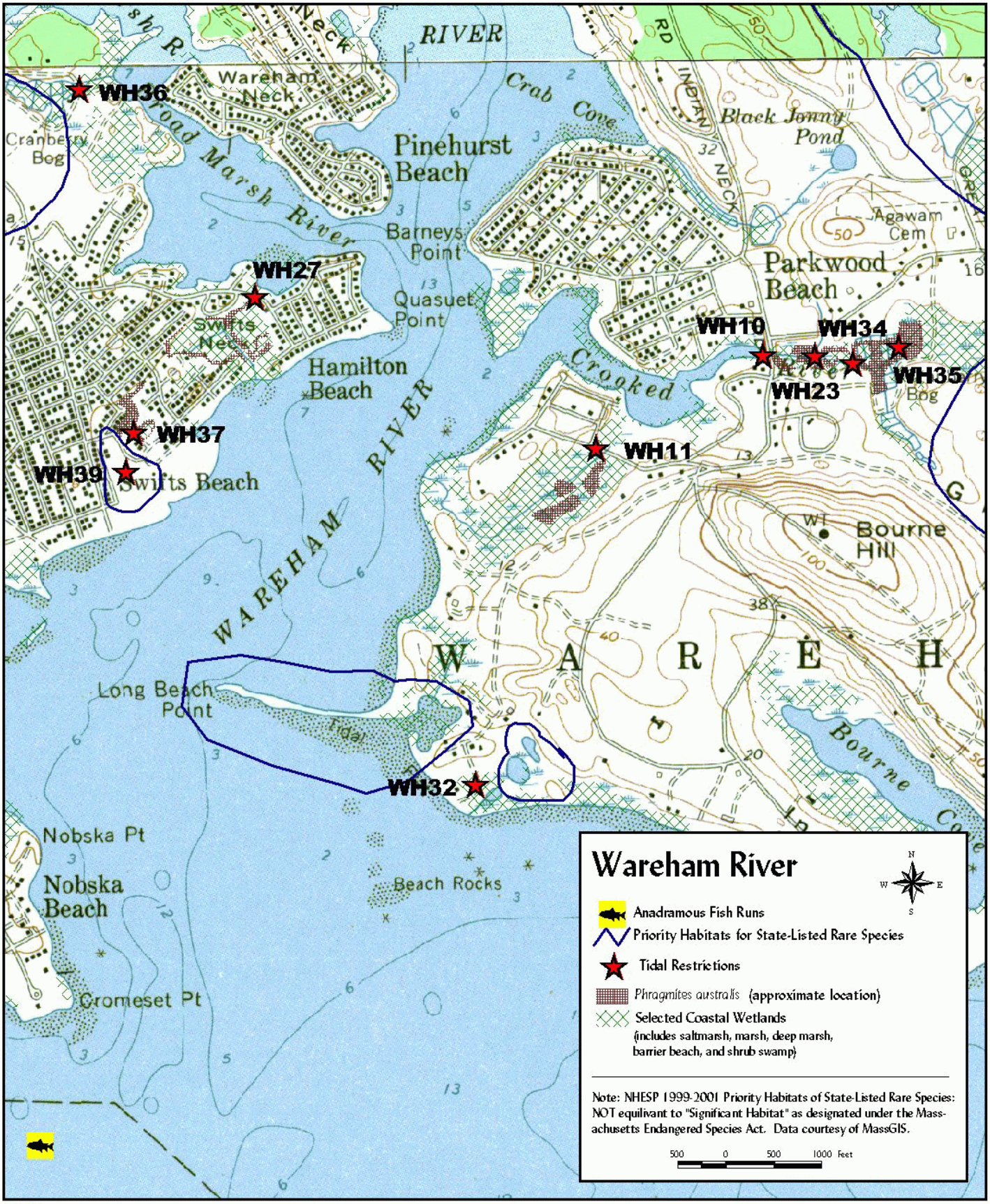
March 2002

Wareham - Map 3



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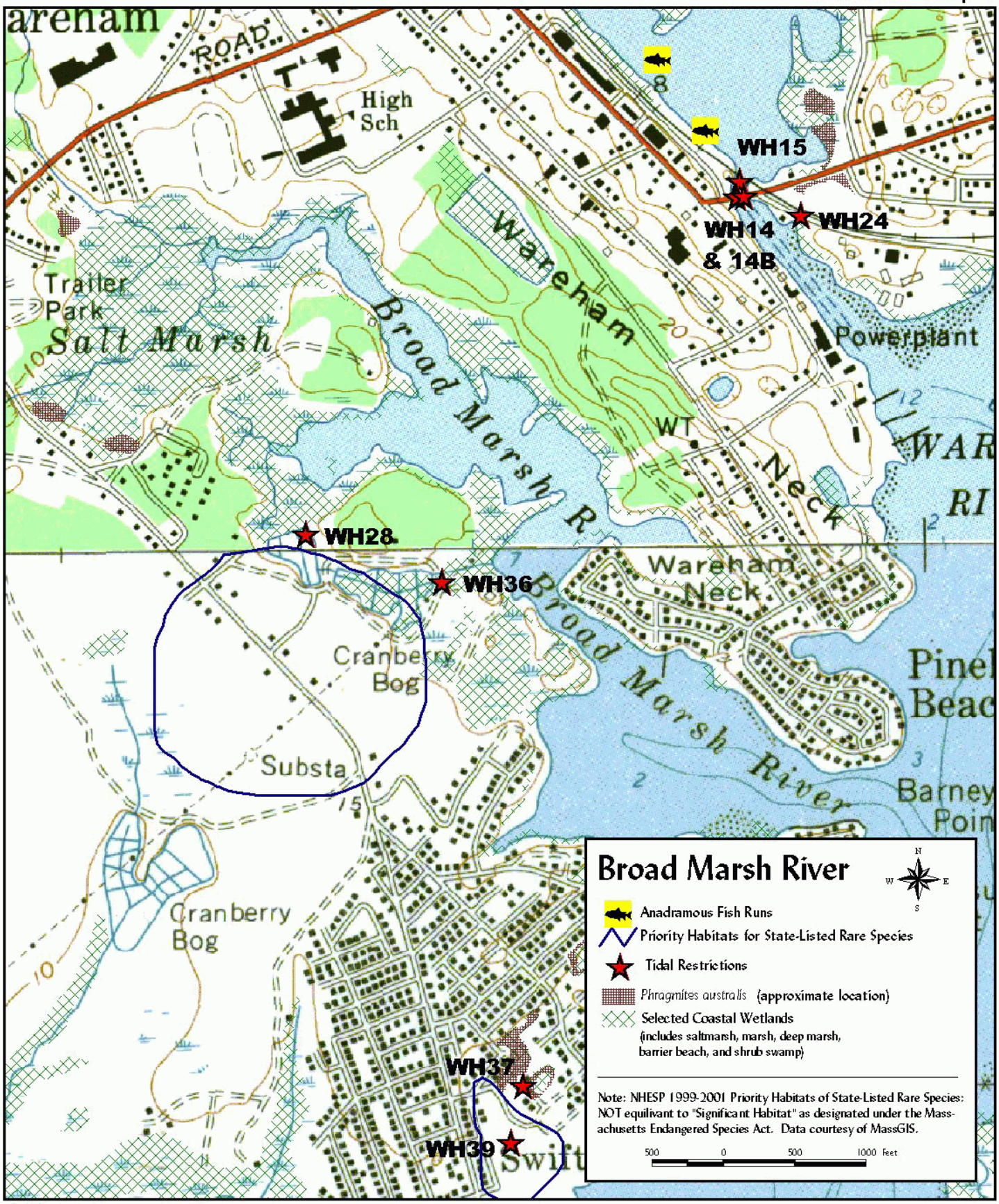

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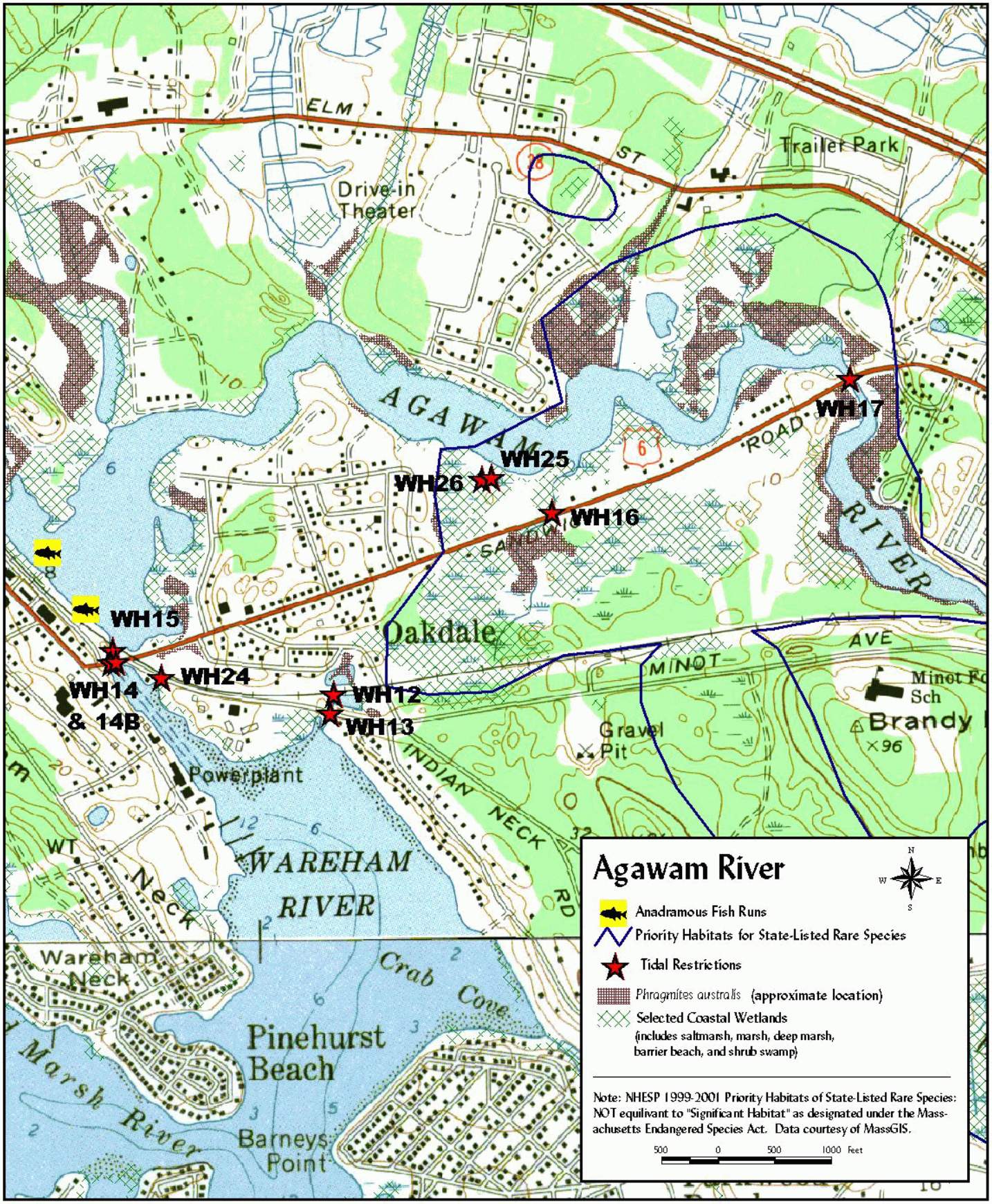
March 2002

Wareham - Map 5



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March 2002

Wareham - Map 7

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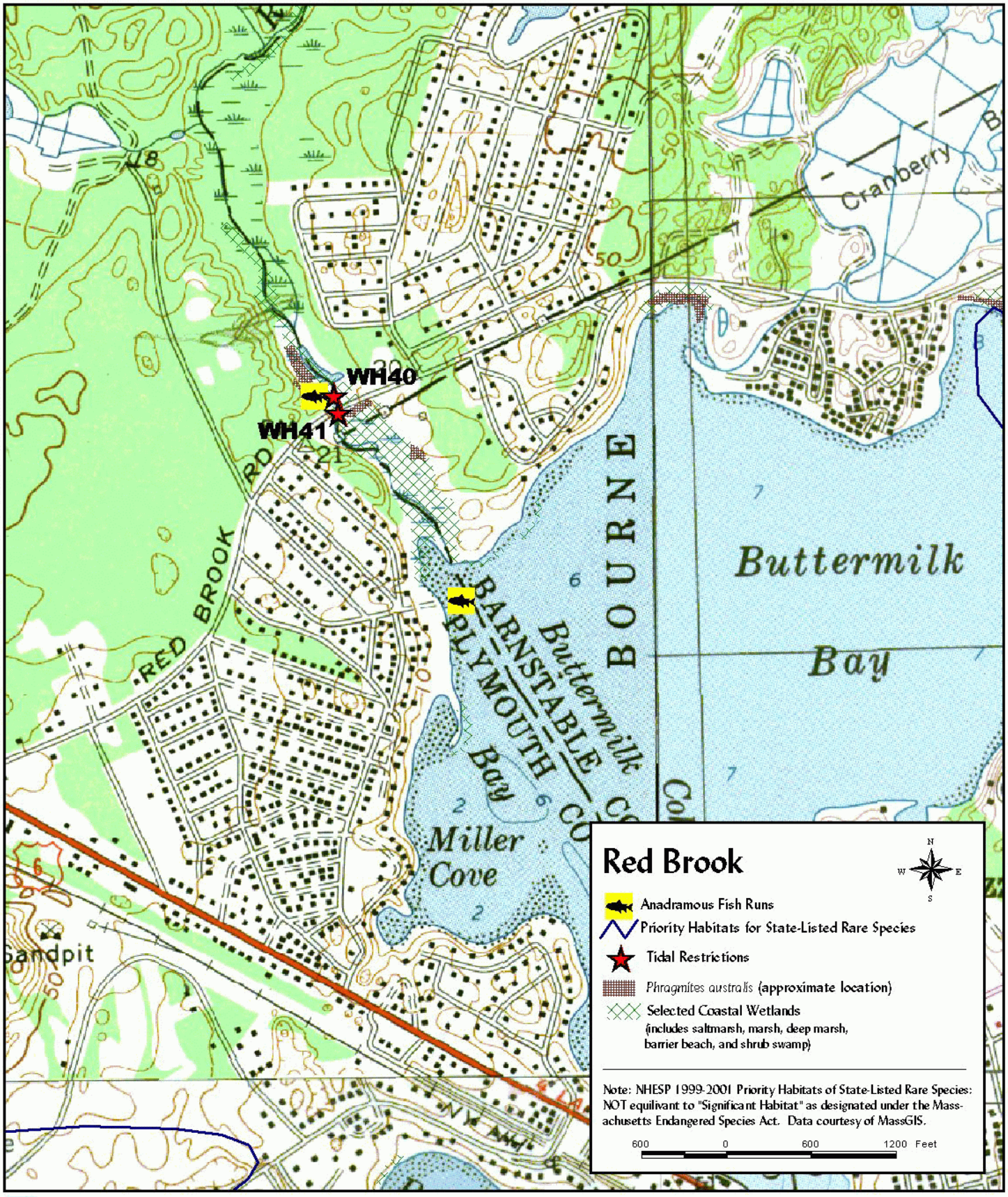
March 2002



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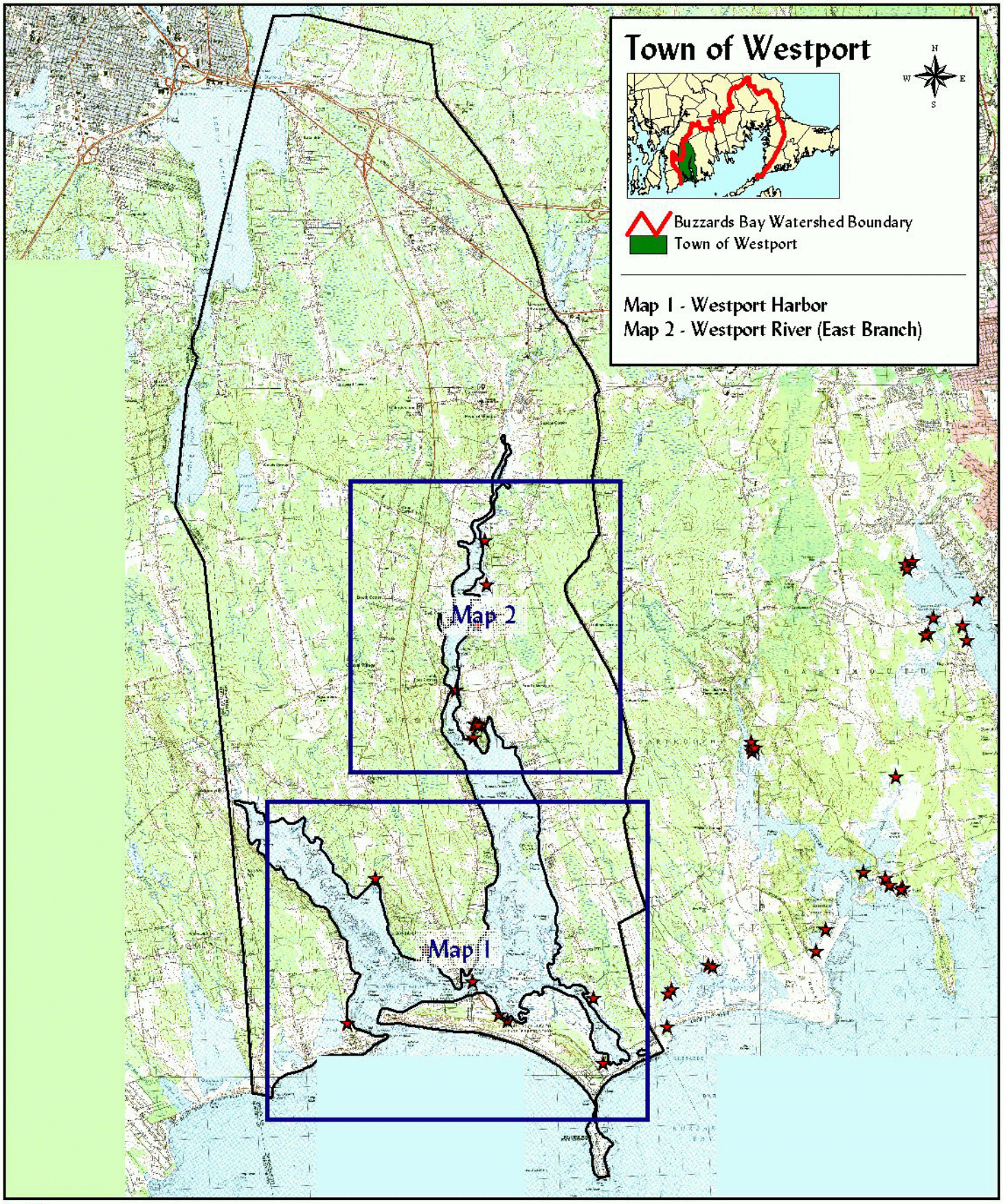
March 2002

Town of Westport

Westport Locus Map



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March 2002

Westport - Map 1

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March 2002

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Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed
March 2002

References

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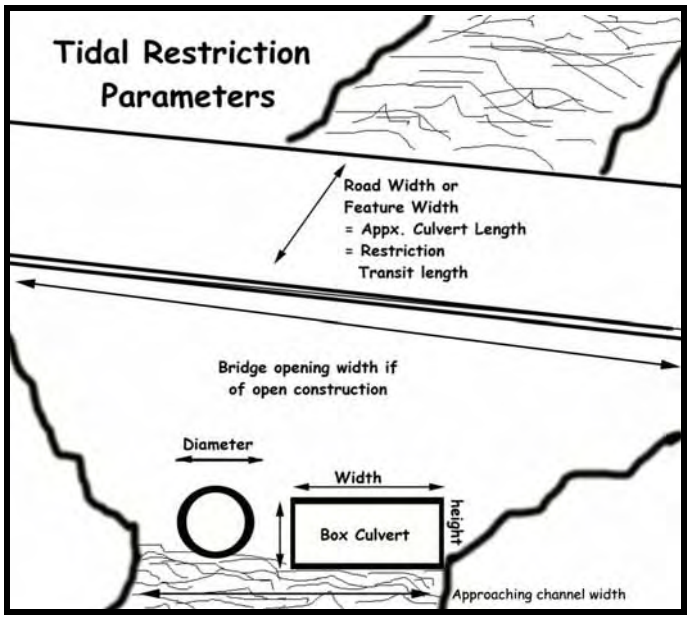
Appendix

Buzzards Bay Project Tidally Restricted/Deep Water Habitat
Field Inspection Sheet

(use back of sheet for additional notes, specify units)

Data Logger: _____ **Date:** _____

Site Location Information **Site #**_____
Town/City_____ County_____
USGS map_____ Aerial Photo#_____ Photo #_____
Restriction Feature Name (Road Name, etc.) _____
Channel, Bay and/or Wetland Name (if any) _____
Proximity to low lying developed areas: ❑ yes ❑ no



Time, and Tidal Conditions
Time___:___
Tide Elevation_____
Tide Direction_____

Principal Restriction Feature
Check all applicable:
❑ Road Bridge ❑ Railroad Bridge
❑ Foot Bridge ❑ Barrier Beach
❑ Road ❑ Dike or Berm
❑ Footpath ❑ Railroad tracks
❑ Other _____
If applicable:
Approaching Channel Width ~_____ Feet

Restriction Opening *Check all applicable:*
❑ No Opening ❑ Pipe Culvert
❑ Box Culvert ❑ Channel
❑ Ditch ❑ Tide Gate ❑ Other _____

Bridge Info *Check All Applicable*:
❑ Draw Bridge ❑ Piers Present ❑ Mostly fill with culverts
Condition (Circle 1): excellent good fair poor
Date Built (if visible)_____ ~Length in Feet_____ # of Piers _____ # of Lanes____
Comments:_____

Culvert Info
Culvert # 1: *Check One:*
❑ Corrugated Metal ❑ Concrete ❑ Clay ❑ Pebble ❑ Conglomerate ❑ Other _____
Condition (*Circle One*): excellent good fair poor
Dimensions: ❑ circle: diameter:_____ ❑ Box: w:_____ x h:_____
Length:_____ ft. dimension were ❑ measured ❑ estimated
Comments: _____

Culvert # 2: *Check One:*
❑ Corrugated Metal ❑ Concrete ❑ Clay ❑ Pebble ❑ Conglomerate ❑ Other _____
Condition (Circle One): excellent good fair poor
Dimensions: ❑ circle: diameter:_____ ❑ Box: w:_____ x h:_____
Length:_____ ft. dimension were ❑ measured ❑ estimated
Comments: _____

Fill obstruction *(Circle one):* Road Footpath Dike Rocks/Rubble Barrier Beach
Length: _____ Width: _____
Surface type:_____ # of lanes (if applicable):_____
Comments: _____

Evidence of Restriction *(Check one or more):*
❑ seaward scouring basin ❑ upstream scouring basin ❑ bank erosion
❑ low marsh ❑ slumping ❑ culvert broken
❑ culvert clogged ❑ vegetation die back ❑ *Lythrum salicornia*
❑ *Phragmites australis* ❑ culvert invert problem detected
❑ ponded water on upstream side
❑ ponded water on seaward side of dike or road
❑ seaward culvert opening submerged at mean high tide
Comments:_____

Wetland Plant Community Characteristics
Dominance type, **seaward** side of tidal restriction_____

Dominance type, **upstream** side of tidal restriction_____

Some common plant species observed_____

Acres of upgradient *Phragmites* _____

Acres of upgradient salt marsh _____

Acres of upgradient wetlands _____

Ares of upgradient surface water _____

Additional Comments:

Common tidal marsh plants in Massachusetts		
Common name	**Scientific name**	**Type of tidal wetland**
smooth cordgrass	*Spartina alterniflora*	salt and brackish marshes
salt hay grass	*Spartina patens*	salt and brackish marshes
salt grass	*Distichlis spicata*	salt and brackish marshes
black grass	*Juncus gerardii*	salt and brackish marshes
glassworts	*Salicornia spp*.	salt marshes
seaside arrowgrass	*Triglochin maritima*	salt marshes
seaside plantain	*Plantago maritima*	salt marshes
high-tide bush	*Iva frutescens*	salt marshes
groundsel bush	*Baccharis halimifolia*	salt and brackish marshes
salt marsh bulrush	*Scirpus robustus*	salt and brackish marshes
seaside goldenrod	*Solidago sempervirens*	salt and brackish marshes
salt marsh aster	*Aster tenuifolius*	salt and brackish marshes
common reed	*Phragmites australis*	salt, brackish, and fresh marshes
switchgrass	*Panicum virgatum*	salt, brackish, and fresh marshes
three-squares	*Scirpus pungens* and *S. americanus*	salt marshes
rose mallow	*Hibiscus moscheutos*	brackish marshes
creeping bent grass	*Agrostis stolonifera* var. *compacta*	brackish and fresh marshes
narrow-leaved cattail	*Typha angustifolia*	brackish marshes

(For illustrations, see *A Field Guide to Coastal Wetland Plants of the Northeastern United States* by R.W. Tiner, 1986, University of Massachusetts Press)

List of marine and estuarine fish and shellfish dependent on Massachusetts tidal wetlands.			
Species	**Adult Use**	**Spawn In/Near Tidal Wetlands**	**Nursery Use**
Striped bass	x	x	x
Bluefish			x
Winter flounder	x	x	x
Scup			x
Tautog			x
Black sea bass			x
Menhaden	x	x	x
Summer flounder			x
Weakfish	x		x
Eel	x		x
White perch	x	x	x
River herring	x	x	x
Shad	x		x
Smelt	x	x	x
Blue crab	x	x	x
Jonah crab			x
Lobster			x
Quahog	x	x	x
Soft shell clam	x	x	x
Bay scallop		x	x
Oyster	x	x	x
Conch			x

(Source: Paul Caruso, Division of Marine Fisheries)

THE WETLANDS RESTORATION Program
and the
PARTNERSHIP TO RESTORE MASSACHUSETTS WETLANDS

Invite you to.....GROWetlands*

You Can Help Reclaim Our Wetland Heritage...

Wetlands are important aquatic resources that provide habitat for fish, birds, and other wildlife; cleanse our waters; and provide storage for flood waters within our watersheds. Wetlands provide educational, open space, aesthetic, and recreational experiences. Before these values were understood, about 28% of the state's wetlands were filled. Since the 1960s, Massachusetts has had strong laws protecting its wetlands. Many of our remaining wetlands (about 600,000 acres) have been degraded, however. Now there is a program to restore wetlands that have been damaged or destroyed.

By Joining Others...

The Massachusetts Wetlands Restoration Program (MWRP) has established GROWetlands to encourage and support a collective effort by the citizens of the Commonwealth to restore our precious wetland heritage. MWRP supports inland and coastal wetlands restoration and especially seeks restoration sites that can help heal our degraded rivers and coastal waters.

A GROWetlands site becomes part of a statewide network of wetland restoration projects. GROWetlands projects can be sponsored by anyone - community groups, government agencies, youth groups, schools, land trusts, watershed associations, and landowners. Sponsors may propose a wetland to restore or work with MWRP to identify a wetland restoration site suitable for their group.

In The Partnership To Restore Massachusetts Wetlands...

GROWetlands projects are supported by and are part of the Partnership To Restore Massachusetts Wetlands, an alliance of agencies, organizations, businesses, and individuals committed to wetlands restoration. GROWetlands projects contribute to the partnership by restoring wetlands and providing information about their sites so others can learn from their experience.

* Groups Restoring Our Wetlands

Getting Started Is Easy, And...

GROWetlands project sponsors submit a brief project nomination form to MWRP, participate in a preliminary site visit and project assessment with a team of wetland experts, work with MWRP to prepare a work plan for the site, and then sign an agreement with MWRP to implement the work plan.

GROWetlands Sponsors can receive:

* technical information and support from wetland experts
* training sessions for sponsors, teachers, and others
* assistance identifying and obtaining funding
* access to MWRP's wetlands restoration data base
* support of the Partnership To Restore Massachusetts Wetlands
* publication of project results in technical and other literature
* recognition for their contribution to improving the state's wetlands

The Payback Is Forever.

The commitment to GROWetlands sites is long-term. A GROWetlands project is supported by MWRP and other partners from the time it is proposed through project organization and design, implementation, and post-implementation maintenance and monitoring. The payback is restored wetlands that will endure and enhance the lives of generations to come.

For More Information Contact...

GROWetlands
Wetlands Restoration Program
Executive Office of Environmental Affairs
One Winter Street, 5th Floor
Boston, MA 02108
617-626-1177

E-mail: christy.foote-smith@state.ma.us
MASSACHUSETTS WETLANDS RESTORATION PROGRAM

GROWetlands

Wetlands Restoration Project Nomination Form

Thank you for your interest in restoring Massachusetts wetlands. If you wish to sponsor a wetlands restoration project and would like to propose that it be considered part of the statewide wetlands restoration initiative called GROWetlands (Groups Restoring Our Wetlands) under the Massachusetts Wetlands Restoration Program, please fill out this form and return to the address below.

Project Name:_____

Project Location: City/Town_____Watershed_____

Please attach a U.S.G.S. quad sheet or other map on which the site location has been marked.

If available, please attach current and historic photos and aerial photos of the project site.

Project Sponsor:_____

Designated Representative:_____

Telephone:_____FAX_____E-mail_____

Address:_____

Project Co-Sponsors:_____

Landowner:_____

Has landowner expressed support for wetlands restoration at the site? Yes__No__
Explain:

Is all or part of the wetland totally destroyed or does it exist in a degraded condition?
Explain:

GROWetlands Nomination Form - Continued

Briefly describe the current condition of the wetland to be restored.

Is the wetland part of an agricultural facility or was it farmland in the past?
___Is in agricultural use now. ___Was never farmed.
___Was formerly agricultural land.
Explain:

What caused the impact to the wetland?

Is the wetland area under an outstanding enforcement order? Yes___ No___
If yes, explain:

What is the approximate size of the area proposed to be restored?

What is the approximate size of adjacent wetland areas, if any?

Please attach a sketch of the area showing the wetland to be restored, adjacent wetlands and water bodies, roads and buildings in the immediate vicinity, and other pertinent information to describe the site. If possible, indicate different wetland types that are present (*Phragmites* swamp, wet meadow, forested wetland, etc.).
If known, what was the wetland type(s) prior to impact?

If known, what restoration activity would be required to restore the wetland?

If known, what is the approximate cost of the restoration?

Has any funding been identified for this project? Yes___ No___
If yes, describe:

Would you like MWRP to arrange a site visit and evaluation by a Wetlands Restoration Assistance Team, a group of volunteer wetlands scientists?
Yes___ No___
Signed:_____
Date:_____

Please send this form with attachments to: GROWetlands EOEA Wetlands Restoration Program One Winter Street - 5th Floor, Boston, MA 02108 tel. 617-626-1177. A representative of MWRP will contact you as soon as possible. Please call us if you have any questions!

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
BN01	Bourne	railroad culver	9	$53,900	$112,400	railroad culvert	N	0.00	0.48	Not calc.	0.48	Not calc.	0.48	100.0%	$53,948	$112,391	$112,391
BN02	Bourne	Road: road	5	$42,900	$24,300	Road	N	4.37	1.77	Not calc.	6.14	Not calc.	0.00	0.0%	$42,925	$24,251	$6,991
BN03	Bourne	bridge: bridge	10	$3,500,000	$94,900	bridge	N	459.21	36.88	Not calc.	496.09	Not calc.	1.74	4.7%	$3,500,000	$94,902	$7,055
BN04	Bourne	bridge: railroad	10	$2,500,000	$67,800	bridge	N	461.45	36.88	Not calc.	498.33	Not calc.	1.74	4.7%	$2,500,000	$67,787	$5,017
BN06	Bourne	road: road	11	$319,100	$106,700	road	N	0.00	2.99	Not calc.	2.99	Not calc.	2.99	100.0%	$319,126	$106,731	$106,731
BN07	Bourne	culvert: road	6	$9,700	$5,700	culvert	N	0.00	1.69	Not calc.	1.69	Not calc.	0.00	0.0%	$9,710	$5,745	$5,745
BN08	Bourne	road: road	11	$453,000	$43,800	road	N	0.00	10.35	Not calc.	10.35	Not calc.	4.98	48.1%	$452,950	$43,763	$43,763
BN09	Bourne	bridge: road	14	$560,000	$7,400	bridge	N	70.40	75.40	Not calc.	145.80	Not calc.	10.00	13.3%	$560,000	$7,427	$3,841
BN10	Bourne	bridge: railroad	13	$510,000	$6,700	bridge	N	71.20	76.40	Not calc.	147.60	Not calc.	10.00	13.1%	$510,000	$6,675	$3,455
BN11	Bourne	tide gate: road	13	$19,600	$5,800	tide gate	N	0.00	3.39	Not calc.	3.39	Not calc.	0.00	0.0%	$19,576	$5,775	$5,775
BN12	Bourne	culvert: road	13	$11,700	$6,900	culvert	N	2.48	1.69	Not calc.	4.17	Not calc.	0.24	14.2%	$11,666	$6,903	$2,798
BN13	Bourne	railroad culver	7	$437,900	$43,790,400	railroad culvert	N	1.17	0.01	Not calc.	1.18	Not calc.	0.00	0.0%	$437,904	$43,790,417	$371,105
BN14	Bourne	bridge: road	14	$450,000	$9,200	bridge	N	20.93	49.05	Not calc.	69.98	Not calc.	2.64	5.4%	$450,000	$9,174	$6,430
BN15	Bourne	culvert: road	13	$35,600	$4,500	culvert	N	0.00	8.00	Not calc.	8.00	Not calc.	1.57	19.6%	$35,641	$4,455	$4,455
BN16	Bourne	culvert: road	15	$21,000	$5,600	culvert	N	0.00	3.76	Not calc.	3.76	Not calc.	3.76	100.0%	$21,029	$5,593	$5,593
BN17	Bourne	dike: driveway	6	$15,200	$29,100	dike	N	0.00	0.52	Not calc.	0.52	Not calc.	0.17	32.7%	$15,155	$29,145	$29,145
BN21	Bourne	road: road	10	$13,500	$19,300	road	N	0.00	0.70	Not calc.	0.70	Not calc.	0.62	88.6%	$13,543	$19,347	$19,347
BN24	Bourne	road: driveway	9	$35,200	$6,400	road		0.00	5.52	Not calc.	5.52	Not calc.	0.72	13.0%	$35,177	$6,373	$6,373
BN25	Bourne	road: road	8	$20,600	$38,800	road	N	0.00	0.53	Not calc.	0.53	Not calc.	0.12	22.6%	$20,578	$38,826	$38,826
BN26	Bourne	dike: dike	11	$31,000	$24,200	dike	N	0.00	1.28	Not calc.	1.28	1.27	0.22	17.2%	$31,006	$24,223	$24,223
BN27	Bourne	driveway: drive	12	$12,500	$12,900	driveway	N	0.00	0.97	Not calc.	0.97	Not calc.	0.97	100.0%	$12,506	$12,893	$12,893
BN28	Bourne	dike: dike	17	$21,500	$21,000	dike	N	0.00	1.02	Not calc.	1.02	Not calc.	1.02	100.0%	$21,459	$21,038	$21,038
BN29	Bourne	railroad: dike	12	$35,200	$28,800	railroad	N	0.00	1.22	Not calc.	1.22	Not calc.	1.22	100.0%	$35,177	$28,834	$28,834
BN30	Bourne	dike: dike	9	$27,500	$10,000	dike	N	0.00	2.74	Not calc.	2.74	Not calc.	0.55	20.1%	$27,530	$10,047	$10,047
BN32	Bourne	bridge: path	9	$119,400	$20,600	bridge	N	0.40	5.79	Not calc.	6.19	Not calc.	2.99	51.6%	$119,435	$20,628	$19,295
BN33	Bourne	railroad bridge	11	$2,500,000	$54,000	railroad bridge	N	12.46	46.28	Not calc.	58.74	Not calc.	2.40	5.2%	$2,500,000	$54,019	$42,560
BN34	Bourne	dike: dike	9	$31,000	$91,200	dike	N	0.00	0.34	Not calc.	0.34	Not calc.	0.34	100.0%	$31,006	$91,194	$91,194
BN35	Bourne	dike: dike	10	$15,900	$45,200	dike	N	0.00	0.35	Not calc.	0.35	Not calc.	0.35	99.2%	$15,943	$45,165	$45,165
BN36	Bourne	dike: dike	10	$31,000	$52,600	dike	N	0.00	0.59	Not calc.	0.59	Not calc.	0.59	100.0%	$31,006	$52,552	$52,552
BN37	Bourne	dike: dike	9	$27,900	$47,200	dike	N	0.00	0.59	Not calc.	0.59	Not calc.	0.59	100.0%	$27,862	$47,224	$47,224
BN38	Bourne	road: road	15	$93,600	$11,500	road	N	0.00	8.16	Not calc.	8.16	Not calc.	0.48	5.9%	$93,574	$11,467	$11,467
BN39	Bourne	dike: dike	15	$15,900	$3,800	dike	N	0.00	4.16	Not calc.	4.16	Not calc.	3.02	72.6%	$15,943	$3,833	$3,833
BN40	Bourne	dike: dike	8	$55,600	$31,200	dike	N	0.00	1.78	Not calc.	1.78	Not calc.	1.70	95.5%	$55,569	$31,219	$31,219
BN43	Bourne	dike: dike	11	$73,100	$8,000	dike	N	0.00	9.10	Not calc.	9.10	Not calc.	4.95	54.4%	$73,126	$8,036	$8,036
BN44	Bourne	railroad: railroa	4	$536,500	$1,625,900	railroad	N	0.17	0.33	Not calc.	0.50	Not calc.	0.00	0.0%	$536,536	$1,625,867	$1,073,072
DA01	Dartmouth	bridge/road: rd	16	$1,100,000	$4,300	bridge/road	N	338.84	256.90	Not calc.	595.74	Not calc.	96.98	37.8%	$1,100,000	$4,282	$1,846

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
DA02	Dartmouth	bridge: road	**18**	**$500,000**	**$2,500**	bridge	N	24.00	199.33	Not calc.	223.33	Not calc.	95.12	47.7%	$500,000	$2,508	$2,239
DA03	Dartmouth	road: road	**14**	**$22,700**	**$3,000**	road	N	0.00	7.54	Not calc.	7.54	Not calc.	0.55	7.3%	$22,664	$3,006	$3,006
DA04	Dartmouth	culvert: road	**20**	**$21,300**	**$500**	culvert	N	33.46	38.81	Not calc.	72.27	Not calc.	20.73	53.4%	$21,273	$548	$294
DA05	Dartmouth	culvert: barrier	**15**	**$180,200**	**$4,600**	culvert	N	33.46	38.80	Not calc.	72.26	Not calc.	20.73	53.4%	$180,185	$4,644	$2,494
DA06	Dartmouth	road: road	**16**	**$9,200**	**$1,000**	road	N	0.00	8.96	Not calc.	8.96	Not calc.	4.45	49.7%	$9,246	$1,032	$1,032
DA07	Dartmouth	road: road	**16**	**$9,200**	**$1,000**	road	N	0.00	8.96	Not calc.	8.96	Not calc.	4.45	49.7%	$9,246	$1,032	$1,032
DA08	Dartmouth	culvert: road	**15**	**$90,100**	**$11,600**	culvert	N	0.00	7.75	Not calc.	16.71	Not calc.	7.60	98.1%	$90,093	$11,625	$5,392
DA09	Dartmouth	bridge: road	**18**	**$600,000**	**$3,300**	bridge	N	87.34	181.27	Not calc.	268.61	Not calc.	11.33	6.3%	$600,000	$3,310	$2,234
DA11	Dartmouth	road: road	**16**	**$7,600**	**$1,200**	road	N	0.31	6.25	Not calc.	6.56	Not calc.	2.17	34.7%	$7,578	$1,212	$1,155
DA12	Dartmouth	culvert: road	**16**	**$128,800**	**$13,900**	culvert	N	11.74	9.26	Not calc.	21.00	Not calc.	5.31	57.3%	$128,797	$13,909	$6,133
DA13	Dartmouth	dike: road	**11**	**$5,900**	**$4,100**	dike	N	0.67	1.44	Not calc.	2.11	Not calc.	0.00	0.0%	$5,860	$4,070	$2,777
DA14	Dartmouth	culvert: road	**13**	**$51,900**	**$7,600**	culvert	N	0.21	6.79	Not calc.	7.00	Not calc.	0.75	11.0%	$51,862	$7,638	$7,409
DA15	Dartmouth	culvert: road	**16**	**$12,200**	**$1,100**	culvert	N	0.51	11.04	Not calc.	11.55	Not calc.	2.09	18.9%	$12,160	$1,101	$1,053
DA16	Dartmouth	culvert: road	**11**	**$10,600**	**$1,200**	culvert	N	0.00	8.91	Not calc.	8.91	Not calc.	0.38	4.3%	$10,637	$1,194	$1,194
DA17	Dartmouth	culvert: road	**17**	**$6,200**	**$900**	culvert	N	0.00	6.79	Not calc.	6.79	Not calc.	0.00	0.0%	$6,206	$914	$914
DA18	Dartmouth	culvert: road	**11**	**$6,600**	**$2,600**	culvert	N	0.00	2.58	Not calc.	2.58	Not calc.	0.49	19.0%	$6,620	$2,566	$2,566
DA19	Dartmouth	wall: wall	**11**	**$10,600**	**$5,600**	wall	N	0.00	1.89	Not calc.	1.89	Not calc.	0.49	25.9%	$10,584	$5,600	$5,600
DA20	Dartmouth	culvert: road	**9**	**$24,100**	**$267,300**	culvert	N	0.00	0.09	Not calc.	0.09	Not calc.	0.09	100.0%	$24,054	$267,266	$267,266
DA21	Dartmouth	rocks: channe	**11**	**$10,900**	**$34,100**	rocks	N	0.00	0.32	Not calc.	0.32	Not calc.	0.32	100.0%	$10,904	$34,075	$34,075
DA22	Dartmouth	culvert: beach	**10**	**$49,400**	**$29,900**	culvert	N	0.00	1.65	Not calc.	1.65	Not calc.	0.45	27.3%	$49,416	$29,949	$29,949
DA23	Dartmouth	dike: path	**15**	**$12,000**	**$700**	dike	N	0.00	18.22	Not calc.	18.22	Not calc.	0.14	0.8%	$12,035	$661	$661
DA24	Dartmouth	dike: dike	**14**	**$12,800**	**$6,400**	dike	N	0.00	2.00	Not calc.	2.00	Not calc.	0.83	41.5%	$12,789	$6,394	$6,394
DA25	Dartmouth	dike: dike	**14**	**$13,500**	**$6,800**	dike	N	0.00	2.00	Not calc.	2.00	Not calc.	0.83	41.5%	$13,543	$6,771	$6,771
DA26	Dartmouth	dike: dike	**14**	**$12,800**	**$6,400**	dike	N	0.00	2.00	Not calc.	2.00	Not calc.	0.83	41.5%	$12,789	$6,394	$6,394
DA27	Dartmouth	dike: dike	**16**	**$13,900**	**$6,100**	dike	N	0.00	2.29	Not calc.	2.29	Not calc.	2.29	100.0%	$13,920	$6,078	$6,078
DA28	Dartmouth	dike: dike	**14**	**$10,700**	**$13,100**	dike	N	0.00	0.82	Not calc.	0.82	Not calc.	0.82	100.0%	$10,715	$13,068	$13,068
DA29	Dartmouth	dike: dike	**14**	**$10,700**	**$13,100**	dike	N	0.00	0.82	Not calc.	0.82	Not calc.	0.82	100.0%	$10,715	$13,068	$13,068
DA30	Dartmouth	dike: dike	**13**	**$12,000**	**$41,500**	dike	N	1.80	0.29	Not calc.	2.09	Not calc.	0.29	100.0%	$12,035	$41,499	$5,758
DA31	Dartmouth	wall: stone wa	**13**	**$10,900**	**$37,600**	wall	N	1.80	0.29	Not calc.	2.09	Not calc.	0.29	100.0%	$10,904	$37,600	$5,217
DA32	Dartmouth	bridge: bridge	**11**	**$45,000**	**$6,400**	bridge	N	0.00	7.02	Not calc.	7.02	Not calc.	1.79	25.5%	$45,000	$6,410	$6,410
FA01	Falmouth	culvert: road	**15**	**$6,000**	**$1,700**	culvert	N	0.00	3.62	Not calc.	3.62	Not calc.	3.62	100.0%	$6,002	$1,658	$1,658
FA02	Falmouth	wall: wall	**19**	**$13,900**	**$900**	wall	N	2.26	14.77	Not calc.	17.03	Not calc.	14.77	100.0%	$13,920	$942	$817
FA03	Falmouth	culvert: wall	**9**	**$12,000**	**$26,700**	culvert	N	0.00	0.45	Not calc.	0.45	Not calc.	0.45	100.0%	$12,004	$26,675	$26,675
FA04	Falmouth	culvert: road	**8**	**$7,200**	**$22,400**	culvert	N	0.00	0.32	Not calc.	0.32	Not calc.	0.32	100.0%	$7,161	$22,377	$22,377
FA05	Falmouth	culvert: road	**21**	**$19,300**	**$1,300**	culvert	N	2.26	14.56	Not calc.	16.82	Not calc.	14.56	100.0%	$19,327	$1,327	$1,149
FA06	Falmouth	culvert: road	**10**	**$19,300**	**$101,700**	culvert	N	0.00	0.19	Not calc.	0.19	Not calc.	0.19	100.0%	$19,327	$101,719	$101,719
FA07	Falmouth	tide gate: road	**13**	**$36,200**	**$4,200**	tide gate	N	0.40	8.70	Not calc.	9.10	Not calc.	7.31	84.0%	$36,220	$4,163	$3,980
FA08	Falmouth	culvert: road	**15**	**$11,200**	**$1,400**	culvert	N	0.40	8.16	Not calc.	8.56	Not calc.	6.77	83.0%	$11,158	$1,367	$1,304
FA09	Falmouth	culvert: road	**13**	**$22,300**	**$3,600**	culvert	N	0.40	6.22	Not calc.	6.62	Not calc.	4.82	77.5%	$22,316	$3,588	$3,371

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
FA10	Falmouth	road: road	17	$14,900	$7,900	road	N	4.18	1.88	Not calc.	6.06	Not calc.	1.88	100.0%	$14,862	$7,905	$2,452
FA11	Falmouth	bridge: bridge	9	$42,000	$9,400	bridge	N	3.21	4.47	Not calc.	7.68	Not calc.	1.63	36.5%	$42,000	$9,396	$5,469
FA12	Falmouth	bridge: bridge	8	$60,000	$20,000	bridge	N	4.47	3.00	Not calc.	7.47	Not calc.	1.63	54.3%	$60,000	$20,000	$8,032
FA13	Falmouth	culvert: road	8	$44,900	$115,200	culvert	N	0.94	0.39	Not calc.	1.33	Not calc.	0.39	100.0%	$44,910	$115,153	$33,767
FA14	Falmouth	bridge: road	9	$1,200,000	$61,400	bridge	N	6.00	19.55	Not calc.	25.55	Not calc.	3.89	19.9%	$1,200,000	$61,381	$46,967
FA15	Falmouth	bridge: road	9	$250,000	$28,800	bridge	N	4.30	8.69	Not calc.	12.99	Not calc.	3.92	45.1%	$250,000	$28,769	$19,246
FA16	Falmouth	bridge: road	9	$1,200,000	$161,300	bridge	N	18.83	7.44	Not calc.	26.27	Not calc.	2.36	31.7%	$1,200,000	$161,290	$45,679
FA17	Falmouth	culvert: railroa	10	$226,000	$59,800	culvert	N	6.76	3.78	Not calc.	10.54	Not calc.	2.36	62.4%	$225,986	$59,785	$21,441
FA18	Falmouth	culvert: dike	7	$30,400	$338,100	culvert	N	0.13	0.09	Not calc.	0.22	Not calc.	0.09	100.0%	$30,427	$338,073	$138,303
FA19	Falmouth	culvert: road	15	$18,900	$5,800	culvert	N	2.31	3.25	Not calc.	5.56	Not calc.	0.71	21.8%	$18,909	$5,818	$3,401
FA20	Falmouth	culvert: railroa	12	$124,000	$56,600	culvert	N	2.19	2.19	Not calc.	4.38	Not calc.	2.19	100.0%	$124,024	$56,632	$28,316
FA21	Falmouth	culvert: railroa	11	$124,000	$50,200	culvert	N	0.00	2.47	Not calc.	2.47	Not calc.	2.47	100.0%	$124,024	$50,212	$50,212
FA22	Falmouth	culvert: road	1	$34,700	$1,400	culvert	N	7.56	25.50	Not calc.	33.06	Not calc.	0.00	0.0%	$34,737	$1,362	$1,051
FA25	Falmouth	culvert: road	5	$24,100	$50,100	culvert	N	0.00	0.48	Not calc.	0.48	Not calc.	0.00	0.0%	$24,054	$50,112	$50,112
FA26	Falmouth	culvert: road	12	$12,500	$3,400	culvert		0.70	3.68	Not calc.	4.38	Not calc.	0.21	5.7%	$12,490	$3,394	$2,852
FA27	Falmouth	culvert: road	13	$8,200	$2,900	culvert	N	0.00	2.85	Not calc.	2.85	Not calc.	0.82	28.8%	$8,203	$2,878	$2,878
FA28	Falmouth	dike: railroad	12	$74,600	$19,500	dike	N	1.39	3.82	Not calc.	5.21	Not calc.	1.04	27.2%	$74,607	$19,531	$14,320
FA28A	Falmouth	dike: railroad	10	$160,700	$42,100	dike	N	1.39	3.82	Not calc.	5.21	Not calc.	1.04	27.2%	$160,730	$42,076	$30,850
FA29	Falmouth	culvert: road	10	$12,000	$3,700	culvert	N	0.00	3.23	Not calc.	3.23	Not calc.	0.29	9.0%	$12,027	$3,724	$3,724
FA30	Falmouth	culvert: dike	9	$12,600	$5,300	culvert	N	0.73	2.36	Not calc.	3.09	Not calc.	0.14	5.9%	$12,564	$5,324	$4,066
FA31	Falmouth	culvert: road	7	$10,600	$4,500	culvert	N	0.73	2.36	Not calc.	3.09	Not calc.	0.14	5.9%	$10,637	$4,507	$3,442
FA32	Falmouth	culvert: path	13	$16,400	$3,200	culvert	N	0.00	5.17	Not calc.	5.17	Not calc.	4.40	85.1%	$16,407	$3,173	$3,173
FA33	Falmouth	culvert: road	12	$8,200	$4,100	culvert	N	0.00	1.99	Not calc.	1.99	Not calc.	1.99	100.0%	$8,203	$4,122	$4,122
FA34	Falmouth	culvert: road	15	$57,200	$8,400	culvert	N	0.51	6.85	Not calc.	7.36	Not calc.	5.85	85.4%	$57,215	$8,353	$7,774
FA35	Falmouth	culvert: barrier	2	$21,400	$76,500	culvert	N	0.00	0.28	Not calc.	0.28	Not calc.	0.00	0.0%	$21,412	$76,472	$76,472
FA36	Falmouth	culvert: barrier	5	$31,000	$25,800	culvert	N	0.00	1.20	Not calc.	1.20	Not calc.		0.0%	$31,006	$25,838	$25,838
FA37	Falmouth	dike: dike	5	$19,600	$31,100	dike	N	0.00	0.63	Not calc.	0.63	Not calc.	0.28	44.4%	$19,596	$31,105	$31,105
FA38	Falmouth	dike: barrier be	12	$24,600	$7,500	dike	N	0.00	3.27	Not calc.	3.27	Not calc.	1.7	52.0%	$24,633	$7,533	$7,533
FA39	Falmouth	culvert: road	15	$227,500	$19,700	culvert	N	0.00	11.54	Not calc.	11.54	Not calc.	11.44	99.1%	$227,538	$19,717	$19,717
FA40	Falmouth	culvert: road	15	$68,100	$4,500	culvert	N	2.25	15.00	Not calc.	17.25	Not calc.	15	100.0%	$68,077	$4,538	$3,947
FA41	Falmouth	culvert: road	16	$64,500	$4,300	culvert	N	2.25	15.00	Not calc.	17.25	Not calc.	15	100.0%	$64,514	$4,301	$3,740
FH01	Fairhaven	culvert: road	7	$7,200	$7,000	culvert	N	0.00	1.02	Not calc.	1.02	Not calc.	0.00	0.0%	$7,161	$7,020	$7,020
FH02	Fairhaven	culvert: road?	13	$12,600	$9,700	culvert	N	0.00	1.30	Not calc.	1.30	Not calc.	1.30	100.0%	$12,622	$9,709	$9,709

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
FH03	Fairhaven	bridge: bridge	**7**	**$350,000**	**$20,500**	bridge	N	1.43	17.07	Not calc.	18.50	Not calc.	3.00	17.6%	$350,000	$20,504	$18,919
FH04	Fairhaven	bridge/culvert:	**9**	**$502,800**	**$359,100**	bridge/culvert	N	0.00	1.40	Not calc.	1.40	Not calc.	1.40	100.0%	$502,770	$359,121	$359,121
FH05	Fairhaven	culvert: road	**9**	**$65,800**	**$73,900**	culvert	N	0.00	0.89	Not calc.	0.89	Not calc.	0.89	100.0%	$65,766	$73,894	$73,894
FH06	Fairhaven	road: road	**8**	**$25,100**	**$8,900**	road	N	0.00	2.82	1053	2.82	0.71	0.71	25.2%	$25,097	$8,900	$8,900
FH07	Fairhaven	road: road	**10**	**$25,100**	**$4,700**	road	N	0.00	5.38	1300	5.38	1.20	1.25	23.2%	$25,097	$4,665	$4,665
FH08	Fairhaven	barrier beach:	**11**	**$18,100**	**$11,500**	barrier beach	N	0.00	1.58	587	1.58	0.00	1.58	100.0%	$18,110	$11,462	$11,462
FH08A	Fairhaven	bridge: bridge	**5**	**$143,800**	**$81,700**	bridge	N	0.00	1.76	Not calc.	1.76	Not calc.	0.98	55.7%	$143,807	$81,708	$81,708
FH09A	Fairhaven	road: road	**10**	**$26,800**	**$44,700**	road	N	0.00	0.60	Not calc.	0.60	Not calc.	0.60	100.0%	$26,835	$44,725	$44,725
FH09B	Fairhaven	culvert: road	**8**	**$7,200**	**$28,600**	culvert	N	0.00	0.25	Not calc.	0.25	Not calc.	0.25	100.0%	$7,161	$28,642	$28,642
FH10	Fairhaven	culvert: road	**14**	**$26,800**	**$13,800**	culvert	N	0.00	1.94	Not calc.	1.94	Not calc.	1.94	100.0%	$26,835	$13,832	$13,832
FH11	Fairhaven	culvert: dike	**12**	**$121,400**	**$18,200**	culvert	N	0.00	6.68	Not calc.	6.68	Not calc.	5.56	83.2%	$121,381	$18,171	$18,171
FH12	Fairhaven	culvert: road	**7**	**$7,600**	**$47,400**	culvert	N	0.00	0.16	Not calc.	0.16	Not calc.	0.16	100.0%	$7,578	$47,361	$47,361
FH13	Fairhaven	culvert: road	**8**	**$15,200**	**$28,600**	culvert	N	0.00	0.53	Not calc.	0.53	Not calc.	0.53	100.0%	$15,155	$28,595	$28,595
FH14	Fairhaven	culvert: road	**3**	**$16,400**	**$31,000**	culvert	N	0.00	0.53	Not calc.	0.53	Not calc.	0.00	0.0%	$16,407	$30,956	$30,956
FH15	Fairhaven	culvert: road	**4**	**$7,600**	**$14,300**	culvert	N	0.00	0.53	Not calc.	0.53	Not calc.	0.00	0.0%	$7,578	$14,298	$14,298
FH16	Fairhaven	culvert: road	**15**	**$76,900**	**$6,600**	culvert	N	0.00	11.72	3225	11.72	8.25	1.20	10.2%	$76,889	$6,560	$6,560
FH17	Fairhaven	footpath: footp	**12**	**$16,400**	**$9,100**	footpath	N	0.00	1.80	Not calc.	1.80	Not calc.	0.00	0.0%	$16,407	$9,115	$9,115
FH18	Fairhaven	culvert: road	**19**	**$18,800**	**$2,200**	culvert	N	0.00	8.67	1479	8.67	7.95	4.43	51.1%	$18,840	$2,173	$2,173
FH19	Fairhaven	culvert: road	**15**	**$32,400**	**$20,500**	culvert	N	0.00	1.58	361	1.58	0.67	1.58	100.0%	$32,396	$20,504	$20,504
FH20	Fairhaven	culvert: path	**12**	**$13,000**	**$4,500**	culvert	N	0.00	2.90	Not calc.	2.90	Not calc.	2.40	82.8%	$13,047	$4,499	$4,499
FH21	Fairhaven	culvert: path	**12**	**$13,000**	**$5,100**	culvert	N	0.00	2.58	Not calc.	2.58	Not calc.	2.11	81.8%	$13,047	$5,057	$5,057
FH21A	Fairhaven	culvert: path	**11**	**$13,000**	**$9,900**	culvert	N	0.00	1.32	Not calc.	1.32	Not calc.	1.32	100.0%	$13,047	$9,884	$9,884
FH22	Fairhaven	culvert: road	**13**	**$20,600**	**$2,300**	culvert	N	0.00	9.08	Not calc.	9.08	Not calc.	4.31	47.5%	$20,578	$2,266	$2,266
FH23	Fairhaven	barrier beach:	**9**	**$62,300**	**$53,200**	barrier beach	N	0.00	1.17	Not calc.	1.17	Not calc.	1.17	100.0%	$62,290	$53,239	$53,239
FH24	Fairhaven	barrier beach:	**6**	**$44,900**	**$50,500**	barrier beach	N	0.00	0.89	308	0.89	Not calc.	0.37	41.9%	$44,910	$50,460	$50,460
MN02	Marion	culvert: road	**9**	**$15,900**	**$6,400**	culvert	N	0.00	2.48	Not calc.	2.48	Not calc.	0.56	22.6%	$15,889	$6,407	$6,407
MN05	Marion	culvert: road?	**7**	**$15,200**	**$17,600**	culvert	N	0.00	0.86	Not calc.	0.86	Not calc.	0.36	41.9%	$15,155	$17,623	$17,623
MN06	Marion	culvert: road?	**6**	**$22,500**	**$26,200**	culvert	N	0.00	0.86	Not calc.	0.86	Not calc.	0.36	41.9%	$22,509	$26,173	$26,173
MN07	Marion	culvert: road?	**9**	**$22,500**	**$12,000**	culvert	N	0.00	1.87	Not calc.	1.87	Not calc.	0.36	19.3%	$22,509	$12,037	$12,037
MN08	Marion	culvert: road	**9**	**$38,500**	**$34,700**	culvert	N	0.00	1.11	Not calc.	1.11	Not calc.	0.84	75.7%	$38,489	$34,675	$34,675
MN09	Marion	culvert: road	**10**	**$81,000**	**$12,600**	culvert	Y	0.00	6.45	Not calc.	6.45	6.45	0.47	7.3%	$80,998	$12,558	$12,558
MN10	Marion	culvert: road	**10**	**$17,600**	**$12,500**	culvert	N	0.00	1.41	234	1.41	1.41	0.00	0.0%	$17,589	$12,474	$12,474
MN12	Marion	culvert: road	**12**	**$8,800**	**$2,600**	culvert	N	0.00	3.43	Not calc.	3.43	Not calc.	2.84	82.8%	$8,783	$2,561	$2,561
MN13	Marion	culvert: road	**11**	**$11,700**	**$5,800**	culvert	N	0.00	2.02	Not calc.	2.02	Not calc.	1.85	91.6%	$11,749	$5,816	$5,816
MN14	Marion	culvert: road	**12**	**$6,700**	**$4,800**	culvert	N	0.00	1.41	Not calc.	1.41	Not calc.	1.41	100.0%	$6,743	$4,783	$4,783
MN15	Marion	culvert: road	**12**	**$11,600**	**$8,300**	culvert	N	0.00	1.41	Not calc.	1.41	Not calc.	1.41	100.0%	$11,633	$8,250	$8,250
MN16	Marion	culvert: road?	**10**	**$17,600**	**$12,500**	culvert	N	0.00	1.41	Not calc.	1.41	Not calc.	1.41	100.0%	$17,565	$12,458	$12,458
MN17	Marion	culvert: road	**11**	**$6,700**	**$6,000**	culvert	N	0.00	1.12	Not calc.	1.12	Not calc.	1.12	100.0%	$6,743	$6,021	$6,021
MN18	Marion	culvert: berm?	**10**	**$16,100**	**$14,400**	culvert	N	0.00	1.12	Not calc.	1.12	Not calc.	1.12	100.0%	$16,082	$14,359	$14,359
MN19	Marion	culvert: berm?	**10**	**$13,500**	**$12,000**	culvert	N	0.00	1.12	Not calc.	1.12	Not calc.	1.12	100.0%	$13,487	$12,042	$12,042

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
MN20	Marion	culvert: berm?	6	$13,500	$48,200	culvert	N	0.00	0.28	Not calc.	0.28	Not calc.	0.28	100.0%	$13,487	$48,168	$48,168
MN21	Marion	culvert: berm?	7	$15,200	$72,200	culvert	Y	0.00	0.21		0.21	Not calc.	0.21	100.0%	$15,155	$72,169	$72,169
MN22	Marion	culvert: berm?	17	$13,500	$700	culvert	Y	0.00	20.27		20.27	Not calc.	19.99	98.6%	$13,487	$665	$665
MN29	Marion	dike: road	9	$6,500	$6,000	dike	N	0.35	1.09	Not calc.	1.44	Not calc.	0.00	0.0%	$6,489	$5,953	$4,506
MN30	Marion	wall:	9	$10,200	$46,100	wall	N	0.00	0.22	Not calc.	0.22	Not calc.	0.15	68.2%	$10,150	$46,136	$46,136
MN31	Marion	wall:	8	$10,200	$46,100	wall	N	0.00	0.22	Not calc.	0.22	Not calc.	0.11	50.0%	$10,150	$46,136	$46,136
MT01	Mattapoisett	culvert: road	13	$7,200	$1,700	culvert	N	0.00	4.18	Not calc.	4.18	Not calc.	1.30	31.1%	$7,161	$1,713	$1,713
MT02	Mattapoisett	culvert: road	13	$7,200	$1,700	culvert	N	0.00	4.18	Not calc.	4.18	Not calc.	1.30	31.1%	$7,161	$1,713	$1,713
MT03	Mattapoisett	culvert: road	15	$143,600	$3,600	culvert	N	0.00	40.00	Not calc.	40.00	Not calc.	3.83	9.6%	$143,628	$3,591	$3,591
MT04	Mattapoisett	culvert: road	16	$43,500	$1,100	culvert	N	0.00	40.00	Not calc.	40.00	Not calc.	3.83	9.6%	$43,519	$1,088	$1,088
MT05	Mattapoisett	culvert: road	13	$218,700	$5,500	culvert	N	0.00	40.00	Not calc.	40.00	Not calc.	3.83	9.6%	$218,709	$5,468	$5,468
MT06	Mattapoisett	culvert: debris	17	$43,500	$1,100	culvert	N	0.00	40.48	Not calc.	40.48	Not calc.	4.49	11.1%	$43,519	$1,075	$1,075
MT07	Mattapoisett	bridge: bridge	13	$600,000	$22,700	bridge	N	12.43	26.49	Not calc.	38.92	Not calc.	5.59	21.1%	$600,000	$22,650	$15,416
MT08	Mattapoisett	culvert: berm,	9	$34,900	$33,900	culvert	N	0.00	1.03	Not calc.	1.03	Not calc.	1.03	100.0%	$34,868	$33,853	$33,853
MT09	Mattapoisett	culvert: culvert	16	$123,500	$4,900	culvert	N	18.80	25.11	Not calc.	43.91	Not calc.	6.19	24.7%	$123,507	$4,919	$2,813
MT10	Mattapoisett	culvert: Cause	12	$13,000	$6,700	culvert	N	0.00	1.94	Not calc.	1.94	Not calc.	1.87	96.4%	$13,047	$6,725	$6,725
MT11	Mattapoisett	culvert: road	11	$9,500	$3,200	culvert	N	0.00	2.96	Not calc.	2.96	Not calc.	2.46	83.1%	$9,524	$3,218	$3,218
MT12	Mattapoisett	culvert: road	12	$66,900	$11,900	culvert	N	0.00	5.60	Not calc.	5.60	Not calc.	3.62	64.6%	$66,870	$11,941	$11,941
MT13	Mattapoisett	culvert: rock w	15	$18,000	$2,200	culvert	N	0.24	8.28	Not calc.	8.52	Not calc.	4.77	57.6%	$18,022	$2,177	$2,115
MT14	Mattapoisett	culvert: remain	5	$195,500	$78,800	culvert	N	0.00	2.48	Not calc.	2.48	Not calc.	0.00	0.0%	$195,536	$78,845	$78,845
MT15	Mattapoisett	culvert: road	16	$11,600	$2,500	culvert	N	0.00	4.58	Not calc.	4.58	Not calc.	2.89	63.1%	$11,592	$2,531	$2,531
MT16	Mattapoisett	culvert: road	9	$19,900	$35,500	culvert	N	0.00	0.56	Not calc.	0.56	Not calc.	0.56	100.0%	$19,906	$35,546	$35,546
MT17	Mattapoisett	wall: wall	18	$12,500	$2,700	wall	N	0.00	4.56	Not calc.	4.56	Not calc.	2.89	63.4%	$12,506	$2,743	$2,743
MT18	Mattapoisett	culvert: path	12	$12,500	$6,300	culvert	N	0.00	1.98	Not calc.	1.98	Not calc.	1.48	74.7%	$12,467	$6,297	$6,297
MT19	Mattapoisett	culvert: dike	10	$22,500	$7,300	culvert	N	0.00	3.09	Not calc.	3.09	Not calc.	2.13	68.9%	$22,509	$7,284	$7,284
MT20	Mattapoisett	path: path	10	$12,000	$100,300	path	N	0.00	0.12	Not calc.	0.12	Not calc.	0.12	100.0%	$12,035	$100,290	$100,290
MT21	Mattapoisett	culvert: path	7	$12,000	$52,200	culvert	N	0.00	0.23	Not calc.	0.23	Not calc.	0.23	100.0%	$12,004	$52,191	$52,191
MT22	Mattapoisett	culvert: road	9	$7,700	$4,400	culvert	N	0.00	1.75	Not calc.	1.75	Not calc.	0.50	28.6%	$7,682	$4,390	$4,390
MT23	Mattapoisett	culvert: road	14	$8,800	$4,300	culvert	N	0.00	2.05	Not calc.	2.05	Not calc.	2.05	100.0%	$8,783	$4,284	$4,284
MT24	Mattapoisett	dike: dike	9	$12,000	$4,900	dike	N	0.00	2.48	Not calc.	2.48	Not calc.	0.00	0.0%	$12,035	$4,853	$4,853
MT25	Mattapoisett	culvert: road	7	$5,900	$18,000	culvert	N	0.00	0.33	Not calc.	0.33	Not calc.	0.10	30.3%	$5,944	$18,012	$18,012
MT26	Mattapoisett	culvert: road	5	$6,700	$41,900	culvert	N	0.00	0.16	Not calc.	0.16	Not calc.	0.04	25.0%	$6,697	$41,857	$41,857
MT27	Mattapoisett	culvert: road	6	$6,900	$29,900	culvert	N	0.00	0.23	Not calc.	0.23	Not calc.	0.10	43.5%	$6,885	$29,937	$29,937
MT28	Mattapoisett	road: driveway	6	$16,200	$269,700	road	N	0.00	0.06	Not calc.	0.06	Not calc.	0.06	100.0%	$16,185	$269,745	$269,745

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
MT29	Mattapoisett	wooden path:	**4**	**$34,900**	**$71,200**	wooden path	N	0.00	0.49	Not calc.	0.49	Not calc.	0.43	87.8%	$34,868	$71,159	$71,159
MT30	Mattapoisett	culvert: path	**9**	**$15,700**	**$17,500**	culvert	N	0.00	0.90	Not calc.	0.90	Not calc.	0.83	92.2%	$15,712	$17,457	$17,457
MT31	Mattapoisett	bridge: path	**5**	**$37,500**	**$536,000**	bridge	N	0.00	0.07	Not calc.	0.07	Not calc.	0.00	0.0%	$37,518	$535,969	$535,969
MT32	Mattapoisett	ditch:	**6**	**$11,700**	**$36,600**	ditch	N	0.00	0.32	Not calc.	0.32	Not calc.	0.01	3.1%	$11,721	$36,627	$36,627
MT33	Mattapoisett	culvert: culvert	**4**	**$25,800**	**$171,900**	culvert	N	0.00	0.15	Not calc.	0.15	Not calc.	0.04	26.7%	$25,792	$171,946	$171,946
MT35	Mattapoisett	culvert: culvert	**7**	**$24,100**	**$21,300**	culvert	N	0.00	1.13	Not calc.	1.13	Not calc.	0.35	31.0%	$24,054	$21,287	$21,287
MT36	Mattapoisett	culvert: culvert	**7**	**$24,100**	**$21,300**	culvert	N	0.00	1.13	Not calc.	1.13	Not calc.	0.35	31.0%	$24,054	$21,287	$21,287
MT37	Mattapoisett	culvert: culvert	**4**	**$11,700**	**$146,200**	culvert	N		0.08	Not calc.	0.08	Not calc.	0.01	12.5%	$11,695	$146,186	$146,186
MT38	Mattapoisett	road: road	**12**	**$14,700**	**$70,000**	road	N	0.00	0.21	Not calc.	0.21	Not calc.	0.15	71.4%	$14,705	$70,023	$70,023
NB02	New Bedford	bridge: road	**7**	**$5,000,000**	**$256,400**	bridge	N	3.73	19.50	Not calc.	23.23	Not calc.	0.82	4.2%	$5,000,000	$256,410	$215,239
NB03	New Bedford	bridge: road	**13**	**$1,000,000**	**$12,000**	bridge	N	221.00	83.40	Not calc.	304.40	Not calc.	12.00	14.4%	$1,000,000	$11,990	$3,285
NB04	New Bedford	bridge: road	**9**	**$4,000,000**	**$48,000**	bridge	N	237.00	83.40	Not calc.	320.40	Not calc.	12.00	14.4%	$4,000,000	$47,962	$12,484
NB05	New Bedford	bridge: road	**9**	**$18,000,000**	**$215,800**	bridge	N	556.00	83.40	Not calc.	639.40	Not calc.	12.00	14.4%	$18,000,000	$215,827	$28,151
NB06	New Bedford	bridge: road	**9**	**$8,000,000**	**$95,900**	bridge	N	556.00	83.40	Not calc.	639.40	Not calc.	12.00	14.4%	$8,000,000	$95,923	$12,512
NB07	New Bedford	bridge: road	**9**	**$8,000,000**	**$95,900**	bridge	N	556.00	83.40	Not calc.	639.40	Not calc.	12.00	14.4%	$8,000,000	$95,923	$12,512
NB08	New Bedford	dike: dike	**16**	**$2,750,000**	**$33,000**	dike	N	1012.00	83.40	Not calc.	1095.40	Not calc.	12.00	14.4%	$2,750,000	$32,974	$2,510
WH01	Wareham	bridge/road: rd	**14**	**$1,500,000**	**$24,500**	bridge/road	N	221.76	61.34	Not calc.	283.10	Not calc.	57.67	94.0%	$1,500,000	$24,454	$5,298
WH01B	Wareham	bridge: bridge/	**15**	**$1,000,000**	**$6,200**	bridge	N	221.76	161.34	Not calc.	383.10	Not calc.	57.67	35.7%	$1,000,000	$6,198	$2,610
WH02	Wareham	bridge: railroad	**4**	**$360,000**	**$3,600,000**	bridge	N	2.17	0.10	Not calc.	2.27	Not calc.	0.00	0.0%	$360,000	$3,600,000	$158,590
WH03	Wareham	bridge/road: rd	**7**	**$119,000**	**$31,900**	bridge/road	N	0.00	3.73	Not calc.	3.73	Not calc.	0.14	3.8%	$119,010	$31,906	$31,906
WH04	Wareham	fill: Cement Ba	**11**	**$13,900**	**$17,600**	fill	N	0.00	0.79	Not calc.	0.79	Not calc.	0.79	100.0%	$13,920	$17,620	$17,620
WH05	Wareham	bridge: road	**12**	**$2,000,000**	**$27,300**	bridge	N	113.39	73.17	Not calc.	186.56	Not calc.	20.70	28.3%	$2,000,000	$27,334	$10,720
WH06	Wareham	bridge: road	**11**	**$1,000,000**	**$16,100**	bridge	N	51.62	62.25	Not calc.	113.87	Not calc.	9.78	15.7%	$1,000,000	$16,064	$8,782
WH07	Wareham	culvert: road	**12**	**$25,000**	**$2,200**	culvert	N	0.00	11.52	Not calc.	11.52	Not calc.	3.83	33.2%	$24,981	$2,168	$2,168
WH08	Wareham	culvert: road	**9**	**$7,200**	**$1,800**	culvert	N	0.00	3.91	Not calc.	3.91	Not calc.	0.00	0.0%	$7,161	$1,831	$1,831
WH09	Wareham	road: road	**11**	**$6,200**	**$1,600**	road	N	0.00	3.91	Not calc.	3.91	Not calc.	0.00	0.0%	$6,206	$1,587	$1,587
WH10	Wareham	Road: road	**15**	**$60,200**	**$4,800**	Road	N	0.00	12.49	Not calc.	12.49	Not calc.	7.21	57.7%	$60,204	$4,820	$4,820
WH11	Wareham	culvert: road	**17**	**$11,300**	**$600**	culvert	N	0.00	19.32	Not calc.	19.32	Not calc.	3.32	17.2%	$11,332	$587	$587
WH12	Wareham	railroad culvert	**10**	**$217,700**	**$369,000**	railroad culvert	N	0.59	0.59	Not calc.	1.18	Not calc.	0.59	100.0%	$217,720	$369,017	$184,508
WH13	Wareham	road: road	**11**	**$85,700**	**$68,600**	road	N	1.35	1.25	Not calc.	2.60	Not calc.	0.88	70.4%	$85,721	$68,577	$32,970
WH14	Wareham	bridge: road	**13**	**$1,750,000**	**$17,000**	bridge	N	189.47	102.65	Not calc.	292.12	Not calc.	66.04	64.3%	$1,750,000	$17,048	$5,991
WH14B	Wareham	bridge: road	**12**	**$500,000**	**$4,900**	bridge	N	189.47	102.65	Not calc.	292.12	Not calc.	66.04	64.3%	$500,000	$4,871	$1,712
WH15	Wareham	bridge: railroad	**10**	**$1,000,000**	**$9,700**	bridge	N	189.47	102.65	Not calc.	292.12	Not calc.	66.04	64.3%	$1,000,000	$9,742	$3,423
WH16	Wareham	culvert: road	**12**	**$70,200**	**$13,500**	culvert	N	0.00	5.20	Not calc.	5.20	Not calc.	3.76	72.3%	$70,215	$13,503	$13,503
WH17	Wareham	bridge: road	**16**	**$350,000**	**$24,500**	bridge	N	23.35	14.26	Not calc.	37.61	Not calc.	14.19	99.5%	$350,000	$24,544	$9,306
WH20	Wareham	bridge: road	**7**	**$2,000,000**	**$146,500**	bridge	N	0.00	13.65	Not calc.	13.65	Not calc.	2.78	20.4%	$2,000,000	$146,520	$146,520
WH21	Wareham	bridge: road	**7**	**$1,500,000**	**$570,300**	bridge	N	5.89	2.63	Not calc.	8.52	Not calc.		0.0%	$1,500,000	$570,342	$176,056
WH23	Wareham	dike: dike	**12**	**$65,800**	**$7,600**	dike	N	0.00	8.60	Not calc.	8.60	Not calc.	5.80	67.4%	$65,766	$7,647	$7,647
WH24	Wareham	railroad: railroa	**11**	**$213,600**	**$577,400**	railroad	N	1.80	0.37	Not calc.	2.17	Not calc.	0.37	100.0%	$213,627	$577,369	$98,445
WH25	Wareham	road: driveway	**6**	**$12,000**	**$52,300**	road	N	0.00	0.23	Not calc.	0.23	Not calc.	0.04	17.4%	$12,032	$52,313	$52,313
WH26	Wareham	dike: driveway	**9**	**$12,000**	**$52,300**	dike	N	0.00	0.23	Not calc.	0.23	Not calc.	0.04	17.4%	$12,035	$52,325	$52,325
WH27	Wareham	road: road	**16**	**$27,000**	**$2,400**	road	N	0.00	11.48	Not calc.	11.48	Not calc.	2.45	21.3%	$26,987	$2,351	$2,351
WH28	Wareham	driveway: drive	**13**	**$12,000**	**$9,200**	driveway	N	0.00	1.31	Not calc.	1.31	Not calc.	1.31	100.0%	$12,035	$9,187	$9,187
WH29	Wareham	road: road	**15**	**$28,500**	**$4,700**	road	N	0.00	6.10	Not calc.	6.10	Not calc.	5.80	95.1%	$28,503	$4,673	$4,673
WH30	Wareham	dike: dike	**9**	**$43,500**	**$4,000**	dike	N	0.00	10.92	Not calc.	10.92	Not calc.	0.00	0.0%	$43,519	$3,985	$3,985
WH31	Wareham	road: road	**15**	**$9,500**	**$1,000**	road	N	0.00	9.53	Not calc.	9.53	Not calc.	5.96	62.5%	$9,524	$999	$999
WH32	Wareham	road: road	**7**	**$6,100**	**$9,300**	road	N	1.90	0.66	Not calc.	2.56	Not calc.	0.00	0.0%	$6,118	$9,269	$2,390

Site #	Town	Rest. Type	Remediation Score	Estimated Cost	Cost Per Vegetated Acre	Restriction Structure Type	Remediated?	surface water acres behind rest.	Vegetated Wetland acres affected	max wetland distance from culvert (ft)	total wetland with surface water	saltmarsh acres	Phragmites acres	% Phragmites	Estimated Remediation Cost	Cost per Acre of Vegetated Wetland	Cost per Acre of All Wetland
WH33	Wareham	road: road	**16**	**$27,500**	**$5,300**	road	N	0.00	5.19	Not calc.	5.19	Not calc.	5.19	100.0%	$27,530	$5,304	$5,304
WH34	Wareham	dike: dike	**12**	**$29,000**	**$4,500**	dike	N	0.00	6.50	Not calc.	6.50	Not calc.	5.00	76.9%	$29,043	$4,468	$4,468
WH35	Wareham	dike: dike	**13**	**$12,000**	**$4,900**	dike	N	0.00	2.48	Not calc.	2.48	Not calc.	2.00	80.6%	$12,035	$4,853	$4,853
WH36	Wareham	dike: dike	**10**	**$12,000**	**$3,000**	dike	N	0.00	3.98	Not calc.	3.98	Not calc.	0.00	0.0%	$12,035	$3,024	$3,024
WH37	Wareham	road: road	**6**	**$169,200**	**$248,800**	road	N	0.00	0.68	Not calc.	0.68	Not calc.	0.40	58.8%	$169,211	$248,840	$248,840
WH39	Wareham	culvert: culvert	**13**	**$155,400**	**$94,500**	culvert	N	0.00	1.70	Not calc.	1.70	Not calc.	1.58	92.9%	$155,446	$94,463	$91,439
WH40	Wareham	dike:	**18**	**$13,900**	**$6,900**	dike	N	0.00	2.03	Not calc.	2.03	Not calc.	2.73	134.5%	$13,920	$6,857	$6,857
WH41	Wareham	bridge/old wall	**9**	**$350,000**	**$150,200**	bridge/old wall	N	0.00	2.33	Not calc.	2.33	Not calc.	2.73	117.2%	$350,000	$150,215	$150,215
WP01	Westport	culvert: road	**14**	**$32,400**	**$2,800**	culvert	N	100.24	11.38	Not calc.	111.62	Not calc.	7.38	64.9%	$32,396	$2,847	$290
WP02	Westport	culvert: road	**7**	**$16,100**	**$24,800**	culvert	N	0.00	0.65	Not calc.	0.65	Not calc.	0.58	88.8%	$16,096	$24,763	$24,763
WP03	Westport	bridge: road	**13**	**$9,200,000**	**$12,100**	bridge	N	1910.00	760.49	Not calc.	2670.49	Not calc.	0.00	0.0%	$9,200,000	$12,097	$3,445
WP04	Westport	culvert: road	**10**	**$26,800**	**$13,600**	culvert	N	0.00	1.97	Not calc.	1.97	Not calc.	1.36	69.0%	$26,835	$13,622	$13,622
WP05	Westport	culvert: road	**6**	**$10,600**	**$5,900**	culvert	N	0.00	1.80	Not calc.	1.80	Not calc.	0.00	0.0%	$10,637	$5,909	$5,909
WP06	Westport	bridge: road	**16**	**$2,800,000**	**$13,600**	bridge	N	311.60	205.51	Not calc.	517.11	Not calc.	135.92	66.1%	$2,800,000	$13,625	$5,415
WP07	Westport	dike: tide gate	**13**	**$13,000**	**$7,700**	dike	N	0.00	1.69	Not calc.	1.69	Not calc.	1.36	80.5%	$12,977	$7,679	$7,679
WP08	Westport	dike: dike	**13**	**$14,900**	**$10,200**	dike	N	0.00	1.45	Not calc.	1.45	Not calc.	1.48	102.1%	$14,862	$10,250	$10,250
WP09	Westport	culvert: dike	**9**	**$17,100**	**$11,100**	culvert	N	0.15	1.54	Not calc.	1.69	Not calc.	0.00	0.0%	$17,102	$11,105	$10,120
WP10	Westport	road: road	**11**	**$7,000**	**$4,100**	road	N	0.00	1.70	Not calc.	1.70	Not calc.	0.24	14.1%	$6,960	$4,094	$4,094
WP11	Westport	dike: dike	**9**	**$13,900**	**$44,900**	dike	N	0.00	0.31	Not calc.	0.31	Not calc.	0.24	77.4%	$13,920	$44,902	$44,902
WP12	Westport	culvert: culvert	**14**	**$13,800**	**$1,800**	culvert	N	0.48	7.72	Not calc.	8.20	Not calc.	3.67	47.5%	$13,840	$1,793	$1,688
WP13	Westport	rocks: rocks	**15**	**$12,400**	**$1,700**	rocks	N	0.23	7.31	Not calc.	7.54	Not calc.	2.93	40.1%	$12,412	$1,698	$1,646
WP14	Westport	dike: dike	**-2**	**$25,800**	**$7,300**	dike	N	3.42	3.53	Not calc.	6.95	Not calc.	0.00	0.0%	$25,792	$7,306	$3,711
WP15	Westport	wall: stone wall	**5**	**$12,000**	**$80,200**	wall	N	0.00	0.15	Not calc.	0.15	Not calc.	0.00	0.0%	$12,035	$80,232	$80,232
WP16	Westport	wall: stone wall	**5**	**$12,000**	**$133,700**	wall	N	0.00	0.09	Not calc.	0.09	Not calc.	0.00	0.0%	$12,035	$133,719	$133,719
WP17	Westport	road: road	**16**	**$9,700**	**$1,000**	road	N	0.00	9.71	Not calc.	9.71	Not calc.	3.61	37.2%	$9,710	$1,000	$1,000
WP18	Westport	road: driveway	**5**	**$14,000**	**$63,700**	road	N	0.14	0.22	Not calc.	0.36	Not calc.	0.01	4.5%	$14,012	$63,692	$38,923
WP19	Westport	road: road	**12**	**$62,700**	**$49,000**	road	N	0.00	1.28	Not calc.	1.28	Not calc.	0.67	52.3%	$62,676	$48,966	$48,966
WP20	Westport	road: road	**8**	**$62,700**	**$174,100**	road	N	0.00	0.36	Not calc.	0.36	Not calc.	0.04	11.1%	$62,676	$174,100	$174,100

Site #	Score for % Phrag	Score for Wetland acreage	Score Remediation Cost per-acre	Score cross section/acre	Score for public restriction	Score for Public wetland	Score Anadram. fish run	Score Rare/Endg. Sp. Hab.	Score adver. rest. impacts	Channel or Restriction Feature	Affected Wetland or Bay Name	Existing Rest. opening width (ft.)	Existing restrict. transit length ft.	Rest. Opening Cross section(ft2)	1 sq ft rulle	actual ft2 acre	Proposed remed. Restr. vol (ft^3)	Cost Factor for restr. type	Principal Restriction Structure
BN01	5	0	0	2	2	0	0	\	0	Railroad		**1.0**	**9.6**	**0.79**	**0.00**	**1.64**	81.4	4.0	railroad
BN02	0	2	1	2	0	0	0	0	0	Private Road to Toby Isl.		**3.5**	**40**	**9.62**	**6.00**	**1.57**	1846.3	0.5	road
BN03	1	4	0	2	2	1	0	0	0	Rt.6 Bridge	Buttermilk Bay	**350.0**	**43.2**	**2100.00**	**496.00**	**4.23**	NA	3.0	bridge
BN04	1	4	0	2	2	1	0	0	0	Railroad Bridge next to Rt.6	Buttermilk Bay	**250.0**	**14.4**	**1500.00**	**498.00**	**3.01**	NA	4.0	railroad
BN06	5	1	0	2	3	0	0	0	0	Mashneee Road	south of Seabreeze	**2.0**	**500**	**3.14**	**3.00**	**1.05**	7536.0	1.0	road
BN07	0	1	3	2	0	0	0	0	0	Culvert Private Road		**2.5**	**9.6**	**4.91**	**2.00**	**2.90**	226.1	0.5	road
BN08	3	2	0	3	3	0	0	0	0	Culvert, Mashnee Rd near spindrift Rd	leads to BN43	**2.5**	**300**	**7.50**	**10.00**	**0.72**	10800.0	1.0	road
BN09	2	4	3	2	3	0	0	0	0	Shore Road		**56.0**	**42**	**560.00**	**146.00**	**3.84**	NA	3.0	road
BN10	2	4	3	2	2	0	0	0	0	Railroad Bridge		**51.0**	**14.4**	**408.00**	**148.00**	**2.76**	NA	3.0	railroad
BN11	0	1	3	2	3	0	4	0	0	tidegate in culvert Dam Rd.		**2.7**	**26.4**	**5.58**	**3.00**	**1.65**	707.4	0.5	road
BN12	2	1	3	2	2	1	0	2	0	Railroad		**2.7**	**12**	**5.58**	**4.00**	**1.34**	321.5	0.5	road
BN13	0	1	0	0	2	0	4	0	0	Railroad culvert		**4.0**	**114**	**12.56**	**1.00**	**10.64**	6872.8	1.5	railroad
BN14	1	3	2	2	3	1	0	2	0	Shore Rd. Bridge	Pocassett River	**45.0**	**26.4**	**270.00**	**70.00**	**3.86**	NA	3.0	road
BN15	2	2	3	3	3	0	0	0	0	Wings Neck Road		**2.5**	**26.4**	**4.91**	**8.00**	**0.61**	621.7	1.0	road
BN16	5	1	3	3	3	0	0	0	0	Kenwood Rd.		**2.2**	**15**	**3.69**	**4.00**	**0.98**	265.3	1.0	road
BN17	3	0	1	2	0	0	0	0	0	Rock Wall		**1.0**	**14.4**	**0.79**	**1.00**	**1.51**	122.1	1.0	driveway
BN21	4	0	1	5	0	0	0	0	0	Scraggy Neck		**0.0**	**21.6**	**0.00**	**1.00**	**0.00**	82.7	1.0	road
BN24	2	2	3	2	0	0	0	0	0	road	Red Brook Harbor	**3.0**	**18**	**7.07**	**6.00**	**1.28**	610.4	1.0	driveway
BN25	3	0	0	2	3	0	0	0	0	Circuit Avenue		**1.0**	**30**	**0.79**	**1.00**	**1.48**	254.3	1.0	road
BN26	2	1	1	3	2	0	0	2	0	Pocasset River, culvert in Dike	south central saltmarsh, west of RR bridge	**1.0**	**60**	**0.79**	**1.00**	**0.61**	508.7	1.0	dike
BN27	5	0	2	5	0	0	0	0	0			**0.0**	**15**	**0.00**	**1.00**	**0.00**	57.5	1.0	driveway
BN28	5	1	1	5	2	1	0	2	0	MBTA Rail Road		**0.0**	**72**	**0.00**	**1.00**	**0.00**	275.8	1.0	dike
BN29	5	1	1	3	2	0	0	0	0	BMTA Rail Road		**1.0**	**72**	**0.79**	**1.00**	**0.64**	610.4	1.0	dike
BN30	3	1	2	3	0	0	0	0	0	Barrier Beach		**1.0**	**50**	**0.79**	**3.00**	**0.29**	423.9	1.0	dike
BN32	4	2	1	2	0	0	0	0	0			**4.0**	**12**	**12.56**	**6.00**	**2.03**	723.5	3.0	path
BN33	1	3	0	2	2	1	0	2	0	railroad bridge	Pocasset River	**250.0**	**20**	**80.00**	**59.00**	**1.36**	NA	1.0	bridge
BN34	5	0	0	1	3	0	0	0	0	service road		**1.5**	**60**	**1.77**	**0.00**	**5.19**	508.7	1.0	dike
BN35	5	0	0	2	3	0	0	0	0	dike		**0.8**	**24**	**0.55**	**0.00**	**1.54**	141.3	1.0	dike
BN36	5	0	0	2	3	0	0	0	0	service road		**1.5**	**60**	**1.77**	**1.00**	**2.99**	508.7	1.0	dike
BN37	5	0	0	1	3	0	0	0	0	old railroad		**2.5**	**24**	**3.75**	**1.00**	**6.36**	432.0	1.0	dike
BN38	1	2	2	3	3	0	4	0	0	service road	Cape Cod Canal	**3.0**	**60**	**7.07**	**8.00**	**0.87**	2034.7	1.0	road
BN39	4	1	4	4	0	0	0	2	0	bog dike		**0.8**	**24**	**0.55**	**4.00**	**0.13**	141.3	1.0	dike
BN40	5	1	1	1	0	0	0	0	0	bog dike		**3.5**	**24**	**9.62**	**2.00**	**5.40**	1107.8	1.0	dike
BN43	4	2	2	3	0	0	0	0	0	dike		**2.0**	**80**	**4.00**	**9.00**	**0.44**	1536.0	1.0	dike
BN44	0	0	0	2	2	0	0	0	0	MBTA Rail Road		**1.5**	**280**	**1.00**	**1.00**	**2.00**	3024.0	4.0	railroad
DA01	3	4	3	3	3	0	0	0	0	Bridge St.	Apponagansett Bay	**110.0**	**36**	**330.00**	**596.00**	**0.55**	NA	3.0	road

Site #	Score for % Phrag	Score for Wetland acreage	Score Remediation Cost per-acre	Score cross section/acre	Score for public restriction	Score for Public wetland	Score Anadram. fish run	Score Rare/Endg. Sp. Hab.	Score adver. rest. impacts	Channel or Restriction Feature	Affected Wetland or Bay Name	Existing Rest. opening width (ft.)	Existing restrict. transit length ft.	Rest. Opening Cross section(ft2)	1 sq ft rulle	actual ft2 acre	Proposed remed. Restr. vol (ft^3)	Cost Factor for restr. type	Principal Restriction Structure
DA02	3	4	4	3	3	1	0	0	0	Gulf Road	Dike Creek or Saltmeadow	**50.0**	**36**	**100.00**	**223.00**	**0.45**	NA	3.0	road
DA03	1	2	4	4	3	0	0	0	0	Smith Neck Rd.	Padanaram Salt Marsh	**1.0**	**36**	**0.79**	**8.00**	**0.10**	305.2	1.0	road
DA04	4	3	6	5	0	0	0	2	0		Nonquitt Marsh	**2.0**	**18**	**3.14**	**72.00**	**0.04**	271.3	1.0	road
DA05	4	3	3	3	0	0	0	2	0	Barrier beach	Nonquitt Marsh	**6.0**	**36**	**24.00**	**72.00**	**0.33**	4147.2	1.0	barrier beach
DA06	3	2	5	4	0	0	0	2	0		cow yard Marsh	**1.5**	**24**	**1.77**	**9.00**	**0.20**	203.5	0.5	road
DA07	3	2	5	4	0	0	0	2	0		Cow Yard Marsh	**1.0**	**24**	**0.79**	**9.00**	**0.09**	203.5	0.5	road
DA08	5	2	2	4	0	0	0	2	0	Private Driveway	Cow Yard Marsh	**2.5**	**230.4**	**3.75**	**17.00**	**0.22**	4147.2	0.5	road
DA09	1	4	4	3	3	1	0	2	0	Little River Road	Little River	**60.0**	**30**	**120.00**	**269.00**	**0.45**	NA	3.0	road
DA11	3	2	5	4	0	0	0	2	0	Little Beach Rd.	Allen's Pond	**1.0**	**14.4**	**0.79**	**7.00**	**0.12**	122.1	0.5	road
DA12	4	2	2	3	2	1	0	2	0		Georges Pond	**4.0**	**48**	**12.56**	**21.00**	**0.60**	2893.8	1.0	road
DA13	0	1	3	5	0	0	0	2	0	Common Drive		**0.0**	**10**	**0.00**	**2.00**	**0.00**	38.3	0.5	road
DA14	2	2	3	2	3	1	0	0	0	Star of the Sea Drive		**3.0**	**30**	**7.07**	**7.00**	**1.01**	1017.4	1.0	road
DA15	2	2	5	3	3	1	0	0	0	Old Road		**2.0**	**24**	**3.00**	**12.00**	**0.26**	345.6	0.5	road
DA16	1	2	5	3	0	0	0	0	0	Old Road to beach		**2.0**	**18**	**3.14**	**9.00**	**0.35**	271.3	0.5	road
DA17	0	2	6	5	3	1	0	0	0	Old Road		**0.0**	**14.4**	**0.00**	**7.00**	**0.00**	55.2	0.5	road
DA18	2	1	4	4	0	0	0	0	0			**0.7**	**20**	**0.35**	**3.00**	**0.14**	75.4	0.5	road
DA19	3	1	3	4	0	0	0	0	0	Stone Wall		**0.4**	**7.2**	**0.14**	**2.00**	**0.07**	10.6	1.0	wall
DA20	5	0	0	1	3	0	0	0	0	road		**1.0**	**40**	**0.79**	**0.00**	**8.72**	339.1	1.0	road
DA21	5	0	1	5	0	0	0	0	0	blocked channel		**0.0**	**4.8**	**0.00**	**0.00**	**0.00**	18.4	1.0	channel through dike
DA22	3	1	1	5	0	0	0	0	0	beach		**0.0**	**250**	**0.00**	**2.00**	**0.00**	957.7	1.0	beach
DA23	0	2	6	5	0	0	0	2	0	path		**0.0**	**12**	**0.00**	**18.00**	**0.00**	46.0	1.0	path
DA24	3	1	3	5	0	0	0	2	0	dike	same as DA25 and DA26	**0.0**	**16.8**	**0.00**	**2.00**	**0.00**	64.4	1.0	dike
DA25	3	1	3	5	0	0	0	2	0	dike	same as DA24 and DA26	**0.0**	**21.6**	**0.00**	**2.00**	**0.00**	82.7	1.0	dike
DA26	3	1	3	5	0	0	0	2	0	dike	same as DA24 and DA25	**0.0**	**16.8**	**0.00**	**2.00**	**0.00**	64.4	1.0	dike
DA27	5	1	3	5	0	0	0	2	0	path to beach		**0.0**	**24**	**0.00**	**2.00**	**0.00**	91.9	1.0	dike
DA28	5	0	2	5	0	0	0	2	0		same as DA29	**0.0**	**3.6**	**0.00**	**1.00**	**0.00**	13.8	1.0	dike
DA29	5	0	2	5	0	0	0	2	0		same as DA28	**0.0**	**3.6**	**0.00**	**1.00**	**0.00**	13.8	1.0	dike
DA30	5	1	0	5	0	0	0	2	0	dike/tide gate	same as DA31	**0.0**	**12**	**0.00**	**2.00**	**0.00**	46.0	1.0	dike
DA31	5	1	0	5	0	0	0	2	0	stone wall	Allen's Pond	**0.0**	**4.8**	**0.00**	**2.00**	**0.00**	18.4	1.0	stone wall
DA32	3	2	3	1	0	0	0	2	0	Stone bridge		**15.0**	**18**	**45.00**	**7.00**	**6.41**	NA	3.0	bridge
FA01	5	1	5	4	0	0	0	0	0	Private Road to Penzance Pt.		**0.7**	**12**	**0.35**	**4.00**	**0.10**	45.2	0.5	road
FA02	5	2	6	5	0	1	0	0	0	Rock Wall	Mill Pond	**0.0**	**24**	**0.00**	**17.00**	**0.00**	91.9	1.0	wall
FA03	5	0	1	3	0	0	0	0	0	Private Driveway		**0.7**	**12**	**0.35**	**0.00**	**0.78**	45.2	1.0	wall
FA04	5	0	1	2	0	0	0	0	0	2nd Private Driveway		**1.0**	**12**	**0.79**	**0.00**	**2.45**	101.7	0.5	road
FA05	5	2	5	5	3	1	0	0	0	Road		**1.0**	**26.4**	**0.79**	**17.00**	**0.05**	223.8	1.0	road
FA06	5	0	0	1	3	1	0	0	0	Road		**1.5**	**26.4**	**1.77**	**0.00**	**9.30**	223.8	1.0	road
FA07	4	2	3	4	0	0	0	0	0	Racing Ave.		**1.5**	**75**	**1.77**	**9.00**	**0.19**	635.9	1.0	road
FA08	4	2	5	4	0	0	0	0	0	Valley Road		**1.5**	**35**	**1.77**	**9.00**	**0.21**	296.7	0.5	road
FA09	4	2	4	3	0	0	0	0	0	Road/Culvert		**1.5**	**35**	**1.77**	**7.00**	**0.27**	296.7	1.0	road

Site #	Score for % Phrag	Score for Wetland acreage	Score Remediation Cost per-acre	Score cross section/acre	Score for public restriction	Score for Public wetland	Score Anadram. fish run	Score Rare/Endg. Sp. Hab.	Score adver. rest. impacts	Channel or Restriction Feature	Affected Wetland or Bay Name	Existing Rest. opening width (ft.)	Existing restrict. transit length ft.	Rest. Opening Cross section(ft2)	1 sq ft rulle	actual ft2 acre	Proposed remed. Restr. vol (ft^3)	Cost Factor for restr. type	Principal Restriction Structure
FA10	5	2	3	5	0	0	0	2	0	Woodneck Rd.		**0.0**	**30**	**0.00**	**6.00**	**0.00**	114.9	1.0	road
FA11	3	2	2	2	0	0	0	0	0	Santuit Rd.	Potter's Hole	**14.0**	**25**	**28.00**	**8.00**	**3.65**	NA	3.0	bridge
FA12	4	2	1	1	0	0	0	0	0	Bayview Rd.		**20.0**	**25**	**40.00**	**7.00**	**5.35**	NA	3.0	bridge
FA13	5	1	0	2	0	0	0	0	0	Bayview Rd.		**2.5**	**36**	**4.91**	**1.00**	**3.69**	847.8	1.0	road
FA14	2	3	0	0	3	1	0	0	0	Quaker Rd.		**120.0**	**40**	**360.00**	**26.00**	**14.09**	NA	3.0	road
FA15	3	2	1	0	3	0	0	0	0		West Falmouth Harbor	**25.0**	**36**	**150.00**	**13.00**	**11.55**	NA	3.0	road
FA16	3	3	0	0	3	0	0	0	0			**120.0**	**48**	**720.00**	**26.00**	**27.41**	NA	3.0	road
FA17	4	2	0	2	2	0	0	0	0	Railroad		**5.0**	**12**	**19.63**	**11.00**	**1.86**	1130.4	4.0	railroad
FA18	5	0	0	2	0	0	0	0	0	Penzance Point Pond		**0.8**	**84**	**0.55**	**0.00**	**2.48**	494.6	1.0	dike
FA19	3	2	3	4	3	0	0	0	0	Road/Culvert		**1.0**	**25.2**	**0.79**	**6.00**	**0.14**	213.6	1.0	road
FA20	5	1	0	4	2	0	0	0	0	Railroad/Culvert		**1.0**	**60**	**0.79**	**4.00**	**0.18**	508.7	4.0	railroad
FA21	5	1	0	3	2	0	0	0	0	Railroad/Culvert		**1.0**	**60**	**0.79**	**2.00**	**0.32**	508.7	4.0	railroad
FA22	0	3	5	3	0	0	0	0	-10	Road /Culvert		**4.0**	**24**	**12.56**	**33.00**	**0.38**	1446.9	0.5	road
FA25	0	0	0	2	3	0	0	0	0	Megansett Harbor		**1.0**	**40**	**0.79**	**0.00**	**1.64**	339.1	1.0	road
FA26	1	1	4	3	0	0	0	2	1	Wigwam Road	Great Sippewisset Marsh	**2.0**	**24**	**3.14**	**4.00**	**0.72**	361.7	0.5	road
FA27	3	1	4	3	0	0	0	2	0	parth north from Wigwam Road	Great Sippewisset Marsh	**1.5**	**18**	**1.77**	**3.00**	**0.62**	152.6	0.5	road
FA28	3	2	1	3	2	1	0	0	0	MBTA RR Right of Way	Great Sippewisset Marsh	**4.0**	**21.6**	**2.00**	**5.00**	**0.38**	207.4	4.0	railroad
FA28A	3	2	0	2	2	1	0	0	0	MBTA RR Right of Way	Great Sippewisset Marsh	**3.0**	**21.6**	**7.07**	**5.00**	**1.36**	732.5	4.0	railroad
FA29	1	1	4	4	0	0	0	0	0	Little Neck Road		**1.0**	**40**	**0.79**	**3.00**	**0.24**	339.1	0.5	road
FA30	1	1	3	4	0	0	0	0	0	Chapaquoit		**0.8**	**10**	**0.55**	**3.00**	**0.18**	58.9	1.0	dike
FA31	1	1	3	2	0	0	0	0	0	driveway for #175		**2.0**	**18**	**3.14**	**3.00**	**1.02**	271.3	0.5	road
FA32	4	2	4	3	0	0	0	0	0	footpath		**1.5**	**18**	**1.77**	**5.00**	**0.34**	152.6	1.0	path
FA33	5	1	3	3	0	0	0	0	0	driveway for Beach Road house		**1.0**	**18**	**0.79**	**2.00**	**0.39**	152.6	0.5	road
FA34	4	2	2	4	3	0	0	0	0	Little Island Road		**1.5**	**300**	**1.77**	**7.00**	**0.24**	2543.4	0.5	road
FA35	0	0	0	2	0	0	0	0	0			**1.0**	**32.4**	**0.79**	**0.00**	**2.80**	274.7	1.0	barrier beach
FA36	0	1	1	3	0	0	0	0	0	Wild Harbor beach		**1.0**	**60**	**0.79**	**1.00**	**0.65**	508.7	1.0	barrier beach
FA37	3	0	1	1	0	0	0	0	0			**4.0**	**12**	**4.00**	**1.00**	**6.35**	230.4	1.0	dike
FA38	4	1	3	4	0	0	0	0	0			**0.8**	**60**	**0.55**	**3.00**	**0.17**	353.3	1.0	barrier beach
FA39	5	2	1	3	3	1	0	0	0	Wild Harbor		**2.0**	**720**	**3.14**	**12.00**	**0.27**	10851.8	0.5	road
FA40	5	2	3	4	0	1	0	0	0	Millfield St.	Mill Pond to Eael Pond	**1.3**	**232**	**1.23**	**17.00**	**0.07**	3073.3	0.5	road
FA41	5	2	3	5	0	1	0	0	0	Millfield St.	Mill Pond to Eael Pond	**1.0**	**342**	**0.79**	**17.00**	**0.05**	2899.5	0.5	road
FH01	0	1	3	3	0	0	0	0	0	Private Drive		**1.0**	**12**	**0.79**	**1.00**	**0.77**	101.7	0.5	road
FH02	5	1	2	2	3	0	0	0	0	Private Drive		**2.0**	**4**	**3.14**	**1.00**	**2.42**	60.3	1.0	road?

Site #	Score for % Phrag	Score for Wetland acreage	Score Remediation Cost per-acre	Score cross section/acre	Score for public restriction	Score for Public wetland	Score Anadram. fish run	Score Rare/Endg. Sp. Hab.	Score adver. rest. impacts	Channel or Restriction Feature	Affected Wetland or Bay Name	Existing Rest. opening width (ft.)	Existing restrict. transit length ft.	Rest. Opening Cross section(ft2)	1 sq ft rulle	actual ft2 acre	Proposed remed. Restr. vol (ft^3)	Cost Factor for restr. type	Principal Restriction Structure
FH03	2	2	1	2	0	0	0	0	0	Peirces Point Bridge		**35.0**	**12**	**70.00**	**19.00**	**3.78**	NA	3.0	bridge
FH04	5	1	0	0	3	0	0	0	0			**5.0**	**40**	**20.00**	**1.00**	**14.29**	3840.0	3.0	path
FH05	5	0	0	1	3	0	0	0	0			**3.0**	**40**	**7.07**	**1.00**	**7.94**	1356.5	1.0	road
FH06	3	1	2	2	0	0	0	0	0	Island View Road		**3.0**	**28.8**	**7.07**	**3.00**	**2.51**	976.7	0.5	road
FH07	3	2	3	2	0	0	0	0	0	Island View Road		**3.0**	**28.8**	**7.07**	**5.00**	**1.31**	976.7	0.5	road
FH08	5	1	2	3	0	0	0	0	0			**1.0**	**75**	**0.79**	**2.00**	**0.50**	635.9	0.5	road
FH08A	4	1	0	0	0	0	0	0	0	Raymond St. Beach		**10.0**	**9.6**	**20.00**	**2.00**	**11.36**	921.6	3.0	bridge
FH09A	5	0	0	2	3	0	0	0	0	Grand View Ave		**1.0**	**48**	**0.79**	**1.00**	**1.31**	406.9	1.0	road
FH09B	5	0	1	2	0	0	0	0	0	Widemarsh Road		**1.0**	**12**	**0.79**	**0.00**	**3.14**	101.7	0.5	road
FH10	5	1	2	3	3	0	0	0	0	culvert at Shore Drive and parking lot		**1.0**	**48**	**0.79**	**2.00**	**0.40**	406.9	1.0	road
FH11	4	2	1	2	3	0	0	0	0	culvert in Hurricane Dike @ Egypt Lane	Atlas Tack	**3.0**	**80**	**7.07**	**7.00**	**1.06**	2713.0	1.0	dike
FH12	5	0	0	2	0	0	0	0	0	Windward Lane		**1.0**	**14.4**	**0.79**	**0.00**	**4.91**	122.1	0.5	road
FH13	5	0	1	2	0	0	0	0	0	Camp Seaspace Lane		**1.0**	**14.4**	**0.79**	**1.00**	**1.48**	122.1	1.0	road
FH14	0	0	1	2	0	0	0	0	0	Camp Seaspace Lane		**1.5**	**18**	**1.77**	**1.00**	**3.33**	152.6	1.0	road
FH15	0	0	2	2	0	0	0	0	0	Windward Lane		**1.0**	**14.4**	**0.79**	**1.00**	**1.48**	122.1	0.5	road
FH16	2	2	3	3	3	0	0	2	0	West Island Causeway		**3.0**	**48**	**7.07**	**12.00**	**0.60**	1627.8	1.0	road
FH17	0	1	2	3	3	1	0	2	0			**1.5**	**18**	**1.77**	**2.00**	**0.98**	152.6	1.0	footpath
FH18	4	2	4	4	3	0	0	2	0	Fir Street		**0.8**	**36**	**0.55**	**9.00**	**0.06**	212.0	1.0	road
FH19	5	1	1	3	3	0	0	2	0	Bass Creek Road		**1.3**	**36**	**1.40**	**2.00**	**0.88**	542.6	1.0	road
FH20	4	1	3	4	0	0	0	0	0			**0.8**	**12**	**0.55**	**3.00**	**0.19**	70.7	1.0	path
FH21	4	1	3	4	0	0	0	0	0			**0.8**	**12**	**0.55**	**3.00**	**0.21**	70.7	1.0	path
FH21A	5	1	2	3	0	0	0	0	0			**0.8**	**12**	**0.55**	**1.00**	**0.41**	70.7	1.0	path
FH22	3	2	4	4	0	0	0	0	0	Winsegansett Ave		**1.5**	**30**	**1.77**	**9.00**	**0.19**	254.3	1.0	road
FH23	5	1	0	3	0	0	0	0	0			**1.0**	**150**	**0.79**	**1.00**	**0.67**	1271.7	1.0	barrier beach
FH24	3	0	0	3	0	0	0	0				**1.0**	**100**	**0.79**	**1.00**	**0.88**	847.8	1.0	barrier beach
MN02	3	1	3	2	0	0	0	0	0	Aucoot Ave.		**2.0**	**35**	**3.14**	**2.00**	**1.27**	527.5	0.5	road
MN05	3	0	1	3	0	0	0	0	0			**1.0**	**14.4**	**0.79**	**1.00**	**0.91**	122.1	1.0	road?
MN06	3	0	1	2	0	0	0	0	0	Bayberry Lane		**2.0**	**20**	**3.14**	**1.00**	**3.65**	301.4	1.0	road?
MN07	2	1	2	2	0	0	0	2	0	Quelle Road		**2.0**	**20**	**3.14**	**2.00**	**1.68**	301.4	1.0	road?
MN08	4	1	1	1	2	0	0	0	0	Route 6		**4.0**	**24**	**6.00**	**1.00**	**5.41**	691.2	1.0	road
MN09	1	2	2	2	3	0	0	0	0	Route 6		**6.0**	**24**	**30.00**	**6.00**	**4.65**	1728.0	1.0	road
MN10	0	1	2	1	3	1	0	2	0	Boat Yard Lane	Hammets Cove	**3.0**	**18**	**7.07**	**1.00**	**5.01**	610.4	0.5	road
MN12	4	1	4	3	0	0	0	0	0	Tide Box		**2.0**	**12**	**3.14**	**3.00**	**0.92**	180.9	0.5	road
MN13	5	1	3	2	0	0	0	0	0	Road to Practice area Kittansett Golf C.		**2.0**	**21.6**	**3.14**	**2.00**	**1.55**	325.6	0.5	road
MN14	5	1	3	3	0	0	0	0	0	3rd Fairway cart path		**1.0**	**9.6**	**0.79**	**1.00**	**0.56**	81.4	0.5	road
MN15	5	1	2	4	0	0	0	0	0	3rd Fairway cart path		**0.7**	**9.6**	**0.35**	**1.00**	**0.25**	36.2	1.0	road
MN16	5	1	2	2	0	0	0	0	0			**2.0**	**12**	**3.14**	**1.00**	**2.23**	180.9	1.0	road?
MN17	5	1	3	2	0	0	0	0	0	Patch to 17th Green, Kittansett Golf C.		**1.5**	**9.6**	**1.77**	**1.00**	**1.58**	81.4	0.5	road
MN18	5	1	2	2	0	0	0	0	0			**2.0**	**9.6**	**3.14**	**1.00**	**2.80**	144.7	1.0	berm?
MN19	5	1	2	2	0	0	0	0	0	17th Fairway Kittansett Golf C.		**1.5**	**9.6**	**1.77**	**1.00**	**1.58**	81.4	1.0	berm?

Site #	Score for % Phrag	Score for Wetland acreage	Score Remediation Cost per-acre	Score cross section/acre	Score for public restriction	Score for Public wetland	Score Anadram. fish run	Score Rare/Endg. Sp. Hab.	Score adver. rest. impacts	Channel or Restriction Feature	Affected Wetland or Bay Name	Existing Rest. opening width (ft.)	Existing restrict. transit length ft.	Rest. Opening Cross section(ft2)	1 sq ft rulle	actual ft2 acre	Proposed remed. Restr. vol (ft^3)	Cost Factor for restr. type	Principal Restriction Structure
MN20	5	0	0	1	0	0	0	0	0	17th Fairway Kittansett Golf C.		**1.5**	**9.6**	**1.77**	**0.00**	**6.31**	81.4	1.0	berm?
MN21	5	0	0	2	0	0	0	0	0	path to 4th tee Kittansett Golf C.		**1.0**	**14.4**	**0.79**	**0.00**	**3.74**	122.1	1.0	berm?
MN22	5	2	6	4	0	0	0	0	0	13rd hole, Kittansett Golf C.		**1.5**	**9.6**	**1.77**	**20.00**	**0.09**	81.4	1.0	berm?
MN29	0	1	3	5	0	0	0	0	0	old dam		**0.0**	**18**	**0.00**	**1.00**	**0.00**	69.0	0.5	road
MN30	4	0	0	5	0	0	0	0	0	stone wall		**0.0**	**0**	**0.00**	**0.00**	**0.00**	0.0	1.0	
MN31	3	0	0	5	0	0	0	0	0	stone wall		**0.0**	**0**	**0.00**	**0.00**	**0.00**	0.0	1.0	
MT01	3	1	5	4	0	0	0	0	0	Cecella Lane		**1.0**	**12**	**0.79**	**4.00**	**0.19**	101.7	0.5	road
MT02	3	1	5	4	0	0	0	0	0	Cecella Lane		**1.0**	**12**	**0.79**	**4.00**	**0.19**	101.7	0.5	road
MT03	1	3	4	3	3	1	0	0	0	Mattapoisett Neck Road		**4.0**	**54**	**12.56**	**40.00**	**0.31**	3255.6	1.0	road
MT04	1	3	5	4	3	0	0	0	0	Mattapoisett Neck Road		**2.0**	**54**	**3.14**	**40.00**	**0.08**	813.9	1.0	road
MT05	1	3	3	3	3	0	0	0	0	Mattapoisett Neck Road		**5.0**	**54**	**19.63**	**40.00**	**0.49**	5086.8	1.0	road
MT06	2	3	5	4	3	0	0	0	0	Old Mattapoisett Neck Rd.		**3.0**	**24**	**7.07**	**40.00**	**0.17**	813.9	1.0	debris
MT07	3	3	1	2	3	1	0	0	0	Old Railroad Bridge	Mattapoisett River	**60.0**	**9.6**	**120.00**	**39.00**	**3.08**	NA	3.0	bridge
MT08	5	1	1	2	0	0	0	0	0	Club House	Eel Pond	**2.0**	**40**	**3.14**	**1.00**	**3.05**	602.9	1.0	berm, culvert with tidegate
MT09	3	3	3	3	3	1	0	0	0	Old Railroad Bridge	Eel Pond	**5.0**	**36**	**16.00**	**44.00**	**0.36**	2764.8	1.0	culvert bridge +road
MT10	5	1	3	3	0	0	0	0	0	old access area to beach		**0.8**	**12**	**0.55**	**2.00**	**0.28**	70.7	1.0	Causeway
MT11	4	1	4	2	0	0	0	0	0	Private road		**2.0**	**14.4**	**3.14**	**3.00**	**1.06**	217.0	0.5	road
MT12	4	2	2	3	0	1	0	0	0	Private road		**2.0**	**200**	**3.14**	**6.00**	**0.56**	3014.4	0.5	road
MT13	4	2	4	4	0	1	0	0	0	stones across channel		**4.0**	**20**	**2.00**	**9.00**	**0.23**	192.0	1.0	broken in places, just remove debris
MT14	0	1	0	1	3	0	0	0	0	Angelica Ave		**5.0**	**48**	**19.63**	**2.00**	**7.91**	4521.6	1.0	remains of earthen/ston e dam
MT15	4	1	4	3	3	1	0	0	0	Private Beach Road		**1.3**	**24**	**1.23**	**5.00**	**0.27**	317.9	0.5	road
MT16	5	0	0	1	3	0	0	0	0	Aucoot Rd.		**2.0**	**48**	**3.14**	**1.00**	**5.61**	723.5	0.5	road
MT17	4	1	4	5	3	1	0	0	0	Rock wall		**0.0**	**15**	**0.00**	**5.00**	**0.00**	57.5	1.0	wall
MT18	4	1	3	4	0	0	0	0	0	cart path		**0.7**	**15**	**0.35**	**2.00**	**0.18**	56.5	1.0	path
MT19	4	1	3	2	0	0	0	0	0	old dike/tide gate		**2.0**	**20**	**3.14**	**3.00**	**1.02**	301.4	1.0	dike
MT20	5	0	0	5	0	0	0	0	0	cart path		**0.0**	**12**	**0.00**	**0.00**	**0.00**	46.0	1.0	path
MT21	5	0	0	2	0	0	0	0	0	#4 Fairway	Eel Pond	**0.7**	**12**	**0.35**	**0.00**	**1.52**	45.2	1.0	path
MT22	3	1	3	2	0	0	0	0	0			**1.5**	**15**	**1.77**	**2.00**	**1.01**	127.2	0.5	road
MT23	5	1	3	2	2	1	0	0	0	Road to beach at Nasketucket Reserve	Shaws Cove	**2.0**	**12**	**3.14**	**2.00**	**1.53**	180.9	0.5	road
MT24	0	1	3	5	0	0	0	0	0	old dike		**0.0**	**12**	**0.00**	**2.00**	**0.00**	46.0	1.0	dike
MT25	3	0	1	3	0	0	0	0	0	road	Inland Road	**0.5**	**20**	**0.20**	**0.00**	**0.59**	42.4	0.5	road
MT26	3	0	0	2	0	0	0	0	0	road	Inland Road	**0.7**	**21**	**0.35**	**0.00**	**2.18**	79.1	0.5	road
MT27	3	0	1	2	0	0	0	0	0	road		**0.8**	**15**	**0.55**	**0.00**	**2.37**	88.3	0.5	road
MT28	5	0	0	1	0	0	0	0	0	driveway		**0.8**	**25**	**0.55**	**0.00**	**9.09**	147.2	1.0	driveway

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MT29	4	0	0	0	0	0	0	0	0	wooden path	path to beach	**4.0**	**10**	**12.56**	**0.00**	**25.63**	602.9	1.0	wooden path
MT30	5	0	1	3	0	0	0	0	0	culvert	path to beach	**1.0**	**16**	**0.79**	**1.00**	**0.87**	135.6	1.0	path
MT31	0	0	0	5	0	0	0	0	0	bridge		**0.0**	**15**	**0.00**	**0.00**	**0.00**	57.5	3.0	path
MT32	1	0	0	5	0	0	0	0	0			**0.0**	**10**	**0.00**	**0.00**	**0.00**	38.3	1.0	
MT33	3	0	0	1	0	0	0	0	0	culvert/road		**1.0**	**45**	**0.79**	**0.00**	**5.23**	381.5	1.0	culvert
MT35	3	1	1	2	0	0	0	0	0	culvert/road	road to dock	**1.5**	**40**	**1.77**	**1.00**	**1.56**	339.1	1.0	culvert
MT36	3	1	1	2	0	0	0	0	0	culvert/road	same as MT35	**1.5**	**40**	**1.77**	**1.00**	**1.56**	339.1	1.0	culvert
MT37	2	0	0	2	0	0	0	0	0	culvert/road	see sheet MT37A	**0.7**	**10**	**0.35**	**0.00**	**4.36**	37.7	1.0	culvert
MT38	4	0	0	5	3	0	0	0	0	road	Old Neck Road	**0.0**	**29**	**0.00**	**0.00**	**0.00**	111.1	1.0	road
NB02	1	2	0	0	3	1	0	0	0	Wood St.	Acushnet River	**500.0**	**72**	**2500.00**	**23.00**	**107.62**	NA	3.0	road
NB03	2	4	2	1	3	1	0	0	0	Coggeshall Street Bridge	Acushnet River	**100.0**	**90**	**2000.00**	**304.00**	**6.57**	NA	3.0	road
NB04	2	4	0	0	2	1	0	0	0	I-195	Acushnet River	**400.0**	**180**	**8000.00**	**320.00**	**24.97**	NA	3.0	road
NB05	2	4	0	0	2	1	0	0	0	Pope's Island Bridge	Acushnet River	**1800.0**	**72**	**48600.00**	**639.00**	**76.01**	NA	3.0	road
NB06	2	4	0	0	2	1	0	0	0	Pope's Island Bridge	Acushnet River	**800.0**	**72**	**17600.00**	**639.00**	**27.53**	NA	3.0	road
NB07	2	4	0	0	2	1	0	0	0	Pope's Island Bridge	Acushnet River	**800.0**	**72**	**7200.00**	**639.00**	**11.26**	NA	3.0	road
NB08	2	4	1	1	3	1	4	0	0	Shaw Cove Drive	New Bedford Harbor	**275.0**	**144**	**8250.00**	**1095.00**	**7.53**	NA	1.0	dike
WH01	5	4	1	1	2	1	0	0	0	Rt.6 Bridge	Weweantic River	**150.0**	**52.8**	**1950.00**	**283.00**	**6.89**	NA	3.0	road
WH01B	3	4	3	2	2	1	0	0	0	Rt.6 Bridge	Weweantic River	**100.0**	**52.8**	**1500.00**	**383.00**	**3.92**	NA	3.0	bridge/road
WH02	0	1	0	0	0	1	0	2	0	Railroad ROW Bridge	Sippican River	**36.0**	**12**	**108.00**	**2.00**	**47.58**	NA	3.0	railroad
WH03	1	1	1	1	3	0	0	0	0	Blackmore Pond Rd.	cohacket Brook	**10.0**	**10**	**30.00**	**4.00**	**8.04**	720.0	3.0	road
WH04	5	0	1	5	0	0	0	0	0	Fishermans Cove Rd		**0.0**	**24**	**0.00**	**1.00**	**0.00**	91.9	1.0	Cement Bank
WH05	3	4	1	0	3	1	0	0	0	Onset Ave	Broad Cove	**200.0**	**48**	**2000.00**	**187.00**	**10.72**	NA	3.0	road
WH06	2	3	1	1	3	1	0	0	0	East Blvd	Broad Cove	**100.0**	**48**	**600.00**	**114.00**	**5.27**	NA	3.0	road
WH07	3	2	4	3	0	0	0	0	0	Camp St.	Mud Cove	**2.0**	**24**	**3.14**	**12.00**	**0.27**	361.7	1.0	road
WH08	0	1	5	3	0	0	0	0	0	Gomez Way	Shell Point Bay	**1.5**	**12**	**1.77**	**4.00**	**0.45**	101.7	0.5	road
WH09	0	1	5	5	0	0	0	0	0	Baker's Island Road	Shell Point Bay	**0.0**	**14.4**	**0.00**	**4.00**	**0.00**	55.2	0.5	road
WH10	4	2	3	3	3	0	0	0	0	Indian Neck Road	Crooked River	**3.0**	**36**	**7.07**	**12.00**	**0.57**	1220.8	1.0	road
WH11	2	2	6	4	3	0	0	0	0	Allen Rd.		**1.5**	**36**	**1.77**	**19.00**	**0.09**	305.2	0.5	road
WH12	5	1	0	2	2	0	0	0	0	Railroad		**3.0**	**50**	**4.50**	**1.00**	**3.81**	1080.0	4.0	railroad
WH13	4	1	0	2	3	1	0	0	0	Narrows Road	Wareham River	**4.0**	**48**	**8.00**	**3.00**	**3.08**	1843.2	1.0	road
WH14	4	4	1	1	2	1	0	0	0	Minot Ave	Wareham River	**175.0**	**200**	**2275.00**	**292.00**	**7.79**	NA	3.0	road
WH14B	4	0	3	2	2	1	0	0	0	Minot Ave	Wareham River	**50.0**	**120**	**650.00**	**292.00**	**2.23**	NA	3.0	road
WH15	4	0	2	1	2	1	0	0	0	Railroad	Wareham River	**100.0**	**100**	**1700.00**	**292.00**	**5.82**	NA	3.0	railroad
WH16	4	2	2	2	2	0	0	0	0	Sandwich Rd., Rt 6		**3.0**	**43.2**	**7.07**	**5.00**	**1.36**	1465.0	1.0	road
WH17	5	3	1	2	2	1	0	2	0	Sandwich Rd., Rt 6	Agawam River	**35.0**	**40**	**140.00**	**38.00**	**3.72**	NA	3.0	road
WH20	3	2	0	0	2	0	0	0	0	I-195	Cohackett Brook	**200.0**	**100**	**600.00**	**14.00**	**43.96**	NA	3.0	road
WH21	0	2	0	0	2	1	0	2	0	I-195	Weweantic River	**150.0**	**180**	**450.00**	**9.00**	**52.82**	NA	3.0	road
WH23	4	2	3	3	0	0	0	0	0	culvert/dike	Crook River	**3.0**	**40**	**7.07**	**9.00**	**0.82**	1356.5	1.0	dike
WH24	5	1	0	2	3	0	0	0	0	railroad	Narrow Ave	**2.0**	**70**	**3.14**	**2.00**	**1.45**	1055.0	4.0	railroad
WH25	2	0	0	2	0	0	0	2	0	driveway		**0.5**	**17**	**0.25**	**0.00**	**1.09**	45.9	1.0	driveway
WH26	2	0	0	5	0	0	0	2	0	driveway		**0.0**	**12**	**0.00**	**0.00**	**0.00**	46.0	1.0	driveway
WH27	3	2	4	4	3	0	0	0	0	Pilgram Avenue		**1.3**	**31**	**1.23**	**11.00**	**0.11**	410.7	1.0	road
WH28	5	1	2	5	0	0	0	0	0			**0.0**	**12**	**0.00**	**1.00**	**0.00**	46.0	1.0	driveway
WH29	5	2	3	3	2	0	0	0	0	Route 6		**1.5**	**52.8**	**1.77**	**6.00**	**0.29**	447.6	1.0	road
WH30	0	2	4	3	0	0	0	0	0	bog dike with tide gate		**2.0**	**54**	**3.14**	**11.00**	**0.29**	813.9	1.0	dike
WH31	4	2	6	3	0	0	0	0	0	road		**2.0**	**14.4**	**3.14**	**10.00**	**0.33**	217.0	0.5	road
WH32	0	1	2	4	0	0	0	0	0	road		**0.5**	**24**	**0.20**	**3.00**	**0.08**	50.9	0.5	road

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WH33	5	2	3	3	2	1	0	0	0	road		**1.5**	**50**	**1.77**	**5.00**	**0.34**	423.9	1.0	road
WH34	4	2	3	3	0	0	0	0	0	dike		**4.0**	**24**	**4.00**	**7.00**	**0.62**	460.8	1.0	dike
WH35	4	1	3	5	0	0	0	0	0	dike		**0.0**	**12**	**0.00**	**2.00**	**0.00**	46.0	1.0	dike
WH36	0	1	4	5	0	0	0	0	0	dike		**0.0**	**12**	**0.00**	**4.00**	**0.00**	46.0	1.0	dike
WH37	4	0	0	2	0	0	0	0	0	Pond Street		**1.0**	**50**	**0.79**	**1.00**	**1.15**	423.9	0.5	road
WH39	5	1	0	2	3	0	0	2	0	Swifts Beach Playground		**1.5**	**418**	**1.77**	**2.00**	**1.04**	3543.8	1.0	culvert
WH40	5	1	3	5	0	0	4	0	0	Red Brook Road - Old Road		**0.0**	**24**	**0.00**	**2.00**	**0.00**	91.9	1.0	
WH41	5	1	0	0	3	0	0	0	0	Bridge, Red Brook Drive		**35.0**	**26.4**	**90.00**	**2.00**	**38.63**	NA	3.0	road
WP01	4	3	4	5	3	1	4	0	-10	River Road	Cockeast Pond	**2.0**	**36**	**3.14**	**112.00**	**0.03**	542.6	1.0	road
WP02	4	0	1	0	0	0	0	2	0		Hulda Cove	**2.0**	**14**	**8.00**	**1.00**	**12.31**	537.6	0.5	road
WP03	0	4	2	2	2	1	0	2	0	Rt.88 Bridge	Westport River	**920.0**	**96**	**9200.00**	**2670.00**	**3.45**	NA	3.0	road
WP04	4	1	2	3	0	0	0	0	0	Cadman's Neck Rd.		**1.0**	**48**	**0.79**	**2.00**	**0.40**	406.9	1.0	road
WP05	0	1	3	2	0	0	0	0	0	Driveway to 123 Cadman's Neck Road		**2.0**	**18**	**3.14**	**2.00**	**1.74**	271.3	0.5	road
WP06	4	4	2	2	3	1	0	0	0	Hix Bridge	Westport River	**280.0**	**30**	**1680.00**	**517.00**	**3.25**	NA	3.0	road
WP07	4	1	3	5	0	0	0	0	0			**0.0**	**18**	**0.00**	**2.00**	**0.00**	69.0	1.0	tide gate
WP08	5	1	2	5	0	0	0	0	0			**0.0**	**30**	**0.00**	**1.00**	**0.00**	114.9	1.0	dike
WP09	0	1	2	2	3	1	0	0	0			**1.5**	**20**	**1.77**	**2.00**	**1.05**	169.6	1.0	dike
WP10	2	1	3	5	0	0	0	0	0	cart path		**0.0**	**24**	**0.00**	**2.00**	**0.00**	91.9	0.5	road
WP11	4	0	0	5	0	0	0	0	0	dike		**0.0**	**24**	**0.00**	**0.00**	**0.00**	91.9	1.0	dike
WP12	3	2	5	4	0	0	0	0	0	road		**0.8**	**12**	**0.69**	**8.00**	**0.08**	90.0	1.0	culvert
WP13	3	2	5	5	0	0	0	0	0	rocks	Westport River	**0.0**	**14.4**	**0.00**	**8.00**	**0.00**	55.2	1.0	rocks
WP14	0	2	3	3	0	0	0	0	-10	dike	Westport River	**1.5**	**45**	**1.77**	**7.00**	**0.25**	381.5	1.0	dike
WP15	0	0	0	5	0	0	0	0	0	stone Wall	Hicks Cove-Dunham Creek	**0.0**	**12**	**0.00**	**0.00**	**0.00**	46.0	1.0	stone wall
WP16	0	0	0	5	0	0	0	0	0	stone Wall	Dunham Creek	**0.0**	**12**	**0.00**	**0.00**	**0.00**	46.0	1.0	stone wall
WP17	3	2	6	3	0	0	0	2	0	driveway		**2.0**	**15**	**3.14**	**10.00**	**0.32**	226.1	0.5	road
WP18	1	0	0	2	0	0	0	2	0	road	Westport River	**0.8**	**16**	**0.55**	**0.00**	**1.51**	94.2	1.0	driveway
WP19	4	1	0	2	2	1	0	2	0	Route 88	Westport River	**2.0**	**85**	**3.14**	**1.00**	**2.45**	1281.1	1.0	road
WP20	2	0	0	1	2	1	0	2	0	road		**2.0**	**85**	**3.14**	**0.00**	**8.72**	1281.1	1.0	road

Site #	Surface Type	Culvert Type	No. of existing Culverts	Culvert Condition	Shape	Explain Condition of Culvert	Additional Comments	culv. diam./ box width (in)	Box culvert height (in)	Culvert cross-section (ft^2)	New Opening Needed?	Proposed culv. diam. (ft)	Poposed new cross sect.(ft^2)
BN01	track	Terracotta	1	fair	circle		private yard, vegetation mowed, water definitely flowing, couldn't find outward culvert end.	12		0.79			
BN02	dirt	Concrete	3	good	circle	broken in places	good flushing, no evidence of restriciton	42		9.62			
BN03	paved	N/A				one was chipped							
BN04	track	N/A											
BN06	paved	aluminum	1	good	circle	culvert ok, needs 500 foot channel opened, depened	channel probably mosquito ditch originally to fresh wetland?	24		3.14			
BN07	dirt	Concrete	1	poor	circle	crushed, filled w/ debris, dn streamside submerged		30		4.91			
BN08	paved	concrete	1	fair	circle	long culvert under lawn, culvert half buried, clogged	scouring basins both ends ACOE investigating remediation	30	36	7.50			
BN09	paved	N/A				head wall collapsed into culvert	big sand bar upstream of opening						
BN10	track	N/A				old but in fine shape	smaller opening than the road bridge up stream						
BN11	tar and gravel	Corr.Metal	1	poor	circle	broken tidegate, culvert cracked in some places	Cranberry bog is upstream side	32		5.58			
BN12	track	Corr.Metal	2	good	circle	tide gate stuck 4" open	rotting board on rusted hinges	32		5.58			
BN13	track	concrete	1	good	circle	1/2 blocked culvert, need to maintain herring run	remdiation multiplier reduced to 1.25 because restriction length is mostly marsh, not railroad	48		12.56			
BN14	paved	N/A				upstream side clogged with debris							
BN15	paved	concrete	1	fair	circle		recently re-did upstream foundation, Rd. overtopped in storm, dn stream bank eroded	30		4.91			
BN16	paved	Corr. Metal	1	good	circle	broken bottom on dnstream end of culvert		26		3.69			
BN17	dirt	Corroded Metal	1			culvert too small, almost 100% all freshwater species		12		0.79			
BN21	paved	none									Y	2	3.14
BN24		clay	1	fair	circle			36		7.07			
BN25	paved	corregated metal	1	poor	circle	old rusted culvert, buried	flow almost cutoff	12		0.79			
BN26	dirt	concrete	1	poor	circle	broken ends, partially submerged, culvert clogged	dike 15 feet above culvert, entrance clogged	12		0.79			
BN27	gravel	aluminum	4	excellent	circle		culverts all too high				Y	2	3.14
BN28	stone ballast										Y	2	3.14
BN29	stone ballast	concrete	1	poor	circle	completely buried		12		0.79			
BN30	sand&grav el		1	poor	circle		too deep, too small	12		0.79			
BN32	stone		1	poor	bridge	partially collapsed on one side		48		12.56			
BN33													
BN34		concrete	1	poor	circle			18		1.77			
BN35		metal	1	poor	circle	broken and rotten	valve on upstream side	10		0.55			
BN36	paved	concrete	1	poor	circle		may be old herring run according to neighbor	18		1.77			
BN37		stone	1	fair	square			30	18	3.75			
BN38	paved	concrete	1	good	circle			36		7.07			
BN39		cast iron	1	poor	circle	very rusted tide gate frozen 90% shut		10		0.55			
BN40							2nd restriction in line after BN10	42		9.62			
BN43		concrete	1	good	square		ACOE investigating remediation	24	24	4.00			
BN44		stone	1	poor	square	other end is 2 ft. concrete culvert circle in x section 1/2 full of sand	RCP at other end	18	8	1.00			
DA01	paved	N/A	0	N/A	N/A	recently rebuilt	check road width/culvert length						

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DA02	paved	N/A	0	N/A	N/A	recently rebuilt	check road width/culvert length						
DA03	paved	Concrete	1	fair	circle		culvert will soon be replaced as part of restoration project, check road width, culvert length	12		0.79			
DA04	paved	Concrete	1	poor	circle	much broken	targeted for restoration?	24		3.14			
DA05		Concrete	1	excellent	box	almost new	Nonquitt	72	48	24.00			
DA06	gravel	Concrete	1	good	circle		culverts will be replaced in 2002 w/ 2, 24" culverts	18		1.77			
DA07	gravel	Concrete	1	good	circle	partially buried in mud		12		0.79			
DA08	dirt/stone	Concrete	1	excellent	elliptical	new		30	18	3.75			
DA09	paved	N/A	0	N/A	N/A	cracks, spalling many areas							
DA11	gravel	Concrete	1	poor	circle	1/2 buried at one end		12		0.79			
DA12	paved	Corr. Metal	2	exccellent	circle	will be replaced soon w/ R.C.D.		48		12.56			
DA13	dirt/stone	none	0	N/A	N/A	old stone foundation					Y	2	3.14
DA14	paved	Concrete	1	good	circle	fairly new		36		7.07			
DA15	dirt	Old Stone	1	poor	box	Road washed out on all sides, stone culvert	Road washed out to such an extent that allows almost free flow at high tide	24	18	3.00			
DA16	dirt		1	poor	box	completely collapsed		24		3.14			
DA17	dirt	stone	1	poor	box	completely collapsed		0	0		Y	2	3.14
DA18	dirt/gravel		1	poor	circle	rotten, buried		8		0.35			
DA19	stone						2-3 large stones in channel	5		0.14	Y	2	3.14
DA20	paved		1	good	circle	discharge at top of wrackline		12		0.79			
DA21						needs rocks removed					Y	2	3.14
DA22	sand		1	poor		99% buried on inland side - not visible on beach side	This is an interdunal wetland swale				Y	2	3.14
DA23	dirt										Y	2	3.14
DA24	dirt					2 ft high, 14 ft. wide					Y	2	3.14
DA25	dirt										Y	2	3.14
DA26	dirt										Y	2	3.14
DA27						2 ft high, 20 ft wide					Y	2	3.14
DA28						1 ft high, 3 ft. wide					Y	2	3.14
DA29						1 ft. long 3 ft. wide					Y	2	3.14
DA30	dirt					tide gate broken	3 ft high, 10 ft. wide				Y	2	3.14
DA31	stone										Y	2	3.14
DA32	stone					poor	acts like a dam 2-1/2 ft. head at low tide						
FA01	dirt, pebble	Terracotta	1	good	circle	Phrag on upstream edge		8		0.35			
FA02		none	0			200 ft broken wall top portion missing, old too small	Phrag. upstream after 2nd restriction, headwall collapsed, phrag both sides, sea wall rebuilt, no flow				Y	2	3.14
FA03	dirt	Corr.Metal	1	fair	circle	driveway, water pooled at inland base, hole in top section		8		0.35			
FA04	dirt	Concrete	1	poor	circle	metal rusting, submerged, water passes through rocks	driveway fills in some of the marsh	12		0.79			
FA05	paved	Corr.Metal	1	fair	circle	culvert not visible, covered by rocks	road crosses marsh, lots of phrag on upstream side, Filled in on east side with soil.	12		0.79			
FA06	paved	Corr. Metal	1	fair	circle	too low, and small, clogged w/debris.		18		1.77			
FA07	paved	Terracotta	1	fair	circle	upstream opening blocked by big slab of cement	Tide gate, cover was off	18		1.77			
FA08	paved	Terracotta	1	fair	circle	too small, covered, clogged	tidegate cover was on ground next to tide box, could be very dangerous for small children	18		1.77			
FA09	paved	Terracotta	1	good	circle	2/3 submerged w/ rocks on upstream side	weir/ tide gate	18		1.77			

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FA10	paved	N/A				barrier beach road with no culverts/ pond created on blocked side	high tide wrack line at downstream edge of road.				Y	2	3.14
FA11	wood	N/A			box	fresh water upstream	weir blocking flow of salt water up into cattail marsh						
FA12	paved	N/A			box	beach access road, no culverts							
FA13	paved	Terracotta	1	poor	circle	badly broken, too high to drain upstream basin		30		4.91	Y	2	3.14
FA14	paved	N/A			box	bridge being rebuilt							
FA15	paved	N/A			box	Channel opening too small, channel= 75 ft, opening = 25 ft	rock foundation fills in edges of channel						
FA16	paved	N/A			box	old cracked							
FA17	track	Corr. Metal	1	fair	circle	Big pool on upstream side, sandbar in channel	ponded water behind it-rock pile in front of culvert opening. Sandbar 25 ft downstream	60		19.63			
FA18	sand/gravel	clay	1	poor	circle	all broken and clogged 0% functional	isolated pond no pipe now bech subject to overwash	10		0.55			
FA19	paved		1	good	circle	small culvert (new) across pond, old headwall sealed		12		0.79			
FA20	track	stone	1	poor	box			12		0.79			
FA21	track	stone	1		box			12		0.79			
FA22	dirt		2	poor	circle	24" concrete culverts washed out	"Fresh Pond" should remain fresh?	48		12.56			
FA25	paved	concrete		poor	circle			12		0.79			
FA26	gravel	Concrete	3	fair	circle			24		3.14			
FA27	gravel	corrugated metal	1	good	circle	good coating galvanized		18		1.77			
FA28	tracks	stone	1	poor	box	balast from railroad tracks has filled most of culvert	see other sheets for culverts	48	6	2.00			
FA28A	tracks	stone	2	good	circle	culverts elevated too high for tidal flow	see other sheets for box culvert	36		7.07			
FA29	gravel	aluminum corr.	1	fair	circle	half buried		12		0.79			
FA30	dirt	clay	1	poor	circle	two-thirds buried	this drains a fresh area that has some salt water intrusion at highest tides	10		0.55			
FA31	stone	concrete		fair	circle	1/2 buried	this is an area which has been drained and the lowes elevation of the ditch supports spartina if the top of the "control" was at the elevation of the marsh probably no water would enter at high tide	24		3.14			
FA32	dirt	clay		poor	circle	terracotta-filled in between sections, ditch filled in		18		1.77			
FA33	dirt/gravel	corrugated metal		poor	circle	3/4 buried, seems rotted		12		0.79			
FA34	gravel			poor	circle	completely buried no flow apparent	ditch through side of dune	18		1.77			
FA35	paved?			excellent	circle	1/2 buried		12		0.79			
FA36					circle	new outlet pipe	barner beach movement will soon block this pipe - only outlet to marsh	12		0.79			
FA37							ditch through dike is 4 ft. wide						
FA38				poor	circle	90% buried at outlet	over 100 feet long - only outlet to marsh	10		0.55			
FA39		corrugated metal		poor	circle	well rotted		24		3.14			
FA40		corrugated metal		poor	circle	culvert clogged, submerged at high tide	Olmstead Marine Service	15		1.23			
FA41		clay		poor	circle	pipe broken, blocked at eel Pond pipe end not visible, covered during house reconstruction	Mr. Hebner	12		0.79			
FH01	dirt	Corr. Metal	1	excellent	circle	looks new	check restriction length	12		0.79			
FH02	dirt	Concrete	1	good	circle			24		3.14	Y	2	3.14

Site #	Surface Type	Culvert Type	No. of existing Culverts	Culvert Condition	Shape	Explain Condition of Culvert	Additional Comments	culv. diam./ box width (in)	Box culvert height (in)	Culvert cross-section (ft^2)	New Opening Needed?	Proposed culv. diam. (ft)	Poposed new cross sect.(ft^2)
FH03	wood	N/A	0	N/A	N/A	old but very passable in daily use							
FH04	paved	Stone	1	good	box	no apparent flaws		60	48	20.00			
FH05	paved	Concrete	2	good	circle	ice damage, no material under wingwalls		36		7.07			
FH06	dirt	Concrete	1	good	circle	new construction	culvert falling apart	36		7.07			
FH07	dirt	Concrete	1	good	circle	new construction		36		7.07			
FH08	paved?	Concrete	1	fair	circle	Culvert washed away in hurricane	exposed to V-zone on beach	12		0.79			
FH08A	Wooden walkway	N/A	0		N/A	wooden walk way							
FH09A	paved	Concrete	1	poor	circle	submerged and partially blocked		12		0.79			
FH09B	dirt/stone	Concrete	1	good	circle			12		0.79			
FH10	paved	unknown	1	fair	circle			12		0.79			
FH11		Concrete	1	good	circle	1/4 blocked at high end by stones	superfund site	36		7.07			
FH12	dirt/shell	Concrete	1	poor	circle	completely under-not visible may be stone culvert		12		0.79			
FH13	paved	Concrete	1	unknown	circle	not visible		12		0.79			
FH14	paved	Concrete	1	fair	circle			18		1.77			
FH15	dirt	unknown	2	poor	circle	looks old		12		0.79			
FH16	paved	Concrete	2	excellent	circle	some stone blocking NE end of culvert by 1/4	no evidence of restriction	36		7.07			
FH17	dirt/gravel	unknown	1	poor	circle	mosquito ditch filling in from overwash pan		18		1.77			
FH18	paved	Concrete	1	fair	circle	Road to beach		10		0.55			
FH19	paved	Concrete	1	fair	circle	one end clogged w/ vegetation	100% phrag, mapped on Wet. Consv. map as saltmarsh	16		1.40			
FH20	dirt/grass	Aluminum	1	fair	circle	partially burried		10		0.55			
FH21	dirt/grass	Corr. Metal	1	fair	circle	rocks blocking both inverts		10		0.55			
FH21A	dirt/grass	Corr. Metal	1	fair	circle			10		0.55			
FH22	paved	Concrete	1	poor	circle	1/4 blocked by stones		18		1.77			
FH23		corrugated metal	1	poor	circle			12		0.79			
FH24			1	good to excellent				12		0.79			
MN02	dirt	concrete	1	poor	circle	chipped culvert, upstream headwall recently collapsed		24		3.14			
MN05	paved?	concrete	1	good	circle			12		0.79			
MN06	dirt	concrete	1	good	circle	no flow		24		3.14			
MN07	paved?	Terracotta	1	fair	circle	not restrictive anymore		24		3.14			
MN08	paved	Stone	1	poor	box	old stones, some loose inside		48	18	6.00			
MN09	paved	Stone	1	new	box			72	60	30.00			
MN10	gravel	unknown	unkn	poor	unknown	can't see culvert		36		7.07			
MN12	dirt	Plastic	2	excellent	circle	all brand new	Kittansett Club will make alterations to allow some tidal flow	24		3.14			
MN13	dirt/gravel	Clay	1	poor	circle	doesn't pass water based on size	may be broken or blocked inside	24		3.14			
MN14	dirt/gravel	ABS plastic	1	good	circle	new	no water movement through culvert	12		0.79			
MN15	paved	Concrete	1	poor	circle	partially buried (1/2)	all freshwater wetlands on upstream side	8		0.35			
MN16	paved?	Clay	1	poor	circle	buried partially blocked at one end	fresh both sides	24		3.14			
MN17	dirt/gravel	Clay	1	poor	circle	can't see culverts mostly blocked	all fresh	18		1.77			
MN18	dirt/gravel	Concrete	1	poor	circle	1/2 buried	all fresh	24		3.14			
MN19	dirt/gravel	Clay	1	poor	circle	Bottom of culvert above channel elevation.		18		1.77			

Site #	Surface Type	Culvert Type	No. of existing Culverts	Culvert Condition	Shape	Explain Condition of Culvert	Additional Comments	culv. diam./ box width (in)	Box culvert height (in)	Culvert cross-section (ft^2)	New Opening Needed?	Proposed culv. diam. (ft)	Poposed new cross sect.(ft^2)
MN20	dirt/gravel	unknown	1	poor	circle	all buried		18		1.77			
MN21	dirt/gravel	unknown	1	fair	circle	all buried		12		0.79			
MN22	dirt/gravel	unknown	1	fair	circle	all buried		18		1.77			
MN29	dirt					5 ft. head					Y	2	3.14
MN30						4 large stones					Y	2	3.14
MN31						6 large stones					Y	2	3.14
MT01	dirt	PVC	1	good	circle		private drive	12		0.79			
MT02	dirt	PVC	1	excellent	circle		private drive	12		0.79			
MT03	paved	Concrete	1	good	circle	100 foot wide, narrows to 30 ft. to 40		48		12.56			
MT04	paved	Concrete	1	poor	circle			24		3.14			
MT05	paved	Concrete	1	good	circle	road crosses large marsh	Culvert too high up, parrallel to Old Mattapoisett Neck Rd	60		19.63			
MT06	paved	Concrete	1	poor	circle	Needs immediate attention, collapsed roadway	Culvert broken in many places, broken up road washed over, 2/3 washed away	36		7.07			
MT07	wood	N/A	0			Roadway built on causeway w/bridge in middle	big area of ponded water, current moving fast						
MT08	dirt	metal	1	poor	circle	broken tide gate stuck open	stuck 3" open, plastic 12" inside concrete 18" w/ broken flap valve	24		3.14			
MT09	dirt	Stone	1	excellent	box	submerged culvert		48	48	16.00			
MT10		Corr. Metal	1	poor	circle	culvert submerged at low tide	limited waterflow, only opening in causeway	10		0.55			
MT11	paved, new	ABS plastic	1	excellent	circle	new looking road	problem due to downstream restriction	24		3.14			
MT12	dirt	Corr. Metal/Concr.	1	poor	circle	changes material over long expanse, marsh dying	broken, been replaced and can hear water trickle out of cracks	24		3.14			
MT13	wall	none	1			submerged culvert, 2 ft. length, basically useless	should be removed, water flowing around and over-also rock wall, broken in places water partially impeded				Y	2	3.14
MT14	dirt	Concrete	1	good	circle	remains of earthen/stone dam	no Phragmites	60		19.63			
MT15	dirt	concrete	1	good	circle			15		1.23			
MT16	dirt?	concrete	1	good	circle	Aucoot road channel dug out		24		3.14			
MT17		none	0	NA	N/A	rock wall w/ missing sections, channel washed through					Y	2	3.14
MT18	dirt	corrugated metal	1	poor	circle	90% crushed		8		0.35			
MT19	dirt/grass	concrete	1	fair	circle	tide gate will not close		24		3.14			
MT20	gravel	none	0	NA	fill	collapsed, clogged					Y	2	3.14
MT21	gravel	unknown	1	poor	circle	not really draining area at all - pipe buried at both ends		8		0.35			
MT22	gravel/recycled ashphalt	unknown	1	good	circle	fairly new - bridge can be used instead		18		1.77			
MT23	dirt	corrugated metal	1	good	circle			24		3.14	Y	2	3.14
MT24						been long time stabilized					Y	2	3.14
MT25	gravel	concrete	1	fair	circle	placed much too high		6		0.20			
MT26	gravel	concrete	1	fair	circle			8		0.35			
MT27	gravel	concrete	1	good	circle	downstream ditch is through upland of Iva		10		0.55			
MT28		pvc	1	excellent	circle			10		0.55			

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MT29	wood					wood planked path resting on marsh		48		12.56			
MT30					circle	can't see culvert because of vegetation		12		0.79			
MT31	bridge					dirt and gravel 6 ft wide 3 ft. high					Y	2	3.14
MT32											Y	2	3.14
MT33	gravel					completely buried at both ends		12		0.79			
MT35	gravel	corrugated metal	1	poor	circle	rotted on the bottom		18		1.77			
MT36	gravel	corrugated metal	1	poor	circle	rotted on the bottom		18		1.77			
MT37	grass	clay and transite	2	poor	circle	3 ft of cover		8		0.35			
MT38	paved										Y	2	3.14
NB02	paved	N/A	0	N/A	N/A								
NB03	paved	N/A	0	N/A	N/A	bridge built out into river on stone pier							
NB04	paved	N/A	0	N/A	N/A								
NB05	paved	N/A	0	N/A	N/A	Phrag upstream							
NB06	paved	N/A	0	N/A	N/A								
NB07	paved	N/A	0	N/A	N/A								
NB08	rock	none	0	N/A	N/A	hurricane barrier							
WH01	paved	N/A				recently reconditioned	bridge opening width=96ft w/pier in middle lowlying areas wouldn't be affected by greater tidal surge						
WH01B	paved	N/A				recently reconditioned	second half of Rt. 6 bridge same as WH01						
WH02		N/A				no bridge left, piers rotting in place	just upstream of Rt. 195						
WH03	paved	N/A											
WH04		none	0	NA		developed area, cemented bank	beach formation limits channel				Y	2	3.14
WH05	paved	N/A				One of lanes is 1/2 filled by sand bar							
WH06	steel	N/A				Very rusted Iron bridge	Causeway/foundation built out into channel						
WH07	paved	Concrete	2	good	circle	Road washed out on downstream side.	Big rocks blocking culvert on both sides	24		3.14			
WH08	dirt/sand	Concrete	1	good	circle	Old road thru marsh	Dead end	18		1.77			
WH09	dirt/sand	none	0		NA		no culverts, road over marsh				Y	2	3.14
WH10	paved	Unknown	1	poor	circle	Whirlpool visible on downstream opening	Pipe deeply submerged, broken, collapsed head wall, once had flap gate, invert 1' below channel	36		7.07			
WH11	paved	Concrete	1	fair	circle	Underground water pipe spraying out into channel		18		1.77			
WH12	track	concrete	1	fair	square			36	18	4.50			
WH13	paved	concrete	1	fair	box	boxed headwall upstream		48	24	8.00			
WH14	paved	N/A				culvert end submereged							
WH14B	paved	N/A				two openings (WH14) converge into one							
WH15	track	N/A											
WH16	paved	Concrete	1	poor	circle	structure broken, not visible on river side	Old weir perhaps?	36		7.07			
WH17	paved	Concrete					Very small opening for size of river						
WH20	paved	N/A					2 bridges, one for east bound, 2nd upstream for west bound						
WH21	paved	N/A					2 bridges, one for east bound, 2nd upstream for west bound						
WH23	dirt	Concrete	1	good	circle			36		7.07			
WH24	paved	Concrete	1	good	circle			24		3.14			
WH25	shell		1	poor	box			6	6	0.25			
WH26	dirt						no opening in dike				Y	2	3.14
WH27	paved	Concrete	1	good	circle			15		1.23			
WH28		clay									Y	2	3.14
WH29	paved		1	good	circle			18		1.77			
WH30		corrugated metal	1	fair	circle		45 ft wide x 13 ft. high	24		3.14			
WH31	dirt	corrugated metal	1	poor	circle	pretty well washed out and broken up but still acts as a restriction		24		3.14			
WH32	grass	clay	1	fair	circle	salt pond has no outlet - lots of phrag around it		6		0.20			

Site #	Surface Type	Culvert Type	No. of existing Culverts	Culvert Condition	Shape	Explain Condition of Culvert	Additional Comments	culv. diam./ box width (in)	Box culvert height (in)	Culvert cross-section (ft^2)	New Opening Needed?	Proposed culv. diam. (ft)	Poposed new cross sect.(ft^2)
WH33	paved	Concrete	1	fair	circle	must be replaced in conjunction with WH29	abandoned section of Route 6	18		1.77			
WH34						low 20 ft wide. This break is 4 ft wide with some railroad ties in channel. Does not function	must be done in conjunction with WH35, WH23 and WH10						
WH35						8-10 ft across poor dondition. Low and lots of holes	this is in a long chaine of restrictions to Crooked River				Y	2	3.14
WH36											Y	2	3.14
WH37			1	poor	circle	difficult to find each end	long line of restrictions WH39 & WH38	12		0.79			
WH39			1		circle		line of restrictions includes WH37 & WH38. Pipe is tied to street drainage system	18		1.77			
WH40											Y	2	3.14
WH41	paved	Cemented Stone	1	good	box		old rock/ earthen wall w/ 10ft. opening just upstream	180	72	90.00			
WP01	paved	Corr.Metal	1	poor	circle	rotten on bottom side	historically pond was fresh water until last culvert. Too little salt inflow. Should be maintained fresh?	24		3.14			
WP02	dirt	Stone	1	good	box			24	48	8.00			
WP03	paved	N/A	0	N/A	N/A								
WP04	paved	Clay	1	poor	circle	partially filled on bottom		12		0.79			
WP05	gravel	Concrete		fair	circle			24		3.14			
WP06	paved	N/A	0	N/A	N/A	recently rebuilt							
WP07	dirt						dike, dirt abut 15 feet wide with break approx. 5 feet wide				Y	2	3.14
WP08			0				20-25 feet wide 6 ft. high total restriction				Y	2	3.14
WP09	dirt	aluminum	1	good	circle		15 feet wide only 2 feet high	18		1.77			
WP10	gravel/dirt						only about 6 inches high overwashed at high tide				Y	2	3.14
WP11							ditch through dike is on 3-4-1/2 ft. wide				Y	2	3.14
WP12	shell	stone	1	poor	box	partially blocked		10	10	0.69			
WP13						Channel blocked to within 6 inches of MHW	12 ft. x 3-1/2 ft. x 6 ft. pile of small and large stones - once a stone bridge				Y	2	3.14
WP14	grass		1		circle	did not see - all estimated		18		1.77			
WP15						stone wall - may allow fish passage holes in wall					Y	2	3.14
WP16						2-3 stones high	Holes for fish passage may be adequate				Y	2	3.14
WP17	gravel		1	good	circle	very little cover		24		3.14			
WP18	gravel/shell		1	excellent	circle	laid very low - no cover		10		0.55			
WP19	paved		1	poor	circle	well rotted		24		3.14			
WP20	paved		1	poor	circle	well rotted		24		3.14			

Site #	Feature or Road width (ft.)	Lanes	Length culvert/rest. (ft)	Approaching channel width (ft.)	Draw Bridge?	Piers?	Number of Bridge Piers	Bridge Year Built	Bridge Channel Width ft	Channel depth (MLW+1.5)	Bridge channel cross section (ft2)	Bridge Structure Condition	Evidence of Restriction	Low lying devel. areas?	PlantsUp/Down stream	Other Plant Species Observed	Wildlife Observed
BN01	8	1		unknown	N	N							CI,P,CB,VDB,CC	Y	N/Sp,P		
BN02	7	1	40	6	N	N							CB	N	N/Sa,Sp		
BN03	36	4			N	Y	4		350	6	2100	good		Y	unknown		
BN04	12	1			N	Y	4		250	6	1500	good		Y	unknown		
BN06	24	2	500	3	N	N								Y	Sp/P,Sp		
BN07	8	1		unknown	N	N							S,US	N	Sa/Sp		
BN08	21	2	300		N	N							PS,PU,US,CB,CC	N	Spartina P.hrag, Iva up Spart. Alt. Down		Great Blue Heron
BN09	35	2			N	N			56	10	560	good	P,PS,PU	N	N/Sp,Sa,P		
BN10	12	1			N	N			51	8	408	good	P,PU	N	N/Sp,Sa,P		
BN11	22	2		10	N	N							PU,SCS,CB	N	Sp/cranberry		
BN12	10	1		unknown	N	N							PU,SCS	N	Sp/Sp		
BN13	95	1		unknown	N	N							PU,SCS	N	Sp/Sp		
BN14	22	2			N	N			45	6	270	good		Y	N/Sp		
BN15	22	2		4	N	N							P,SCS,VDB	N	Sp,Ds/Sp,Sa,P		
BN16	22	2	15	4	N	N							L,P,SCS	Y	Sp,Sa/P		
BN17	12		0		N	N						good	P	Y	N/Sp,Sa,P		
BN21	18	2	0														
BN24			18														
BN25	21	2	30		N	N									s. Patens? plantain, poison ivy		
BN26			60	3	N	N							Phrag, Iva		Distichlis, Spar, Iva Phrags./ Patens		
BN27	12	1	15										culvert invert, phragmites aus				
BN28	60												vegetation die back				
BN29	60												culvert clogged				
BN30	75		50										phragmites aus				
BN32	10												seaward & upstream scouring				
BN33	20		250			7			20	4	80						
BN34			60														
BN35	20												phragmites aus				
BN36			60														
BN37	20																
BN38			60										phragmites aus				
BN39	20			4									phragmites aus				
BN40	20			6									mummichugs				
BN43			80										veg die back, phrag aus				
BN44			280	6									ponded water on seaward side				
DA01	30	2			N	Y	10		110	3	330	good		N	Sp/Sp		

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DA02	30	2			N	Y	4	1938	50	2	100	good	P	N	Sp/Sp		Black ducks
DA03	30	2			N	N							P	N	N/Sp,P		
DA04	15	1.5		8	N	N							P,PU	N	N/P,Sp		
DA05	30			2	N	N							P,PU,CB	unkno	N/P,Sp		
DA06	20	1		2	N	N							P,VDB	N	P,Sp/P,Sp		
DA07	20	1		1	N	N							P,VDB	unkno	unknown		
DA08	##	1		2	N	N							P,PU,VDB	unkno	N/P,Sp		
DA09	25	2			N	Y	2	1932	60	2	120	poor		unkno	P/unknown		
DA11	12	1		unknown	N	N							P,PU,SCS	N	Sp/P		
DA12	40	2		35	N	N								unknown			
DA13	15	1	10		N	N						fair		unknown			
DA14	25	2		unknown	N	N							P,VDB	N	Sp/Sp		Oysters
DA15	20	1		15	N	N							P,PU	N	Sp/Sp		
DA16	15	1		1.5													
DA17	12	1		4													
DA18	9	1	20	2													
DA19	6																
DA20	30	2	40														
DA21	4																
DA22			250														
DA23	10																
DA24	14																
DA25	18	1															
DA26	14																
DA27	20																
DA28	3																
DA29	3																
DA30	10			10													
DA31	4																
DA32	15								15	3	45						
FA01	10	1		4	N	N							CC,P,SCS,CB,CD,VDB	N	N/P,Ssp		
FA02	20		0		N	N							PU	Y	N/Sp		
FA03	10	1		2	N	N							CC,P,SCS,CD	Y	P/P		
FA04	10	1			N	N							CC,P,SCS	Y	P/P		
FA05	22	2		2	N	N							CC,P,SCS	Y	Sp/P		
FA06	22	2		1	N	N							P	Y	P/P		
FA07	20	2	75	4	N	N							S,SCS,CB,CD	Y	N/Tl		Ring Necked Pheasant
FA08	15	2	35	5	N	N							L,P,PU,SCS,VDB	N	Tl,P/Sp,P		Redwinged Blackbirds
FA09	12	1	35	4	N	N							P,,PU,SCS	Y	P,Sp/P,Tl		Redwing Blkbirds, Mallards

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FA10	15	2	30		N	N							P, PU	N	Sp/P,Tl		Can. Geese, Swans, Mallards
FA11	22	2	25	12	N	N			14	2	28	good	SC,P,PU,US	N	Sa/Sp,P		
FA12	22	2	25	12	N	N			20	2	40	good	S,P,PS,US,BE	N	Sp/Sa		Canadian Geese
FA13	22	2	36	12	N	N						fair	L,Cl,P,PS,PU,SC S,CB,BE,CC	N	Sp/Sp,P		
FA14	40	2	40	120	N	Y	2	1938	120	3	360	poor	S,P,PU	N	N/Sp		Great Blue Herons feeding
FA15	30	2		75	N	N		1992	25	6	150	excellent	P,US,BE	N	N/Sp,P		Buffleheads
FA16	40	2			N	Y	3		120	6	720	fair	P	N	Sp/Sp,P		
FA17	10	1		25	N	N							L,C,P,PU,US,VDB ,BE	N	Sp,Sa/Sp,P		
FA18	70				N	N											
FA19	21	2			N	N											
FA20	50				N	N											
FA21	50				N	N											
FA22	20				N	N											
FA25	20		40														
FA26	15	1	24	8													
FA27	12	2	18	2	N	N							Phrag		Iva/Sp	Juncus	osprey
FA28	18			8									Phrag		Iva, Phrag/Sp	Toxco.	Osprey
FA28A	18			8									Phrag		Iva, Phrag/Sp	Toxco.	Osprey
FA29	21		40	2													
FA30				2													
FA31	15			2													
FA32	15			2													
FA33	15			2													
FA34	18		300	2													
FA35	27			2													
FA36			60														
FA37	10								4	1	4						
FA38	50																
FA39			720	8													
FA40			232		N								P, veg dieback	Y			
FA41			342		N								P, veg dieback	Y			
FH01	12	1	12	2	N	N						excellent		N	Sp/Sp		
FH02	20	2	4	unknown	N	N							P	Y	P,Sp/P		2 Hawks in air above

Site #	Feature or Road width (ft.)	Lanes	Length culvert/rest. (ft)	Approaching channel width (ft.)	Draw Bridge?	Piers?	Number of Bridge Piers	Bridge Year Built	Bridge Channel Width ft	Channel depth (MLW+1.5)	Bridge channel cross section (ft2)	Bridge Structure Condition	Evidence of Restriction	Low lying devel. areas?	PlantsUp/Down stream	Other Plant Species Observed	Wildlife Observed
FH03	10	1			N	N			35	2	70	fair	P	N	Sp/Sp		Oysters under bridge
FH04	12	1	40	3	N	N						good	P	N	Sp/P		
FH05	12	1	40	unknown	N	N							P	N	Sp/P		
FH06	24	1		5	N	N							P,PU,SCS,CI,CD	N	Sp,Iva,P/Sp,Iva,P		Great Blue Heron
FH07	24	1		unknown	N	N							P,PU,SCS,BE	N	Sp/Sp,Iva,P		
FH08	50		75	unknown	N	N							P	Y	N/P		
FH08A	8				N	N			10	2	20	poor	P	N	N/P,Sp		
FH09A	40	2		unknown	N	N							P	Y	P/Sp,P		
FH09B	10	1		unknown	N	N							P	N	P/Sp		
FH10	40	2		unknown	N	N							P	N	N/P		
FH11	##		80	3	N	N						excellent	P	N	Sp/Sp,P		
FH12	12	1			N	N							P	N	P/P		
FH13	12	1			N	N							P	N	P/P		
FH14	15	1		unknown	N	N							P		Sp/P,Sp		
FH15	12	1		unknown	N	N								N	Sp/Sp		
FH16	40	2		unknown	N	N									Sp/Sp		
FH17	15	1		unknown	N	N								N	Sp/Sp		
FH18	30	2		4	N	N									Sp/Sp		
FH19	30	2		2	N	N							P	N			
FH20	10	1		1	N	N							P,CC		P/SP,P		
FH21	10	1		2	N	N							CC				
FH21A	10	1		2	N	N							CC				
FH22	25	2		4	N	N							L,P,PU,CC		Sp/Sp,P		Great Blue Heron
FH23			150														
FH24			100														
MN02	10	1	35	2	N	N							CC,P,SCS,CB,CI, CD	Y	Sp/Sp,Ds,Jg	Salicornia sp.	
MN05	12			1	N	N							P,SCS	Y	Sp,Iva/Sp,Iva,P		Crows and Gulls
MN06	12	1	20	2	N	N							CC,P,SCS	Y	Sp/SP,P	Iva frutescenes	
MN07	12		20	2	N	N							CC,SCS	Y	Sp/Iva,Sp		
MN08	65	4	24	2	N	N							S,P	N	Sp/P,Sp		
MN09	30	4	24	2	N	N							S,P	N	Sp/P,Sp		
MN10	15	1		unknown	N	N							PU,CB	N	Sp/Sp		
MN12	10	1		2	N	N							P,SCS	N			
MN13	18	1		2	N	N							L,P,SCS,CC	N	P/P,Sp		
MN14	8	1		2	N	N							P	N	Sp/Freshwater		
MN15	8	1		2	N	N							P	N	Sp,P/Freshwater		
MN16	10			2	N	N								N	Fresh/Fresh		
MN17	8	1		unknown	N	N								N	Fresh/Fresh		
MN18	8			unknown	N	N									Fresh/Fresh		
MN19	8			3	N	N									Fresh/Fresh		

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MN20	8			3	N	N								N			
MN21	12			0.5	N	N								N			
MN22	8			3	N	N								N			
MN29	15	1															
MN30				2													
MN31				2													
MT01	10	1		1	N	N						good	CC,P,SCS	N	Ds,Sp/Ds,Sp,P		
MT02	10	1		1	N	N						good	P,SCS	N	Sp/Sp,P		
MT03	45	2		3	N	N							P,SCS,US	N	Sp/P		
MT04	45	2		2	N	N							S,L,P,PU,CB	N	Sp/Sp		
MT05	45	2		25	N	N							L,P,CI	N	Sp/Sp	Juncus gerardii	
MT06	20	2		4	N	N							L,P,CB,CI,BE,CD	N	Sp/Jg,P		
MT07	8	1			N	N			60	2	120	good	S,P,PU	N	Sp/P		Crows, gulls, ducks
MT08	40		40	1	N	N							P,SCS,CB	N	P		
MT09	30	1		4	N	N			5	1	5	excellent	S,PS,PU	N	Sa,Sp/Sa,Sp,P		Swans, Geese
MT10	20		12		N	N							P,PU,SCS,CI,CD	N	P,Sp/TI	Tupulo	
MT11	12			2	N	N							L,P,VDB	N	P,Sp/P,Sp		
MT12	12	1	200	4	N	N							S,P,PU,SCS,US, CB,CD,VDB	N	N/P,Sp		6Black Ducks feeding
MT13	20		20	20	N	N			4	0.5	2		P,PU,SCS,CB,CI, CD	Y	N/P,Sp		Canadian Geese
MT14	20		48	5	N	N							S	Y	Sp,Ds/Sp,Ds	Iva frutescense	
MT15	15	1	24	2	N	N							P, SCS, US	Y	Ds, Sp/Sp		
MT16	40	2		3	N	N							SCS	Y	Jg,Sp,Ds/Jg,Sp,Ds		
MT17	20		15		N	N						poor	P	Y	N/Sp,P		
MT18	12	1	15		N	N											
MT19	20		20		N	N											
MT20	10	1	0		N	N											
MT21	10	1	12	2	N	N											
MT22	10	1	15		N	N											
MT23	12	1	12	4	N	N						good	P				
MT24			12	4													
MT25	12	1.5	20														
MT26	14	1.5	21														
MT27	13	1	15														
MT28			25														

Site #	Feature or Road width (ft.)	Lanes	Length culvert/rest. (ft)	Approaching channel width (ft.)	Draw Bridge?	Piers?	Number of Bridge Piers	Bridge Year Built	Bridge Channel Width ft	Channel depth (MLW+1.5)	Bridge channel cross section (ft2)	Bridge Structure Condition	Evidence of Restriction	Low lying devel. areas?	PlantsUp/Down stream	Other Plant Species Observed	Wildlife Observed
MT29			10														
MT30			16														
MT31	6		15														
MT32			10	3													
MT33	15	1.5	45														
MT35	25	1	40	4													
MT36	25	1	40	4													
MT37	9	1	10	2													
MT38	21	2	29	1													
NB02	60	2			N	N			500	5	2500		P	Y	Sa,P/P		
NB03	75	2			N	N			100	20	2000	fair	S,P,PS,PU,US	Y	N/P		
NB04	##	4			N	N			400	20	8000		P,PS,PU	Y	N/P		
NB05	60	4			N	Y	8		1800	27	48600	good	P	Y			
NB06	60	4			Y	Y	1		800	22	17600	good	P	Y			
NB07	60	4			Y	Y	4		800	9	7200	good	P, PS, PU	Y			
NB08	##				N	N			275	30	8250	excellent					
WH01	44	4		980	N	Y	2	1956	150	13	1950	good	P	Y	Sp/Sp,P		
WH01B	44	4			N	Y	1	1956	100	15	1500	good	P	Y	Sp/Sp,P		
WH02	10	1	12		N	Y	2		36	3	108	poor	S,P	N	N/Tl	Freshwtr sp.	
WH03	25	2	10		N	N			10	3	30	good		N	N/Tl		
WH04	20		0		N	N							P	N	N/Sp,P		
WH05	40	2			N	Y	2	1914	200	10	2000	good	P	Y	N/Sp		
WH06	40	2			N	N			100	6	600	poor	P	Y	Sp/Sp,Sa		
WH07	20	2		8ft.	N	N							P,CC	Y	Sp/Jg,Ds	Seaside lavender	
WH08	10	1		unknown	N	N							S	N	Sp/Sp,Jg		
WH09	12	1	0		N	N								Y	Sp/Sp, Jg		
WH10	30	2		300	N	N							S,CI,P,PS,PU,SCS,US,CB	N	Sp,Sa/Sp,P		
WH11	30	2		3	N	N							P,SCS,US,CB	N	Sp/Sp,P		
WH12	15	1	50		N	N							CI,P,PU,CB	N	N/P		
WH13	40	2		unknown	N	N							P,PU,SCS,US	Y	N/Sa,P		
WH14	##	4	200		N	N	2	1992	175	13	2275	good	P,PU	Y	N/P,Sa		
WH14B	##	4			N	N		1992	50	13	650	good	P,PU	Y	N/P,Sa		Osprey fishing in river
WH15	15	1	100		Y		11		100	17	1700	good	P,PU	Y	N/P		
WH16	36	2			N	N						poor	CI,P,PS,PU,SCS,CB,VDB,CC	N	SP,P/P,Tl		
WH17	40	2	40	100	N	N		1930	35	4	140		P,PS,PU,US	N	Sp,P/P		
WH20	##	4	100		N	known			200	3	600	good	P	N	Sp,Sa/P		
WH21	##	4			N	known			150	3	450	good	P	N	Sa,Sp/P,Sp		
WH23			40	10													
WH24	24	2	70														
WH25	12	1	17	3													
WH26	10																
WH27	21	2	31	4													
WH28	10																
WH29	44	4		2													
WH30	45																
WH31	12	1															
WH32	20	1	24	3													

Site #	Feature or Road width (ft.)	Lanes	Length culvert/rest. (ft)	Approaching channel width (ft.)	Draw Bridge?	Piers?	Number of Bridge Piers	Bridge Year Built	Bridge Channel Width ft	Channel depth (MLW+1.5)	Bridge channel cross section (ft2)	Bridge Structure Condition	Evidence of Restriction	Low lying devel. areas?	PlantsUp/Down stream	Other Plant Species Observed	Wildlife Observed
WH33	30	2	50	2													
WH34	20			4					4	1	4						
WH35	10			3													
WH36	10																
WH37			50														
WH39			418														
WH40	20																
WH41	22	2		20	N	N			35		0	good	L,VDB,BE	N	Sp,Sa,P,Tl/P,Tl		
WP01	30	2		3	N	N							P,U,SCS	N	Sp/P		
WP02	14	1	14	6	N	N							P	unkno	Sp/cattail	Narrow-leaved cattail	
WP03	80	2			N	Y	13 sets		920	10	9200	good	P	N	Sp/Sp		
WP04	40	2		unknown	N	N								unkno	Sp/Sp		
WP05	15	1		unknown	N	N								unknown			
WP06	25	2			Y	Y	10 sets		280	6	1680	fair		Y	P/Sp		
WP07	15			3													great blue heron
WP08	25																
WP09			20	3													
WP10	20																
WP11	20																
WP12	10	1	12	25													
WP13	12			12													
WP14			45	6													
WP15	10			12													
WP16	10			12													
WP17	12	1	15	4													
WP18	14	1	16	1													
WP19	40	2	85	2													
WP20	40	2	85	2													

Buzzards Bay Project National Estuary Program
2870 Cranberry Highway
East Wareham, MA 02538
(508) 291-3625
www.buzzardsbay.org

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