PUBLIC NOTICE

US Army Corps
of Engineers ®
New England District

696 Virginia Road
Concord, MA 01742-2751

Date: July 26, 2016
Comment Period Ends: August 25, 2016
File Number: NAE-2007-02926
In Reply Refer To: Joshua Helms
Or by e-mail: joshua.m.helms@usace.army.mil

The District Engineer of the New England District, Corps of Engineers ("Corps") has received a prospectus dated May 24, 2016 for an amendment to the Massachusetts Department of Fish and Game (DFG) – Massachusetts In-lieu Fee Program Instrument ("DFG-MA-ILF"). The proposal is for the restoration of eelgrass habitat at two sites in Boston, Massachusetts and one in Salem, Massachusetts using DFG-MA-ILF funds. The Corps is soliciting comments on the prospectus.

SPONSOR: Massachusetts Department of Fish and Game ATTN: Richard Lehan, 251 Causeway Street, Boston, MA 02114

ACTIVITY: The prospectus includes the re-establishment (restoration) of approximately ½ acre of eelgrass to sites in Salem Sound and Boston Harbor to compensate for authorized impacts to waters of the United States within the Coastal Service Area for which payments into the DFG-MA-ILF program were made in lieu of the permittees doing their own mitigation.

The proposal involves the planting of eelgrass within two ¼ acre sites immediately adjacent to Massachusetts Division of Marine Fisheries eelgrass restoration sites within the waters of Boston Harbor and Salem Sound. The sites proposed to be restored are the Governor's Island Flats in Boston (Latitude 42.34436° N, Longitude -70.98657° E), Massachusetts and Middle Ground in Salem (Latitude 42.53171° N, Longitude -70.84711° E), Massachusetts. A proposed secondary site is located at Great Brewster Island in Boston, Massachusetts (Latitude 42.33171° N, Longitude -70.89837° E).

Work involves the collection of approximately 5200 eelgrass shoots in Nahant and Beverly and transplanting these plants to the primary restoration sites at Governor's Island Flats and Middle Ground or the secondary restoration site at Great Brewster Island, and is described in the attached prospectus entitled "Eelgrass Restoration Project Proposal" and dated "May 24, 2016."

The DFG-MA-ILF was approved and signed on May 23, 2014. It can be viewed through the New England District's web site at http://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/MA/MAILFInstrument.pdf

The process for review of the request to modify the instrument will follow 33 CFR 332, Compensatory Mitigation for Losses of Aquatic Resources ("Mitigation Rule"). The Mitigation Rule was published in the Federal Register on April 10, 2008.

If the mitigation plan is deemed sufficient, MADFG will be informed that they can develop a draft amendment to the DFG-MA-ILF Instrument which will be reviewed by the Interagency Review Team (IRT) comprised of federal and state agency representatives. If the draft amendment is deemed acceptable, the amendment will be finalized and then authorized by the Corps after consultant with the IRT. The decision whether to authorize the sponsor to proceed to a draft amendment will be based on the District Engineer's determination of the potential of the proposed site to provide compensatory mitigation for activities authorized by Department of the Army permits.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposal. Any comments received will be considered by the Corps of Engineers to determine whether to allow the sponsor to proceed to develop a final mitigation plan. Comments are also used to determine the need for a public hearing.

ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH).

The District Engineer has made a preliminary determination that the site-specific adverse effect will not be substantial. Further consultation with the National Marine Fisheries Service regarding EFH conservation recommendations is being conducted and will be concluded prior to the final decision.

NATIONAL HISTORIC PRESERVATION ACT

Based on his initial review, the District Engineer has determined that little likelihood exists for the proposed work to impinge upon properties with cultural or Native American significance, or listed in, or eligible for listing in, the National Register of Historic Places. Therefore, no further consideration of the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, is necessary. This determination is based upon one or more of the following:

a. The permit area has been extensively modified by previous work.
b. The permit area has been recently created.
c. The proposed activity is of limited nature and scope.
d. Review of the latest published version of the National Register shows that no presence of registered properties listed as being eligible for inclusion

therein are in the permit area or general vicinity.

e. Coordination with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer(s)

ENDANGERED SPECIES CONSULTATION

The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the project site. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect any Federally listed endangered or threatened species or their designated critical habitat. By this Public Notice, we are requesting that the appropriate Federal Agency concur with our determination.

COASTAL ZONE MANAGEMENT

The States of Connecticut, Maine, Massachusetts, New Hampshire and Rhode Island have approved **Coastal Zone Management Programs**. Where applicable, the applicant states that any proposed activity will comply with and will be conducted in a manner that is consistent with the approved Coastal Zone Management Program. By this Public Notice, we are requesting the State concurrence or objection to the applicant's consistency statement.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. **Comments should be submitted in writing by the above date.** If you have any questions, please contact Joshua Helms at (978) 318-8211, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the proposal. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice.

All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the sponsor who will normally be requested to contact objectors directly in an effort to reach an understanding.

For more information on the New England District Corps of Engineers programs, visit our website at http://www.nae.usace.army.mil.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK NOR DOES THE PROJECT, IF APPROVED, PREJUDGE FUTURE PROJECTS WITHIN THE SERVICE AREA.

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Jennifer L. McCarthy
Chief, Regulatory Division

If you would prefer not to continue receiving Public Notices, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____

Massachusetts Department of Fish and Game

In-Lieu Fee Program

Eelgrass Restoration Project Proposal

To be implemented by the Division of Marine Fisheries

Prepared By

T. Evans and J. Carr

Submitted to

The Massachusetts In Lieu Fee Program

Administered by the Department of Fish and Game

MarineFisheries
Commonwealth of Massachusetts

David E. Pierce

Director

May 24, 2016

Introduction

In 2014 the Corps approved DFG to be the sponsor of a state-wide program that would provide in-lieu fee compensatory mitigation associated with Corps permits under §404 of the Clean Water Act and/or §§9 or 10 of the Rivers and Harbors Act of 1899 and related federal rule at 33 C.F.R. Part 332 (the federal Mitigation Rule). Specifically, on May 23, 2014 the Corps and DFG signed an Instrument developed by DFG that set forth a comprehensive description of how DFG will administer its in-lieu fee program ("ILFP") in Massachusetts.

The availability of DFG's ILFP allows permittees, with the Corps' approval, to make a monetary payment in compensation for project impacts to aquatic resources of the U.S. in Massachusetts, *in-lieu of* on-site mitigation. When these in-lieu fee payments are made to the ILFP, DFG assumes legal responsibility for implementing the required mitigation, which it does by aggregating and expending the in-lieu payments on mitigation projects.

DFG's ILFP is being administered by its three divisions – the Division of Marine Fisheries ("DMF"), the Division of Fisheries and Wildlife ("DFW") and the Division of Ecological Restoration ("DER") - and will implement mitigation projects that permanently protect aquatic resources and upland buffers and/or restore impacted aquatic resources within four (4) service areas. DFG selects ILFP mitigation projects through its application of detailed prioritization criteria in the ILFP Instrument, which includes consideration of a potential project's ability to achieve multiple mitigation objectives and its support or compatibility with broader conservation or management initiatives.

Since the establishment of DFG's ILFP, eight (8) U.S. Army Corps of Engineers ("Corps") permittees have made an in-lieu fee ("ILF") payment to the program totaling $298,670.84. Of this total amount, $274,670.84 of the ILF payments are derived from Corps-permitted impacts to subtidal, intertidal and estuarine marine resources in the Coastal Service Area. At the end of 2015 DFG determined that it had received a sufficient amount of ILF payments to fund and select one or more mitigation projects to be implemented beginning in 2016.

DFG's Evaluation of Potential Mitigation Projects

Representatives of DFG's Commissioner Office and DFG's Divisions met to identify, discuss and evaluate potential ILFP mitigation projects. In view of the type, location and scope of the Corps-permitted impacts underlying the great majority of ILF payments made to date, DFG determined at the outset that its first proposed mitigation project using ILFP funds should be to restore marine aquatic resources in the Coastal Service Area. DFG focused its attention

on two potential mitigation projects in the Coastal Service, specifically the North Subarea, discussed below.

- ***Key Marsh salt marsh restoration in Belle Isle State Reservation in Revere, MA.***

  This site, which is owned by the MA Department of Conservation and Recreation (DCR), contains about seven (7) acres of tide-restricted salt marsh and two (2) acres of filled salt marsh. The latter area has remnants of an abandoned radio tower facility built on the marsh and that is surrounded by an earthen dike designed to keep the tides out. To date, DER has only completed some preliminary assessment and design of restoration options.

  The big picture restoration goal is to restore tidal hydrology at this site. More specifically, on the northern portion of the site, the existing remnant berm would be removed to facilitate tidal exchange across the marsh surface. On the southern portion of the site, the berm would be breached at the location of the existing water control structure to restore tidal hydrology, and the breach area would be graded to mimic the channel profile of the historic tidal creek. A potential subsequent phase of the project would involve the removal of 2.2 acres of fill from to restore wetlands. At present, there are only a ballpark cost estimates in the range of $200,000 to $400,000, depending on scope of the dike and fill removal scope and the option selected to dispose of the materials. Current project partners include DCR, MassBays Program, Essex Co. Mosquito Control, Mystic River Watershed Association, and Friends of Belle Isle Marsh.

  DER does not have the staff resources to take the lead on project management, design, permitting, and construction. DCR, the land owner, has no intention of becoming the project lead either. Realistically, none of the other project partners has the capability and resources to assume the role of an effective project proponent. Thus, the absence of a capable and committed project lead is a key weakness in terms of both timely implementation and likelihood of success. Additionally, important aspects of the project have not yet been sufficiently developed (e.g., disposal approach; project costs; timeframe for implementation). Finally, DFG's proposed mitigation project – eelgrass restoration in Salem Harbor and Boston Harbor – has a closer nexus to the Corps-permitted impacts underlying the ILF payments.

- ***Eelgrass Restoration Project to be implemented by DMF***

  The second potential mitigation project considered by DFG was a proposal for DMF to use ILFP funds to restore approximately ½ acre of eelgrass to sites in Salem Sound and Boston Harbor, within the Coastal Service Area, Northern Subarea. By way of background, DMF has

a long-standing, ongoing and successful eelgrass restoration program, and so is uniquely qualified to conduct this restoration and fulfill the mitigation requirements of the ILFP. Beginning in 2005, DMF planted approximately five acres of eelgrass at sites in Boston Harbor as part of the Algonquin Hubline mitigation requirement (Hubline). Since that time the grass has more than doubled at the Long Island and Peddocks Island sites, to approximately 8.5 acres of eelgrass meadow. DMF recently completed the planting of two more acres of eelgrass in Massachusetts Bay, as part of a second mitigation requirement for Hubline (HUB3).

Site selection is a critical part of the restoration process. DMF has been working to refine site selection criteria throughout Massachusetts Bay and we are familiar with the best places to continue to restore eelgrass at this time. DMF proposed to restore eelgrass at two sites contiguous to sites that were successful in previous restoration efforts: Governor's Island Flats in Boston Harbor and Middle Ground in Salem Sound. DMF would plant ¼ acre at each site in the first year spread over two seasons. To ensure success, DMF would also augment plantings in the second year (third season) at previously planted sites and additional sites that have rated well in our site selection process. Finally, DMF has the requisite personnel with expertise that are available to complete the restoration within the above timeframes.

As between the Belle Isle Reservation tidelands restoration project and the eelgrass restoration project, DFG determined that the latter mitigation proposal by DMF is by far the strongest, most viable and timely ILFP mitigation project.

DFG's Selection of DMF's Proposed Eelgrass Restoration Project

For the reasons discussed in more detail below, DMF proposed and the DFG team selected, consistent with the ILFP project selection criteria in the Instrument, the specific eelgrass restoration project set forth in this proposal for review and approval by the Corps in consultation with the IRT.

Restoration Sites

***Site** Selection*

DMF relied on its extensive in-water experience to select sites for this project. Due to degraded water quality, available sites for restoration are increasingly limited in Massachusetts. We selected sites adjacent to sites where we have had previous restoration success. We propose two primary sites at Governors Island Flats, Boston and Middle Ground, Salem. We also propose Great Brewster Island as a secondary site. It is prudent to plant over several seasons

to ensure uncontrollable events such as storms or bioturbators (e.g., crabs) do not eliminate an entire planting. For this reason we have proposed three seasons of planting.

Donor sites for the Hubline restoration were previously selected based on the physical characteristics of the site and the proximity to the transplant site, with consideration of the size and longevity of the donor meadow. For the proposed project we will begin with our established donor sites in Nahant and Beverly, while continuing to assess the most effective use of these and other possible donor meadows for optimal transplant success.

Success Criteria (performance standards)

Initial transplant success will be determined one month following the restoration effort and will be successful if measurements are equal to or greater than 40% of the originally planted shoot density. Each year the restoration site will be monitored and compared to values measured at reference sites. We expect the restored eelgrass to be following a trajectory of development, approaching statistical equivalence, based on the mean and standard deviation of the reference values, after three to five years (Evans and Short 2005). The final success of our eelgrass restoration will be determined after five years of monitoring, based on a comparison of parameters measured at the restored meadows with established success criteria developed mathematically from values measured at reference meadows, according to methods described in Short et al (2000).

Governors Island Flats

Governors Island Flats (Figure 1) is a shallow bank within Boston Harbor. It is 5– 6 ft MLW, characterized by silty sediments. Historically, Governors Island flats had abundant eelgrass meadows.

DMF successfully planted a 1/3 acre area in 2013 at Governors Island Flats. Monitoring in 2015 showed plant growth and plot enlargement both through seeding and lateral expansion. Mean shoot density increased over the two years since transplanting and it is within one standard

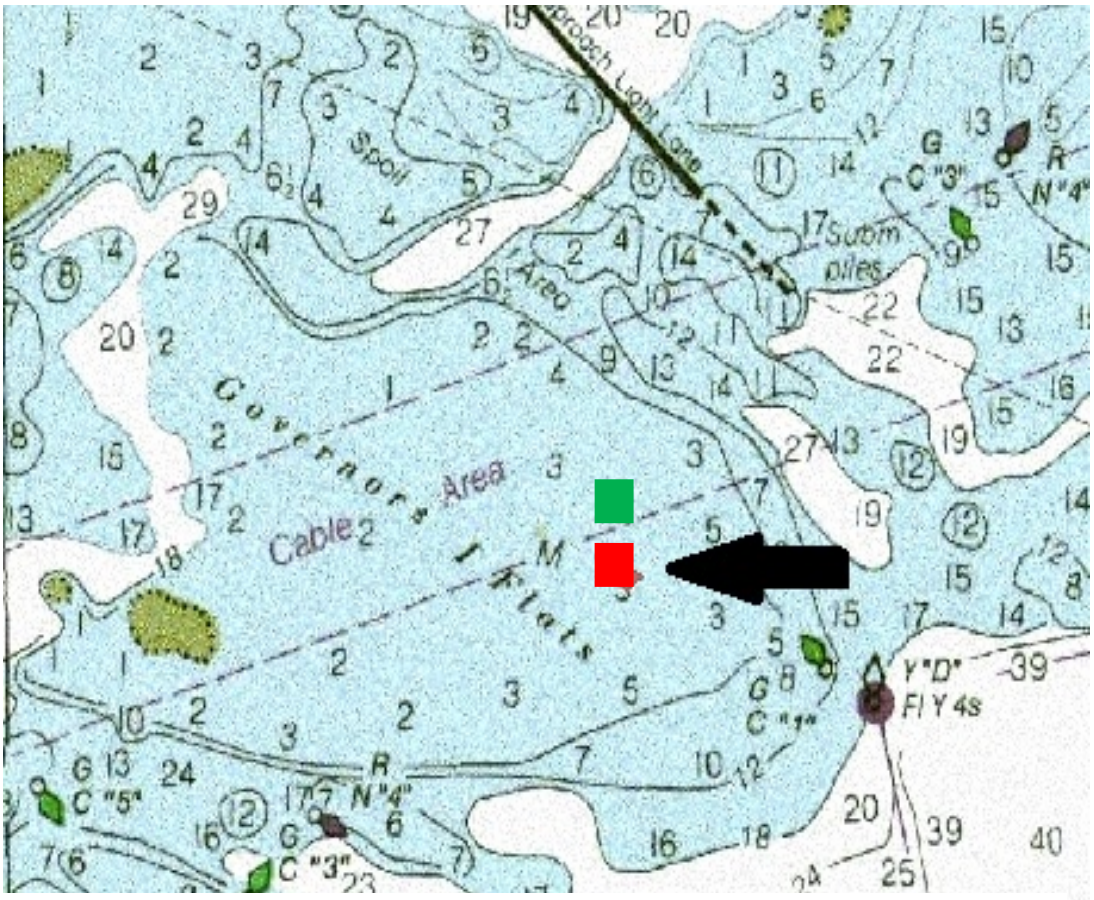

Figure 1. Proposed location of ¼ acre Restoration site at Governor's Island Flats (green) and hubline restoration site (red)

deviation of the mean of all the reference sites. There is additional area suitable for eelgrass restoration at the site and we propose the addition of ¼ acre shoreward of the existing restoration site (Figure 1). The exact location will be determined in the field based on suitable substrate. GPS locations will be obtained and included in all reporting. In the first season, a 1/8 acre site will be planted with eelgrass in a checkered pattern as shown in Figure 6. The following season an additional 1/8 acre will be planted at each site. We will augment the plantings as needed in the second year.

Middle Ground

Middle Ground, also known as Aqua Vite, is the shoal northeast of the mouth of Salem Harbor with depths of 6- 12 feet at MLW (Figure 3). There are anecdotal reports of this area having abundant eelgrass in past decades. We first investigated it in 2011 and found only a few small, scattered eelgrass patches. Light measurements indicated adequate light for eelgrass growth (Evans et. al 2013) and there is extensive area suitable for additional planting.

DMF successfully planted a 1/3 acre area at Middle Ground in 2012. Monitoring in 2015 showed plant growth and plot enlargement both through seeding and lateral expansion. Mean shoot density increased over the two years since transplanting and it is within one standard deviation of the mean of all the reference sites (Evans et. al 2013). A 1/8 acre site will be planted with eelgrass in the first season (e.g., spring) ,

Figure 2. Proposed location of ¼ acre Restoration site at Middle Ground (green) and hubline restoration site (red)

1/8 acre in the second season (e.g., fall of the same year), and will be augmented as needed in the third season (e.g.. spring of the following year).

Methods

Permitting

DMF obtained all required local, state and federal permits and authorizations for the above restoration and donor sites in 2005, as part of the Hubline restoration. The Boston Conservation Commission has determined that we will require a new NOI, filed as an Ecological Restoration Project, for the additional plantings. We are currently discussing the proposed project with the Commissions in the other towns and with the Army Corps of Engineers to determine if any other permits are needed.

Transplanting

Eelgrass shoots will be collected from donor beds in Nahant and Beverly using a low impact collection method where shoots are gathered by hand in a dispersed manner and no more than 1% are harvested from a m^2 area.

At Governors Island Flats and Middle Ground we propose to plant approximately 1/4 acre of eelgrass at each site in the first year. 5,200 transplanted shoots will be arranged in a checkered pattern of eight 5 m^2 plots of planted and unplanted 1 m^2 squares, for a total of 104 squares spread across the site (Figure 6). We will use the Burlap Disc method (Pickerell, pers. com) or a seeding method. When using the burlap disc method ten shoots are woven into a burlap disk by their rhizomes (Evans et al 2013). The discs are then planted in a shallow hole at five locations within a $1m^2$ quadrat.

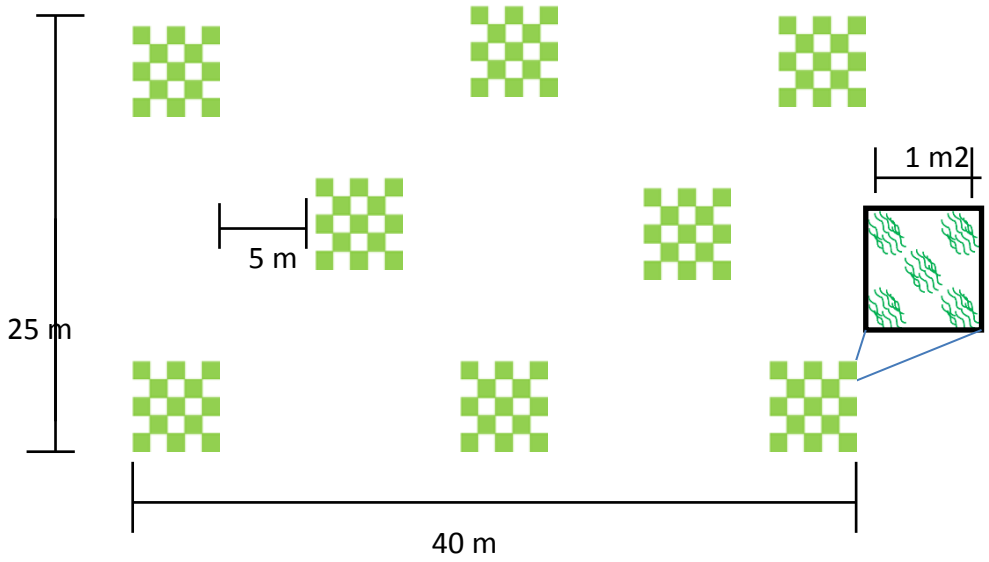

Figure 6. Layout for 1 site, approximately ¼ acre area. Eight plots each in a checkerboard pattern of 13 planted and unplanted 1 m2 squares for a total of 5,200 shoots.

Monitoring

We propose initial monitoring of the planted plots by divers one month after transplanting, and then both diver monitoring and acoustic mapping annually for five years. We will also monitor reference meadows for comparison.

Transplant Site

At the one month and annual monitoring events, divers will swim over each planted 5 m^2 plot and note the presence/absence of originally planted squares for the entire restoration area. This will provide an initial percent survival of the transplant. In addition, three planted squares in each plot, for a total of 24 squares per site, will be randomly selected for collection of shoot density, canopy height and percent cover measurements. The plot's length, width and diagonal will be measured to quantify areal expansion. This monitoring method will continue for five years at all planted sites to determine the overall expansion of the plantings through lateral growth and seeding, and finally to calculate the area successfully restored.

Reference Site

We have six reference beds, three in Salem Sound and three in Boston Harbor, which we plan to monitor for comparison with our transplanted sites in order to calculate restoration success according to a method described in Short et al (2000). Reference beds have similar depth, bottom type, and water conditions as the restoration sites.

At each reference site a transect tape will be set within a pre-established location. Shoot density, canopy height and percent cover will be measured at 12 1 m^2 quadrats assigned in a repeated random design at locations along the transect.

Acoustic mapping

Both restored and reference meadows will be mapped using hydroacoustic methods in the two planting years and again at the conclusion of the five year monitoring period, using a Humminbird 999CI HD SI unit with an 800 kHz high resolution transducer. The meadow area will be surveyed with overlapping lines for 150% sonar coverage. The resulting sonar files will have the water column removed and then be slant range and beam angle corrected in SonarTRX Pro release 15. The resulting lines will be exported and mosaiced in ArcGIS 10.2. In ArcGIS, areas within the mosaic that have eelgrass will be delineated. The area of the meadow will then be quantified and in the final years will be compared to mapped area from the previous years.

Budget

The budget has three main categories:

1. Equipment and supplies;

Includes field gear such as tape measures, screw anchors and buoys, dive gear, boat fuel, SCUBA air, acoustic mapping equipment and use, and donor bed selection genetics lab work.,

2. Personnel;

Includes salary and benefits, dive pay differential and travel. In the first year, personnel will include a project manager (Tay Evans), two Fisheries Technicians (Jillian Carr) and (Katelyn Ostrikis) and a seasonal technician. Additional assistance will be provided by other DMF personnel as needed.

3. Permitting costs for filing of NOIs with conservation commissions.

Item	Year 1	Year 2	Year 3	Year 4	Year 5
Equipment and supplies	$19,657.80	$18,398.00	$7,670.00	$7,670.00	$7,670.00
Personnel	$53,631.05	$54,901.90	$34,730.69	$34,730.69	$34,730.69
Permitting	$440.00	$440.00			
total	$73,728.85	$73,739.90	$42,400.69	$42,400.69	$42,400.69
Grand total	$274,670.84				

ILF Prioritization Criteria

The Department of Fish and Game's (DFG) In Lieu Fee Program (ILFP) has developed prioritization criteria used to select mitigation projects. Below we outline our project's merits addressing each of the five criteria:

Criterion 1) The Project's Ability to Achieve Multiple Mitigation Objectives:

The following seven mitigation objectives are identified in the ILFP instrument (p. 42). This project meets the five objectives in bold, each of which is described in detail below.

a. **Restores or improves more than one ecological function or system;**
b. Protects high quality resources/habitats for state-listed species protected under MESA;
c. **Protects important wildlife habitats identified by MassDEP's or other entities important habitat maps;**
d. Targets a high quality riparian habitat area;
e. Targets resources that are under threat of destruction or degradation;

f. Furthers the habitat protection climate change adaptation strategies described in the 2011 Massachusetts Climate Change Adaptation Report
g. Falls within one or more management and restoration climate change adaptation strategies.

a. *Restores or improves more than one ecological function or system*: The primary resource that will benefit from the proposed project will be eelgrass (*Zostera marina*). Eelgrass itself is an important habitat protected by the Massachusetts Wetlands Protection Act and the federal Clean Water Act and through NMFS Essential Fish Habitat provisions (discussed in greater detail below). It provides habitat for various life stages of commercial and recreational fishery resources such as winter flounder (*Pseudopleuronectes americanus*), American lobster (*Homerus americanus*), Atlantic cod (*Gadus morhua*), Pollock (*Pollachius virens*), white hake (*Urophycis tenius*),red hake (*Urophycis chuss*), tomcod (*Microcadus tomcod*), American eel (*Anguila rostrata*), striped bass (*Morone saxatilis*), bay scallop (*Argopecten irradians*) and juvenile stages of fish and invertebrates that serve as forage for the above mentioned species. Eelgrass is also important to ecological function as it enhances the physical quality of the subtidal habitat, improves water quality through biogeochemical enhancements and sediment trapping, attenuates wave and storm energy, and sequesters carbon.

One of the challenges of habitat restoration in the subtidal zone is the limitation of appropriate project types. Projects could include removal of fill or debris (physical restoration) or creation of fisheries habitat or ecosystem services (physical plus ecosystem restoration). This project proposes the latter.

c. *Protects important wildlife habitats identified by MassDEP's or other entities important habitat maps*: This project will restore critical habitat identified by the Wetlands Protection Act, the Mid-Atlantic Fishery Management Council (MAFMC) and NMFS. MAFMC and NMFS have designated eelgrass as an Essential Fish Habitat (EFH) for cod, pollock, white and red hake, winter and summer flounder, as well as additional designation as a Habitat Area of Particular Concern (HAPC) for a subset of these species.

e. *Targets resources that are under threat of destruction or degradation*: Seagrasses are in decline worldwide (Short et al 2006, Short et al 2014), and declines have been observed statewide in Massachusetts (Costello and Kenworthy 2011) as well as in specific embayments (Costa 1988, DMF unpub. data). As an estuarine plant, seagrasses are useful indicators of estuarine health as they are subject to numerous threats of anthropogenic and environmental stresses. Such threats include nutrient loading,

pollution, development-related habitat loss, impacts from boating and fishing activity, and shifting environmental conditions.

f. *Furthers the habitat protection climate change adaptation strategies described in the 2011 Massachusetts Climate Change Adaptation Report*: This project specifically addresses two adaptation strategies listed in the Coastal, Estuarine and Marine Habitats, Resources and Ecosystem Services section (pg114) of the report: Strategy 2, which focuses on improving resiliency of natural habitats through habitat restoration and other means; and Strategy 6 which calls for increased monitoring, observations and assessments to better manage resources and respond to critical shifts in benthic flora communities and areas of high trophic support. Monitoring at the restored and reference sites will include diver and acoustic monitoring and mapping for five years, which will be used to determine restoration success, but will also contribute to the body of knowledge from monitored sites in Massachusetts and New England, providing observation that can be used in a broader context as an early warning system to better manage and interpret change in eelgrass in the region.

g. *Falls within one or more management and restoration climate change adaptation strategies*: In addition to the strategies above, this project also addresses strategy g(iv) from the ILFP instrument (pg 43): Identify and assess potential restoration of coastal wetlands.

Criterion 2) The Project's Support of or Compatibility with Broader Conservation or Management Initiatives and Surrounding Landscape:

The proposed project furthers the broader DFG management initiative of preserving the state's natural resources and people's right to conservation of those resources, as well as DMF's mission to manage the Commonwealth's living marine resources in balance with the environment. In DMF's Strategic Plan, improving and restoring fisheries habitat is a key strategy to achieving one of our primary goals: to improve fisheries sustainability, promote responsible harvest and optimize production of our living marine resources. There are also many other conservation and management initiatives focused on eelgrass and estuarine water quality protection and improvement, such as DEP's Eelgrass Mapping and Monitoring Program, the Massachusetts Estuaries Project and EPA's Estuarine Protection Program.

This project supports broader conservation initiatives within Salem Sound and Boston Harbor by supplementing previous restoration efforts and by complementing ongoing monitoring

efforts in these embayments. In both embayments, many estuarine health studies are being conducted by local watershed, academic and government organizations such as MWRA, Salem Sound Coastwatch, Northeastern University, Salem State University, EPA, and others.

Criterion 3) The Project's Likelihood of Success

Eelgrass restoration is inherently risky as unpredictable factors including storms and algae blooms may impact newly planted areas. Many groups have attempted eelgrass restoration in Massachusetts with mixed results. DMF has had the most successful track record with eelgrass restoration over the past decade and has met the restoration goals for all projects undertaken. To date three of six sites that DMF fully planted are continuing to grow and expand.

Site selection is an important step in eelgrass restoration. Sites that are not well chosen may lack the conditions needed for growth and expansion resulting in a high probability of transplant failure. Our institutional knowledge of habitat suitability, along with our use of several different site selection models, and experience with planting dozens of test plot and full-scale restoration locations throughout Salem Sound and Boston Harbor gives us the necessary foundation for making sound site selection decisions for this project.

Criterion 4) Whether the Project will Result in Mitigation in the same Service Area:

The draft 2015 ILF Program Annual Report states that 87% of the total impacts to the Coastal Service Area occurred in Subtidal habitat in Salem Sound. The second most impacted habitat was Salt Marsh in Scituate (11% of total impacts). The third most impacted habitat was Subtidal/Intertidal impacts in Boston Harbor (2% of total impacts). The proposed project will create 0.5 or more acres of Essential Fish Habitat (EFH) in the Subtidal habitat in Salem Sound and Boston Harbor, both of which are within the Coastal Service Area.

The benefits of creating new eelgrass beds can be realized beyond these areas due to the reproductive physiology of the plant. Typically in the plant's second growing season, eelgrass shoots become reproductive when temperature conditions are suitable (early to mid-summer). The reproductive shoot, holding dozens of seeds, is released and floats for a month or more before dropping its seeds (Källström et al 2008), which sink to the bottom. If seeds are transported to suitable habitats, new beds can form.

Criterion 5) Cost of Implementing and Maintaining the Project

DMF has provided a detailed budget for this proposal to demonstrate that we will accomplish the required acreage in the first year, with plantings to augment and fill in any losses in the second year. Our budget includes five years of monitoring, beginning in the first year. Although

eelgrass restoration is relatively expensive when compared to terrestrial projects, DMFs experience and in-house capabilities maximize efficiency. Furthermore, planting eelgrass is one of the best options for restoring and improving subtidal habitat.

All proposed eelgrass restoration sites are located in shallow subtidal waters that are tidelands owned by and subject to the regulatory jurisdiction of the Commonwealth. Where, as here, a Commonwealth agency is restoring habitat on Commonwealth tidelands, there are no available and appropriate legal instruments to preserve such tidelands from further development. For example, DMF obtaining a Chapter 91 License would not be appropriate because the proposed eelgrass restoration activity does not involving the filling or placement of structures in Commonwealth tidelands. To put this situation in context and perspective, because DMF's proposed eelgrass restoration sites are not located in close proximity to the shoreline, proposed development of these sites by third parties is not likely for the foreseeable future. Moreover, in the unlikely event that a project proponent proposed activities that had an adverse impact to these eelgrass restoration sites, mitigation would be required through the applicable federal and state permitting processes.

The ongoing restoration and protection of important marine habitats is an integral part of DMF's mission, as highlighted in multiple strategies of DMF's Strategic Plan (see Goal 1, Goal 3, Goal 4, Goal 5, Goal 6). Over the past decade, DMF has developed an eelgrass program that includes its own restoration, monitoring, management efforts, providing review and comment during the federal and state environmental review processes on projects that may affect eelgrass habitat, and establishing partnerships with other academic, non-profit, and government agencies interested in advancing eelgrass research and restoration.

Thus, this proposed eelgrass restoration project arises out of DMF's larger eelgrass program and reflects DMF's commitment to continue to further its long-term stewardship of eelgrass in the Commonwealth. Consequently, DMF's restoration, monitoring, management efforts are expected to continue beyond the proposed eelgrass plantings and minimum 5 year follow-up monitoring timeframe for this project. The progression and long term health of these proposed eelgrass restoration sites will inform future eelgrass protection and restoration efforts in the Commonwealth. In conclusion, DMF is making a long term commitment to the success of all of its eelgrass program efforts, including this eelgrass restoration project to be funded by ILF payments.

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