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CAPE COD
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December 3, 2012

Regular Mail

Secretary Richard K. Sullivan, Jr.
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Yarmouth CWMP
MEPA Project Number – #14272
Attn: MEPA Analyst Holly Johnson

Dear Secretary Sullivan:

On November 8, 2012, a joint Cape Cod Commission (Commission)/MEPA public hearing was held and the Commission received comments on the Draft Environmental Impact Report/Draft Environmental Impact Statement (DEIR/DEIS) for the proposed Herring River Restoration Project.

Prior to this hearing, the Commission Subcommittee received a copy of the DEIR/DEIS. During the hearing, the Herring River Restoration Committee members, including representatives of the Towns of Truro and Wellfleet made a presentation on the proposed project and DEIR/DEIS. Commission staff provided an analysis of the DEIR/DEIS in a staff report. After consideration of this information, the Subcommittee met and voted to adopt the Commission staff report as their comments to MEPA.

The attached staff report provides comments for inclusion in Final EIR/Final EIS scope concerning the 2009 Regional Policy Plan (revised August 2012) issue areas of Coastal Resources, Natural Resources, Water Resources, Heritage Preservation/Community Character, Transportation and Hazardous/Solid Waste Management. Thank you for considering our comments as you develop the scope for the Final EIR/Final EIS. Please contact Commission staff if you have any questions or concerns about the content of this letter or the attached staff report.

Sincerely,


Leonard Short
Subcommittee Chair

Enclosure

Cc: Margo Fenn, Project Coordinator, Herring River Restoration Committee
Gary Joseph, Chair, Herring River Restoration Committee (c/o Wellfleet Health Agent)
Tim P. Smith, National Park Service/Cape Cod National Seashore
Timothy King, Wellfleet Interim Town Manager and DRI Liaison
Hillary Greenberg-Lemos, Wellfleet Health Agent
Rex Peterson, Truro Town Administrator
Charleen Greenhalgh, Truro Assistant Town Administrator/DRI Liaison

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STAFF REPORT

HERRING RIVER RESTORATION (EOEA # 14272)

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Tom Cambareri (Water Resources Program Manager)
Sarah Korjeff (Planner II/Historic Preservation Specialist)
Heather McElroy (Natural Resources Specialist)
Steven Tupper (Technical Services Planner)

DATE

October 29, 2012

INTRODUCTION

The Cape Cod Commission (Commission) has received a Draft Environmental Impact Report (DEIR)/Draft Environmental Impact Statement (DEIS), for the proposed Herring River Restoration Project from the Herring River Restoration Committee (Applicant). The Herring River Restoration Committee includes representatives from the Towns of Wellfleet and Truro, the National Park Service, and other state and Federal agencies.

A public hearing will be held on Thursday, November 8, 2012 at the Wellfleet Senior Center/Council on Aging, 715 Old Kings Highway, Wellfleet, MA, beginning at 6:30 PM for the purposes of providing hearing comments on the DEIR/DEIS and to gather information on the proposed project for the Joint Massachusetts Environmental Policy Act (MEPA)/Cape Cod Commission review process.

The DEIR/DEIS was published in the *Environmental Monitor* on October 22, 2012. Comments on the DEIR/DEIS are due to the Massachusetts Environmental Policy Act (MEPA) Unit by December 12, 2012.

PROJECT DESCRIPTION

As described in the *Purpose* section of the DEIR/DEIS, “the project is to restore self-sustaining coastal habitats on a large portion of the 1,100-acre Herring River estuary in Wellfleet and Truro.” The DEIR/DEIS further describes a Preferred Alternative (Alternative D), the primary component of which is construction and installation of a new tidal control structure at Chequessett Neck Road, together with a new dike at the mouth of Mill Creek. Other project components include:

- Adaptive Management approach to long-term management of the new structure,
- Replacement of culverts at road crossings upstream of Chequessett Neck Road,
- Raising or relocating approximately 8,000 square feet of low lying roadway located within the Herring River floodplain,
- Management of woody vegetation within the Herring River floodplain to promote recolonization of salt marsh vegetation,
- Restoration of channel sinuosity, and
- Management and/or mitigation of flooding impacts to private properties.

A more detailed description and analysis of the proposed *Project Alternatives* is also discussed in the Coastal/Natural Resources comments, below.

JURISDICTION

As noted in the Certificate on the Environmental Notification Form issued by the Secretary of the Executive Office of Energy and Environmental Affairs, the proposed project requires the preparation of an Environmental Impact Report (EIR) pursuant to 301 CMR 11.00(3)(a) of the MEPA regulations at a minimum because it alters one or more acres of bordering vegetated wetlands. The proposed project may also alter more than 50 acres of land, require a variance according to the Wetlands Protection Act, and require both Chapter 91 Licenses and a 401 Water Quality Certification from the Department of Environmental Protection. As development requiring an EIR, the project is categorically deemed to be a Development of Regional Impact (DRI) under the Cape Cod Commission Act (Act), Section 12(i), and Section 2(d)(i) of the Commission’s *Enabling Regulations* (revised March 2011; New Fee Schedule Effective July 1, 2012), and is subject to DRI review by the Commission.

PROCEDURAL HISTORY

On June 20, 2008, the Secretary of the Executive Office of Energy and Environmental Affairs (Secretary) issued a Certificate which established a Special Review Procedure to help coordinate review of the project, which involves a Citizen’s Advisory Committee, designated as the Herring River Restoration Committee (HRRC). The HRRC includes representatives from the Towns of Wellfleet and Truro, the National Park Service, the Cape Cod National Seashore, and representatives from several other groups and state and federal agencies, including Office of Coastal Zone Management, Wetlands Restoration Center, US Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration.

The Commission and MEPA held a joint hearing on the Environmental Notification Form (ENF) on August 14, 2008, where a Commission Subcommittee formulated comments for inclusion

into the MEPA scope for the Draft EIR. On November 7, 2008, the Secretary issued a Certificate on the ENF that set out the Draft EIR scope.

STAFF COMMENTS

Commission staff reviewed the DEIR/DEIS for the project's compliance with the Regional Policy Plan (as amended August 2012) and offers the following comments on the project for consideration by MEPA and other agencies.

COASTAL/NATURAL RESOURCES: WILDLIFE/PLANT HABITAT & WETLANDS

This large-scale ecological restoration project does not fit neatly into the Cape Cod Commission's regulatory framework. Because the project is required to prepare an Environmental Impact Report through MEPA, it is a mandatory DRI. The project's anticipated outcomes will bring broad ecological benefits to the Herring River system in Wellfleet and Truro, and as a result will likely benefit human health and economy. However, the proposed changes to the existing man-made structures within the estuary, including the Chequessett Neck Road dike, and upstream dikes, culverts and roadways, are not without impacts that may be in conflict with minimum performance standards in the 2009 Regional Policy Plan (RPP) (as amended).

The purpose of these staff comments on the Herring River Restoration Project is to inform the Cape Cod Commission of the instances where proposed actions in the DEIR/DEIS may be inconsistent with the RPP, and to offer some perspective as to how those inconsistencies may be balanced against the anticipated gains, or benefits, of the project. Under a typical DRI review, inconsistencies with MPSs may be addressed through mitigation; in the context of this ecological restoration project, "mitigation" may take several forms, depending on the nature of the impact.

The National Park Service, together with the Towns of Wellfleet and Truro, have invested years of research and analysis, engaging technical experts and concerned residents, and consulting regulatory agencies, into the development of this project and the parameters of possible alternatives. One of the roles the Commission may serve through the review of this project is to receive and filter public comments on the various options presented in the DEIR/DEIS, and make recommendations on options that will best serve the residents of Wellfleet, Truro, and the region.

Project Purpose and Potential Outcomes

The National Park Service (NPS) and the Herring River Restoration Committee (HRRC) have identified several objectives in pursuing this project. Observation and analysis of resources, and research and modeling of potential actions support the NPS and HRRC's anticipation of many positive ecological and social benefits from the project. The following summarizes potential outcomes:

1. Reestablishment, to extent practical, the natural tidal range within the 1,100 acre Herring River estuary,
2. Improve estuarine water quality for resident and migratory animals,
3. Protect and enhance harvestable shellfish resources,
4. Restore the estuary's functions as a nursery and source of organic matter,
5. Improve migratory fish and eel runs,
6. Re-establish the salinity gradient within the floodplain to improve estuarine habitats,

7. Restore normal sedimentation processes within the floodplain to counter marsh subsidence,
8. Restore ecological balance to improve mosquito control,
9. Cultural and socio-economic benefits, including restoration of expansive salt marshes within the floodplain for esthetic and recreational benefits.

The following staff comments are structured around the impacts to resources protected under the Cape Cod Commission Act, as specified in the RPP, due to the proposed restoration project as presented in the DEIR/DEIS:

1. Incremental Tidal Restoration and Adaptive Management
2. Vegetation Management
3. Low-lying Road Crossings and Culverts
 - a. High Toss Road
 - b. Pole Dike, Bound Brook, and Old County Roads
4. Restoration of Tidal Channel and Marsh Surface Elevation
5. Upper Pole Dike Creek
6. Public Access and Recreation Opportunities
7. Project Alternatives
 - a. Alternative B
 - b. Alternative C
 - c. Alternative D

1. Incremental Tidal Restoration and Adaptive Management

The project will involve the removal of the dike structure at Chequessett Neck Road, and replacement with a structure which will allow for the gradual re-introduction of tidal exchange to the Herring River system over a period of several years. This project element addresses the need to monitor the progress of the restoration effort over time, and to make management decisions that respond to the conditions-of-the-moment consistent with the objectives and limitations of the project (adaptive management). Actions contemplated in the draft framework for the Adaptive Management Plan, found in Appendix C of the DEIR/DEIS, include:

- d. invasive species management,
- e. planting and seeding native estuarine plants,
- f. removal of woody vegetation within the restoration area,
- g. reestablishment or creation of tidal channels,
- h. creation of salt pannes and pools to promote fish habitat, and
- i. applying layers of sediment to subsided areas to promote reestablishment of inter-tidal habitats.

Direct/Indirect Impacts:

These actions will require *development* activity (as defined by the Commission Act and Regional Policy Plan) within resource areas protected by the RPP. Direct impacts include: the 2.4 acres of alteration within wetlands, wetland buffers, coastal banks, land subject to coastal storm flowage, and rare species habitat to replace the dike and culverts at Chequessett Neck Road; vegetation removal within the 900+ acre restoration area; dredging to create channels and salt pannes; and application of sediment to the marsh surface. Indirect impacts will result due to changes within the restoration area that result from the change in salinity, tidal exchange, and flood levels including: changes from

freshwater and brackish wetlands to salt and estuarine habitats, impacts to dunes, impacts to rare species habitat (Northern Harrier, Diamondback Terrapin, Eastern Box Turtle, American Bittern, Least Bittern, and Water Willow Stem Borer), changes in aquatic species, impacts to terrestrial species, and impacts to low-lying properties, including the Chequessett Yacht & Country Club (CYCC).

The following comments address the consistency of the removal of the dike and Adaptive Management project elements with the Minimum Performance Standards (MPS) and Best Development Practices (BDP) in the RPP:

MPS/BDP	Comment
MPS CR2.1, 2.3, 2.4, 2.8	These standards restrict development within land subject to coastal storm flowage (LSCSF) to ensure that development does not impede the storm damage control functions of LSCSF or impede the migration or function of other coastal resources. The project impacts resources protected by these standards, but CR2.10 (see below) provides an exception for ecological restoration projects.
MPS CR2.10	This coastal standard provides an exception from compliance with several coastal MPSs for projects that restore salt marsh, fish runs, and shellfish beds. Provided the HRRC demonstrates that measures have been taken to minimize adverse impacts to LSCSF, and that other MPSs have been met, this standard provides for the proposed development activities that address the ecological restoration objectives of the project.
BDP CR2.13	This Best Development Practice encourages the removal of development from the coastal floodplain, which the project proposes.
BDP CR2.14	This Best Development Practice encourages the use of the 1988 datum of NAVD88, which the project does.
MPS CR3.7	This standard prohibits improvement dredging, except where necessary to accomplish a substantial public benefit. As part of the adaptive management plan, the project may need to dredge portions of the river/wetlands system in order to restore channel sinuosity, improve drainage, and improve habitat. The HRRC will have to demonstrate that the adaptive management plan has appropriate checks and balances to ensure that any improvement dredging resulting from the project will result in net gains to habitat, and/or other public benefit.
MPS CR3.9	This standard requires the beneficial reuse of clean dredged materials. The project will utilize dredged materials on the marsh surface in order to elevate the marsh surface, counter the effects of subsidence, and promote salt marsh growth.
MPS CR3.11	This standard protects fish, shellfish, and crustaceans from the impacts of development. The project will result in improvements to habitat for these animals.
MPS WET1.1, 1.2	These standards protect wetlands and their buffers from alteration. The project involves significant wetland alteration in the form of direct and indirect impacts (see above, Direct/Indirect impacts). However, these actions are taken to achieve the project

	<p>objective of ecological restoration. This standard allows for alteration, provided it is the minimum necessary and there are no feasible alternatives, and that mitigation is provided.</p> <p>As the HRRC refines the project, selecting a preferred alternative and proceeding with the engineering required to execute the various project elements, they should keep in mind minimizing direct impacts to wetland resources (such as construction impacts, footprint of fill for dikes and road elevations, rip rap or bulkheads associated with protecting roads and low-lying properties, etc.). At the same time, Commission staff notes that over time, if objectives are met, the project will result in measurable improvements to salinity, estuarine wetland vegetation, water chemistry and dissolved oxygen, estuarine animal habitat, and reduced mosquito production, to 800 – 900 acres of presently degraded estuarine habitat.</p>
BDP WET1.5	This Best Development Practice encourages wetland restoration, including revegetation and restoration of tidal flushing.
MPS WPH1.1	This standard requires the preparation of a natural resources inventory for DRIs. The EIS/EIR provides adequate evaluation of the resources within the project area for the purposes of this standard.
MPS WPH1.2, 1.3	These standards require the minimization of clearing, grading, and fragmentation of wildlife habitat. The project will require clearing of woody vegetation, either by mechanical means or through the natural process of increased salinity resulting from the restoration effort. However, as the HRRC refines the project, selecting a preferred alternative and proceeding with the engineering required to execute the various project elements, they should keep in mind minimizing clearing and grading (such as construction-related impacts).
MPS WPH1.4	This standard requires the protection of rare species habitat. The project will result in indirect impacts to habitat of the Northern Harrier, Diamondback Terrapin, Eastern Box Turtle, American Bittern, Least Bittern, and Water Willow Stem Borer, all state-listed species. The project will likely result in some positive habitat changes for some of these species (e.g. increased estuarine habitat for Diamondback Terrapin), and in the loss of habitat for others (loss of freshwater marsh habitat for American and Least Bitterns). The Commission will seek guidance from the Natural Heritage and Endangered Species Program in determining whether the project complies with this standard, and whether impacts to rare species should be mitigated by means other than those planned for the restoration project generally (e.g. creation or preservation of specialized habitat within the project area, or elsewhere within the seashore).
MPS WPH1.6	This standard addresses the management of invasive species within a project site. Invasive species management is an integral part of the proposed project.
BDP WPH1.7	This Best Development Practice encourages ecological restoration.

BDP WPH1.8	This Best Development Practice encourages un-development. The project includes elements that would potentially remove development from the floodplain.
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2. Vegetation Management

The project anticipates the need to remove existing vegetation within the restoration area prior to, and/or during the course of the restoration. The removal of vegetation would be governed by protocols within the Adaptive Management Plan. As detailed in the discussion of performance standards, above, the removal of vegetation from wetlands and/or their buffers is inconsistent with MPS WET1.1 and 1.2, and WPH 1.2 and 1.3 but is supported by MPS CR2.10, MPS WPH1.6, BDP WET1.5, and BDP WPH1.7. As a change in wetland type and vegetation is an objective of the project and contributes toward the many anticipated benefits of the project, staff suggests that vegetation management is a necessary and appropriate project element.

3. Low-Lying Road Crossings and Culverts

j. High Toss Road

High Toss Road forms the next upstream barrier to tidal restoration within the Herring River system in the form of an earthen berm and culvert. According to the draft EIS/EIR, this restriction would need to be widened to 30 ft in order to restore tidal flow upstream. In addition, the restoration effort will result in flooding High Toss Road. The draft EIS/EIR outlines three potential options to address the flooding of the road and the tidal-flow barrier it presents: elevate the road, abandon and remove the road, or close the road during flood events. Each of these alternatives will result in impacts to wetlands and potential loss of use of the road. Staff recommends that public opinion may inform the best option for continued use of High Toss Road. Barring any clear consensus, staff suggests that the option which meets the project objectives while minimizing harm to the environment may be the best alternative.

The following comments address the consistency of the High Toss Road project elements with the Minimum Performance Standards and BDPs in the RPP:

MPS/BDP	Comments
MPS CR1.1	This standard requires the protection of existing legal access to the coast. The draft EIS/EIR indicates that the HRRC is aware of the need to address the continued use of these public ways.
MPS CR2.10	This coastal standard provides an exception from compliance with several coastal MPSs (CR2.1, 2.3, 2.4, and 2.8) for projects that restore salt marsh, fish runs, and shellfish beds, and for the maintenance of public infrastructure (roads). Provided the HRRC demonstrates that measures have been taken to minimize adverse impacts to LSCSF, and that other MPSs have been met, this standard provides for the proposed development activities that address the ecological restoration objectives of the project.

BDP CR2.13	This Best Development Practice encourages the removal of development from the coastal floodplain, which the project proposes.
MPS WET1.1, 1.2	<p>These standards protect wetlands and their buffers from alteration. This project element involves potential wetland alteration in the form of wetland fill and construction activities that might impact 13,000 sq ft of wetland resource areas. However, some action at High Toss Road is necessary to achieve the project objective of ecological restoration. This standard allows for alteration, provided it is the minimum necessary and there are no feasible alternatives, and that mitigation is provided.</p> <p>As the HRRC refines the project, selecting a preferred alternative for High Toss Road and proceeding with the engineering required to execute this project element, they should keep in mind minimizing direct impacts to wetland resources (such as construction impacts, footprint of fill, rip rap or bulkheads associated with elevating the road, etc.). At the same time, Commission staff notes that over time, if objectives are met, the project will result in measurable improvements to salinity, estuarine wetland vegetation, water chemistry and dissolved oxygen, estuarine animal habitat, and reduced mosquito production, to 800 – 900 acres of presently degraded estuarine habitat.</p>
BDP WET1.5	This Best Development Practice encourages wetland restoration, including revegetation and restoration of tidal flushing.
MPS WPH1.2, 1.3	These standards require the minimization of clearing, grading, and fragmentation of wildlife habitat. This project element may require clearing of vegetation. However, as the HRRC refines the project, selecting a preferred alternative and proceeding with the engineering required to execute changes to High Toss Road, they should keep in mind minimizing clearing and grading (such as construction-related impacts).
MPS WPH1.4	This standard requires the protection of rare species habitat. Depending on the option for High Toss Road selected, this project element may result in impacts to rare species habitat. The Commission will seek guidance from the Natural Heritage and Endangered Species Program in determining whether this project element complies with this standard.
BDP WPH1.7	This Best Development Practice encourages ecological restoration.
BDP WPH1.8	This Best Development Practice encourages un-development. This element would potentially remove development from the floodplain.

k. Pole Dike, Bound Brook, and Old County Roads

Segments of these roads, totaling approximately 6,200 linear ft, would be subject to flooding following restoration. The DEIR/DEIS suggests that these segments would need to be elevated or relocated to mitigate the effects of flooding, and that there is the possibility that culverts within these road segments would have to be replaced. As mitigating the effects of flooding on these roads is necessary to achieve the objectives of the project, staff suggests that the proposed alterations are necessary and appropriate project elements. Barring strong public opinion regarding elevating or relocating these road segments, staff suggests that the option which meets the project objectives while minimizing harm to the environment may be the best alternative.

The following comments address the consistency of the Pole Dike, Bound Brook, and Old County Roads project elements with the MPS and BDPs in the RPP:

MPS/BDP	Comments
MPS CR1.1	This standard requires the protection of existing legal access to the coast. The draft EIS/EIR indicates that the HRRC is aware of the need to address the continued use of these public ways.
MPS CR2.10	This coastal standard provides an exception from compliance with several coastal MPSs (CR2.1, 2.3, 2.4, and 2.8) for projects that restore salt marsh, fish runs, and shellfish beds, and for the maintenance of public infrastructure (roads). Provided the HRRC demonstrates that measures have been taken to minimize adverse impacts to LSCSF, and that other MPSs have been met, this standard provides for the proposed development activities that address the ecological restoration objectives of the project.
BDP CR2.13	This Best Management Practice encourages the removal of development from the coastal floodplain, which the project proposes.
MPS WET1.1, 1.2	<p>These standards protect wetlands and their buffers from alteration. This project element involves potential wetland alteration in the form of wetland fill and construction activities that might impact 6,000 sq ft of wetland resource areas. However, some action at Pole Dike, Bound Brook, and Old County Roads is necessary to achieve the project objective of ecological restoration. This standard allows for alteration, provided it is the minimum necessary and there are no feasible alternatives, and that mitigation is provided.</p> <p>As the HRRC refines the project, selecting a preferred alternative for Pole Dike, Bound Brook, and Old County Roads and proceeding with the engineering required to execute this project element, they should keep in mind minimizing direct impacts to wetland resources (such as construction impacts, footprint of fill, rip rap or bulkheads associated with elevating the roads, etc.). At the same time, Commission staff notes that over time, if objectives are met, the project will result in measurable improvements to salinity,</p>

	estuarine wetland vegetation, water chemistry and dissolved oxygen, estuarine animal habitat, and reduced mosquito production, to 800 – 900 acres of presently degraded estuarine habitat.
BDP WET1.5	This Best Management Practice encourages wetland restoration, including revegetation and restoration of tidal flushing.
MPS WPH1.2, 1.3	These standards require the minimization of clearing, grading, and fragmentation of wildlife habitat. This project element may require clearing of vegetation. However, as the HRRC refines the project, selecting a preferred alternative and proceeding with the engineering required to execute changes to Pole Dike, Bound Brook, and Old County Roads, they should keep in mind minimizing clearing and grading (such as construction-related impacts).
MPS WPH1.4	This standard requires the protection of rare species habitat. Depending on the options selected for these road segments, this project element may result in impacts to rare species habitat. The Commission will seek guidance from the Natural Heritage and Endangered Species Program in determining whether this project element complies with this standard.
BDP WPH1.7	This Best Management Practice encourages ecological restoration.
BDP WPH1.8	This Best Management Practice encourages un-development. This element would potentially remove development from the floodplain.

4. Restoration of Tidal Channel and Marsh Surface Elevation

This project element involves several potential actions to reverse the effects of diking, drainage, and subsidence of the marsh surface. These actions could include dredging of sediment within the Herring River channel, creation of small channels and ditches, restoring stream sinuosity, removing berms, and applying dredged materials to the marsh surface. As discussed above, these actions are regulated by Minimum Performance Standards in the RPP.

The following comments address the consistency of the Restoration of Tidal Channel and Marsh Surface project elements with the MPS and BDPs in the RPP:

MPS/BDP	Comment
MPS CR2.4	This standard restricts the placement of fill within land subject to coastal storm flowage (LSCSF) to ensure that development does not impede the storm damage control functions of LSCSF. This project element impacts resources protected by this standards, but CR2.10 (see below) provides an exception for ecological restoration projects.
MPS CR2.10	This coastal standard provides an exception from compliance with CR2.4 for projects that restore salt marsh, fish runs, and shellfish beds. Provided the HRRC demonstrates that measures have been taken to minimize adverse impacts to LSCSF, and that other MPSs have been met, this standard provides for the proposed activities that address the ecological restoration objectives of the project.
BDP CR2.13	This Best Development Practice encourages the removal of development from the coastal floodplain, which this element proposes.
MPS CR3.7	This standard prohibits improvement dredging, except where necessary to accomplish a substantial public benefit. The HRRC will have to demonstrate that the adaptive management plan has appropriate checks and balances to ensure that any improvement dredging resulting from the project will result in net gains to habitat, or other public benefit.
MPS CR3.9	This standard requires the beneficial reuse of clean dredged materials. The project will utilize dredged materials on the marsh surface in order to elevate the marsh surface, counter the effects of subsidence, and promote salt marsh growth.
MPS CR3.11	This standard protects fish, shellfish, and crustaceans from the impacts of development. The project will result in improvements to habitat for these animals, however, dredging should be designed and timed to avoid adverse impacts to these animals.
MPS WET1.1, 1.2	These standards protect wetlands and their buffers from alteration. This element involves wetland alteration by way of the placement of fill. However, this action would be taken to achieve the project objective of ecological restoration, according to protocols in the Adaptive Management Plan. This standard allows for alteration, provided it is the minimum necessary and there are no feasible alternatives, and that mitigation is provided.

	As the HRRC refines the project, they should provide protocols within the Adaptive Management Plan to ensure that alterations to wetlands are the minimum necessary to achieve the project objectives. Commission staff notes that over time, if objectives are met, the project will result in measurable improvements to salinity, estuarine wetland vegetation, water chemistry and dissolved oxygen, estuarine animal habitat, and reduced mosquito production, to 800 – 900 acres of presently degraded estuarine habitat.
BDP WET1.5	This Best Development Practice encourages wetland restoration.
MPS WPH1.4	This standard requires the protection of rare species habitat. The project will result in indirect impacts to habitat of the Northern Harrier, Diamondback Terrapin, Eastern Box Turtle, American Bittern, Least Bittern, and Water Willow Stem Borer, all state-listed species. The actions contemplated under this project element may result in positive habitat changes for some of these species (e.g. increased estuarine habitat for Diamondback Terrapin), and in the loss of habitat for others (loss of freshwater marsh habitat for American and Least Bitterns). The Commission will seek guidance from the Natural Heritage and Endangered Species Program in determining whether the project complies with this standard, and whether impacts to rare species should be mitigated by means other than those planned for the restoration project generally (e.g. creation or preservation of specialized habitat within the project area, or elsewhere within the seashore).
BDP WPH1.7	This Best Development Practice encourages ecological restoration.
BDP WPH1.8	This Best Development Practice encourages un-development. This element would potentially remove development from the floodplain.

5. Upper Pole Dike Creek

This project element is located mostly outside of the Seashore boundary, and contains approximately 130 privately owned parcels within the historic floodplain. Approximately 100 acres of degraded wetlands could be restored with the reintroduction of tidal flow within this sub-basin. The HRRC would mitigate impacts to low-lying properties within this area on a site-by-site basis. Flood protection measures could include elevating driveways, relocating structures, constructing berms or rip-rap walls, and/or moving wells.

The following comments address the consistency of mitigation of flooding to low-lying private properties within Upper Pole Dike Creek with the MPS and BDPs in the RPP:

MPS/BDP	Comment
MPS CR2.1, 2.3, 2.4, 2.8	These standards restrict development within land subject to coastal storm flowage (LSCSF) to ensure that development does not impede the storm damage control functions of LSCSF or impede the migration or function of other coastal resources. Mitigating low-lying properties could impact resources protected by these standards, but CR2.10 (see below) provides an exception for ecological restoration projects.
MPS CR2.10	This coastal standard provides an exception from compliance with several coastal MPSs for projects that restore salt marsh, fish runs, and shellfish beds. Provided the HRRC demonstrates that measures have been taken to minimize adverse impacts to LSCSF, and that other MPSs have been met, this standard provides for the proposed development activities that address the ecological restoration objectives of the project.
MPS WET1.1, 1.2	<p>These standards protect wetlands and their buffers from alteration. Mitigating low-lying properties could result in impacts to wetlands and their buffers. However, these potential actions would be taken to achieve the project objective of ecological restoration. This standard allows for alteration, provided it is the minimum necessary and there are no feasible alternatives, and that mitigation is provided.</p> <p>As the HRRC works through the details of mitigating low-lying properties, they should keep in mind minimizing direct impacts to wetland resources (such as construction impacts, footprint of fill for dikes and road elevations, rip rap or bulkheads associated with protecting roads and low-lying properties, etc.). Commission staff notes that over time, if objectives are met, the project will result in measurable improvements to salinity, estuarine wetland vegetation, water chemistry and dissolved oxygen, estuarine animal habitat, and reduced mosquito production, to 800 – 900 acres of presently degraded estuarine habitat.</p>
MPS WPH1.2, 1.3	These standards require the minimization of clearing, grading, and fragmentation of wildlife habitat. As the HRRC works through the details of mitigating flooding of low-lying properties, they should keep in mind minimizing clearing and grading (such as construction-related impacts).
MPS WPH1.4	This standard requires the protection of rare species habitat. Mitigating flooding of low-lying properties may result in impacts to habitat of state-listed species. The HRRC

	should work with the NHESP to avoid, minimize, and appropriately mitigate impacts to individual private properties.
BDP WPH1.7	This Best Development Practice encourages ecological restoration.
BDP WPH1.8	This Best Development Practice encourages un-development. The project includes elements that would potentially remove development from the floodplain.

6. Public Access and Recreation Opportunities

The HRRC intends to improve public recreational access opportunities as part of the restoration project, and through the design of specific project elements (such as the new Chequessett Neck Road tide-control structure). The RPP supports improved public access to the coast through MPS CR1.1, BDP CR1.5, and 1.6. In addition, the HRRC should note that MPS CR2.6 requires that redevelopment of water-dependent marine infrastructure that would impact a coastal bank should be set as far landward as feasible to minimize adverse impacts to the natural beneficial functions of the bank.

7. Project Alternatives

The previous sections address the elements which are common to all of the potential alternatives. The following comments address only those elements which are unique to a project alternative.

1. Alternative B

This alternative would achieve the lowest high tide elevation to achieve the project objectives through the construction of a tide control structure at Chequessett Neck Road. This alternative would not include a new dike structure at Mill Creek, and thus some action would be necessary to mitigate flooding to the CYCC. Options include 1. relocating or 2. elevating the flooded portions of the course.

2. Alternative C

This alternative would achieve the highest possible high tide elevation given the current constraints within the floodplain, while excluding tidal restoration to the Mill Creek sub-basin through the construction of a dike. This second dike would allow for out-flow of fresh water, but would eliminate any tidal influence into this portion of the floodplain. The CYCC and other low-lying properties in the Mill Creek sub-basin would be unaffected by the restoration project.

3. Alternative D

This alternative would achieve the highest possible high tide elevation given the current constraints within the floodplain, and would include a dike at Mill Creek with a tidal control structure to allow for management of tidal influence within the Mill Creek sub-basin. Because flooding would be re-introduced to this portion of the floodplain, some action would be necessary to mitigate flooding to the CYCC, and other low-lying properties. Options include 1. relocating or 2. elevating the flooded portions of the course.

Each of these alternatives will result in impacts to coastal resources, freshwater wetlands, wildlife and plant habitat, and rare species habitat, as previously discussed. Through an alternatives analysis workshop, the HRRC identified the “full build” Alternative D as the preferred alternative for the project. Staff recommends that public opinion may also inform selection of the best alternative, as there are many resources of public and private value that will be significantly affected by the project.

Alternative D will result in impacts not previously discussed. These impacts would result from the construction of a new dike at Mill Creek, and the flooding of CYCC. The construction of the dike will result in 2.4 acres of temporary impacts to wetlands and 12,500 sq ft of permanent wetland fill. Option 1, relocating the affected portions of the CYCC course, would result in 12 acres of course reverting to salt marsh, and 30 acres of upland (presently providing box turtle habitat) being converted to new fairways. Option 2, elevating the affected portions of the CYCC course, would result in 10 acres of fill within low-lying, wet areas of the course, and the clearing and excavation of 5 acres of upland (presently providing box turtle habitat) to supply the fill.

If the HRRC carries Alternative D forward as the preferred alternative in the final EIS/EIR, they will have to show that the impacts from Option 1 or 2 are consistent with the MPS. The following issues should be addressed:

MPS/BDP	Comment
MPS CR2.1, 2.3, 2.4, 2.8	These standards restrict development within land subject to coastal storm flowage (LSCSF) to ensure that development does not impede the storm damage control functions of LSCSF or impede the migration or function of other coastal resources. The project impacts resources protected by these standards, but CR2.10 (see below) provides an exception for ecological restoration projects.
MPS CR2.10	This coastal standard provides an exception from compliance with several coastal MPSs for projects that restore salt marsh, fish runs, and shellfish beds. Provided the HRRC demonstrates that measures have been taken to minimize adverse impacts to LSCSF, and that other MPSs have been met, this standard provides for the proposed development activities that address the ecological restoration objectives of the project.
BDP CR2.13	This Best Development Practice encourages the removal of development from the coastal floodplain, which the project proposes under Option 1.
MPS WET1.1, 1.2	<p>These standards protect wetlands and their buffers from alteration. Changes to the CYCC fairways will involve some wetland alteration. However, these actions are taken to achieve the project objective of ecological restoration. This standard allows for alteration, provided it is the minimum necessary and there are no feasible alternatives, and that mitigation is provided.</p> <p>As the HRRC refines the project, selecting a preferred alternative and option for the CYCC, they should keep in mind minimizing impacts to wetland resources (such as construction impacts, footprint of fill, etc.). At the same time, Commission staff notes that over time, if objectives are met, the project will result in measurable improvements</p>

	to salinity, estuarine wetland vegetation, water chemistry and dissolved oxygen, estuarine animal habitat, and reduced mosquito production, to 800 – 900 acres of presently degraded estuarine habitat.
MPS WPH1.2, 1.3	These standards require the minimization of clearing, grading, and fragmentation of wildlife habitat. Changes to the fairways will require clearing of vegetation. As the HRRC refines the project, selecting a preferred alternative and option for the CYCC, they should keep in mind minimizing clearing and grading.
MPS WPH1.4	This standard requires the protection of rare species habitat. Of either option selected, the impacts to rare species habitat should be avoided, minimized and mitigated. The Commission will seek guidance from the Natural Heritage and Endangered Species Program in determining consistency with this standard.
MPS WPH1.6	This standard addresses the management of invasive species within a project site. Invasive species management is an integral part of the project.

WATER RESOURCES

Restoring tidal flow to the Herring River will result in improvements to water and sediment quality within the river and provide benefits to its ecology. The Commission indicated in its 2008 comment letter on the ENF that the project should identify potential private wells and provide information about how the restoration of tidal flow might affect their water. The DEIR/DEIS provides information identifying well sites could potentially be affected (Martin 2007) and reference to a report that evaluated the potential for changes to the aquifer and saltwater interface (Martin 2004). Although the DEIR/DEIS considered this item, it dismissed it from further consideration. It was not apparent how the DEIR/DEIS considered this issue in Chapter 4; *Environmental Consequences*.

The study by Masterson (2004) used the USGS groundwater model of the Chequessett lens to evaluate a number of scenarios of tidal exchanges based upon initial modeling by Spaulding (2001) of tidal response to dike openings. There were several scenarios in which tidal restoration resulted in a decrease of the fresh water lens thickness. The DEIR/DEIS has presented hydrologic modeling of tidal response from the Woods Hole Group and should consider the use of updated modeling by the WHG (2007) as the basis for evaluating the groundwater response. Furthermore the issue of private wells should be explicitly identified in the Adaptive Management Plan as an item for monitoring, potentially making use of the Chequessett Yacht and Country Club Golf Course Irrigation well and USGS monitoring wells and that were installed to characterize groundwater conditions in the Herring River watershed.

HERITAGE PRESERVATION AND COMMUNITY CHARACTER

Historic, Cultural and Archeological Resources

The Regional Policy Plan requires protection of historic and archaeological resources under MPS HPCC1.1 and MPS HPCC1.3. As currently proposed in the Preferred Alternative (Alternative D), the Herring River Restoration Project involves the construction of a new dike structure that would raise the tidal level in portions of the Herring River estuary. The project has the potential to impact historic and archaeological sites in primarily three ways: from construction/ground disturbance in low-lying areas where new dikes and tidal control structures are proposed; from

erosion due to increased tidal flow through sensitive areas; and from ground disturbance in archaeologically sensitive upland areas where an existing golf course may be relocated.

Commission staff notes that Alternative C, which would include construction of a tidal exclusion dike at Mill Creek, would have less impact on archaeological resources due to the fact that the golf course would not need to be relocated to archaeologically sensitive uplands.

The Cape Cod National Seashore maintains an inventory of cultural properties. While no known above ground historic resources have been identified in the project area, some early industrial properties such as dikes and bridges related to construction of the Cape Cod railroad in the 1870s may need further evaluation to determine their significance.

The project area is known to be archaeologically sensitive. An initial archaeological survey was conducted by PAL in 2011 (*Phase 1A Archaeological Background Research and Sensitivity Assessment*) and identified 25 known pre-contact archaeological sites in the area. This information was used to develop a predictive model to identify areas of high and moderate archaeological sensitivity in the project area. A full archaeological survey of the area has not been conducted due to the long-term and adaptive nature of the project. Further archaeological survey is proposed only for those areas that are proposed to be impacted by ground disturbance or increased tidal flow and erosion as the project develops. The process for determining when additional survey is warranted and how to proceed is to be addressed in a Programmatic Agreement that is currently being developed with consulting parties.

It appears that the proposed project may be able to avoid impacts to archaeological resources if it proceeds carefully and can adapt to avoid significant sites if they are found. The DEIR/DEIS outlines the goals of avoiding impacts to archaeological resources, first by avoiding archaeologically sensitive areas when possible and, if avoidance is not possible, then performing additional archaeological survey work to determine if archaeological resources are present. If resources are found, specific actions to mitigate impacts would be developed on a site by site basis. To be consistent with RPP standard MPS HPCC1.3 regarding protection of archaeological resources, any significant archaeological sites that are identified need to be preserved, and mitigation would be limited to means that protect those significant archaeological sites from destruction or negative impacts. The Programmatic Agreement should reflect the Commission's standard for protection of archaeological resources, and describe how impacts to significant archaeological sites will be mitigated consistent with this standard.

Exterior Lighting

The DEIR/DEIS did not address impacts from exterior lighting. However, based on a review of the Alternatives, Commission staff suggests exterior lighting impacts would likely be limited to work lights to illuminate construction or maintenance activities. At the same time, it is likely that the majority if not all construction or maintenance activities (such as vegetation trimming/removal within the floodplain) would occur during daylight hours. Given this, staff suggests the proposed Herring River Restoration Project will likely not result in a significant exterior lighting impact.

TRANSPORTATION

As detailed in the DEIR/DEIS, the increase in tidal flow from the Action Alternatives would result in the flooding of a number of local paved and unpaved roads. The impacted roads, including High Toss Road, Pole Dike Road, Bound Brook Road, Old County Road, and numerous fire roads, would need to be elevated, relocated, closed during high tides, or

abandoned. The impacts of these alternatives on the roadway network, particularly on emergency vehicle access, should be detailed in subsequent engineering studies and traffic analyses.

In addition to permanent impacts, temporary construction impacts on the roadway network should be addressed in subsequent analyses. Chequessett Neck Road dike reconstruction will result in disruption to vehicles travelling on Chequessett Neck Road. If the road is to be closed for an extended period, care must be taken in providing a safe, well-signed detour route. If the road is to remain open during construction, efforts should be taken to ensure the safety of workers and the traveling public.

HAZARDOUS AND SOLID WASTE MANAGEMENT

Based on the overall project as described by the *Executive Summary* and Chapters 1 and 2 of the DEIR/DEIS, Commission staff suggests that generation of Hazardous and Solid Waste is likely to result from construction and long-term maintenance activities that involve construction equipment (such as backhoes, cranes, chain saws, etc.). Examples of project elements that appear likely to involve construction equipment include reconfiguration of the Chequessett Neck Road dike and tide gates, culvert replacement, raising or relocating low lying roadways, possible reconfiguration of the CYCC, and removing trees and woody vegetation within the floodplain.

The DEIR/DEIS did not provide sufficient information on the Hazardous or Solid Wastes associated with these and other project components for Commission staff to determine what types and quantities of Hazardous or Solid Wastes may be generated from the overall project. Commission staff suggests subsequent project documents provide more detail on what project elements would generate Hazardous or Solid Wastes, and include information on types and amounts of Hazardous and Solid Waste, and describe how these wastes would be handled and disposed of.

AFFORDABLE HOUSING

Given the nature of the project, Commission staff suggests that the Regional Policy Plan's Affordable Housing section does not apply to the proposed project.

ECONOMIC DEVELOPMENT

Given the nature of the project, and because the Towns of Truro and Wellfleet do not yet have a Land Use Vision Map, Commission staff suggests that the Regional Policy Plan's Economic Development section does not apply to the proposed project.

ENERGY RESOURCES

Given the nature of the project, Commission staff suggests that the Regional Policy Plan's Energy section does not apply to the proposed project.

LAND USE

Given the nature of the project, and because the Towns of Truro and Wellfleet do not yet have a Land Use Vision Map, Commission staff suggests that the Regional Policy Plan's Land Use section does not apply to the proposed project.

OPEN SPACE

Commission staff suggests that the Regional Policy Plan's Open Space section does not apply to the proposed project because the project proponents are the National Park Service together with the municipalities of Wellfleet and Truro.