Herring River Tidal Restoration Project

Conceptual Restoration Plan

Submitted to: The Towns of Wellfleet and Truro and the Cape Cod National Seashore

Prepared and Submitted by: The Herring River Technical Committee, with technical support provided by ENSR/AECOM, Inc.

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A number of organizations contributed information, feedback, and ideas to the HRTC. These include:

- Departments of Public Works, Wellfleet and Truro
- Wellfleet Fire Department
- Wellfleet Herring Warden
- Maintenance Division, CCNS
- Cape Cod Mosquito Control Project
- Natural Resources Management Division, CCNS
- National Park Service, Water Resources Division
- Wellfleet Conservation Trust
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- HRTC Recording Secretaries, Megan Eckhardt and Christine Bates

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EXECUTIVE SUMMARY

The Herring River runs from Wellfleet Harbor northeast about four miles to Herring Pond in north Wellfleet, and northwest a similar distance to Ryder Beach in south Truro. Historically, the river was bordered by nearly 1100 acres of coastal wetlands. The estuary contained a productive river herring run and shellfishery, as well as extensive saltmarsh habitats.

In 1909, the natural condition was changed dramatically when the mouth of the river was diked at Chequesset Neck (see Photo 1). The dike was constructed with the intent of controlling mosquitoes and creating arable and developable land. Subsequent ditching and stream channelization was intended to drain the system's wetlands even further.

Photo 1: Since 1909, tidal exchange into Wellfleet's Herring River has been restricted by a dike fitted with three six-by-six foot culverts; two culverts are fitted with clapper valves to allow drainage but block the inflow of seawater; the third culvert has a partially open sluice gate that allows some seawater to flow into the river.

The cumulative effects of these modifications have been far reaching. Former saltmarshes are now disturbed freshwater wetlands or dry deciduous woodlands of comparatively low ecological value. Water quality is degraded with high acidity, low dissolved oxygen, and high fecal coliform bacteria. The first two of these have caused fish kills; the third has led to closure of shellfish beds both upstream and downstream of the dike. With poor tidal flushing and degraded water quality for predatory fish, nuisance mosquito production remains high.

Since the 1980s, understanding of this environmental degradation has grown, thanks to research efforts at the Cape Cod National Seashore (CCNS), which has management responsibility for much of the floodplain, and awareness of the citizens in the Town of Wellfleet. Full restoration of the Herring River estuary would increase the salt marsh acreage of Wellfleet Harbor by about 60%.

In August 2005, a Memorandum of Understanding (MOU) signed by the Town and CCNS created a Herring River Technical Committee (HRTC) charged with assessing the feasibility

of tidal restoration. The HRTC consists of a broad spectrum of local, state and federal representatives. In January 2006, after reviewing all the science related to restoration of the Herring River, the HRTC concluded:

"…tidal restoration of the Herring River Saltmarsh is feasible and will provide numerous and substantial public benefits. As outlined in the Technical Committee's Synopsis, significant improvements in water quality would provide subsequent public health, recreational, environmental, and economic benefits. Our recommendation includes a new structure capable of full tidal restoration. The new structure should incorporate controlled gates to provide incremental increases in tidal exchange. This would allow for well thought out management, supervision, monitoring, and evaluation (HRTC 2006)*."*

This recommendation was accepted by the Wellfleet Board of Selectmen and the National Park Service. As a next step, the HRTC was charged with initiating formal planning for the restoration. This Conceptual Restoration Plan (CRP) is the first step in that planning.

Initial hydrodynamic modeling has shown that full tidal restoration of the river would require a new dike structure at Chequesset Neck. Alternatives for this structure are presented, including both gated structures and an open bridge. A preferred alternative is not included in this CRP. That selection would depend on more detailed hydrodynamic modeling, further planning, and additional public input. Provision is also made to include recreational and access opportunities as part of the restoration, for boating (canoeing & kayaking), fishing and hiking.

In the 100 years since the current dike was constructed, development has occurred on or near the coastal floodplain. This includes private residences, wells and septic systems, low-lying roads and a golf course. Floodplain restoration, allowing nearly the full tidal range into the valley, would affect some of these developments. Plans are outlined to identify and resolve all of these issues. Much of that work is already underway, including meetings with directly affected abutters. The protection of low-lying development may require additional, smaller control dikes at Mill Creek and/or on the main stream at High Toss Road and Bound Brook Island Road. (The HRTC has also recommended a control dike at Pole Dike, to initially isolate Upper Pole Dike Creek from the project pending the resolution of abutter issues there.)

The restoration will cause a major and extensive change in vegetation, with large areas presently covered by shrubs and trees reverting to saltmarsh grasses (see Photo 2). Plans are outlined to manage and monitor this process. Plans are also presented for monitoring and controlling mosquito populations. Finally, the CRP analyzes the effects of the restoration project on water quality and sediment transport in the downstream harbor, concluding that risks are low, but recommending targeted monitoring and management steps.

This restoration plan is based on the principle of "adaptive management" where, throughout the expectedly long restoration process, management actions are carefully monitored and analyzed with respect to project objectives prior to taking further action. This approach recognizes and accommodates for the inevitable uncertainties inherent in a

habitat restoration project of this complexity and magnitude.

The restoration of the Herring River saltmarshes will be an expensive project, far beyond the funding capacities of the small towns of Wellfleet and Truro. State, federal and private funding will be pursued for this work. However, in-kind matching contributions from Town departments will be needed to match state and federal support.

The next step for planning the restoration is execution of a second MOU by the Towns of Wellfleet and Truro and the National Park Service signifying acceptance of this conceptual plan. If approved, that MOU would initiate detailed planning, design, and permitting. All of these steps will be subject to formal and informal public input and comment. No final plans or decisions have yet been made.

Photo 2: View of the lower basin of The Herring River just above Chequesset Neck.

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"A river should never kill its fish..." -Gordon Peabody