

# **TOWN OF EASTHAM**

- Town Map
- Chart of Site Characteristics
- Sites 1 to 9



# TOWN OF EASTHAM









## Location of Selected Salt Marsh Restrictions

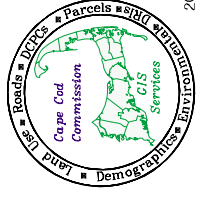
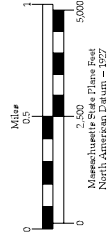
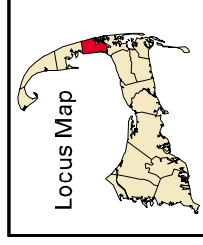
This map was produced by the Cape Cod Commission Geographic Information System office, with digital data from MassGIS and the Cape Cod Commission, 2001.

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis.

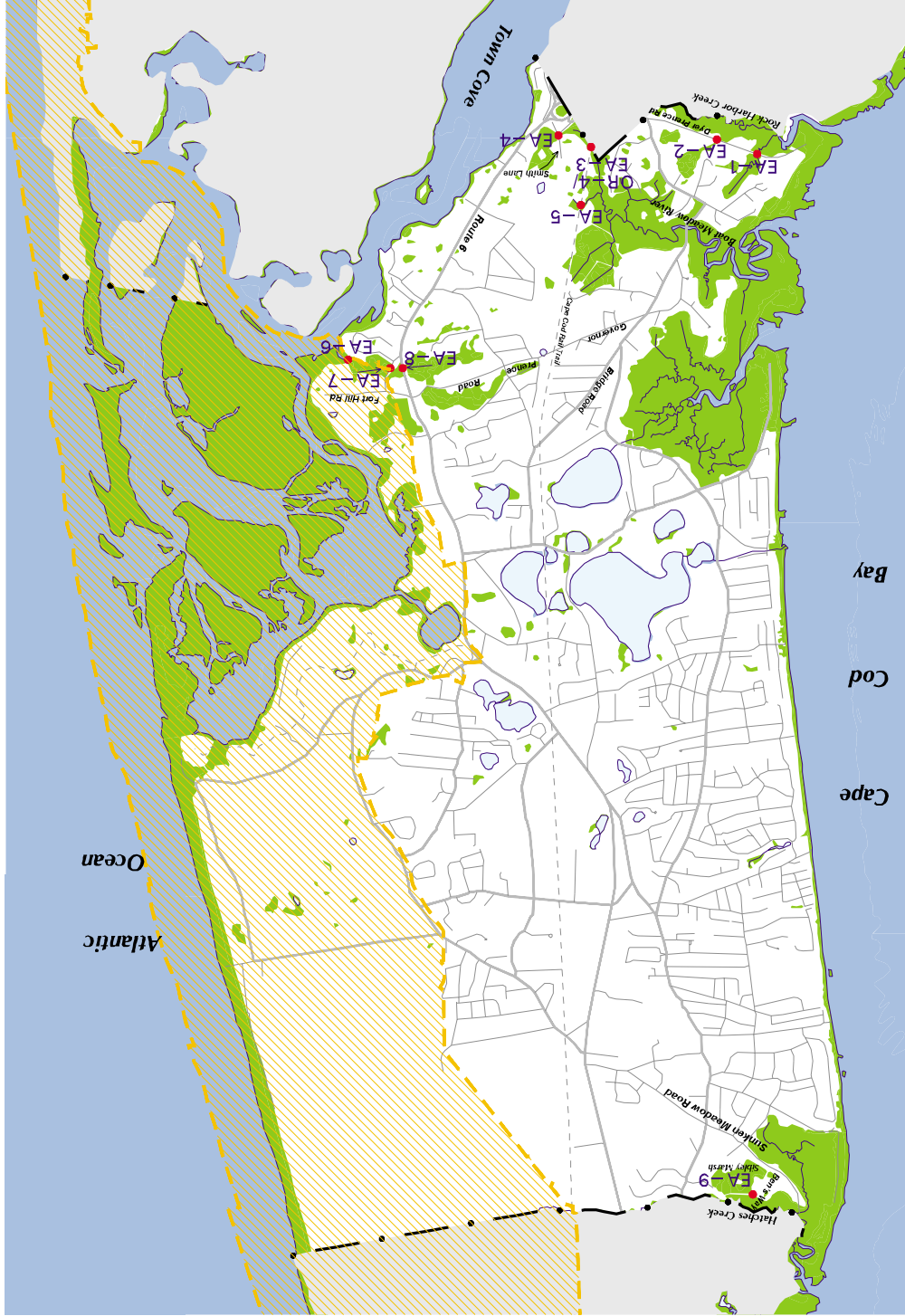
This project was funded, in part, by the Executive Office of Environmental Affairs, Massachusetts Wetlands Restoration Program.

### EA-1 Restriction Site

-  Wetland
-  Ocean
-  Pond or Lake
-  CC National Seashore
-  Local Road
-  Major Route
-  Bike Trail
-  Stream



2001





## Town of Eastham–Site Characteristics

Site Number	Size of upstream affected area (salt marsh acres / total affected acres)	Is the upstream affected area contiguous to protected open space (ownership)?	Does this tidal channel support a shellfish resource area?	Is the channel or system part of an anadromous fish pathway?	Does the culvert/pipe support an engineered flood control structure?	Is the affected area or site within an ACEC boundary?	Does the affected area include Priority Habitat of Rare Species (PH) or Estimated Habitat of Rare Wildlife (WH)?	Are there any restricted sites upstream of this site (site number)?	Ownership of the site (public vs. private)
EA-1	9.71 / 11.56	YES (municipal)	YES	YES	NO	YES	YES (PH,WH)	NO	PUBLIC
EA-2	0.72 / 6.87	NO	YES	YES	NO	YES	YES (PH,WH)	NO	PUBLIC
OR-4/ EA-3	5.20 / 16.94	YES (private)	YES	NO	NO	YES	YES (PH,WH)	YES (EA-4)	PUBLIC
EA-4	0.0 / 10.18	NO	YES	NO	NO	YES	YES (PH)	NO	PRIVATE
EA-5	1.13 / 1.13	YES (municipal)	YES	NO	NO	YES	YES (PH,WH)	NO	PUBLIC
EA-6	7.71 / 18.74	YES (federal, state)	YES	NO	NO	NO	YES (PH,WH)	YES (EA-7, EA-8)	PUBLIC
EA-7	1.71 / 6.93	YES (federal, state)	YES	NO	YES (tide gate)	NO	YES (PH,WH)	YES (EA-8)	PUBLIC
EA-8	1.71 / 4.51	NO	YES	NO	NO	NO	NO	NO	PUBLIC
EA-9	6.31 / 16.51	YES (private)	YES	NO	YES (tide gate)	YES	YES (PH,WH)	NO	PRIVATE



# EASTHAM

## Dyer Prence Road restriction of Rock Harbor Creek

### Site EA-1

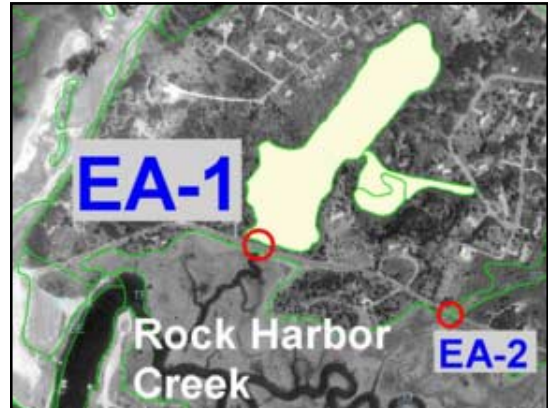
#### Site Description

Rock Harbor Creek forms the town line between Orleans and Eastham and flows in a southeasterly direction from its mouth on Cape Cod Bay into Cedar Pond. Dyer Prence Road runs parallel to the creek on its north shore and intersects two tidal channels. Site EA-1 is the western most site. Flow passes under the road via a 28-inch concrete pipe set in a concrete headwall. The opening is consistently submerged by high tide and appears to be in good condition. It does not appear to be broken or clogged. The Rock Harbor Creek system supports anadromous fish and shellfish resources that are closed to shellfishing.

#### General Information

The seaward channel is approximately 20 to 25 feet wide, narrowing to 5 to 10 feet upstream. Salt marsh is delineated by the Wetlands Conservancy Program on both sides of the roadway bed. While there is no significant change in vegetation from the seaward to upstream sides, there are other visual indicators of a restriction including major scouring and erosion on both sides of Dyer Prence Road. Additionally, marsh slumping was observed within the seaward marsh area.

- Restriction width – 28 inches
- Restriction length – 60 feet
- Upstream salt marsh – 9.71 acres



Upstream Affected Area (acres): SM – 9.71;  
SS – 1.11; M – 0.74.



The roadway berm around this seaward headwall and the channel edges are severely eroded. A wide, deep scour pool has formed in front of this 28-inch opening.



Scouring and erosion scar the upstream side. As was the seaward headwall, this side is consistently submerged. Note the placement of the tide gauge to monitor flow in this system.

# EASTHAM

## Dyer Prence Road restriction of Rock Harbor Creek

Site EA-2

### Site Description

Rock Harbor Creek forms the town line between Orleans and Eastham and flows in a southeasterly direction from its mouth on Cape Cod Bay into Cedar Pond. Dyer Prence Road runs parallel to the creek on its north shore and intersects two tidal channels. Site EA-2 lies to the east of EA-1. Measurements of the culvert could not be taken at this site. Even at low tide both pipe openings were submerged within pools of stagnant water and were inaccessible. The site appeared to be severely degraded, warranting immediate repair. The Rock Harbor Creek system supports anadromous fish and shellfish resources that are closed to shellfishing.

### General Information

Flow through this culvert appeared to be minimal. A 1 to 2-foot channel was visible on the seaward side that petered out and did not appear to extend to the seaward side of the roadway bed. Upstream, a 2 to 3-foot channel filled with stagnant, murky water extended from the pipe opening into the shrub swamp beyond. Scouring was minor at this site, likely due to the minimal flow. No erosion was observed.

- Restriction width – not accessible
- Restriction length – 42 feet
- Upstream salt marsh – 0.72 acres

### Comments

The Wetlands Conservancy Program delineated salt marsh adjacent to the seaward side of the roadway berm and shrub swamp immediately upstream of this infrastructure. The Program also delineated 0.72 acres of salt marsh upstream of the shrub swamp. If not for this upstream salt marsh, this site would likely have been excluded from this Atlas because the seaward channel does not appear to reach the roadway berm.



Upstream Affected Area (acres): SM – 0.72;  
SS – 3.65; M – 2.50.



A stagnant pool filled with reeds makes the seaward culvert opening inaccessible even at low tide.



This view into the upstream shrub swamp shows the stagnant channel in the distance.

# ORLEANS/EASTHAM

## Cape Cod Rail Trail restriction of Boat Meadow River

Site OR-4/EA-3

### Site Description

Boat Meadow River runs in an easterly direction from its mouth on the Cape Cod Bay. Prior to reaching the Cape Cod Rail Trail, the river flows under Bridge Road via a 57-foot unrestricted bridge (see site EA-a, Appendix B). Boat Meadow River is conveyed under the bike trail via a 36-inch concrete pipe. The pipe is in serious disrepair. The trail's side slope embankments are eroding and its paved surface is being undermined. Restricted site EA-4 lies upstream. Boat Meadow River is within the Inner Cape Cod Bay Area of Critical Environmental Concern. While the river does support extensive shellfish resources, they are closed to shell-fishing.

### General Information

Seaward of this site the river channel is approximately 15 feet wide, narrowing to approximately 5 feet upstream. Visual indicators of a restriction are severe and include major scouring and erosion both seaward and upstream. Vegetation die off and ponded water are significant in the adjacent seaward marsh area. The vegetation changes noticeably from the seaward to upstream sides of the bike path with minor *Phragmites* growth seaward, becoming significant on the fringes and in the rear of the upstream affected area. An exposed length of seaward pipe is broken off in several sections. The opening is jammed by large logs, pieces of docks, and other debris that have collected at this site.

- Restriction width – 36 inches
- Restriction length – 45 feet
- Upstream salt marsh – 5.20 acres

### Comments

An Environmental Notification Form (EOEA file number 12421) for Cape Cod Rail Trail Safety Improvements was filed in January 2001, stating that the pipe is a tidal restriction reducing critical upstream habitat for fish and invertebrates and that the vegetative community suffers as well. Massachusetts Coastal Zone Management (MCZM) has examined this site as part of the US Environmental Protection Agency sponsored Salt Marsh Assessment Project. This project calls for replacement of the existing pipe with a 6 by 4-foot precast concrete box culvert. Restoration work at this site has now been funded by the Massachusetts Wetlands Restoration Program's Corporate Wetlands Restoration Partnership, the National Fish and Wildlife Federation, the Department of Environmental Management and MCZM. At this time all permits have been approved and construction bids received.



Upstream Affected Area (acres): SM – 5.20;  
SS – 2.31; M – 9.43.



Debris marks the seaward opening of this culvert under the bike trail. Pieces of the pipe have broken off and lie in the deep scour pool in front of the opening.



Upstream of the bike trail the bank has eroded away from this 36-inch pipe. Scour and erosion scar the area.

# EASTHAM

## Smith Lane restriction of Boat Meadow River

Site EA-4

### Site Description

Boat Meadow River runs in an easterly direction from its mouth on the Cape Cod Bay. Smith Lane crosses Boat Meadow River upstream of restricted site OR-4/EA-3. Flow passes under Smith Lane via a 40-inch concrete pipe. The seaward opening appears to be consistently submerged at mean high tide. The pipe appears to be unbroken, but clogged with muck. Boat Meadow River is within the Inner Cape Cod Bay Area of Critical Environmental Concern. While the river does support extensive shellfish resources, they are closed to shellfishing.

### General Information

The seaward channel is approximately 3 to 5 feet wide, widening to about 5 feet upstream. Vegetation changes significantly from one side of the road to the other – *Phragmites* growth is minor on the seaward side and dominates the upstream affected area. Cattails are present on both sides of the road – with significant growth seaward and minor growth upstream. Other visual indicators of a restriction include minor scouring and erosion both seaward and upstream.

- Restriction width – 40 inches
- Restriction length – 40 feet (estimate)
- Upstream salt marsh – 0 acres

### Comments

Because the restriction caused by site OR-4/EA-3 is severe, the Eastham Department of Natural Resources suggests waiting for the remediation work to be completed and to give the system a chance to adapt to any improvements. Over time, the scope of work that is needed at upstream site EA-4 may become more apparent.



Upstream Affected Area (acres): SS – 2.31; M – 7.87.



Upstream of Smith Lane the affected area is dominated by *Phragmites*.

# EASTHAM

## Cape Cod Rail Trail restriction of channel off Boat Meadow River

Site EA-5

### Site Descriptions

Upstream of unrestricted site EA-a at Bridge Road (see Appendix B) several channels meander through the marshes of Boat Meadow River. North of restricted site OR-4/EA-3 on the Cape Cod Rail Trail one of these channels passes under the bikeway via an estimated 1-foot diameter metal pipe. The pipe appeared to be in poor condition – it is visibly clogged with muck and consistently submerged at mean high tide. Boat Meadow River is within the Inner Cape Cod Bay Area of Critical Environmental Concern. While the river does support extensive shellfish resources, they are closed to shellfishing.

### General Information

The seaward channel is approximately 2 to 4 feet wide, narrowing to 2 feet upstream of the Rail Trail. Visual indicators of a restriction include significant seaward scouring and minor upstream scouring. Upstream erosion was significant. *Phragmites* growth is minor on the seaward side and fringes the upstream affected area. There did not appear to be significant flow passing through the culvert – stagnant pools of water submerged the pipe opening on both sides of the Rail Trail.

- Restriction width – 1 foot (estimate)
- Restriction length – 40 feet (estimate)
- Upstream salt marsh – 1.13 acres



Upstream Affected Area (acres): SM – 1.13.



Standing on the bike trail there is a clear view of the upstream affected with its fringe of *Phragmites*.



Standing in the upstream affected area one can see how steep the bike trail berm is. The metal pipe is circled in the bottom of this photo.

# EASTHAM

## Restrictions of Abelino's Creek by:

**Stone Dike**  
Site EA-6

**Governor Prence Road**  
Site EA-7

**Route 6**  
Site EA-8

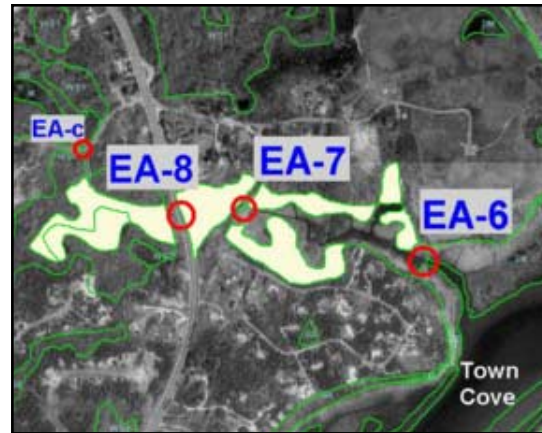
## Site Descriptions

The mouth of Abelino's Creek is located off of Town Cove about 1.1 miles west from Nauset Inlet. The wetland associated with the creek are crossed by: a stone dike owned by the Cape Cod National Seashore (site EA-6); Governor Prence Road (site EA-7); and Route 6 (site EA-8). The area between sites EA-7 and EA-8 is known as the Mary Chase Salt Marsh and is owned and managed jointly by the Massachusetts Division of Fisheries and Wildlife and Ducks Unlimited, Inc. Continuing upstream of site EA-8, the creek and wetland area is crossed again by Governor Prence Road (see Appendix B, site EA-c). Abelino's Creek does support shellfish resources that are closed to shellfishing.

## General Information<sup>1</sup>

The old stone dike, site EA-6, is made of large boulders located at the mouth of Abelino's Creek. The creek flows through an opening in the dike about 5 feet wide. The stream channel upstream of the dike is about 4 feet wide. Site EA-7 is a 30-inch diameter reinforced concrete pipe under Governor Prence Road with a flapper gate on the seaward side that closes on an incoming tide. The existing flapper gate was installed in 1989 to replace an older structure. Today, only half of the flapper gate remains intact. Site EA-8 is a 30-inch reinforced concrete pipe, approximately 60 feet long, the runs under Route 6. Tidal flow reaching this site is minimal due to the flapper gate upstream at site EA-7.

<sup>1</sup>See ACOE, 1996, pp. 73-84. Information provided is based on both fieldwork conducted at sites EA-7 and EA-8 and the ACOE report.



Upstream Affected Area (acres): SM – 7.71; M – 11.03. The SM acreage between EA-6 and EA-7 is estimated at 6 acres. Not all of the SM is highlighted in this image.



This broken clapper gate covers the 30 inch pipe and restricts the incoming tide under Governor Prence Road.

Vegetation upstream of site EA-6 and seaward of EA-7 is comprised mainly of salt marsh with a wide band of *Phragmites* fringing the wetland area. Within the Mary Chase Marsh *Phragmites* visibly dominates the vegetation. Upstream of Route 6, site EA-8, *Phragmites* is also dominant.

(continued on page E9)

(continued from page E8)

## Restrictions of Abelino's Creek by:

**Stone Dike**  
Site EA-6

**Governor Prence Road**  
Site EA-7

**Route 6**  
Site EA-8

### Site EA-6

- Restriction width – 5 feet (approximate)
- Restriction length – unknown
- Upstream salt marsh – 7.71 acres (estimate)

### Site EA-7

- Restriction width – 30 inches (tide gate)
- Restriction length – 43 feet
- Upstream salt marsh – 1.71 acres

### Site EA-8

- Restriction width – 30 inches
- Restriction length – 60 feet
- Upstream salt marsh – 1.71 acres

## Comments

These sites were selected and studied by the Army Corp of Engineers (ACOE) in 1996, which found that “during spring tide conditions, there does not appear to be any restriction caused by either the Gov. Prence Road [site EA-7] or the Route 6 [site EA-8] culverts. However, the closure of the [clapper] gate at the Gov. Prence Road culvert restricts tidal flow to the marsh.” The study also referenced the possible negative effects of this on low-lying development and found that the stone dike does not appear to be restricting flow into the wetland.<sup>2</sup> The Massachusetts Wetlands Restoration Program is currently studying the potential and necessity for remediation at these sites. According to the Director of Natural Resources site EA-6 is emerging as the focus of any future restoration effort.

<sup>2</sup>ACOE, 1996, p. 84.



*Phragmites visibly dominates the Marsh Chase Salt Marsh, an area of approximately 2.42 acres of shallow marsh between Governor Prence Road and Route 6.*



*This concrete headwall houses the upstream opening of the 30 inch pipe passing under Route 6. Stagnant water obscures the submerged pipe.*



*While Phragmites visibly dominates the view into the upstream wetland area from site EA-8, the Wetlands Conservancy Program has identified 1.71 acres of salt marsh further upstream.*

# EASTHAM

## Earthen dike restriction of channel off Hatches Creek

Site EA-9

### Site Descriptions

Hatches Creek forms the border between Eastham and Wellfleet. Tidally connected to the creek is an area known as Sibley Marsh, which lies south of the creek, north of North Sunken Meadow road, and east of Ben's Way. A low earthen dike extends east to west and can be accessed from the end of Ben's Way (all land and the roadway are privately owned). A tidal channel passes under this dike via a 2-foot corrugated metal pipe that is effectively sealed by a metal flapper gate. Hatches Creek does support shellfish resources that are closed to shellfishing.

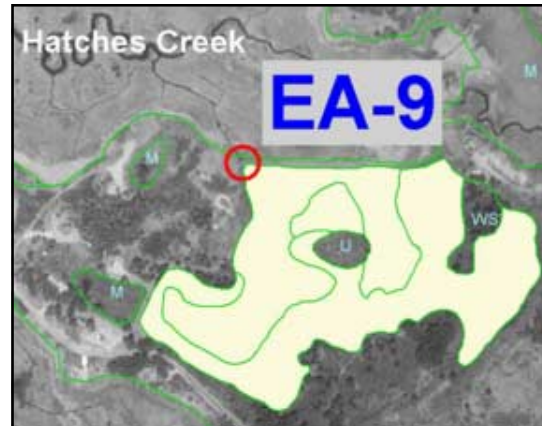
### General Information

Both the seaward and upstream channels are approximately 5 feet wide. Visual indicators of a restriction include significant scouring and minor bank erosion near the seaward opening. The flapper gate appears to be rusted shut but is missing its bottom 2 inches, which provide a small opening that could allow some salt water to pass upstream. The flapper gate and pipe appear to be consistently submerged at high tide. Visual indicators of a restriction upstream include minor scouring and bank erosion. *Phragmites* growth is dominant in the upstream affected area.

- Restriction width – 2 feet (tide gate)
- Restriction length – 30 feet
- Upstream salt marsh – 6.31 acres

### Comments

According to the Eastham Department of Natural Resources, the Cape Cod National Seashore would like to utilize this restriction and its associated wetland area as a control site. Therefore, restoration at this location may not be favored.



Upstream Affected Area (acres): SM – 6.31; SS – 9.43; M – 0.77.



This flapper gate prevents tidal flow from passing upstream via the 2-foot pipe. Note the tide gauge installed at this location.



This corrugated metal sluiceway is located on the upstream side of the dike, with its opening approximately 1-foot lower than the seaward side's opening.