

TOWN OF BREWSTER

- Town Map
- Chart of Site Characteristics
- Sites 1 to 7

TOWN OF BREWSTER








Location of Selected Salt Marsh Restrictions

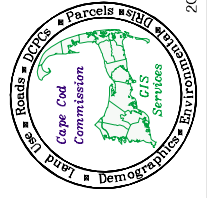
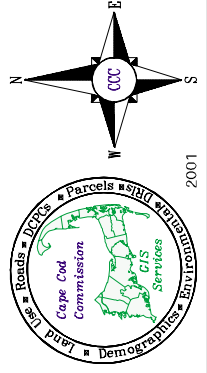
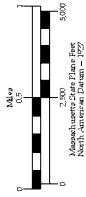
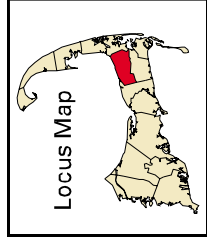
This map was produced by the Cape Cod Commission Geographic Information System office, with digital data from MassGIS and the Cape Cod Commission, 2001.

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.

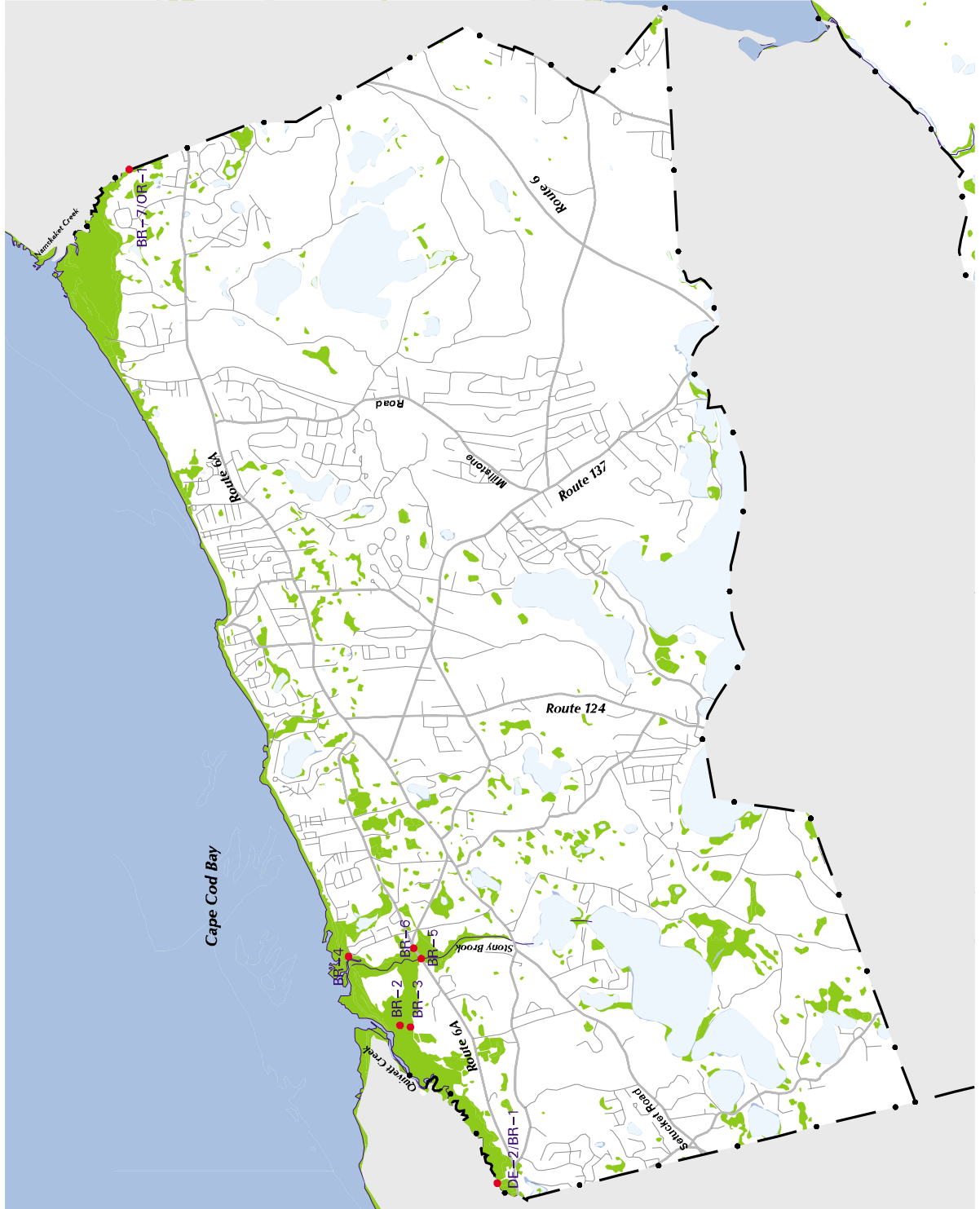
This project was funded, in part, by the Executive Office of Environmental Affairs, Massachusetts Wetlands Restoration Program.

BR - 1 Restriction Site

-  Wetland
-  Ocean
-  Pond or Lake
-  Local Road
-  Major Road
-  Stream
-  Railroad



2001



Town of Brewster –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)
DE-2/ BR-1	5.29 / 11.62	YES (municipal)	YES	YES	NO	NO	YES (PH)	NO	PUBLIC
BR-2	0.83 / 4.94	NO	NO	NO	NO	NO	YES (PH)	YES (BR-3)	PRIVATE
BR-3	0.0 / 3.75	NO	NO	NO	YES (flapper gate)	NO	YES (PH)	NO	PRIVATE
BR-4	8.39 / 21.29	YES (municipal)	NO	YES	NO	NO	NO	NO	PUBLIC
BR-5	12.25 / 31.56	NO	YES	YES	NO	NO	YES (PH, WH)	NO	PUBLIC
BR-6	12.25 / 31.56	NO	YES	YES	NO	NO	YES (PH, WH)	NO	PUBLIC
BR-7/ OR-1	1.12 / 6.94	YES (state)	YES	NO	NO	YES	YES (PH, WH)	NO	PUBLIC

DENNIS/BREWSTER

Sea Street restriction of Quivett Creek

Site DE-2/BR-1

Site Description

Sea Street was abandoned just north of Quivett Creek near its headwaters on the Dennis/Brewster town line. Pedestrian access continues south on the abandoned road-bed across Quivett Creek. According to local officials, there are two culverts under the former Sea Street each measuring 20-inches (these culverts were not visible during fieldwork conducted for this Atlas). The seaward side of the Creek pools significantly at the roadway berm as tidal flow tries to pass under Sea Street. A three-sided concrete structure passes the flow on the upstream side of the Sea Street path. A 20-inch corrugated metal pipe is also located at the site. Although it is sited high in the bank, it regularly passes water at high tide. Quivett Creek supports an active anadromous fish run to spawning ponds south of Route 6A.

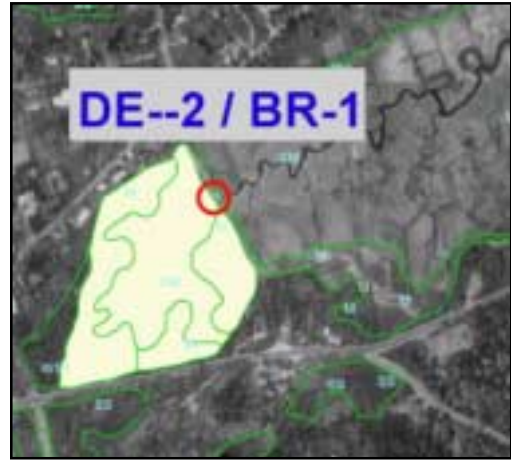
General Information

Quivett Creek is approximately 10 feet wide both seaward and upstream of the restriction. Obvious characteristics of a tidal restriction are present on either side of the submerged culverts – major scouring occurs as the water is detained in basins it has formed near the culvert openings; the banks of Quivett Creek are eroding significantly due to the unnatural stream conditions; the marsh near the seaward opening exhibits both marsh slumping and vegetation die off. The vegetation changes significantly from the seaward to the upstream sides of the restriction – there is a significant presence of *Phragmites* in the upstream area.

- Restriction width – two 20-inch pipes
- Restriction length – 55 feet
- Upstream salt marsh – 5.29 acres

Comments

After significant study by a team including the National Marine Fisheries Service (NMFS), the Massachusetts Wetlands Restoration Program, and local officials from Dennis and Brewster, this site is targeted for remediation. One tidal measurement taken during a study showed a high tide water level 18 inches higher on the seaward than on the upstream side of Sea Street. The NMFS has funding in place for this restoration and is moving forward with the cooperation of both communities.



Upstream Affected Area (acres): SM – 5.29;
SS – 0.99; M – 5.34.



This corrugated metal pipe is suspended high in the bank but does pass water regularly. Water also flows through an obscured opening below this water line.



Flow is directed down through this concrete structure; broken pipe and the suspended pipe are visible in the background.

BREWSTER

Cranberry bog berm restriction of channel off Quivett Creek

Site BR-2

Site Description

West of Drummer Boy Park Butler Lane extends north from Route 6A, ending at a cul-de-sac where several walking trails lead into the woods north of Butler Lane. For detailed trail directions speak with the local Conservation Commission, which is aware of this restriction and its specific location. Privately owned, now inactive, cranberry bogs dot the marsh. Berms built to support past cranberry farming are still in place, severing the tidal flow. This site (lying seaward of BR-3) consists of a 6-inch plastic, PVC pipe set low in the cranberry bog berm. To keep the weight of the berm off the pipe, and to help keep the opening clear, wooden boards form a casing around the pipe's seaward opening. The upstream pipe opening sticks out under a heavily eroded retaining wall.

General Information

The seaward channel is approximately 5 feet wide. Where the tide attempts to pass through the berm it is effectively dammed by the berm – the 6-inch pipe allows on a fraction of the tidal flow to pass upstream. Delineated as salt marsh by the WCP, *Phragmites* and scrub brush dominate the upstream area. This vegetation is in stark contrast to the extensive salt marsh just seaward of this site, extending to the berm itself. At the seaward opening the visual indicators of a tidal restriction are extreme – scour, bank erosion, and vegetation die-off are each evident and are among the worst observed.

- Restriction width – 6 inches
- Restriction length – 22 feet
- Upstream salt marsh – 0.83 acres

Comments

While the berms and bog areas are privately owned, these and other pathways traversing the Quivett Creek marshes are heavily used by the public. There are no protected open space parcels directly adjacent to this upstream affected area. The town is interested in purchasing and protecting land in this area however, land prices are high and there is hope that private citizens will take steps to protect this marsh area.



Upstream Affected Area (acres): SM – 0.83; SS – 0.36; M – 3.75.



Bank scouring is severe as water pools by the seaward side of this restrictive cranberry bog berm; boards form a casing around the tiny, 6 inch pipe.



Scour, erosion, and vegetation die-off are severe in the seaward salt marsh adjacent to site BR-2.



The upstream opening of the 6-inch pipe is barely visible under the heavily eroding wooden retaining wall.

BREWSTER

Cranberry bog berm restriction of channel off Quivett Creek

Site BR-3

Site Description

The restriction is a 2-foot corrugated metal pipe with flapper gate (seaward) and a box-type dam structure (upstream) restricting flow under an old cranberry bog berm. This site lies at the rear of the 0.83 acre patch of salt marsh delineated upstream of site BR-2. As is site BR-2, this site is reached via walking trails accessed from the Butler Lane cul-de-sac.

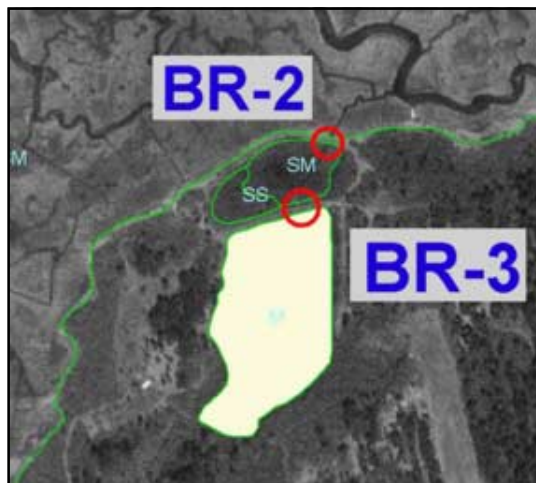
General Information

The pipe is set approximately 4 feet below the upstream dam structure, effectively preventing any incoming tidal flow from rising up and out of the pipe to naturally flush the upstream affected area. The upstream affected area is dominated by *Phragmites*. Water is pooled around the dam structure upstream; currently no stoplogs are in place and water is constantly draining from this area. The seaward channel (estimated width averaging 4 feet) is approximately twice the width of the 2-foot pipe. There is a flapper valve stuck in place, open only 5 inches.

- Restriction width – 2-foot pipe with flapper gate
- Restriction length – 30 feet
- Upstream salt marsh – 0 acres



Metal dam structure in the Phragmites-dominant marsh upstream of the old cranberry bog berm (now a footpath).



Upstream Affected Area (acres): M – 3.75.



Corrugated metal pipe with flapper gate visible through the Phragmites at the seaward opening of BR-3.

Comments

Site BR-2 lies seaward of this site and is severely restricted – fieldwork was conducted during an incoming tide but no tidal waters were reaching the seaward side of BR-3. There are no protected open space parcels directly adjacent to this upstream affected area. The town is interested in purchasing and protecting land in this area, however land prices are high and there is hope that private citizens will take steps to protect this marsh area.

BREWSTER

Paine's Creek Road restriction of channel into Freemans Pond

Site BR-4

Site Description

At the mouth of Stony Brook on Cape Cod Bay a tidal creek flows under Paine's Creek Road via a 3-foot corrugated metal pipe. The tidal creek, which flows into Freemans Pond, is approximately one quarter mile long and runs parallel to the shoreline for about half its length. Originally, the pond connected to the Bay by a creek flowing due north from the pond. The pipe is in fair condition. Rock reinforcement lines the banks near the pipe openings. The seaward opening is submerged at mean high tide, evidenced by high tide lines visible well above the opening. This channel supports an anadromous fish run (brown trout).

General Information

A 20-foot wide channel branches off of Stony Brook at its mouth and travels only about 15 feet before reaching the culvert. The upstream channel is approximately 6-feet wide. Visual indicators of restriction include minor scouring basins and minor bank erosion at both the seaward and upstream ends of the pipe. Natural stream conditions and free flow are not evident. There is no *Phragmites* in sight of this restriction.

- Restriction width – 3 feet
- Restriction length – 60 feet
- Upstream salt marsh – 8.39 acres

Comments

Freemans Pond is the only salt pond in the town of Brewster. Conditions are severely degraded and the system is converting to a freshwater ecosystem. According to the Brewster Natural Resources officer, the town would like to restore the natural saltwater ecosystems. This site was selected and studied by the Army Corps of Engineers in 1996. The study found that restoration of tidal flows would be best provided by a slightly larger and deeper culvert along with channel dredging (ACOE, 1996, pp. 37-48).



Upstream Affected Area (acres): SM – 8.39;
M – 4.36; SS – 8.54.



The 3-foot opening, dwarfed by the pooling water, clearly restricts natural free-flowing stream conditions.



Erosion and scour are visible near the upstream opening; the channel meanders between coastal banks and salt marsh on its way to Freemans Pond.

BREWSTER

Route 6A restriction of Stony Brook Site BR-5

Site Description

Stony Brook crosses under Route 6A via a 3-foot wide metal pipe set in concrete and stone headwalls. This site lies just to the east of the Cape Cod Museum of Natural History, west of the intersection of Lower Road with Route 6A, and approximately 150 feet west of site BR-6. Sites BR-5 and BR-6 affect the same upstream salt marsh, shrub swamp, and shallow marsh systems. Stony Brook is an active and successful anadromous fish pathway for both herring and brown trout.

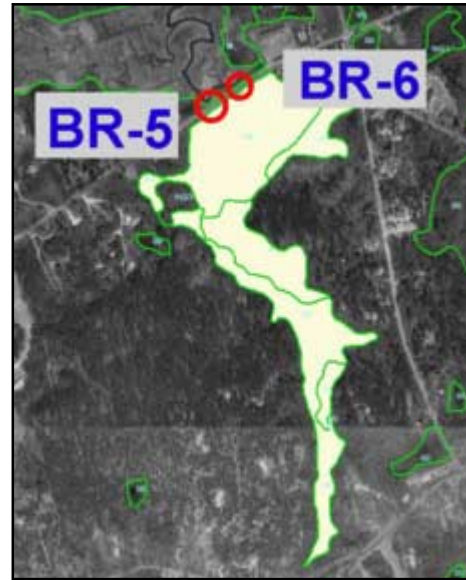
General Information

The seaward pipe opening protrudes from a stone headwall that is in serious disrepair; the stone slabs have eroded, slipped out of place, and now partially block the pipe opening adding to its restrictive nature. The upstream channel is approximately 10-15 feet wide. By contrast the upstream channel is only 3 feet wide. The pipe is submerged at high tide – water marks are visible on the headwall well above the opening. Other visual indicators of a restriction include scouring and bank erosion near the seaward opening. Additionally, there is significant scouring adjacent to the upstream opening. A large amount of sand has been deposited at the edge of the scour pool in the upstream channel.

- Restriction width – 3 feet
- Restriction length – 50 feet
- Upstream salt marsh – 12.25 acres

Comments

According to the Brewster Natural Resources Officer, anadromous fish are found well upstream of this restriction throughout the freshwater ponds south of the Stony Brook Mill.



Upstream Affected Area (acres): SM – 12.25;
SS – 13.12; M – 6.19.



The seaward culvert is visible at low tide with water pooling by this partially blocked opening.



A large sandbar has formed in the upstream channel near the culverts' scour basin – road runoff from the nearby major road junction is a likely source.

BREWSTER

Route 6A restriction of a channel off of Stony Brook

Site BR-6

Site Description

Immediately west of the intersection of Lower Road and Route 6A a branch off of Stony Brook crosses under Route 6A via a 2.5-foot wide metal pipe set in concrete and stone headwalls. The main branch of Stony Brook crosses under Route 6A at site BR-5 just to the west of this site. Both sites affect the same upstream salt marsh, shrub swamp, and shallow marsh systems. Stony Brook is an active and successful anadromous fish pathway for both herring and brown trout.

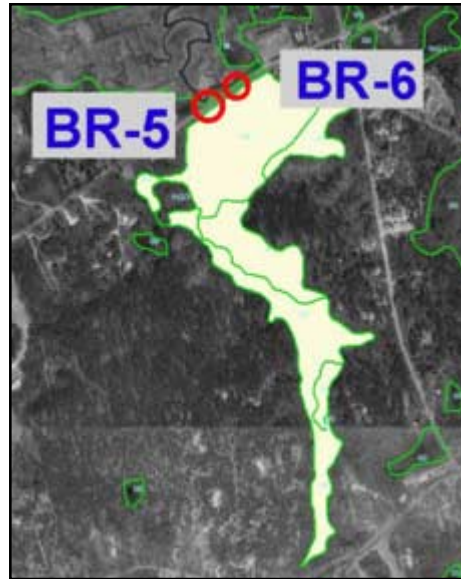
General Information

The seaward side of the pipe is in generally good condition except for erosion near the headwall that has caused a rockslide from the bank into the channel. There is a significant scour basin present near the seaward opening, which is submerged at mean high tide. The upstream pipe opening is set in a rock and concrete headwall that was originally designed to enable the placement of water-tight stop logs. The frame to hold such logs has eroded away and the remaining headwall is beginning to crumble. Both seaward and upstream tidal channels are approximately 10 feet wide. *Phragmites* is the significant vegetation in the upstream affected area.

- Restriction width – 2.5 feet
- Restriction length – 50 feet
- Upstream salt marsh – 12.25 acres

Comments

According to the Brewster Natural Resources Officer, spawning fish are found well upstream of this restriction throughout the freshwater ponds south of the Stony Brook Mill. Although this culvert does not pass the flow from the main channel of Stony Brook, it is part of the same tidal creek system and flows into the same upstream marsh area.



Upstream Affected Area (acres): SM – 12.25;
SS – 13.12; M – 6.19.



This headwall supporting the upstream opening is in need of repair—it is eroding and falling into the channel below.



The seaward opening is nearly submerged even well before the tide is high. Watermarks are visible near the top of the headwall.

BREWSTER/ORLEANS

Cape Cod Rail Trail restriction of Namskaket Creek

Site BR-7/OR-1

Site Description

The Cape Cod Rail Trail bike path crosses the Namskaket Creek at the Brewster-Orleans town line causing a major tidal restriction. Access to the site is via the bike path only. One 1-foot pipe was found here, however there might be additional pipes that were not visible. This pipe is so egregiously undersized and the site degraded that tidal flow is effectively cut off from the upstream marsh area. This site is located within the boundaries of the Inner Cape Cod Bay Area of Critical Environmental Concern, owned and managed by the state Department of Environmental Management (DEM).

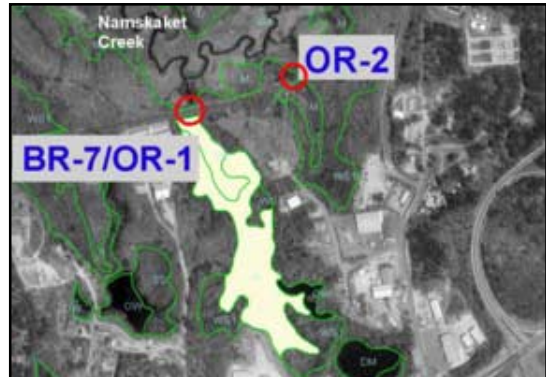
General Information

The site is in serious disrepair. The seaward pipe opening was obscured and buried under a pile of rocks. After some digging a 1-foot metal pipe was uncovered. Upstream of the bike path, water is flowing down into a hole below ground where the pipe is presumed to be – the pipe itself is not visible. The creek banks at the site are extremely eroded, with vegetation die off and major scouring pools scarring the upstream site. The width of Namskaket Creek varies between 6 and 10 feet both seaward and upstream of the Rail Trail. *Phragmites* dominates the upstream affected area. The restriction has persisted for so long that the upstream system has become mainly a freshwater marsh.

- Restriction width – 1 foot (estimated)
- Restriction length – 62 feet
- Upstream salt marsh – 1.12 acres

Comments

A joint restoration effort is underway by the Natural Resources Conservation Service (NRCS), DEM, Orleans and Brewster local officials, the state Wetlands Restoration Program, and MA Coastal Zone Management. At the time of this writing inventory and assessment, a needs assessment, and cost estimates for materials and services have been completed. The restoration project is currently in the permitting process and work is expected to begin in Fall 2002.



Upstream Affected Area (acres): SM – 1.12; M – 5.82.



An eroding retaining wall helps support the Cape Cod Rail Trail that is restricting tidal flow in Namskaket Creek – water is seen bubbling out from under a pile of rocks that covers the 1-foot pipe.



Phragmites and shrubs are seen taking over the once salt marsh upstream of the Rail Trail.