

Tidal Restriction Site Profiles Buzzards Bay Watershed

Bourne
Dartmouth
Falmouth
Fairhaven
Marion
Mattapoisett
New Bedford
Wareham
Westport

Note: The sites detailed in this section represent the top 10% of all Buzzards Bay sites based upon the scoring system developed by the Buzzards Bay Project. While these sites earned the highest scores, this section is not meant to imply that remediation efforts at other sites in the Atlas are not appropriate. Remediation at any site is justified if suitable

BOURNE: MBTA Railroad, North of Pocasset River

Tidal Restriction Site BN28

Site Description

BN28 is one of a number of restrictions that was created by the MBTA rail line that extends from the Cape Cod rail road bridge to Falmouth Village. This restriction is located on Bennets Neck just north of the Pocasset River (see map on page 72). There is no apparent hydraulic connection under the rail road bed and the absence of tidal flow has resulted in a die-off of most of this marsh. The rail tracks are at a low elevation relative to the marsh.

General Information

Designated rare and endangered species habitat
State owned restriction, public wetland

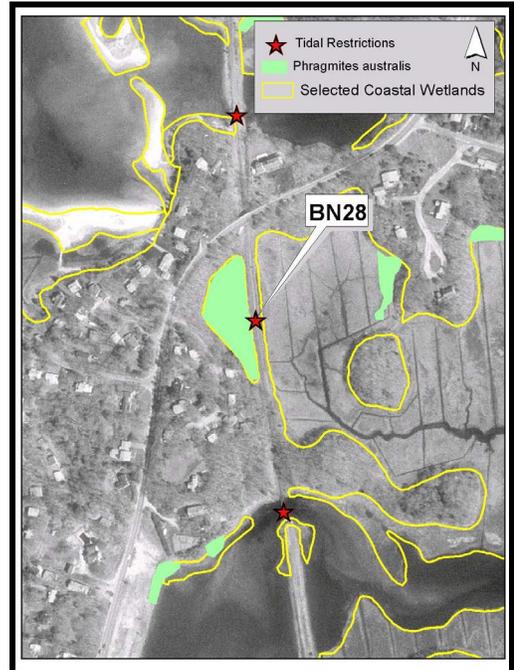
Culvert condition: no culvert – dike
Restriction width: 60 feet
Proposed culvert length: 72 feet
Acres of wetlands affected: 1.0 acres
Acres of *Phragmites* present: 1.0 acres

Estimated Remediation Cost

Total estimated cost: \$21,500
Cost per acre: \$21,000

Comments

A culvert could be installed under the tracks to allow tidal flow to the wetland to the West. The low elevation of the tracks relative to the salt marsh make this an affordable railroad bed project.



View of railroad tracks

DARTMOUTH: Bridge Street/Apponagansett Bay

Tidal Restriction Site DA01

Site Description

Bridge Street is on a long (1800 foot) causeway connecting Padanaram Village with South Dartmouth (see map on page 78). This very old road has severely restricted tidal flows into upper Apponagansett Bay. The lower section of the road abutments are constructed with cut granite blocks.

General Information

State-owned bridge affecting private and public wetlands

2-lane paved road and bridge

Bridge condition: good

Road width: 30 feet

Total restriction width: 36 feet

Acres of wetlands affected: 256.9 acres

Acres of *Phragmites* present: 97.0 acres

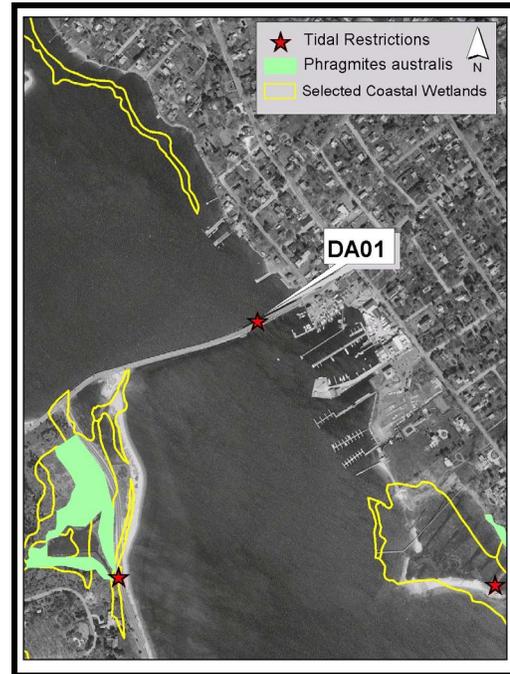
Estimated Remediation Cost

Total estimated cost: \$1,100,000

Cost per acre: \$4,300

Comments

This bridge was recently rebuilt. It might be more cost effective to install new culverts under selected areas of Bridge Street rather than to expand the opening of the bridge or deepen the channel.



Looking south



View of bridge and road

DARTMOUTH: Gulf Road in Apponagansett Bay

Tidal Restriction Site DA02

Site Description

This restriction is located on the southwest corner of inner Apponagansett Bay (see map on page 78). The bridge on Gulf Road controls tidal flow to a large wetland over a mile to the south.

General Information

Locally-owned bridge affecting a public wetland
2-lane paved road and bridge

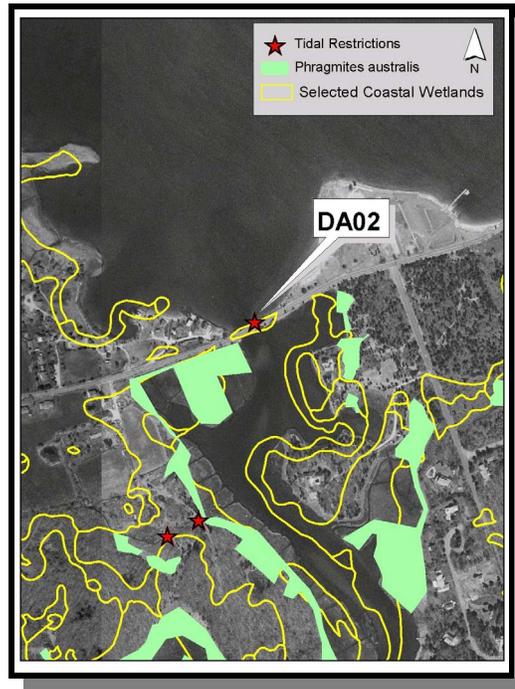
Bridge condition: good

Road width: 30 feet

Total restriction width: 36 feet

Acres of wetlands affected: 199.3 acres

Acres of *Phragmites* present: 95.1 acres



Estimated Remediation Cost

Total estimated cost: \$500,000

Cost per acre: \$2,500

Comments

This bridge was originally built in 1938, and it has recently been rebuilt. Deepening of the channel or adding additional culverts may improve flushing upstream.



View of bridge

DARTMOUTH: Nonquitt Marsh, near Round Hill

Tidal Restriction Site DA04

Site Description

This restriction consists of a concrete culvert under a road in Nonquitt, a private gated community. The affected salt marsh is owned by the non-profit land conservation trust, Dartmouth Natural Resources Trust. Tidal waters must first flow through a pipe under the barrier beach (DA05) to reach this restriction (see map on page 79).

General Information

Private road (owned by Nonquitt Association), private marsh (owned by land trust)

Culvert condition: fair

Road width: 15 feet

Culvert length: 18 feet

Acres of wetlands affected: 38.8 acres

Acres of *Phragmites* present: 20.7 acres

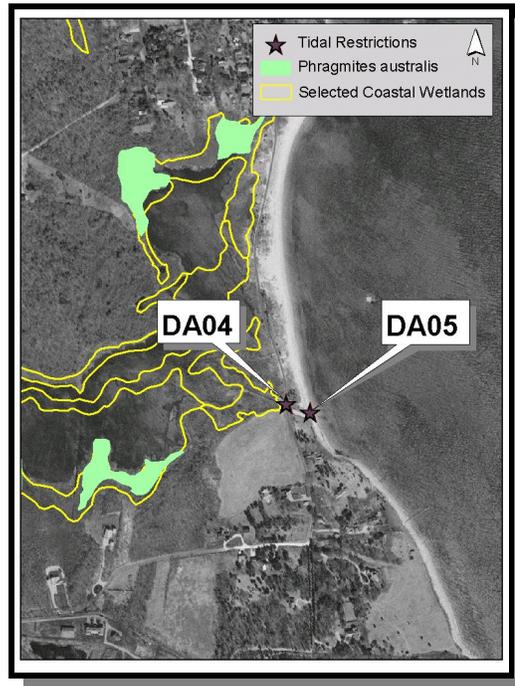
Estimated Remediation Cost

Total estimated cost: \$21,300

Cost per acre: \$500

Comments

This site has been selected for remediation by the New Bedford Harbor Trustees Council along with DA05.



Culvert under road



View of marsh

DARTMOUTH: Cow Yard Marsh at Little River

Tidal Restriction Site DA06 & DA07

Site Description

Sites DA06 and DA07 are two culverts located under a gravel road crossing through a marsh in the lower portion of the Little River estuary (see map on page 80). The road provides access to a group of summer cottages commonly referred to as “The Cowyard”. The surrounding marsh is owned by the non-profit land conservation trust, Dartmouth Natural Resources Trust. This marsh is also restricted by DA08, which is currently a GROWetlands project.

General Information

Private restriction, private marsh (owned by land trust)
Rare and endangered species habitat

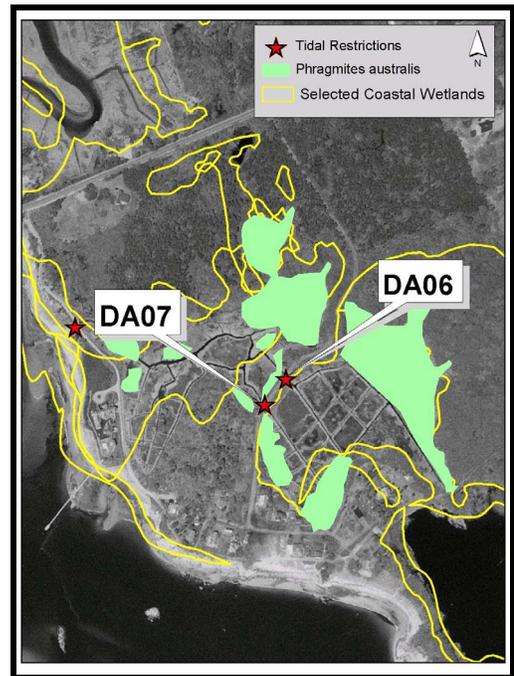
Culvert condition: both good
Road width: 20 feet
Culvert length: each is 24 feet
Acres of wetlands affected: 9.0 acres
Acres of *Phragmites* present: 4.5 acres

Estimated Remediation Cost

Total estimated cost: \$9,200 (for each)
Cost per acre: \$1,000 (for each)

Comments

The major restriction to this marsh system, DA08, will be replaced with a larger culvert in the near future as part of a GROWetlands project. As there are some low lying developed areas above DA06 and DA07, further study may be warranted prior to initiating further remediation efforts at this marsh. Due to the fact that the driveway is not paved and the culverts are not far below the road surface, these restrictions would be easy to fix. DA07 is partially buried in mud.



Gravel road passing over restriction DA06

DARTMOUTH: Little River Road

Tidal Restriction Site DA09

Site Description

Tidal restriction DA09 is the Little River Bridge in Dartmouth (see map on page 80). Located at the mouth of Little River, this bridge has cracks and spalling in many areas and may need reconstruction in the future.

General Information

2-lane paved road and bridge
Town-owned bridge, public wetland
Rare and endangered species habitat

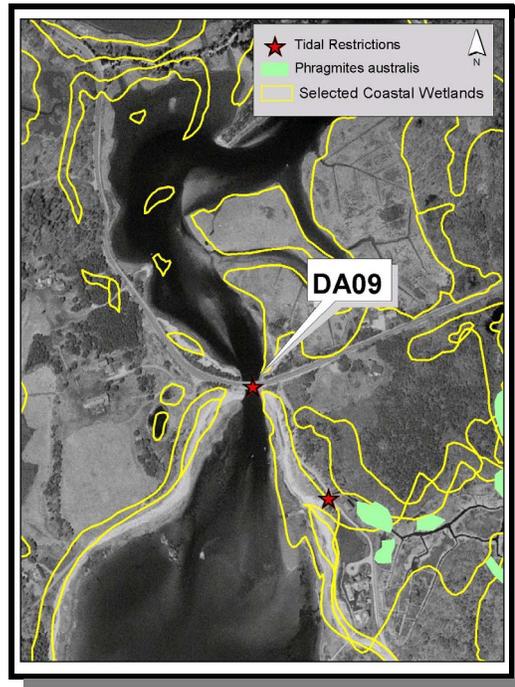
Bridge condition: poor
Road width: 25 feet
Restriction length: 50 feet
Acres of wetlands affected: 181.3 acres
Acres of *Phragmites* present: 11.3 acres

Estimated Remediation Cost

Total estimated cost: \$600,000
Cost per acre: \$3,300

Comments

The plunge pool created by tidal scouring is a favorite spot for illicit bridge jumping. Although this site scored high for a number of reasons, further study would be required to determine if upstream impairments are caused by this restriction, and whether dredging of the channel or widening of the bridge during construction would mitigate these impacts.



South side of bridge looking upstream

DARTMOUTH: Little Beach Road/Allens Pond

Tidal Restriction Site DA11

Site Description

DA11 is on a barrier beach in the southeastern corner of Allens Pond (see map on page 83). It is located on property owned by the Massachusetts Audubon Society. The road provides access to the Allen's Pond barrier beach summer community. The road is low relative to the marsh and in a FEMA mapped velocity zone.

General Information

Private gravel road, private wetlands
Rare and endangered species habitat

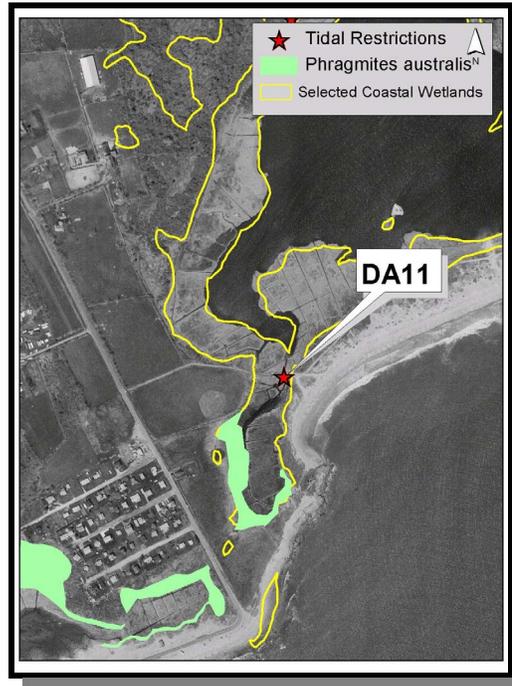
Culvert condition: poor
Road width: 12 feet
Culvert length: 14.4 feet
Acres of wetlands affected: 6.3 acres
Acres of *Phragmites* present: 2.2 acres

Estimated Remediation Cost

Total estimated cost: \$7,600
Cost per acre: \$1,200

Comments

The Buzzards Bay Project has initiated discussions with the Massachusetts Audubon Society and the Town of Dartmouth concerning the replacement of the undersized culvert with two 24" culverts.



North side of culvert



South side of culvert

DARTMOUTH: Road at Georges Pond/Slocums River

Tidal Restriction Site DA12

Site Description

DA12 consists of two culverts under the access road to Demarest Lloyd State Park at the mouth of the Slocums River estuary (see map on page 82). The existing culverts drain George’s Pond. Stabilization rocks for the sides of the access road have been thrown into the culverts, partially blocking them.

General Information

Paved state-owned road, public wetland
Rare and endangered species habitat

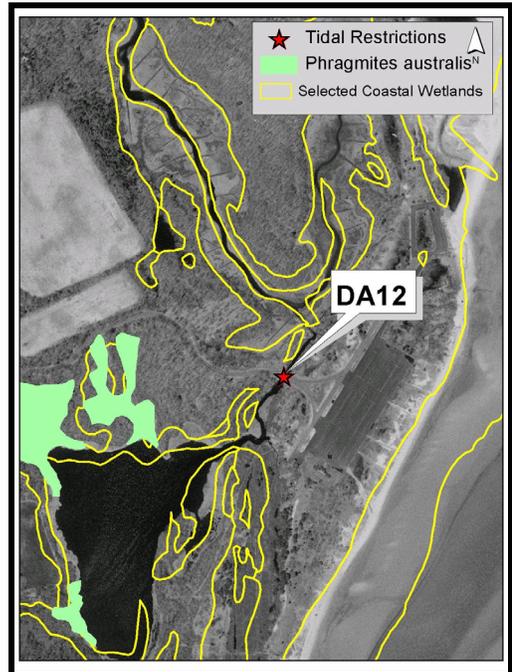
Culvert condition: excellent
Road width: 40 feet
Culvert length: 48 feet
Acres of wetlands affected: 9.3 acres
Acres of *Phragmites* present: 5.3 acres

Estimated Remediation Cost

Total estimated cost: \$128,800
Cost per acre: \$13,900

Comments

Buzzards Bay Project staff members have made arrangements with the Department of Environmental Management’s park supervisor to remove the stones in the culvert. While removal of the obstructing stones within the existing culverts may improve flushing, a new culvert may be needed. The road edge at the culverts is crumbling due to the loss of the stabilizing rip rap.



South end of culverts



View of road edge

DARTMOUTH: Old Road/Star of the Sea Drive

Tidal Restriction Site DA15

Site Description

DA15 is the remainder of a stone box culvert which was under an old road that used to pass through a marsh in the northwest portion of Apponagansett Bay (see map on page 78). The road has been washed out to such an extent that water flows almost freely through at high tide. The surrounding marsh is owned by the Town of Dartmouth.

General Information

Town-owned old roadway and wetland

Culvert condition: poor

Restriction width: 20 feet

Restriction length: 24 feet

Acres of wetlands affected: 11.0 acres

Acres of *Phragmites* present: 2.1 acres

Estimated Remediation Cost

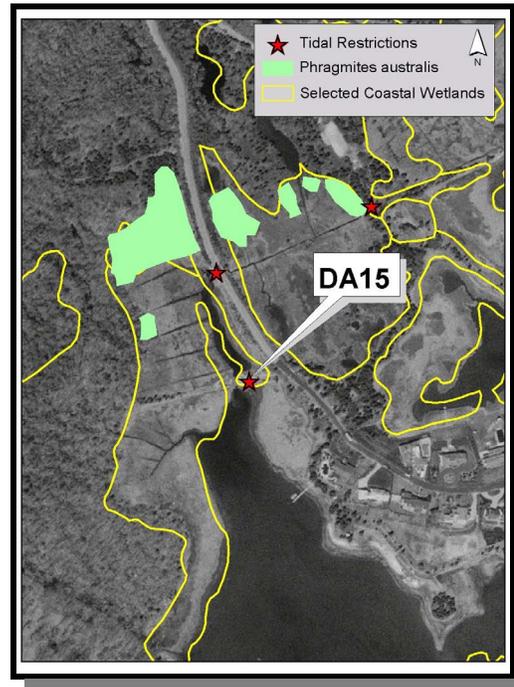
Total estimated cost: \$12,200

Cost per acre: \$1,100

Comments

The replacement of the existing stone path with a footbridge would increase the tidal flow yet still allow pedestrian access to the property.

Note: This restriction was remediated by the Town of Dartmouth in May 2002.



Old stone box culvert



Upstream view

DARTMOUTH: Old Road, Upper Apponagansett Bay

Tidal Restriction Site DA17

Site Description

DA17 is another restriction in the northwest corner of Apponagansett Bay (see map on page 78). It is an old stone box culvert that has completely collapsed. This was the original road location to access the upland area to the south. The wetland restricted by the culvert also receives tidal flushing through DA14, a restriction to the north of DA15. Much of this marsh was an old gravel pit.

General Information

Town-owned dirt road, public wetland

Culvert condition: poor

Restriction width: 12 feet

Restriction length: 14.4 feet

Acres of wetlands affected: 6.8 acres

Acres of *Phragmites* present: 0.8 acre

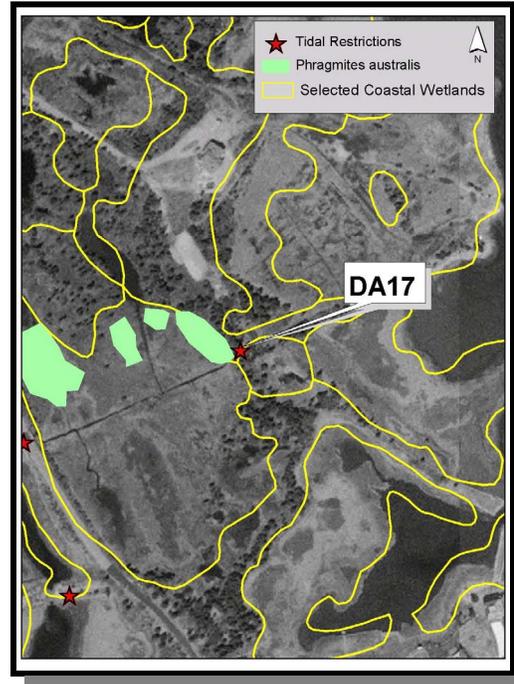
Estimated Remediation Cost

Total estimated cost: \$6,200

Cost per acre: \$900

Comments

Since this road is no longer used, the removal of the old road and culvert would be fairly simple.



Downstream view



Upstream view

DARTMOUTH: Path to Beach at Demarest Lloyd State Park

Tidal Restriction Site DA27

Site Description

DA27 is a path owned by the Dartmouth Natural Resources Trust that accesses the south end of Demarest Lloyd State Park near the Slocums River (see map on page 82). This restriction consists of a 4-foot wide path to a beach. The marsh south of this point is fresh/brackish. There is no culvert.

General Information

Private path and private wetlands
Rare and endangered species habitat

Culvert condition: no culvert - breached dike

Path width: 4 feet

Proposed culvert length: 6 feet

Acres of wetlands affected: 2.3 acres

Acres of *Phragmites* present: 2.3 acres

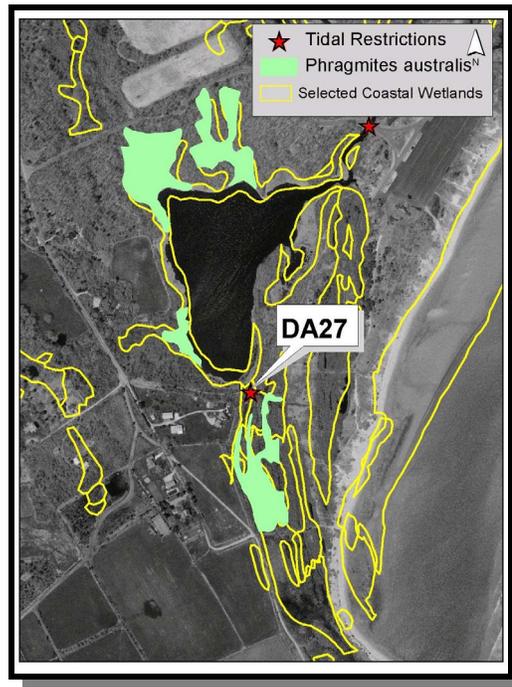
Estimated Remediation Cost

Total estimated cost: \$13,900

Cost per acre: \$6,100

Comments

A culvert needs to be installed at this site. This would be an excellent AmeriCorp project. All materials could be brought in by hand. All work could be performed with hand tools.



View of path

FALMOUTH: Rock Wall at Mill Pond

Tidal Restriction Site FA02

Site Description

FA02 is a seawall located east of Gardiner Road (see map on page 101). The seawall is on a barrier beach designed to prevent tidal and storm flows from entering the salt marsh and low lying areas north of Eel Pond in Woods Hole. The seawall has been recently repaired. Most of the marsh has been transformed into *Phragmites* except for the portion “reclaimed” as a ball field and now owned by the Town of Falmouth.

General Information

Private rock wall, public wetland

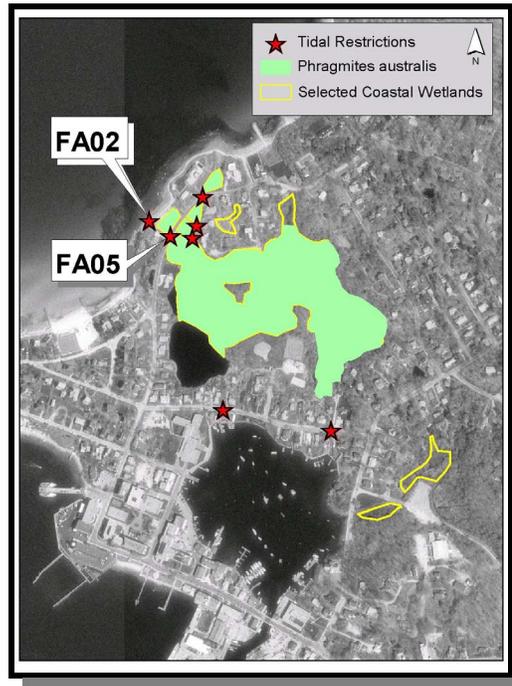
Culvert condition: culvert not visible
Stone wall width: 3 feet
Estimated culvert length: 24 feet
Acres of wetlands affected: 14.8 acres
Acres of *Phragmites* present: 14.8 acres

Estimated Remediation Cost

Total estimated cost: \$13,900
Cost per acre: \$900

Comments

Due to the low lying areas, this site should be investigated to determine if a self regulating tide gate is needed. The impacted marsh is the same area affected by FA03, FA04, FA05, FA06, FA40, and FA41. A study that looks at all restrictions affecting this marsh system is recommended.



View of rock wall



View from behind wall

FALMOUTH: Road at Mill Pond

Tidal Restriction Site FA05

Site Description

FA05 is a culvert under Gardiner Road in Woods Hole that conducts any tidal flow ponded by restriction FA02 (see map on page 101). Most of the marsh has been transformed into *Phragmites* except for the portion “reclaimed” as a ball field and now owned by the Town of Falmouth.

General Information

Paved town-owned road, public & private wetland

Culvert condition: fair

Road width: 22 feet

Culvert length: 26.4 feet

Acres of wetlands affected: 14.6 acres

Acres of *Phragmites* present: 14.6 acres

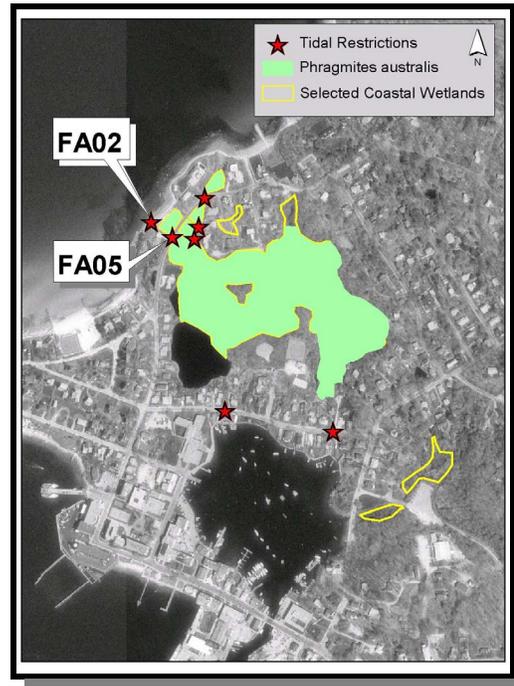
Estimated Remediation Cost

Total estimated cost: \$19,300

Cost per acre: \$1,300

Comments

There is a lot of *Phragmites* on the upstream side of this culvert. The culvert has filled in on the east side with soil and is not visible, as it is covered by rocks. A larger culvert is required. The impacted marsh is the same area affected by FA02, FA03, FA04, FA06, FA40, and FA41. A study that looks at all restrictions affecting this marsh system is recommended.



Restriction site FA05



Upstream view

FALMOUTH: Woodneck Road/Little Sippiwisset Marsh

Tidal Restriction Site FA10

Site Description

FA10 is a beach access road near Little Sippiwisset Marsh that was installed with no culvert (see map on page 99). The lack of a culvert has prevented tidal flows from the north and has caused ponding of water on the south side of the road.

General Information

Private paved road, private wetland
Rare and endangered species habitat

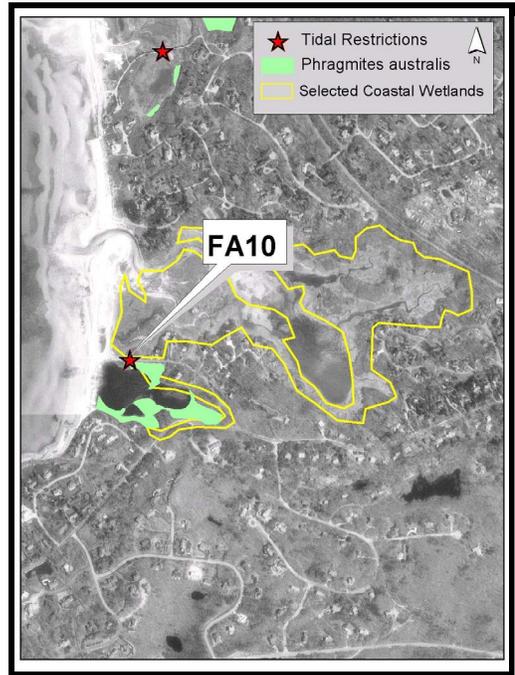
Culvert condition: no culvert
Road width: 15 feet
Proposed culvert: 30 feet
Acres of wetlands affected: 1.9 acres
Acres of *Phragmites* present: 1.9 acres

Estimated Remediation Cost

Total estimated cost: \$14,900
Cost per acre: \$7,900

Comments

This is a barrier beach road with no culverts. The pond that formed on the blocked side may have created specialized habitat which may now deserve protection. This freshwater/brackish habitat should be studied before the installation of a culvert is considered.



View of marsh



View of road

FALMOUTH: Millfield Street in Woods Hole

Tidal Restriction Site FA4 I

Site Description

Tidal restriction FA41 is an approximately 342-foot long culvert running under two private properties and Millfield Street in Woods Hole. The culvert connects Eel Pond to Mill Pond (see map on page 101).

General Information

Private property
Town road, public wetland

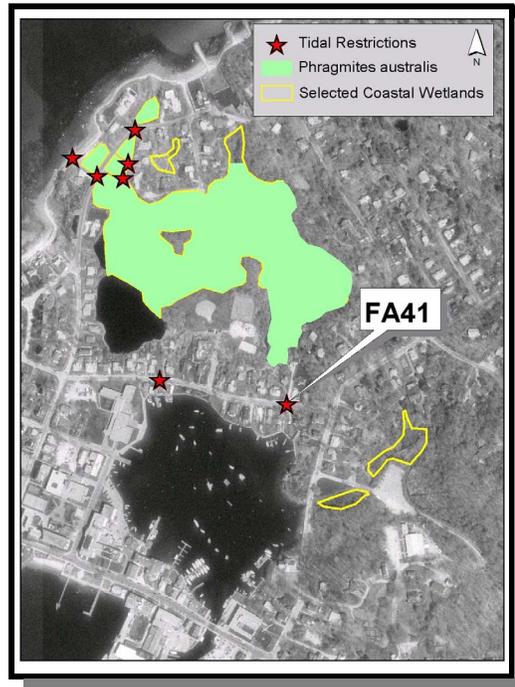
Culvert condition: poor
Road width: 20 feet
Culvert length: 30 feet
Acres of wetlands affected: 15 acres
Acres of *Phragmites* present: 15 acres

Estimated Remediation Cost

Total estimated cost: \$64,500
Cost per acre: \$4,300

Comments

The culvert is 95% blocked at the Eel Pond end and not visible. In the spring of 2002 the culvert was broken during the reconstruction of the home on the Eel Pond side and covered over without being replaced. The length of the culvert and density of development will provide challenges to restoration. The impacted marsh is the same area affected by FA02, FA03, FA04, FA05 FA06, and FA40. A study that looks at all restrictions affecting this marsh system is recommended.



Mill Pond side of culvert

FAIRHAVEN: Fir Street on West Island

Tidal Restriction Site FH18

Site Description

Restriction FH18 was created by the construction of a parking lot, which is used for the town beach and the DEM State Reservation on West Island (see map on page 94). The salt marsh behind the barrier beach was filled to create the parking lot. In order to maintain drainage for the marshes on the west side of the road, a perimeter ditch was dug around the parking lot and a culvert was placed under Fir Street. The wetlands to the west and north are privately owned.

General Information

Town-owned road, private wetlands

Culvert condition: fair

Road width: 30 feet

Culvert length: 36 feet

Acres of wetlands affected: 8.7 acres

Acres of *Phragmites* present: 4.4 acres

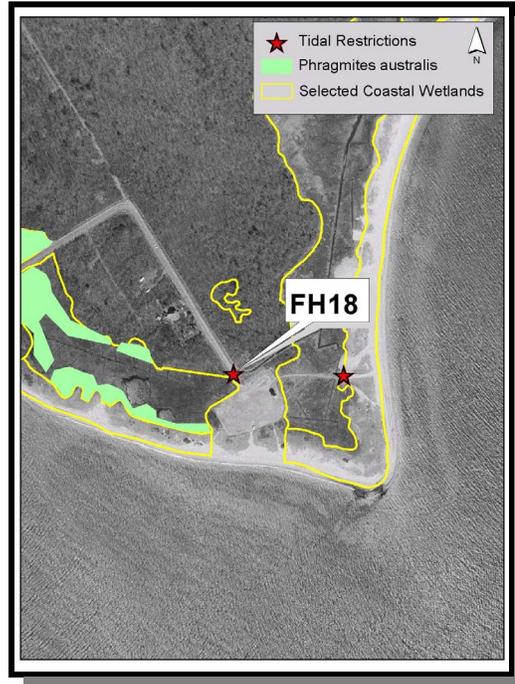
Estimated Remediation Cost

Total estimated cost: \$18,800

Cost per acre: \$2,200

Comments

This site has generated interest among several state agencies. The ditch through the upland to FH18 should also be reshaped to handle an increased flow when the culvert is replaced with a larger one.



Downstream view



Upstream view

MARION: Kittansett Club on Sippican Neck

Tidal Restriction Site MN22

Site Description

MN22 is located at the end of Sippican Neck (see map on page 109). The Kittansett Club constructed the original seawall in 1927. It was repaired on a periodic basis until 1998 when a 50 foot section was removed. The removal now allows salt water to drain quickly following a hurricane or winter storm, as well as allowing daily tidal fluctuation to be restored.

General Information

Private seawall, private wetlands

Culvert condition: fair

Seawall width: 8 feet

Seawall breach: 50 feet

Acres of wetlands affected: 20.3 acres

Acres of *Phragmites* present: 20.0 acres

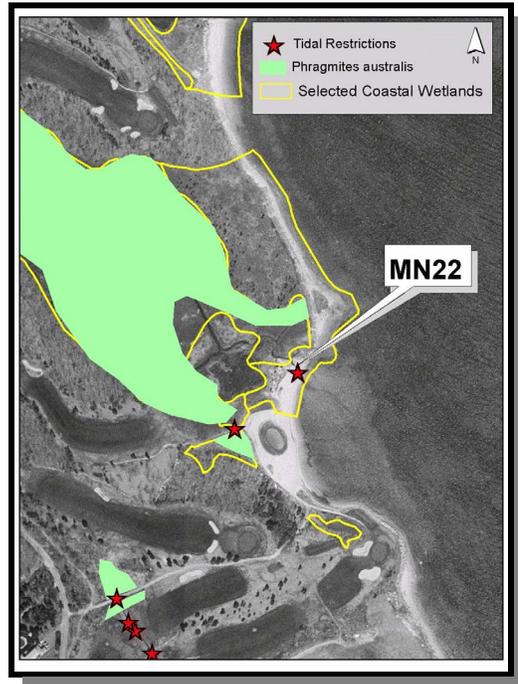
Estimated Remediation Cost

Total estimated cost: \$13,500

Cost per acre: \$700

Comments

Most of the *Phragmites* has died back since the restriction was partially removed in 1998. This site should be investigated further to determine if other improvements to flushing can be achieved.



Section of wall that was removed

MATTAPOISETT: Mattapoisett Neck Road

Tidal Restriction Site MT04

Site Description

MT04 is one of several restrictions that would need to be remediated as part of an over-all project to increase tidal flushing to the marsh south of Mattapoisett Neck Road (see map on page 116). Mattapoisett Neck Road is the only access to the houses on Mattapoisett Neck. MT04 is one of three culverts under the road. The salt marsh has a limited amount of *Phragmites* but many small dead spots.

General Information

Town-owned paved road, private wetlands

Culvert condition: poor

Road width: 45 feet

Culvert length: 54 feet

Acres of wetlands affected: 40.0 acres

Acres of *Phragmites* present: 3.8 acres

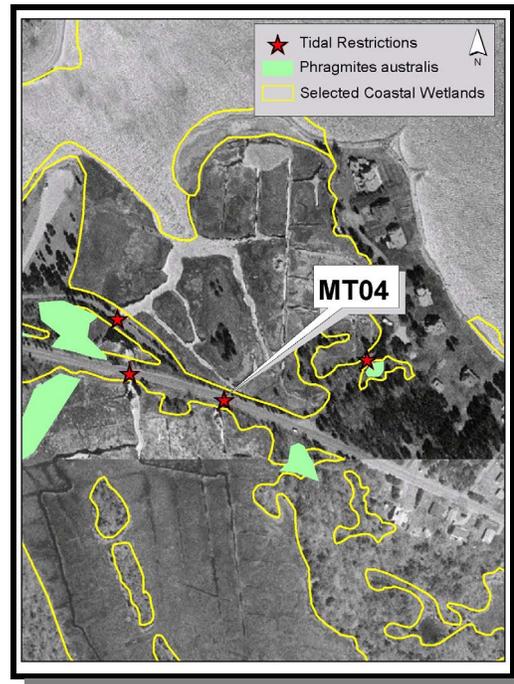
Estimated Remediation Cost

Total estimated cost: \$43,500

Cost per acre: \$1,100

Comments

MT04 has been selected as a GROWetlands site. The Massachusetts Wetland Restoration Program has engaged an engineering firm to study this marsh and the three restrictions: MT03, MT04 & MT05.



View of south side of Mattapoisett Neck Road

MATTAPOISETT: Old Mattapoissett Neck Road

Tidal Restriction Site MT06

Site Description

MT06 is a culvert under an older section of Mattapoissett Neck Road near the mouth of the Mattapoissett River (see map on page 116). The culvert was put in place in 1954 after a hurricane. After the hurricane of 1956 this section of road was abandoned. This culvert cannot be removed until the existing water line for Mattapoissett Neck Road is relocated.

General Information

Town road, private wetland

Culvert condition: poor

Road width: 20 feet

Culvert length: 24 feet

Acres of wetlands affected: 40.5 acres

Acres of *Phragmites* present: 4.5 acres

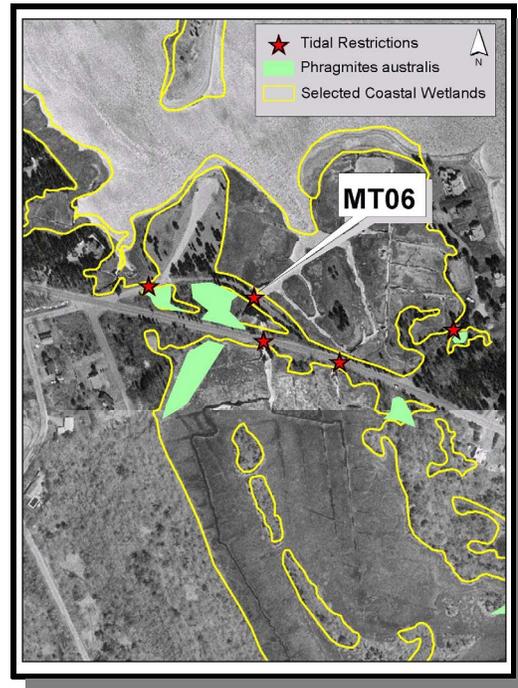
Estimated Remediation Cost

Total estimated cost: \$43,500

Cost per acre: \$1,100

Comments

This culvert is broken in many places. Additionally, the road is broken up and two-thirds washed away. This site has been selected as a GROWetlands project. The Massachusetts Wetlands Restoration Program has secured an engineering firm to study the site.



Downstream side

MATTAPOISETT: Old Railroad Bridge/Eel Pond

Tidal Restriction Site MT09

Site Description

MT09 is an old New York-New Haven Railroad bridge over the entrance to Eel Pond in the upper portion of Mattapoisett Harbor (see map on page 116). The side slopes are quite steep and the road base is quite narrow. This is the only access to the house on Goodspeed Island.

General Information

Town-owned bridge, private wetland

Culvert condition: excellent

Road width: 30 feet

Culvert length: 36 feet

Acres of wetlands affected: 25.1 acres

Acres of *Phragmites* present: 6.2 acres

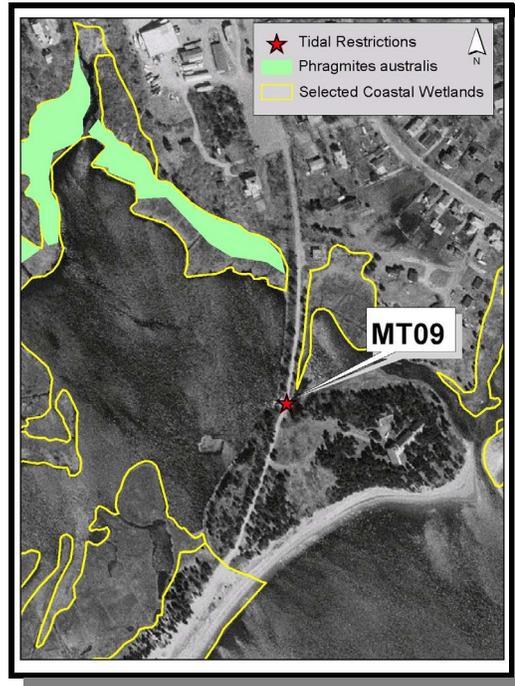
Estimated Remediation Cost

Total estimated cost: \$123,500

Cost per acre: \$4,900

Comments

The culvert is submerged and Eel Pond has developed a breach in the barrier beach west of this site. The breach may provide adequate flushing to the pond. Further study of this issue is warranted prior to planning a secondary culvert.



Restriction site MT09

MATTAPOISETT: Town Beach Road at Hiller Cove

Tidal Restriction Site MT15

Site Description

MT15 is under the access road to the town beach at Hiller Cove (see map on page 118). The access road is gravel and the grade is less than 3 feet above the culvert.

General Information

Town-owned roads, private wetlands

Culvert condition: good

Road width: 15 feet

Culvert length: 24 feet

Acres of wetlands affected: 4.6 acres

Acres of *Phragmites* present: 2.9 acres

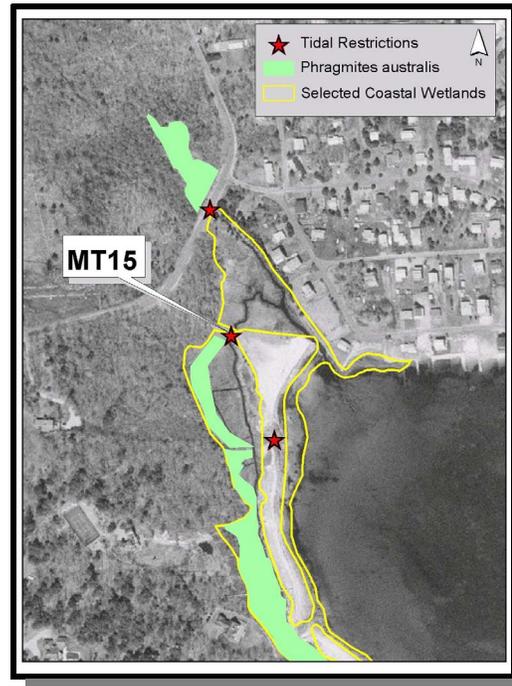
Estimated Remediation Cost

Total estimated cost: \$11,600

Cost per acre: \$2,500

Comments

Due to the lack of paving and utilities and the shallow culvert depth, this culvert would be easy to replace. There has been somewhat of a breach in the barrier beach to the south at MT17, which allows tidal waters to the same wetland.



Entrance road to beach



Upstream end of culvert

MATTAPOISETT: Rock Wall at Hiller Cove

Tidal Restriction Site MT17

Site Description

MT17 is located on the town beach at Hiller Cove off of Aucoot Road (see map on page 118). It consists of a stonewall that was placed in the breach of a barrier beach to prevent tidal flows. Since the stones were placed, the barrier beach has retreated making the stone wall only partially effective. The reduced wave velocity behind the stone wall has caused the breach to clog with eelgrass that has washed ashore.

General Information

Town-owned restriction, public wetland

Culvert condition: no culvert

Breach width: 30 feet

Wall length: 25 feet

Acres of wetlands affected: 4.6 acres

Acres of *Phragmites* present: 2.9 acres

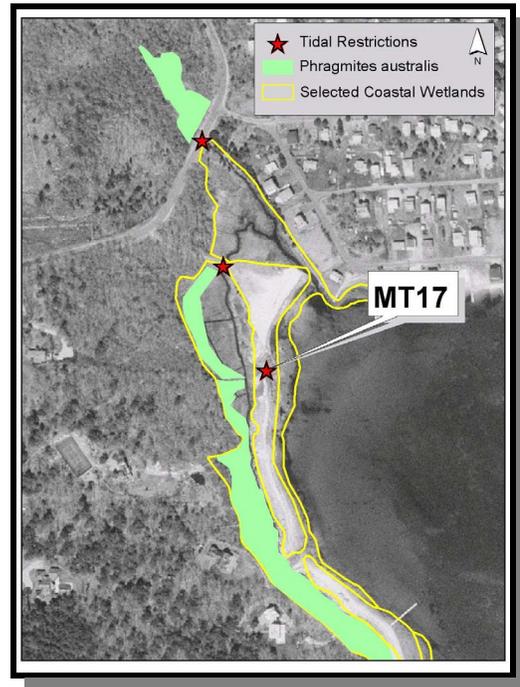
Estimated Remediation Cost

Total estimated cost: \$12,500

Cost per acre: \$2,700

Comments

The rock wall has sunk and is clearly over washed. While the removal of this wall would provide only a marginal increase in tidal flooding, the project would be easy to complete.



Stone wall on beach, looking south

NEW BEDFORD: New Bedford Hurricane Dike

Tidal Restriction Site NB08

Site Description

Restriction site NB08 is a hurricane dike that stretches for 3.5 miles along the South End of New Bedford to the Town of Fairhaven. Site NB08 is the opening into New Bedford Harbor, which allows boat passage (see map on page 123).

General Information

Federal restriction, public wetland
Anadromous fish run

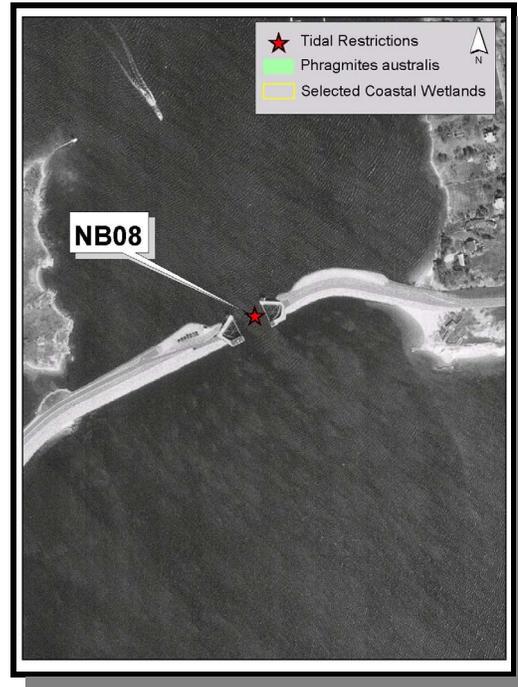
Dike condition: excellent
Restriction width: 120 feet
Restriction length: 144 feet
Acres of wetlands affected: 83.4 acres
Acres of *Phragmites* present: 12.0 acres

Estimated Remediation Cost

Total estimated cost: \$2,750,000
Cost per acre: \$33,000

Comments

The New Bedford Harbor Trustees Council is investigating the possibility of increasing tidal flow to New Bedford Harbor. Rather than altering the hurricane barrier entrance, installation of a large culvert west of the entrance is being considered.



Opening in hurricane dike from the Fairhaven Shipyard & Marina

WAREHAM: Allen Road at Crooked River

Tidal Restriction Site WH1 I

Site Description

WH11 is a concrete culvert under a town road near Crooked River, off the Wareham River estuary (see map on page 130). The culvert is not far below the grade of the road. The marsh to the south of the culvert also has a natural opening at its southern end.

General Information

Town-owned, paved road, private wetlands

Culvert condition: fair

Road width: 30 feet

Culvert length: 36 feet

Acres of wetlands affected: 19.3 acres

Acres of *Phragmites* present: 3.3 acres

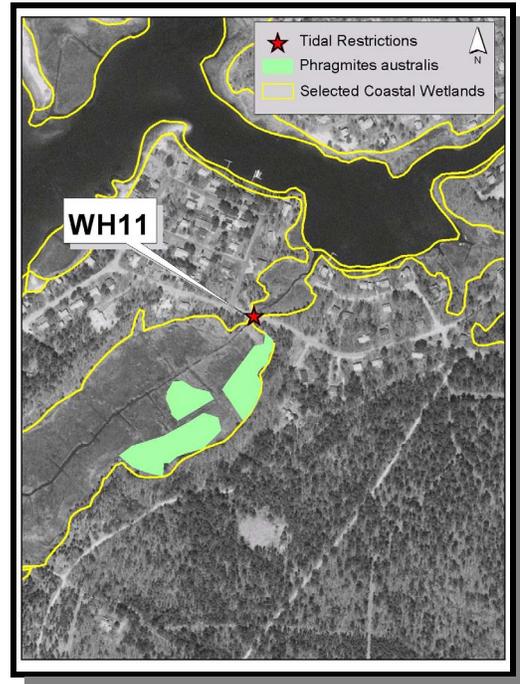
Estimated Remediation Cost

Total estimated cost: \$11,300

Cost per acre: \$600

Comments

There is a water main bleeder pipe discharging at the culvert which lowers the salinity in the area. Sediment washing off the road and low velocity through the culvert have caused sand to accumulate. Dredging of the ditch, along with installation of a larger culvert would be needed to improve flushing.



Tidal restriction WH1 I

WAREHAM: Sandwich Road/Route 6 - Agawam River

Tidal Restriction Site WHI 7

Site Description

WHI7 is a State Route 6 bridge/culvert located over the Agawam River (see map on page 132). While the bridge appears to have a considerable span from the surface, it actually has a rather small opening. This site is just downstream from the Town of Wareham's waste water treatment plant discharge.

General Information

State-owned, paved road, public wetland
Rare and endangered species habitat
Anadromous fish run

Bridge condition: good

Road width: 40 feet

Culvert length: 40 feet

Acres of wetlands affected: 14.3 acres

Acres of *Phragmites* present: 14.2 acres

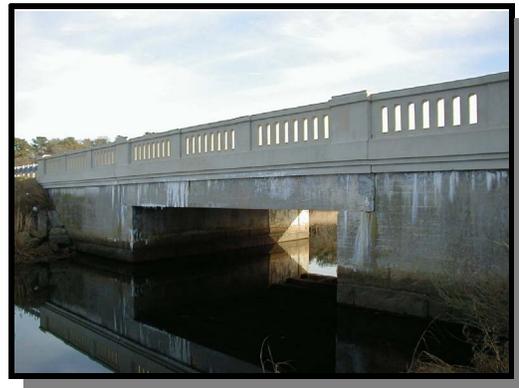
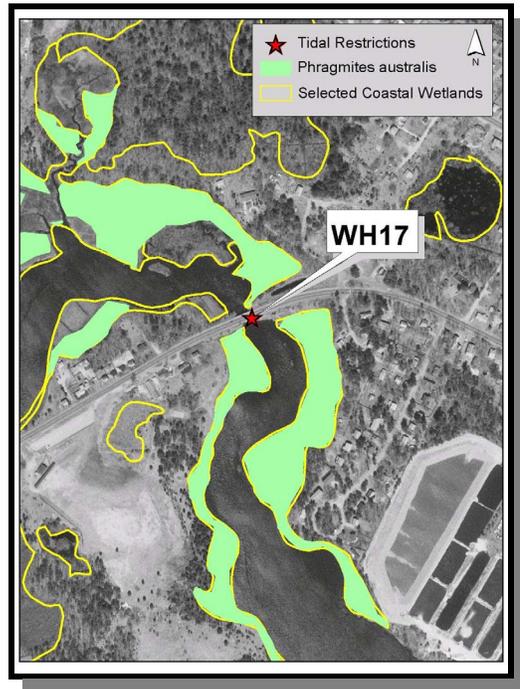
Estimated Remediation Cost

Total estimated cost: \$350,000

Cost per acre: \$24,500

Comments

This opening is very small for the size of the river. The river supports a herring run as well as sea run brown trout. Increased flushing may also improve water quality impairments caused by the wastewater treatment plant.



North side of bridge

WAREHAM: Pilgrim Avenue at Broadmarsh River

Tidal Restriction Site WH27

Site Description

WH27 is a concrete culvert under Pilgrim Avenue, a town-owned road (see map on page 130). The marsh to the south of the culvert also has a natural opening at its southern end. Much of the flow through the pipe has been reduced by mud and rocks.

General Information

Town-owned, paved road, private wetlands

Culvert condition: good

Road width: 21 feet

Culvert length: 31 feet

Acres of wetlands affected: 11.5 acres

Acres of *Phragmites* present: 2.5 acres



Estimated Remediation Cost

Total estimated cost: \$27,000

Cost per acre: \$2,400

Comments

Due to the shallow culvert depth, this would be an easy culvert to replace. The location of any utilities (gas, water, and sewer are present in the street) could add appreciably to the final costs.



East end of pipe

WAREHAM: Abandoned Section of Route 6/Weweantic River

Tidal Restriction Site WH33

Site Description

This is a culvert under an older, abandoned section of State Route 6 (see map on page 128). Elevation of the culvert is difficult to determine because of the overgrowth of *Phragmites* and poison ivy.

General Information

State-owned restriction, public wetlands

Culvert condition: fair

Road width: 30 feet

Culvert length: 50 feet

Acres of wetlands affected: 5.2 acres

Acres of *Phragmites* present: 5.2 acres

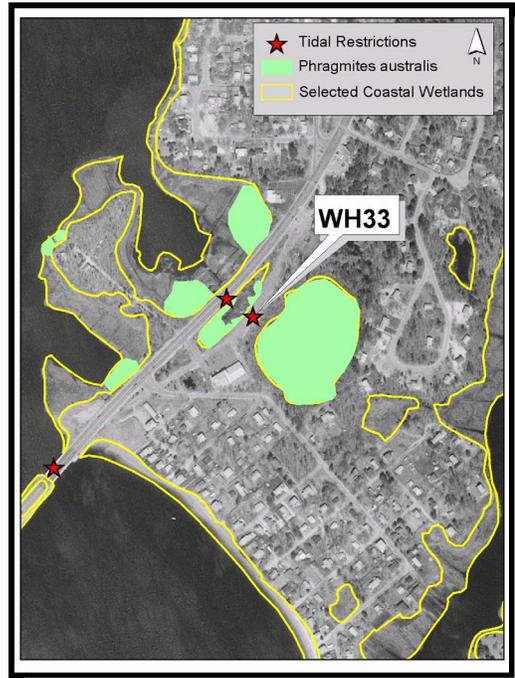
Estimated Remediation Cost

Total estimated cost: \$27,500

Cost per acre: \$5,300

Comments

This project must be remediated in conjunction with WH29. Although there are no properties accessed by this section of road, the road contains water mains and active electric/telephone poles precluding road removal. The marsh to the south was flooded for several days by salt water after Hurricane Bob in 1991. All freshwater vegetation in the marsh was killed as a result of that flooding.



Old section of Route 6



Phragmites at end of pipe

WAREHAM/BOURNE/PLYMOUTH: Red Brook Road

Tidal Restriction Site WH40

Site Description

WH40 is an old road with stone abutments, many of which have fallen into the brook. The restriction crosses Red Brook Road, leading to Buttermilk Bay, and is located at the intersection of the Bourne/Wareham/Plymouth town lines (see map on page 135).

General Information

Wetlands and restriction on private property
Anadromous fish run

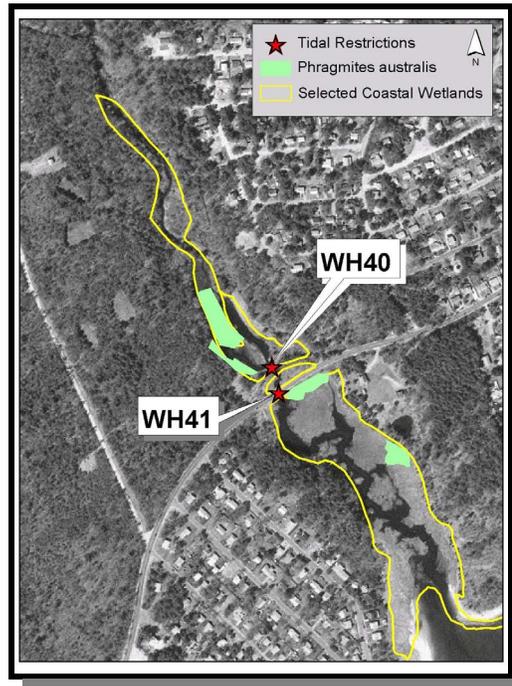
Culvert condition: no culvert
Old road width: 20 feet
Acres of wetlands affected: 2.0 acres
Acres of *Phragmites* present: 2.7 acres

Estimated Remediation Cost

Total estimated cost: \$13,900
Cost per acre: \$6,900

Comments

Improvements to flushing under this old road, should be done in conjunction with improvements at WH41. The removal of this old road remnant would be fairly easy to accomplish as there is ready access for heavy equipment. Due to the site topography it would not be necessary to remove the material off-site. Wetland Protection Act permits must be issued by both Wareham and Plymouth.



Downstream view from WH40, looking at WH41



Upstream view, above WH40

WESTPORT: Hix Bridge/Westport River

Tidal Restriction Site WP06

Site Description

This tidal restriction is caused by fill material deposited under Hix Bridge, which impedes tidal flow and creates a damming effect (see map on page 141). Large granite blocks were toppled in the river as a result of the destruction of the old Hix Bridge by the Hurricane of '38 and from the demolition of the bridge in 1939.

General Information

Town-owned bridge, public wetland

Bridge condition: fair

Restriction width: 25 feet

Restriction length: 30 feet

Acres of wetlands affected: 205.5 acres

Acres of *Phragmites* present: 135.9 acres

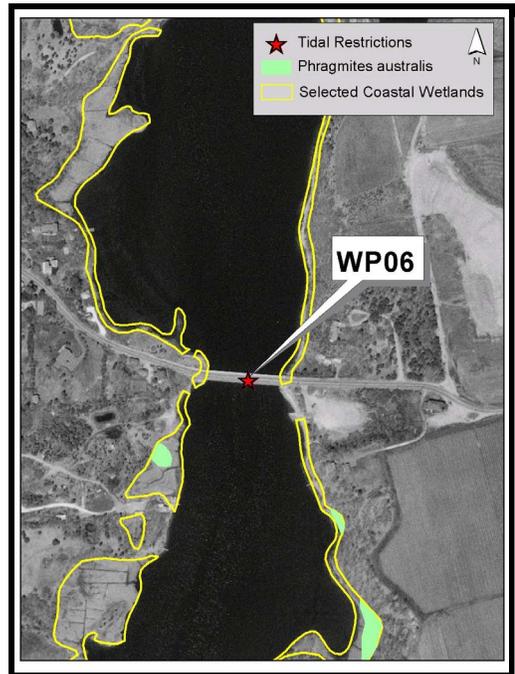
Estimated Remediation Cost

Total estimated cost: \$2,800,000

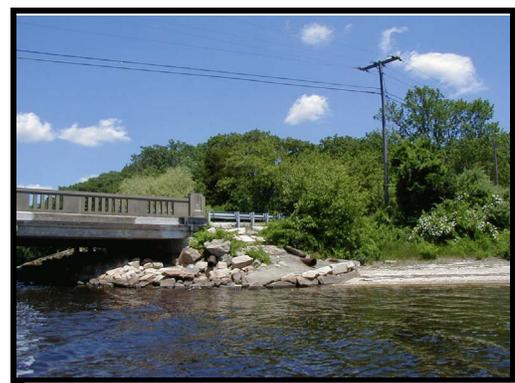
Cost per acre: \$13,600

Comments

The Town of Westport is planning to rebuild this bridge. The U.S. Army Corps of Engineers is conducting a tidal flushing study to determine the benefits of increased tidal flushing. There may be problems associated with the removal of the granite blocks. A detailed report on this site is available on the Buzzards Bay Project's website, www.buzzardsbay.org.



View of Hix Bridge, looking North



Close up view

WESTPORT: Driveway at the Let/Westport River

Tidal Restriction Site WP17

Site Description

WP17 is under a very long, low driveway to an upland area known as the Let on the lower East Branch of the Westport River (see map on page 140). The low driveway restricts the size of possible additional culverts.

General Information

Private, gravel driveway, private wetlands

Culvert condition: good

Road width: 12 feet

Culvert length: 15 feet

Acres of wetlands affected: 9.7 acres

Acres of *Phragmites* present: 3.6 acres

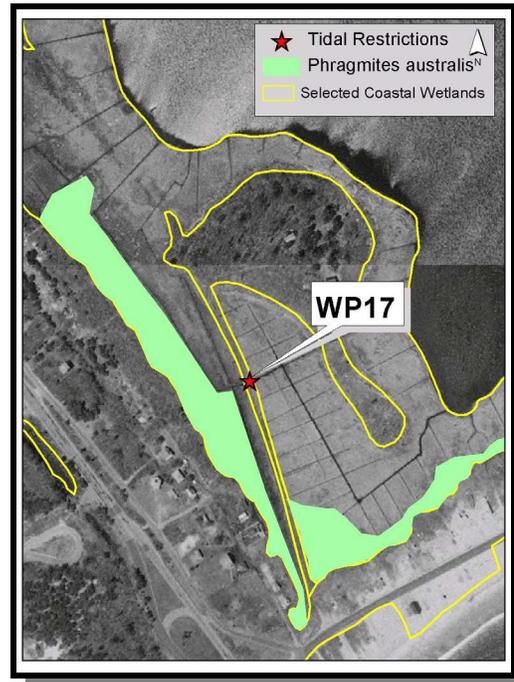
Estimated Remediation Cost

Total estimated cost: \$9,700

Cost per acre: \$1,000

Comments

The addition of new culverts at the site may require new mosquito ditching. Any new culverts would be fairly easy to place. If the driveway is improved by an increase of fill, new ditching may not be required.



View of driveway