West Falmouth Harbor Subwatershed

Falmouth, Cape Cod, Massachusetts

The West Falmouth Harbor Subwatershed is located in Falmouth. It has an area of 2,233 acres.

The Harbor is composed of an outer region, and inner region consisting of two basins, and three tributary systems. According to The Coalition for Buzzards Bay Baywatchers II report, the harbor contains 356 moorings and is highly used by recreational boaters. The Inner Harbor has both a Town Dock and public boat ramp. Boat fueling at the Town Dock is no longer available and pump out facilities for boat waste are not available. West Falmouth Harbor is one of the Town of Falmouth's significant marine resources. The water quality in the harbor has remained fairly high until recently. The system is currently undergoing changes due to nutrient loading, primarily from recent entry of nutrients discharged for the town's Wastewater Treatment Facility. The other major groundwater plume in the area comes from the former septage lagoons at the Falmouth Landfill.

West Falmouth Harbor remains an important habitat for quahogs, soft-shell clams, oysters, and some scallops. The harbor was classified as Seasonally Approved, which allows shellfish harvest from November 1 through April 30, but was recently downgraded to "Closed to Shellfishing" from May 1 – September 30 due to deteriorating water quality.

West Falmouth Harbor is notable for its diversity of nitrogen sources. The harbor's watershed comprises a variety of nutrient sources, among them the town's Waste Water Treatment Facility (WWTF), its landfill, old septage lagoons, composting installations, runoff from roads and lawns, as well as effluent from a growing number of residential septic systems and from the town's industrial park. The WWTF presents the largest source of nitrogen and is increasing at the highest rate.

Based on nitrogen loading estimates done by the Cape Cod Commission, SMAST scientists, and the Buzzards Bay Project, it appears that the WWTF contributes approximately 70% of the watershed nitrogen input to the Harbor (Baywatchers II report). The remainder is from residential housing and light commercial areas (Falmouth Technology Park), associated sources (roads, driveways, etc.), and the nitrogen enriched groundwater plume originating from the Falmouth Landfill and its now closed septage disposal lagoons. The increasing mass of nitrogen discharged results from increasing use of the facility for septage, additional hook-ups within sewered areas, and increased occupancy. The harbor is projected to experience a more than 33% increase in total nitrogen load from 1998 to 2004.

Results from the Falmouth Pond Watchers 1997 season showed that West Falmouth Harbor did not exhibit any large declines in water quality even with the arrival of the wastewater treatment plant (WWTP) effluent plume. The highest levels of nitrogen within the WWTP plume, resulting from higher nitrogen loading in recent years, had not yet reached harbor waters.

Approximately five percent of Falmouth is publicly sewered. The sewered areas are Main Street in Falmouth and nearly all of Woods Hole. Almost ninety-five percent of the town is on municipal water. There is one treatment plant in Falmouth, currently processing 550,000 gallons per day (gpd) with a capacity of 810,000 gpd and discharging to groundwater. A $14 million upgrade has been approved to bring the capacity up to 1,000,000 gpd in the next few years. The creation of 450 new sewer connections in West Falmouth is currently in the design phase.

Past oil, fuel, chemical, and hazardous waste disposal activities on the Massachusetts Military Reservation have created groundwater pollution plumes, one of which is projected to flow into this watershed. The Air Force Center For Environmental Excellence (AFCEE) is investigating and addressing this groundwater pollution.

Stewards:

- The Coalition for Buzzards Bay (www.savebuzzardsbay.org)
- Falmouth Associations Concerned with Estuaries and Saltponds (FACES)

Studies conducted in the watershed:

- Baywatchers II. Nutrient related water quality of Buzzards Bay embayments: a synthesis of Baywatchers monitoring 1992-1998. The Coalition for Buzzards Bay. December 1999.
- Cape Cod Coastal Embayment Project (A Nitrogen Loading Analysis of the West Falmouth Harbor). 1998. Cape Cod Commission.
- Water Quality Monitoring of Falmouth's Coastal Ponds: Results from the 1997 Season. Falmouth Pond Watchers. June 1998. A similar document is also available the 1994-95 and 1996 sampling seasons.
- School for Marine Science and Technology is studying water quality, eelgrass mapping, and nitrogen attenuation by bordering saltmarsh, and potential effluent discharge technologies.
- Student papers on water quality, macrophytes, benthic invertebrates, and fish (Dr. Ivan Valiela, Marine Biological Laboratory, Woods Hole, MA).
- Revision of Nitrogen Load Limits (Draft, Buzzards Bay Project).
- West Falmouth Harbor was selected as a priority area for the Estuaries Project – Southeastern Massachusetts Embayment Restoration, funded by the state and UMass Dartmouth. The goal of the project is to develop critical nutrient loading thresholds for each embayment to aid in water resources planning. The thresholds will support federal requirements for the development of Total Maximum Daily Loads for impaired surface waters. This area was evaluated in 2002.
- Atlas of Tidally Restricted Salt Marshes – Buzzards Bay Watershed, Massachusetts. 2002. Buzzards Bay Project National Estuary Program.
- Atlas of Stormwater Discharges in the Buzzards Bay Watershed, Final Draft. June 2002. Buzzards Bay Project National Estuary Program.

Who is collecting water quality data and where:

- Falmouth Pond Watchers sample in eight locations. Sampling began in 1992. Physical parameters, nitrate-nitrogen, nitrite-nitrogen, ammonium-nitrogen, PON, TON, POC, chlorophyll a, cholide, sulfide, phosphate.
- The Coalition for Buzzards Bay Baywatchers. Sample for temperature, water clarity, salinity, dissolved oxygen, chlorophyll a, nitrogen, and phosphorus.

Management actions taken:

- Massachusetts Division of Fisheries and Wildlife stocks Deep Pond with rainbow, brook, and brown trout.
- West Falmouth Harbor Drainage Project. Project used infiltration technology to treat stormwater to reduce bacterial contamination to West Falmouth Harbor. Funded by a Year 2000 Coastal Remediation Program (CPR) grant to the Town of Falmouth.
- The West Falmouth Harbor Management Committee formed in 2000 and is working on the development of a harbor management plan.
- The old landfill on Thomas Landers Road was capped in 2000. Six acres of this site were turned into a Waste Management Facility.

- During the summer in 2000, 500,000 clam seed and quahog seed (each) were raised in the shellfish upweller tank in West Falmouth Harbor. The soft-shell clams were planted under mesh in Waquoit Bay, Eel River, Bournes Pond, Green Pond, Great Pond, West Falmouth Harbor, and Megansett Harbor. In November 2000, 200,000 seed bay scallops were planted in West Falmouth Harbor and Waquoit Bay. Additionally, 200,000 field plant quahogs were planted in West Falmouth Harbor, Waquoit Bay, Great Pond, and Green Pond.

Subwatershed facts: (For data sources see Appendix)

- 21 E sites: 1, Getty Station on Route 28
- Solid waste sites: 1
- Zone IIs located in this watershed: 1
- Percent of the undeveloped land that is protected (according to 1985/1990 data): 35.2%
- Acres of existing wetlands: 39
- Certified vernal pools: 2
- Named freshwater ponds: Oyster, Crooked, Lilly, Deep
- Named rivers or creeks: none
- Shellfish growing areas: West Falmouth Harbor is closed to shellfishing May 1 – September 30.
- This watershed contains Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife.

Priorities:

- Implement BMP for storm drain on Route 28A draining to West Falmouth Harbor. Work with Massachusetts Highways Department to correct. (NRCS)
- Implement a stormwater best management practice for the treatment of polluted roadway runoff contained in the Old Dock Road drainage system and discharging in West Falmouth Harbor.
- Acquire open space. Parcels considered a priority for acquisition for water supply protection and development: Falmouth Tracts 4, 6, 11, 12, 19, 26, 33, and 35 were ranked as having medium or high water supply development potential in the Cape Cod Commission's *Priority Land Acquisition Assessment Project* (April 1999). These tracts are located throughout the Town of Falmouth.
- Implement those salt marsh restoration projects identified in the *Atlas of Tidally Restricted Salt Marshes – Buzzards Bay Watershed, Massachusetts* (2002) that have been evaluated and prioritized by the town. Sites in this subwatershed are FA15, FA16, FA17, FA, FA19, FA29, FA30, FA31, FA32, FA33, FA34.
- Develop critical nutrient loading thresholds for West Falmouth Harbor to aid in water resources planning and the development of TMDLs.
- Cease accepting septage until a new nitrogen removing facility is operational (Baywatchers II report).

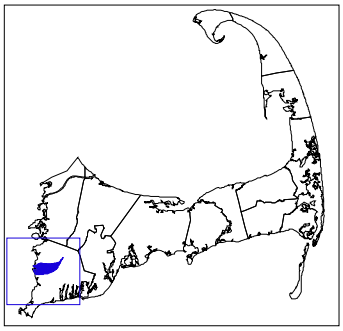
Recreation:

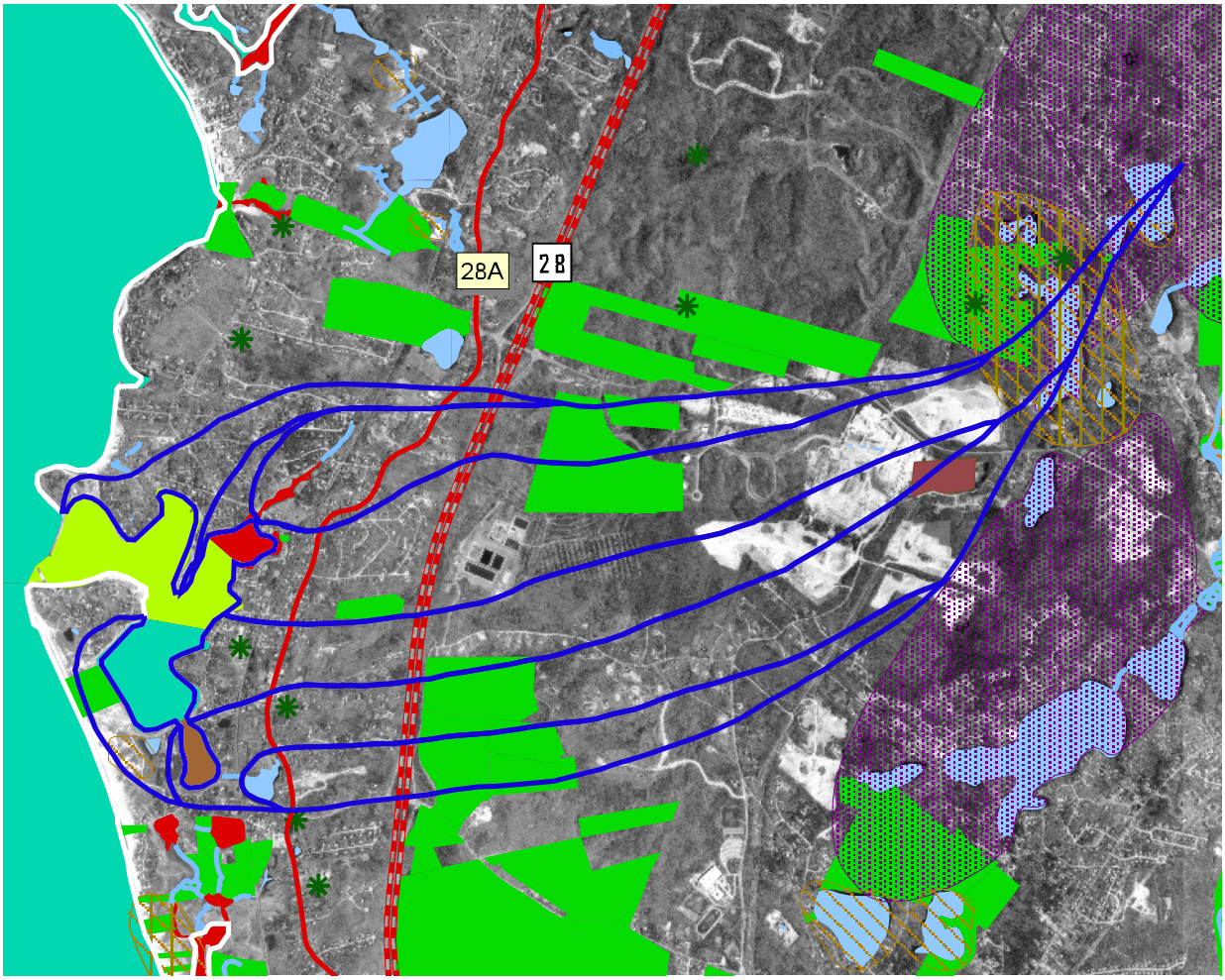
Camping areas: none
Golf courses: none
Pathways and trails:
www.capecodcommission.org/pathways/trailguide.htm
Public access: www.state.ma.us/dfwele/pab/pabSEmap.htm
Public beaches and landings:

- Chapoquoit Beach
- 2 landings

West Falmouth Harbor

Falmouth, MA





Watershed Resources

N

0 0.5 1 Miles

Natural Heritage and Endangered Species Program Data
- Certified Vernal Pool
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Species

Groundwater Protection Areas
- Interim Wellhead Protection Area
- Zone II
- Solid Waste Facility

Watershed Boundary

Anadromous Fish Run

Shellfish Growing Areas
- APPROVED
- CONDITIONALLY APPROVED
- MANAGEMENT CLOSURE
- PROHIBITED
- RESTRICTED

Open Space

Streams

Ponds

Roads

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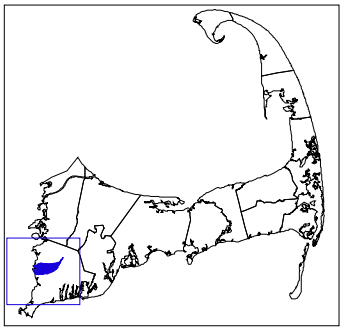
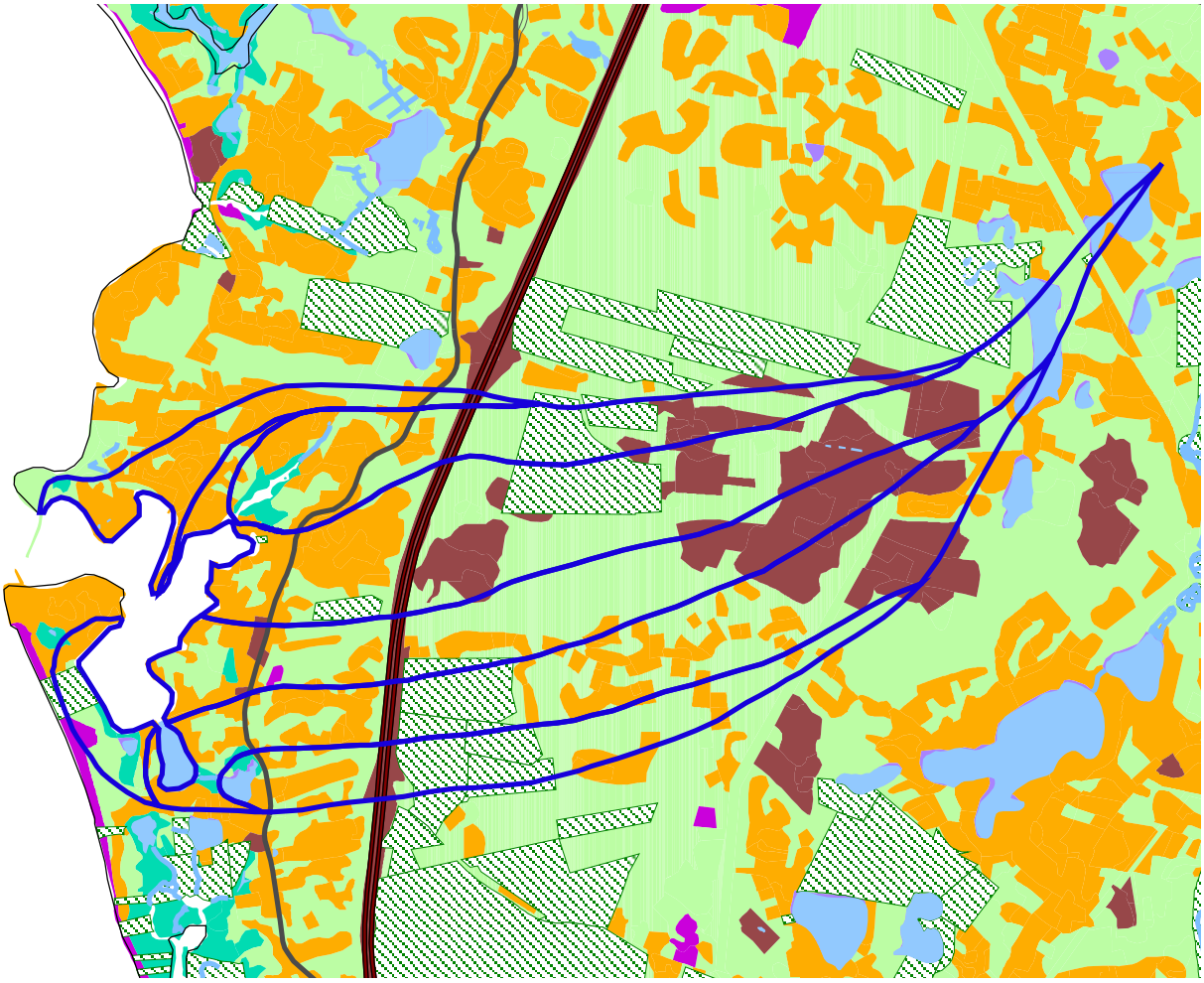
Winter 2003

West Falmouth Harbor

Falmouth, MA





Land Use

N

0 0.5 1 Miles

Land Use

- non-residential developed
- open land
- recreation
- residential
- water
- wetland
- Streams
- Ponds
- Watershed Boundary
- Protected Open Space

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