

WEYMOUTH AND WEIR SUBWATERSHED- RIVER AND ESTUARY SEGMENT ASSESSMENTS

Furnace Brook (Segment MA74-10).....	192
Trout Brook (Segment MA74-12).....	193
Cochato River (Segment MA74-06).....	194
Farm River (Segment MA74-07).....	196
Monatiquot River (Segment MA74-08).....	198
Town Brook (Segment MA74-09).....	202
Town River Bay (Segment MA74-15).....	205
Weymouth Fore River (Segment MA74-14).....	207
Old Swamp River (Segment MA74-03).....	210
Mill River (Segment MA74-04).....	213
Weymouth Back River (Segment MA74-05).....	214
Weymouth Back River (Segment MA74-13).....	217
Crooked Meadow River (Segment MA74-01).....	219
Weir River (Segment MA74-02).....	220
Weir River (Segment MA74-11).....	223

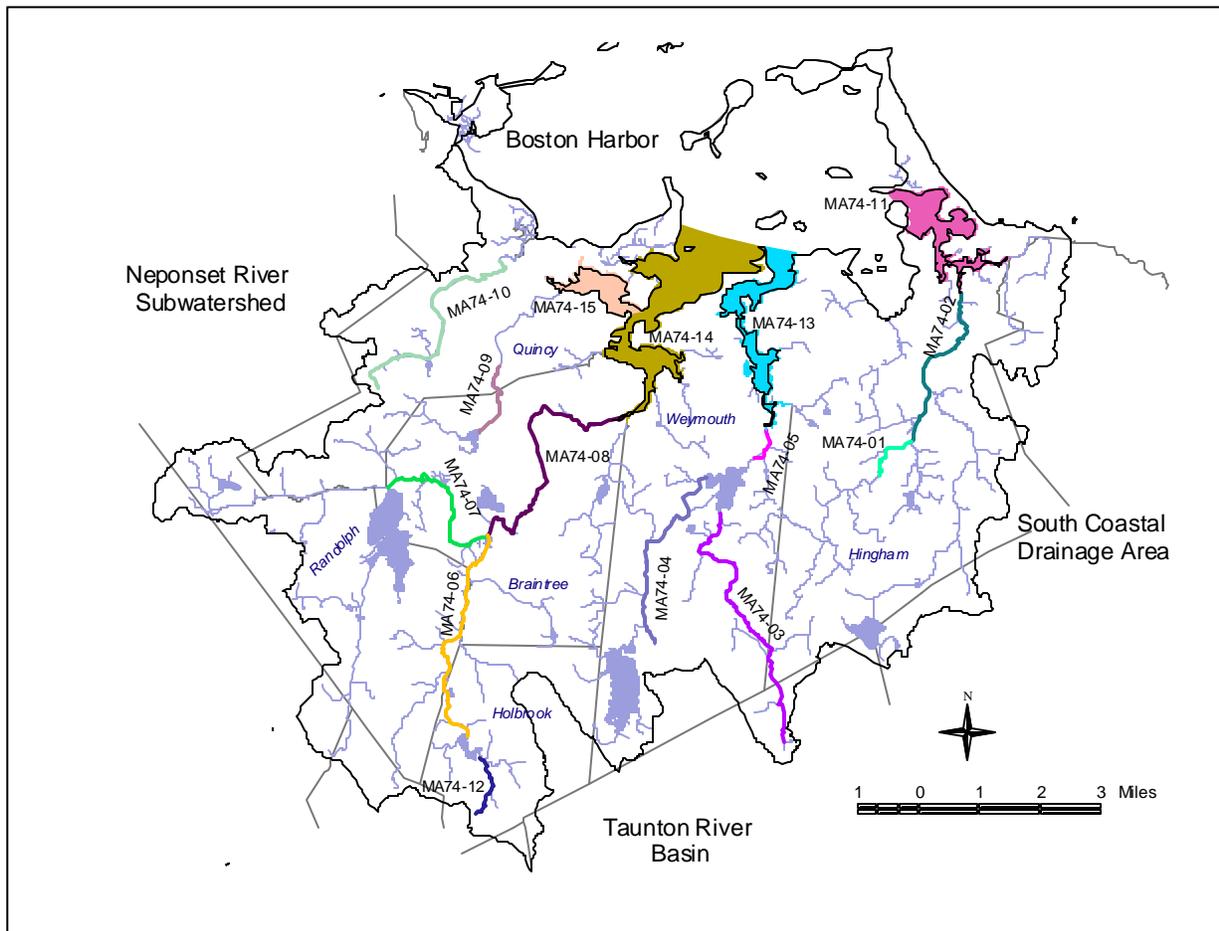


Figure 18. River/Estuarine Segments in the Weymouth and Weir Subwatershed

ISSUES AND RECOMMENDATIONS PERTINENT TO THE WEYMOUTH AND WEIR SUBWATERSHED

Water quantity is an important issue throughout the Boston Harbor Watershed. The majority of public water, whether from local supplies or through the interbasin transfer of water from Quabbin Reservoir in central Massachusetts by the MWRA, is processed at the MWRA's Deer Island Wastewater Treatment Plant and discharged to Massachusetts Bay. Recharge of the local systems is mainly limited to precipitation events and low streamflow is a serious problem. This loss of water essentially reduces available streamflow, and threatens instream uses such as aquatic life, habitat quality and quantity and recreational uses. Strong conservation measures through implementation strategies such as block rate pricing, installation of water-saving devices in homes and public buildings, in concert with a strong educational program, will all help reduce the stress placed on the water resources throughout the Boston Harbor Watershed.

Sanitary sewer overflows have been a chronic problem in the Weymouth Fore River and Back River watersheds contributing to violations of water quality standards, particularly during periods of high groundwater after rain events. These overflows have been in areas of public water supplies, shellfish beds, and bathing beaches. The overflows have occurred from the municipal sewer systems, as well as the MWRA interceptor system serving the communities on the South Shore. The primary causes of the sewer overflows are hydraulic deficiencies in the MWRA system and the municipal systems, excessive amounts of infiltration and inflow getting into the municipal systems, and poor operation and maintenance of the municipal systems (Chretien 2002).

Under the Title 5 Program, the Commonwealth has developed three programs to assist homeowners with wastewater management problems. The Homeowner Septic Loan Program provides low interest loans to homeowners to upgrade systems that will not pass Title 5 inspections. The Comprehensive Community Septic Management Program provides betterment loans to communities to target known or suspected failures or to develop a community-wide management plan. The third option allows homeowners to claim tax credits for septic upgrades. Additional information about the Title 5 Program is available online from the MA DEP website <http://www.state.ma.us/dep/brp/wwm/T5pubs.htm#add>. In the Weymouth and Weir Subwatershed, the towns of Hingham, Holbrook, and Weymouth have participated in the Comprehensive Community Septic Management Program (Chesebrough 2002).

The communities of Weymouth, Braintree, Holbrook, Randolph, and Hingham obtain their water from within the watershed. These communities are virtually at the capacity or above the capacity of their existing water supply sources (Chretien 2002).

DEP issued an ACO to the Town of Weymouth for exceeding limits on permitted water withdrawals. With DEP oversight and assistance, the Town has reduced unaccounted-for water and instituted water conservation measures, as required by the Order. After investigations of alternatives were performed for additional capacity, as required by the Order, the Town was able to obtain a Water Management Act Permit for the reactivation of Winter Street Well #1. The well has the potential of increasing their water supply capacity by 0.43 MGD above the existing town-wide capacity of 4.5 MGD. Weymouth is also approved to connect the Libbey Park Well with an approved capacity of 0.39 MGD to the Bilodeau Water Treatment Plant, which will improve the Town's ability to reliably provide sufficient and higher quality water to meet demand. Weymouth, with the cooperation of MWRA, will also be establishing an emergency connection to the MWRA water distribution system (Chretien 2002).

Braintree-Randolph-Holbrook Tri-Town Water District, with DEP approval, is performing dredging of 1.4 million cubic yards of material from the Great Pond Reservoir to increase water supply storage capacity for an additional 30 days (Chretien 2002).

Mass. American Water Co., providing water to the Town of Hingham, signed an Administrative Consent Order with Penalty with the DEP in 1999 and as a result of DEP oversight has reduced unaccounted-for water from 26% to 13%. Mass. American has also provided for the establishment of a stream gage to better monitor the impact of their withdrawals on the Weir River (Chretien 2002).

Black Rock Golf Community, Hingham, MA, received a Water Management Act Permit Approval in June 2001. The four irrigation wells are located in the former Hingham Crushed Stone Quarry, in the Plymouth River segment of the Weir River sub-basin. The development is presently under construction; no water withdrawal has occurred to date (O'Keefe 2002).

RECOMMENDATIONS

- Collect quality assured water quality, bacteria, and biological data to assess the designated uses of rivers and estuaries in the Weymouth and Weir Subwatershed.
- Work with the Fore River Watershed Association to develop a QAPP for their future water quality monitoring data. Continue to review the Fore River Watershed Association fish count and water quality data as it becomes available.
- Continue to monitor for fecal coliform bacteria to determine if the Braintree, Weymouth, and MWRA sewer projects aimed at reducing the number of sanitary sewer overflows to this subwatershed are effective.
- Determine the status of the septic system repairs being implanted under the Title 5 program in Hingham, Holbrook, and Weymouth.

FURNACE BROOK (SEGMENT MA74-10)

Location: From headwaters north of Blue Hills Reservoir, Quincy to confluence with Blacks Creek, Quincy.

Segment Area: 2.7 miles.

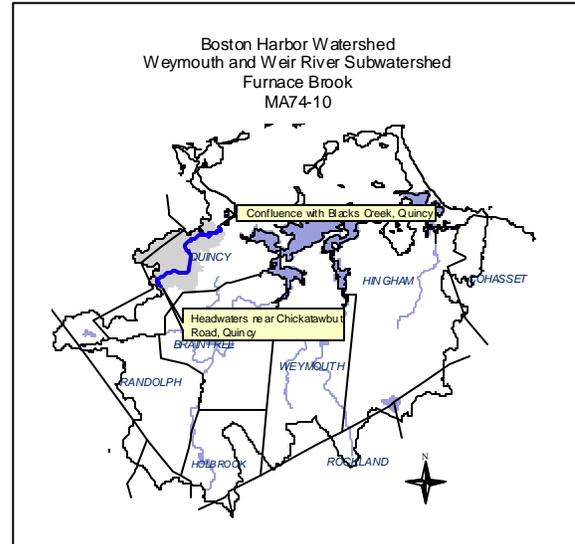
Classification: Class B.

Land-use estimates for the subwatershed (map inset, gray shaded area):

Residential	40%
Forest	33%
Open Land	9%

This segment is on the 1998 303(d) list of impaired waters needing confirmation for organic enrichment/low DO (MA DEP 1999a).

During 1992 and 1993, DMF monitored anadromous rainbow smelt spawning habitat in Furnace Brook, Quincy. Smelt were found to deposit eggs in one small stretch of the brook from Hancock Street Bridge to the interface of fresh and intertidal habitat (Chase 2000). Results indicated that in comparison to similar size spawning runs in the Boston Harbor region, the run in Furnace Brook is below capacity (Chase 2000). Possible explanations include degradation of habitat due to storm water runoff and the narrow tide gate opening at Quincy Bay that may limit adult attraction and passage.



WMA WATER WITHDRAWAL AND SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated water withdrawals or wastewater discharges in this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

Furnace Brook (MA74-10) Use Summary Table

Aquatic Life	Fish Consumption	Primary Contact	Secondary Contact	Aesthetics
Not Assessed				

TROUT BROOK (SEGMENT MA74-12)

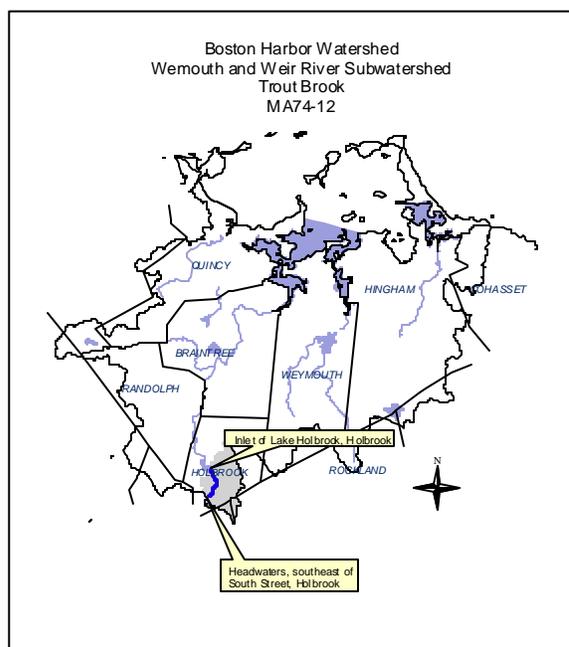
Location: Headwaters, southeast of South Street, Holbrook, to inlet of Lake Holbrook, Holbrook.

Segment Area: 3.9 miles.

Classification: Class B.

Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	52%
Residential	36%
Open Land	7%



WMA WATER WITHDRAWAL SUMMARY (APPENDIX G, TABLE G1):

Facility	PWS ID#	WMA Permit #	WMA Registration #	Source G = ground	Authorized Withdrawal (MGD)	1999 Average Withdrawal (MGD)
Randolph/Holbrook Joint Water Board	3244001		31913301	04G	3.27*	3.86

* System-wide withdrawal

SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated wastewater discharges to this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

Trout Brook (MA74-12) Use Summary Table

Aquatic Life	Fish Consumption	Primary Contact	Secondary Contact	Aesthetics
				
Not Assessed				

COCHATO RIVER (SEGMENT MA74-06)

Location: Outlet Lake Holbrook, Holbrook to confluence with Farm and Monatiquot rivers, Braintree.

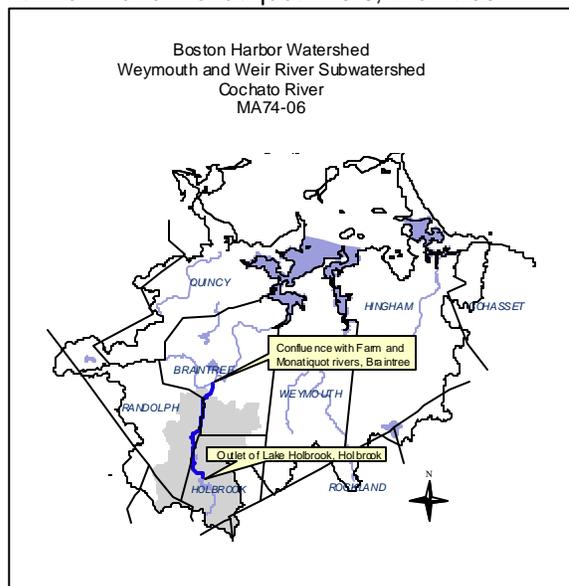
Segment Area: 4 miles.

Classification: Class B.

Land-use estimates for the subwatershed (map inset, gray shaded area):

Residential	42%
Forest	38%
Open Land	9%

This segment is on the 1998 303(d) list of impaired waters for pesticides, organic enrichment/ low DO, and pathogens (MA DEP 1999a). The Baird & McGuire Superfund Site, located approximately 500 feet west of the Cochato River on South Street near the Holbrook/Randolph line, was a former chemical manufacturing and batching facility. Activities included mixing, packaging, storing and distribution of various products, including herbicides, pesticides, disinfectants, soaps, floor waxes, and solvents. The groundwater at the Baird & McGuire Site is contaminated with pesticides and organic and inorganic chemicals. Studies found significant levels of volatile organic compounds (VOCs), other organic compounds, arsenic, and pesticides including DDT and chlordane in Cochato River sediments. The groundwater discharge is believed to be partially responsible for contamination of Cochato River sediments and adjoining wetlands. A total of 4,712 cubic yards of contaminated sediment were removed from the river. Annual sampling of the river sediments and five year sampling of fish in the river and in Sylvan Lake will continue for 30 years to ensure that contaminant levels do not increase. Frequency of sampling may decrease after year five if contaminant levels decrease significantly (MA DEP 13 November 1998).



The Holbrook Conservation Commission maintains the Lake Holbrook Dam, located along this river segment. The use assessments for Lake Holbrook, Sylvan Lake and Ice House Pond are provided in the Lakes section of this assessment report (Table 12).

WMA WATER WITHDRAWAL SUMMARY (APPENDIX G, TABLE G1):

Facility	PWS ID#	WMA Permit #	WMA Registration #	Source G = ground	Authorized Withdrawal (MGD)	1999 Average Withdrawal (MGD)
Braintree Municipal Golf Course		9P31904001		Irrigation Pond	0.05	0.05

SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated wastewater discharges to this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

FISH CONSUMPTION

MDPH issued a fish consumption advisory for the Cochato River, including Ice Pond and Sylvan Lake, due to elevated levels of pesticides in fish tissue. The advisory recommends the following:

1. Children younger than 12-years, pregnant women, and nursing mothers, should not consume any fish from the Cochato River, including Ice Pond and Sylvan Lake.
2. The general public should not consume any brown bullhead (*Ameiurus nebulosus*), carp (*Cyprinus carpio*), and/or American eel (*Anguilla rostrata*) from the Cochato River, including Ice Pond and Sylvan Lake.
3. The general public should limit consumption of non-affected fish species (see above) from this waterbody to two meals per month.

Based on the MDPH site-specific fish consumption advisory, this segment is assessed as non-support for the *Fish Consumption Use*.

Cochato River (MA74-06) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		NOT ASSESSED				
Fish Consumption		NON-SUPPORT	Pesticides		Unknown	
Primary Contact		NOT ASSESSED				
Secondary Contact		NOT ASSESSED				
Aesthetics		NOT ASSESSED				

RECOMMENDATIONS COCHATO RIVER (MA74-06)

- As it becomes available, review sediment and fish data from the Baird & McGuire Superfund assessments to determine possible long-term impacts to aquatic life.

FARM RIVER (SEGMENT MA74-07)

Location: From confluence with Blue Hill River at unnamed outlet of Great Pond, Braintree to confluence with Cochato River forming headwaters of Monatikquot River, Braintree.

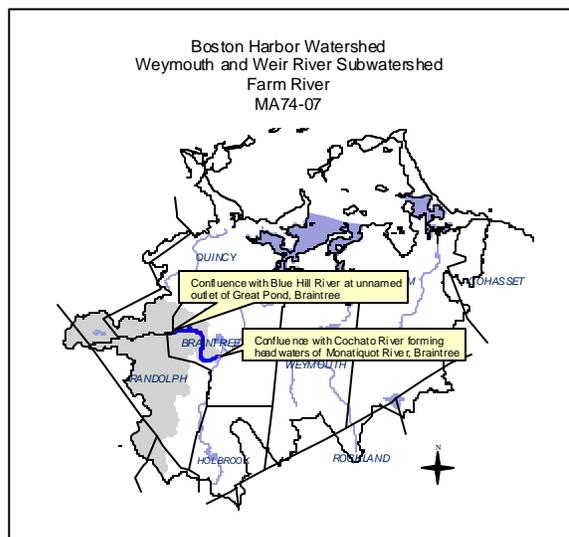
Segment Area: 2.7 miles.

Classification: Class B

Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	42%
Residential	26%
Industrial	9%

The use assessment for Hoosicwhisick Pond is provided in the Lakes section of this assessment report (Table 12).



WMA WATER WITHDRAWAL SUMMARY (APPENDIX G, TABLE G1):

Facility	PWS ID#	WMA Permit #	WMA Registration #	Source	Authorized Withdrawal (MGD)	1999 Average Withdrawal (MGD)
Randolph/Holbrook Joint Water Board	3244001		31913301	01S Great Pond	3.27	3.86
Braintree Water and Sewer Department	3040000		31904001	01S Great Pond (lower) 02S Richardi Reservoir 03S Farm River 04S Upper Reservoir	3.87	3.35

For three weeks during the months of June, July, August, and September, up to 80% of the flow of the Farm River may be diverted to Richardi Reservoir where it is then pumped to Great Pond for use by the Braintree Water and Sewer Department for the municipal supply of Braintree, Randolph and Holbrook. The amount of water pumped from Richardi Reservoir to Great Pond Reservoir varies from year to year. 310 million gallons were pumped from Richardi to Great Pond in 2000, representing approximately 10% of the water withdrawn from Great Pond (Jean 2002).

SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated wastewater discharges to this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

Farm River (MA74-07) Use Summary Table

Aquatic Life	Fish Consumption	Primary Contact	Secondary Contact	Aesthetics
				
Not Assessed				

RECOMMENDATIONS FARM RIVER (MA74-07)

- The Farm River is the headwaters for the Monaquot River. A moderately impacted benthic community was identified in the Monaquot River by DWM in 1999. The estimated 7Q10 from the USGS Streamflow Statistics for Massachusetts webpage (<http://ma.water.usgs.gov/streamstats/>) for the Monaquot River at Gage 01105580 (Monaquot River at South Braintree) is 0.5 cfs and the estimated 7Q10 at Gage 01105582 (Monaquot River at East Braintree) is 0.22 cfs. Work with MA DEP Northeast Regional Office to determine the water withdrawal practices from the Farm River by the Braintree Water and Sewer Department and to develop WMA permit limits as necessary to maintain baseflows in the Farm River for the protection of Aquatic Life.

MONATIQUOT RIVER (SEGMENT MA74-08)

Location: Headwaters at confluence of Cochato and Farm rivers, Braintree to confluence with Weymouth Fore River at Route 53, Braintree.

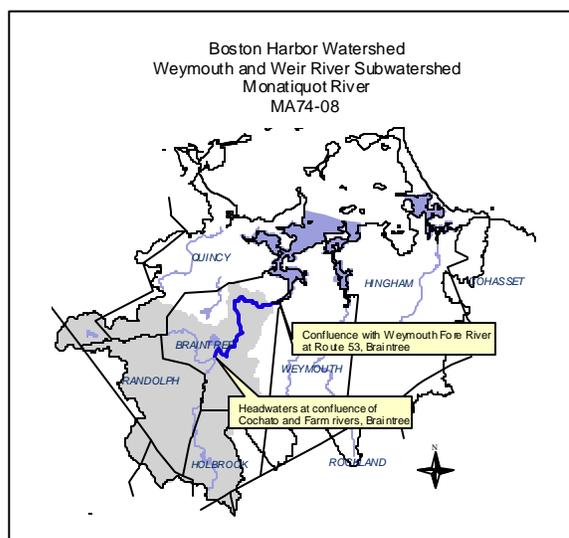
Segment Area: 4.3 miles.

Classification: Class B

Land-use estimates for the subwatershed (map inset, gray shaded area):

Residential	37%
Forest	36%
Open Land	8%

The Monatiquot River is the main tributary to the Fore River Estuary. It is located about 10 miles south of Boston and encompasses 28.5 mi². The river lies within the towns of Braintree, Randolph, Holbrook, Avon, Stoughton, Milton, Canton, and Quincy (Franklin 2001). This segment is on the 1998 303(d) list of impaired waters needing confirmation for organic enrichment/ low DO and pathogens (MA DEP 1999a). The use assessment for Sunset Lake is provided in the Lakes section of this assessment report (Table 12).



In the Town of Braintree, sanitary sewage overflows (SSOs) have occurred at various locations throughout the Town including the Howard Street Pumping Station, the Allen Street Siphon, Trotters Green, the Beach Front area, Surrey Lane, Union Street, the Common Street Pump Station, Bestick Road, the Grove Street Pump Station, the Brookside Road Pump Station, and Prospect Street. These overflows have discharged to the Monatiquot River. There were more than 120 overflow events from 1993 to 1999. Additionally, under certain wet weather conditions, overflows from the existing MWRA regional sewer system have discharged into the Monatiquot River. Both the Town of Braintree and MWRA are currently working with DEP to reduce the frequency, duration, and volume of overflows including the construction of the Braintree-Weymouth Relief Facilities by MWRA and the implementation of infiltration reduction projects by Braintree. Both the Towns of Weymouth and Braintree and MWRA are currently working with DEP to reduce the frequency, duration, and volume of SSO events (Chretien 2002).

WMA WATER WITHDRAWAL AND SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated water withdrawals or wastewater discharges in this segment.

However, for three weeks during the months of June, July, August, and September, up to 80% of the flow of the Farm River (the headwaters of this segment) may be diverted to Richardi Reservoir where it is then pumped to Great Pond for use by the Braintree Water and Sewer Department for the municipal supply of Braintree, Randolph and Holbrook. The amount of water pumped from Richardi Reservoir to Great Pond Reservoir varies year to year. 310 million gallons were pumped from Richardi to Great Pond in 2000, representing approximately 10% of the water withdrawn (Jean 2002).

All communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

AQUATIC LIFE

Biology

During July 1999, DEP DWM conducted a benthic macroinvertebrate survey at one station on the Monatiquot River (MR01) downstream from Middle Street, Braintree. The benthic community was only 47% comparable (moderately impacted) to the reference station at Hawes Brook (Appendix C).

In April 1997, a field sampling program was conducted for the Fore River Watershed Association to determine the existence of a herring population along the Monatiquot River (Franklin 2001). River herring were found within the Monatiquot River, however, sightings were limited. The spillway at McCusker Drive was identified as a possible barrier to migration. In addition to fish counts limited chlorophyll *a*, ammonia, nitrate, and phosphate samples were collected.

Habitat/Flow

As part of the 1999 benthic survey, DEP DWM conducted a habitat assessment (Appendix C). The sampling reach was almost completely channelized, with "rip-rap" placed along both banks. Occasional areas of erosion and sloughing were observed with silty deposits possibly originating from the upstream road crossings and adjacent roadways.

As part of the Massachusetts Watershed Initiative MWI99-02 grant project, flow data was collected by USGS from the Monatiquot River at Commercial Street in East Braintree (Gage 01105583) on ten occasions between June 1999 and June 2000. Discharges in 1999 ranged from 0.55 to 42 cfs and in 2000 ranged from 31 to 130 cfs (Socolow *et al.* 2000 and Socolow *et al.* 2001). The estimated 7Q10 from the USGS Streamflow Statistics for Massachusetts webpage (<http://ma.water.usgs.gov/streamstats/>) for the Monatiquot River at Gage 01105580 (Monatiquot River at South Braintree) is 0.5 cfs and the estimated 7Q10 at Gage 01105582 (Monatiquot River at East Braintree) is 0.22 cfs. Both sites are upstream of Gage 01105583. It should be noted that 1999 was a drought year. Average monthly flows in June were lower than have been recorded in decades (USGS 5 June 2001).

Chemistry – water

As part of the Massachusetts Watershed Initiative Grant MWI99-02, USGS also collected DO, temperature, ammonia-nitrogen, and phosphorus samples at Commercial Street in East Braintree between June 1999 and June 2000 (Socolow *et al.* 2000 and Socolow *et al.* 2001).

DO

Dissolved oxygen concentrations ranged between 7.7 and 11.8 mg/L (n=11). No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

All temperature measurements (n=11) were below the SWQS for a Class B waterbody.

pH

pH ranged from 6.4 to 7.5 SU (n=11) with only one sample below 6.5 SU.

Ammonia-Nitrogen (as N)

Ammonia-Nitrogen concentrations ranged from BDL to 0.315 mg/L. All measurements were below the acute and chronic water quality criteria for ammonia-nitrogen.

Total Phosphorus (as P)

Total phosphorus concentrations ranged between BDL and 0.042 mg/L (n=11).

Based on the moderately impacted benthic community (loss of Ephemeroptera, Plecoptera, Trichoptera taxa and scrapers, as well as hyperdominance of one taxon), the channelized streambed, and landuse information, the *Aquatic Life Use* for the Monatiquot River is assessed as non-support.

PRIMARY CONTACT AND SECONDARY CONTACT RECREATION

The Fore River Watershed Association has been collecting fecal coliform bacteria samples from the Monatiquot River at Shaw Street. Although the data did not meet DEP's quality assurance guidelines, bacteria counts were above 400 cfu/100mL in eight of the 18 samples (Franklin 2001). In April 1997, the Fore River Watershed Association identified an outfall pipe discharging to the Monatiquot River. Further investigation identified this pipe as a source of fecal coliform bacteria (Franklin 2001).

As part of the Massachusetts Watershed Initiative MWI99-02 grant project, USGS collected fecal coliform bacteria samples from the Monatiquot River (Commercial Street in East Braintree) in 1999 and 2000 (Socolow *et al.* 2000 and Socolow *et al.* 2001). Fecal coliform bacteria counts ranged from 270 to 4,800 cfu/100mL (n=10). Seven of the ten samples were collected during the primary contact recreation season with 71% greater than 400 cfu/100mL. Sampling events were indicative of wet and dry weather conditions.

It should be noted that SSOs are common in this subwatershed. The Town of Braintree has had more than 120 overflow events between 1993 and 1999, from multiple locations including Howard Street Pumping Station, Allen Street Siphon, Trotters Green, Beach Front area, Surrey Lane, Union Street, Common Street Pump Station, Bestick Road, Grove Street Pump Station, Brookside Road Pump Station, and Prospect Street. The Town of Braintree and MWRA are currently working with DEP to reduce the frequency, duration, and volume of SSO events (Chretien 2002).

Based on the frequency of elevated fecal coliform bacteria counts, during both wet and dry weather conditions, the *Primary* and *Secondary Contact Recreational use* is assessed as non-support.

AESTHETICS

During the 1999 DWM habitat survey some instream turbidity was noted. No other objectionable conditions were recorded (i.e. no odors, oily sheens, trash/debris).

Too little current information (i.e., spatial and temporal coverage) is available to assess this use; therefore, the *Aesthetics Use* for the Monatiquot River is currently not assessed.

Monatiquot River (MA74-08) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		NON SUPPORT	Unknown, habitat alteration		Unknown, hydromodification	SSO, urban runoff/ storm sewers
Fish Consumption		NOT ASSESSED				
Primary Contact		NON SUPPORT	Pathogens		Unknown, urban runoff/storm sewers, municipal point source (SSO)	
Secondary Contact		NON SUPPORT	Pathogens		Unknown, urban runoff/storm sewers, municipal point source (SSO)	
Aesthetics		NOT ASSESSED				

RECOMMENDATIONS MONATIQUOT RIVER (MA74-08)

- Work with the Fore River Watershed Association to develop a QAPP for their future water quality monitoring data. Continue to review the Fore River Watershed Association fish count and water quality data as it becomes available.
- Investigate sources of fecal coliform bacteria from the pipe identified by the Fore River Watershed Association.
- Continue to monitor pathogen levels in the Monatiquot River to determine the effectiveness of the MWRA and Town of Braintree sewer system improvements.
- Work with MA DEP Northeast Regional Office to determine the water withdrawal practices from the Farm River by the Braintree Water and Sewer Department and to develop WMA permit limits as necessary to maintain baseflows in the Farm River for the protection of Aquatic Life.

TOWN BROOK (SEGMENT MA74-09)

Location: Outlet Old Quincy Reservoir, Braintree to confluence with Town River, north of Route 3A, Quincy (includes the "Canal")
Segment Area: 3.5 miles.
Classification: Class B.

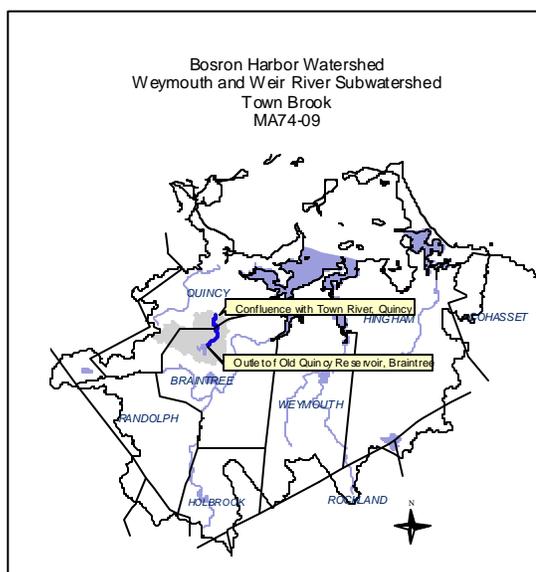
Land-use estimates for the subwatershed (map inset, gray shaded area):

Residential	30%
Forest	22%
Industrial	14 %

The Old Quincy Reservoir Dam is located along this segment. It is maintained by Braintree Water/Sewer Department (Ryan 2001). Additional information on dams in Massachusetts may be obtained from MA DEM at <http://www.state.ma.us/dem/> and a MassGIS datalayer showing the location of dams in Massachusetts will soon be available at:

<http://www.state.ma.us/dem/programs/gis/de%5FdI.htm>.

Town Brook, an urban interrupted stream, is above ground for approximately 0.6 miles from the outlet of Old Quincy Reservoir downstream to the Route 3 interchange in Braintree. The brook then is mostly underground until Revere Road where it emerges and is then above for approximately 0.3 miles. The Army Corps of Engineers (ACOE) in corporation with the Commonwealth of Massachusetts is modifying the channel of Town River, constructing a flood relief tunnel under Quincy Center, and reconstructing the Old Quincy Dam in Braintree to control flooding in the Town Brook subwatershed (ACOE 30 April 2001). All phases of this flood control project will be turned over to the MDC.



WMA WATER WITHDRAWAL SUMMARY:

There are no regulated water withdrawals from this segment.

SURFACE NPDES DISCHARGE SUMMARY:

Massachusetts Bay Transit Authority (MBTA) Quincy Pump Station (MA0033987) is permitted to discharge 0.216 MGD of wet weather flow and groundwater to Town Brook. The permit expires on 3 September 2002. The acute and chronic toxicity limits are 100% effluent. This facility is currently using lab water as dilution water in the whole effluent toxicity tests. The facility should at least run Town Brook water as a toxicity test control.

All communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

AQUATIC LIFE

Toxicity

Effluent

Between February 1998 and February 2001, MBTA Quincy Pump Station conducted 12 modified acute and chronic whole effluent toxicity tests using the inland silverside, *Menidia beryllina*. With the exception of one test (September 1998 LC₅₀=97.7% effluent), acute toxicity was not detected (LC₅₀ ≥100% effluent). Chronic toxicity was detected in four test events, violating the permit limit of 100% effluent (range: <6.25 to 100%).

Habitat/Flow

Town Brook is underground and culverted for the majority of its 3.5-mile length. The ACOE has constructed a flood relief tunnel under Quincy Center (completed 1997-1998) and is reconstructing the Old Quincy Dam in Braintree to control flooding in the Town Brook subwatershed (ACOE 30 April 2001). The tunnel begins between Granite Street and Parking Way at the Star Market. The 12 foot deep, 4,000-foot long tunnel only receives inflow during major storm events. The tunnel is a deep rock tunnel with a drop-in at both ends. Additionally, a weir is located at the bottom end and aerators are placed in the tunnel to maintain sufficient DO levels. Between storms, storm water can enter the tunnel at high tide. The floodwater re-enters Town Brook between the South Artery and Washington Street. Prior to 2000, a sediment and brush blockage was causing water from Town Brook to backup into the tunnel thereby bypassing smelt spawning habitat. This condition has since been rectified by reconstruction of the MDC and City of Quincy owned portion of the flood control project (ACOE 2001).

Upstream of Town Brook, the Burgin Brook Diversion Tunnel was constructed to convey floodwaters away from Burgin Brook. The tunnel is similar to the Town Brook Diversion Tunnel. Flows from the Burgin Brook Tunnel are emptied into the Town Brook Tunnel and then into Town Brook. Prior to entering Town Brook Tunnel, sediments are captured in a sediment-settling basin (Galvin 2002).

Flow data was collected on Town Brook by USGS at their gage (01105585) downstream from Miller Stile Road, Quincy during ten occasions between May 1999 and June 2000 as part of the Massachusetts Watershed Initiative MWI99-02 grant project. Discharges ranged from 0.33 to 7.7 cfs with a seventeen-year average of 8.15 cfs (Socolow *et al.* 2000 and Socolow *et al.* 2001). It should be noted that 1999 was a drought year. Average monthly flows in June were lower than have been recorded in decades (USGS 5 June 2001). The lowest daily mean discharge of 0.33 cfs was recorded on 3 October 1999.

Chemistry – water

Also as part of the Massachusetts Watershed Initiative Grant MWI99-02, USGS sampled dissolved oxygen, temperature, ammonia-nitrogen, and phosphorus at their gage (01105585) downstream from Miller Stile Road, Quincy between May 1999 and June 2000 (Socolow *et al.* 2000 and Socolow *et al.* 2001). In conjunction with the Town Brook flood control project the ACOE collected grab samples (DO, pH, temperature, nitrogen, phosphorus, and TSS) upstream from the tunnel outlet and compared them to the tunnel water. These data indicated similar results in both the brook and tunnel water (ACOE 2001).

DO

Dissolved oxygen concentrations ranged between 7.2 and 11.7 mg/L (n=10). No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

All temperature measurements were below the SWQS for a Class B waterbody (n=10).

pH

pH ranged from 6.2 to 7.4 SU with only one less than 6.5 SU (n=10).

Ammonia-Nitrogen (as N)

Ammonia-Nitrogen concentrations ranged from 0.050 to 0.333 mg/L (n=10). All measurements were below the acute and chronic water quality criteria for ammonia-nitrogen.

Total Phosphorus (as P)

Total phosphorus concentrations ranged between 0.004 (estimated) and 0.073 mg/L (n=10).

Based on the loss of habitat due to the underground and channelized nature of this brook and best professional judgment, the *Aquatic Life Use* is assessed as non-support.

PRIMARY AND SECONDARY CONTACT RECREATION

As part of the MWI99-02 grant project, USGS collected fecal coliform bacteria samples from their gage (01105585) downstream from Miller Stile Road, Quincy on ten occasions between May 1998 and June 2000 (Socolow *et al.* 2000 and Socolow *et al.* 2001). Samples were collected during both wet and dry weather conditions. Fecal coliform bacteria counts ranged from 420 to 23,000 cfu/100mL. Levels were above 2,000 cfu/100mL in half the samples and were above 4,000 in one sample.

Based on the frequency of elevated fecal coliform bacteria counts, during both wet and dry weather conditions, the *Primary* and *Secondary Contact Recreational* uses are assessed as non-support.

Town Brook (MA74-09) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		NON SUPPORT	Habitat alteration, unknown		Hydromodification, Unknown	
Fish Consumption		NOT ASSESSED				
Primary Contact		NON SUPPORT	Pathogens		Unknown	Urban runoff/storm sewers
Secondary Contact		NON SUPPORT	Pathogens		Unknown	Urban runoff/storm sewers
Aesthetics		NOT ASSESSED				

RECOMMENDATIONS TOWN BROOK (MA74-09)

- The Massachusetts Bay Transit Authority (MBTA) Quincy Pump Station (MA0033987) should collect water from Town Brook upstream of their discharge to use as dilution water in their whole effluent toxicity tests. If the brook water does not meet the control test acceptability criteria (e.g., survival > 80% at 7-day), then Town Brook water must still be utilized as a test control and not as diluent.
- Work with Braintree and Quincy to identify failing septic systems and illicit sewer connections that may be contributing bacteria to Town Brook.

TOWN RIVER BAY (SEGMENT MA74-15)

Location: From the headwaters at the Route 3A bridge in Quincy, to its mouth at the Weymouth Fore River between Shipyard and Germantown Points, Quincy.

Segment Area: 0.5 square miles.

Classification: Class SA.

LandUse estimates for this subwatershed are unavailable.

This segment is on the 1998 303(d) list of impaired waters for organic enrichment/ low DO and pathogens (MA DEP 1999a).

WMA WATER WITHDRAWAL SUMMARY:

There are no regulated water withdrawals from this segment.

SURFACE NPDES DISCHARGE SUMMARY:

Twin Rivers Technologies, L.P. (MA0004073) is permitted to discharge via two outfalls: 001 (to the Weymouth Fore River) and 003. The facility is permitted to discharge 10 MGD of non-contact cooling water and boiler blow down water via 003 to this segment. The permit includes an 87°F temperature limit. The facilities permit states that if their acute toxicity test is < 100% effluent they must retest within 30 days. The permit expires on 26 March 2002. This discharge is tidally influenced.

Sprague Electric (MA0020869) is permitted to discharge treated storm water runoff from the diked and not diked areas via outfall 001. The permit includes monitoring requirements for flow, pH, and PAHs and limits for TSS (100 mg/L maximum daily) and oil/grease (15 mg/L). The permit expires on 4 June 2003.

All communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

Additionally, there are two vessel sewage pump-out facilities located on Town River Bay: Bay Pointe Marina and Town River Yacht Club (CZM 3 October 2001).

USE ASSESSMENT

AQUATIC LIFE

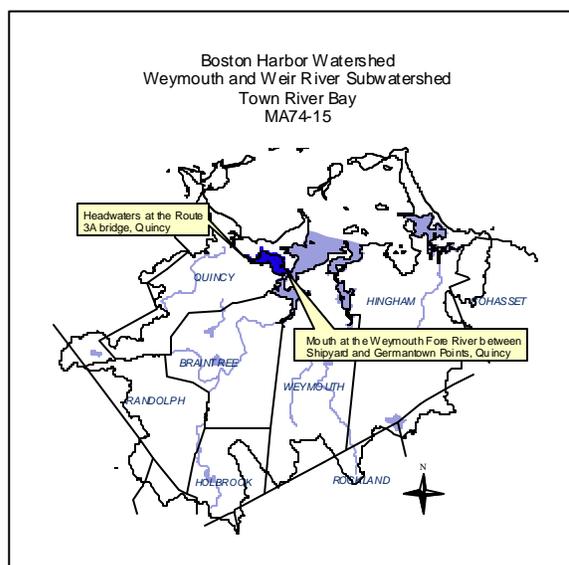
Toxicity

Effluent

Between 1997 and 2000, Twin Rivers Technologies, L.P. (MA0004073) conducted annual whole effluent toxicity tests on outfall 003 using the mysid shrimp *M. bahia*. Of the four test events the LC₅₀ was less than 100% effluent on two occasions (80 and 77% effluent). The facilities permit requires a retest within 30 days if an LC₅₀ is less than 100% effluent.

Ambient

Between 1997 and 2000, Twin Rivers Technologies, L.P. (MA0004073) used water from Town River Bay as dilution water in their annual whole effluent toxicity tests. Survival of the mysid shrimp *M. bahia* exposed (48-hour) to the Bay water was good (>90%).



Scant instream water quality data were available to assess the *Aquatic Life Use*; it is therefore not assessed.

SHELLFISHING

The DMF Shellfish Status Report of October 2000 indicates that shellfish growing areas GBH1.23 and GB1H.31 are conditionally restricted and GBH1.0, GBH1.22 and GBH1.24 are prohibited (DFWELE 2000).

Based on this information the *Shellfishing Use* is assessed as partial support for 0.13 mi² and non-support for 0.37 mi² of this segment of Town River Bay.

PRIMARY AND SECONDARY CONTACT RECREATION

In 1999, one bathing beach advisory was issued for Rhoda Beach. The City of Quincy Health Department identified breaks in pipes, boat discharges, and/or storm water as the possible sources of pollution (EPA 20 July 2000).

The *Primary and Secondary Contact Recreational* uses are not assessed due to the lack of available bacteria data. This segment is however, on “Alert Status” due to the probability of elevated bacteria counts as indicated by the bathing beach closure.

Town River Bay (MA74-15) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		NOT ASSESSED				
Fish Consumption		NOT ASSESSED				
Shellfishing		PARTIAL SUPPORT 0.13 mi ² NON-SUPPORT 0.37 mi ² For watershed-wide shellfish growing area data see Appendix E.				
Primary Contact*		NOT ASSESSED*				
Secondary Contact*		NOT ASSESSED*				
Aesthetics		NOT ASSESSED				

* “Alert Status” Issues Identified- See *Primary and Secondary Contact Recreational* uses

RECOMMENDATIONS TOWN RIVER BAY (MA74-15)

- If the Twin Rivers LC₅₀ <100%, the facility needs to retest again within thirty days as stated in their NPDES permit. If toxicity test results continue to violate permit limits (frequency and severity of violations considered), a toxicity identification and reduction evaluation should be conducted.

WEYMOUTH FORE RIVER (SEGMENT MA74-14)

Location: Route 53, Braintree to mouth (eastern point at Lower Neck, Weymouth and western point at Wall Street on Houghs Neck, Quincy).

Segment Area: 3.3 square miles.

Classification: Class SB, Shellfishing (Restricted).

Land use estimates for this subwatershed are unavailable.

This segment is on the 1998 303(d) list of impaired waters for pathogens (MA DEP 1999a). In the Town of Weymouth, sanitary sewer overflows have occurred to Whitman's Pond, Mill River, Back River, Fore River, and Old Swamp River. Between 1992 and March 1999, 530 overflow events were recorded. In the Town of Braintree, sanitary sewage overflows have occurred at various locations throughout the Town including the Howard Street Pumping Station, the Allen Street Siphon, Trotters Green, the Beach Front area, Surrey Lane, Union Street, the Common Street Pump Station, Bestick Road, the Grove Street Pump Station, the Brookside Road Pump Station, and Prospect

Street. These overflows have discharged to the Monaquot River. There were more than 120 overflow events from 1993 to 1999. Additionally, under certain wet weather conditions, overflows from the existing MWRA regional sewer system have discharged into the Weymouth Fore River and Smelt Brook. The MWRA Smelt Brook Siphon has been the most significant location of overflows. Since 1996, it has overflowed several times each year for periods of up to 11 days on certain occasions. Both the Towns of Weymouth and Braintree and MWRA are currently working with DEP to reduce the frequency, duration, and volume of SSO events (Chretien, 2002).

In 1988 and 1989 DMF conducted anadromous rainbow smelt spawning surveys in the Weymouth Fore River. According to Chase (1990) the Fore River is one of the "top smelt producing rivers in Massachusetts Bay".

WMA WATER WITHDRAWAL SUMMARY:

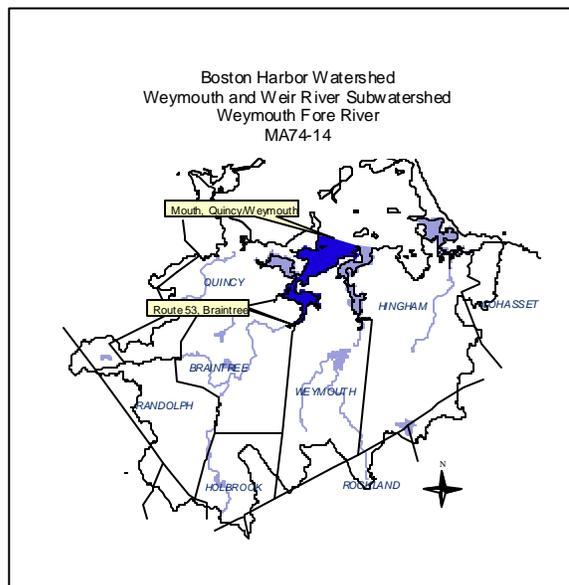
There are no regulated water withdrawals from this segment.

SURFACE NPDES DISCHARGE SUMMARY:

Twin Rivers Technologies, L.P. (MA0004073) is permitted to discharge via two outfalls: 001 and 003 (to Town River Bay). The facility is permitted to discharge 1 MGD of non-contact cooling water and storm water via 001 to this segment. The permit includes an 87°F temperature limit. The facilities permit states that if their acute toxicity test is < 100% effluent they must retest within 30 days. The permit expires on 26 March 2002. This discharge is tidally influenced.

The proposed Fore River Station is a nominal 750-775 megawatt (MW) natural gas fired combined cycle power plant to be developed and operated by Sithe Edgar Development, LLC (Sithe), an affiliate of Sithe Energies Group. The Fore River Station will be located at the site of the retired Boston Edison Company Edgar Station in Weymouth, Massachusetts. The former Edgar site, together with Boston Edison Company generating facilities in Everett, South Boston, Framingham and Medway, was acquired by Sithe in a transaction completed on 15 May 1998 (MA DEP 22 Feb 2000). It should be noted that this facility will only have storm water discharges and there will be no operational discharges to the river.

The MWRA is presently digging a deep rock tunnel under the Fore River from North Weymouth to the Nut Island Inter Island Tunnel. The tunnel under the Fore River is a major component of the \$175 million MWRA Braintree-Weymouth Relief Facilities construction project that will increase existing sewer service capacity from 55 MGD to 73 MGD for the communities of Braintree, Weymouth, Holbrook, Randolph, and Hingham. Wastewaters from the construction site run-off and tunnel dewatering discharge to the Fore River



after receiving treatment by chemical addition, clarification, and filtration. NPDES General Permit No. MAG070047 covers discharges up to 5000 gpm from these treatment facilities. Presently, however, the system only discharges up to about 2000 gpm (Chretien 2002).

All communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

AQUATIC LIFE

Toxicity

Effluent

Between 1998 and 2000, Twin Rivers Technologies, L.P. (MA0004073) conducted annual whole effluent toxicity tests on Outfall 001 using the mysid shrimp *M. bahia*. The LC₅₀ was less than 100% effluent on only one occasion (74% effluent). The facilities permit requires a retest within 30 days if an LC₅₀ is less than 100% effluent.

Ambient

Between 1998 and 2000, Twin Rivers Technologies, L.P. (MA0004073) uses water from Town River Bay as dilution water in their annual whole effluent toxicity tests. Survival of *M. bahia* exposed (48-hour) to the Bay water was good (100%).

Chemistry - water

As part of their ongoing receiving water monitoring program, MWRA collected monthly surface and bottom water quality samples (DO and temperature) between 1996 and 2000 at station 116, Hingham Bay, mouth of Fore River, red Nun #28 (Coughlin 2001a and 2002).

DO

Dissolved oxygen concentrations were not below 5.0mg/L in the surface or bottom waters during any of the sampling events (n=135). Dissolved oxygen concentrations ranged from 5.35 to 13.13 mg/L and percent saturation ranged from 71.7 to 125.8% with only three greater than 115%. No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

No temperature readings (n=144) were above the SWQS for a class SB waterbody.

Turbidity

Turbidity levels ranged from 0 to 37 NTU and an average of 7.33 NTU (n=89).

Chlorophyll a

Chlorophyll a measurements (n=85) ranged from 4.33 to 28.30 µg/L in the surface and bottom waters.

Suspended Solids

TSS measurements (n=79) ranged from 0.9 to 41.4 mg/L with only two greater than 25 mg/L collected during dry weather conditions.

The *Aquatic Life Use* is assessed as support for the Weymouth Fore River based on multiple years of water chemistry data (DO, temperature, water clarity and chlorophyll a) with limited exceedances of the SWQS for a Class SB waterbody.

SHELLFISHING

The DMF Shellfish Status Report of October 2000 indicates that shellfish growing areas GBH1.10, GBH 1.13, GBH1.20, GBH1.25 and GBH1.26 are conditionally restricted and GBH1.27 is management closure, and GBH1.0, GBH1.20, and GBH1.21 are prohibited (DFWELE 2000).

Based on this information the *Shellfishing Use* is assessed as partial support for 0.63 mi², non-support for 2.56 mi² while the remaining 0.11 mi² of this segment of the Weymouth Fore River are not assessed due to the management closure.

PRIMARY CONTACT AND SECONDARY CONTACT RECREATION

The MWRA also collected fecal coliform bacteria samples at site 116 Hingham Bay, mouth of Fore River, red Nun #28 as part of their ongoing receiving water monitoring program (Coughlin 2002) between 1996 and 2000. Fecal coliform bacteria counts ranged between <5 and 8,400 cfu/100mL (n=116). Samples were collected during both wet and dry weather conditions. During the primary contact season, fecal coliform bacteria counts ranged between <5 and 2,560 cfu/100mL with only five of the 69 counts greater than 400 cfu/100mL. Additionally, MWRA recorded Secchi disk depths at this station on 169 occasions (range: 1.0 – 6 m) with only three readings below 1.2 m. It should be noted that SSOs are common in this subwatershed. The MWRA Smelt Brook Siphon has overflowed several times each year since 1996, and at times for up to 11 days per event (Chretien 2002).

While fecal coliform bacteria counts were low during both wet and dry weather conditions at MWRA's monitoring station, the *Primary* and *Secondary Contact Recreational* uses are assessed as partial support due to the frequency of SSO events and the probability of elevated bacteria counts associated with them.

Weymouth Fore River (MA74-14) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		SUPPORT				
Fish Consumption		NOT ASSESSED				
Shellfishing		PARTIAL SUPPORT 0.63 mi ² NON- SUPPORT 2.56 mi ² NOT ASSESSED 0.11 mi ² For watershed-wide shellfish growing area data see Appendix E.				
Primary Contact		PARTIAL SUPPORT	Pathogens		Municipal point source (SSO), urban runoff / storm sewers	
Secondary Contact		PARTIAL SUPPORT	Pathogens		Municipal point source (SSO), urban runoff / storm sewers	
Aesthetics		NOT ASSESSED				

RECOMMENDATIONS WEYMOUTH FORE RIVER (MA74-14)

- If the Twin Rivers LC₅₀ <100%, the facility needs to retest again within thirty days as stated in their NPDES permit. If toxicity test results continue to violate permit limits (frequency and severity of violations considered), a toxicity identification and reduction evaluation should be conducted.
- Continue to monitor fecal coliform bacteria counts in the Weymouth Fore River to determine if the Braintree, Weymouth, and MWRA sewer projects aimed at reducing the number of sanitary sewer overflows to this subwatershed are effective.

OLD SWAMP RIVER (SEGMENT MA74-03)

Location: Headwaters just west of Pleasant Street and north of Liberty Street, Rockland to inlet Whitmans Pond, Weymouth.

Segment Area: 4.4 miles.

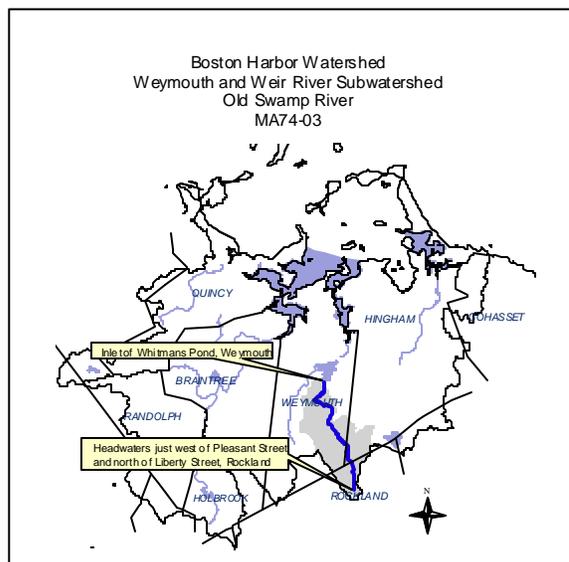
Classification: Class A.

Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	41%
Residential	34%
Open Land	7%
Industrial	7%

This segment is on the 1998 303(d) list of impaired waters needing confirmation for pathogens (MA DEP 1999a). In 2001, DFWELE stocked trout in the Old Swamp River for the purpose of recreational fishing (DFWELE 15 March 2001). DFWELE has proposed that this segment be reclassified in the SWQS as a cold water fishery (MassWildlife 2001).

In the Town of Weymouth, sanitary sewer overflows have occurred to Whitman's Pond, Mill River, Back River, Fore River, and Old Swamp River. Between 1992 and March 1999, 530 overflow events were recorded. The Town of Weymouth is currently working with DEP to reduce the frequency, duration, and volume of SSO events and has undertaken a capital improvement project and extensive infiltration and inflow removal work (Chretien, 2002).



WMA WATER WITHDRAWAL SUMMARY (APPENDIX G, TABLE G1):

Facility	PWS ID#	WMA Permit #	WMA Registration #	Source G = ground	Authorized Withdrawal (MGD)	1999 Average Withdrawal (MGD)
Weymouth DPW- Water Division	3336000		31933601	03G	4.51*	4.43

* System-wide withdrawal

SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated wastewater discharges to this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

AQUATIC LIFE

Biology

During July 1999 DEP DWM conducted a benthic macroinvertebrate survey at station SR01 on Old Swamp River just upstream from the USGS gage (01105600) in Weymouth. The SR01 benthic community was 65% comparable to the reference station NE09, resulting in a "slightly impacted" bioassessment (Appendix C).

Habitat/Flow

A habitat assessment was conducted by DEP DWM as part of the July 1999 benthic survey. Habitat quality for the benthic community was good while fish habitat quality was suboptimal. Further

investigations identified areas of massive riparian zone removal and erosion in the vicinity of a housing development located between Pleasant Street and Oak Street in Weymouth (Appendix C).

As part of the MWI99-02 grant project, flow data was collected at USGS gage (01105600) on Old Swamp River on ten occasions between May 1999 and June 2000. Discharges in 1999 ranged from 0.55 to 15 cfs and in 2000 ranged from 6.2 to 15 cfs (Socolow *et al.* 2000 and Socolow *et al.* 2001). The 34-year average streamflow at this gage is 9.17 cfs (Socolow *et al.* 2001). It should be noted that 1999 was a drought year. Average monthly flows in June were lower than have been recorded in decades (USGS 5 June 2001).

Chemistry – water

Also, as part of this MWI Grant the USGS collected dissolved oxygen, temperature, ammonia-nitrogen, and phosphorus samples from their gage (01105600) on Old Swamp River on ten occasions between May 1999 and June 2000 (Socolow *et al.* 2000 and Socolow *et al.* 2001).

DO

Dissolved oxygen concentrations ranged between 7.2 and 11.7 mg/L (n=10). No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

All temperature measurements were below the SWQS for a Class B waterbody.

pH

pH ranged from 6.4 to 7.3 SU with only one measurement below 6.5 SU (n=10).

Ammonia-Nitrogen (as N)

Ammonia-Nitrogen concentrations ranged from BDL to 0.071 mg/L (n=10). All measurements were below the acute and chronic water quality criteria for ammonia-nitrogen.

Total Phosphorus

Total phosphorus concentrations (n=10) ranged between 0.004 (estimated) and 0.080 mg/L with an average of 0.029 mg/L.

Due to insufficient data/information, the upper 2.4 miles are currently not assessed. Based on a slightly impaired benthic community (i.e., pollution tolerant species) the *Aquatic Life Use* is assessed as partial support downstream from Mt. Hope Cemetery (lower 2.0 miles).

PRIMARY CONTACT AND SECONDARY CONTACT RECREATION

As part of the MWI grant project, USGS also collected fecal coliform bacteria samples from Old Swamp River on eight occasions at their gage (Socolow *et al.* 2000 and Socolow *et al.* 2001). Bacteria concentrations ranged from 10 to 2,400 cfu/100mL (n=9) with counts above 400 cfu/100mL on one occasion. However, between 1992 and March 1999, 530 sanitary sewer overflow events occurred in the Town of Weymouth. The Town is working to reduce the number of SSO events and is conducting I/I work (Chretien 2002).

The *Primary* and *Secondary Contact Recreational* uses are assessed as partial support due to SSO events and historically high bacteria counts.

AESTHETICS

No obvious signs of aesthetic quality degradation were noted, however, upstream of the sampling reach DWM identified areas of massive riparian zone removal and erosion in the vicinity of a housing development located between Pleasant Street and Oak Street in Weymouth (Appendix C).

Based on the overall high aesthetic quality and land use information Old Swamp Brook is assessed as support for the *Aesthetics Use*. This brook is however on "Alert Status" due to the encroaching housing development (riparian disruption and resulting erosion).

Old Swamp River (MA74-03) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		NOT ASSESSED upper 2.4 miles PARTIAL SUPPORT lower 2.0 miles	Unknown		Unknown	SSO
Fish Consumption		NOT ASSESSED				
Primary Contact		PARTIAL SUPPORT	Pathogens		Municipal point source (SSO), urban runoff / storm sewers	
Secondary Contact		PARTIAL SUPPORT	Pathogens		Municipal point source (SSO), urban runoff / storm sewers	
Aesthetics*		SUPPORT*				

* "Alert Status" issues identified see *Aesthetics Use*

RECOMMENDATIONS OLD SWAMP RIVER (MA74-03)

- Through outreach awareness programs educate local residents on the importance of maintaining an adequate riparian zone. Investigate the need to implement BMPs to stabilize the streambanks and prevent further erosion.
- Conduct fecal coliform bacteria monitoring to determine the effects of SSO events on the Old Swamp River and to determine if sewer projects undertaken by the Town of Weymouth are effective in reducing bacteria inputs to the river

MILL RIVER (SEGMENT MA74-04)

Location: Headwaters, west of Route 18 and south of Randolph Street, Weymouth to inlet Whitmans Pond, Weymouth.

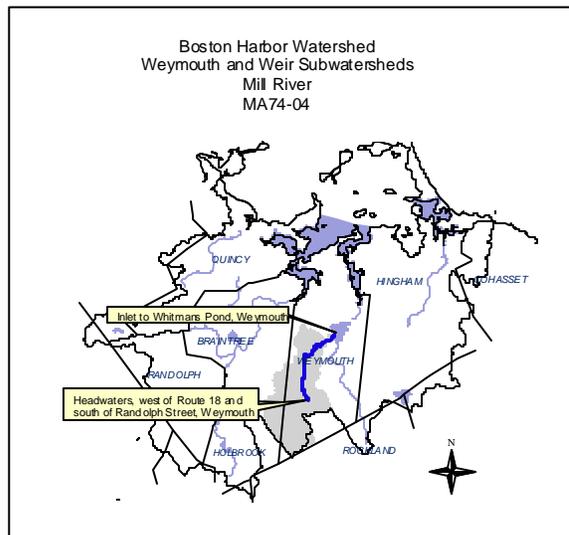
Segment Area: 3.5 miles.

Classification: Class A.

Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	44%
Residential	32%
Open Land	6%
Commercial	6%

This segment is on the 1998 303(d) list of impaired waters needing confirmation for nutrients, pathogens, and noxious aquatic plants (MA DEP 1999a). In the Town of Weymouth, sanitary sewer overflows have occurred to Whitman's Pond, Mill River, Back River, Fore River, and Old Swamp River. Between 1992 and March 1999, 530 overflow events were recorded. The Town of Weymouth is currently working with DEP to reduce the frequency, duration, and volume of SSO events and has undertaken a capital improvement project and extensive infiltration and inflow removal work (Chretien, 2002).



WMA WATER WITHDRAWAL SUMMARY (APPENDIX G, TABLE G1):

Facility	PWS ID#	WMA Permit #	WMA Registration #	Source G = ground	Authorized Withdrawal (MGD)	1999 Average Withdrawal (MGD)
Weymouth DPW- Water Division	3336000		31933601	01G 02G 04G 05G	4.51*	4.43

* System-wide withdrawal

SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated wastewater discharges to this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

Mill River (MA74-04) Use Summary Table

Aquatic Life	Fish Consumption	Primary Contact	Secondary Contact	Aesthetics
				
Not Assessed				

RECOMMENDATIONS MILL RIVER (MA74-04)

- Review stream flow data collected as part of the Weymouth DPW Water Division WMA permit to determine if water withdrawal practices are adversely impacting baseflows and fisheries on Mill River

WEYMOUTH BACK RIVER (SEGMENT MA74-05)

Location: Outlet Elias Pond to the old Bay Colony Railroad tracks, Weymouth.

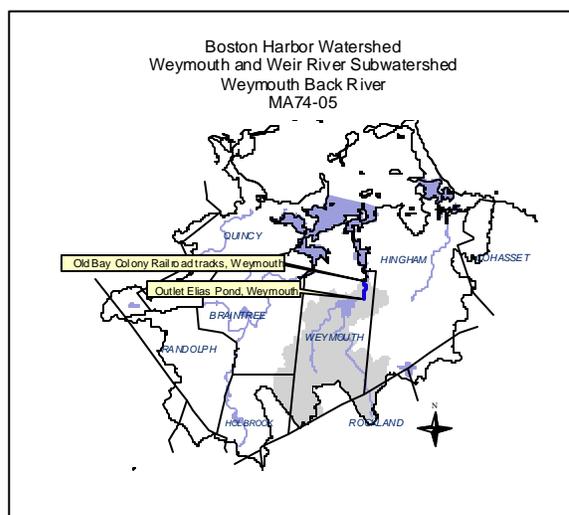
Segment Area: 0.8 miles.

Classification: Class B, Warm Water Fishery, ORW

Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	39%
Residential	36%
Open Land	7%

This segment is on the 1998 303(d) list of impaired waters needing confirmation for organic enrichment/low DO and pathogens (MA DEP 1999a). In the Town of Weymouth, sanitary sewer overflows have occurred to Whitman's Pond, Mill River, Back River, Fore River, and Old Swamp River. Between 1992 and March 1999, 530 overflow events were recorded. The Town of Weymouth is currently working with DEP to reduce the frequency, duration, and volume of SSO events and has undertaken a capital improvement project and extensive infiltration and inflow removal work (Chretien, 2002).



This segment is located within the 950-acre Weymouth Back River ACEC. Approximately 180 acres of which are tidal waters flushing into Hingham Bay and serve as shellfish areas and nursery grounds for finfish. Alewives and smelt return to the ACEC to spawn (MA DEM August 2000).

WMA WATER WITHDRAWAL AND SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated water withdrawals or wastewater discharges in this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

The Town of Weymouth received State Revolving Fund money to develop a Stormwater Management Plan to support the Town's compliance with Phase II requirements (Chretien 2002).

USE ASSESSMENT

AQUATIC LIFE

Habitat/Flow

As part of the MWI99-02 grant project, USGS collected flow measurements downstream from Broad Street, East Weymouth between May 1999 and June 2000. Discharges in 1999 ranged from 0.53 to 11 cfs and in 2000 ranged from 12 to 19 cfs (Socolow *et al.* 2000 and Socolow *et al.* 2001). It should be noted that 1999 was a drought year. Average monthly flows in June were lower than have been recorded in decades (USGS 5 June 2001).

Chemistry – water

As part of the MWI99-02 Grant, USGS sampled Weymouth Back River on ten occasions between May 1999 and June 2000 at their gage (01105612) downstream from Broad Street, East Weymouth. Parameters measured included dissolved oxygen, pH, temperature, ammonia-nitrogen, and total phosphorus (Socolow *et al.* 2000 and Socolow *et al.* 2001).

DO

USGS dissolved oxygen concentrations ranged between 6.7 and 11.8 mg/L (n=10). No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

All temperature readings were below the SWQS for a class SA waterbody.

pH

pH ranged from 6.3 to 7.6 SU (n=10) with only one less than 6.5 SU.

Ammonia-Nitrogen (as N)

Ammonia-Nitrogen concentrations ranged from BDL to 0.122 mg/L. All measurements were below the acute and chronic water quality criteria for ammonia-nitrogen.

Total Phosphorus (as P)

Total phosphorus levels ranged between 0.005 (estimated) and 0.047 mg/L.

Based on the available chemical data (i.e., DO, pH, and temperature,) the *Aquatic Life Use* is assessed as support for this segment of the Weymouth Back River.

PRIMARY CONTACT AND SECONDARY CONTACT RECREATION

As part of the MWI99-02 grant project, USGS collected fecal coliform bacteria samples at their gage (01105612) downstream from Broad Street, East Weymouth. Fecal coliform levels (n=10) ranged from 40 to 28,000 cfu/100mL (dry weather). Bacteria counts were above 400 cfu/100mL in seven samples, above 2,000 cfu/100mL in four samples, and above 4,000 cfu/100mL in three samples. Samples were collected during both wet and dry weather conditions.

In the Town of Weymouth, sanitary sewer overflows have occurred to Back River, Fore River, and Old Swamp River. Between 1992 and March 1999, 530 overflow events were recorded. The Town of Weymouth is currently working with DEP to reduce the frequency, duration, and volume of SSO events and has undertaken a capital improvement project and extensive infiltration and inflow removal work (Chretien, 2002).

Based on elevated bacteria counts during wet and dry weather and the frequency of SSO events, the *Primary* and *Secondary Contact Recreational uses* are assessed as non-support for this segment of the Weymouth Back River.

Weymouth Back River (MA74-05) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		SUPPORT				
Fish Consumption		NOT ASSESSED				
Primary Contact		NON SUPPORT	Pathogens		Municipal point source (SSO), urban runoff / storm sewers	
Secondary Contact		NON SUPPORT	Pathogens		Municipal point source (SSO), urban runoff / storm sewers	
Aesthetics		NOT ASSESSED				

RECOMMENDATIONS WEYMOUTH BACK RIVER (MA74-05)

- Work with local groups to maintain the fish ladder at the headwaters of the Weymouth Back River.
- Continue to monitor fecal coliform bacteria counts to determine if sewer projects undertaken by the Town of Weymouth are effective in reducing bacteria inputs to the river

WEYMOUTH BACK RIVER (SEGMENT MA74-13)

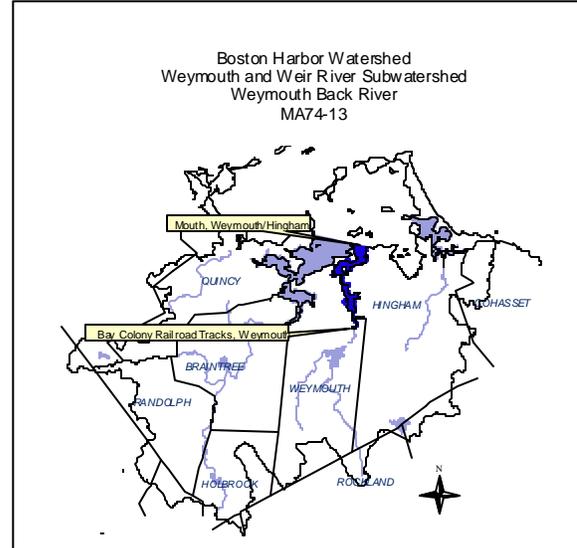
Location: Old Bay Colony Railroad tracks, Weymouth to mouth between Lower Neck to the west and Wompatuck Road, Hingham.

Segment Area: 1.9 square miles.

Classification: Class SA, Shellfishing (Open)

This segment is on the 1998 303(d) list of impaired waters for pathogens (MA DEP 1999a). In the Town of Weymouth, sanitary sewer overflows have occurred to Whitman's Pond, Mill River, Back River, Fore River, and Old Swamp River. Between 1992 and March 1999, 530 overflow events were recorded. The Town of Weymouth is currently working with DEP to reduce the frequency, duration, and volume of SSO events and has undertaken a capital improvement project and extensive infiltration and inflow removal work (Chretien, 2002).

This segment is located within the 950-acre Weymouth Back River ACEC. Approximately 180 acres of which are tidal waters flushing into Hingham Bay and serve as shellfish areas and nursery grounds for finfish. Alewives and smelt return to the ACEC to spawn (MA DEM August 2000).



WMA WATER WITHDRAWAL AND SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated water withdrawals or wastewater discharges in this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

AQUATIC LIFE

Chemistry – water

As part of their ongoing receiving water monitoring program, MWRA collected water quality samples (dissolved oxygen, % saturation, temperature, and turbidity) from one station (086-Weymouth Back River, downstream from the Rte 3A bridge) between 1996 and 2000 (Coughlin 2002).

DO

MWRA DO concentrations ranged between 5.1 and 13.05 mg/L (n=125). Percent saturations ranged between 69.6 and 121% with only three greater than 115% (n=125). No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

All temperature readings were below the SWQS for a class SA waterbody.

Turbidity

MWRA turbidity readings ranged from 0 to 10 NTU (n=101).

Based on the available chemical data (i.e., DO, temperature, and turbidity) the *Aquatic Life Use* is assessed as support for this segment of the Weymouth Back River.

SHELLFISHING

The DMF Shellfish Status Report of October 2000 indicates that shellfish growing areas GBH1.11, GBH1.13, GBH1.14 and GBH1.29 are conditionally restricted and GBH1.0, and GBH1.15 are prohibited (DFWELE 2000b).

Based on the conditionally restricted and prohibited status of the growing areas, the *Shellfishing Use* is assessed as partial support for 0.83 mi² and non-support for 1.07 mi² of this segment of the Weymouth Back River.

PRIMARY CONTACT AND SECONDARY CONTACT RECREATION

MWRA collected fecal coliform bacteria samples as part of their ongoing receiving water monitoring at one station (086- downstream from Rte 3A bridge) on this segment of the Weymouth Back River (Coughlin 2002). Samples were collected during both wet and dry weather conditions. Fecal coliform bacteria counts (n=113) ranged from <5 to 1630 cfu/100mL (wet weather). During the primary contact season (n=66) fecal coliform bacteria counts ranged from <5 to 635 cfu/100 mL with only one count greater than 400 cfu/100mL.

Based on the low fecal coliform bacteria counts, the *Primary and Secondary Contact Recreational uses* are assessed as support. This segment is, however, on “Alert Status” based on the possibility of elevated bacteria counts as a result of SSO events in this subwatershed.

AESTHETICS

MWRA collected Secchi disk transparencies at their water quality monitoring station on this segment of the Weymouth Back River between 1996 and 2000 (Coughlin 2002). Secchi disk depth ranged from 0.24 to 6 m with only 19 of the 161 readings not meeting the SWQS of 1.2 m.

Based on the good water clarity and land use information this segment of the Weymouth Back River is assessed as support for the *Aesthetics Use*

Weymouth Back River (MA74-13) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		SUPPORT				
Fish Consumption		NOT ASSESSED				
Shellfishing		PARTIAL SUPPORT 0.83 mi ² NON-SUPPORT 1.07 mi ² For watershed-wide shellfish growing area data see Appendix E.				
Primary Contact*		SUPPORT*				
Secondary Contact*		SUPPORT*				
Aesthetics		SUPPORT				

* “Alert Status” issues identified- See *Primary and Secondary Contact Recreational Use* assessments

RECOMMENDATIONS WEYMOUTH BACK RIVER (MA74-13)

- Continue to monitor fecal coliform bacteria counts to determine if sewer projects undertaken by the Town of Weymouth are effective in reducing bacteria inputs to the river.

CROOKED MEADOW RIVER (SEGMENT MA74-01)

Location: Outlet Cushing Pond, Hingham to confluence with Weir River, Hingham.

Segment Area: 0.9 miles.

Classification: Class B.

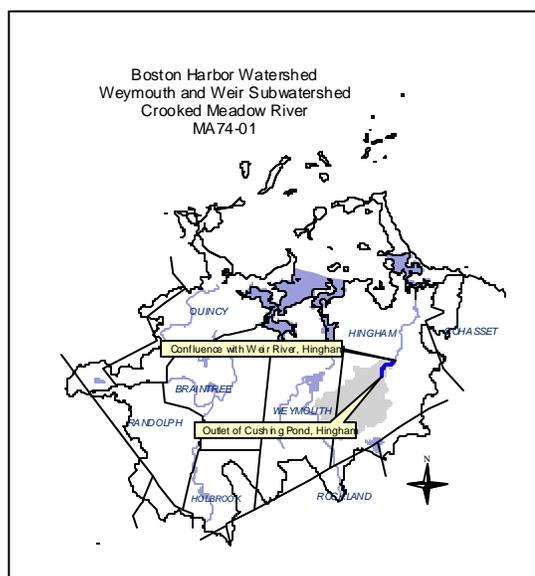
Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	45%
Residential	33%
Industrial	10%

Crooked Meadow River begins at the Cushing Pond dam. The Cushing Pond Dam (privately owned) is at the outlet of Cushing Pond and the headwaters of Crooked Meadow River (Ryan 2001). Additional information on dams in Massachusetts may be obtained from MA DEM at <http://www.state.ma.us/dem/> and a MassGIS datalayer showing the location of dams in Massachusetts will soon be available at:

<http://www.state.ma.us/dem/programs/gis/de%5FdI.htm>.

This segment is on the 1998 303(d) list of impaired waters needing confirmation for nutrients, organic enrichment/low DO, and noxious aquatic plants (MA DEP 1999a).



WMA WATER WITHDRAWAL SUMMARY:

There are no regulated water withdrawals from this segment.

SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated wastewater discharges to this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

Crooked Meadow River (MA74-01) Use Summary Table

Aquatic Life	Fish Consumption	Primary Contact	Secondary Contact	Aesthetics
				
Not Assessed				

WEIR RIVER (SEGMENT MA74-02)

Location: Headwaters at confluence of Crooked Meadow River and Fulling Mill Brook, Hingham to Rockland Street, Hingham.

Segment Area: 2.8 miles.

Classification: Class B.

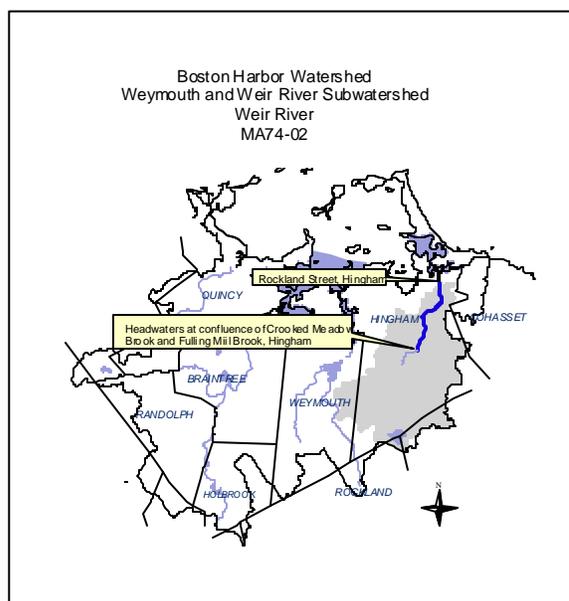
Land-use estimates for the subwatershed (map inset, gray shaded area):

Forest	50%
Residential	32%
Open Land	6%

This segment is on the 1998 303(d) list of impaired waters needing confirmation for nutrients and pathogens (MA DEP 1999a). This segment flows through an impounded reach formed by Foundry Pond Dam, which is maintained by the Town of Hingham.

The use assessment for Accord and Foundry ponds are provided in the Lakes section of this assessment report (Table 12). This segment is located within the Weir River ACEC (MA DEM August 2000). Although the data did not meet DEP's water quality assurance guidance, the Weir River Watershed Association

collected staff gage readings at four stations along this segment between October 1999 and October 2000: WR1, (Foundry Pond Dam), WR2 (Route 3A), WR4 (Union St.), and WR5 (Free St.). Additionally they collected measurements at one tributary station WR3 (Triphammer Pond) (Woods, 2001).



WMA WATER WITHDRAWAL SUMMARY (APPENDIX G, TABLE G1):

Facility	PWS ID#	WMA Permit #	WMA Registration #	Source G = ground S=surface	Authorized Withdrawal (MGD)	1999 Average Withdrawal (MGD)
Norwell Water Department	4219000	9P41921901	41921901	02G 03G 05G 11G	0.4 (permitted) 0.32 (registered)	Not available
Mass American Water Company - Hingham	3131000		31913101	1-6G 8G 2S 3S	3.51*	3.44

* System-wide withdrawal

Both the Norwell Water Department and Mass American Water Company – Hingham withdraw water from the Weir River subwatershed.

SURFACE NPDES DISCHARGE SUMMARY:

Merriman Inc., (MA0001821) was permitted to discharge to this segment. The Merriman site is currently listed as a MA DEP 21e hazardous waste site.

All communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

AQUATIC LIFE

Biology

During July 1999, DEP DWM conducted a benthic macroinvertebrate survey upstream from Route 228, Hingham at station WR01. The benthos assemblage was 82% comparable to the reference station NE09 resulting in a “non- to slightly-impacted” community (Appendix C). The benthic macroinvertebrate community had representatives of numerous feeding groups indicating balanced trophic structure and multiple food sources. Additionally, a fairly pollution intolerant species was dominant.

Habitat/Flow

Considerable instream sediment deposition compromised fish and macroinvertebrate habitat, but overall substrate embeddedness was low (Appendix C).

As part of the MWI99-02 grant project, USGS collected discharge measurements at the Route 3A bridge, Hingham between June 1999 and June 2000. Discharges in 1999 ranged from 1.5 to 16 cfs and in 2000 ranged from 18 to 36 cfs (Socolow *et al.* 2000 and Socolow *et al.* 2001). It should be noted that 1999 was a drought year. Average monthly flows in June were lower than have been recorded in decades (USGS 5 June 2001).

The Norwell Water Department and Mass American Water Company withdraw over 4 MGD of water from this subwatershed for municipal supply.

Chemistry – water

Also as part of the MWI grant project, USGS sampled the Weir River at the Route 3A bridge, Hingham between June 1999 and June 2000. Parameters measured included dissolved oxygen, temperature, ammonia-nitrogen, and phosphorus.

DO

Dissolved oxygen concentrations ranged between 6.2 and 11.3 mg/L (n=10) No samples were collected pre-dawn and, therefore, do not represent a worst-case scenario.

Temperature

All temperature readings were below the SWQS for a class SA waterbody (n=10).

pH

pH ranged from 6.2 to 7.1 SU and was only below 6.5 SU on one occasion (n=10).

Ammonia-Nitrogen (as N)

Ammonia-Nitrogen concentrations ranged from BDL to 0.102 mg/L (n=10). All measurements were below the acute and chronic water quality criteria for ammonia-nitrogen.

Total Phosphorus (as P)

Total phosphorus levels ranged between 0.004 (estimated) and 0.044 mg/L (n=10).

Based on the high comparability to the regional reference station, the dominance of pollution intolerant species, and water chemistry data the *Aquatic Life Use* is assessed as support for this segment of the Weir River. The Weir River is however, on “Alert Status” due to the possible negative impacts from the sediment inputs to the river and reduced baseflows.

PRIMARY CONTACT AND SECONDARY CONTACT RE CREATION

As part of the MWI99-02 grant project, USGS collected fecal coliform bacteria samples at the Route 3A bridge in Hingham (Socolow *et al.* 2000 and Socolow *et al.* 2001). Fecal coliform bacteria counts ranged from 25 to 570 cfu/100mL (n=10). Levels were above 400 cfu/100mL in two samples, both during the primary contact season.

Based on the intermittent elevated bacteria counts the *Primary Contact Recreational Use* is assessed as partial support. No fecal coliform counts were above 2,000 cfu/100mL, therefore, the *Secondary Contact Recreational Use* is assessed as support.

AESTHETICS

No obvious signs of aesthetic quality degradation were noted (i.e., no odors, trash/debris, or oily sheens). The water was clear with no observable turbidity (Appendix C).

Based on the overall high aesthetic quality and land use information this segment of the Weir River is assessed as support for the *Aesthetics Use*

Weir River (MA74-02) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life*		SUPPORT*				
Fish Consumption		NOT ASSESSED				
Primary Contact		PARTIAL SUPPORT	Pathogens		Unknown	
Secondary Contact		SUPPORT				
Aesthetics		SUPPORT				

* "Alert Status" issues identified-- See the *Aquatic Life Use* assessment

RECOMMENDATIONS WEIR RIVER (MA74-02)

- As part of their new WMA permit, Mass American is required to maintain a stream gage on the Weir River. Review streamflow data to determine if water withdrawals are impacting habitat for the aquatic life by reducing baseflow in this segment of the Weir River.

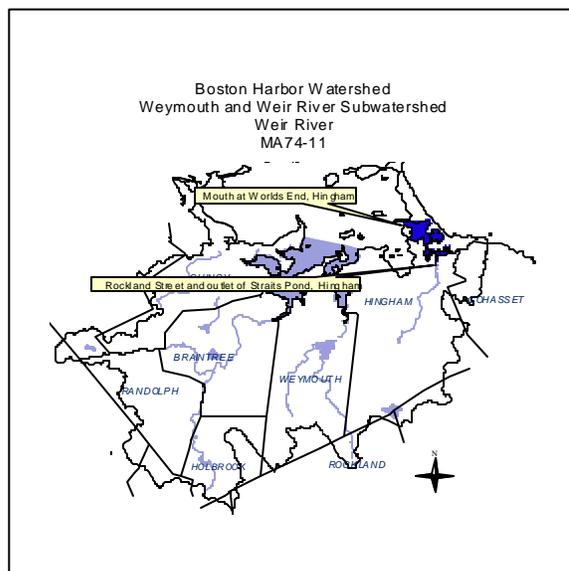
WEIR RIVER (SEGMENT MA74-11)

Location: Rockland Street and outlet Straits Pond, Hingham to mouth at Worlds End, Hingham/Hull.

Segment Area: 1.0 mile.

Classification: Class SA, Shellfishing (Open)

This segment is on the 1998 303(d) list of impaired waters for pathogens (MA DEP 1999a). The Weir River herring fishery was established in 1805. It is currently much reduced and best quantified as a remnant population. The largest potential spawning area, Accord Pond, is used as a water supply by the town of Hingham. The Weir River herring run is managed under the Town of Hingham regulations with approval by the Commonwealth through the Division of Marine Fisheries. This system has historically supported a strong Rainbow smelt population and an active fishery in Hingham Bay. The run was so large that it has served as a source of smelt eggs for propagation programs by both the Division of Marine Fisheries and the Division of Fisheries and Game in both inland and coastal waters and for cooperative programs with other states (Brady 2001).



WMA WATER WITHDRAWAL AND SURFACE NPDES DISCHARGE SUMMARY:

There are no regulated water withdrawals or wastewater discharges in this segment. However, all communities in the Boston Harbor Watershed (excluding Boston) are required to obtain Phase II NPDES storm water general permit coverage for their municipal drainage systems. EPA is currently writing this general permit (with input from DEP) and a preliminary draft is currently available for internal review. The draft for public comment should be available by the end of June 2002. The final version of the Phase II storm water general permit for regulated small municipal separate storm sewer systems (MS4) will be issued by December 9, 2002. The towns must submit applications for coverage under the permit to EPA by March 10, 2003 (Scarlet 2002).

USE ASSESSMENT

SHELLFISHING

The DMF Shellfish Status Report of October 2000 indicates that shellfish growing areas GBH1.3, GBH1.4, GBH1.5 and GBH1.7 are conditionally restricted and GBH1.0 and GBH1.6 are prohibited (DFWELE 2000).

Based on this information the *Shellfishing Use* is assessed as partial support for 0.52 mi² and non-support for 0.48 mi² of this segment of the Weir River.

Weir River (MA74-11) Use Summary Table

Designated Uses		Status	Causes		Sources	
			Known	Suspected	Known	Suspected
Aquatic Life		NOT ASSESSED				
Fish Consumption		NOT ASSESSED				
Shellfishing		PARTIAL SUPPORT 0.52 mi ² NON-SUPPORT 0.48 mi ² For watershed-wide shellfish growing area data see Appendix E.				
Primary Contact		NOT ASSESSED				
Secondary Contact		NOT ASSESSED				
Aesthetics		NOT ASSESSED				

WEYMOUTH AND WEIR SUBWATERSHED - LAKE ASSESSMENTS

A total of 27 lakes, ponds or impoundments (the term "lakes" will hereafter be used to include all) have been identified and assigned PALIS code numbers in the Weymouth and Weir Subwatershed (Ackerman 1989 and MA DEP 2001b). These lakes represent a total surface area for the Weymouth and Weir Subwatershed lakes of 1,204.3 acres. They range in size from 0.7 to 329 acres; only five lakes are greater than 50 acres and, of those, three are greater than 200 acres.

No data/information were available to assess the *Aquatic Life*, *Recreational*, and *Aesthetics* uses for the lakes in the Weymouth and Weir Subwatershed. They are all currently not assessed.

FISH CONSUMPTION

The MDPH fish consumption advisory list contains the status of each water body for which an advisory has been issued. If a water body is not on the list it may either be because an advisory was not warranted or the water body has not been sampled. MDPH's most current Fish Consumption Advisory list is available online at <http://www.state.ma.us/dph/beha/fishlist.htm>.

The MDPH Fish Consumption List includes two ponds in the Weymouth and Weir Subwatershed because of elevated levels of pesticides in fish tissue. The advisories recommend the following (MDPH 2001a):

Icehouse Pond, Randolph, Holbrook, Braintree

1. Children under 12, pregnant women and nursing mothers should not eat any fish from Icehouse Pond.
2. The general public should not consume any of the affected fish species (Brown Bullhead, Carp, American Eel) from Icehouse Pond.
3. The general public should limit consumption of non-affected fish from Icehouse Pond to two meals per month.

Sylvan Lake, Randolph, Holbrook, Braintree

1. Children under 12, pregnant women and nursing mothers should not eat any fish from Sylvan Lake.
2. The general public should not consume any of the affected fish species (Brown Bullhead, Carp, American Eel) from Sylvan Lake.
3. The general public should limit consumption of non-affected fish from Sylvan Lake to two meals per month.

These two ponds, Icehouse Pond in Holbrook/Braintree and Sylvan Lake in Randolph/Holbrook/Braintree, are impaired (non-support due to pesticides) for the *Fish Consumption Use* (Table 12). No other lakes in the Weymouth and Weir Subwatershed currently have individual fish consumption advisories, so they are not assessed.

In July 2001, MDPH issued new statewide consumer advisories on fish consumption and mercury contamination. The MDPH "...is advising pregnant women, women of childbearing age who may become pregnant, nursing mothers and children under 12 years of age to refrain from eating the following marine fish; shark, swordfish, king mackerel, tuna steak and tilefish. In addition, MDPH is expanding its previously issued statewide fish consumption advisory which cautioned pregnant women to avoid eating fish from all freshwater bodies due to concerns about mercury contamination, to now include women of childbearing age who may become pregnant, nursing mothers and children under 12 years of age (MDPH 2001b)."

Additionally, MDPH "...is recommending that pregnant women, women of childbearing age who may become pregnant, nursing mothers and children under 12 years of age limit their consumption of fish not covered by existing advisories to no more than 12 ounces (or about 2 meals) of cooked or uncooked fish per week. This recommendation includes canned tuna, the consumption of which should be limited to 2 cans per week. Very small children, including toddlers, should eat less. Consumers may wish to choose to eat light tuna rather than white or chunk white tuna, the latter of which may have higher levels of mercury (MDPH 2001b)."

MDPH's statewide advisory does not include fish stocked by the state Division of Fisheries and Wildlife or farm-raised fish sold commercially. The statewide advisory encompasses all freshwaters in Massachusetts and, therefore, the *Fish Consumption Use* for lakes in the Weymouth and Weir Subwatershed cannot be assessed as support or partial support.

Table 12 presents the use assessments for the lakes in the Weymouth and Weir Subwatershed.

RECOMMENDATIONS – LAKES

- Coordinate with DEM and/or other groups conducting lake surveys to generate quality assured lake data. Conduct more intensive lake surveys to better determine the lake trophic and use support status and identify causes and sources of impairment. As sources are identified within lake watersheds, they should be eliminated or, at least, minimized through the application of appropriate point or non-point source control techniques.
- Review data from “Beaches Bill” required water quality testing (bacteria sampling from all formal bathing beaches) to assess the status of the recreational uses; e.g., Sunset Lake (Braintree), Whitmans Pond (Weymouth).
- Review DEP Drinking Water Program Source Water Assessment Program evaluations when they are completed to develop and implement recommendations for the protection of Class A waterbodies in the Weymouth and Weir Subwatershed including Great Pond, Upper Reservoir, Whitmans Pond, Richardi Reservoir, Weymouth Great Pond (Great Pond), Accord Pond, and Accord Brook.

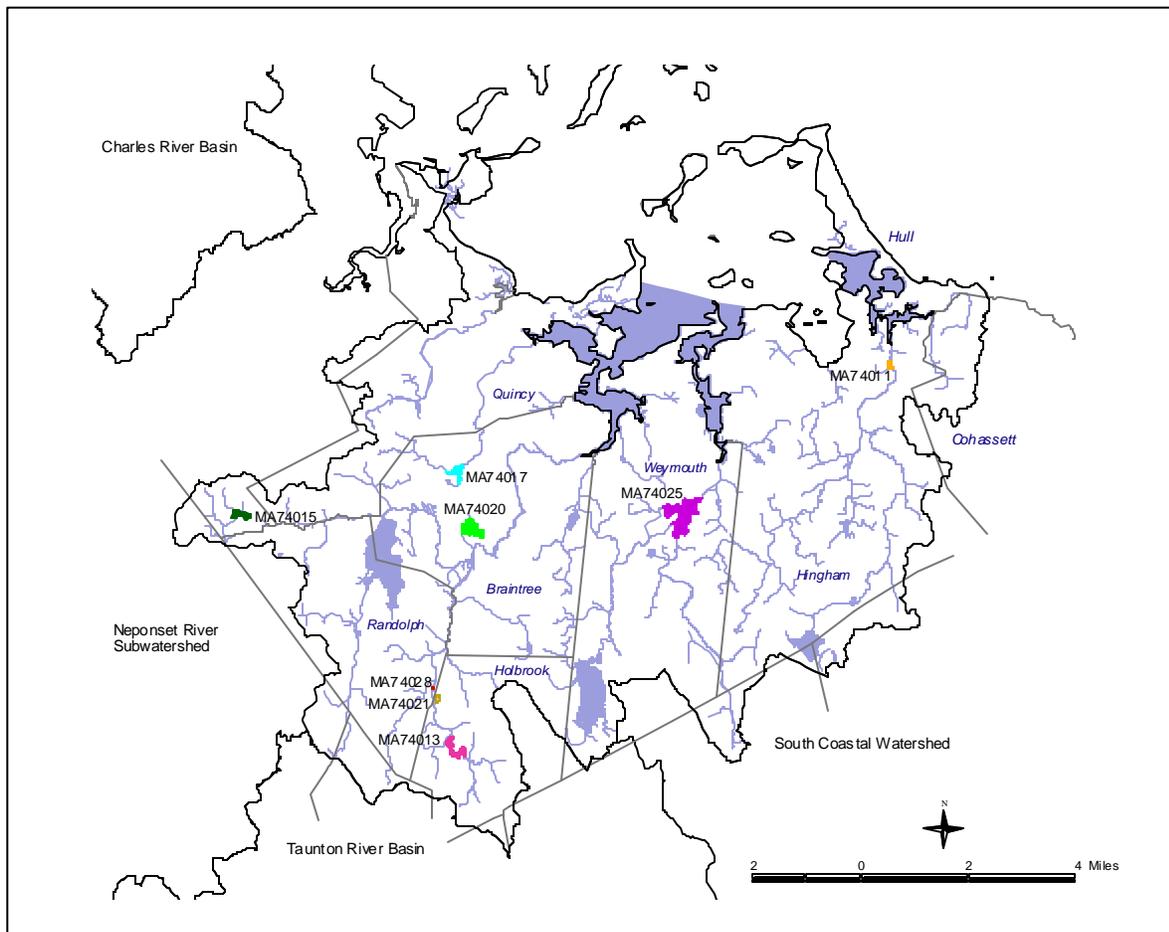


Figure 19. Lake Segments in the Weymouth and Weir Subwatershed

Table 12. Weymouth and Weir River Basins Lakes Assessments (**Bold** indicates 1998 303(d) listed waters.)

LAKE	Waterbody Identification Code WBID	SIZE Acres	 Aquatic Life (Causes)	 Fish Consumption (Causes)	 Primary Contact (Causes)	 Secondary Contact (Causes)	 Aesthetics (Causes)
Foundry Pond, Hingham	MA74011	8.0	Not Assessed	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Lake Holbrook, Holbrook	MA74013	36.6	Not Assessed	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Hoosicwhisick Pond, Milton	MA74015	23.0	Not Assessed	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Old Quincy Reservoir, Braintree	MA74017	36.0	Not Assessed	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Sunset Lake, Braintree	MA74020	57.0	Not Assessed	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Sylvan Lake, Holbrook	MA74021	2.0	Not Assessed	2.00 acres Non-support (Pesticides)	Not Assessed	Not Assessed	Not Assessed
Whitmans Pond, Weymouth	MA74025	210.0	Not Assessed	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Ice House Pond, Randolph	MA74028	0.70	Not Assessed	0.70 acres NON-SUPPORT (Pesticides)	Not Assessed	Not Assessed	Not Assessed