PARKER RIVER WATERSHED
WATER QUALITY ASSESSMENT REPORT

Sandy Point, Plum Island, Ipswich, MA

Parker River below Larkin Rd., Byfield, MA

Ox Pasture Brook, below Feno Dr., Rowley

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
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PARKER RIVER WATERSHED

WATER QUALITY ASSESSMENT REPORT

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Department of Environmental Protection
Division of Watershed Management

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Massachusetts Department of Environmental Protection
Division of Watershed Management
Worcester, Massachusetts

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- Department of Fisheries, Wildlife, and Environmental Law Enforcement (DFWELE)
  - Division of Fisheries and Wildlife
  - Riverways Program
  - Division of Marine Fisheries
- Massachusetts Department of Environmental Management (MA DEM)

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  - Water Resources Division

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- Parker River Clean Water Association (PRCWA)
- Little River Stream Team
- Parker River Headwaters Stream Team
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Cover photo credits: Parker River Clean Water Association

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LIST OF ACRONYMS

7Q10	seven day, ten year low flow
ACEC	Area of Critical Environmental Concern
ACO	Administrative Consent Order
BPJ	best professional judgment
BRP	Bureau of Resource Protection
CMR	Code of Massachusetts Regulations
CNOEC	chronic no observed effect concentration
CWA	Clean Water Act
DDT	Dichlordiphenyltrichloroethane
DFWELE	Department of Fisheries, Wildlife, and Environmental Law Enforcement
DMF	Division of Marine Fisheries
DMR	Discharge Monitoring Report
DO	dissolved oxygen
DWM	Division of Watershed Management
EOEA	Executive Office of Environmental Affairs
EPA	United States Environmental Protection Agency
GIS	geographic information system
IBT	Interbasin Transfer Act
LC_{50}	lethal concentration to 50% of the test organisms
LTER	Long-Term Ecological Research Site
MA DEM	Massachusetts Department of Environmental Management
MA DEP	Massachusetts Department of Environmental Protection
MassGIS	Massachusetts Geographic Information System
MBL	Marine Biological Laboratory
MDPH	Massachusetts Department of Public Health
MPN	most probable number
MRS	mercury research study
MVPC	Merrimack Valley Planning Commission
NAWQA	National Water-Quality Assessment
NECB	New England Coastal Basin
NH_3-N	ammonia-nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NSF	National Science Foundation
ORW	Outstanding Resource Waters
PALIS	Pond and Lake Information System
PCB	polychlorinated biphenols
PIE	Plum Island Ecosystems
PRCWA	Parker River Clean Water Association
PWS	public water supply
QAPP	quality assurance project plan
QA/QC	quality assurance/ quality control
RBP	rapid bioassessment protocol
SARIS	Stream and River Inventory System
SDWA	Safe Drinking Water Act
SOP	standard operating procedure
SWAP	Source Water Assessment Program
SWQS	Surface Water Quality Standards
TIE/TRE	toxicity identification and toxic reduction evaluation
TMDL	total maximum daily loads
TOC	total organic carbon
TOXTD	MA DEP DWM Toxicity Testing Database
TRC	total residual chlorine
USGS	United States Geological Survey
WBID	Waterbody Identification Code
WBS	Waterbody System Database
WMA	Water Management Act
WWTP	waste water treatment plant

LIST OF UNITS

cfs	cubic feet per second
cfu	colony forming unit
gpd	gallons per day
MGD	million gallons per day
µg/kg	microgram per kilogram
mg/L	milligram per liter
mL/L	milliliter per liter
ng	nanogram
NTU	nephelometric turbidity units
ppb	parts per billion
ppm	parts per million
SU	standard units
TEQ/kg	toxic equivalents per kilogram

EXECUTIVE SUMMARY
PARKER RIVER WATERSHED
WATER QUALITY ASSESSMENT REPORT

The Massachusetts Surface Water Quality Standards (SWQS) designate the most sensitive uses for which surface waters in the Commonwealth shall be protected. The assessment of current water quality conditions is a key step in the successful implementation of the Watershed Approach. This critical phase provides an assessment of whether or not the designated uses are being met (support, partial support, non-support) or are not assessed, as well as basic information needed to focus resource protection and remediation activities later in the watershed management planning process. All or portions of the Eagle Hill River, Paine Creek, Rowley River and Parker River, as well as eight ponds in the watershed are on the 1998 303(d) list of impaired waters. Total maximum daily load (TMDL) reports have been or are being developed for the eight ponds.

This assessment report presents a summary of current water quality data/information used to assess the status of the designated uses as defined in the Massachusetts surface water quality standards. Each use, within a given segment, is individually assessed as 1*) **support***, 2) ***partial support***, or 3) ***non-support***. When too little current data/information exists or no reliable data are available the use is ***not assessed***. However, if there is some indication of water quality impairment, which is not "naturally occurring", the use is identified with an "Alert Status". It is important to note that not all waters are assessed. Many small and/or unnamed rivers and ponds are currently ***unassessed***; the status of their designated uses has never been reported to EPA in the Commonwealth's 305(b) report nor is information on these waters maintained in the Waterbody System (WBS) database.

The designated use status is presented for 11 named rivers, streams, brooks or creeks (the term "rivers" will hereafter be used to include all), Plum Island Sound, and 14 ponds/impoundments in the Parker River Watershed. Detailed information for six individual freshwater river segments totaling 26.6 river miles, nine individual estuary segments totaling 7.274 square miles, and 14 ponds totaling 302.6 acres is presented for the following designated uses: *Aquatic Life, Fish Consumption, Drinking Water, Shellfishing* (where applicable)*, Primary* and *Secondary Contact Recreation* and *Aesthetics*.

RIVERS, ESTUARIES, COASTAL EMBAYMENTS

The Parker River Watershed is a coastal river drainage area. It is contains freshwater streams that flow into estuarine tributaries to the Plum Island Sound. Major tributaries to the Plum Island Sound included in this report are: the Plum Island, Parker, Rowley and Eagle Hill rivers. The Parker River is the largest tributary to the Sound. Tributaries to the Parker River subwatershed included in this report are: Jackman Brook, Mill River, Ox Pasture Brook and Little River. Additionally, before flowing into Plum Island Sound, the Rowley and Eagle Hill rivers receive flow from their respective tributaries (Bull Brook, Egypt River and Paine Creek).

A summary of the *Aquatic Life, Fish Consumption, Drinking Water, Shellfishing, Primary* and *Secondary Contact Recreation,* and *Aesthetics* uses in these waters follows. When sufficient data/current information were not available, the uses were not assessed.

AQUATIC LIFE USE – Rivers, Estuaries, Coastal Embayments

The *Aquatic Life Use* is supported when suitable habitat (including water quality) is available for sustaining a native, naturally diverse, community of aquatic flora and fauna. Impairment of the *Aquatic Life Use* (non-support or partial support) may result from anthropogenic stressors that include point and/or nonpoint source(s) of pollution and hydrologic modification.

The status of the *Aquatic Life Use* in the Parker River Watershed is as follows:

Aquatic Life Use Summary – Rivers (miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
15.3	**8**	**0**	**3.3**	**26.6**

Aquatic Life Use Summary – Estuaries/ Coastal Embayments (square miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
6.6	**0**	**0**	**0.674**	**7.274**

As illustrated in Figure 1, 58% of the river miles assessed in this report support *Aquatic Life Use w*hile a 1.0-mile reach of the Parker River and the entire freshwater segment of the Mill River (7.0 river miles) are impaired for *Aquatic Life Use*. Impairment to this one-mile reach of the Parker River (between the Georgetown Water Department wells and Rock Pond) is caused by little or no flow during summer months. Although sources of impairment are unknown, water withdrawals are suspected. The cause of impairment to the Mill River is unknown, however, low flow and excessive nutrients (from the upstream eutrophic impoundments) are suspected to impair this segment.

Ninety-one percent of the estuarine waters in the Parker River Watershed support the *Aquatic Life Use* (Figure 1). The remaining 0.674 mi^2 are not assessed.

Other issues of concern to the *Aquatic Life Use* within this watershed include whole effluent toxicity of Governor Dummer Academy's discharge to a small, unnamed tributary to the Mill River and Ipswich Water Department's increase in water withdrawals from the Egypt River subwatershed.

PARKER RIVER WATERSHED

Aquatic Life Use Assessment Summary - Rivers, Estuaries, Coastal Embayments and Ponds

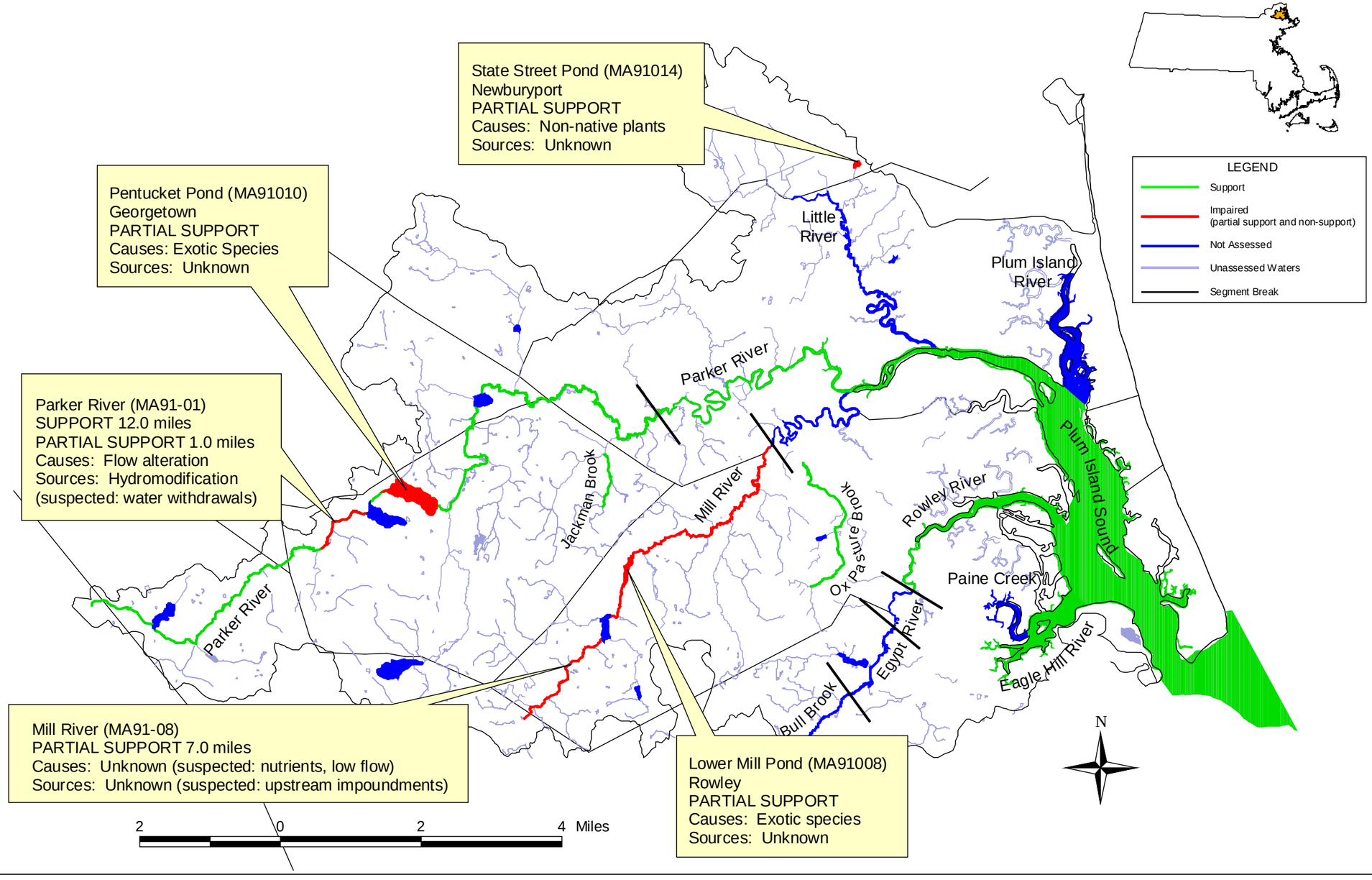

Figure 1. *Aquatic Life Use* Assessment Summary - Rivers, Estuaries, Coastal Embayments and Ponds

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FISH CONSUMPTION USE – Rivers, Estuaries, Coastal Embayments

The *Fish Consumption Use* is supported when there are no pollutants present that result in unacceptable concentrations in edible portions of marketable fish or for the recreational use of fish, other aquatic life or wildlife for human consumption. The assessment of this use is made using the most recent list of Fish Consumption Advisories issued by the Massachusetts Executive Office of Health and Human Services, Department of Public Health (MDPH), Bureau of Environmental Health Assessment (MDPH 2001a). The MDPH list identifies waterbodies where elevated levels of a specified contaminant in edible portions of freshwater species poses a health risk for human consumption; hence the *Fish Consumption Use* is assessed as non-support in these waters.

NOTE: In July 2001, MDPH issued new 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.

Because of the statewide advisory, however, no waters can be assessed as support or partial support for the *Fish Consumption Use*. The status of the *Fish Consumption Use* in the Parker River Watershed is as follows:

Fish Consumption Use Summary – Rivers (miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
0	**0**	**1.1**	**25.5**	**26.6**

Fish Consumption Use Summary – Estuaries/Coastal Embayments (square miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
0	**0**	**0**	**7.274**	**7.274**

MDPH issued advisories for two impoundments of the Parker River (Rock and Pentucket ponds) because of elevated mercury concentrations in fishes (MDPH 2001a). The *Fish Consumption Use* is therefore assessed as non-support for a total of 1.1 miles of the Parker River through these impoundments (Figure 2). No other river miles were assessed for the *Fish Consumption Use* in the Parker River Watershed. Additionally, no estuarine segments were assessed for this use.

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PARKER RIVER WATERSHED

Fish Consumption Use Assessment Summary - Rivers, Estuaries, Coastal Embayments and Ponds

In July 2001, MDPH issued new consumer advisories for fish consumption because of 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)."

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Because of the statewide advisory no waters can be assessed as support or partial support for the *Fish Consumption Use.*

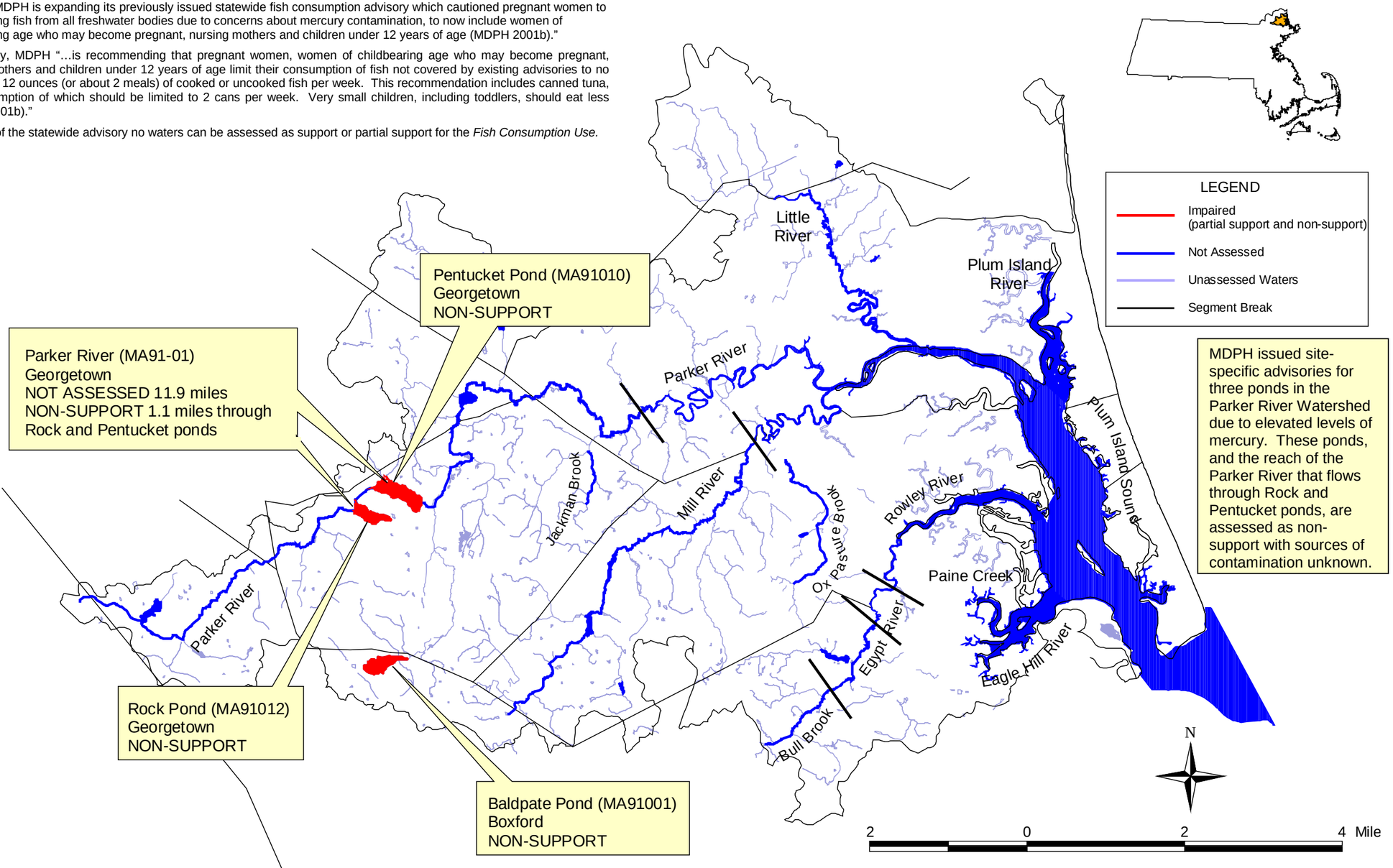

Figure 2. *Fish Consumption Use* Assessment Summary - Rivers, Estuaries, Coastal Embayments and Ponds

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DRINKING WATER USE – Rivers, Estuaries, Coastal Embayments

The term *Drinking Water Use* has been used to indicate sources of public drinking water. While this use is not assessed in this report, information on drinking water source protection and finish water quality is available at http://www.state.ma.us/dep/brp/dws/dwshome.htm and from the Parker River Watershed's public water suppliers. These waters are subject to stringent regulation in accordance with the Massachusetts Drinking Water Regulations. MA DEP's Drinking Water Program (DWP) has primacy for implementing the provisions of the federal Safe Drinking Water Act. DWP has also initiated work on its Source Water Assessment Program (SWAP), which requires that the Commonwealth delineate protection areas for all public ground and surface water sources; inventory land uses in these areas that may present potential threats to drinking water quality; determine the susceptibility of water supplies to contamination from these sources; and publicize the results. Except for suppliers with surface water sources for which a waiver from filtration has been granted (these systems also monitor surface water quality), public water suppliers monitor their finished water (tap water) for major categories of contaminants (e.g., bacteria, volatile and synthetic organic compounds, inorganic compounds, etc.) and report their data to DWP.

SHELLFISHING USE – Rivers, Estuaries, Coastal Embayments

The *Shellfishing Use* is supported when shellfish harvested from approved Open Shellfish Areas (Class SA) are suitable for consumption without depuration and shellfish harvested from approved Restricted Shellfish Areas (Class SB) are suitable for consumption with depuration. The Division of Marine Fisheries (DMF) classifies shellfishing areas in the Parker River/ Plum Island Sound Coastal Drainage Area. The *Shellfishing Use* for this report was assessed using the DMF shellfishing closure list dated October 2000. The status of the 11,138 acres of shellfishing beds in the entire Parker River/ Plum Island Sound Coastal Drainage Area (including areas that extend into open-water and areas not specifically included in this assessment report) is as follows:

DMF Classification Type	MA DEP Use Support Status	DMF Area (acres)	% of total DMF acreage
Approved	Support	7106.453	64%
Conditionally Approved	Partial support	3494.853	31%
Prohibited	Non-support	536.662	5%

Individual DMF management area classifications are provided in Appendix E of this report. It should be noted that DMF's areas are defined in acres of shellfishing habitat.

PRIMARY AND SECONDARY CONTACT RECREATION USE – Rivers, Estuaries, Coastal Embayments

The *Primary Contact Recreation Use* is supported when conditions are suitable (fecal coliform bacteria densities, pH, temperature, turbidity and aesthetics meet the Surface Water Quality Standards) for any recreational or other water related activity during which there is prolonged and intimate contact with the water with a significant risk of ingestion. Activities include, but are not limited to, wading, swimming, diving, surfing and water skiing. The *Secondary Contact Recreation Use* is supported when conditions are suitable for any recreational or other water use during which contact with the water is either incidental or accidental. These include, but are not limited to, fishing, boating and limited contact incident to shoreline activities.

The status of the *Primary* and *Secondary Contact Recreation Uses* in the Parker River Watershed is as follows:

Primary* and *Secondary Contact Recreation Uses Summary – Rivers (miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
0	**0**	**0**	**26.6**	**26.6**

Primary* and *Secondary Contact Recreation Uses Summary – Estuaries/Coastal Embayments (square miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
6.88	**0**	**0**	**0.394**	**7.274**

No river miles within the Parker River Watershed are currently assessed for the recreational uses (Figure 3). However, 95% of the assessed estuaries in the Parker River Watershed support the *Primary* and *Secondary Contact Recreation Uses*. The remaining 5% of the estuarine area is currently not assessed (Egypt River, Rowley River and Paine Creek).

AESTHETICS USE – Rivers, Estuaries, Coastal Embayments

The *Aesthetics Use* is supported when surface waters are free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

The status of the *Aesthetics Use* in the Parker River Watershed is as follows:

Aesthetics Use Summary – Rivers (miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
23.3	**0**	**0**	**3.3**	**26.6**

Aesthetics Use Summary – Estuaries/Coastal Embayments (square miles)				
SUPPORT	**PARTIAL SUPPORT**	**NON-SUPPORT**	**NOT ASSESSED**	**Total**
4.7	**0**	**0**	**2.574**	**7.274**

Where assessed, the waters of the Parker River Watershed support the *Aesthetics Use*. The areas include the freshwater segments of the Parker and Mill rivers, the entire length of both Jackman and Ox Pasture brooks, and Plum Island Sound. The remaining 3.3 river miles and 2.574 mi^2 of estuarine habitat were not assessed.

PARKER RIVER WATERSHED

Primary and *Secondary Contact Recreation Uses* Assessment Summary
Rivers, Estuaries, and Coastal Embayments

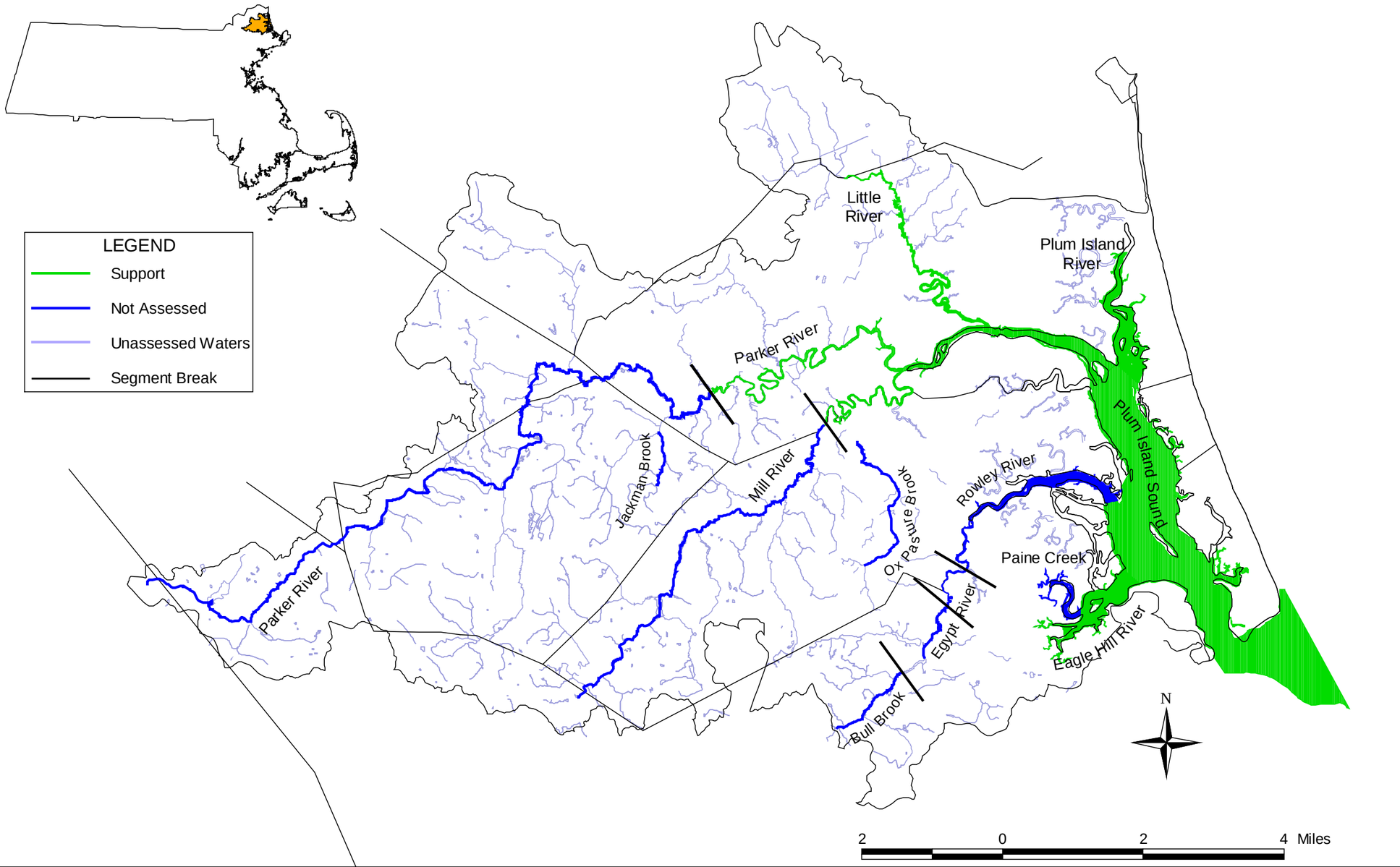

Figure 3. *Primary* and *Secondary Contact Recreation Uses* Assessment Summary - Rivers, Estuaries, and Coastal Embayments

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RECOMMENDATIONS – RIVERS, ESTUARIES, COASTAL EMBAYMENTS

In addition to specific issues for the individual segments, the evaluation of current water quality conditions in the Parker River Watershed has revealed the need for the following:

- Conduct a preliminary analysis to prioritize the need for collecting quality assured data to fully assess all designated uses of segments in the Parker River Watershed. Review the USGS Statewide Water-Quality Network Report for examples of the monitoring necessary to completely assess all uses (USGS 2001).

- Complete the Water Management Act (WMA) five-year reviews for permits in the Parker River Watershed and continue to evaluate compliance with WMA registration and/or permit limits. Work with water suppliers to optimize water withdrawal and reservoir management practices to maintain minimum streamflow.

- Ipswich Water Department has applied for a permit to withdraw greater volumes from their sources in the Rowley River subwatershed. Prior to the permit issuance the Water Department is required to implement aggressive water conservation. Through the permitting process, determine the potential impacts of Ipswich Water Department's withdrawals on streamflow/habitat.

- Collect additional data to determine the frequency, duration, and spatial extent of low flow conditions and assess habitat quality as it is related to streamflow.

- When the MA DEP DWP Storm Water Assessment Program evaluations are completed, develop and implement recommendations to protect Bull Brook, a Class A river in the Parker River Watershed.

- Reissue Governor Dummer's National Pollutant Discharge Elimination System (NPDES) permit with appropriate limits and monitoring requirements.

- Conduct fecal coliform bacteria monitoring upstream and downstream from Governor Dummer's discharge, during wet and dry weather conditions, to determine the effectiveness of the Governor Dummer Academy's wastewater treatment plant (WWTP) upgrades. If Governor Dummer continues to have problems meeting their LC_{50} and chronic no observed effect concentration (CNOEC) limits, the need for a toxicity identification and toxic reduction evaluation (TIE/TRE) should be determined.

- Inspections should be conducted of facilities with general storm water permits to determine if storm water protection plans have been developed and implemented.

- Conduct bacteriological monitoring (using the indicator organism specified in the Massachusetts Surface Water Quality Standards) to assess the status of the *Primary* and *Secondary Contact Recreation Uses* in currently not assessed waters.

- Work with the Division of Marine Fisheries, Coastal Zone Management and local communities to identify and reduce sources of contamination (e.g., storm water, failing septic systems, etc.) to shellfish areas.

- Assist the Towns of Rowley and Newburyport in repair of suspected failing septic and sewer systems.

- Work with the Parker River Clean Water Association to identify causes and sources of contamination, conduct stream cleanups, and encourage/strengthen local stewardship.

- Work with the Massachusetts Department of Environmental Management (MA DEM) to monitor dam safety and/or removal issues including the need for fish passage facilities in the Parker River Watershed.

PONDS

Information on 14 ponds in the Parker River Watershed is presented in this report. These ponds represent approximately 95% (302.6 of 317.6 acres) of the watershed's total pond acreage. Ponds in the Parker River Watershed represent multiple stages of succession, as described in terms of trophic status estimates (Table 1). Excessive plant growth in ponds (both rooted aquatics and algae) was the most frequently recorded cause of impairment for multiple uses (*Primary* and *Secondary Contact Recreation* and *Aesthetics*).

Table 1. Parker River Watershed pond trophic status summary.

TROPHIC STATUS	NUMBER OF PONDS	ACRES
Oligotrophic	0	0
Mesotrophic	3	189.6
Eutrophic	5	44.0
Hypereutrophic	1	14.0
Undetermined*	5	55.0
Not Attainable	0	0.0
Total	**14**	**302.6**

* It should be noted that some ponds or portions of ponds are listed as undetermined when indicators were not readily observable. With this approach, only the most obvious impairments are reported and, therefore, the assessment of ponds in the Parker River Watershed is limited to a "best case" picture. Potentially more of the pond acreage would be listed as impaired, or in a more enriched trophic status, if more variables were measured and more criteria assessed.

AQUATIC LIFE USE – Ponds

The status of the *Aquatic Life Use* for the ponds in the Parker River Watershed is as follows:

***Aquatic Life Use* Summary – Ponds (acres)**				
SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED	TOTAL
0	104	0	198.6	302.6

Two exotic aquatic plant species (*Trapa natans* and *Cabomba caroliniana*) were identified in ponds in the Parker River Watershed. These plants are particularly invasive species and reproduce vegetatively; therefore, they may spread readily downstream on currents or between ponds by mechanical transport. Based on the presence of these exotic aquatic species, three ponds (Lower Mill, Pentucket, and State Street ponds) were assessed as partial support for the *Aquatic Life Use* (Figure 1). Approximately one-third of the pond-acreage in the Parker River Watershed was not assessed for this use.

FISH CONSUMPTION USE – Ponds

The status of the *Fish Consumption Use* for the ponds in the Parker River Watershed is as follows:

***Fish Consumption Use* Summary – Ponds (acres)**				
SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED	TOTAL
0	0	189.6	113.0	302.6

Because of health concerns associated with exposure to mercury, MDPH issued fish consumption advisories for Rock, Pentucket, and Baldpate ponds (MDPH 2001a). Because of these advisories, the *Fish Consumption Use* was assessed as non-support for 63% of pond acres in the Parker River Watershed (Figure 2). The remaining acreage was not assessed due to MDPH's revised statewide advisory for mercury (see *Fish Consumption Use – Rivers*) that encompasses all Massachusetts waters.

DRINKING WATER USE – Ponds

The *Drinking Water Use* has been used to indicate sources of public drinking water. While this use is not assessed in this report, information on drinking water source protection and finish water quality is available at http://www.state.ma.us/dep/brp/dws/dwshome.htm and from the Parker River Watershed's public water suppliers. These waters are subject to stringent regulation in accordance with the Massachusetts Drinking Water Regulations. The DWP has primacy for implementing the provisions of the federal Safe Drinking Water Act. DWP has also initiated work on SWAP, which requires that the Commonwealth delineate protection areas for all public ground and surface water sources; inventory land uses in these areas that may present potential threats to drinking water quality; determine the susceptibility of water supplies to contamination from these sources; and publicize the results. Except for suppliers with surface water sources for which a waiver from filtration has been granted (these systems also monitor surface water quality) public water suppliers monitor their finished water (tap water) for major categories of contaminants (e.g., bacteria, volatile and synthetic organic compounds, inorganic compounds, etc.) and report their data to DWP.

PRIMARY CONTACT RECREATION USE – Ponds

The status of the *Primary Contact Recreation Use* for the ponds in the Parker River Watershed is as follows:

***Primary Contact Recreation Use* Summary – Ponds (acres)**				
SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED	TOTAL
0	95	55	152.6	302.6

No ponds in the Parker River Watershed were assessed as supporting the *Primary Contact Recreation Use*. Portions or all of eight ponds (154 acres) were impaired (partial or non-support) for this use. Because the data available to assess the *Primary Contact Recreation Use* focused on macrophyte cover, transparency and presence of exotic/non-native aquatic plants, the major cause of impairment was noxious/overabundant plant growth. When no visual impairment was identified during the synoptic surveys, it could not be assumed that water quality conditions met standards (i.e., no bacterial data) and, therefore, this use was not assessed for half of the pond acreage in the Parker River Watershed.

SECONDARY CONTACT RECREATION AND *AESTHETICS USES – Ponds*

The status of the *Secondary Contact Recreation* and *Aesthetics Uses* for the ponds in the Parker River Watershed is as follows:

***Secondary Contact Recreation* and *Aesthetics Uses* Summary – Ponds (acres)**				
SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED	TOTAL
0	10	55	237.6	302.6

None of the ponds assessed in the Parker River Watershed supported the *Secondary Contact Recreation* and *Aesthetics Uses* while all or portions of seven ponds (65 acres) were impaired (partial or non-support) for these uses. Because the data available to assess the recreational uses focused on macrophyte cover, transparency and presence of exotic aquatic plants, the major cause of impairment was noxious/overabundant plant growth. When no visual impairment was identified during the synoptic surveys, it could not be assumed that water quality conditions met standards and, therefore, the majority (79%) of the pond-acreage in the Parker River Watershed was not assessed for the *Secondary Contact Recreation* and *Aesthetics Uses*.

RECOMMENDATIONS - PONDS

Potentially more of the pond acreage would be listed as impaired or in a more enriched trophic status if additional variables were measured and more criteria assessed. In the Parker River Watershed there is a need to:

- Conduct monitoring (e.g., fecal coliform bacteria, Secchi disk depth, etc.) to assess the *Primary* and *Secondary Contact Recreation Uses*.
- Conduct monitoring for water chemistry data including dissolved oxygen and temperature profiles, total phosphorus and chlorophyll *a* to assess the *Aquatic Life Use*.
- Monitor/control the spread and growth of exotic aquatic and wetland vegetation.
- Implement recommendations to be identified in the Parker River Watershed Total Phosphorus TMDL and pond Diagnostic/Feasibility studies, including performing pond watershed surveys to identify sources of impairment.
- Review the MA DEP DWP SWAP evaluations when they are completed to develop and implement recommendations for the protection of Class A waters in the Parker River Watershed, including Bull Brook and Dow Brook reservoirs and tributaries thereto.
- Work with the Massachusetts Department of Environmental Management (MA DEM) to monitor dam safety and/or removal issues including the need for fish passage facilities in the Parker River Watershed.