Appendix 9
Boston Harbor: Neponset River Watershed and Coastal Drainage Area
Assessment and Listing Decision Summary

Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle

CN: 505.1

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Prepared by:

Massachusetts Department of Environmental Protection
Massachusetts Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, Massachusetts 01606

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2018/20 Cycle Impairment Changes

Waterbody	AU_ID	2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Bolivar Pond	MA73005	5	5	(Fanwort*)		Added
Bolivar Pond	MA73005	5	5	(Non-Native Aquatic Plants*)		Removed
Bubbling Brook	MA73-11	2	5	Benthic Macroinvertebrates		Added
Bubbling Brook	MA73-11	2	5	Fish Bioassessments		Added
Clark Pond	MA73008	4c	4c	(Water Chestnut*)		Added
East Branch	MA73-05	5	5	(Dewatering*)		Removed
East Branch	MA73-05	5	5	Dissolved Oxygen		Removed
East Branch	MA73-05	5	5	(Flow Regime Modification*)		Added
East Branch	MA73-05	5	5	Metals		Removed
East Branch	MA73-05	5	5	Temperature		Removed
East Branch	MA73-05	5	5	Unspecified Metals in Sediment		Added
Ellis Pond	MA73018	4c	4c	(Fanwort*)		Added
Ellis Pond	MA73018	4c	4c	(Non-Native Aquatic Plants*)		Removed
Germany Brook	MA73-15	5	5	pH, High		Removed
Massapoag Brook	MA73-21	5	5	(Curly-leaf Pondweed*)		Added
Massapoag Brook	MA73-21	5	5	(Fanwort*)		Added
Massapoag Brook	MA73-21	5	5	Phosphorus, Total		Removed
Mill Brook	MA73-08	5	5	Temperature		Added
Mother Brook	MA73-28	5	5	(Dewatering*)		Removed
Mother Brook	MA73-28	5	5	(Flow Regime Modification*)		Added
Mother Brook	MA73-28	5	5	Trash		Changed
Neponset Reservoir	MA73034	5	5	(Fanwort*)		Added
Neponset Reservoir	MA73034	5	5	(Non-Native Aquatic Plants*)		Removed
Neponset River	MA73-01	5	5	Cadmium		Added
Neponset River	MA73-01	5	5	(Curly-leaf Pondweed*)		Added
Neponset River	MA73-01	5	5	(Fish Passage Barrier*)		Added
Neponset River	MA73-01	5	5	Metals		Removed
Neponset River	MA73-01	5	5	(Non-Native Aquatic Plants*)		Added
Neponset River	MA73-01	5	5	Unspecified Metals in Sediment		Added
Neponset River	MA73-02	5	5	(Fish Passage Barrier*)		Added
Neponset River	MA73-02	5	5	Trash		Changed
Neponset River	MA73-02	5	5	Unspecified Metals in Sediment		Added
Neponset River	MA73-03	5	5	(Curly-leaf Pondweed*)		Added
Neponset River	MA73-03	5	5	Dissolved Oxygen		Removed
Neponset River	MA73-03	5	5	(Fish Passage Barrier*)		Added
Neponset River	MA73-03	5	5	PCBs in Sediment		Added
Neponset River	MA73-03	5	5	Trash		Changed
Neponset River	MA73-03	5	5	Unspecified Metals in Sediment		Added

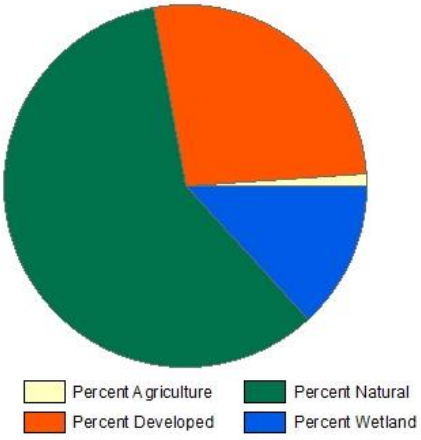
Waterbody	AU_ID	2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Neponset River	MA73-04	5	5	Dissolved Oxygen		Removed
Neponset River	MA73-04	5	5	Trash		Changed
Pecunit Brook	MA73-25	4a	5	Benthic Macroinvertebrates		Added
Ponkapoag Pond	MA73043	4a	4a	(Fanwort*)		Added
Purgatory Brook	MA73-24	4a	5	Trash		Changed
Reservoir Pond	MA73048	4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Added
Reservoir Pond	MA73048	4a	4a	(Fanwort*)		Added
Russell Pond	MA73003	5	5	(Curly-leaf Pondweed*)		Added
Russell Pond	MA73003	5	5	(Non-Native Aquatic Plants*)		Removed
Town Pond	MA73056	4c	4c	(Fanwort*)		Added
Town Pond	MA73056	4c	4c	(Non-Native Aquatic Plants*)		Removed
Turner Pond	MA73058	4c	4c	(Fanwort*)		Added
Turner Pond	MA73058	4c	4c	(Non-Native Aquatic Plants*)		Removed
Unnamed Tributary	MA73-32	5	5	pH, Low		Removed
Unnamed Tributary	MA73-32	5	5	Phosphorus, Total		Removed
Unnamed Tributary	MA73-33	5	5	Benthic Macroinvertebrates		Added
Unnamed Tributary	MA73-34	4c	5	Benthic Macroinvertebrates		Added
Unnamed Tributary	MA73-34	4c	5	Trash		Changed
Unquity Brook	MA73-26	5	5	Fish Bioassessments		Added
Unquity Brook	MA73-26	5	5	pH, Low		Removed

Beaver Brook (MA73-19)

Location:	Headwaters (perennial portion), near Moose Hill Street, Sharon through Sawmill Pond to mouth at confluence with Massapoag Brook, Sharon.
AU Type:	RIVER
AU Size:	3.5 MILES
Classification/Qualifier:	B

Beaver Brook - MA73-19

Watershed Area: 3.14 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.12	3.12	0.88	0.88
Agriculture	1.1%	1.1%	0.2%	0.2%
Developed	26.7%	26.7%	12.9%	12.9%
Natural	59.2%	59.2%	56.6%	56.6%
Wetland	13.1%	13.1%	30.3%	30.3%
Impervious Cover	10.2%			

Fish, other Aquatic Life and Wildlife Use: Not Supporting

DFG biologists found that the most upstream reach of Beaver Brook near Moose Hill Street in Sharon was completely dry in July 2010, so no fish sampling was conducted. Further downstream sampling was conducted upstream from Depot Street along Moose Hill Parkway (Sample ID 2526) in August 2008. Four species (129 individuals) were collected with the sample comprised of tolerant and moderately tolerant macrohabitat generalists. MassDEP staff conducted water quality monitoring further downstream near Upland Road in Sharon (W0557) during the summer of 2009. Three-day unattended DO and temperature probes were deployed in May, August and September. The minimum DO concentration was 3.19mg/L and the mean minimum DO was well under 5 mg/L for two out of the three deploys. The maximum DO saturation was 103.2%, with a maximum diel shift of 3.60mg/L (above 3mg/L on two out of the three deploy days). The maximum temperature was 22.8^{o}C. Attended probe data were also collected with the minimum DO was 4.7mg/L, and the maximum saturation was 82%, the maximum temperature was 21.5^{o}C, and pH ranged from 6.4 to 6.6SU. Grab samples for total phosphorus were also collected. The seasonal average was 0.02mg/L (maximum 0.026mg/L). One long term (100-day) temperature logger was also deployed. The maximum temperature was 26.8 °C. NepRWA volunteers/interns/staff also conducted *in situ* and grab sampling in Beaver Brook 4 to 6 times per year between May and October near Maskwonicut Street (BEB025) between 2008 to 2018 excluding 2015 & 2016. Their usable data were indicative of generally good water quality conditions (minimum DO 5.1mg/L, maximum saturation 84.1%, maximum temperature 25.5^{o}C, pH range 6.55-7.7SU, seasonal average total phosphorus concentrations ranging from 0.04 to 0.13mg/L with maximums ranging from 0.05 to 0.23mg/L). The total phosphorus concentrations >0.1mg/L were limited to August and September 2014 so considered atypical and not indicative an impairment. Backpack electrofishing in Beaver Brook in early September 2009 by MassDEP biologists upstream of Maskwonicut Street in Sharon (Sample ID 4521) resulted in the capture of only pumpkinseed while further downstream of Maskwonicut Street (alongside the railroad tracks) backpack electrofishing by DFG biologists in August 2008 (Sample ID 2527) resulted in the capture of four species (15 individuals) which were tolerant and moderately tolerant macrohabitat generalists. MassDEP staff also collected one benthic macroinvertebrate sample (Sample ID B0139), approximately 200 meters downstream of Maskwonicut Street, in July 2009. The RBPIII status of the sample was considered to be “not impaired”, with 95% comparability to the reference sample. Near

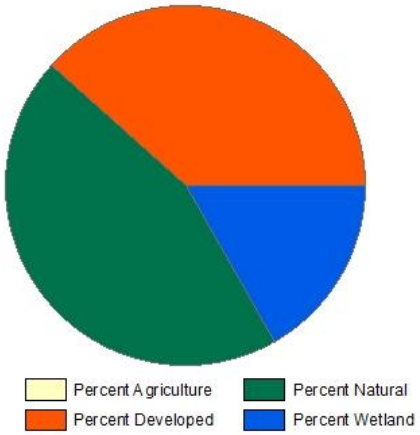
the most downstream portion of Beaver Brook DFG biologists conducted backpack electrofishing in September 2007 (Sample ID 2815). Sampling resulted in the capture of three species (11 individuals) were collected, with the sample dominated by a moderately tolerant macrohabitat generalist but one individual intolerant species, the "Banded sunfish" was also collected. The Aquatic Life Use of Beaver Brook will continue to be assessed as "Not Supporting" based on the episodes of low DO during the summer of 2009 despite the other biological and water quality data indicative of generally good conditions. Observations made by MassDEP biologists suggests that low/intermittent flows potentially a result of groundwater withdrawals (the Zone IIs are all along this brook) may be exacerbate this problem. The benthic macroinvertebrates bioassessment is being carried forward until more recent data are collected to confirm appropriateness of its delisting.

Beaver Meadow Brook (MA73-20)

Location:	Headwaters, outlet of Glenn Echo Pond, Stoughton, to mouth at inlet of Bolivar Pond, Canton.
AU Type:	RIVER
AU Size:	3.3 MILES
Classification/Qualifier:	B

Beaver Meadow Brook - MA73-20

Watershed Area: 2.86 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.84	2.8	0.99	0.99
Agriculture	0.2%	0.2%	0.4%	0.4%
Developed	38.3%	37.4%	23.2%	23.2%
Natural	44.8%	45.4%	49.7%	49.7%
Wetland	16.7%	17%	26.7%	26.7%
Impervious Cover	18%			

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

DFG biologists conducted one fish survey using the backpack shocking method in Beaver Meadow Brook in July 2010 upstream of York Street in Stoughton (Sample ID 3318). The habitat was noted to be very shallow with heavy silt and only a few minutes' worth of shocking was achieved. The sample contained 10 individuals and was comprised of 2 species (moderately tolerant macrohabitat generalists). MassDEP staff conducted water quality monitoring further downstream at Boston Drive in Canton (W1945) during the summer of 2009. Three-day unattended continuous probe deployments in May, August and September recorded a minimum DO concentration of 3.7mg/L with mean minimum DO concentrations ranging from 4.02 to 5.09mg/L. The maximums for DO saturation, diel shift, and temperature was 90.6%, 3.26mg/L, 22.6°C, respectively. Data collected by attended probes was as follows: pH ranged from 6.3 to 6.6SU, maximum temperature 20.8°C; two out of six DO measurements were <5mg/L, with a minimum DO concentration of 4.2mg/L and maximum saturation of 77%. Grab samples for total phosphorus averaged 0.037mg/L (maximum 0.054mg/L). NepRWA volunteers/interns/staff also conducted sampling typically 4 to 6 times a year between May and October, further downstream in Beaver Meadow Brook at Pine Street in Canton (BMB026). Useable DO data in 2017 & 2018 were indicative of good conditions ranging from 5.4 to 8.52mg/L. Useable temperature and pH data spanning 2008 to 2018 (excluding 2015 & 2016) were generally indicative of good water quality, with a maximum temperature of 24.5°C and a pH range of 6.49 to 7.5SU. The seasonal (btw May & Sept) average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) ranged from 0.03 to 0.07mg/L with seasonal maximum concentrations ranging from 0.04 to 0.13mg/L.

The Aquatic Life Use for Beaver Meadow Brook will continue to be assessed as Not Supporting because of low dissolved oxygen. Although there were some indications of nutrient enrichment (diel DO shift above 3.0mg/L in May 2009 and the slightly elevated total phosphorus concentrations recorded by NepRWA near Pine Street with season average concentrations above 0,.05mg/L in three of six years), the maximum DO saturation was low and there were no dense/very dense filamentous algae observed. An Alert is being identified for total phosphorus. It should also be noted that the water temperatures were quite cool compared to other tributaries in the area suggesting groundwater influence.

Billings Street/East Street Pond (MA73065)

Location:	Sharon.
AU Type:	FRESHWATER LAKE
AU Size:	2 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994. The Aquatic Life Use of Billings Street/East Street Pond will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants (*M. heterophyllum*).

Blue Hills Reservoir (MA73004)

Location:	Quincy.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of Blue Hills Reservoir so this use is Not Assessed.

Bolivar Pond (MA73005)

Location:	Canton.
AU Type:	FRESHWATER LAKE
AU Size:	20 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fanwort*)		Added
5	5	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort) in 1994. The Aquatic Life Use of Bolivar Pond will continue to be assessed as "Not Supporting" with the impairment being changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (*Cabomba caroliniana*).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	Impairment changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (Cabomba caroliniana).

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

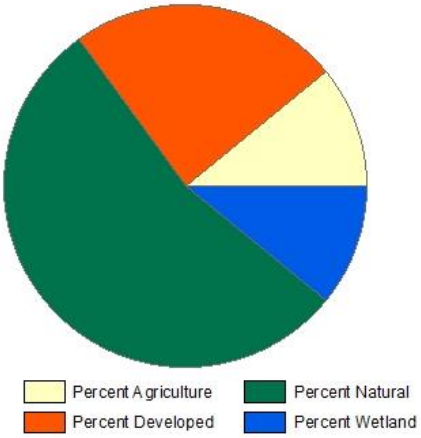
During the WPP 1994 synoptic survey of Bolivar Pond and infestation of the non-native aquatic macrophyte, *Cabomba caroliniana* was identified (MassDEP 1994). The impairment was changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (*Cabomba caroliniana*).

Bubbling Brook (MA73-11)

Location:	Headwaters (perennial portion), near North Street, Walpole to mouth at inlet Pettee Pond, Walpole/Westwood border.
AU Type:	RIVER
AU Size:	0.9 MILES
Classification/Qualifier:	B

Bubbling Brook - MA73-11

Watershed Area: 1.39 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.39	1.39	0.35	0.35
Agriculture	10.8%	10.8%	14.3%	14.3%
Developed	24.2%	24.2%	20.4%	20.4%
Natural	54.1%	54.1%	46.1%	46.1%
Wetland	10.9%	10.9%	19.2%	19.2%
Impervious Cover	8.1%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Benthic Macroinvertebrates		Added
2	5	Fish Bioassessments		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

MassDEP biologists collected one benthic macroinvertebrate sample in Bubbling Brook (Sample ID B0764), at Trailside Drive, in July 2009. The RBPIII status of the sample was moderately impaired, with 43% comparability to the reference station at West Branch Palmer River (B0777). MassDEP biologists also conducted fish surveys in Bubbling Brook using the backpack shocking method downstream of the Trailside Drive crossing in Walpole (Sample ID 4525) (around the middle of the AU) in September 2009 and DFG biologists conducted similar sampling upstream of the Pettees Pond Lane crossing (near the bottom of the AU) (Sample ID 4060) in August 2012. At Trailside Drive one species (16 individuals) were collected, with the sample comprised completely of the moderately tolerant macrohabitat generalist "Redfin pickerel". At Pettees Pond Lane no fish were collected at all.

Based on the benthic macroinvertebrate sample with an RBPIII analysis indicating moderately impaired conditions and the lack of fish during the August 2012 survey the Aquatic Life Use for Bubbling Brook is being assessed as "Not Supporting".

Buckmaster Pond (MA73006)

Location:	Westwood.
AU Type:	FRESHWATER LAKE
AU Size:	34 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Assessed
There is no data available to assess the Aquatic Life Use of Buckmaster Pond so this use is Not Assessed.

Clark Pond (MA73008)

Location:	Walpole.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Water Chestnut*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophytes *Myriophyllum heterophyllum* (variable water milfoil) and *Trapa natans* (Water Chestnut) for Clark Pond in 1994. The Aquatic Life Use of Clark Pond remains assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants (*M. heterophyllum*). The specific cause "Water Chestnut" is being added for this reporting cycle.

Cobbs Pond (MA73009)

Location:	Walpole.
AU Type:	FRESHWATER LAKE
AU Size:	14 ACRES
Classification/Qualifier:	B

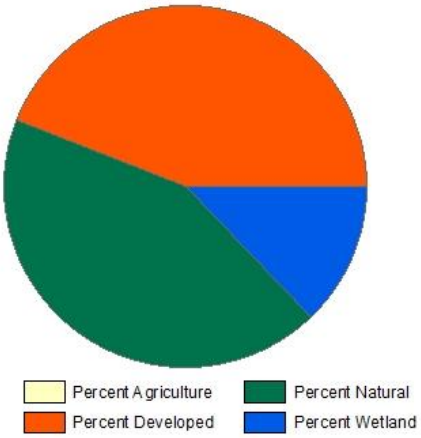
Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophyte, *Myriophyllum heterophyllum* (variable water milfoil), in Cobbs Pond in 1999. Upon validation of non-native aquatic species observation records, analysts noted Cobbs Pond was listed as impaired for *Cabomba caroliniana* (fanwort) in the 2004 Water Quality Assessment Report in error. With no new data available for this reporting cycle, the Aquatic Life Use of Cobbs Pond remains assessed as "Not Supporting" due to the historical impairments (the Non-Native Aquatic Plants cause is being retained due only to the *M. heterophyllum* infestation).

East Branch (MA73-05)

Location:	East Branch Neponset River - Headwaters, outlet of Forge Pond, Canton through East Branch Pond to mouth at confluence with Neponset River, Canton (locally known as Canton River).
AU Type:	RIVER
AU Size:	2.6 MILES
Classification/Qualifier:	B

East Branch - MA73-05

Watershed Area: 28.67 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	28.29	9.92	7.98	2.61
Agriculture	0.9%	1.2%	0.8%	0.5%
Developed	43.7%	49.2%	27.7%	33.4%
Natural	42.8%	37.2%	46.7%	38.9%
Wetland	12.7%	12.4%	24.8%	27.2%
Impervious Cover	16.7%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Dewatering*)		Removed
5	5	Dissolved Oxygen		Removed
5	5	(Flow Regime Modification*)		Added
5	5	Metals		Removed
5	5	Temperature		Removed
5	5	Unspecified Metals in Sediment		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting
NepRWA volunteers/interns/staff conducted *in situ* and grab sampling in the East Branch typically 5 to 6 times a year between May and October; at Neponset Street in Canton (EAB010). Useable temperature and pH spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality as follows: minimum DO 7.06mg/L, maximum saturation 106% (2017 & 2018), maximum temperature 27°C, pH range of 6.7-7.98SU, seasonal (btw May & Sept) average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) ranging from 0.03 to 0.05mg/L and seasonal maximum ranging from 0.04 to 0.07mg/L. MassDEP staff also conducted water quality monitoring in the East Branch at Neponset Street in Canton (W1963) during the summer of 2009 downstream of all three dams/impoundments. Data collected during three -day unattended continuous probe

deployments in May, August and September were as follows: minimum DO concentration of 8.17mg/L, maximum DO saturation 104.3%, maximum diel DO shift 1.06mg/L, maximum temperature 25.8°C. The attended probe data is as follows: DO 8.4-9.9mg/L (n=6), maximum saturation 102%, pH range 7.3 to 7.4SU; maximum temperature 24.4°C (n=8 discrete measurements); average seasonal total phosphorus 0.029mg/L and a maximum of 0.035mg/L. Copper and lead were both found to exceed their respective acute and/or chronic criteria during one of four sampling events each.

Without any more recent biological monitoring data, the Aquatic Life Use of East Branch will continue to be assessed as "Not Supporting" for benthic macroinvertebrates. Two of the impairments are being changed: Dewatering impairment is being changed to flow regime modification and the Metals impairment to Unspecified Metals in Sediment based on the sediment sampling conducted in the Factory Pond impoundment of East Branch in 1994. Although there were water column exceedances for copper and lead once in 1994 and again once during the four surveys in 1999 these single exceedances are allowed according to the CALM guidance so not an impairment. All of the recent temperature data collected in the East Branch, however, meet the water quality standard for a warm water fishery (≤28.3°C) and so temperature is being delisted (see removal comments below for rational). The "Dissolved Oxygen" impairment is also being delisted as a result of clarifying historical information as well as recent data which documents that DO is meeting standards (see Removal Comments below for rationale).

Fish Consumption Use: Not Supporting

According to the DPH Freshwater Fish Consumption Advisory List (MassDPH 2013), East Branch (MA73-05, locally known as Canton River) should be impaired for PCBs and DDT in fish tissue. A correction is being made for the 2018 cycle, removing the PCBs in Fish Tissue impairment from the Aquatic Life Use and applying it to the Fish Consumption Use. The Fish Consumption Use continues to be impaired for DDT in Fish Tissue.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Dewatering	Clarification of listing cause	The dewatering impairment for East Branch (MA73-05) is being changed to flow regime modification which is more appropriate. The original impairment in 1998 reporting cycle was flow alteration and this was remapped to low flow alteration in the 2010 reporting cycle. Flow alterations in East Branch result from the dams/impoundments in the contributing subwatershed and activities by the now closed Plymouth Rubber Company non-contact cooling water intakes and discharges.
Dissolved Oxygen	Applicable WQS attained; original basis for listing was incorrect	The East Branch (MA73-05) was originally listed as impaired for "Organic enrichment/DO" in the 2002 reporting cycle and was switched to just "low DO" in 2010. The original listing was based on NepRWA data collected 1998-2001 at Neponset Street in Canton, however it appears this listing may have been erroneous due to the fact that the accuracy of the NepRWA 1998-2001 DO data was judged to be suspect based on the field collection techniques (i.e., bucket sampling) and was not included in the assessment of the AU at that time. All recent DO data collected at the same location (downstream of impoundment at Neponset Street) meet SWQS: in summary NepRWA (sample site EAB010) discrete DO data from 2017 and 2018 ranged from 7.06

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		to 11.01mg/L, with a max saturation of 106%; MassDEP (sample site W1963) three-day unattended probe deployments in May, August and September 2009 recorded a minimum DO of 8.17mg/L (with mean minimum DO ranging from 8.33 to 8.89mg/L), a maximum DO saturation of 104.3% and a max diel shift of 1.06mg/L. Six MassDEP discrete DO measurements taken during the summer of 2009 ranged from 8.4-9.9mg/L with a maximum saturation of 102%. With the exception of the Plymouth Rubber Company site redevelopment, similar land use patterns between 1995 and 2019 satellite imagery were observed and therefore data collected within this timeframe are considered usable for water quality assessment, listing, and delisting decisions. Based on all the most recent DO data and supporting information collected by both MassDEP and NepRWA staff the "Dissolved oxygen" impairment is being delisted for the East Branch (MA75-05).
Metals	Clarification of listing cause	The East Branch (MA73-05) was originally listed as impaired for "Metals" in the 1998 reporting cycle based on water column and sediment surveys conducted during the summer of 1994. The sediment in the Factory Pond impoundment of the East Branch were found to contain elevated concentrations of Cadmium, Chromium, Copper, and Lead so the impairment is being changed to Unspecified Metals in Sediment. Although there were water column exceedances for copper and lead once during three surveys in 1994 and again once during the four surveys in 1999 these single exceedances are allowed according to the CALM guidance and therefore not an impairment.
Temperature	Applicable WQS attained; based on new data	The East Branch (MA73-05) was originally listed as impaired for "Thermal modifications" in the 1998 reporting cycle and was switched to "Temperature" in 2010. The original listing was based on MassDEP data collected during the biomonitoring survey in July 1994 downstream from Neponset Street in Canton. At that time the of that survey the East Branch water temperature was 31°C. All of the recent temperature data collected by NepRWA and MassDEP staff at the same location (downstream of impoundment at Neponset Street) met the SWQS for a warm water fishery (≤28.3°): NepRWA data (Station EAB010) collected typically 5 to 6 times a year between May and October from 2008 to 2018 (excluding 2015 & 2016) maximum temperature 27oC (n=52). MassDEP temperature data (Station W1963) during the summer of 2009 collected during three -day unattended continuous probe deployments in May, August and September were as follows: maximum temperature 25.8oC and attended

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		probe maximum temperature 24.4oC (n=8 discrete measurements). The Plymouth Rubber Company NPDES permit (MA0000884) authorizing the discharge of non-contact cooling water was also terminated in April 2002. Except for the Plymouth Rubber Company site redevelopment, similar land use patterns in 2005 and 2015 satellite imagery were observed and therefore data collected within this timeframe are considered usable for water quality assessment, listing, and delisting decisions. Based on all the most recent temperature data and supporting information collected by both MassDEP and NepRWA staff the "Temperature" impairment is being delisted for the East Branch (MA75-05).

Supporting Information for Delisted Impairments

Dewatering

The dewatering impairment for East Branch (MA73-05) is being changed to flow regime modification which is more appropriate. The original impairment in 1998 reporting cycle was flow alteration and this was remapped to low flow alteration in the 2010 reporting cycle. Flow alterations in East Branch result from the dams/impoundments in the contributing subwatershed and activities by the now closed Plymouth Rubber Company non-contact cooling water intakes and discharges

Dissolved Oxygen

All recent DO data collected downstream of impoundment at Neponset Street meet SWQS: in summary NepRWA (sample site EAB010) discrete DO data from 2017 and 2018 ranged from 7.06 to 11.01mg/L, with a max saturation of 106%; MassDEP (sample site W1963) three-day unattended probe deployments in May, August and September 2009 recorded a minimum DO of 8.17mg/L (with mean minimum DO ranging from 8.33 to 8.89mg/L), a maximum DO saturation of 104.3% and a max diel shift of 1.06mg/L. Six MassDEP discrete DO measurements taken during the summer of 2009 ranged from 8.4-9.9mg/L with a maximum saturation of 102%.

Data supporting delisting of Dissolved Oxygen impairment:

NepRWA data for EAB010 (NepRWA 2019)

Station	Year	Count DO mg/L	Count DO LT4.0	Count DO LT5.0	Max of DO%
EAB010	2008	*	*	*	*
EAB010	2009	*	*	*	*
EAB010	2010	*	*	*	*
EAB010	2011	*	*	*	*
EAB010	2012	*	*	*	*

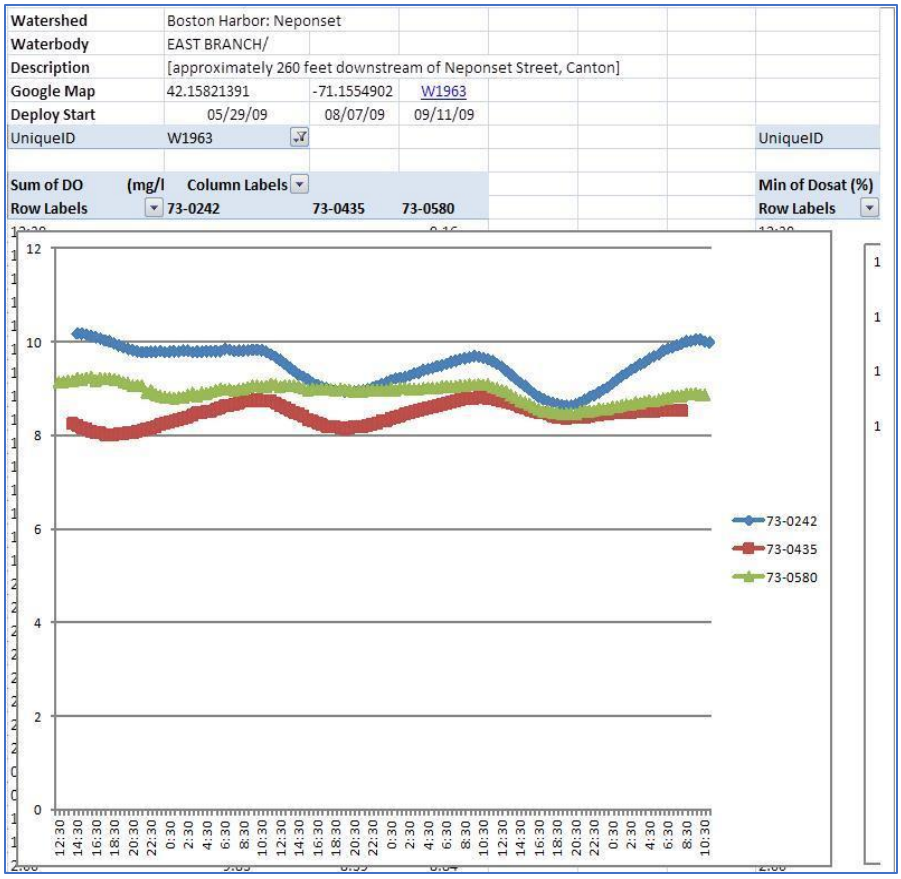
EAB010	2013	*	*	*	*
EAB010	2014	*	*	*	*
EAB010	2017	6	0	0	103.2
EAB010	2018	6	0	0	106

*Dissolved oxygen data 2008-2014 was not included in this review due to absence of calibration data. The WPP external data review process determined this data to not be of assessment quality.

DO probe data EAST BRANCH (W1963) approximately 260 feet downstream of Neponset Street, Canton (MassDEP Undated 6):

Unique ID	Waterbody	AU_Class	AU_Class Qu	Start.Date	Days	OWMID Min DO	Daily Mean Minimum DO	Maximum Daily DO Shift	OWMID Mean DO	OWMID Max Saturation	Violates Criteria
W1963	EAST BRANCH	B		05/29/09	3	8.66	8.89	1.06	9.50	104.3	None
W1963	EAST BRANCH	B		08/07/09	3	8.17	8.33	0.62	8.46	102.0	None
W1963	EAST BRANCH	B		09/11/09	3	8.48	8.63	0.63	8.93	97.0	None

DO probe deployment graph (MassDEP Undated 6)



Metals

East Branch (MA73-05) was originally listed as impaired for "Metals" in the 1998 reporting cycle based on water column and sediment surveys conducted during the summer of 1994. The sediment in the Factory Pond impoundment of the East Branch were found to contain elevated concentrations of Cadmium, Chromium, Copper, and Lead so the impairment is being changed to Unspecified Metals in Sediment. Although there were water column exceedances for copper and lead once during three surveys in 1994 and again once during the four surveys in 1999 these single exceedances are allowed according to the CALM guidance (MassDEP 2018) and therefore not an impairment. The historical listing information regarding metals in water column and sediment are in the 1994 Neponset River Watershed Resource Assessment Report (MassDEP 1995).

Temperature

All of the recent temperature data collected by NepRWA and MassDEP staff in the East Branch (downstream of impoundment at Neponset Street) has met the SWQS for a warm water fishery (≤28.3°): NepRWA data (Station EAB010) collected typically 5 to 6 times a year between May and October from 2008 to 2018 (excluding 2015 & 2016) maximum temperature 27°C (n=52). MassDEP temperature data (Station W1963) during the summer of 2009 collected during three -day unattended continuous probe deployments in May, August and September were as follows: maximum temperature 25.8°C and attended probe maximum temperature 24.4°C (n=8 discrete measurements). The Plymouth Rubber Company NPDES permit (MA0000884) authorizing the discharge of non-contact cooling water was also terminated in April 2002. Except for the Plymouth Rubber Company site redevelopment, similar land use

patterns in 2005 and 2015 satellite imagery were observed and therefore data collected within this timeframe are considered usable for water quality assessment, listing, and delisting decisions. Based on all the most recent temperature data and supporting information collected by both MassDEP and NepRWA staff the "Temperature" impairment is being delisted for the East Branch (MA75-05).

Data supporting delisting of temperature impairment:

NepRWA temperature data for EAB010 (NepRWA 2019)

Station	Year	Count Temp	Count Temp >20.0	Count Temp >22.0	Count Temp >28.3	Count Temp >30.3
EAB010	2008	6	1	0	0	0
EAB010	2009	6	1	1	0	0
EAB010	2010	6	3	1	0	0
EAB010	2011	6	3	1	0	0
EAB010	2012	6	2	0	0	0
EAB010	2013	6	1	1	0	0
EAB010	2014	6	3	3	0	0
EAB010	2017	5	3	1	0	0
EAB010	2018	5	2	1	0	0

Data Source: (MassDEP Undated 6)

Unique ID	Gear Type	Project Name	OWMIDs Used to Build File	
W1963	Data Sonde	Boston Harbor-Neponset (2009)	73-0242, 73-0435, 73-0580	
Station ID	**Station Description**	**Mile Point**	**Latitude (dec-degrees)**	**Longitude (dec-degrees)**
NE12	(approximately 260 feet downstream of Neponset Street, Canton)		42.15821391	-71.15549018
Watershed	**SARIS_PALIS_CAMIS**	**Water Body**		
Boston Harbor: Neponset	7341300	EAST BRANCH/		
Station File Start Time	5/29/2009 2:30 PM			
Station File End Time	9/14/2009 10:30 AM			
Total Station File Duration (Hours)	2588.0			
Total Station File Count	5177			
	Analytes			
	Temperature (Celsius)	**DO (mg/L)**	**DOsat (%)**	
Observed Deployment Time (Hours)	204.5	204.5	204.5	
Observed Count	412	412	412	
Avg*	19.5	9.0	99	
SD*	2.7	0.5	3	
Min*	14.6	8.0	93	
Max*	25.8	10.2	104	
Median*	18.9	9.0	99	
IQR*	3.8	0.7	5	
Mean of the Daily Mean*	19.8	8.9		
Mean of the Daily Min*	17.9	8.6		
Mean of the Daily Max*	21.8	9.2		
MWAT*	--			
Amount of Time > 20 deg. C (Hours)	89.5			
Max Duration > 20 deg. C (Hours)	66.0			
Avg Daily Amount of Time > 20 deg. C (H	11.9			
Amount of Time > 28.3 deg. C (Hours)	0.0			
Max Duration > 28.3 deg. C (Hours)	0.0			
Avg Daily Amount of Time > 28.3 deg. C (	0.0			
Amount of Time > 29.4 deg. C (Hours)	0.0			
Max Duration > 29.4 deg. C (Hours)	0.0			
Avg Daily Amount of Time > 29.4 deg. C (	0.0			
Amount of Time < 3.0 mg/L (Hours)		0.0		
Max Duration < 3.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 3.0 mg/L (Ho		0.0		
Amount of Time < 4.0 mg/L (Hours)		0.0		
Max Duration < 4.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 4.0 mg/L (Ho		0.0		
Amount of Time < 5.0 mg/L (Hours)		0.0		
Max Duration < 5.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 5.0 mg/L (Ho		0.0		
Amount of Time < 6.0 mg/L (Hours)		0.0		
Max Duration < 6.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 6.0 mg/L (Ho		0.0		

**Units are those of the analyte listed. SD is unitless.*

Ellis Pond (MA73018)

Location:	Norwood.
AU Type:	FRESHWATER LAKE
AU Size:	17 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)		Added
4c	4c	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort) in 1994; consequently, the Aquatic Life Use of Ellis Pond will continue to be assessed as "Not Supporting". Impairment changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (*Cabomba caroliniana).*

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	Impairment changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (Cabomba caroliniana).

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

During the WPP 1994 synoptic survey of Ellis Pond an infestation of the non-native aquatic macrophyte, *Cabomba caroliniana* was identified (MassDEP 1994). The impairment was changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (Cabomba caroliniana).

Farrington Pond (MA73040)

Location:	Stoughton.
AU Type:	FRESHWATER LAKE
AU Size:	3 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported the suspected infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994, however species confirmation is still needed. Although non-native aquatic macrophyte species identification have for *M. heterophyllum* has not been specifically confirmed, the Aquatic Life Use of Farrington Pond will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants.

Flynns Pond (MA73019)

Location:	Medfield.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of Flynns Pond so this use is Not Assessed.

Forge Pond (MA73020)

Location:	Canton.
AU Type:	FRESHWATER LAKE
AU Size:	19 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of Forge Pond so this use is Not Assessed.

Ganawatte Farm Pond (MA73037)

Location:	Walpole/Sharon/Foxborough.
AU Type:	FRESHWATER LAKE
AU Size:	29 ACRES
Classification/Qualifier:	B

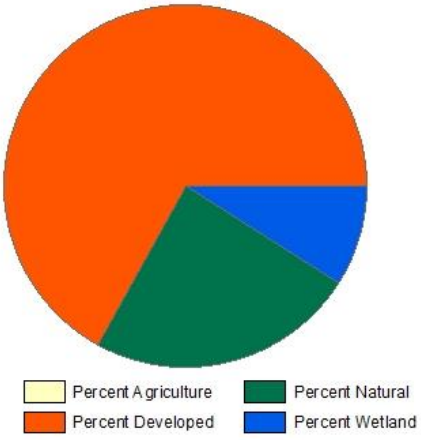
Fish, other Aquatic Life and Wildlife Use: Not Supporting
Ganawatte Farm Pond (also known as Pine Street Pond) is mapped as deep marsh according to the MassDEP Detailed Wetlands (2005) Datalayer. The depth of the pond was found to be less than 2m. The Aquatic Life Use for Ganawatte Farm Pond will remain assessed as Not Supporting based on older data (1999 MassDEP baseline survey) indicating low DO at depth. Note: The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual. This waterbody is filled in with macrophytes during the growing season, has little oxygen, and should likely more appropriately be described as a wetland rather than a lake.

Germany Brook (MA73-15)

Location:	Headwaters, east of Winter Street, Norwood to inlet of Ellis Pond, Norwood.
AU Type:	RIVER
AU Size:	2 MILES
Classification/Qualifier:	B

Germany Brook - MA73-15

Watershed Area: 2.5 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.49	2.49	0.6	0.6
Agriculture	0%	0%	0%	0%
Developed	67%	67%	49.6%	49.6%
Natural	24%	24%	30.6%	30.6%
Wetland	9%	9%	19.7%	19.7%
Impervious Cover	23.9%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	pH, High		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
DFG biologists conducted fish surveys in Germany Brook using the backpack shocking method up and downstream of Sycamore Drive in August 2012 (Sample ID 4040/4041) and MassDEP biologists conducted sampling upstream of Westover Parkway in Westwood in September 2009 (Sample ID 4523). Upstream of Sycamore three species (42 individuals) were collected and downstream five species (63 individuals) were collected. Both samples were comprised of tolerant and moderately tolerant macrohabitat generalists and in both cases also one intolerant species i.e. the fluvial specialist "Eastern brook trout" (15 individuals upstream and 10 downstream, with 14 individuals upstream measuring less than 140mm and eight individuals downstream). Upstream of Westover Parkway five species (48 individuals) were collected. The sample was comprised of tolerant and moderately tolerant macrohabitat generalists as well as multiple age classes of Eastern Brook Trout (9 individuals, with five less than 140mm) and one fluvial dependent species i.e. White Sucker (25 individuals). MassDEP staff also collected water quality data for the brook at Westover Parkway in Norwood (W1942) during the summer 2009. The data were all indicative of good water quality conditions: Two-day unattended continuous probe deployments for DO and temp in June, August and September documented a minimum DO concentration of 7.44mg/L, a maximum saturation of 94.0%, the max diel shift was 0.92 mg/L and the maximum temperature was 21.4^{o}C. Attended data included pH ranging from 7.2-7.3 SU; maximum temperature 18.9^{o}C; minimum DO 8.6mg/L and maximum saturation 96%. Grab samples for total phosphorus averaged 0.029mg/L (maximum 0.036mg/L). NepRWA volunteers/interns/staff collected *in situ* and grab sample data for Germany Brook typically 4 to 6 times a year between May and October, at the inlet to Ellis Pond (GEB020); useable temperature and pH

spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality with all but two measurements below 20°C (maximum 22°C in August 2018 and 21.5°C in August 2010) and pH range 6.56-7.76 SU. Useable DO data from 2017 & 2018 were also indicative of good water quality with a minimum of 5.74mg/L and maximum saturation 90.5%. Seasonal average total phosphorus data (btw May & Sept), spanning 2011 to 2018 but excluding 2015 & 2016, ranged from 0.04 to 0.07 mg/L with 4 out of the 6 years' showing a seasonal average >0.05mg/L. The maximum total phosphorus concentrations ranged from 0.07 to 0.13 mg/L.
Although total phosphorus concentrations slightly exceeded the recommended threshold of ≤0.05mg/L (for a stream entering lake) all other water quality data collected in Germany Brook were indicative of good conditions—multiple age classes of Eastern brook trout were present, there was no biological evidence of nutrient enrichment, and the other water quality data met CALM guidance thresholds. Based on the most recent pH data for Germany Brook which meet water quality standards, pH is being delisted as a cause of impairment (see Removal Comment for justification). Since the seasonal total phosphorus averages documented by NepRWA staff were slightly elevated, the Aquatic Life Use of Germany Brook will remain assessed as "Not Supporting" despite other indications of good water quality conditions.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
pH, High	Applicable WQS attained; based on new data	MA73-15 was first listed for pH in the 2002 reporting cycle. The impairment listing was based on 1994 water quality survey data (pH = 5.8 and 6.1SU) for samples collected just upstream of Nichols St. The listing was switched incorrectly to HIGH pH in the 2010 reporting cycle. More recent NepRWA data collected just downstream of Nichols St documents improved conditions with a range of 6.56-7.76 SU spanning 2008 to 2018 (excluding 2015 & 2016). Water quality survey data collected in Germany Brook further upstream in 2009 also documents good pH conditions during the MassDEP surveys conducted during the summer of 2009 (pH=7.2-7.3 SU). Based on all the recent pH data indicative of good conditions, the pH impairment is being delisted.

Supporting Information for Delisted Impairments

pH, High

Recent NepRWA data collected just downstream of Nichols St documents improved pH conditions in Germany Brook with a range of 6.56-7.76 SU spanning 2008 to 2018 (excluding 2015 & 2016). Water quality survey data collected in Germany Brook further upstream in 2009 also documents good pH conditions during the MassDEP surveys conducted during the summer of 2009 (pH=7.2-7.3 SU). Based on all the recent pH data indicative of good conditions, the pH impairment is being delisted.

Data supporting high pH delisting:

NepRWA data for GEB020 (NepRWA 2019)

Station	Year	Count pH	Count pH <6.5 or >8.3SU	Count pH <6.0 >8.8SU
GEB020	2008	6	0	0
GEB020	2009	6	0	0
GEB020	2010	6	0	0

GEB020	2011	6	0	0
GEB020	2012	4	0	0
GEB020	2013	5	0	0
GEB020	2014	6	0	0
GEB020	2017	5	0	0
GEB020	2018	6	0	0

Attended probes measurements were conducted at station W1942 during the sampling season. 6 discrete pH were measured all meeting SWQS criteria. Data Source: (MassDEP Undated 6).

Datayear	Watershed	Waterbody	UNIQUE_ID	DATE	TIME	PH
2009	Neponset	Germany Brook	W1942	6/1/2009	2:11:10 PM	7.2
2009	Neponset	Germany Brook	W1942	6/3/2009	10:58:03 AM	7.2
2009	Neponset	Germany Brook	W1942	8/10/2009	2:19:02 PM	7.3
2009	Neponset	Germany Brook	W1942	8/12/2009	10:45:03 AM	7.3
2009	Neponset	Germany Brook	W1942	9/14/2009	1:41:03 PM	7.2
2009	Neponset	Germany Brook	W1942	9/16/2009	10:56:02 AM	7.2

Glen Echo Pond (MA73022)

Location:	Canton/Stoughton.
AU Type:	FRESHWATER LAKE
AU Size:	16 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported the suspected infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994, however species confirmation is still needed. Although non-native aquatic macrophyte species identification have for *M. heterophyllum* has not been specifically confirmed, the Aquatic Life Use of Glen Echo Pond will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants.

Gulliver Creek (MA73-30)

Location:	From confluence Unquity Brook, Milton to confluence Neponset River, Milton (Note: Unquity Brook culverted, confluence not visible on quad).
AU Type:	ESTUARY
AU Size:	0.02 SQUARE MILES
Classification/Qualifier:	SB: SFR

Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of Gulliver Creek so it is Not Assessed.

Hammer Shop Pond (MA73023)

Location:	Sharon.
AU Type:	FRESHWATER LAKE
AU Size:	2 ACRES
Classification/Qualifier:	B

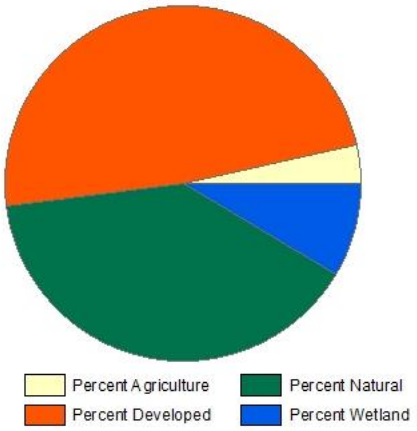
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use for Hammer Shop Pond so this use is Not Assessed.

Hawes Brook (MA73-16)

Location:	Headwaters, outlet of Ellis Pond, Norwood to mouth at confluence with Neponset River, Norwood.
AU Type:	RIVER
AU Size:	1.1 MILES
Classification/Qualifier:	B

Hawes Brook - MA73-16

Watershed Area: 8.68 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	8.66	6.63	2.12	1.84
Agriculture	3.5%	3.2%	3.7%	3.9%
Developed	48.5%	55.7%	43.2%	45.8%
Natural	39.4%	33%	37.2%	35.1%
Wetland	8.5%	8.1%	15.9%	15.1%
Impervious Cover	16.9%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

NepRWA volunteers/interns/staff collected *in situ* and grab sample data typically 4 to 6 times a year between May and October at three sites along Hawes Brook as follows: at Walpole Street in Norwood (HAB002), the railroad crossing at Endean Park (HAB006) and Washington Street (HAB010). Useable temperature and pH data spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality with no measurements exceeding 28.3°C (maximum temperatures ranged from 25 to 27.2°C) and with the exception of two measurements above 8.3SU (8.7SU in April 2009 at HAB002 and 8.47SU in October 2008 at HAB010) pH ranged from 6.69-8.07SU. Useable DO data at HAB002 and HAB010 from 2017 & 2018 were also indicative of good water quality with a minimum of 5.31mg/L and maximum saturation of 100.4%. Seasonal (btw May & Sept) total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) were also mostly indicative of good water quality at HAB002 and HAB010 with the seasonal average ranging from 0.03 to 0.06mg/L (seasonal maximums ranging from 0.03 to 0.09mg/L) and at HAB006 the seasonal average was slightly elevated in 2012 (0.13mg/L) but was less than 0.1mg/L in all other years between 2011 and 2018 (0.03 to 0.06mg/L). DFG biologists conducted fish surveys in Hawes Brook using the backpack shocking method 200ft off Washington Street in Norwood in July 2000 (Sample ID 145); 7 species (201 individuals) were collected. The sample was comprised completely of tolerant and moderately tolerant macrohabitat generalists as well as one moderately tolerant fluvial specialist (fallfish) and one tolerant fluvial dependent (white sucker). MassDEP staff collected water quality data at Washington Street in Norwood (W0544) during the summer of 2009. All of the water quality data were indicative of good conditions: three-day unattended continuous probe deployments for DO and temperature in May, August and September recorded a minimum DO concentration of 7.62mg/L, a maximum saturation of 98.4%, a max diel shift of 0.91 mg/L with a maximum temperature of 24.2°C. Attended probes; pH data ranged from 7.0-7.2SU; the maximum temperature was 21.8°C; the minimum DO concentration was 7.9mg/L and the maximum saturation was 94%. Grab sample data for total phosphorus was low (average 0.022mg/L, maximum 0.03mg/L).

The Aquatic Life Use for Hawes Brook is assessed as "Fully Supporting" based on water quality and fish data collected between 2008 and 2018.

Jewells Pond (MA73026)

Location:	Medfield.
AU Type:	FRESHWATER LAKE
AU Size:	4 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting
Herbicide database information continues to supply evidence of anon-native plant infestation in Jewell Pond. The Aquatic Life Use of Jewells Pond remains assessed as “Not Supporting” due to the infestation of Non-Native Aquatic Plants (*Myriophyllum heterophyllum*) (variable water milfoil).

Lymans Pond (MA73021)

Location:	Westwood.
AU Type:	FRESHWATER LAKE
AU Size:	25 ACRES
Classification/Qualifier:	B

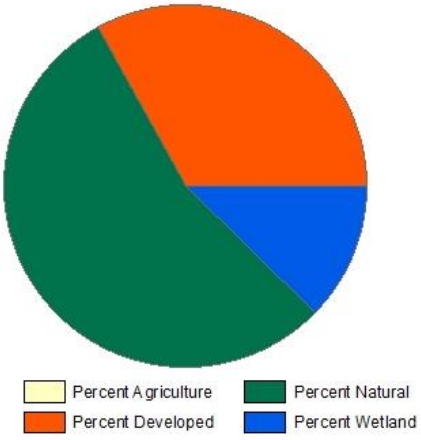
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of Lymans Pond so this use is Not Assessed.

Massapoag Brook (MA73-21)

Location:	Headwaters, outlet Hammer Shop Pond, Sharon to mouth at inlet Forge Pond, Canton (through former 2010 segment: Manns Pond MA73028).
AU Type:	RIVER
AU Size:	4.2 MILES
Classification/Qualifier:	B

Massapoag Brook - MA73-21

Watershed Area: 10.38 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	10.03	4.77	3.5	1.46
Agriculture	0.9%	1.2%	0.8%	0.6%
Developed	32.7%	43.1%	23%	25%
Natural	54.1%	43.7%	51.5%	47.8%
Wetland	12.2%	12%	24.7%	26.6%
Impervious Cover	10.8%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Added
5	5	(Fanwort*)		Added
5	5	Phosphorus, Total		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting

DFG biologists conducted fish surveys along Massapoag Brook using the backpack shocking method between 2007 and 2013 near the upper, middle and lower part of the brook (Sample ID's 4786, 2817, 2818 & 4787 respectively). Each sample contained between nine and 27 individuals and all were almost completely comprised of tolerant and moderately tolerant macrohabitat generalists. A small number of the tolerant fluvial dependent species "White sucker" and the intolerant species "Banded sunfish" were also collected. NepRWA volunteers/interns/staff conducted *in situ* and grab sampling typically 4 to 6 times a year between May and October in Massapoag Brook at Billings Street in Sharon (MPB037). Useable DO data from 2017 & 2018 were indicative of good conditions with a minimum of 7.58mg/L and maximum saturation of 96%. Temperature and pH spanning 2008 to 2018 (excluding 2015 & 2016) were also generally indicative of good water quality with just one temperature measurement exceeding 28.3°C (29°C September 2017), and a pH range of 6.71-7.89SU. Seasonal (btw May & Sept) average total phosphorus concentrations (spanning 2011 to 2018 but excluding 2015 & 2016) were generally low ranging from 0.02 to 0.06mg/L above 0.05mg/L just once (2012). MassDEP staff collected one benthic macroinvertebrate sample from Massapoag Brook between the Manns Pond impoundment and Billings Street in Sharon (Sample ID B0143) in September 2009. The RBPIII status of the sample was considered to be slightly impaired, with 71% comparability to the reference station West Branch Palmer River (B0777). Two non-native aquatic macrophytes, *Cabomba caroliniana* (Fanwort) and *Marsilea quadrifolia*

(pepperwart or water clover), were documented by MassDEP biologists in the Manns pond impoundment of Massapoag Brook during the summer of 1994. Further downstream NepRWA volunteers/interns/staff conducted *in situ* and grab sampling typically 4 to 6 times a year between May and October in Massapoag Brook near Walnut Street in Canton (MPB088). Useable water quality data were also generally indicative of good water conditions as follows: minimum DO 6.9mg/L, maximum saturation 97%, maximum temperature 24.5°C, pH range 6.82 to 8.17SU, seasonal average total phosphorus concentrations ranging from 0.02 to 0.04mg/L. The non-native aquatic macrophyte *Potamogeton crispus* (Curly-leaf Pondweed) was also observed in the brook at Mechanic Street in Canton (W1946) during MassDEP surveys conducted during the summer of 2009. The Aquatic Life Use of Massapoag Brook is assessed as "Not Supporting" due to infestations of three non-native aquatic plants including *Cabomba caroliniana* (Fanwort) and *Marsilea quadrifolia* (pepperwort) in the Manns Pond impoundment and *Potamogeton crispus* (Curly-leaf Pondweed) further downstream near Mechanic Street. All other water quality monitoring data including benthic, fish, and physico-chemical data are indicative of good conditions although the benthic macroinvertebrate bioassessments impairment is being carried forward until more recent data are collected to confirm the appropriateness of its delisting. The total phosphorus is being delisted as a cause of impairment (see Removal Comment for justification).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Phosphorus, Total	Applicable WQS attained; reason for recovery unspecified	Total Phosphorus was originally listed as an impairment during the 2002 reporting cycle (first reported as nutrients) based on samples collected from Massapoag Brook by NepRWA staff at Walnut Street in Canton from 1999 to 2001. The nutrient impairment was changed to total phosphorus in the 2010 reporting cycle. When first listed, total phosphorus concentrations ranged from 0.026 to 0.140mg/L (n=9) with four measurements greater than 0.05mg/L and a seasonal average in 2000 of 0.07mg/L. Since then total phosphorus data have been collected at the same location as well as further upstream at Billings Street in Sharon between 2011 and 2018 (excluding 2015 & 2016). Seasonal average total phosphorus concentrations at both locations have with one exception (0.06mg/L at Billings Street in 2012) been <0.05mg/L. Since the most recent data is indicative of full support for the Aquatic Life Use the Total Phosphorus impairment for Massapoag Brook (MA73-21) is being delisted.

Supporting Information for Delisted Impairments

Phosphorus, Total

NepRWA TP data for Massapoag Brook at Billings Street in Sharon MPB037 (NepRWA 2019)

Station	Year	Count TP	Count TP >0.025 mg/L	Count TP >_0.1 mg/L	TP Min mg/L	TP Max mg/L	TP Avg mg/L
MPB037	2011	5	2	0	0.02	0.03	0.02
MPB037	2012	6	5	1	0.02	0.18	0.07
MPB037	2013	5	1	0	0.02	0.03	0.02
MPB037	2014	6	2	0	0.01	0.05	0.03
MPB037	2017	6	0	0	0.01	0.02	0.02

MPB037	2018	6	4	0	0.01	0.03	0.02

NepRWA “Seasonal” TP data for MPB037 (May-Sept) (NepRWA 2019)

Station	Year	Count TP	Count TP >0.025 mg/L	Count TP >_0.1 mg/L	TP Min mg/L	TP Max mg/L	TP Avg mg/L
MPB037	2011	4	2	0	0.02	0.03	0.02
MPB037	2012	4	4	0	0.03	0.09	0.06
MPB037	2013	4	1	0	0.02	0.03	0.02
MPB037	2014	5	1	0	0.01	0.03	0.02
MPB037	2017	5	0	0	0.01	0.02	0.02
MPB037	2018	5	3	0	0.01	0.03	0.02

NepRWA TP data for Massapoag Brook at Walnut Street, Canton MPB088 (NepRWA 2019)

Station	Year	Count TP	Count TP >0.025 mg/L	Count TP >_0.1 mg/L	TP Min mg/L	TP Max mg/L	TP Avg mg/L
MPB088	2011	6	5	0	0.02	0.04	0.03
MPB088	2012	4	4	0	0.04	0.05	0.04
MPB088	2013	6	5	0	0.02	0.04	0.03
MPB088	2014	6	5	0	0.02	0.07	0.04
MPB088	2017	6	5	0	0.02	0.04	0.03
MPB088	2018	5	5	0	0.03	0.07	0.04

NepRWA “Seasonal” TP data for MPB088 (May-Sept) (NepRWA 2019)

Station	Year	Count TP	Count TP >0.025 mg/L	Count TP >_0.1 mg/L	TP Min mg/L	TP Max mg/L	TP Avg mg/L
MPB088	2011	4	4	0	0.03	0.04	0.03
MPB088	2012	3	3	0	0.04	0.05	0.04
MPB088	2013	4	4	0	0.03	0.04	0.04
MPB088	2014	5	4	0	0.02	0.04	0.03
MPB088	2017	5	4	0	0.02	0.04	0.03
MPB088	2018	4	4	0	0.03	0.07	0.04

Massapoag Lake (MA73030)

Location:	Sharon.
AU Type:	FRESHWATER LAKE
AU Size:	389 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)
MassDEP staff reported a suspected infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994, however species confirmation is still needed. MassDEP records also indicate that the Town of Sharon has had Massapoag Lake treated with herbicides for five years between 2002 and 2014 to control an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort). An infestation of Asian clam (*Corbicula fluminea*) was also reported however an observation of a live specimen will be required to confirm the infestation of this species. Although non-native aquatic macrophyte species identification for *M. heterophyllum* has not been specifically confirmed, the Aquatic Life Use of Massapoag Lake will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants. This use is also being identified with an Alert because of the potential infestation of Asian clam and Fanwort.

Memorial Pond (MA73012)

Location:	Walpole.
AU Type:	FRESHWATER LAKE
AU Size:	8 ACRES
Classification/Qualifier:	B

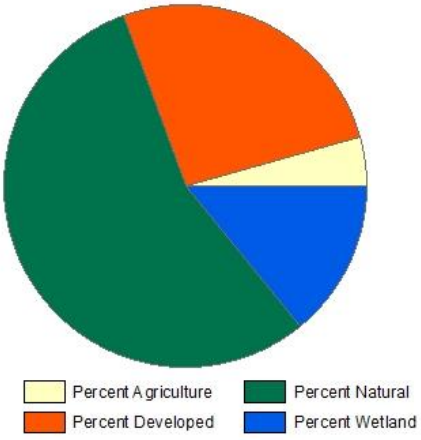
Fish, other Aquatic Life and Wildlife Use: Not Assessed
Memorial Pond is mapped as "open water" according to the MassDEP Detailed Wetlands (2005) Datalayer. Surveys from 1994 mention dense growths and hypereutrophic conditions in a shallow water body. There are no other data so the Aquatic Life Use for Memorial Pond will continue to be Not Assessed. Note: The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual.

Mill Brook (MA73-08)

Location:	From headwaters (perennial portion) north of Hartford Street, Medfield to mouth at inlet of Jewells Pond, Medfield.
AU Type:	RIVER
AU Size:	2.3 MILES
Classification/Qualifier:	B

Mill Brook - MA73-08

Watershed Area: 3.53 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.52	3.51	1.06	1.06
Agriculture	4.4%	4.4%	1.7%	1.7%
Developed	26.1%	26.2%	17.3%	17.3%
Natural	55.4%	55.3%	47.1%	47.1%
Wetland	14.1%	14.1%	33.9%	33.9%
Impervious Cover	8.2%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)
MassDEP biologists conducted fish surveys using the backpack shocking method in Mill Brook in the vicinity of Millbrook Rd in Medfield, in August 2009 (Sample ID 4518) and DFG biologists conducted backpack electrofishing in the same area in July 2006 (Sample ID 1603). In 2009 3 species (10 individuals) were collected. The sample was comprised completely of moderately tolerant macrohabitat generalists, however, young of year EBT were also observed (but not captured); consequently, this waterbody will be assessed as a Tier 1 cold water fishery based on existing use by EBT. Of note, the 1994 WQAR stated that this brook was historically documented as a naturally reproducing trout stream. Downstream of the road in 2006 3 species (8 individuals) were collected. The sample was comprised completely of moderately tolerant macrohabitat generalists, with chain and redfin pickerel being the most common species. MassDEP staff collected one benthic macroinvertebrate sample (Sample ID B0140), just downstream of Millbrook Rd in July 2009. The RBPIII status of the sample was considered to be "slightly impaired", with 62% comparability to the reference station West Branch Palmer River (B0777). MassDEP staff also collected water quality data in Mill Brook at Millbrook Road (W1938) during the 2009 surveys. Attended pH data ranged from 6.4-6.5SU, maximum temperature was 19.0^{o}C, and minimum DO was 7.3mg/L. Grab samples for total phosphorus averaged at 0.028mg/L with a maximum of 0.04mg/L. Two-day unattended continuous probe deployments for DO in June, August and September recorded a minimum DO concentration of 6.94mg/L, maximum saturation of 91.5% and a max diel shift of 0.70 mg/L. For the 95-day continuous temperature logger deployment the maximum 7-DADM was 23.2^{o}C and the maximum 24hr rolling average was 22.2^{o}C. The 7-DADM exceeded the chronic evaluation guideline of ≤ 20.0^{o}C 25 times but did not exceed the acute

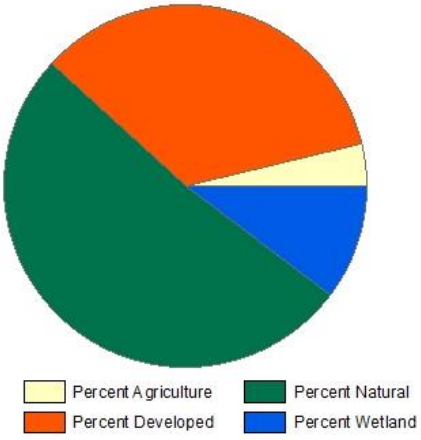
evaluation guideline of 23.5°C at any time. The general nature of the temperature excursions appear to be as expected for a small stream in the summer months i.e. temperatures were >20°C for a consistent period of time between mid-July and late August, with no isolated spikes. However, this very small watershed of just 3.52 sq. miles has only 69.5% "natural and wetland" with ~8.2% impervious cover, which fails to meet the thermal excursion criteria. Therefore, the temperature violations in the Mill Brook watershed are NOT considered natural. Lastly NepRWA volunteers/interns/staff collected *in situ* and grab sample data typically 4 to 6 times a year between May and October, just upstream of Jewells Pond at Nebo Street in Medfield (MIB030). Useable temperature and pH data at this location spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality. However, at least half of the useable attended dissolved oxygen measurements each year (limited to 2017-2018) were <5 mg/L, which corroborates the existing listing for DO for this AU which was also based on NepRWA data collected in 2007 and 2008. The NepRWA sampling location is just downstream from a very large wetland complex. Total phosphorus (btw May & Sept) appears to be worsening at this location over the years NepRWA sampled there, with usually 1-2 measurements per season exceeding 0.1 mg/L in 2014, 2017 & 2018. The maximum total phosphorus in 2018 was 0.16 mg/L with a seasonal average of 0.11 mg/L. There is no other evidence to suggest a nutrient impairment for Mill Brook at this time, however an Alert will be identified for Total Phosphorus and additional sampling at Nebo Street will be recommended.
The Aquatic Life Use for this Mill Brook AU (MA73-08) will be listed as "Not Supporting" due to elevated temperatures exceeding the chronic criterion for this Tier 1 cold water fishery. The existing listings for low DO, dewatering, and benthic macroinvertebrates are being carried forward.

Mill Brook (MA73-12)

Location:	Source northeast of Ledgewood Drive, Dover to inlet of Pettee Pond, Westwood.
AU Type:	RIVER
AU Size:	2.9 MILES
Classification/Qualifier:	B

Mill Brook - MA73-12

Watershed Area: 2.2 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.17	2.14	0.54	0.54
Agriculture	3.7%	3.7%	1.1%	1.1%
Developed	34.5%	35%	38.3%	38.3%
Natural	51.5%	50.9%	42.9%	42.9%
Wetland	10.3%	10.4%	17.7%	17.7%
Impervious Cover	10.3%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

DFG biologists conducted fish surveys using the backpack shocking method in Mill Brook at the Oriole Rd crossing in Westwood (Sample ID 1654) and upstream of the Sunrise Rd crossing (Sample ID 1655) both in July 2006; MassDEP biologists also conducted backpack electrofishing off Tamarack Rd (Sample ID 4524) in September 2009. At Oriole Road seven species (63 individuals) were collected, with the sample comprised of moderately tolerant macrohabitat generalists as well as one intolerant species i.e. the fluvial specialist "Brown Trout" (4 individuals all measuring less than 140mm) and one fluvial dependent species (one individual). At Sunrise Rd only three species (17 individuals) were collected, with the sample comprised of just one tolerant macrohabitat generalist (bluegill) as well as one intolerant species (the fluvial specialist "Brown Trout" (4 individuals, all of them measuring less than 140mm) and one fluvial dependent species (White Sucker (5 individuals). At Tamarack Rd five species (50 individuals) were collected, with the sample comprised completely of moderately tolerant and tolerant macrohabitat generalists. The presence of YOY Brown Trout at Oriole Rd and Sunrise Rd puts this AU in the category of a Tier 2 Cold Water Fishery (existing use history as a CFR is also there in form of concern from North Walpole Fish and Game Club back in 1999). MassDEP staff collected water quality data in Mill Brook at Tamarack Rd in Westwood (W1941) during the 2009 surveys; all data were indicative of good water quality: A long term (95-day) temperature logger was deployed from mid-June through mid-September. The maximum 7-DADA was 21.4°C and the maximum 24hr rolling average was 22.2°C. The 7-DADA exceeded the chronic evaluation guideline for a Tier 2 Cold Water Fishery of ≤ 21.0°C only 4 times and did not exceed the acute evaluation guideline of 24.1°C at any time. Two discrete temperature readings were 15.8 and 16.7°C. NepRWA volunteers/interns/staff collected *in situ* measurements and grab samples typically 4 to 6 times a year between May and October, at the inlet to Pettee Pond in Westwood (MLB024); useable temperature and pH data spanning 2008 to 2018 (excluding 2015 & 2016) were also indicative of good water quality; with temperature only exceeding the "discrete data criterion" of 20°C once in August 2018 (maximum temperature 22°C) and a pH range of 6.68-7.67SU. Useable DO data at the same location from 2017 & 2018 were also indicative of good water quality with a minimum of 6.23mg/L and maximum saturation of 90.1%. The seasonal (btw May & Sept) total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016)

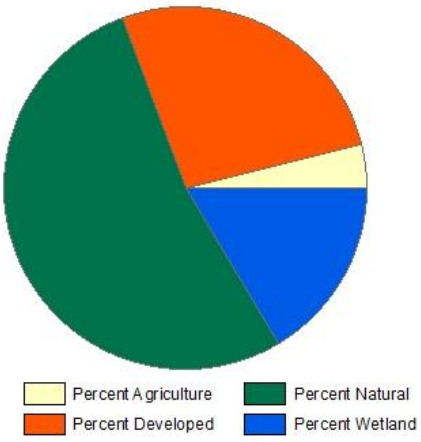
were slightly elevated (maximum 0.15mg/L with seasonal averages ranging from 0.03 to 0.07mg/L (as a river entering a lake (Pettee Pond), EPA gold book criteria is 0.05mg/L).
Based on the water quality data and presence of young of year cold water fish species (brown trout), the Aquatic Life Use of Mill Brook is assessed as Fully Supporting. An alert is being added for total phosphorus.

Mine Brook (MA73-09)

Location:	Headwaters, outlet of Jewells Pond, Medfield, to the inlet of Turner Pond, Walpole.
AU Type:	RIVER
AU Size:	3 MILES
Classification/Qualifier:	B

Mine Brook - MA73-09

Watershed Area: 5.99 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	5.98	3.69	1.63	1.03
Agriculture	3.8%	2.6%	1.6%	0.8%
Developed	26.9%	27.3%	15.3%	14%
Natural	52.9%	51%	43.7%	41.2%
Wetland	16.4%	19%	39.4%	44%
Impervious Cover	8.7%			

Fish, other Aquatic Life and Wildlife Use: Not Supporting

DFG biologists conducted fish surveys using the backpack shocking method in the vicinity of Elm Street in July 2006 (Sample ID 1653) and also in July 2002 (Sample ID 685). Upstream of the road in 2006 6 species (23 individuals) were collected. The sample was comprised almost completely of tolerant and moderately tolerant macrohabitat generalists but two intolerant species (only 2 individuals) including one fluvial specialist were also found. Downstream of the road in 2002 8 species (59 individuals) were collected. The sample was also comprised almost completely of tolerant and moderately tolerant macrohabitat generalists however two small Brown Trout" (2 individuals less than 140mm so native) were also collected.

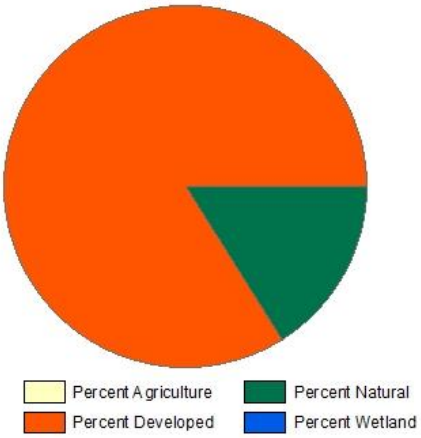
Although the fish data were indicative of generally good conditions in this low gradient stream the historical impairment for dissolved oxygen is being retained so the Aquatic Life Use for Mine Brook is assessed as "Not Supporting".

Mother Brook (MA73-28)

Location:	Headwaters at the Charles River Diversion control structure, Dedham to mouth at confluence with Neponset River, Boston [Reported as MA72-13 until May 3, 2000].
AU Type:	RIVER
AU Size:	3.7 MILES
Classification/Qualifier:	B

Mother Brook - MA73-28

Watershed Area: 2.58 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.56	2.56	0.48	0.48
Agriculture	0%	0%	0%	0%
Developed	83.2%	83.2%	66.8%	66.8%
Natural	15.9%	15.9%	30.4%	30.4%
Wetland	1%	1%	2.8%	2.8%
Impervious Cover	34.8%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Dewatering*)		Removed
5	5	(Flow Regime Modification*)		Added
5	5	Trash		Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting

Mother Brook NepRWA volunteers/interns/staff conducted *in situ* and grab sampling in Mother Brook typically 4 to 6 times a year between May and October in the upper reach at Washington St in Dedham (MOB001). DO data collected in 2017 & 2018 (n=12) ranged from 1.7 to 10.5mg/L and was <5.0mg/L in June and July 2017. The maximum saturation was 97%, pH ranged from 6.48 to 7.67 SU (n=50), the maximum temperature was 26°C, and the seasonal (btw May & Sept) average total phosphorus concentration data (spanning 2011 to 2018 but excluding 2015 & 2016) ranged from 0.05 to 0.08mg/L. DFG biologists conducted backpack electrofishing near the upstream reach of Mother Brook off the corner of Lower East St/just NW of Washington St at the gaging station in July 2011 (Sample ID 3733). Only seven individuals, all tolerant or moderately tolerant macrohabitat generalists, were collected representing four species however sampling efficiency was noted as being poor. From 2007 to 2009 a section of Mother Brook was drained in order to clean up PCB's from the sediment. The 0.3mile stretch ran from 98 Business Street to just before the brook's confluence with the Neponset River downstream of Hyde Park Avenue. The canal had to be drained and the contaminated sediment completely removed. The cleanup was completed by December of 2009. NepRWA volunteers/interns/staff conducted *in situ* and grab sampling in Mother Brook typically 4 to 6 times a year between May and October in the downstream reach at Reservation Rd in Hyde Park (MOB032). Useable DO data

collected between 2017 & 2018 ranged from 4.0 to 10.1mg/L with only one of 12 measurements below 5.0mg/L. The maximum saturation was 96%, pH ranged from 6.66 to 7.8 SU (n=53), and the maximum temperature was 27°C. Seasonal (btw May & Sept) total phosphorus average data (spanning 2011 to 2018 but excluding 2015 & 2016) ranged from 0.05 to 0.07mg/L. MassDEP staff also conducted water quality monitoring of Mother Brook at Reservation Rd in Hyde park (W1949) during the summer of 2009. Unattended continuous probe deployments for two days each in in June, August and September recorded a minimum DO of 5.07mg/L (mean minimum DO concentrations ranging from 5.12 to 7.65mg/L), a maximum saturation of 107%, the maximum diel DO shift was 2.62mg/L, and the maximum temperature was 27.3°C. Attended probe measurements were as follows: DO ranged from 5.5-8.6mg/L with a maximum saturation of 95%, pH ranged from 6.9 to 7.3SU, the maximum temperature was 24.6°C (n=6), and the seasonal average total phosphorus concentration was 0.059mg/L with a maximum of 0.08mg/L.

The Aquatic Life Use of Mother Brook will continue to be assessed as "Not Supporting" based on existing impairments for Dewatering, Dissolved Oxygen, and Total phosphorus. It should be noted that the historical listing was "partial support" for nutrients in the 2002 reporting cycle (changed to Total Phosphorus in the 2010 reporting cycle) based on NepRWA data at Washington Street (MOB001) collected from 1999 to 2001. Concentrations ranged from 0.055 to 0.157 mg/L (n=10) with three samples greater than 0.1 mg/L. The seasonal averages were 0.086mg/L in 2000 and 0.092 mg/L in 2001. More recent total phosphorus data collected by both NepRWA and MassDEP document seasonal average concentrations between 0.05 and 0.08mg/L and there were no other indicators of nutrient enrichment (maximum saturation 107%, maximum diel DO shift 2.6mg/L, no observations of dense/very dense filamentous algae recorded). Total phosphorus delisting may be warranted in the future.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Dewatering	Clarification of listing cause	The dewatering impairment for Mother Brook (MA73-28) is being changed to flow regime modification which is more appropriate. The original impairment in 2002 reporting cycle was flow alteration and this was remapped to low flow alteration in the 2010 reporting cycle. Mother Brook, the first canal constructed in the US, is capable of diverting streamflow from the Charles River Basin into the Neponset River Basin. The diversion is operated by MDC which regulates flow in the spring and the fall as well as during major storm events to prevent flooding in the lower Charles River Basin.

Supporting Information for Delisted Impairments

Dewatering

The dewatering impairment for Mother Brook (MA73-28) is being changed to flow regime modification which is more appropriate. Mother Brook, the first canal constructed in the US, is capable of diverting streamflow from the Charles River Basin into the Neponset River Basin. The diversion is operated by MDC which regulates flow in the spring and the fall as well as during major storm events to prevent flooding in the lower Charles River Basin.

Neponset Reservoir (MA73034)

Location:	Foxborough.
AU Type:	FRESHWATER LAKE
AU Size:	312 ACRES
Classification/Qualifier:	B: WWF, HQW

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fanwort*)		Added
5	5	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

MassDEP staff reported an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort) in 1994. An infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable milfoil) was also suspected although the specific species could not be confirmed. MassDEP staff also observed highly turbid water and algal blooms during the 1994 survey, which corroborates the existing impairment listing for turbidity and algae. Between January 2005 and December 2018 whole effluent toxicity tests were conducted on the Invensys effluent using the test organisms *C. dubia* (n=56 tests) and *P. promelas* (n=55 tests). The LC_{50}s of all the tests were >100% effluent with slight evidence of toxicity to *P. promelas* in June 2017. The effluent exhibited chronic toxicity to *C. dubia* (Feb 2016, Aug 2016, Sept 2017, June & Sept 2018) ranging from 12.5 to 50% effluent and to *P. promelas* (December 2017 and June 2018) with a value of 50% effluent.

Historically this AU had been impacted by a release of hazardous materials, including heavy metal contamination of the sediments. The release originated from an industrial wastewater discharge to the inlet stream of the Neponset Reservoir, known as Gudgeon Brook, from the Foxboro Company facility. The company was issued a Notice of Responsibility (NOR) in 1995, citing elevated levels of cadmium in the sediment. The combined results of the subsequent Phase II CSA evaluation demonstrated that the conditions at the Site did not pose a "Significant Risk of Harm to the Environment", except for the surface water exceedances of the NRWQC for cadmium. The primary remedial goal was to reduce dissolved concentrations of cadmium in the surface water of the Reservoir. However, it was concluded that a Permanent Solution was not technically feasible since there was uncertainty regarding whether any of the technologies would achieve a condition of NSR (no significant risk). A temporary solution proposed biannual sampling of the reservoir for 5 years to evaluate trends in cadmium concentrations in surface water and sediments and confirmation that a condition of "No Substantial Hazard" was maintained. By 2018 it was concluded that the concentration of cadmium in the surface water no longer exceeded the NRWQC value. It was also stated that, with the source of the cadmium discharge having been eliminated it was expected that concentrations of the metal in the reservoir would continue to decrease over time. The current effluent to this AU is regulated under the terms of an NPDES permit (# MA0004120) issued on July 17, 2015. The discharge is subject to routine monitoring and reporting.

The Aquatic Life use of Neponset Reservoir will continue to be assessed as "Not Supporting" based on existing impairments for Algae, Non-Native aquatic plants and turbidity. A new impairment will be added for *Cabomba caroliniana* (Fanwort). An alert is being added for the potential infestation of *M. heterophyllum.*

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	The generic "Non-Native Aquatic Plants" is not needed since the specific macrophyte Cabomba caroliniana (fanwort) has been utilized.

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

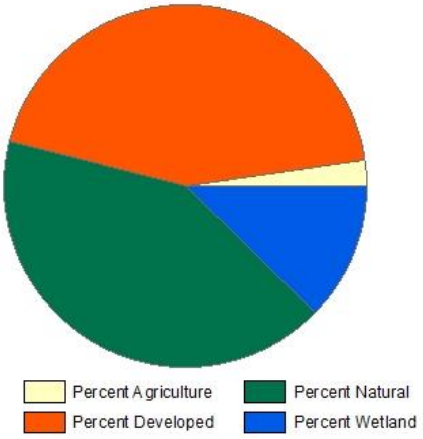
During the WPP 1994 synoptic survey of this reservoir, an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* was identified (MassDEP 1994). The generic impairment "Non-Native Aquatic Plants" is not needed since the specific macrophyte Cabomba caroliniana (fanwort) has been utilized.

Neponset River (MA73-01)

Location:	Outlet of Neponset Reservoir, Foxborough to confluence with East Branch, Canton (through former 2010 segments: Crackrock Pond MA73010 and Bird Pond MA73002) (HQW qualifier applies upstream of Crackrock Pond Dam (NATID: MA00816)) (SARIS note: the upper portion of segment between Neponset Reservoir Dam (NATID: MA03115) and Crackrock Pond Dam not included in SARIS descriptor).
AU Type:	RIVER
AU Size:	13.2 MILES
Classification/Qualifier:	B: WWF, HQW* (*HQW applies to portion upstream of Crackrock Pond Dam)

Neponset River - MA73-01

Watershed Area: 43.99 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	43.92	10.98	11.53	2.86
Agriculture	2.3%	0.4%	1.8%	0%
Developed	43.8%	60%	31.3%	37.9%
Natural	41.7%	29.2%	42.6%	34.8%
Wetland	12.3%	10.4%	24.3%	27.3%
Impervious Cover	17.8%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Cadmium		Added
5	5	(Curly-leaf Pondweed*)		Added
5	5	(Fish Passage Barrier*)		Added
5	5	Metals		Removed
5	5	(Non-Native Aquatic Plants*)		Added
5	5	Unspecified Metals in Sediment		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting
Site investigations for Neponset Reservoir/Crackrock Pond (Foxboro Co) concluded in 2018 cadmium concentration in the ponds surface water was below criteria and should continue to decrease. NepRWA conducted in situ and grab sampling 5-6 times/year between May and Oct at sites along this Neponset River AU (MA73-01), outlet Crackrock Pond (NER002), South Street, Walpole (NER040), Hollingsworth & Vose (Bird Pond impoundment) dam, Walpole (NER075), and Pleasant Street, Norwood (NER080). In the upper reaches low DOs often measured at outlet Crackrock Pond (three of 10 measurements

between May 2017 - Oct 2018 were 0.23 to 3.69mg/L) and often low DO at South Street (range 1.92 - 7mg/L half below 5.0mg/L). Temperature (T) and pH data (2008 to 2018 but excluding 2015 & 2016) indicative of good conditions at these sites (max T 26.5°C, pH 6.47 to 7.55). Seasonal avg TP elevated in both 2017 and 2018 at NER002 (max 0.26mg/L) and lower at NER040 (range 0.05 - 0.08mg/L). Backpack electrofishing by DFG biologists downstream South Street in 2007 (Sample ID 2804) caught 16 fish (six species) mostly moderately tolerant macrohabitat generalists and a few intolerant swamp darters. MassDEP staff found infestations of two non-native aquatic macrophytes P. crispus and M. heterophyllum near Rt 27, Walpole (W1943) in summer 2009 otherwise data here indicative of good conditions: 3-day probe deployments min DO 7.42mg/L, max diel shift 1.52mg/L, and max saturation 102.2%, max T (95-day thermistor) 28oC (max 7-DADM 27.3°C), seasonal avg TP 0.034mg/L, and no exceedances of acute or chronic metals criteria (n=4 samples). In the lower reaches of this Neponset River AU NepRWA data (NER075 and NER080) indicative of generally good conditions: minimum DO 6.06 and 4.56mg/L (two of 10 measurements slightly below 5mg/L), max saturation 102%, max T 27°C, pH 6.58 - 8.08SU, seasonal avg TP 0.03 to 0.05mg/L. Between these two NepRWA sites Certainteed Inc. (MA0003531) also collected river water ~1500' south of Morse Street, Norwood for site control in their WET tests. Survival of both C. dubia survival (n=31 tests between Feb 2005 - Oct 2018) and P. promelas (n=12 between Feb 2005 - Aug 2010) exposed (48hr) to river water was good (> 85%). The LC50s for both C. dubia and P. promelas were all >100% effluent (n= 28 valid tests Feb2005 - Oct 2018 for C. dubia and 11 valid tests Feb 2005 - Aug 2010 for P. promelas). Two valid C. dubia tests were conducted on outfall 002 between April 2017 and Jan 2018 using C. dubia. The LC50 was 72.5% effluent in April 2017 and was >100% effluent in January 2018. Factory Mutual Engineering (MA0003638) discharge of treated effluent (sprinkler testing operations) ended June 2004. According to DMF biologists two barriers, Baker Chocolate Dam and Tilestone and Hollingsworth Dam (both with passage scores of 10—no possible passage in the lower Neponset River AU (MA73-03) block passage of herring, eel, rainbow smelt and/or shad further up into the Neponset River. The next upstream barrier on the Neponset after Tilestone and Hollingsworth Dam is Hollingsworth & Vose dam in Walpole.
The Aquatic Life Use for this Neponset River AU (MA73-01) will continue to be assessed as Not Supporting based on low DO and elevated TP in the upper reaches of the river. Impairments for the non-native plant Curly-leaf pond weed (P. crispus) and fish passage barrier for diadromous fish are being added. The generic Non-Native Aquatic Plants impairment is being added for the presences of M. heterophyllum because this species code is not available. Metals is being delisted based on the recent results of the site investigations conducted in Crackrock Pond as well as the lack of any acute or chronic water column metals exceedances near Rt 27, Walpole during summer 2009 (see further justification in the removal comment). Unspecified metals in sediment is being added to address sediment contamination documented during the 1994 MassDEP survey and Cadmium is being added based on EPA's evaluation of water column data.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Metals	Applicable WQS attained; based on new data	In January 2019 MassDEP received approval of the Final Permanent Solution Statement (PSS) for the hazardous materials release from the Foxboro Company Industrial Discharge that affected Neponset Reservoir and Crackrock Pond (original metals impairment listed during the 1998 reporting cycle based on 1994 water column and sediment analyses conducted by MassDEP). The Phase II CSA evaluation demonstrated that the conditions at the Site did not pose a "Significant Risk of Harm" to the environment except for "the surface water exceedances of NRWQC for cadmium". The primary remedial goal was to reduce dissolved concentrations of cadmium in the surface water of Crackrock Pond. A brief synopsis of the investigations is summarized as follows: The final Phase III remedial action plan (RAP) Approval of the PSS associated with the was approved by MassDEP on January 19, 2012. The primary remedial goal was to reduce dissolved concentrations of cadmium in the surface water of Neponset Reservoir and Crackrock Pond to levels below the established NRWQC, thus achieving a condition of No Significant Risk of Harm to the Environment at the Site. However, the Phase III finally

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		concluded that a Permanent Solution was not considered to be technically feasible for the Site since there was substantial uncertainty regarding whether any of the technologies would achieve a condition of NSR (no significant risk). In January 2013, a Temporary solution (TSS) was determined to be appropriate for the Site. This solution proposed biannual sampling for the following 5 years to evaluate trends in cadmium concentrations in surface water and sediments and confirmation that a condition of "No Substantial Hazard" was maintained. In accordance with the Plan surface water sampling events were completed at Crackrock Pond from 2013 through 2017. The purpose of this sampling was to monitor the extent of NRWQC exceedances and to assess trends in surface water conditions at the Site. Four sampling events were completed during the first two years of monitoring following the filing of the Temporary Solution (2013 and 2014) and two additional monitoring events were completed during the fifth year of monitoring (2017). The monitoring events were timed to represent a variety of seasonal conditions. During each sampling event, surface water samples were collected from four fixed locations in Crackrock Pond. In February 2018, a Working Draft PSS was created for the Site. The PSS concluded that the concentration of cadmium in the surface water no longer exceeded the NRWQC value. Additionally, the PSS stated that: "with the source of the cadmium discharge having been eliminated, it is expected that concentrations of the metal in the reservoir will continue to decrease over time". The current NPDES discharge to Gudgeon Brook now consists mainly of stormwater conveyed through drain lines from areas on the Schneider facility and adjacent Foxborough neighborhoods, as well as stormwater from the separate Town of Foxborough storm drainage system along Chestnut Street. The current effluent is regulated under the terms of the NPDES permit [#MA0004120] issued on July 17, 2015 and is subject to routine monitoring and reporting. Furthermore, none of the metals (including Cu, Cd, and Pb) sampling in the river near Route 27 in Walpole (W1943) four times during the summer of 2009 exceeded acute or chronic criteria. Water column metals samples were collected at the outlet of Crackrock Pond (NE02), South Street in Walpole (NE04) and Pleasant Street Bridge in Norwood (NE10) three times during the summer of 1994. One sample of nine samples analyzed for Hg was at the detection limit (0.0002mg/L) at NE10 while all of the other samples were reported <0.0002mg/L so Hg is also not considered an impairment. Based on all of these data/information, the metals

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		impairment is being delisted for this Neponset River AU (MA73-01).

Supporting Information for Delisted Impairments

Metals

Historical contamination from The Foxborough Company

In the mid-1990's it was discovered that the Neponset Reservoir, (headwaters of the Neponset River and Crackrock Pond), had been impacted by a release of hazardous materials, including heavy metal contamination of the sediments. The release originated from an industrial wastewater discharge from **The Foxboro Company facility** (a metal plating and manufacturing company) and continued for many years. In April 2001, The Foxboro Company changed its name to Invensys Systems, Inc. These days the company is known as "**Schneider Electric USA, Inc**.", and is involved in the digital transformation of energy management and automation. The Foxboro Company discharged process wastewater and sanitary wastewater via an NPDES-permitted discharge point (permit No. MA0004120 and State Permit No. 307), to the inlet stream of the Neponset Reservoir, known as Gudgeon Brook. The process discharge was connected to the Mansfield WWTP in 1987 and the sanitary discharge was connected in 1989. In 1994, the facility went to a closed-loop system, eliminating its Non-Contact Cooling Water (NCCW) discharge.

In addition, 1994 sediment analyses (MassDEP 1995) indicated that Crackrock Pond (located downstream from Neponset Reservoir) showed high concentrations of phosphorus. It was suspected that the Foxboro Company was also responsible for this, as a result of treated process wastewater containing phosphorus being discharged to the reservoir. An evaluation of phosphorus levels in the sediments of Neponset Reservoir was reported on in 1999 (ESE 1999). The report concluded that the phosphorus levels in sediments within the Neponset Reservoir did not display spatial patterns indicative of an historical discharge from the "Foxboro Company". It was also concluded that the concentrations of phosphorus within the sediments of the Neponset Reservoir were not different from those measured in comparable Massachusetts waterbodies, which had not received discharges from permitted point sources.

On May 19, 1995, the MassDEP issued to The Foxboro Company a Notice of Responsibility **(NOR)** under the MCP [MASSACHUSETTS CONTINGENCY PLAN]. The NOR cited elevated levels of cadmium in sediments in the Neponset Reservoir. The May 1996 Phase I Investigation Report of the Neponset Reservoir found that cadmium and a number of other metals in sediments, exceeded the Massachusetts Contingency Plan Stage I screening levels, that were used to judge if there was potential for exposure (Menzie-Cura & Associates 2001).

Between August 1997 and September 1998, portions of the facilities drain line that fed into the outfall at Gudgeon Brook were cleaned out to remove solids, including potential residual metals contamination. This action in effect mitigated the source of COC's to the Reservoir to the extent feasible as required under 310 CMR 40.1003(5).

From 2003 through 2008 the Phase II CSA [COMPREHENSIVE SITE ASSESSMENT] was developed. This time period included work on a **Supplemental Phase II Comprehensive Site Assessment** (Woodard&Curran, Final Draft Neponset Reservoir Supplemental Phase II Comprehensive Site Assessment- Downstream Crackrock Pond Release Tracking Number4-11387 2008) to investigate and define the nature and extent

of the release downstream of the Neponset Reservoir, specifically Crackrock Pond. The objective of the Supplemental Phase II was also to compare the chemical and biological conditions in Crackrock Pond to those of the Neponset Reservoir in order to evaluate the potential for risk to ecological receptors.

The assessment of Crackrock Pond was accomplished using a comparative analysis approach in which appropriate parallels were made using data developed during the Phase II **CSA** study in conjunction with the data collected as part of the supplemental investigation. Rather than completing an entirely new risk evaluation for Crackrock Pond, chemical and biological data from Neponset Reservoir were used as a basis for evaluating ecological health risks in Crackrock Pond. Surface water, sediment, fish tissue sampling and a habitat survey were conducted in Upper, Middle, and Lower Crackrock Pond**.** Two rounds of surface water were collected from five locations (June **2006** and January **2007)** in the Pond at varying depths in the water column. One round of sediment sampling was conducted (June **2006)** at twelve locations to a depth of **36** inches below the sediment surface. Fish were collected using a variety of nets and equipment and specimens were retained for tissue analysis. Samples from all media were analyzed for site-specific Constituents of Concern (COCs) consisting of cadmium, chromium, copper, nickel, silver, and zinc. No benthic invertebrate toxicity tests were run using Crackrock Pond sediments as part of the Phase II CSA or the Supplemental CSA. Major findings of the supplemental investigation included the following:

- Fish Assessment. The fish community structure and health conditions were similar to those observed in the Neponset Reservoir. In addition, on an overall basis, **COC** body burdens in Crackrock Pond fish were similar to or lower than those in Neponset Reservoir fish.

- Surface Water and Sediment Geochemistry Assessment. Concentrations of COCs in Crackrock Pond surface water and sediment were found to be generally lower than those observed in the Neponset Reservoir. Concentrations of dissolved cadmium and copper in surface water in Upper and Middle Crack Rock Pond exceeded National Recommended Water Quality Criteria (NRWQC) on an infrequent basis.

In summary, the habitats, geochemical characteristics, and concentrations of COCs in Crackrock Pond were found comparable to those documented in the Neponset Reservoir. As such the following conclusions could be made:

2008 Supplemental Phase II CSA (Downstream Evaluation of Crackrock Pond):

- Surface water and sediment concentrations of COCs were lower in Crackrock Pond than in the Neponset Reservoir
- The habitats, geochemical characteristics, and concentrations of COCs in Crackrock Pond surface water, sediment and fish were comparable to those documented in the Neponset Reservoir.
- Conditions in Crackrock Pond did not pose a substantial hazard to ecological receptors.
- The downstream extent of contamination was defined as the Western edge of Middle Crackrock Pond.
- Conditions in Crackrock Pond did not present a significant risk of harm to human health, public safety, or public welfare. However, consistent with the findings of the 2003 Phase II Report for Neponset Reservoir, a conclusion of No Significant Risk to the environment could not be supported for Crackrock Pond due to surface water exceedances of U.S. EPA National Recommended Water Quality Criteria (NRWQC).
- A condition of No Substantial Hazard to the environment exists for Crackrock Pond.

Metals delisting reasoning:

The combined results of the Phase II CSA evaluation (incorporating the Supplemental Phase) demonstrated that the conditions at the Site did not pose a **Significant Risk of Harm** to the environment with one exception — the **surface water exceedances of NRWQC for cadmium**.

According to the Approval of Permanent Solution Statement (MassDEP June 2019), the final Phase III remedial action plan (RAP) was approved by MassDEP on January 19, 2012. The primary remedial goal was to reduce dissolved concentrations of cadmium in the surface water of Neponset Reservoir and Crackrock Pond to levels below the established NRWQC, thus achieving a condition of No Significant Risk of Harm to the Environment at the Site. However, the Phase III finally concluded that a Permanent Solution was not considered to be technically feasible for the Site since there was substantial uncertainty regarding whether any of the technologies would achieve a condition of NSR (no significant risk).

In January 2013 a Temporary solution (TSS) was determined to be appropriate for the Site. This solution proposed biannual sampling for the following 5 years to evaluate trends in cadmium concentrations in surface water and sediments and confirmation that a condition of "No Substantial Hazard" was maintained. In accordance with the Plan surface water sampling events were completed at Crackrock Pond from 2013 through 2017. The purpose of this sampling was to monitor the extent of NRWQC exceedances and to assess trends in surface water conditions at the Site. Four sampling events were completed during the first two years of monitoring following the filing of the Temporary Solution (2013 and 2014) and two additional monitoring events were completed during the fifth year of monitoring (2017). The monitoring events were timed to represent a variety of seasonal conditions. During each sampling event, surface water samples were collected from four fixed locations in Crackrock Pond.

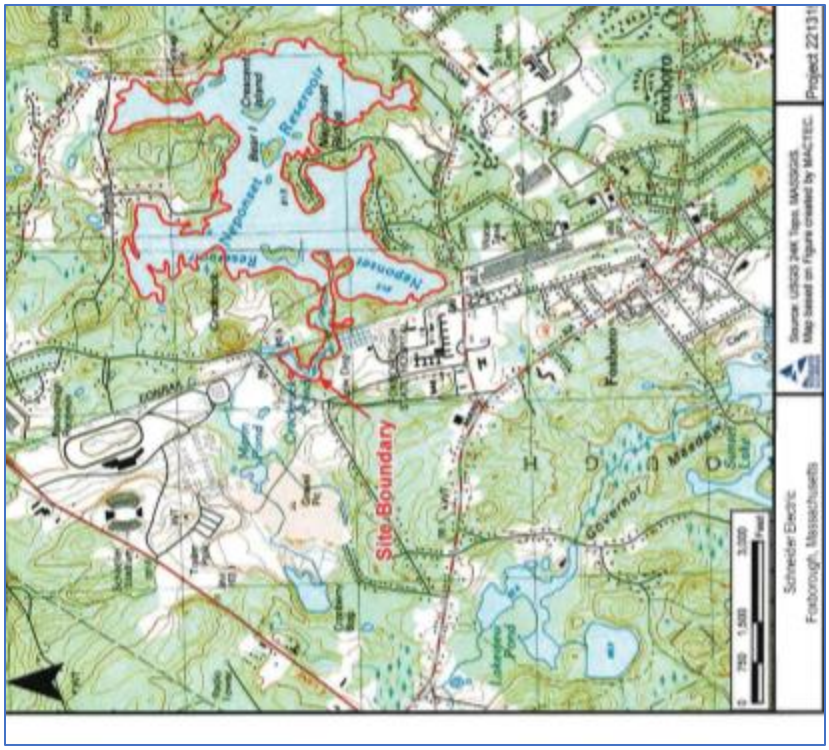
In February 2018 a Working Draft Permanent Solution Statement (PSS) was created for the Site (Woodard&Curran 2018). The PSS concluded that the concentration of cadmium in the surface water no longer exceeded the NRWQC value. Additionally the PSS stated that: "with the source of the cadmium discharge having been eliminated, it is expected that concentrations of the metal in the reservoir will continue to decrease over time".

In January 2019 MassDEP received the Final Permanent Solution Statement (PSS) (MassDEP June 2019) for the disposal site. No additional response actions are required. The current effluent to Gudgeon Brook now consists mainly of stormwater conveyed through drain lines from areas on the Schneider facility and adjacent Foxborough neighborhoods, as well as stormwater from the separate Town of Foxborough storm drainage system along Chestnut Street. The current effluent is regulated under the terms of an NPDES renewal permit [#MA0004120] issued on July 17, 2015. The discharge is subject to routine monitoring and reporting.

Unspecified metals in sediment however is being added to address sediment contamination documented during the MassDEP 1994 survey.

Data supporting the metals delisting:

Data Source: (Woodard & Curran 2017)


Site Boundary
Foxboro
Schneider Electric
Foxborough, Massachusetts
Project 22131


NR-SW-F
SW-F-SHORE
NR-SW-M
NR-SW-N
NR-SW-O
NR-SW-P
NR-SW-B
WOODARD & CURRAN

TABLE 1
Summary of Surface Water Analytical Results (Biannual Samples)
Neponset Reservoir & Crackrock Pond
Foxborough, Massachusetts

			Crackrock Pond Samples										
		Location	NR-SW-M	NR-SW-M	NR-SW-MM	NR-SW-M	M (DUP-Z)	NR-SW-M	NR-SW-MM	NR-SW-M	NR-SW-MM	NR-SW-M	NR-SW-MM
		Sample Date	8/14/13	4/10/14	4/10/14	9/19/14	9/19/14	12/15/14	12/15/14	3/1/17	3/1/17	7/5/17	7/5/17
General Chemistry	Alkalinity	mg/L	22.2	16.7	16.6	23.7	23.1	15.6	15.4	17.3	20.6	21.1	21.2
	TSS	mg/L	8.3	<5	<5	<5	<5	<4	<4	12.4	7.6	6	4.4
	Chloride	mg/L	48	46	47	62.5	63	49.4	48.8	76.1	76.2	82.4	82.6
	Sulfate	mg/L	--	<10	<10	3.72	4.25	3.91	3.83	5.61	5.52	4.04	4.24
	Sulfide	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.670	< 0.670	<1	<1
	Dissolved Organic Carbon	mg/L	5.4	4	3.9	3.7	4.9	3.76	3.67	4.67	4.73	6.95	5.17
	Hardness	mg/L	32	28	28	35.6	34.4	28	28	40	40	42	40
Total Metals	Cadmium*	mg/L	0.0005	0.0003	0.0003	0.0008	0.00034 J	0.000257 JB	0.000303 JB	0.000352J	0.000112J	<0.0000710	<0.0000710
	Calcium	mg/L	--	8.53	8.8	9.95	9.59	8.57 B	8.27 B	11.7	11.5	11.7	11.8
	Copper	mg/L	0.0012	0.0012	0.0014	0.003	0.002	0.00116	0.00142	0.00296B	0.00138B	0.000871 J	0.000851 J
	Lead	mg/L	0.0007	<0.0005	<0.0005	0.001	<0.001	0.00015 J	0.000188 J	0.00104	0.0000807J	0.000151 J	0.0000696
	Magnesium	mg/L	--	2.1	2.18	2.62	2.55	2.57 B	2.41 B	3.17	3.1	3.15	3.2
	Potassium	mg/L	--	1.54	1.59	2	2	1.81	1.73	1.84	1.81	1.77	1.81
	Sodium	mg/L	--	25.7	26.8	33.6	33.6	27 B	25.5 B	38.5	38.2	39.2	40.4
	Zinc	mg/L	0.0411	0.0139	0.0142	<0.01	<0.01	0.00795 B	0.0121 B	0.00666	0.00413J	0.00180 J	0.00215 J
Dissolved Metals	Cadmium*	mg/L	0.00006 J	0.00017 J	0.00019 J	0.000089 J	<0.000084	0.000256 J	0.000232 J	0.0000846J	0.000273J	<0.0000710	<0.0000710
	Calcium	mg/L	9.21	--	--	--	--	--	--	--	--		
	Copper	mg/L	0.0013	0.0012	0.0016	0.001	0.001	0.000918 J	0.00137	0.00144	0.00237	0.000876 J	0.000858 J
	Lead	mg/L	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	0.0000694 J	< 0.0000690	0.000638J	<0.0000690	<0.0000690
	Magnesium	mg/L	2.39	--	--	--	--	--	--	--	--		
	Potassium	mg/L	1.61	--	--	--	--	--	--	--	--		
	Sodium	mg/L	27.5	--	--	--	--	--	--	--	--		
	Zinc	mg/L	0.0377	<0.02	<0.02	0.012	<0.01	0.00577 B	0.00614 B	0.00348J B	0.00545B	0.00160 J B	0.00143 J B

Notes:
mg/L = Milligrams per liter
< = Constituent is not detected above the laboratory reporting limit (LRL) presented.
J = Constituent is detected below the LRL but above the method detection limit (MDL).
B = Constituent was detected in method blank.
* = Cadmium results are reported to the MDL.

TABLE 1

Summary of Surface Water Analytical Results (Biannual Samples)

Neponset Reservoir & Crackrock Pond

Foxborough, Massachusetts

			Crackrock Pond Samples										
	Location		NR-SW-N	NR-SW-N	NR-SW-N	NR-SW-N	NR-SW-N	NR-SW-N	NR-SW-O	NR-SW-O	NR-SW-O	NR-SW-O	NR-SW-O
	Sample Date		8/14/13	4/10/14	9/19/14	12/15/14	3/1/17	7/5/17	8/14/13	4/10/14	12/15/14	3/1/17	7/5/17
General Chemistry	Alkalinity	mg/L	22	16.4	27.8	16.2	48.2	39.8	31.8	17.8	23.1	38.2	47.6
	TSS	mg/L	44	6.1	<5	<4	< 4.00	<4	<5	<5	<4	22.8	59.2
	Chloride	mg/L	48	47	90.4	49.8	193	91.5	66	52	49.4	169	98.1
	Sulfate	mg/L	--	<10	11.8	3.87	32.3	6.94	--	<10	3.87	22.7	8.98
	Sulfide	mg/L	<0.1	<0.1	<0.1	< 0.1	< 0.670	<1	<0.1	<0.1	< 0.1	< 0.670	<1
	Dissolved Organic Carbon	mg/L	6.1	3.9	4	3.45	4.11	4.55	4.8	3.9	3.56	5.68	6.85
	Hardness	mg/L	33	29	56.4	32	164	52	55	34	28	100	64
Total Metals	Cadmium*	mg/L	0.0021	0.0003	0.00012 J	0.000206 JB	0.0000855J	<0.0000710	<0.0002	0.0002	0.00032 JB	0.000191J	0.000426 J
	Calcium	mg/L	--	9.04	16.3	8.55 B	49.2	14.9	--	10.4	8.23 B	28.8	17.8
	Copper	mg/L	0.0026	0.0016	0.002	0.000807 J	0.00320B	0.00124	0.0009	0.0016	0.00144	0.00295B	0.0038
	Lead	mg/L	0.0022	<0.0005	<0.001	0.000134 J	0.000611J	0.000128 J	<0.0005	<0.0005	0.000196 J	0.000475J	0.00274
	Magnesium	mg/L	--	2.24	3.78	2.52 B	9.93	3.67	--	2.47	2.43 B	6.52	4.33
	Potassium	mg/L	--	1.65	2.5	1.74	5.77	8.68	--	1.72	1.77	3.87	14.2
	Sodium	mg/L	--	27.6	46.4	27.4 B	112	43.5	--	29.5	26.7 B	86.6	47.7
	Zinc	mg/L	0.017	0.0145	<0.01	0.0121 B	0.0184	0.00407 J	0.0118	0.0164	0.0219 B	0.0132	0.00967
Dissolved Metals	Cadmium*	mg/L	<0.00004	0.00018 J	0.000097 J	0.00017 J	0.0000747J	<0.0000710	0.00004 J	0.00014 J	0.000226 J	0.000125J	<0.0000710
	Calcium	mg/L	9.2	--	--	--	--		16.5	--	--	--	
	Copper	mg/L	0.0006	0.0015	0.001	0.001	0.00271	0.00102	0.0018	0.0018	0.0013	0.00263	0.000922 J
	Lead	mg/L	<0.0005	<0.0005	<0.001	<0.001	0.000291J	<0.0000690	<0.0005	<0.0005	<0.001	0.000181J	<0.0000690
	Magnesium	mg/L	2.43	--	--	--	--		3.74	--	--	--	
	Potassium	mg/L	1.47	--	--	--	--		2.16	--	--	--	
	Sodium	mg/L	27.6	--	--	--	--		37.7	--	--	--	
	Zinc	mg/L	0.0124	<0.02	<0.01	0.00739 B	0.0161B	0.00474 J B	0.0141	<0.02	0.00677 B	0.0125B	0.00246 J B

Notes:
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Neponset Reservoir & Crackrock Pond
Foxborough, Massachusetts

			Crackrock Pond Samples					
	Location		NR-SW-P	NR-SW-P	NR-SW-P	NR-SW-P	NR-SW-P	NR-SW-P
	Sample Date		8/14/13	4/10/14	9/19/14	12/15/14	3/1/17	7/5/17
General Chemistry	Alkalinity	mg/L	33	17.8	28.6	22.4	37.4	43.2
	TSS	mg/L	27	<5	6.6	<4	4.8	<4
	Chloride	mg/L	63	57	89.2	48.6	171	102
	Sulfate	mg/L	--	<10	14.1	3.8	19.4	8.44
	Sulfide	mg/L	0.13	<0.1	<0.1	< 0.1	< 0.670	<1
	Dissolved Organic Carbon	mg/L	7	3.9	4.3	3.55	5.88	6.95
	Hardness	mg/L	54	34	60	28	92	58
Total Metals	Cadmium*	mg/L	0.002	0.0005	0.00019 J	0.000244 JB	0.000255J	<0.0000710
	Calcium	mg/L	--	10.2	17	8.09 B	25.9	16.6
	Copper	mg/L	0.0031	0.0022	0.003	0.00101	0.00317B	0.00429
	Lead	mg/L	0.0041	0.0007	<0.001	0.000136 J	0.000552J	0.000335 J
	Magnesium	mg/L	--	2.45	4.27	2.44 B	5.77	3.98
	Potassium	mg/L	--	1.7	2.62	1.7	3.68	13.4
	Sodium	mg/L	--	29.2	49.1	25.7 B	89.8	47.8
	Zinc	mg/L	0.0245	0.0155	<0.01	0.00862 B	0.0144	0.0299
Dissolved Metals	Cadmium*	mg/L	<0.00004	0.00016 J	<0.000084	0.000213 J	0.000227J	<0.0000710
	Calcium	mg/L	15.6	--	--	--	--	
	Copper	mg/L	0.0008	0.0012	0.002	0.0012	0.00269	0.00156
	Lead	mg/L	<0.0005	<0.0005	<0.001	<0.001	0.000186J	<0.0000690
	Magnesium	mg/L	3.66	--	--	--	--	
	Potassium	mg/L	2.08	--	--	--	--	
	Sodium	mg/L	36	--	--	--	--	
	Zinc	mg/L	0.0105	<0.02	<0.01	0.00579 B	0.0129B	0.00474 J B

Notes:
mg/L = Milligrams per liter
< = Constituent is not detected above the laboratory reporting limit (LRL) presented.
J = Constituent is detected below the LRL but above the method detection limit (MDL).
B = Constituent was detected in method blank.
* = Cadmium results are reported to the MDL.

Data source: (MassDEP Undated 6)

Acute Metals- CMC Relate Data

Unique ID	Waterbody	Year	Count	Cd..CMC	Cr..CMC	Cu..CMC	Pb..CMC	Ni..CMC	Ag..CMC	Zn..CMC	As..CMC	Al..CMC
W1943	NEPONSET RIVER	2009	4	0	0	0	0	0	0	0	0	0

Chronic Metals- CCC Relate Data

Unique ID	Waterbody	Year	Count	Cd..CCC	Cr..CCC	Cu..CCC	Pb..CCC	Ni..CCC	Zn..CMC	Zn..CCC	As..CCC	Al..CCC	Se..CCC
W1943	NEPONSET RIVER	2009	4	0	0	0	0	0	0	0	0	0	0

Acute Metals- CMC Relate Data

Unique ID	Waterbody	Year	Count	Cd..CMC	Cr..CMC	Cu..CMC	Pb..CMC	Ni..CMC	Ag..CMC	Zn..CMC	As..CMC	Al..CMC
W1933	NEPONSET RIVER	2009	4	0	0	0	0	0	0	0	0	0

Chronic Metals- CCC Relate Data

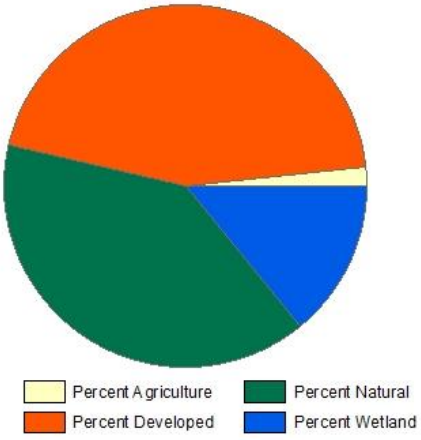
Unique ID	Waterbody	Year	Count	Cd..CCC	Cr..CCC	Cu..CCC	Pb..CCC	Ni..CCC	Zn..CMC	Zn..CCC	As..CCC	Al..CCC	Se..CCC
W1933	NEPONSET RIVER	2009	4	0	0	0	0	0	0	0	0	0	0

Neponset River (MA73-02)

Location:	Confluence with East Branch, Canton to confluence with Mother Brook, Boston.
AU Type:	RIVER
AU Size:	7.7 MILES
Classification/Qualifier:	B: WWF

Neponset River - MA73-02

Watershed Area: 94.87 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	94.41	27.7	24.66	6.38
Agriculture	1.7%	0.9%	1.4%	0.5%
Developed	44.7%	54.2%	29.3%	31.9%
Natural	39.5%	25.8%	40.6%	22.8%
Wetland	14.1%	19.1%	28.6%	44.8%
Impervious Cover	17.8%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)		Added
5	5	Trash		Changed
5	5	Unspecified Metals in Sediment		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

Monitoring was conducted by NepRWA volunteers/interns/staff and MassDEP staff at four sampling locations along this Neponset River AU (MA73-02) from upstream to downstream as follows: at Dedham Street Bridge, Westwood (NER125), at Green Lodge Street, Canton (W0568), at Paul's Bridge (Neponset Valley Pkwy), in Milton (NER150), and at the end of B Street, Boston (W1934). NepRWA data at NER125: DO data in 2017 and 2018 ranged from 3.4 to 7.66mg/L with three measurements in 2018 that were below 5mg/L (n=10). The maximum saturation was only 72.7%. The temperature, pH, and seasonal average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) were indicative of good conditions (maximum temperature 25.5°C (n=51), pH range 6.35 - 7.2SU (n=52), and seasonal average concentrations of total phosphorus 0.05 to 0.07mg/L). Further downstream at Green Lodge Street in Canton water quality data collected during the summer of 2009 (W0568) was indicative of good conditions: minimum DO during the three three-day probe deployments was 6.68mg/l, the maximum diel DO shift was only 0.9mg/L, the maximum saturation was 84%, the pH ranged from 6.6 to 7.0SU (n=8) and the average total phosphorus concentration was 0.041 mg/L (maximum 0.046mg/L). There was one exceedance of the chronic lead criteria for out of the four sampling events and no acute or chronic criteria

exceedances for any other metal analyzed. NepRWA data for the river at Paul's Bridge in Milton (NER150) can be summarized as follows: DO data in 2017 and 2018 ranged from 3.85 to 8.75mg/L with two measurements in 2018 that were below 5mg/L (n=10). The maximum saturation was 89.1%. The temperature, pH, and seasonal average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) were indicative of good conditions (maximum temperature 25^{o}C, pH range 6.55-7.6SU (n=50), and seasonal (btw May & Sept) average total phosphorus data ranging from 0.04 to 0.09mg/L. MassDEP data collected at the downstream end of this Neponset River AU near B Street in Boston (W1934) during the summer of 2009 were also indicative of good conditions: three two-day unattended continuous probe deployments in June, August, and September recorded a minimum DO of 5.46mg/L, maximum DO saturation of 79.2%, the maximum diel DO shift was 0.68mg/L, the maximum temperature was 23.8^{o}C. Attended pH data ranged from 6.6 to 6.8SU (n=5) and the seasonal average total phosphorus was 0.043mg/L (maximum 0.058mg/L). According to DMF biologists two barriers along the downstream Neponset River AU (MA73-03) in Milton/Boston do not allow passage of river herring, American eel, rainbow smelt and/or American shad further up into the Neponset River watershed: the Baker Chocolate Dam and the Tilestone and Hollingsworth Dam (both with passage scores of 10—no possible passage).

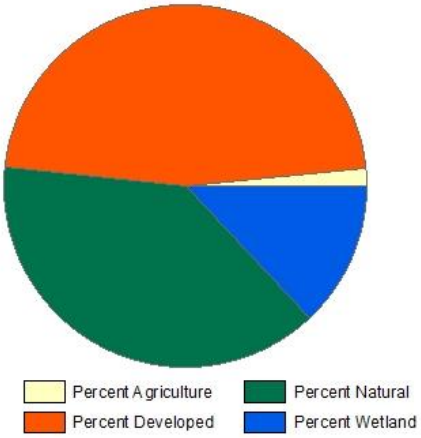
The Aquatic Life Use of this Neponset River AU (MA73-02) will continue to be assessed as "Not Supporting" based on some evidence of low dissolved oxygen in the river reported by NepRWA during the summer of 2018 and the metals impairment is being carried forward. Fish passage barrier is being added because of the Tilestone and Hollingsworth Dam diadromous fish passage obstructions. The other water quality data collected by NepRWA and MassDEP are indicative of good conditions. Unspecified metals in sediment is being added to address the sediment contamination documented during the 1994 MassDEP surveys.

Neponset River (MA73-03)

Location:	Confluence with Mother Brook, Boston to Neponset River Baker Chocolate Dam (NATID: MA01093), Milton/Boston.
AU Type:	RIVER
AU Size:	3.7 MILES
Classification/Qualifier:	B: WWF

Neponset River - MA73-03

Watershed Area: 108.51 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	108.02	9.26	27.31	1.69
Agriculture	1.5%	0.2%	1.3%	0.1%
Developed	46.8%	67.7%	30.2%	39.5%
Natural	38.7%	26.5%	41.4%	43.9%
Wetland	13%	5.7%	27.1%	16.5%
Impervious Cover	18.9%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Added
5	5	Dissolved Oxygen		Removed
5	5	(Fish Passage Barrier*)		Added
5	5	PCBs in Sediment		Added
5	5	Trash		Changed
5	5	Unspecified Metals in Sediment		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting
Monitoring was conducted by staff from NepRWA (and volunteers/interns), MassDEP, and MWRA at five sampling locations along Neponset River AU (MA73-03) upstream to downstream: Canoe Launch south of Mattapan Square (NER165), near Brush Hill Road (NER179), near Ryan Playground, Mattapan (NER185)/ behind baseball field off western end of Meadowbank Avenue (W1935), mid-channel downstream pedestrian foot bridge (MWRA 255), and above Baker Dam (MWRA 055). NepRWA data at NER165: temperature, pH, and seasonal average total phosphorus data (2011 to 2018 excluding 2015 & 2016) were indicative of good conditions (maximum temperature 28°C (n=27), pH range 6.43 - 7.6SU (n=35) with only one measurement <6.5SU, and seasonal average concentrations of total phosphorus 0.05 to 0.07mg/L (n=4)). NepRWA data (NER179): DO data in 2017 and 2018 ranged from 6.0 to 9.2mg/L (n=11). The maximum saturation was 95%,

maximum temperature was 20°C, pH range 6.63-7.44SU (n=11), and seasonal (btw May & Sept) average total phosphorus data was 0.05mg/L both 2017 and 2018. Further downstream at NER185: minimum DO 5.8mg/L (n=12), maximum saturation 72%, maximum temperature 25°C (n=44), pH ranged from 6.63 to 8.2SU (n=50), and seasonal average total phosphorus concentrations ranged from 0.05 to 0.1mg/L (n=6). MassDEP data summer of 2009 (W1935) indicative of good conditions: minimum DO during three two-day probe deployments 7.07mg/l, maximum diel DO shift only 1.4mg/L, the maximum saturation 104%, pH ranged from 7.0 to 7.1SU (n=5) and average total phosphorus concentration was 0.044 mg/L (maximum 0.078mg/L). There was one slight chronic lead criteria exceedance (1.33TU) out of four sampling events and no acute or chronic criteria exceedances for any other metal. One observation of dense/very dense filamentous algae noted out of 10 site visits and an infestation of non-native aquatic macrophyte *Potamogeton crispus* (Curly-leaf Pondweed). MWRA data (Sites 255 and 055) between 2009 and 2018: Except one day (1 September 2016) when DO <5.0mg/L (4.6 and 4.4mg/L surface/bottom, respectively) all measurements were ≥5.6mg/L (n=440 measurements), vast majority measurements (437 of 446) well below 125% saturation, maximum temperature 26.91°C (n=144), pH ranged 6.60 to 8.13SU (n=444) except one low (5.57SU in March 2017), specific conductivity exceeded 904µS/cm (estimated chronic criterion) seven days (13 measurements) all other measurements ranging from 230 to 887 µS/cm (n=446), chlorophyll a data below 16µg/L except 5 measurements (n=105), and seasonal average total phosphorus concentrations ranged 0.040 to 0.065mg/L. In 2009 NepRWA CAC recommended cleanup of PCB contaminated sediments behind Tileston and Hollingsworth Dam and its removal. USGS studies (~ 2011) documented PCB contamination in lower Neponset River originating from Mother Brook starting early 1950s. In 2018/2019 EPA sampled lower river near dams - goal "superfund site" designation. According to DMF biologists two barriers do not allow passage of river herring, American eel, rainbow smelt and/or American shad further up into Neponset River watershed: Baker Chocolate Dam and Tilestone and Hollingsworth Dam (passage scores 10—no possible passage).

The Aquatic Life Use of this Neponset River AU (MA73-03) will continue to be assessed as Not Supporting due to obstructions to diadromous fish passage, infestation of non-native aquatic macrophyte Curly-leaf Pondweed (P. crispus), PCB contamination in sediments and metals. Since other water quality data were indicative of good conditions the DO impairment is being delisted (see further justification in the removal comments). Unspecified metals in sediment being added to address sediment contamination documented during 1994 MassDEP surveys.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Dissolved Oxygen	Applicable WQS attained; based on new data	Organic enrichment/low DO was first listed as an impairment for this Neponset River AU (MA73-03) in the 1992 reporting cycle and was changed to Dissolved Oxygen in the 2010 reporting cycle. According to the notes on the scanned Water Body System (WBS) database coding sheet filled out by assessors the original impairment was identified as a slight impairment based on four surveys in 1991. The minimum DO in the river at Dana Avenue, after junction with Mother Brook, Hyde Park (Station NE14) was 4.1mg/L and was below 5.0mg/L on three of four survey dates (18 June, 2 July, and 16 July) during the summer of 1991. More recently, between 2009 and 2018 monitoring was conducted by NepRWA volunteers/interns/staff, MassDEP staff, and MWRA staff at several sampling locations along this Neponset River AU (MA73-03) from upstream to downstream as follows: at the Canoe Launch south of Mattapan Square in Hyde Park (NER165), near Brush Hill Road in Milton (NER179), near the Ryan Playground in Mattapan (NER185)/ behind the baseball field off western end of Meadowbank

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		Avenue Mattapan/Boston (W1935), downstream side of pedestrian foot bridge, mid-channel, 150 meters upstream of site 055 and the Baker Dam (MWRA 255), and above Baker Dam in Milton (MWRA 055). The DO data, with a single exception of one day at one site, met the Class B Warm Water criterion of 5 mg/L at these sampling locations as follows: NepRWA data (NER179): DO data in 2017 and 2018 ranged from 6.0 to 9.2mg/L (n=11), at NER185: minimum DO was 5.8mg/L (n=12). Data collected during the summer of 2009 by MassDEP at (W1935) was indicative of good conditions: minimum DO during the three two day probe deployments was 7.07mg/l, MWRA data (Sites 255 and 055) between 2009 and 2018: Except for one single day (1 September 2016) when DO was below 5.0mg/L (4. 6 and 4.4mg/L near the surface and bottom, respectively) all other measurements taken were > 5.6mg/L (n=440 measurements taken almost every two weeks). Based on these most recent DO data collected from sites along this Neponset River AU (MA73-03), the Dissolved Oxygen impairment is being delisted.

Supporting Information for Delisted Impairments

Dissolved Oxygen

Between 2009 and 2018 monitoring was conducted by NepRWA volunteers/interns/staff, MassDEP staff, and MWRA staff at several sampling locations along this Neponset River AU (MA73-03) from upstream to downstream as follows:

- Canoe Launch south of Mattapan Square in Hyde Park (NER165),
- near Brush Hill Road in Milton (NER179), NepRWA DO data in 2017 and 2018 ranged from 6.0 to 9.2mg/L (n=11)
- near the Ryan Playground in Mattapan (NER185) NepRWA DO data in 2017 and 2018 minimum DO was 5.8mg/L (n=12)/ behind the baseball field off western end of Meadowbank Avenue Mattapan/Boston (W1935), DO data collected during the summer of 2009 by MassDEP at (W1935) was indicative of good conditions: minimum DO during the three two day probe deployments was 7.07mg/L
- downstream side of pedestrian foot bridge, mid-channel, 150 meters upstream of site 055 and the Baker Dam (MWRA 255), and above Baker Dam in Milton (MWRA 055). MWRA data (Sites 255 and 055) between 2009 and 2018: Except for one single day (1 September 2016) when DO was below 5.0mg/L (4. 6 and 4.4mg/L near the surface and bottom, respectively) all other measurements taken were $\geq$ 5.6mg/L (n=446 measurements taken almost every two weeks).

The DO data along this Neponset River AU (MA73-03), with a single exception of one day at one site, met the Class B Warm Water criterion of 5 mg/L so the Dissolved Oxygen impairment is being delisted.

NepRWA data for NER165 (NepRWA 2019)

Station	Year	Count DO mg/L	Count DO LT4.0	Count DO LT5.0	Max of DO%
NER165	2008	*	*	*	*

NER165	2009	*	*	*	*
NER165	2010	*	*	*	*
NER165	2011	*	*	*	*
NER165	2012	*	*	*	*
NER165	2013	*	*	*	*
NER165	2014	*	*	*	*

*Dissolved oxygen data 2008-2014 was not included in this review due to absence of calibration data. The WPP external data review process determined this data to not be of assessment quality.

NepRWA data for NER179 (NepRWA 2019)

Station	Year	Count DO mg/L	Count DO LT4.0	Count DO LT5.0	Max of DO%
NER179	2017	5	0	0	95
NER179	2018	6	0	0	86

*Dissolved oxygen data 2008-2014 was not included in this review due to absence of calibration data. The WPP external data review process determined this data to not be of assessment quality

NepRWA data for NER185 (NepRWA 2019)

Station	Year	Count DO mg/L	Count DO LT4.0	Count DO LT5.0	Max of DO%
NER185	2008	*	*	*	*
NER185	2009	*	*	*	*
NER185	2010	*	*	*	*
NER185	2011	*	*	*	*
NER185	2012	*	*	*	*
NER185	2013	*	*	*	*
NER185	2014	*	*	*	*
NER185	2017	6	0	0	91
NER185	2018	6	0	0	92

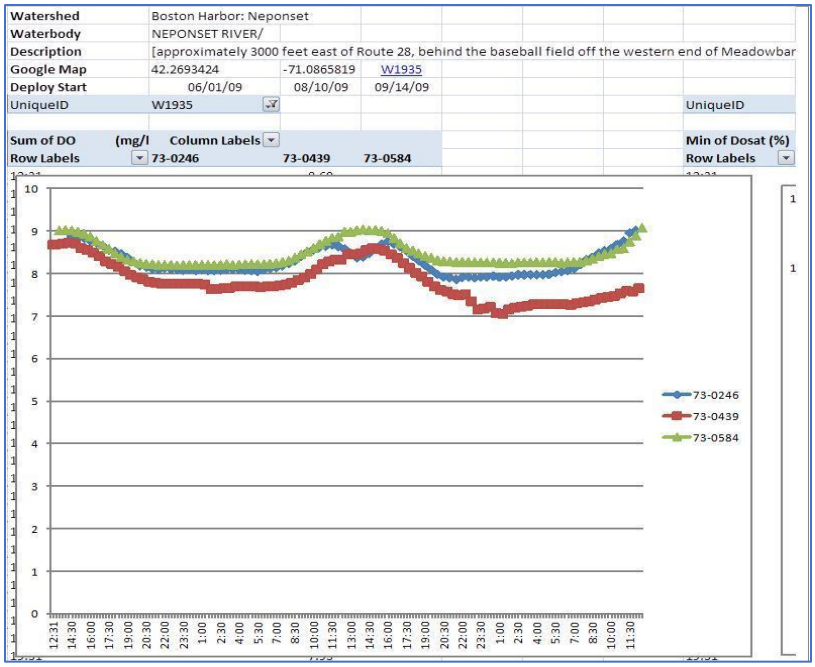
*Dissolved oxygen data 2008-2014 was not included in this review due to absence of calibration data. The WPP external data review process determined this data to not be of assessment quality.

Probes were deployed in the Neponset River (W1935) by MassDEP on 06/01/09 and lasting 2 days. None of the data collected during this deployment violates criterion for dissolved oxygen. The minimum DO was 7.88 mg/L while the mean daily minimum DO was 7.91 mg/L. The maximum daily DO shift was 1.1 mg/L and the mean DO was 8.3 (MassDEP Undated 6).

DO probe data (MassDEP Undated 6).

UniqueID	Waterbody	AU_Class	AU_ClassQu	Start.Date	Days	OWMID Min DO	Daily Mean Minimum DO	Maximum Daily DO Shift	OWMID Mean DO	OWMID Max Saturation	Violates Criteria
W1935	NEPONSET RIVER	B	WWF	06/01/09	2	7.88	7.91	1.10	8.30	99.3	None
W1935	NEPONSET RIVER	B	WWF	08/10/09	2	7.07	7.13	1.44	7.84	104.2	None
W1935	NEPONSET RIVER	B	WWF	09/14/09	2	8.22	8.24	0.83	8.48	99.0	None

DO probe deployment graph (MassDEP Undated 6).



Attended probes measurements were conducted at station W1935 during the sampling season. Dissolved oxygen readings were obtained on 5 occasions with 0 recordings < 4mg/L (MassDEP Undated 6).

Attended Data													
UniqueID	Waterbody	Count Temp	Count Temp CWF GT20	Count Temp CWF GT22 Severe.	Count Temp WWF GT28.3	Count Temp WWF GT30.3 Severe.	Count PH	Count PH LT6.5 GT8.3	Count PH LT6.0 GT8.8 Severe.	Count DO	Count DO CWF LT5.0	Count DO WWF LT4.0	DOSAT max
W1935	NEPONSET RIVER	7	1	1	0	0	5	0	0	5	0	0	104

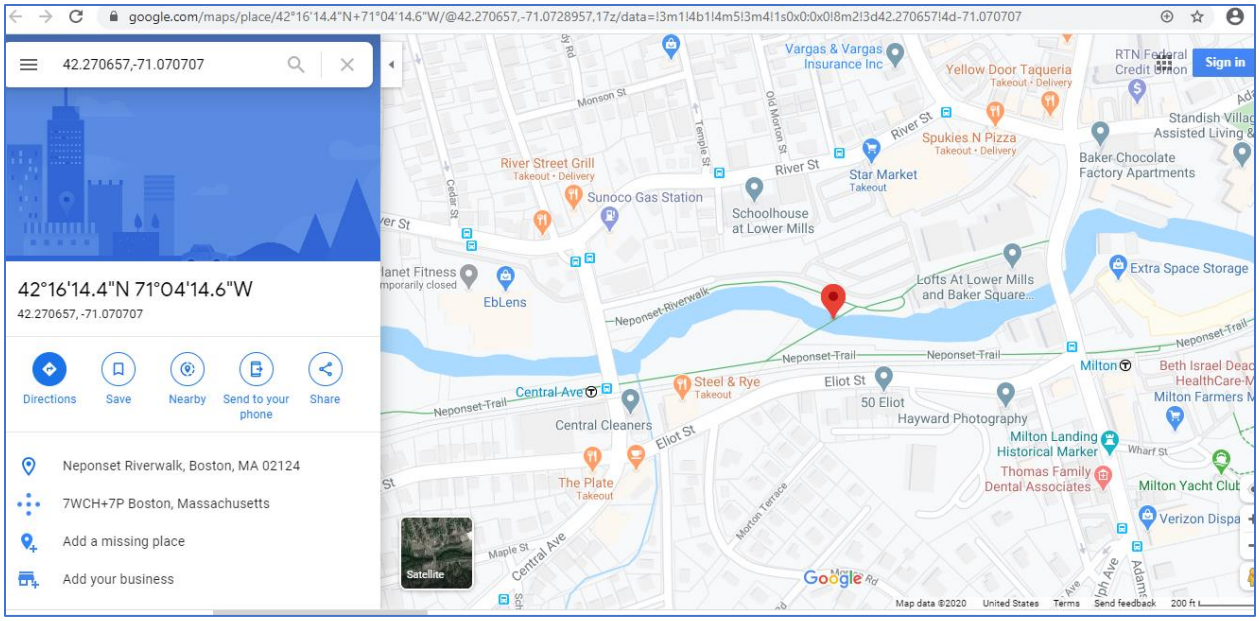
Data Source: (MassDEP Undated 6)

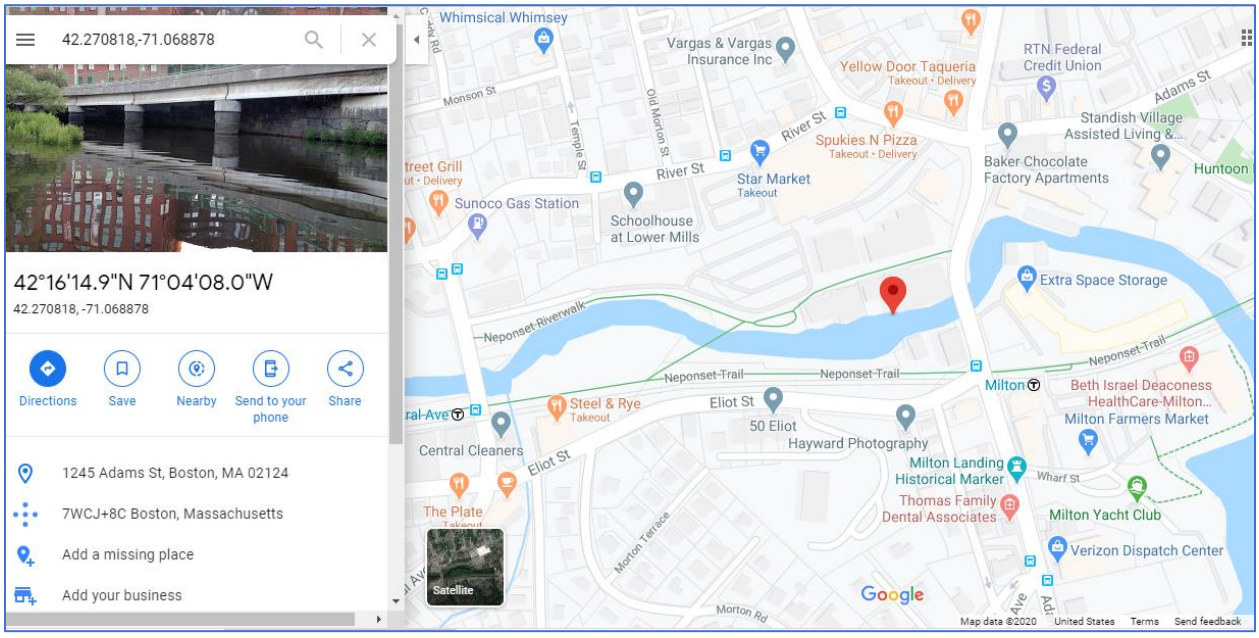
Unique ID	Gear Type	Project Name	OWMIDs Used to Build File	
W1935	Data Sonde	Boston Harbor-Neponset (2009)	73-0246, 73-0439, 73-0584	
Station ID	**Station Description**	**Mile Point**	**Latitude (dec-degrees)**	**Longitude (dec-degrees)**
NER185	[approximately 3000 feet east of Route 28, behind the baseball field off the western end of Meadowbank Avenue, (Mattapan) Boston]		42.2693424	-71.08658191
Watershed	**SARIS_PALIS_CAMIS**	**Water Body**		
Boston Harbor: Neponset	7341000	NEPONSET RIVER/		
Station File Start Time	6/1/2009 2:30 PM			
Station File End Time	9/16/2009 12:30 PM			
Total Station File Duration (Hours)	2566.0			
Total Station File Count	5133			
	Analytes			
	Temperature (Celsius)	**DO (mg/L)**	**DOsat (%)**	
Observed Deployment Time (Hours)	140.0	140.0	140.0	
Observed Count	283	283	283	
Avg*	19.8	8.2	91	
SD*	2.1	0.5	5	
Min*	17.1	7.1	84	
Max*	24.0	9.1	104	
Median*	19.0	8.2	90	
IQR*	3.4	0.6	6	
Mean of the Daily Mean*	19.8	8.2		
Mean of the Daily Min*	19.0	7.8		
Mean of the Daily Max*	21.0	8.8		
MWAT*	--			
Amount of Time > 20 deg. C (Hours)	47.5			
Max Duration > 20 deg. C (Hours)	47.5			
Avg Daily Amount of Time > 20 deg. C (H	8.0			
Amount of Time > 28.3 deg. C (Hours)	0.0			
Max Duration > 28.3 deg. C (Hours)	0.0			
Avg Daily Amount of Time > 28.3 deg. C (	0.0			
Amount of Time > 29.4 deg. C (Hours)	0.0			
Max Duration > 29.4 deg. C (Hours)	0.0			
Avg Daily Amount of Time > 29.4 deg. C (	0.0			
Amount of Time < 3.0 mg/L (Hours)		0.0		
Max Duration < 3.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 3.0 mg/L (Ho		0.0		
Amount of Time < 4.0 mg/L (Hours)		0.0		
Max Duration < 4.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 4.0 mg/L (Ho		0.0		
Amount of Time < 5.0 mg/L (Hours)		0.0		
Max Duration < 5.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 5.0 mg/L (Ho		0.0		
Amount of Time < 6.0 mg/L (Hours)		0.0		
Max Duration < 6.0 mg/L (Hours)		0.0		
Avg Daily Amount of Time < 6.0 mg/L (Ho		0.0		

**Units are those of the analyte listed. SD is unitless.*

Data Source: (MWRA 2019, MassDEP Undated 7)

MRWA staff conducted water quality sampling at two sites near the very end of this Neponset River AU (MA73-03) as follows: Downstream side of pedestrian foot bridge, mid-channel, 150 meters upstream of site 055 in 2018 (MWRA Site 255) and above Baker Dam in Milton between 2009 and 2018 (MWRA site 055). Except for one day (1 September 2016) when DO was below 5.0mg/L (4.6 and 4.4mg/L near the surface and bottom, respectively) all other measurements taken in the Neponset River by MRWA staff (sites 255 and 055) were $\geq$ 5.6mg/L in (n=440 measurements taken almost every two weeks between 2009 and 2018).





Dissolved Oxygen mg/L, annual data, surface and bottom combined						Dissolved Oxygen Saturation %, annual data, surface and bottom combined					
Station ID	**Years**	**Min**	**Max**	**Ave**	**Count**	**Station ID**	**Years**	**Min**	**Max**	**Ave**	**Count**
055	2009	7.3	15.2	11.4	42	**055**	2009	87	119	102	42
	2010	5.6	14.8	10.5	40		2010	69	120	97	40
	2011	7.0	14.6	10.0	44		2011	81	121	95	46
	2012	6.6	13.9	10.9	49		2012	77	125	102	49
	2013	7.5	15.3	11.4	48		2013	77	132	102	48
	2014	7.2	14.5	11.0	46		2014	74	145	101	46

	2015	5.6	14.0	10.1	41		2015	69	112	95	41
	2016	4.4	13.8	10.7	46		2016	51	128	97	46
	2017	7.2	13.8	10.4	46		2017	78	106	94	46
	2018	7.4	14.2	10.7	36		2018	89	109	98	38
055 Total		**4.4**	**15.3**	**10.7**	**438**	**055 Total**		**51**	**145**	**98**	**442**
255	2018	13.2	13.2	13.2	2	**255**	2018	95	95	95	4
255 Total		**13.2**	**13.2**	**13.2**	**2**	**255 Total**		**95**	**95**	**95**	**4**

Neponset River (MA73-04)

Location:	Milton Lower Falls Dam (Neponset River Baker Chocolate Dam, NAT ID: MA01093), Milton/Boston to mouth at Dorchester Bay, Boston/Quincy.
AU Type:	ESTUARY
AU Size:	0.67 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen		Removed
5	5	Trash		Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

Monitoring was conducted by NepRWA volunteers/interns/staff, and MWRA staff at five sampling locations along this Neponset River AU (MA73-04) from upstream seaward as follows: below Baker Dam at Adams Street Boston/Milton (NER200), Granite Avenue near BOS095 (closed) (MWRA 054), between Neponset Ave and MBTA bridges (MWRA 042), Commercial Point, Victory Rd. Park, BOS090 (closed) (MWRA 089), and Old Colony Yacht Club, near MWR 211 (closed) (MWRA 041). NepRWA data at NER200: temperature, pH, and seasonal average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) were indicative of good conditions (maximum temperature 25°C (n=46), pH range 6.68 – 7.75SU (n=48), and seasonal average concentrations of total phosphorus 0.05 to 0.08mg/L (n=6)). MWRA data collected between 2009 and 2018 were indicative of good conditions as follows: dissolved oxygen measurements (>99%) were above 5.0mg/L (n=1894), the pH ranged from 6.6 to 8.45SU (n=1898), and the maximum temperature was 27.26°C (n=1045 summer measurements between June and September). Saturations were as high as 131% but <1% of the 1894 measurements were above 125%. It should also be noted that near the lower end of the AU, the MWRA was authorized to discharge from the Commercial Point CSO Treatment Facility via outfall MWR 211 to the lower Neponset River (NPDES # MA0103284). Between September 2005 and September 2007 five valid whole effluent toxicity (WET) tests were conducted on the Commercial Point effluent using the inland silverside, *M. beryllina*. The LC_{50}s were all >100% effluent, although one of the tests (November 2006) did show some slight evidence of toxicity. During this same period 5 valid whole effluent toxicity tests were also conducted using the mysid shrimp *M. bahia.* The LC_{50}s of 4 of the tests were >100% effluent. The remaining test (September 2005) had an LC_{50} of 91.3% effluent. In 2007 the MWRA installed 135,700 linear feet (25.7 miles) of storm drain to remove stormwater runoff from local sewers serving a 1,750-acre area in Dorchester. They then closed all CSO regulators, allowing decommissioning of MWRA's Commercial Point CSO facility.

The Aquatic Life Use for the Neponset River Estuary (MA73-04) is assessed as Fully Supporting based on the evidence of good conditions documented by NepRWA and MRWA (DO, saturation, temperature and pH) and the removal of the CSO discharge. The influence of PCB contamination known to occur in the freshwater Neponset River to the biota in this estuary is identified as an Alert.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Dissolved Oxygen	Applicable WQS attained; based on new data	Organic enrichment/low DO was first listed as an impairment for this Neponset River AU (MA73-04) in the 1992 reporting cycle and was changed to Dissolved Oxygen in the 2010 reporting cycle. The original impairment was based on low DO in the river upstream

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		of Neponset Bridge (BH10B) collected by MassDEQE (now MassDEP) staff during the summer of 1985 (31 July was 4.7 and 21 August 2.7mg/L and further out between Squantum Point and Malibu Beach, Boston (BH10A) (21 August was 4.0mg/L). In 2007 ~135,700 linear feet (25.7 miles) of storm drain was installed to remove stormwater runoff from local sewers serving a 1,750-acre area in Dorchester. Upon completion of this project the MWRA closed all CSO regulators, allowing decommissioning of their Commercial Point CSO facility which eliminated outfall MWR 211/BOS090 to this lower Neponset River AU (MA73-03). Dissolved oxygen data have been collected by MRWA staff at four monitoring locations along this Neponset River AU between 2009 and 2018 upstream to seaward as follows: Granite Avenue near BOS095 (closed) (MWRA 054), between Neponset Ave and MBTA bridges (MWRA 042), Commercial Point, Victory Rd. Park, BOS090 (closed) (MWRA 089), and Old Colony Yacht Club, near MWR 211 (closed) (MWRA 041). Of the 1894 measurements collected during this timeframe only 6 (0.3%) have been below the 5.0mg/L water quality standard. Furthermore except for the single low DO (3.3.mg/L on 28 May 2009) in the river near the Neponset Street bridge (042) none have been below 5.0mg/L (n=441). Less than 1% of the DO measurements taken in the river at Commercial Point (089) were below 5.0mg/L (n=5 of 576). The other two stations did not have any DO data below 5.0mg/L. Based on the last ten years of DO data collected by MWRA staff at four sites along this Neponset River AU (MA73-04) the dissolved oxygen impairment is being delisted since almost all measurements (>99%) have been above 5.0mg/L.

Supporting Information for Delisted Impairments

Dissolved Oxygen

In 2007 ~135,700 linear feet (25.7 miles) of storm drain was installed to remove stormwater runoff from local sewers serving a 1,750-acre area in Dorchester. Upon completion of this project the MWRA closed all CSO regulators, allowing decommissioning of their Commercial Point CSO facility which eliminated outfall MWR 211/BOS090 to this lower Neponset River AU (MA73-03). Dissolved oxygen data have been collected by MRWA staff at four monitoring locations along this Neponset River AU between 2009 and 2018 upstream to seaward as follows: Granite Avenue near BOS095 (closed) (MWRA 054), between Neponset Ave and MBTA bridges (MWRA 042), Commercial Point, Victory Rd. Park, BOS090 (closed) (MWRA 089), and Old Colony Yacht Club, near MWR 211 (closed) (MWRA 041). Of the 1894 measurements collected during this timeframe only 6 (0.3%) have been below the 5.0mg/L water quality standard. Furthermore except for the single low DO (3.3.mg/L on 28 May 2009) in the river near the Neponset Street bridge (042) none have been below 5.0mg/L (n=441). Less than 1% of the DO measurements taken in the river at Commercial Point (089) were below 5.0mg/L (n=5 of 576). The other

two stations did not have any DO data below 5.0mg/L. Based on the last ten years of DO data collected by MWRA staff at four sites along this Neponset River AU (MA73-04) the dissolved oxygen impairment is being delisted since almost all measurements (>99%) have been above 5.0mg/L.

NepRWA data NER200 (NepRWA 2019)

Station	Year	Count Temp	Count DO mg/L	Count DO LT4.0	Count DO LT5.0	Max of DO%
NER200	2008	5	*	*	*	*
NER200	2009	3	*	*	*	*
NER200	2010	4	*	*	*	*
NER200	2011	5	*	*	*	*
NER200	2012	5	*	*	*	*
NER200	2013	6	*	*	*	*
NER200	2014	6	*	*	*	*
NER200	2017	6	6	0	0	100.9
NER200	2018	6	6	0	0	100.6

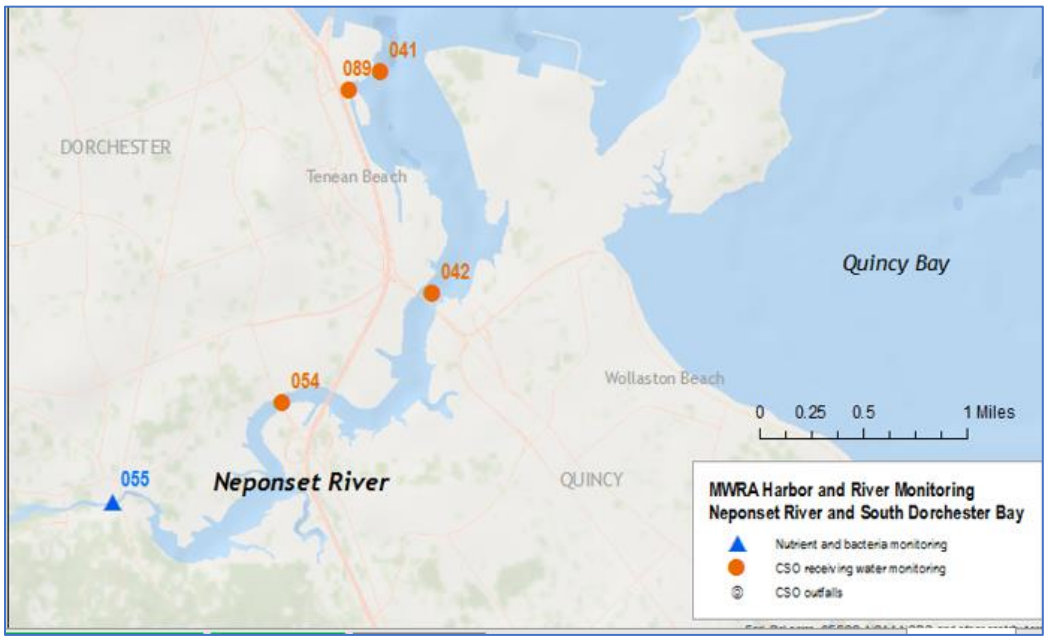
*Dissolved oxygen data 2008-2014 was not included in this review due to absence of calibration data. The WPP external data review process determined this data to not be of assessment quality.

StationID	Watershed	Waterbody	SampleDate	SampleTime	FlowCondition	DO mg/L	DO %
NER200	Boston Harbor	Neponset River	11-May-17	7:35:00 AM	Unknown	10.62	100.9
NER200	Boston Harbor	Neponset River	08-Jun-17	8:08:00 AM	Unknown	9.25	91.9
NER200	Boston Harbor	Neponset River	13-Jul-17	7:40:00 AM	Unknown	7.5	88.9
NER200	Boston Harbor	Neponset River	10-Aug-17	7:52:00 AM	Unknown	7.71	85.7
NER200	Boston Harbor	Neponset River	14-Sep-17	8:15:00 AM	Unknown	7.43	81
NER200	Boston Harbor	Neponset River	12-Oct-17	6:25:00 AM	Unknown	7.91	81.1
NER200	Boston Harbor	Neponset River	10-May-18	7:30:00 AM	Unknown	8.14	84.7
NER200	Boston Harbor	Neponset River	14-Jun-18	7:10:00 AM	Unknown	8.9	95.3
NER200	Boston Harbor	Neponset River	12-Jul-18	7:25:00 AM	Unknown	7.7	88.9
NER200	Boston Harbor	Neponset River	09-Aug-18	7:45:00 AM	Unknown	7.39	90.6
NER200	Boston Harbor	Neponset River	13-Sep-18	8:00:00 AM	Unknown	9.23	100.6
NER200	Boston Harbor	Neponset River	11-Oct-18	7:40:00 AM	Unknown	8.62	92.4

Data Source: (MassDEP Undated 7, MWRA 2019)

StatID	LOC_DESC	QuickMap
041	South Dorchester Bay, Neponset River, Old Colony Yacht Club, near BOS090 (closed)	041
042	Neponset River, between Neponset Ave and MBTA bridges	042
054	Neponset River, Granite Ave., near BOS095 (closed)	054

089	South Dorchester Bay, Neponset River, Commercial Point, Victory Rd. Park, BOS090 (closed)	089



Data Sources: (MassDEP Undated 7, MWRA 2019)

Dissolved Oxygen Check for <5mg/L, annual data, surface and bottom combined								
		Surface			Bottom			Total
Final Segment Assignment	**Station ID**	**High**	**Low**	**S Total**	**High**	**Low**	**B Total**	
MA73-04	041	222		222	220		220	442
	042	221		221	219	1	220	441
	054	220		220	215		215	435
	089	313	5	318	258		258	576
Grand Total		**976**	**5**	**981**	**912**	**1**	**913**	**1894**

Dissolved Oxygen mg/L, annual data, surface and bottom combined					
Station ID	**Years**	**Min**	**Max**	**Ave**	**Count**
041	2009	6.2	10.7	8.0	43
	2010	6.9	9.8	8.0	40
	2011	6.6	9.8	7.9	44
	2012	6.6	10.9	8.4	44
	2013	6.7	12.6	8.9	50
	2014	6.3	11.8	8.7	42
	2015	6.5	11.9	8.6	44
	2016	6.6	10.8	8.4	52
	2017	6.1	11.8	8.5	44

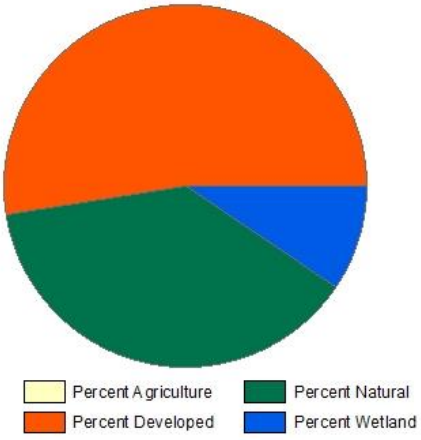
	2018	6.6	11.1	8.4	39
041 Total		**6.1**	**12.6**	**8.4**	**442**
042 One measurement below 5 on 28 May 2009	2009	3.3	10.2	7.8	43
	2010	6.8	10.1	7.9	40
	2011	6.0	10.9	7.8	44
	2012	6.4	10.6	8.2	44
	2013	6.6	12.5	8.8	50
	2014	6.0	11.6	8.5	42
	2015	6.1	12.2	8.5	42
	2016	6.5	11.0	8.2	52
	2017	5.7	12.2	8.2	44
	2018	6.5	12.0	8.3	40
042 Total		**3.3**	**12.5**	**8.2**	**441**
054	2009	6.2	9.4	7.6	40
	2010	6.0	10.6	7.6	38
	2011	5.6	12.2	7.7	44
	2012	5.8	10.7	8.1	44
	2013	6.1	12.5	8.6	48
	2014	5.8	11.5	8.3	42
	2015	5.6	12.5	8.3	41
	2016	5.7	11.3	8.1	55
	2017	5.5	13.0	8.1	44
	2018	6.1	12.7	8.4	39
054 Total		**5.5**	**13.0**	**8.1**	**435**
089 below 5 on 28 May 2009	2009	4.7	13.2	8.6	90
	2010	5.8	12.8	8.7	73
Below 5 on 5 July 2011	2011	5.0	14.7	8.0	73
	2012	6.1	11.0	7.9	59
	2013	5.4	12.5	8.8	60
below 5 on 17 June 2014	2014	3.8	11.3	8.8	52
below 5 on 6 July 2015	2015	4.4	11.9	8.3	41
	2016	5.9	10.8	8.3	52
below 5 on 11 Oct 2017	2017	3.6	11.7	8.4	38
	2018	6.4	11.3	8.4	38
089 Total		**3.6**	**14.7**	**8.4**	**576**
Grand Total	**3.3**	**14.7**	**8.3**	**2920**	**1894**

Pecunit Brook (MA73-25)

Location:	Headwaters east of Carey Circle and west of Pecunit Street, Canton to mouth at confluence with Neponset River, Canton.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	B

Pecunit Brook - MA73-25

Watershed Area: 1.03 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.03	1.03	0.22	0.22
Agriculture	0.4%	0.4%	0.4%	0.4%
Developed	52.2%	52.2%	34.1%	34.1%
Natural	38%	38%	47.1%	47.1%
Wetland	9.3%	9.3%	18.4%	18.4%
Impervious Cover	13.4%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	5	Benthic Macroinvertebrates		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

NepRWA volunteers/interns/staff collected *in situ* measurements and grab samples of Pecunit Brook at Elm Street in Canton (PEB088) typically 4 to 6 times a year between May and October; useable temperature and pH spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality--maximum temperature 24°C and pH range of 6.29-7.26SU. pH was below 6.5SU in four of 54 measurements in nine years. Useable DO data at the same location from 2017 & 2018, ranging from 3.46 to 8.78mg/L (n=12); with measurements falling below 4.0mg/L once in October 2017 and below 5.0mg/L once in August 2018 but these data should be used with caution due to sporadic issues with meter QC. The maximum DO saturation was 80%. Seasonal (btw May & Sept) average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) ranged from 0.07 to 0.11mg/L with maximums ranging from 0.09 to 0.14mg/L. The seasonal average total phosphorus exceeded the EPA recommended Gold Book standard of 0.1mg/L just once in 2012 but since that time decreasing to the lowest seasonal average of 0.07mg/L in 2018. An Alert status was previously assigned to this AU due to elevated total phosphorus concentrations measured by NepRWA between 1999 and 2001. Further downstream MassDEP staff collected one benthic macroinvertebrate sample (Sample ID B0760) in Pecunit Brook, just upstream of Rt.95 in Canton, in July 2009. The RBPIII status of the sample was considered to be moderately impaired, with 48% comparability to the reference station at West Branch Palmer River (B0777). water quality monitoring by MassDEP staff was also conducted here (W1948) during the summer of 2009. The water quality data were indicative of good water quality. Three-day unattended continuous probe deployments for DO and temp in May, August and September recorded a minimum DO concentration of 7.46mg/L, the maximum DO

saturation was 94.9%, the maximum diel shift was 1.39mg/L and the maximum temperature was 21.7°C). Attended probe data can be summarized as follows: pH ranged from 6.8 to 7.2SU; out of six discrete temperature readings the maximum temperature was 19.6°C; out of six DO measurements the range was 8.3-9.3mg/L with a maximum saturation of 94%. Grab samples for total phosphorus were indicative of good water quality with a seasonal average of 0.038mg/L and a maximum of 0.059mg/L.

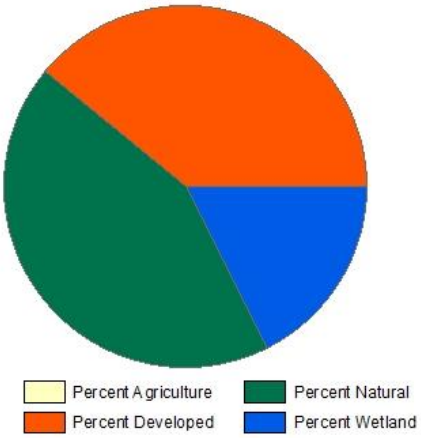
The Aquatic Life Use for Pecunit Brook is assessed as Not Supporting based on the moderately impaired benthic macroinvertebrate sample. All other water quality data were indicative of good conditions. While there were no other indications of nutrient impairment it should be noted that the Blue Hill Country Club Golf course lies just upstream of the NepRWA Elm Street sampling location and intermittent pulses of elevated total phosphorus might be expected as a result of turf fertilization. For this reason and with the impaired benthic macroinvertebrate assemblage in mind, the Alert status for total phosphorus will be maintained for this AU.

Pequid Brook (MA73-22)

Location:	Headwaters east of York Street, Canton to mouth at inlet of Forge Pond, Canton (excluding the approximately 1.3 miles through Reservoir Pond, segment MA73048).
AU Type:	RIVER
AU Size:	2.8 MILES
Classification/Qualifier:	B

Pequid Brook - MA73-22

Watershed Area: 6.53 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	6.53	4.91	1.4	0.94
Agriculture	0.7%	0.8%	0%	0%
Developed	38.8%	37.1%	28.9%	24.4%
Natural	43.1%	42.7%	43.7%	43.7%
Wetland	17.4%	19.4%	27.4%	31.9%
Impervious Cover	15.8%			

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

DFG biologists conducted fish surveys up and downstream of Reservoir Pond (Sample ID's 3336 & 3337 respectively using the backpack shocking method in the Pequid Brook in July 2010. Both samples contained more than 150 individuals and were almost completely comprised of tolerant and moderately tolerant macrohabitat generalists. A small number of the tolerant fluvial dependent species "White sucker" was also collected downstream of Reservoir Pond. NepRWA volunteers/interns/staff collected *in situ* measurements and grab samples upstream of Reservoir Pond at Rt.138 (PQB036) and downstream of the pond at Sherman Street (PQB040), typically 4 to 6 times a year between May and October. Useable DO data upstream of the pond in 2017 & 2018 was very low ranging from 0.25mg/L in September 2017 to 4.04mg/L (n=12). Higher concentrations were found below Reservoir Pond (4.67 to 8.37mg/L n=5) with only one measurement below 5.0mg/L. Useable temperature spanning 2008 to 2018 (excluding 2015 & 2016) were generally indicative of good water quality with the maximum temperature 24°C at Rt.138 and 25°C at Sherman Street and pH ranging from 5.98 to 7.24SU (n=49 with only one measurement below 6.0SU) upstream of the pond and 6.39 to 7.63SU (n=50) in Pequid Brook downstream of Reservoir Pond. Seasonal (between May & Sept) average total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) was indicative of poor water quality upstream of Reservoir Pond, with the seasonal average usually exceeding the EPA recommended concentration (for a river entering a lake) of 0.05mg/L (ranging 0.05 to 0.17mg/L) and the seasonal maximums ranging from 0.08 to 0.22mg/L. However, downstream of Reservoir Pond the seasonal total phosphorus concentrations were lower with seasonal averages ranging from 0.03 to 0.06mg/L, though the seasonal average did exceed 0.05mg/L in 2017. MassDEP staff also conducted water quality monitoring near the mouth of Pequid Brook at Sherman Street in Canton (W0559) during the summer of 2009. Three-day unattended continuous probe deployments for DO in May, August and September recorded a minimum DO concentration of 6.1mg/L, a maximum DO saturation of 85.9%, a maximum diel shift of 1.2mg/L, and a maximum temperature of 25.5°C. Attended probes data can be summarized as follows: the minimum DO concentration was 6.4mg/L, the maximum saturation was 86%, pH ranged from 6.9 to 7.3SU, and the maximum temperature was 25.2°C. The seasonal average total phosphorus concentration was 0.032mg/L with a maximum of 0.046mg/L.

The data for Pequid Brook indicates a clear difference in water quality up and downstream of Reservoir Pond. It should be noted, however, that despite the very low DO and somewhat elevated total phosphorus concentrations upstream of the pond, the fish population was dominated by moderately tolerant macrohabitat generalist species. This portion of the stream is low gradient and has a large wetlands influence. Despite the high concentrations of total phosphorus upstream of Reservoir Pond, there was not enough data available to provide solid evidence of a nutrient-related impairment, therefore an alert is being issued for TP. Downstream from Reservoir Pond, water quality was much better. The Aquatic Life use of Pequid Brook is assessed as "Not Supporting" based on the continued evidence of low dissolved oxygen in the brook upstream of Reservoir Pond.

Pettee Pond (MA73036)

Location:	Walpole/Westwood.
AU Type:	FRESHWATER LAKE
AU Size:	10 ACRES
Classification/Qualifier:	B

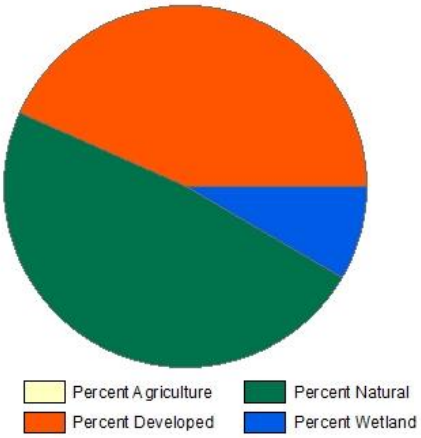
Fish, other Aquatic Life and Wildlife Use: Not Assessed
No data are available for this reporting cycle, so the Aquatic Life Use for Pettee Pond is Not Assessed.

Pine Tree Brook (MA73-29)

Location:	Headwaters, outlet Hillside Pond, Milton to mouth at confluence with the Neponset River, Milton (through former 2010 segment: Pope's Pond MA73044).
AU Type:	RIVER
AU Size:	4.6 MILES
Classification/Qualifier:	B

Pine Tree Brook - MA73-29

Watershed Area: 7.65 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	7.65	5.83	1.64	1.21
Agriculture	0.7%	0.3%	0.4%	0.2%
Developed	43.1%	53.9%	23.2%	30.1%
Natural	48%	36.8%	56.9%	46.9%
Wetland	8.3%	9%	19.4%	22.8%
Impervious Cover	14.8%			

Fish, other Aquatic Life and Wildlife Use: Not Supporting
DFG biologists conducted a fish survey using the backpack shocking method in Pine Tree Brook in Milton downstream of the Unquity Road crossing (Sample ID 804) in July 2002. Four species (11 individuals) were collected in this low gradient reach and the sample was comprised of tolerant and/or moderately tolerant macrohabitat generalists; the most common being Bluegill and American eel. NepRWA volunteers/interns/staff conducted *in situ* and grab sampling at three locations along the brook typically 5 to 6 times a year between May and October as follows: downstream of Popes Pond at Blue Hills Parkway (PTB028), at Brook Road (PTB035), and near the mouth at Central Ave (and Eliot Street) in Milton (PTB047). A summary of useable data is as follows: DO data (2017 & 2018) at the most upstream station PTB028 DO ranged from 3.42 to 8.76m/L with three of 12 measurements below 5.0mg/L and the maximum saturation was 80.6%. At PTB035 DO ranged from 4.83 to 7.52mg/L with only one measurement below 5.0mg/L and the maximum saturation was 80.5%. Near the mouth of Pine Tree Brook (PBT047) the DO ranged from 5.9 to 9.35mg/L with a maximum saturation of 88%. Temperature and pH data spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality at all locations with a maximum temperature of 26^{o}C and a pH range of 6.3 to 7.66SU (only one of 145 measurements was below 6.5SU). Seasonal (btw May & Sept) average total phosphorus ranging from 0.023 to 0.065mg/L. NepRWA staff also collected a Chlorophyll *a* sample just once in May 2008 at Blue Hills Parkway (PTB028) and the concentration was very low (0.96ug/L). MassDEP staff also conducted water quality monitoring near the mouth of Pine Tree Brook at Eliot Street in Milton (W0573) during the summer of 2009. Two-day unattended continuous probes were deployed in June, August and September. The minimum DO was 5.73mg/L (mean minimum DO concentrations ranged from 6.24 to 7.74mg/L), the maximum DO saturation was 111.6%, the maximum diel DO shift was 2.9mg/L, and the maximum temperature was 24.8^{o}C. Attended probes data can be summarized as follows: out of five DO measurements the range was 8.7-9.8mg/L with a maximum saturation of 104%, pH ranged from 6.8 to 7.0SU; the maximum temperature was 20.5^{o}C. Grab samples for total phosphorus averaged 0.034mg/L (maximum of 0.077mg/L).

Although most recent data are indicative of generally good water quality conditions, the Aquatic Life Use of Pine Tree Brook will continue to be assessed as “Not Supporting” for low DO and physical substrate habitat alterations without sufficient data to delist these impairments.

Pinewood Pond (MA73039)

Location:	Stoughton.
AU Type:	FRESHWATER LAKE
AU Size:	25 ACRES
Classification/Qualifier:	B

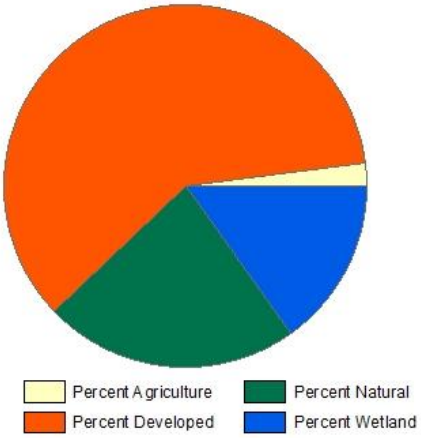
Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported the suspected infestation of a non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994, although species confirmation is still needed. Although the non-native aquatic macrophyte species identification for *M. heterophyllum* has not been specifically confirmed, the Aquatic Life Use of Pinewood Pond will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants.

Plantingfield Brook (MA73-23)

Location:	Headwaters east of Thatcher Street, Westwood, to mouth at confluence with Purgatory Brook, Norwood (portion culverted).
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B

Plantingfield Brook - MA73-23

Watershed Area: 1.5 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.5	1.5	0.41	0.41
Agriculture	2%	2%	3.1%	3.1%
Developed	60%	60%	32.1%	32.1%
Natural	22.8%	22.8%	31%	31%
Wetland	15.1%	15.1%	33.8%	33.8%
Impervious Cover	22.4%			

Fish, other Aquatic Life and Wildlife Use: Not Supporting
There are no recent data available to assess the Aquatic Life Use of Plantingfield Brook so the historical impairment for dewatering is being retained.

Ponkapoag Pond (MA73043)

Location:	Canton/Randolph.
AU Type:	FRESHWATER LAKE
AU Size:	214 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Fanwort*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

MassDEP staff have identified several non-native aquatic macrophytes in Ponkapoag Pond: *Myriophyllum heterophyllum* (variable water milfoil) and *M. spicatum* (Eurasian water milfoil) in 1994, *Cabomba caroliniana* (Fanwort) in 2009, and most recently *Utricularia inflata* (swollen bladderwort) in 2017.

The Aquatic Life Use of Ponkapoag Pond will continue to be assessed as "Not Supporting" due to the presence of "Non-Native Aquatic Plants" including *Myriophyllum heterophyllum* (variable water milfoil) and the specific species Eurasian water milfoil and Fanwort.

Fish Consumption Use: Not Supporting

MassDEP biologists conducted fish toxics sampling at Ponkapoag Pond in May 2017 as part of the probabilistic lake surveys (MAP2). Because of elevated mercury measured in fish filets, MassDPH issued the following fish consumption advisories:

- *"Children younger than 12 years of age, pregnant women, women of childbearing age who may become pregnant, and nursing mothers should not eat any fish from this water body."*
- *"The general public should limit consumption of all fish from this water body to two meals per month."*

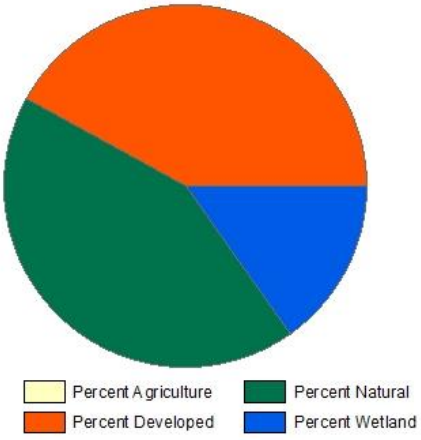
Since there is a site specific DPH advisory for elevated mercury in fish tissue (MassDPH 2019), the Fish Consumption Use for Ponkapoag Pond (MA73043) continues to be assessed as Not Supporting. This impairment, due to atmospheric deposition – toxics and other unknown sources, is covered under the Northeast Regional Mercury Total Maximum Daily Load Final Addendum for Massachusetts (CN 377.0).

Ponkapog Brook (MA73-27)

Location:	Headwaters, outlet of Ponkapoag Pond, Canton to confluence with Neponset River, Canton.
AU Type:	RIVER
AU Size:	3.1 MILES
Classification/Qualifier:	B

Ponkapog Brook - MA73-27

Watershed Area: 4.27 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.27	3.7	0.86	0.72
Agriculture	1%	1.1%	0.3%	0.3%
Developed	41.6%	44.6%	26.1%	30%
Natural	42.4%	39.2%	32.7%	30.2%
Wetland	15%	15.1%	40.9%	39.6%
Impervious Cover	13.6%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

DFG biologists conducted fish surveys using the backpack shocking method at two locations along Ponkapog Brook in August 2008: upstream of Hubbard Street and near Elm Street (Sample ID's 2520 & 2563, respectively). At Hubbard Street only two individuals were collected but visibility was noted as being poor. Further downstream near Elm Street a total of 27 fish were collected representing eight species. The sample contained multiple age classes of Eastern brook trout (seven ≤140mm) as well as one large brown trout and other tolerant and moderately tolerant macrohabitat generalist species. The Elm Street location was noted as being a fish stocking site for Brown trout. MassDEP staff collected one benthic macroinvertebrate sample (ID B0761), just downstream of Elm Street in Canton in July 2009. The RBPIII status of the sample was considered to be not impaired/slightly impaired, with 81% comparability to the reference station at West Branch Palmer River (B0777). MassDEP staff also conducted water quality monitoring in the brook here during the summer of 2009 (W0566). Three continuous probe deployments, one in May and two in September) were made. The minimum DO was 5.55mg/L with mean minimum DOs during the three deployments ranging from 5.65-7.26mg/L. The only deployment below 6.0mg/L was in early September. The maximum diel shift was 3.14mg/L (both deployments in September were above 3.0mg/L) --one indicator of nutrient enrichment. The maximum saturation was 108.6%. During the three (three-day) continuous probe deployments the maximum temperature was 19.5°C all below the acute and chronic criterion for a Tier 1 Cold Water Fishery. Attended probes were used to collect data eight times over the sampling season with a maximum temperature of 20.1°C in August. The pH ranged from 6.4 to 6.6SU. The seasonal average total phosphorus concentration was 0.041mg/L with a maximum of 0.061mg/L (n=5). NepRWA volunteers/interns/staff also collected *in situ* data and grab samples from Ponkapog Brook at Elm Street (POB040) typically 4 to 6 times a year between May and October spanning 2008 to 2018 (excluding 2015 & 2016). DO data for 2017 & 2018 ranged from 2.13 to 7.32mg/L and was below 5.0mg/L five times out of 12. The maximum temperature was 26˚C (September 2008) with four of 51 measurements above 20˚C although based on the data usability review the temperature data should be used with caution. Three of the four measurements above 20°C were small excursions (i.e. 1 to 2˚C). The pH data ranged from 6.27-7.1SU with seven of the 52 measurements over the nine years below 6.5SU. These slight excursions are considered natural based on the close proximity/ and large percentage of wetlands in the watershed and along the brook. The

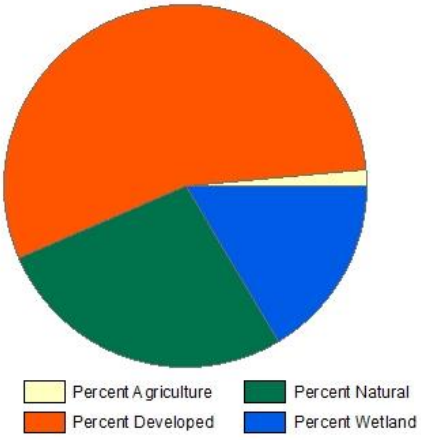
seasonal total phosphorus data ranged from 0.05 to 0.17mg/L (maximums ranging from 0.08 to 0.45mg/L) and were above 0.1mg/L twice; in 2011 and 2018.
The Aquatic Life Use of Ponkapog Brook (MA73-27) is assessed as "Fully Supporting" based primarily on the benthic macroinvertebrate and fisheries data. The presence of multiple age classes of Eastern Brook Trout is indicative of good water quality conditions and because of this Existing Use this brook should be protected as a Tier 1 cold water and a Cold Water designation should be considered. An alert is being identified because of some evidence of nutrient enrichment (large diel shifts in oxygen and intermittent spikes of total phosphorus), and low DO reported by NepRWA.

Purgatory Brook (MA73-24)

Location:	Headwaters east of Farm Lane, Westwood to confluence with Neponset River, Norwood.
AU Type:	RIVER
AU Size:	5.1 MILES
Classification/Qualifier:	B

Purgatory Brook - MA73-24

Watershed Area: 5.98 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	5.98	4.98	1.67	1.41
Agriculture	1.4%	0.8%	1.6%	0.8%
Developed	55.1%	61.7%	36.1%	41.4%
Natural	27.1%	21.8%	24.8%	20.2%
Wetland	16.4%	15.8%	37.5%	37.6%
Impervious Cover	22.9%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	5	Trash		Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

DFG biologists conducted fish surveys using the backpack shocking method in Purgatory Brook at the Gay Street crossing (Sample ID 1604) and upstream of the Everett Street crossing (Sample ID 1656) both in July 2006; and MassDEP biologists conducted sampling near Everett Street in September 2009 (Sample ID 4520). At the most upstream sampling location one species (7 individuals) was collected – a moderately tolerant macrohabitat generalist (Largemouth bass). NepRWA volunteers/interns/staff conducted *in situ* and grab sampling in Purgatory Brook near Rte.1A (PUB022) typically 4 to 6 times a year between May and October. Their useable data can be summarized as follows: minimum DO 6.34mg/L, maximum saturation 95%, maximum temperature 21°C (and only once in 2018 exceeding 20°C), pH range 6.25-7.7SU (only once in 2009 below 6.5SU), seasonal average (btw May & Sept) total phosphorus data ranging from 0.06 to 0.11mg/L and above 0.1mg/L in one year (2014). Fish samples collected near Everett Street were comprised of both tolerant and moderately tolerant macrohabitat generalists as well as at least one fluvial dependent species (White sucker). Multiple age classes of brown trout were also present in the July 2006 sample –establishing the presence of a Tier 2 Cold Water Fishery. MassDEP staff also deployed a long term (95-day) temperature logger in the brook at Everett Street (W1953) during the summer of 2009. During the 95-day deployment (mid-June through mid-September) the maximum temperature was 25.4°C and the maximum 7 DADA was 22.2°C and the maximum 24hr rolling average was 23.1°C.

The Aquatic Life Use for Purgatory Brook is assessed as Fully Supporting based on the fish and water quality data. Since the presence of multiple age classes of brown trout were found in the brook in July 2006 an alert is being identified for

temperature (the 7 DADA was above 21.0°C seven times). Purgatory Brook should be protected as cold water habitat (DFG identifies this brook a CFR).

Reservoir Pond (MA73048)

Location:	Canton.
AU Type:	FRESHWATER LAKE
AU Size:	251 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Added
4a	4a	(Fanwort*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

MassDEP staff reported a suspected infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994 (species confirmation needed), as well as *Cabomba caroliniana* (Fanwort) and *Myriophyllum spicatum* (Eurasian Water Milfoil) in 2009.

Although non-native aquatic macrophyte species identification for *M. heterophyllum* has not been specifically confirmed, the Aquatic Life Use of Reservoir Pond will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants as well as for *Cabomba caroliniana* (Fanwort) and *Myriophyllum spicatum* (Eurasian Water Milfoil).

Russell Pond (MA73003)

Location:	Milton.
AU Type:	FRESHWATER LAKE
AU Size:	9 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Added
5	5	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophyte *Potamogeton crispus* (Curly-leaf Pondweed) in 1994. The Aquatic Life Use of Russell Pond will continue to be assessed as "Not Supporting" with the impairment being changed from the generic Non-Native Aquatic Plants to the specific macrophyte "Curly-leaf Pondweed" (*Potamogeton crispus*).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	Impairment changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Curly-leaf Pondweed" (Potamogeton crispus).

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

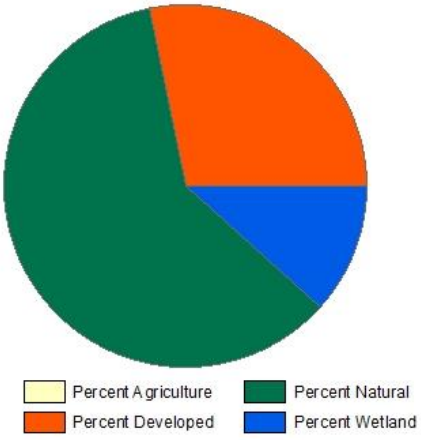
During the WPP 1994 synoptic survey of Russell Pond, an infestation of the non-native aquatic macrophyte, *Potamogeton crispus* was identified (MassDEP 1994). The impairment was changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Curly-leaf Pondweed" (Potamogeton crispus).

School Meadow Brook (MA73-06)

Location:	Headwaters, outlet of Ganawatte Farm Pond, Walpole to confluence with Neponset River, Walpole.
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B

School Meadow Brook - MA73-06

Watershed Area: 3.16 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.16	3.16	1.07	1.07
Agriculture	0.8%	0.8%	0.7%	0.7%
Developed	28%	28%	20%	20%
Natural	59.7%	59.7%	57.5%	57.5%
Wetland	11.6%	11.6%	21.8%	21.8%
Impervious Cover	12.6%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

NepRWA volunteers/interns/staff collected water quality data at site SMB001 (located close to the outlet of the pond/headwaters of the brook at Pine Street in Walpole) generally 5 or 6 times a year from 2008 to 2014 and 2017 to 2018. *In situ* and grab sample data (temperature, pH, total phosphorus) were indicative of good water quality; with a maximum temperature of 23°C, pH ranging from 6 to 7.19SU, a maximum total phosphorus of 0.07 mg/L and a yearly average total phosphorus ranging from 0.04 to 0.05 mg/L. Useable dissolved oxygen data was limited to 4 or 5 visits each in 2017 and 2018. The majority of dissolved oxygen measurements at SMB001 were <5 mg/L ranging from 1.9 to 7.6mg/L. It is likely that the low dissolved oxygen concentrations observed at this location are naturally occurring, due to the influence of the Ganawatte Farm Pond/wetland area immediately upstream. NepRWA also collected chlorophyll *a* data in June 2008 which was indicative of good water quality (12.6 µg/L). Further downstream DFG biologists conducted backpack electrofishing in a low gradient pool/glide/run habitat upstream from Route 1 in Walpole (Sample ID 2805) in September 2007. Six species (60 individuals) were collected. With the exception of a single brook trout, the sample was comprised of macrohabitat generalists and both intolerant and moderately tolerant species were well represented.
The Aquatic Life Use for School Meadow Brook is assessed as Fully Supporting based primarily on the fish population data. Generally good water quality conditions were also documented by NepRWA however the location of site SMB001 (being so close to Ganawatte Pond, which is identified as “deep marsh” in the 2005 wetland GIS layer), is not considered to be well representative of the School Meadow Brook AU.

Sprague Pond (MA73053)

Location:	Boston/Dedham.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

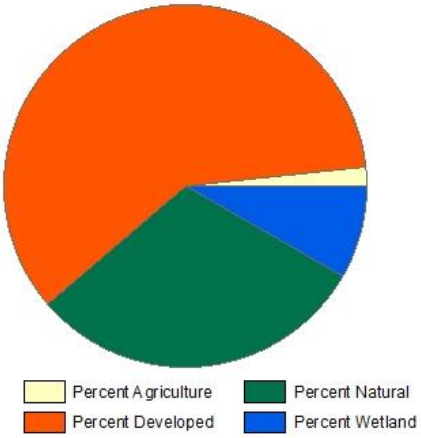
Fish, other Aquatic Life and Wildlife Use: Not Assessed
With no available data for this reporting cycle, the Aquatic Life Use for Sprague Pond is Not Assessed.

Steep Hill Brook (MA73-18)

Location:	Headwaters, outlet of Pinewood Pond, Stoughton, to mouth at inlet of Bolivar Pond, Canton.
AU Type:	RIVER
AU Size:	0.9 MILES
Classification/Qualifier:	B

Steep Hill Brook - MA73-18

Watershed Area: 5.96 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	5.94	5.93	1.46	1.46
Agriculture	1.7%	1.6%	2%	2%
Developed	59.6%	59.7%	34.5%	34.5%
Natural	30.5%	30.4%	42.6%	42.6%
Wetland	8.3%	8.3%	20.9%	20.9%
Impervious Cover	21.8%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

MassDEP biologists collected a benthic macroinvertebrate sample in Steep Hill Brook (Sample ID B0759) north of Erin Rd in Stoughton in July 2009. The RBPIII status of the sample was considered "slightly impaired", with 71% comparability to the reference station West Branch Palmer River (B0777). DFG biologists also conducted fish surveys slightly further downstream using the backpack shocking method west of Greenbrook Drive and North of Erin Rd in Canton/Stoughton (Sample ID 2819) in September 2007. Five species (19 individuals) were collected. The sample was comprised of tolerant and moderately tolerant macrohabitat generalists as well as one tolerant fluvial dependent species "White sucker".

Based on the benthic and fish survey data, the Aquatic Life Use of Steep Hill Brook is assessed as "Fully Supporting".

Town Pond (MA73056)

Location:	Stoughton.
AU Type:	FRESHWATER LAKE
AU Size:	8 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)		Added
4c	4c	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort) in 1994. The Aquatic Life Use of Town Pond will continue to be assessed as "Not Supporting" due to the infestation of with the non-native aquatic macrophyte "Fanwort" (*Cabomba caroliniana*).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	Impairment changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (Cabomba caroliniana).

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

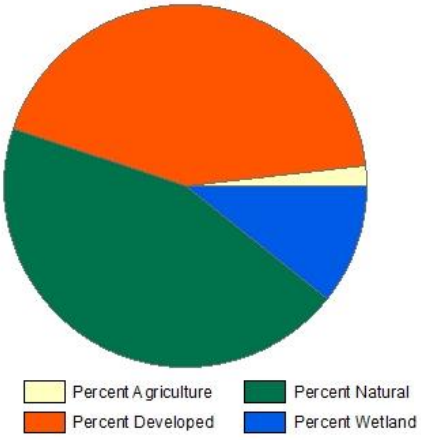
During the WPP 1994 synoptic survey of this pond an infestation of the non-native species *Cabomba caroliniana* was identified (MassDEP 1994). The impairment was changed from the generic "Non-Native Aquatic Plants" to the specific macrophyte "Fanwort" (Cabomba caroliniana).

Traphole Brook (MA73-17)

Location:	Headwaters west of Everett Street, Sharon, to confluence with Neponset River, Sharon.
AU Type:	RIVER
AU Size:	3.9 MILES
Classification/Qualifier:	B

Traphole Brook - MA73-17

Watershed Area: 4.65 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.65	4.6	1.09	1.09
Agriculture	1.8%	1.3%	0%	0%
Developed	43.1%	43.5%	31.4%	31.4%
Natural	44.4%	44.3%	42.8%	42.8%
Wetland	10.7%	10.8%	25.7%	25.7%
Impervious Cover	17.8%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

MassDEP biologists collected benthic, fish, and water quality data from Traphole Brook near Coney Street in Walpole (roughly in the middle of the AU) during the summer of 2009. The RBPIII analysis of the benthic macroinvertebrate sample (Sample ID B0142) was "not impaired", with 86% comparability to the reference station at West Branch Palmer River (B0777). Backpack electrofishing (SampleID 5422) resulted in the capture of four species. The sample was dominated by multiple age classes of Eastern Brook Trout. The water quality sampling data (W0551) documented good conditions: three-day unattended continuous probe deployments for DO and temperature in May, and August recorded a minimum DO concentration of 8.64mg/L) and a maximum saturation of 97%, a max diel shift of 1.17mg/L, and a maximum temperature of 17.3°C. Attended probe measurements documented good pH (range 6.6 to 6.9SU), maximum temperature was 15.7°C (n=8); minimum DO 9.1mg/L (n=6) and a maximum saturation of 96%. Maximum temperature recorded during the long term (95-day) temperature logger deployment was 21.1°C. The maximum 7- DADM was 19.9°C and daily mean was 19.6°C all below the acute and chronic criterion for a Tier 1 Cold Water Fishery. Total phosphorus data were also low (average 0.019mg/L, maximum of 0.039mg/L). Further downstream near Sumner Street in Norwood, NepRWA volunteers/interns/staff collected *in situ* and grab sample data (THB033) typically 4 to 6 times a year between May and October; useable temperature and pH spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality with a maximum temperature of 21°C and a pH range of 6.5-7.85SU. Useable DO data at the same location from 2017 & 2018 were also indicative of good water quality (range 7.38 to 9.85mg/L) with a maximum saturation of 93.5%. Seasonal (btw May & Sept) total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) was also indicative of good water quality with seasonal average concentrations ranging from 0.06 to 0.10mg/L. Slightly further downstream DFG biologists conducted backpack electrofishing behind Norwood Garden Apartments, off Plymouth Drive in 2000 (Sample ID 144). Six species were documented including both multiple age classes of both brown and Easter Brook Trout as well as one other fluvial dependant species (white sucker) and two intolerant macrohabitat generalist species (banded sunfish and swamp darter). It should also be noted that NepRWA staff submitted comments on MassDEP's 2016 proposed IR that the mill pond dam and its associated impoundment cause significant detrimental warming effects on Traphole Brook. The group expressed concern over the potential impacts of the warm water

to the valuable cold water fishery. Although it was concluded that these data could not be used for assessment purposes due to the lack of QC data (i.e. no side by side checks of the loggers against a field probe and no NIST thermometer checks in water bath before or after deployment), an Alert will be identified due to evidence of warming as a result of the impoundment. It should be noted here that the dam and other habitat restoration efforts are being targeted for removal/remediation which will improve habitat quality in Traphole Brook.

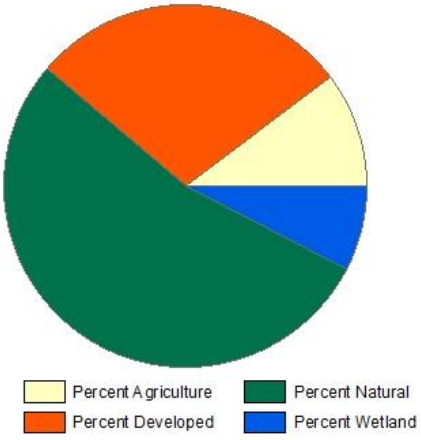
The Aquatic Life Use is assessed as Fully Supporting for Traphole Brook based on benthic macroinvertebrates, fish and water quality data collected between 2008 and 2018. An alert is being identified for temperature downstream from the mill pond dam.

Tubwreck Brook (MA73-07)

Location:	Headwaters - small unnamed pond southeast of Powissett Street, Dover to confluence with Mill Brook just southwest of Dover/Medfield border.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B

Tubwreck Brook - MA73-07

Watershed Area: 0.71 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	0.71	0.71	0.21	0.21
Agriculture	10.2%	10.2%	5.8%	5.8%
Developed	28.6%	28.6%	24.6%	24.6%
Natural	53.7%	53.7%	50%	50%
Wetland	7.5%	7.5%	19.6%	19.6%
Impervious Cover	10.1%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

DFG biologists conducted fish surveys using the backpack shocking method in a low gradient section of Tubwreck Brook upstream from Draper Road in Dover (Sample ID 2523) in August 2008. The nature of the habitat was very shallow with only one spot containing enough water to sample. One species (4 individuals) were collected. The sample was comprised of Redfin Pickerel, which is a moderately tolerant macrohabitat generalist. MassDEP biologists conducted another survey further downstream of Draper Road in Dover (Sample ID 4519) in August 2009. Low flow conditions were noted, as well as water supply well-heads on the left bank. Two moderately tolerant macrohabitat generalist species (5 individuals) were collected. The sample was comprised again of mostly Redfin Pickerel but also this time 1 Pumpkinseed. MassDEP staff collected water quality data at Draper Road in Dover (W1937) during the summer of 2009. Two-day unattended continuous probe deployments for DO in June, August and September were indicative of good water quality (i.e. minimum DO concentration 7.6mg/L, maximum saturation of 90.4% and a max diel shift of 0.76 mg/L). A 95-day temperature logger deployment in 2009 was also indicative of good water quality for a cold water fishery. The 7-DADM was 20.2°C, with only 2 exceedances of the chronic criterion and the maximum 24hr average was 18.9°C. A 108-day sonde deployment recorded a minimum DO of 7.6mg/L and maximum saturation of 90%. Attended temperature, pH and DO as well as total phosphorus at Draper Road were also indicative of good water quality; with pH ranging from 6.4 -6.5SU; maximum temperature of 17.3°C; minimum DO concentration 8.3mg/L; average total phosphorus 0.025 mg/L and maximum total phosphorus 0.034 mg/L.

Based on the fish and water quality data collected in 2008 and 2009 the Aquatic Life Use of Tubwreck Brook is assessed as "Fully Supporting". It should be noted, however, Tubwreck Brook along with Mill and Mine brooks, part of the "Mine Brook" subwatershed in the 1994 Neponset River WQAR is considered by DFG biologists as a "naturally reproducing trout stream", based on data collected between 1979 and 1987. Tubwreck Brook is currently identified as a cold water fisheries resource by DFW. The Mill Brook AU immediately downstream of Tubwreck Brok is now considered a Tier 1 cold water fishery based on observations of YOY EBT in 2009; and therefore, Tubwreck Brook should also be protected as a Tier 1 AU. Since no cold water fish were collected (or observed) in Tubwreck Brook by state biologists in 2008 or 2009, nor were salmonid species in the "Mine Brook system" back in 1994, it appears that cold water fish have been absent in Tubwreck Brook during the summer

sampling season for quite a while and low flow (dewatering) is likely to be one of the main reasons for this. There were observations of marked low flow conditions made during the 2009 MassDEP surveys; and MASSGIS datalayers depict the presence of two “Community Groundwater Wells” downstream of Draper Road, one “Non-community groundwater well” at the top of the Tubwreck Brook and Zone II Wellhead Protection Areas along the brook. Therefore an “Alert” for “low flow conditions” is being identified.

Turner Pond (MA73058)

Location:	Walpole.
AU Type:	FRESHWATER LAKE
AU Size:	18 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)		Added
4c	4c	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

MassDEP staff identified an infestation of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort) in Turner Pond in the summer of 1994. NepRWA staff submitted comments (and supporting data) on the 2016 IR, expressing concern regarding dissolved oxygen levels, nutrient pollution and eutrophication in Turner Pond, and their usable data are summarized below. NepRWA data included *in-situ* measurements as well as grab samples for total phosphorus and chlorophyll a near the outlet of the pond (@MMB106 Mill Pond Rd), generally 5 or 6 times a year from 2008 to 2014 and 2017 to 2018. Temperature and pH were indicative of good conditions with a maximum temperature of 23°C and pH ranging from 6 to 7.19SU. Since herbicides were applied to the upstream third of the pond in late June of both 2017 and 2018 so few of the DO measurements were considered appropriate for assessment decisions. Attended DO data in May 2017 and June 2018 were 6.51 and 5.21mg/L, respectively. NepRWA also collected seasonal (btw May & Sept) total phosphorus data between 2006 and 2018. These data often did not meet criteria for lakes, with a maximum of 0.17 mg/L in 2012 with seasonal averages over the years ranging from 0.04 to 0.11 mg/L. Secchi depth in May and June 2017 was very low at 0.8m and 0.65m, respectively. Useable chlorophyll a data was limited to 2006, 2008 and 2014 and was indicative of good water quality, with the maximum each year being <16ug/l. NepRWA's recommendation for a nutrient impairment for this AU is recognized and while NepRWA Secchi depth and total phosphorus data is suggestive of nutrient concerns, the available useable key indicator data (chlorophyll a data all <16ug/L) were not indicative of nutrient enriched conditions.

The Aquatic Life Use of Turner Pond will continue to be assessed as "Not Supporting" due to the presence of the non-native aquatic macrophyte *Cabomba caroliniana* (Fanwort) infestation. Alerts for low dissolved oxygen, total phosphorus and secchi depth are being identified.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	The generic "Non-Native Aquatic Plants" is not needed since the specific macrophyte Cabomba caroliniana (fanwort) has been utilized.

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

During the WPP 1994 synoptic survey of this pond an infestation of the non-native species *Cabomba caroliniana* was identified (MassDEP 1994). The generic impairment "Non-Native Aquatic Plants" is not needed since the specific macrophyte Cabomba caroliniana (fanwort) has been utilized.

Turners Pond (MA73059)

Location:	Milton.
AU Type:	FRESHWATER LAKE
AU Size:	11 ACRES
Classification/Qualifier:	B

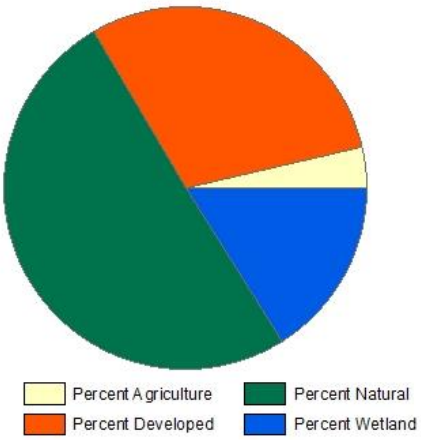
Fish, other Aquatic Life and Wildlife Use: Not Supporting
No new data are available for Turners Pond so the impairments identified during the 1999 surveys are carried forward. The Aquatic Life Use for Turners Pond is Not Supporting.

Unnamed Tributary (MA73-10)

Location:	Headwaters, outlet Turner Pond, Walpole to confluence with Neponset River, Walpole.
AU Type:	RIVER
AU Size:	0.4 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-10

Watershed Area: 8.22 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	8.21	5.42	2.15	1.35
Agriculture	3.6%	3%	1.3%	0.7%
Developed	29.8%	29.8%	20.5%	21.1%
Natural	50.5%	49%	42.7%	38.9%
Wetland	16%	18.2%	35.5%	39.3%
Impervious Cover	10.8%			

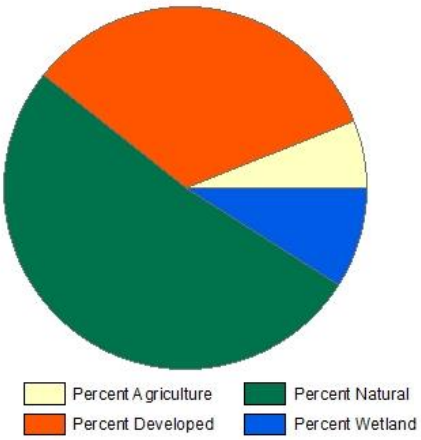
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of this Unnamed Tributary (MA73-10).

Unnamed Tributary (MA73-14)

Location:	Headwaters, outlet Willet Pond, Walpole/Norwood, to inlet Ellis Pond, Norwood.
AU Type:	RIVER
AU Size:	0.4 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-14

Watershed Area: 4.92 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.89	4.46	1.2	1.2
Agriculture	6%	5.2%	6.6%	6.6%
Developed	33.4%	36.1%	34.7%	34.7%
Natural	51.7%	50%	43.1%	43.1%
Wetland	9%	8.8%	15.5%	15.5%
Impervious Cover	10.6%			

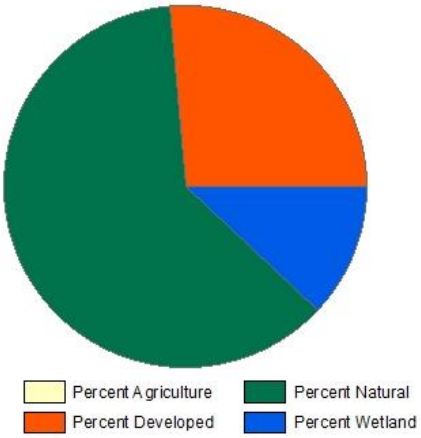
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of this unnamed tributary (MA73-14).

Unnamed Tributary (MA73-31)

Location:	Headwaters, outlet of Massapoag Lake, Sharon to mouth at inlet of Hammer Shop Pond, Sharon (not depicted on 1987 Mansfield USGS quad).
AU Type:	RIVER
AU Size:	0.3 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-31

Watershed Area: 3.64 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.32	3.32	1.35	1.35
Agriculture	0.6%	0.6%	1.2%	1.2%
Developed	26.3%	26.3%	26.8%	26.8%
Natural	61.3%	61.3%	51.9%	51.9%
Wetland	11.9%	11.9%	20.1%	20.1%
Impervious Cover	7.2%			

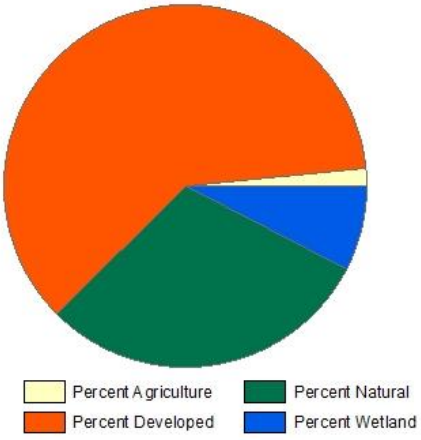
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available to assess the Aquatic Life Use of this Unnamed Tributary (MA73-31) so this use is Not Assessed.

Unnamed Tributary (MA73-32)

Location:	From the outlet of Town Pond, Stoughton to mouth at confluence with Steep Hill Brook, Stoughton.
AU Type:	RIVER
AU Size:	1 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-32

Watershed Area: 4.96 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.95	4.95	1.23	1.23
Agriculture	1.5%	1.5%	2.4%	2.4%
Developed	61%	61%	34.1%	34.1%
Natural	29.9%	29.9%	44.4%	44.4%
Wetland	7.6%	7.6%	19.1%	19.1%
Impervious Cover	22.4%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	pH, Low		Removed
5	5	Phosphorus, Total		Removed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

MassDEP staff collected a benthic macroinvertebrate sample (Sample ID B0780) downstream of Central Street in Stoughton in July 2009. The RBPIII analysis of the sample indicated not impaired, with 90% comparability to the reference station in the West Branch Palmer River (B0777). NepRWA volunteers/interns/staff conducted *in situ* and grab sampling in this Unnamed Tributary at the Central Street/West Street area (SHB021) typically 4 to 6 times a year between May and October. Their useable temperature and pH data spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality with a maximum temperature of 25°C and a pH range of 6.4-7.8SU (only once in nine years and 51 measurements, falling just below the criteria of 6.5SU). Useable DO data at the same location from 2017 & 2018 were also indicative of good water quality ranging from 5.73 to 8.98mg/L with a maximum saturation of 85%. Seasonal (btw May & Sept) total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) was also indicative of good water quality, with seasonal averages ranging from 0.02 to 0.04mg/L (seasonal maximums ranged from 0.03 to 0.07mg/L).

The Aquatic Life Use of this Unnamed Tributary to Steep Hill Brook (MA73-32) is assessed as "Not Supporting" with the benthic macroinvertebrate impairment being carried forward until more recent data are collected to

confirm the appropriateness of its delisting. The former impairments for total phosphorus and pH are being delisted as causes of impairment (see Removal Comment for justification).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
pH, Low	Applicable WQS attained; reason for recovery unspecified	The Aquatic Life Use of this unnamed tributary to Steephill Brook was historically listed as "partial support" for pH in 2002 (the listing was changed to pH-low in 2010), based on NepRWA data at Central/West Street (SHB021) collected from 2000 to 2001. pH ranged between 6.4 and 7.0 SU (n=7) with only two measurements less than 6.5 SU. Considering NepRWA data at the same location spanning 2008 to 2018 (excluding 2015 & 2016); pH ranged between 6.4 and 7.8SU (only once in nine years and 51 measurements, falling just below the criteria of 6.5SU. Based on the most recent data and given the magnitude and frequency of the excursion (i.e. <0.5 SU outside of the criterion range and this excursion happening only once in nine years), it is concluded that this new data is indicative of full support for the Aquatic Life Use. Consequently, the low pH impairment for this unnamed tributary (MA73-32) is being delisted.
Phosphorus, Total	Applicable WQS attained; reason for recovery unspecified	The Aquatic Life Use of this unnamed tributary to Steephill Brook was historically listed as "partial support" for nutrients in 2002 (the listing for nutrients was changed to Total Phosphorus in 2010), based on NepRWA data at Central/West Street (SHB021) collected from 1999 to 2001. Concentrations ranged between 0.02 and 0.092 mg/L (n=11), with five samples greater than 0.05 mg/L and seasonal averages of 0.05mg/L in 2000 and 0.057 mg/L in 2001. Considering NepRWA data at the same location spanning 2008 to 2018 (excluding 2015 & 2016); the seasonal average for total phosphorus ranged from 0.02 to 0.04mg/L, thus never exceeding the EPA recommended gold book concentration of 0.05mg/L. The Total Phosphorus impairment for the unnamed tributary (MA73-32) is being delisted, as all the most recent data is indicative of full support for the Aquatic Life Use.

Supporting Information for Delisted Impairments

pH, Low

NepRWA data for Unnamed Tributary Central/West Street (SHB021) (NepRWA 2019)

Station	Year	Count pH	Count pH <6.5 or >8.3SU	Count pH <6.0 or >8.8SU
SHB021	2008	6	0	0
SHB021	2009	6	0	0
SHB021	2010	4	0	0
SHB021	2011	6	1	0

SHB021	2012	6	0	0
SHB021	2013	5	0	0
SHB021	2014	6	0	0
SHB021	2017	6	0	0
SHB021	2018	6	0	0

Phosphorus, Total

NepRWA TP data for Unnamed Tributary at the Central Street/West Street area (SHB021) (NepRWA 2019)

Station	Year	Count TP	Count TP >0.025 mg/L	Count TP >_0.1 mg/L	TP Min mg/L	TP Max mg/L	TP Avg mg/L
SHB021	2011	6	2	0	0.02	0.05	0.03
SHB021	2012	6	5	0	0.02	0.06	0.04
SHB021	2013	5	3	0	0.02	0.03	0.03
SHB021	2014	6	5	0	0.02	0.07	0.04
SHB021	2017	6	4	0	0.02	0.04	0.03
SHB021	2018	6	5	0	0.02	0.07	0.04

NepRWA “Seasonal” TP data for SHB021 (May-Sept) (NepRWA 2019)

Station	Year	Count TP	Count TP >0.025 mg/L	Count TP >_0.1 mg/L	TP Min mg/L	TP Max mg/L	TP Avg mg/L
SHB021	2011	4	1	0	0.02	0.03	0.02
SHB021	2012	4	4	0	0.03	0.06	0.04
SHB021	2013	3	3	0	0.03	0.03	0.03
SHB021	2014	5	4	0	0.02	0.07	0.04
SHB021	2017	5	4	0	0.02	0.04	0.03
SHB021	2018	5	4	0	0.02	0.07	0.04

Total Phospohorus (mg/l)

SiteID#	Description	Town	5/24/00		7/26/00		9/27/00		11/15/00		1/24/01		3/22/01		3/28/01		>0.1
NER002	Neponset River @outlet of Crackrock Pond	Foxborough	0.0569926	a	n/s		0.047	b	0.057	b	0.057	a	0.046		0.043		0
NER040	Neponset River @ South Street	Walpole	0.0532931		0.0739905		0.076		0.070		n/s		0.054		0.033	a	0
MIB037	Mine Brook @ Elm Street	Medfield	0.0343956		0.0718907		0.073		0.058		0.052		0.032		n/s		0
SMB013	School Meadow Brook @ Washington Street	Walpole	0.0239969		0.0725406	a	0.047		0.036		n/s		0.028		n/s		0
SPB016	Spring Brook @ Route 27	Walpole	0.069391		0.0585924		0.029		0.048		0.051		0.068		n/s		0
NER075	Neponset River @ Hollingsworth & Vose Dam	Walpole	0.0605922		0.1069862		~~0.097~~	a	0.052		0.058		0.092		0.038		1
MLB024	Mill Brook @ inlet of Petee's Pond	Westwood	n/s		n/s		n/s		n/s		n/s		n/s		n/s		0
WIP001	Willett Pond @ northwest shore	Walpole	n/s		n/s		n/s		n/s		n/s		n/s		n/s		0
WIP002	Willett Pond @ east shore	Walpole	n/s		n/s	a	n/s		n/s		n/s		n/s		n/s		0
WIP003	Willett Pond @ southern shore	Walpole	n/s	a	n/s		n/s		n/s		n/s		n/s		n/s		0
GEB020	Germany Brook @ inlet of Ellis Pond	Norwood	0.1099858	b	0.1119855		0.054	b	0.053		0.050		n/s		0.031		2
HAB002	Hawes Brook @ Walpole Street	Norwood	0.0453941		0.0535931		0.046		0.041		0.030		0.071		0.030		0
HAB006	Hawes Brook @ Endean Park, railroad bridge	Norwood	0.0609921		0.0622919		0.081		n/s		0.030		0.092		0.030		0
HAB010	Hawes Brook @ Washington Street	Norwood	0.3089601		0.2229712		0.066		n/s		0.027		0.105		0.033		3
NER080	Neponset River @ Pleasant Street Bridge	Norwood	0.0423945		0.0430944		0.044	a	0.053		0.058		0.114		0.034		1
MEB001	Meadow Brook @ Sunnyside Road	Norwood	0.38695		0.324958		0.354	b	0.196	b	0.130	b	0.143		0.084		6
THB020	Traphole Brook @ Coney Street	Walpole	0.0398449	a,b	0.0533931	b	0.058		0.049		0.046		0.146	b	0.034	a	1
BEB013	Beaver Brook @ Upland Road	Sharon	0.0351955		0.0495936		0.063	b	0.044		n/s		0.036	b	0.033		0
MPB009	Massapoag Brook @ outlet Lake Massapoag	Sharon	0.0219972		0.1179848		0.022	b	0.021		0.024		0.040	b	0.023		1
MPB088	Massapoag Brook @ Walnut Street	Canton	0.1399819		0.0567927		0.042		0.046	a	0.037		0.067	b	0.026		1
SHB021	Steep Hill Brook @ Central St. & West St.	Stoughton	0.0468939		0.0526932		0.047		0.051		0.045		0.092		0.035		0
BMB026	Beaver Meadow Brook @ Pine Street	Canton	0.0508934		0.0468939		0.069		0.057		n/s	b	0.048		0.031		0
PQB040	Pequit Brook @ Sherman Street	Canton	0.0329957		0.0474939		0.034		0.028		0.033		0.052		0.032		0
EAB010	East Branch @ Neponset Street	Canton	0.0329957		0.0445942		n/s		0.050	a	n/s		0.104		0.031		1
PUB022	Purgatory Brook @ Rt. 1A, near Everett St.	Westwood	0.0433944		0.0599923		0.052		0.065		~~0.075~~	a	0.260		0.034		1
NER125	Neponset River @ Dedham Street Bridge	Canton	0.0537931		0.0724906		0.083		0.060		0.040		0.049		0.036		0
PEB008	Pecunit Brook @ Elm Street	Canton	0.1289833		0.1209844		0.077		0.078		n/s		n/s		0.051		2
POB024	Ponkapoag Brook @ Washington Street	Canton	0.0509934	b	0.0381951		0.066		n/s		0.038		0.143	b	0.032	b	1
NER150	Neponset River @ Paul's Bridge	Milton	0.0588924		0.0750403	a	0.058		0.058		0.062	b	0.051	b	0.037	a	0
MOB001	Mother Brook @ Washington Street	Dedham	0.0785898		0.0961876	b	0.100		0.072		0.157		0.065		0.055		1
NER165	Neponset River @ Fairmount railroad station	Hyde Park	0.0749903		0.0724906		0.057		0.068		0.113		0.117		0.052		2
NER185	Neponset River @ Ryan Playground	Mattapan	0.0681912		0.0999871	b	0.049		0.072		0.228	b	0.147	b	0.042		2
PTB028	Pine Tree Brook @ Blue Hills Parkway	Milton	0.0474939		0.0599923		0.059		0.270		~~0.046~~	a	0.128		0.032		2
PTB035	Pine Tree Brook @ Brook Road	Milton	0.1204844	a	0.0415946		0.064		0.061		0.044		0.151		0.034	a	2
PTB047	Pine Tree Brook @ Central Avenue	Milton	0.0493936	a	0.07729		0.063		0.059		0.055		0.274		0.036	b	1
NER200	Neponset River @ Adams Street Bridge	Milton/Boston	0.0817894		0.0760902		0.074		0.070		0.064		0.120		0.042		1
UNB002	Unquity Brook @ Randolph Avenue	Milton	0.146981		0.2369694		~~0.091~~	a	0.336		0.070	b	0.133	b	0.048		4
UNB014	Unquity Brook @ Adams Street	Milton	0.0999871		0.0615921		0.089		0.100		0.059		0.223		0.044		1
UNB016	Unquity Brook @ Squantum St./Christopher Rd.	Milton	0.0732905		0.0670913	a	0.082		0.072		0.049		0.427	a	0.057		1
Rainfall @ Logan Airport (inches)																	
	3 days prior		0.00		0.01		Trace		0.00		0.05		0.00		0.00		
	2 days prior		0.31		0.00		0.00		0.02		0.00		0.00		0.10		
	1 day prior		0.13		0.00		0.65		0.65		0.00		0.41		0.01		
	Day of Sampling		0.72		0.33		0.00		0.00		0.00		2.42		0.00		

a = average of duplicates
b = collected by NepRWA staff
strikethrough indicates field duplicates did not meet acceptance criteria

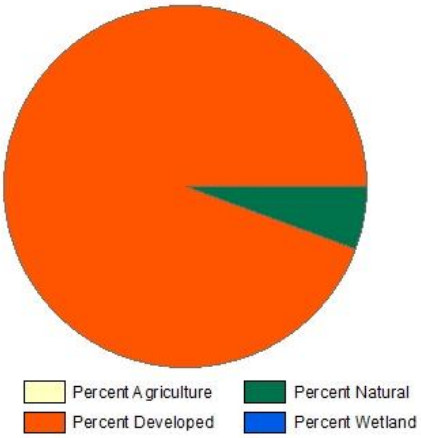
Dry
Wet Post Flush
Wet Flush

Unnamed Tributary (MA73-33)

Location:	Locally known as "Meadow Brook" - From where the underground/culverted stream emerges east of Pleasant Street, Norwood to confluence with Neponset River, Norwood.
AU Type:	RIVER
AU Size:	0.7 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-33

Watershed Area: 1.16 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.16	1.16	0.07	0.07
Agriculture	0%	0%	0%	0%
Developed	94.3%	94.3%	72.5%	72.5%
Natural	5.6%	5.6%	26.7%	26.7%
Wetland	0.1%	0.1%	0.8%	0.8%
Impervious Cover	46%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

NepRWA volunteers/interns/staff collected *In situ* and grab sample data in this unnamed tributary locally known as "Meadow Brook" at Sunnyside Rd in Norwood (MEB001) typically 4 to 6 times a year between May and October; useable temperature and pH spanning 2008 to 2018 (excluding 2015 & 2016) were indicative of good water quality with a max temp of 22.5°C and a pH range of 6.42-7.94SU (once in 2018 below 6.5SU). Useable DO data at the same location from 2017 & 2018 were also indicative of good water quality ranging from 4.45 to 10.08mg/L and below 5.0mg/L only once in 2017). The maximum saturation was 96%. The seasonal (btw May & Sept) total phosphorus data (spanning 2011 to 2018 but excluding 2015 & 2016) were slightly high with averages ranging from 0.06 to 0.17mg/L (the maximum concentration was 0.35mg/L). Seasonal average concentrations were above 0.1mg/L four times out of the six years when data were available. MassDEP biologists collected a benthic macroinvertebrate sample close to the mouth of this unnamed tributary locally known as "Meadow Brook" upstream of Dean Street in Norwood (B0762) in July 2009. The RBPIII status of the sample was considered to be severely impaired (only 5% comparability to the reference station at West Branch Palmer River (B0777).

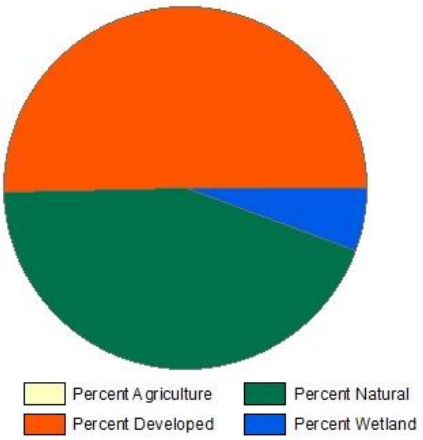
The Aquatic Life Use of this unnamed tributary (locally known as Meadow Brook) shall continue to be assessed as "Not Supporting" because of elevated Total Phosphorus concentrations as well as the severely impaired benthic macroinvertebrate assemblage documented during the summer of 2009.

Unnamed Tributary (MA73-34)

Location:	Headwaters, outlet Clark Pond, Walpole to confluence with Neponset River, Walpole (locally considered part of Spring Brook) (excluding the approximately 0.2 miles through Diamond Pond and the approximately 0.2 miles through Memorial Pond segment MA73012).
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-34

Watershed Area: 2.13 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.13	2.13	0.6	0.6
Agriculture	0.9%	0.9%	0%	0%
Developed	49.9%	49.9%	38.7%	38.7%
Natural	43.7%	43.7%	48.7%	48.7%
Wetland	5.6%	5.6%	12.6%	12.6%
Impervious Cover	17.7%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	Benthic Macroinvertebrates		Added
4c	5	Trash		Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

NepRWA volunteers/interns/staff collected *in situ* and grab sample data typically 4 to 6 times a year between May and October at Rt.27 in Walpole (SPB016). Useable Chlorophyll a data was restricted to one sample in October 2008 which was well below the 16ug/L threshold; total phosphorus (spanning 2011 to 2018 but excluding 2015 & 2016) seasonal maximum ranged from 0.05 to 0.12 mg/L and the seasonal average ranged from 0.03 to 0.07 mg/L; temperature and pH spanning 2008 to 2018 (excluding 2015 & 2016) had a maximum temp of 27°C and a pH range of 6.51-7.76SU. Useable DO data from 2017 & 2018 at times showed signs of poor water quality, with measurements falling below 5.0 mg/L in July and August 2017 and also August 2018, with a minimum of 3.16 mg/L. MassDEP biologists collected one benthic macroinvertebrate sample (Sample ID B0763), just upstream of the confluence of this unnamed tributary (locally known as "Spring Brook") with the Neponset River, in July 2009. The RBPIII status of the sample was considered to be moderately impaired, with 48% comparability to the reference station West Branch Palmer River (B0777). Water quality data were also collected just upstream of the confluence with the Neponset River (W1952) during the summer of 2009. Two-day unattended continuous probe deployments for DO in June, August and September recorded a minimum DO concentration of 5.37mg/L in August, a maximum saturation of 111.9% in September and a max diel shift of 2.52 mg/L in September. Attended probes; pH ranged from 7.0-7.3 SU; maximum

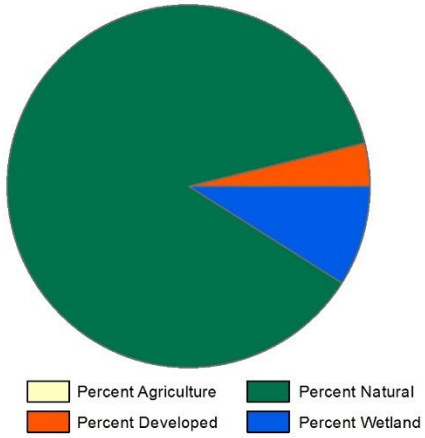
temperature 24.3^{o}C; a minimum DO concentration 5.6mg/L and maximum saturation 101%. Grab samples for total phosphorus recorded an average of 0.026mg/L and a maximum of 0.034mg/L.
The Aquatic Life Use of this unnamed tributary (locally known as Spring Brook) shall be assessed as "Not Supporting", based on the moderately impaired benthic macroinvertebrate assemblage. An Alert is being identified for low DO based on recent NepRWA data which recorded occasional concentrations below 5.0 mg/L in the summer months.

Unnamed Tributary (MA73-35)

Location:	Unnamed tributary to Beaver Brook, headwaters outlet small unnamed pond east of Moose Hill Street, Sharon to mouth at confluence with Beaver Brook, Sharon.
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA73-35

Watershed Area: 0.24 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	0.24	0.24	0.07	0.07
Agriculture	0%	0%	0%	0%
Developed	3.9%	3.9%	19%	19%
Natural	88.8%	88.8%	80%	80%
Wetland	9.1%	9.1%	0%	0%
Impervious Cover	3%			

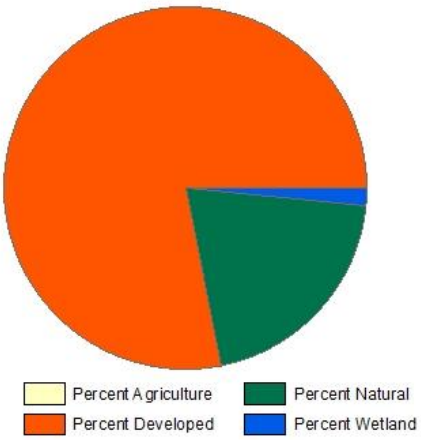
Fish, other Aquatic Life and Wildlife Use: Fully Supporting
DFG biologists conducted backpack electrofishing in August 2008 in this Unnamed Tributary to Beaver Brook near the end of Sandy Ridge Circle (through woods via foot trail to stream) in Sharon (SampleID 2565). The sample was comprised primarily of multiple age classes of Eastern brook trout and redfin pickerel. The Aquatic Life Use for this Unnamed Tributary (MA73-35) is assessed as Fully Supporting based on the fish population survey data indicating the presence of multiple age classes of Eastern brook trout which is indicative of excellent water quality and habitat conditions.

Unquity Brook (MA73-26)

Location:	Isolated (urban): Headwaters (perennial portion) near Randolph Avenue, Milton to mouth at confluence with Gulliver Creek, Milton (Note: culverted portions of segment total approximately 1/3 of segment length, or 0.5 miles).
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B

Unquity Brook - MA73-26

Watershed Area: 1.38 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.38	1.38	0.21	0.21
Agriculture	0.4%	0.4%	0%	0%
Developed	77.9%	77.9%	61.9%	61.9%
Natural	20.1%	20.1%	32.1%	32.1%
Wetland	1.6%	1.6%	6.1%	6.1%
Impervious Cover	29.9%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fish Bioassessments		Added
5	5	pH, Low		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting

NepRWA volunteers/interns/staff conducted *in situ* and grab sampling typically 6 times a year between May and October spanning 2008 to 2018 (excluding 2015 & 2016), at three locations along Unquity Brook in Milton as follows: upstream at Randolph Ave (UNB002), near the lower end of the brook at Adams Street (UNB014) and at the mouth at Squantum Street (UNB016). At the most upstream location useable DO data (12 measurements in 2017 & 2018), ranged from 1.45 to 7.03mg/L and was frequently low (n=8 of 12 measurements) particularly during the latter part of the summer. The maximum saturation was 65%. The pH ranged from 6.2 to 7.48SU (n=49), maximum temperature was 26°C, and the seasonal average total phosphorus concentrations ranged from 0.08 to 0.17mg/L. DFG biologists conducted backpack electrofishing in the Unquity Brook at the end of Houghton Road in July 2011 (Sample ID 3732). The habitat was very shallow with barely enough water to sample and further upstream at Windmere Road crossing the brook was dry. Only one American Eel, a tolerant macrohabitat generalist, was caught. Further downstream near Adams Street (UNB014) the NepRWA data can be summarized as follows: DO ranged from 7.51 to 9.64mg/L and maximum saturation 89.6% (n=11), maximum temperature 20°C (n=54), pH range 6.62 to 7.28SU (n=54), and the seasonal average total phosphorus concentrations ranged from 0.05 to 0.08mg/L. MassDEP staff conducted water quality monitoring slightly further downstream at Rowe Street in Milton (W0579) during the summer of

2009. The minimum DO measured during two two-day and one three-day unattended continuous probe deployment in June and September was 7.45mg/L (mean minimum DO concentrations ranged from 7.89-9.05mg/L). The maximum DO saturation was 93.2% and the maximum diel DO shift was 1.2mg/L. The maximum temperature was 16.6°C. Attended data were also collected and can be summarized as follows: DO 8.4-9.3mg/L with a maximum saturation of 90%, pH 6.5 to 6.7SU (n=7); maximum temperature 16.7°C, total phosphorus average was 0.065mg/ (maximum 0.24mg/L). Further downstream near Squantum Street (UNB016) the NepRWA data can be summarized as follows: DO ranged from 7.7 to 9.69mg/L and maximum saturation 91.8% (n=12), maximum temperature 21°C (n=54), pH range 6.68 to 7.9SU (n=54), and the seasonal average total phosphorus concentrations ranged from 0.05 to 0.08mg/L.
The Aquatic Life Use for Unquity Brook (MA73-26) will continue to remain assessed as Not Supporting. Unquity Brook is in a highly urbanized area and has a very small drainage area (only 1.38mi^2). Low DO and elevated total phosphorus concentrations were documented by NepRWA staff in the very headwaters of the brook (potentially above the perennial portion of this stream). During the summer of 2011 DFG biologists documented the brook was dry above Windmere Road and only one American eel was captured in their sample at the end of Houghton Road so a fish bioassessments impairment is being added. The former impairments for dewatering, physical substrate habitat alterations, and sedimentation/siltation are being maintained. In the lower reaches of the brook generally good water quality conditions (DO, pH, temperature, total phosphorus concentrations) were documented. Low pH is being delisted as a cause of impairment based on the data collected by MassDEP and NepRWA staff between 2008 and 2018 (see removal comment for justification).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
pH, Low	Applicable WQS attained; based on new data	Low pH was originally listed as an impairment for Unquity Brook in the 2002 reporting cycle based on very limited data (one sample) collected by MassDEP at Brook Road (W0580) with pH 5.9SU in August 1994 and data collected by NepRWA at their three sampling stations between 1997 and 2001 ranging from 5.9 to 8.7SU with 8 of 59 measurements (14%) below 6.5SU. Based on the most recent NepRWA and MassDEP data collected between 2008 and 2018 at three stations along Unquity Brook pH was somewhat higher ranging from 6.2 to 7.9SU with only 6 of 164 (4%) measurements slightly below 6.5SU. Based on these more recent data which indicate an improvement (low pH from 5.9 to 6.2SU and most measurements above 6.5SU, low pH is being delisted as an impairment for Unquity Brook.

Supporting Information for Delisted Impairments

pH, Low

Discrete probe measurements were taken by MassDEP staff in Unquity Brook at Rowe Street in Milton (W0579) during the summer 2009. 7 discrete pH were measured with 0 which did not met criterion and 0 were considered 'severe' violations of the criterion. (MassDEP Undated 6).

attended data

SARIS_PALIS	Waterbody	UNIQUE_ID	DESCRIPTOR	DATE	TIME	FLOWSTAT	PH
7341050	Unquity Brook	W0579	[Rowe Street (ju	6/1/2009	3:21:03 PM	Flowing	6.6
7341050	Unquity Brook	W0579	[Rowe Street (ju	6/3/2009	1:17:03 PM	Flowing	6.6
7341050	Unquity Brook	W0579	[Rowe Street (ju	8/10/2009	**	Flowing	**
7341050	Unquity Brook	W0579	[Rowe Street (ju	8/12/2009	1:25:03 PM	Flowing	6.5
7341050	Unquity Brook	W0579	[Rowe Street (ju	9/14/2009	2:10:02 PM	Flowing	6.6
7341050	Unquity Brook	W0579	[Rowe Street (ju	9/16/2009	1:23:01 PM	Flowing	6.7
7341050	Unquity Brook	W0579	[Rowe Street (ju	9/25/2009	11:29:04 AM	Flowing	6.6
7341050	Unquity Brook	W0579	[Rowe Street (ju	9/28/2009	11:50:32 AM	Flowing	6.6

NepRWA volunteers/interns/staff conducted sampling in Unquity Brook at the following locations: upstream at Randolph Ave (UNB002), near the lower end of the brook at Adams Street (UNB014) and at the mouth at Squantum Street (UNB016). The pH data can be summarized as follows:

NepRWA data for UNB002 (pH range 6.2 to 7.48SU (n=49) (NepRWA 2019)

Station	Year	Count pH	Count pH <6.5 or >8.3SU	Count pH <6.0 or >8.8SU
UNB002	2008	6	2	0
UNB002	2009	6	0	0
UNB002	2010	6	2	0
UNB002	2011	6	0	0
UNB002	2012	5	1	0
UNB002	2013	4	0	0
UNB002	2014	4	0	0
UNB002	2017	6	1	0
UNB002	2018	6	0	0

NepRWA data for UNB014 (pH range 6.62 to 7.28SU (n=54)) (NepRWA 2019)

Station	Year	Count pH	Count pH <6.5 or >8.3SU	Count pH <6.0 or >8.8SU
UNB014	2008	6	0	0
UNB014	2009	6	0	0
UNB014	2010	6	0	0
UNB014	2011	6	0	0
UNB014	2012	6	0	0
UNB014	2013	6	0	0

UNB014	2014	6	0	0
UNB014	2017	6	0	0
UNB014	2018	6	0	0

NepRWA data for UNB016 (pH range 6.68 to 7.9SU (n=54)) (NepRWA 2019)

Station	Year	Count pH	Count pH <6.5 or >8.3SU	Count pH <6.0 or >8.8SU
UNB016	2008	6	0	0
UNB016	2009	6	0	0
UNB016	2010	6	0	0
UNB016	2011	6	0	0
UNB016	2012	6	0	0
UNB016	2013	6	0	0
UNB016	2014	6	0	0
UNB016	2017	6	0	0
UNB016	2018	6	0	0

Willet Pond (MA73062)

Location:	Walpole/Westwood/Norwood (at northern end, includes former 2008 segment: Unnamed Tributary MA73-13).
AU Type:	FRESHWATER LAKE
AU Size:	205 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Insufficient Information (Alert)
NepRWA volunteers/interns/staff collected *in-situ* and grab sample data at two locations for Willet Pond; the "southern site location" (WIP003) and the "east end location" (WIP002). Useable Chlorophyll a data was restricted to 2008 (n=3 & n=5) and 2014 (n=6 & n=6). In 2008 Chlorophyll a exceeded the 16ug/L threshold once at WIP003 in August; in 2014 Chlorophyll a was noted to exceed the 16ug/L threshold once in October at WIP002. Total phosphorus was measured at the same two locations (spanning 2011 to 2018 but excluding 2015 & 2016). The seasonal total phosphorus average concentrations ranged from 0.013 to 0.053 mg/L and was above 0.025mg/L once at WIP003 in 2012 and twice at WIP002 in 2017. The maximum total phosphorus concentration was 0.12 mg/L. Useable temperature and pH data spanning 2008 to 2018 (excluding 2015 & 2016) had a maximum temperature of 28^{o}C and a pH range of 6.77-8.56SU with one pH above 8.3SU at WIP003 in 2009. There is insufficient information to assess the Aquatic Life Use of Willet Pond. This use is identified with an Alert however because of occasional indications of nutrient enrichment (Chlorophyll a and total phosphorus) which warrants further investigation prior to making an impairment decision.

Woods Pond (MA73055)

Location:	Stoughton.
AU Type:	FRESHWATER LAKE
AU Size:	14 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP staff reported a suspected infestation of the non-native aquatic macrophyte *Myriophyllum heterophyllum* (variable water milfoil) in 1994, however species confirmation is needed. Although non-native aquatic macrophyte species identification have for *M. heterophyllum* has not been specifically confirmed, the Aquatic Life Use of Woods Pond will continue to be assessed as "Not Supporting" due to the presence of Non-Native Aquatic Plants.

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