Appendix 7
Boston Harbor (Proper)
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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Boston Inner Harbor	MA70-02	5	5	Enterococcus	R1_MA_2019_01	Changed
Boston Inner Harbor	MA70-02	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Dorchester Bay	MA70-03	5	5	Enterococcus	R1_MA_2019_01	Changed
Dorchester Bay	MA70-03	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Hingham Bay	MA70-06	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Hingham Bay	MA70-07	5	5	Estuarine Bioassessments		Added
Hingham Bay	MA70-07	5	5	Fecal Coliform	R1_MA_2019_01	Changed
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Quincy Bay	MA70-04	5	5	Enterococcus	R1_MA_2019_01	Changed
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Quincy Bay	MA70-05	5	5	Enterococcus	R1_MA_2019_01	Changed
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Winthrop Bay	MA70-10	5	5	Enterococcus	R1_MA_2019_01	Changed
Winthrop Bay	MA70-10	5	5	Fecal Coliform	R1_MA_2019_01	Changed

Boston Harbor (MA70-01)

Location:	The area defined by a line from the southerly tip of Deer Island to Boston Lighthouse on Little Brewster Island, then south to Point Allerton; across Hull and West guts; across the mouths of Quincy and Dorchester bays, Boston Inner Harbor and Winthrop Bay (including President Roads and Nantasket Roads).
AU Type:	ESTUARY
AU Size:	18.6 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fecal Coliform	R1_MA_2019_01	Changed

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

Benthic macroinvertebrate sampling (and sediment analysis) has been conducted in Boston Harbor since 1991. In 2018 Sediment Profile Imaging was conducted at 27 stations, including 22 recon sites and five traditional stations (T01, T02, T03, T05A (S. of Deer Island & W. of Long Island), and T06 (adjacent to W. side of Peddocks Island)). Overall, after wastewater/sludge discharges were eliminated, total benthic abundance trended downward, species richness trended upward, as did evenness and diversity, with all measures levelling off in recent years. It was concluded that recently observed trends, including reduction of indicators of organic enrichment and increases in species diversity in recent years are consistent with benthic habitat recovery. Between 2017 and 2018 decreases in mean total abundance of macroinvertebrates were observed at T01, T02 & T03; but at T05A & T06 there was an increase. This variability in abundance is consistent with observations of the dominant taxa and is considered to be related more to normal physical disturbances than organic stress. Abundances of the sewage tracer bacterium "*Clostridium perfringens*" (normalized to percent fines) during 2018, were generally low and comparable across all monitoring stations, especially when compared to historic data. Water from Boston Harbor was collected north of the treatment plant and Nantasket Ave, in the locality of Stony Beach for use as diluent in the Hull WWTP acute WET tests. Survival (48hr) of *M. beryllina* exposed to harbor water between May 2010 and February 2019 was >75% during these tests (n=36). No acute whole effluent toxicity to *M. beryllina* was detected on composite treated effluent samples from the Hull WWTP (NPDES # MA0101231) between May 2010 and February 2019 (n= 31 valid tests) with all LC50 >100% and ANOEC=100% effluent). The MassDEP Eelgrass Mapping Project documented an increase eelgrass bed habitat in Boston Harbor between 1995 and 2017 from 0.03 miles2 to 0.30 miles2, respectively. From 2009-2018 MWRA staff conducted *in-situ* monitoring at five sites in Boston Harbor (044, 048, 065, 106, 141) and nutrient sampling at two (106: Long Island, green can #17, 141: N. of Peddocks Island, near Hull Gut). Depth at 106 and 141 ranged from 3.2 to 20.3m and 4.0 to 18.3m, respectively. DO concentrations at all five sites ranged from 5.3 to 12.9 mg/L (n=2290 including both surface and bottom measurements), saturation ranged from 65 to 145%. There were two years (2013 and 2014) with saturations >125% in >10% samples (three sites in 2013, two sites in 2014) but little evidence in other years. Temperature was as high as 23.89°C (n=1102) and pH ranged from 6.70 to 8.29SU (n=2282). Chlorophyll a concentrations ranged from 0.13 to 12.80µg/L (average 3.18µg/L, n=942) with concentrations >10µg/L in spring and winter months at both surface and bottom (17 times overall but at no time >10% of measurements). The seasonal average total nitrogen concentrations were all below 0.4mg/L at both sites (overall average 0.251mg/L, n=471), with year-round averages ranging from 0.076 to 0.469mg/L. The Aquatic Life Use for Boston Harbor is assessed as Fully Supporting based on the increase in eelgrass bed habitat, improved benthic community (increased diversity/richness), good DO and low nutrient levels. The Alert Status associated with fin erosion, bent fin ray and flounder liver disease at Deer Island Flats will be carried forward due to a lack of recent data.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Boston Inner Harbor (MA70-02)

Location:	From the Mystic and Chelsea rivers, Chelsea/Boston, to the line between Governors Island and Fort Independence, Boston (East Boston) (including Fort Point, Reserved and Little Mystic channels).
AU Type:	ESTUARY
AU Size:	2.56 SQUARE MILES
Classification/Qualifier:	SB(CSO): SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

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

Benthic macroinvertebrate sampling (and sediment analysis) has been conducted in Boston Inner Harbor since 1991. In 2018 Sediment Profile Imaging was conducted at three stations, including two recon sites and one traditional station (C019- at the mouth of Fort Pt. Channel). Overall, the infauna assemblage is relatively "species poor" (avg 20 species per collection 2004-2018) with comparatively lower abundance compared to the rest of the Harbor. However, it was noted that despite decreasing values in some recent years, diversity measures have remained among the highest observed to date. In addition, although *C. perfringens* counts (C019) have not remained consistently below historical averages, recent counts are generally lower than the 2007-2009 peak. Survival of *M. bahia and M. beryllina* exposed (48 hours or 7-day) to water collected from four sites in Boston Inner Harbor as part of whole effluent toxicity (WET) tests conducted for Gillette Co. (2013, 2014, 2016-2018), Logan Int. Airport (2008-2011), Logan Int. Airport Fire Training Facility (2017, 2019) and New England Aquarium (2010, 2012) were ≥93%. WET tests were also conducted for these facilities and the Boston Water and Sewer Commission (BWSC) CSO Outfall 215 and Prison Point CSO Treatment Facility Outfall 203. With only a few exceptions toxicity has not been detected. From 2009-2018 MWRA staff conducted *in-situ* monitoring at 10 sites in Boston Inner Harbor (014, 015, 018, 019, 022, 024, 075, 138, 154, 178) and nutrient sampling at two (024: Mouth of Inner Harbor, red buoy 10 and 138: Fort Point Channel mouth, off New England Aquarium). Depth at station 024 and 138 ranged from 4.1 to 18m and 6.2 to 18.3m, respectively. DO ranged from 1.3 to 16.5mg/L between 2009 and 2018 at the 10 sites sampled in Boston Inner Harbor (n=5639 including both surface and bottom measurements). However, in the last five years (2014 through 2018), only 24 of 2512 measurements (<0.01%) were <5.0mg/L, with all but four of these measurements in the two innermost Fort Point Channel sites (075: Fort Pt Channel, Broadway with 17 measurements (10 days) <5.0mg/L (minimum 3.7mg/L in the last five years) and 018: Fort Pt Channel, Summer St. with 3 measurements (3 days) <5.0mg/L (minimum 4.2mg/L). DO % saturation ranged from 17 to 184% (n=6539); 23 measurements were above 125% in the last five years (n=2512) (all in 2014 and 2015) with no measurements >125% in last three years (2016-2018). The maximum temperature was 26.43°C (Jun-Sep avg 17.46°C, n=2857) and pH ranged from 6.15 to 8.66SU (six times <6.5 and once >8.3, n=5660). Chlorophyll *a* concentrations ranged from 0.13 to 21.3µg/ (avg 3.57µg/L, n=946). There was a total of 18 measurements above 10µg/L (~2% of the samples with only six above 10µg/L in the last three years). The seasonal avg TN concentrations were below 0.4mg/L at both sites (overall avg 0.349mg/L, n=468), with year-round averages ranging from 0.150 to 0.883mg/L.

The Aquatic Life Use of Boston Inner Harbor (MA70-02) will continue to be assessed as Not Supporting with the DO impairment being carried forward despite the generally good water quality and fairly stable, although with lower species richness than other Boston Harbor monitoring locations, macroinvertebrate community. The DO impairment is being carried forward because of the very infrequent excursion of criteria in the two innermost Fort Point Channel sites although the rest of the Inner Boston Harbor AU area has consistently met criteria. The alerts for occasional indications of enrichment (i.e., supersaturation, elevated chlorophyll a concentrations,

slightly elevated TN concentration) are being removed based on the very few samples indicative of problems in the last three years (2016 through 2018). The alert for degraded sediment quality at the mouth of Fort Point Channel is being carried forward due to a lack of recent data and in acknowledgement of the relatively low macroinvertebrate species richness.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Dorchester Bay (MA70-03)

Location:	From the mouth of the Neponset River, Boston/Quincy to the line between Head Island and the north side of Thompson Island and the line between the south point of Thompson Island, Boston and Chapel Rocks, Quincy.
AU Type:	ESTUARY
AU Size:	3.46 SQUARE MILES
Classification/Qualifier:	SB: SFR, CSO

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

Benthic macroinvertebrate sampling (and sediment analysis) has been conducted in Dorchester Bay since 1991. In 2018 Sediment Profile Imaging was conducted at six stations, including five reconnaissance and the one traditional station (T04-Savin Hill Cove). The site is in a depositional area and is characterized by fine-grained sediments comprised almost entirely silt and clay. Station T04 has consistently supported comparatively the lowest species richness during the 2011-2018 timeframe, with moderate total abundance and low species richness (dominated by *S. benedicti*). MWRA staff also noted that abundances of the sewage tracer bacterium "*Clostridium perfringens*" (normalized to percent fines) at T04 were variable from 2008 to 2018; but while showing a slight increase in 2018 from the previous year, were still low compared to historic data. No eelgrass bed habitat is present. From 2009 - 2018 MWRA staff conducted *in-situ* monitoring at seven sites in Dorchester Bay (033, 036, 038, 039, 040, 084, 140) and nutrient sampling at two (038: North Dorchester Bay, 140: South Dorchester Bay, near Columbia Point and Savin Hill Cove). Depth at 038 and 140 ranged from 1.5 to 9.0m and 2.2 to 12.3m, respectively. DO at all seven sites ranged from 3.3 to 15.2mg/L (n=3686 including both surface and bottom measurements) but was <5.0mg/L in only four samples (two surface and bottom) on 28 May 2009. Saturation was >125% in >10% of measurements at two sites (036 and 040) in 2013 and 2014 but otherwise good at all sites in all years. The maximum temperature was 25.7°C (n=3678) and pH ranged from 6.63 to 8.62 SU (n=3686, just once >8.3SU). Chlorophyll a concentrations ranged from 0.17 to 68.10µg/L (average 4.30µg/L, n=942) with concentrations >10µg/L in 2014 and 2015 at station 038 and between 2013 and 2016 at site 140. The seasonal average total nitrogen concentrations did not exceed 0.4mg/L in any year at station 038 but was slightly above 0.4mg/L at station 140 (maximum of 0.427mg/L) in 4 of the 10 sample years (2009, 2011, 2013, and 2017). The year-round total nitrogen averages ranged from 0.165 to 0.985mg/L (overall average 0.353mg/L (n=469). No additional data/information (impingement/entrainment) was available for the UMass Boston power plant in the vicinity of Columbia Point Peninsula/Savin Hill Cove.

The Aquatic Life Use of Dorchester Bay (MA70-03) is assessed as Fully Supporting due to the generally good water quality and fairly stable, although with lower species richness than other Boston Harbor monitoring locations, macroinvertebrate community. The alert for degraded sediment quality is being carried forward due to a lack of recent data and in acknowledgement of the relatively low macroinvertebrate species richness in the bay.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Hingham Bay (MA70-06)

Location:	The area north of the mouth of the Weymouth Fore River extending on the west along the line between Nut Island and the south point of West Head, and on the east side along a line from Prince Head just east of Pig Rock to the mouth of the Weymouth Fore River (midway between Lower Neck and Manot Beach), Quincy.
AU Type:	ESTUARY
AU Size:	0.96 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting
Between 2009 and 2018 MWRA staff conducted *in-situ* monitoring at one station (080: Hingham Bay, Quincy Yacht Club - red nun #2) in this Hingham Bay AU (MA70-06). Depth at this site ranged from 1.5 to 12.7m. Dissolved oxygen (DO) was good ranging from 5.3 and 12.4mg/L (n=439, including both surface and bottom measurements). DO% saturation ranged from 66.3 to 134.2% and was slightly elevated (>125%) on only five days (8 of 439 measurements). The maximum temperature measured was 22.7°C (n=256) and pH ranged from 7.2 to 8.2SU (n=439). The Aquatic Life Use for this Hingham Bay AU (MA70-06) is assessed as Fully Supporting based on the *in-situ* sampling data conducted by MRWA staff between 2009 and 2018 that were indicative of generally good conditions.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Hingham Bay (MA70-07)

Location:	The area defined between Peddocks Island and Windmill Point; from Windmill Point southeast to Bumkin Island; from Bumkin Island southeast to Sunset Point; from Sunset Point across the mouth of the Weir River to Worlds End; from Worlds End across the mouth of Hingham Harbor to Crow Point; from Beach Lane, Hingham across the mouth of the Weymouth Back River to Lower Neck; and from Lower Neck midway across the mouth of the Weymouth Fore River.
AU Type:	ESTUARY
AU Size:	4.8 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Estuarine Bioassessments		Added
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting

Benthic macroinvertebrate sampling (and sediment analysis) has been conducted in Boston Harbor since 1991. In 2018 Sediment Profile Imaging was conducted at 12 reconnaissance stations and one traditional station (T08- just Northwest of Bumpkin Island adjacent to Hull Bay), in this Hingham Bay AU (MA70-07). Sediments at this site consisted primarily of sand and gravel. This site was generally found to be one of the most species-rich stations in Boston Harbor from 2011 through 2018. Between 2017 and 2018 there was a decrease in mean total abundance of macroinvertebrates though was within the range observed in recent years. It was also noted that the variability in abundance, consistent with observations of the dominant taxa, were related more to normal physical disturbances than organic stress. MWRA also noted that abundances of the sewage tracer bacterium "*Clostridium perfringens*" at T08 were variable from 2008 to 2018; but while showing a peak in 2016 (an artifact of normalizing the counts by percent fine sediments), overall concentrations have remained lower during the past decade than those reported during the 1990s. Eelgrass is considered a sentinel species for embayment health. In 1995 MassDEP's Eelgrass Mapping Project found that ~5.6% of this Hingham Bay AU (MA70-07) had eelgrass bed habitat (~0.04923mi^2). In 2013 the size of eelgrass beds was less (0.00434mi^2), despite a small rebound in 2007 but no eelgrass bed habitat was documented in 2017. From 2009-2018 MWRA staff conducted *in-situ* monitoring and nutrient sampling at one station (site 124: Crow Point Flats) within this Hingham Bay AU (MA70-07). Depth ranged from 0.1 to 7.5m. DO was good (range 7.1 to 13.2mg/L (n=348, including both surface and bottom measurements). DO% saturation ranged from 80.1 to 132%, rarely above >125% (one day each in April 2013 and July 2014). The maximum temperature was 22.73°C (n=122) and pH ranged from 7.5to 8.2SU (n=348). Chlorophyll *a* concentrations ranged from 0.58 to 16.0µg/L (average 3.99µg/L, n=348) with concentrations >10µg/L in >10% of measurements in 2017 only (in both surface and bottom samples). Seasonal average total nitrogen concentrations were all below 0.4mg/L (overall average 0.25mg/L (n=173) with year-round averages ranging from 0.154 to 0.385mg/L.

The Aquatic Life Use for this Hingham Bay AU (MA70-07) is assessed as Not Supporting due the complete loss of eelgrass bed habitat between 1995 and 2017 so the Estuarine Bioassessments Impairment is being added. The former alert for eelgrasss bed habitat loss is no longer needed. The other benthic and water quality data collected by MRWA between 2009 and 2018 were indicative of generally good conditions.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Hull Bay (MA70-09)

Location:	The area defined east of a line from Windmill Point, Hull to Bumkin Island, Hull and from Bumkin Island to Sunset Point, Hull.
AU Type:	ESTUARY
AU Size:	2.48 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Estuarine Bioassessments		Added
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
Eelgrass is considered a sentinel species for embayment health. In 1995 MassDEP's Eelgrass Mapping Project found that ~0.6% of Hull Bay had eelgrass bed habitat (~0.01162mi^2). In 2013 the size of eelgrass beds was less (~0.00017mi^2), despite a small rebound in 2007 but no eelgrass bed habitat was documented in 2017. The Aquatic Life Use for Hull Bay is assessed as Not Supporting due the complete loss of eelgrass bed habitat between 1995 and 2017 so the Estuarine Bioassessments Impairment is being added. The former alert for eelgrasss bed habitat loss is no longer needed.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Pleasure Bay (MA70-11)

Location:	A semi-enclosed bay, the flow restricted through two channels between Castle and Head islands, Boston.
AU Type:	ESTUARY
AU Size:	0.22 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Assessed
No data are available to assess the Aquatic Life Use for Pleasure Bay, so it is Not Assessed.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Quincy Bay (MA70-04)

Location:	From Bromfield Street near the Wollaston Yacht Club, northeast to N42 17.3 W71 00.1, then southeast to Houghs Neck near Sea Street and Peterson Road (formerly referred to as the "Willows"), Quincy.
AU Type:	ESTUARY
AU Size:	1.52 SQUARE MILES
Classification/Qualifier:	SA: SFO

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting
From 2009 – 2018 MWRA staff conducted *in-situ* monitoring at one station (047: Wollaston Beach, off storm drains 7 and 8 at Sachem St). in this Quincy Bay AU (MA70-04). Depth ranged from 0.1m to 4.5m. Dissolved oxygen concentrations ranged between 4.91 and 13.21mg/L (n=421, including both surface and bottom measurements) with only one measurement below 5mg/L. DO% saturation was rarely above 125% (once in 2011 and 2018 and twice in 2013). The maximum temperature was 27.1°C (n=242) and pH ranged from 7.21 to 8.22SU (n=421). The Aquatic Life Use of this Quincy Bay AU (MA70-04) is assessed as Fully Supporting based on the generally good water quality conditions documented by MRWA between 2009 and 2018.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Quincy Bay (MA70-05)

Location:	Quincy Bay, north of the class SA waters (segment MA70-04), Quincy to the line between Moon Head and Nut Island, Quincy.
AU Type:	ESTUARY
AU Size:	4.41 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

Benthic macroinvertebrate sampling (and sediment analysis) has been conducted in Boston Harbor since 1991. In 2018 Sediment Profile Imaging was conducted at seven stations, including six reconnaissance and one traditional station (T07) in this Quincy Bay AU (MA70-05). Sediment at this site was comprised of nearly equal proportions of sand and silt-clay. This site has typically supported low infaunal abundance (compared to other areas in the harbor) and from 2017 to 2018 a decrease in mean total abundance was observed. Species richness, which reached unusual peaks in 2013 and 2016, exhibited typical species richness in 2018. Variability in abundance from year to year is considered to be related more to normal physical disturbances than organic stress. Abundances of the sewage tracer bacterium *Clostridium perfringens* (normalized to percent fines) at T07 during 2018, were generally low when compared to historic data. From 2009-2018 MWRA staff conducted *in-situ* and nutrient monitoring at one site in this Quincy Bay AU (MA70-05) (139: Off Hangmans Island). Depth ranged from 0.1 to 7m. Dissolved oxygen concentrations ranged from 6.7 to 12.6mg/L (n=468, including both surface and bottom measurements) with saturations ranging from 79.9 to 133.3% (rarely above 125%). The maximum temperature was 22.98°C (n=158) and pH ranged from 7.4 to 8.3 SU (n=468). Chlorophyll *a* concentration ranged between 0.24 and 16.5µg/L (n=471, overall average 3.37µg/L, summer average 3.47µg/L) and were infrequently >10µg/L (exception 2017 with three surface measurements above 10µg/L representing slightly >10% of the samples). The seasonal average total nitrogen concentrations were all below 0.4mg/L (range 0.209 to 0.278mg/L, n= 197), with an overall year-round average of 0.252mg/L (n=234).

The Aquatic Life Use of this Quincy Bay AU (MA70-05) is assessed as Fully Supporting based on the MRWA 2008 – 2018 monitoring data indicative of a fairly stable benthic community and good water quality conditions.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Winthrop Bay (MA70-10)

Location:	From the tidal flats at Coleridge Street, Boston (East Boston) to a line between Logan International Airport and Point Shirley, Boston/Winthrop.
AU Type:	ESTUARY
AU Size:	1.65 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Fully Supporting
One modified acute and chronic whole effluent toxicity test using *Menidia beryllina* was conducted on a grab sample from the Logan International Airport (NPDES # MA0000787, Outfall 001B) during a wet weather deicing episode in April 2011. The test results were as follows: LC_{50} 100%, ANOEC and CNOEC 25% effluent. From 2009 – 2018 MWRA staff conducted *in-situ* monitoring at one site in Winthrop Bay (130 at Green Can #1 - in channel between Snake Island and Logan International Airport). Depth ranged from 3.5 to 11.5m. Dissolved oxygen concentrations ranged between 6.6 and 12.4mg/L (n=439, including both surface and bottom measurements). Saturations were occasionally slightly above 125% (but only in a few sampling events in 2013, 2014 and 2018, ~2% samples). The maximum temperature was 23.8°C (n=254) and pH ranged from 6.7 to 8.3 SU (n=432). The Aquatic Life Use for Winthrop Bay is assessed as Fully Supporting based on the generally good water quality conditions documented by MRWA between 2009 and 2018.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

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