

**Final Massachusetts Integrated List of Waters for the
Clean Water Act 2022 Reporting Cycle**

**Appendix 12
Hudson: Bashbish River Basin
Assessment and Listing Decision Summary**

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Massachusetts Department of Environmental Protection

MassDEP's mission is to protect and enhance the Commonwealth's natural resources – air, water, and land – to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations. In carrying out this mission MassDEP commits to address and advance environmental justice and equity for all people of the Commonwealth; provide meaningful, inclusive opportunities for people to participate in agency decisions that affect their lives; and ensure a diverse workforce that reflects the communities we serve.

Watershed Planning Program

The Watershed Planning Program is a statewide program in the Division of Watershed Management, Bureau of Water Resources, at MassDEP. We are stewards of the water resources of Massachusetts. Together with other state environmental agencies, we share in the duty and responsibility to protect, enhance, and restore the quality and value of the waters of the Commonwealth. We are guided by the federal Clean Water Act and work to secure the environmental, recreational, and public health benefits of clean water for the residents of Massachusetts. The Watershed Planning Program is organized into five Sections that each have a different technical focus under the Clean Water Act: (1) Surface Water Quality Standards; (2) Surface Water Quality Monitoring; (3) Data Management and Water Quality Assessment; (4) Total Maximum Daily Load; and (5) Nonpoint Source Pollution.

Disclaimer

References to trade names, commercial products, manufacturers, or distributors in this report constituted neither endorsement nor recommendation by MassDEP.

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Notice of Availability

This report is available on the Massachusetts Department of Environmental Protection website:

<https://www.mass.gov/lists/integrated-lists-of-waters-related-reports>.

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2022 Cycle Impairment Changes

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Bashbish Brook	MA13-01	2	2	None		Unchanged

Bashbish Brook (MA13-01)

Location:	Headwaters at confluence with Ashley Hill Brook, west of West Street, Mount Washington to Massachusetts/New York border, Mount Washington.
AU Type:	RIVER
AU Size:	2.1 MILES
Classification/Qualifier:	B: CWF, HQW

Bashbish Brook - MA13-01

Watershed Area: 13.29 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	13.29	10.23	2.91	2.29
Agriculture	1.2%	1.4%	1.6%	1.8%
Developed	2%	2.3%	2.2%	2.6%
Natural	94.1%	93.5%	91%	91.3%
Wetland	2.7%	2.8%	5.3%	4.4%
Impervious Cover	0.8%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None		Unchanged

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	

MassDEP biologists sampled Bashbish Brook just upstream of the confluence of Wright Brook in Mount Washington MA during the summers of 2012, 2013, 2014, and 2015 as part of the Reference Site Network monitoring project. Survey results of this Cold Water habitat can be briefly summarized as follows: the benthic community (Station B0816) IBI scores were all indicative of exceptional/satisfactory conditions (72 to 82, n=5), multiple age classes of Eastern brook trout and/or brown trout were documented (backpack electrofishing in August 2012 [SampleID 5110], October 2013 [SampleID 5094], August 2014 [Sample ID 6341] and September 2015 [SampleID 6382]), and water quality sampling data including both deployed probe and discrete sampling efforts (Station W2280) were indicative of excellent conditions (minimum dissolved oxygen 7.8mg/L during summers 2013 – 2015, maximum temperature 21.3°C during summers 2012 – 2015 with maximum 24 hour rolling average 20.3°C, pH 7.0 to 7.6SU, no indications of any nutrient enrichment problems (seasonal average total phosphorus concentrations 0.005mg/L, max diel DO shift 1.8mg/L, maximum saturation 98%, maximum pH 7.6SU), and low concentrations of ammonia-nitrogen (0.051mg/L) and chloride (maximum 13mg/L). MassDFG biologists also conducted backpack electrofishing further downstream in Bashbish Brook upstream of the falls along Falls Road in Mount Washington (SampleID 6670) in September 2017. The fish sample contained multiple age classes of brown trout and was dominated by fluvial species (99% of the sample). The Aquatic Life Use of Bashbish Brook is assessed as Fully Supporting based on benthic macroinvertebrate, fish population, and water quality monitoring data collected by MassDEP and MA DFG biologists between 2012 and 2017.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
5094	MassDEP	Fish Community	Bashbish Brook	South of Falls Rd, ~200 ft US of confluence of Mt Washington	42.10614	-73.48299
5110	MassDEP	Fish Community	Bashbish Brook	S of Falls Rd, 200ft US of Wright Br confluence	42.10614	-73.48229
6341	MassDEP	Fish Community	Bashbish Brook	At WQ RSN section, S of Falls Rd, ~200 ft US of Wright Brook Confluence, Mount Washington	42.10614	-73.48299
6382	MassDEP	Fish Community	Bashbish Brook	, Mount Washington	42.10614	-73.48299
6670	MassDFG	Fish Community	Bashbish Brook	Falls Rd US of Falls, Mount Washington	42.10840	-73.48709
B0816	MassDEP	Benthic	Bashbish Brook/	[south of Falls Road, approximately 60 meters upstream of the confluence of Wright Brook, Mount Washington, MA]	42.106140	-73.482990
W2280	MassDEP	Water Quality	Bashbish Brook	[south of Falls Road, approximately 200 feet upstream of the confluence of Wright Brook, Mount Washington]	42.106140	-73.482990

Biological Monitoring Information

Benthic Macroinvertebrate Data

MassDEP Benthic Macroinvertebrate Data (2011-2017). (MassDEP Undated 2)

[Index Biological Condition Class: E= Exceptional, S= Satisfactory, MD= Moderately Degraded, SD= Severely Degraded; High Gradient IBI Thresholds: E= 100-75, S= 74-55, MD= 54-35, SD= 34-0; Low Gradient IBI Thresholds: E= 100-81, S= 80-62, MD= 61-38, SD= 37-0; R qualifier = Rarefaction (100ct) <55]

Station Code	Collection Date	Collection Method	Index Type	Organism Count	Index Score	Index Biological Condition Class
B0816	04/17/12	RBP kicknet	Western_Highlands_100ct	103	76	E
B0816	07/11/12	RBP kicknet	Western_Highlands_100ct	101	77	E

Station Code	Collection Date	Collection Method	Index Type	Organism Count	Index Score	Index Biological Condition Class
B0816	07/31/13	RBP kicknet	Western_Highlands_300ct	337	73	S
B0816	07/31/14	RBP kicknet	Western_Highlands_300ct	310	82	E
B0816	07/15/15	RBP kicknet	Western_Highlands_300ct	320	72	S

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net; Trout= any combination of brook trout, brown trout, rainbow trout, tiger trout; Other Tier2 Species= any size and any combination of American brook lamprey, Atlantic salmon, lake chub, lake trout, longnose sucker, slimy sculpin]

[Species List: BND = Blacknose Dace, BT = Brown Trout, CRC = Creek Chub, EBT = Brook Trout, GS = Golden Shiner, P = Pumpkinseed]

Sample ID	Sample Date	Method	Sample Type	Total Taxa	Total Ind	Trout ≤140mm Ind	LLS<200mm Ind	Other Tier2 Ind	Cold Ind %	Fluvial Ind %	Notables	CFR	Species List
5094	10/01/13	BP	TP	1	37	12	0	0	100%	100%	No	Yes	BT,
5110	08/01/12	BP	TP	3	67	37	0	0	84%	100%	No	Yes	BND, BT, EBT,
6341	08/28/14	BP	TP	1	32	18	0	0	100%	100%	Yes	Yes	BT,
6382	09/03/15	BP	TP	2	65	21	0	0	95%	100%	No	Yes	BND, BT,
6670	09/12/17	BP	TP	5	459	31	0	0	15%	99%	No	Yes	BND, BT, CRC, GS, P,

Physico-chemical Water Quality Information

DO, pH, Temperature

MassDEP Long-term Continuous Dissolved Oxygen Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[7DADMin= 7-Day Average of the Daily Minima, 7DADA= 7-Day Average of the Daily Average, CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Day Count	7day Count	30day Count	DO Min (mg/L)	Min 7DADMin (mg/L)	Min 7DADA (mg/L)	Delta DO Max (mg/L)	Count CW 7DADMin <6.0	Count CW 1Day Min <5.0	Count WW Early Life Stages 7DADA <6.5	Count WW Early Life Stages 1Day Min <5.0	Count WW Other Life Stages 7DADMin <5.0	Count WW Other Life Stages 1Day Min <4.0	Count CW 30DADA <8.0	Count WW Other Life Stages 30DADA <6.0
W2280	05/15/13	09/15/13	124	118	95	8.5	8.8	9	1.8	0	0	0	0	0	0	0	0
W2280	05/23/14	09/07/14	94	82	36	8.8	9.1	9.4	0.9	0	0	0	0	0	0	0	0
W2280	05/21/15	09/14/15	117	111	88	7.8	8.3	8.7	1.7	0	0	0	0	0	0	0	0

MassDEP Discrete Dissolved Oxygen Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	DO Count	DO Min (mg/L)	DO Avg (mg/L)	Count CW <5.0	Count WW Early Life Stages <5.0	Count WW Other Life Stages <4.0
W2280	05/14/13	09/16/13	4	9.2	9.9	0	0	0
W2280	06/17/14	09/08/14	4	9.7	9.8	0	0	0
W2280	06/17/15	09/15/15	4	9.1	9.6	0	0	0

MassDEP Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[Summer Index is June 1 – Sept 15; Max Daily Mean= Maximum 24-Hour Average, 7DADM= 7-Day Average of the Daily Maxima, 7DADA= 7-Day Average of the Daily Average, CW= Coldwater, WW= Warmwater; In the case of more than one row of data in the same year for a site, different types of temperature probes were deployed.]

Station Code	Start Date	End Date	Index Count	7day Count	Max Daily Mean (°C)	Max Temp (°C)	Max 7DADM (°C)	Max 7DADA (°C)	Count CWTier1 7DADM >20	Count CWTier1 Daily Mean >23.5	Count CWTier2 7DADA >21	Count CWTier2 Daily Mean >24.1	Count WW 7DADM >27.7	Count WW Daily Mean >28.3
W2280	06/01/12	09/15/12	107	107	19.6	20.2	19.3	18.5	0	0	0	0	0	0
W2280	06/01/13	09/15/13	107	104	20.0	21.3	20.1	19.0	2	0	0	0	0	0
W2280	06/01/13	09/15/13	107	104	20.0	21.2	20.0	19.0	0	0	0	0	0	0
W2280	06/01/14	09/07/14	85	76	18.1	19.3	17.8	16.9	0	0	0	0	0	0
W2280	06/01/15	09/14/15	106	103	18.6	19.5	18.7	17.7	0	0	0	0	0	0

24-hour Rolling Average Calculations for MassDEP Short- and Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater; In the case of more than one row of data in the same year for a site, different types of temperature probes were deployed.]

Station Code	Start Date	End Date	Count Days Deployed	24hr Rolling Count	Max 24hr Avg Rolling Temp (°C)	Count CWTier1 24hr Avg Rolling >23.5 °C	Count CWTier2 24hr Avg Rolling >24.1 °C	Count WW 24hr Avg Rolling >28.3°C
W2280	06/01/12	09/15/12	107	5136	19.8	0	0	0
W2280	06/01/13	09/15/13	107	5136	20.3	0	0	0
W2280	06/01/13	09/15/13	107	5136	20.3	0	0	0
W2280	06/01/15	09/15/15	106	5111	18.7	0	0	0
W2280	06/01/14	09/08/14	99	4079	18.2	0	0	0

MassDEP Discrete Temperature Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Temp Count	Index Count	Temp Max (°C)	Temp Avg (°C)	Count CW >20	Count CW >22	Count WW >28.3	Count WW >30.3
W2280	05/09/12	10/03/12	2	0	12.9	11.7	0	0	0	0
W2280	05/14/13	09/16/13	6	3	17.7	12.6	0	0	0	0
W2280	06/17/14	09/08/14	4	4	14.6	14.2	0	0	0	0
W2280	06/17/15	09/15/15	4	4	17.7	15.1	0	0	0	0

MassDEP Discrete pH Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

Station Code	Start Date	End Date	pH Count	pH Min (SU)	pH Max (SU)	pH Count <6.5 & >8.3	pH Count <6.0 & >8.8
W2280	05/14/13	09/16/13	4	7	7.4	0	0
W2280	06/17/14	09/08/14	4	7	7.3	0	0
W2280	06/17/15	09/15/15	4	7.4	7.6	0	0

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[Summer seasonal total phosphorus data collected May-Sept]

Station Code	Data Year	Seasonal TP Count	Seasonal TP Min (mg/L)	Seasonal TP Max (mg/L)	Seasonal TP Avg (mg/L)	Delta DO Max (mg/L)	Delta DO Avg (mg/L)	DO Sat Max (%)	pH Max (SU)	Count Algal Obsv.	Dense/V. Dense Film/Fila. Algae
W2280	2012	2	0.005	0.005	0.005	--	--	--	--	3	0
W2280	2013	5	0.005	0.005	0.005	1.8	0.5	97.6	7.4	4	0
W2280	2014	4	0.005	0.005	0.005	0.9	0.4	97.7	7.3	4	0
W2280	2015	4	0.005	0.005	0.005	1.7	0.6	97.9	7.6	4	0

Toxics and other pollutants (metals, ammonia, chloride, chlorine)

MassDEP Total Ammonia Nitrogen (TAN) Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

[TAN= NH3 + NH4+]

Station Code	Data Year	TAN Count	TAN Min (mg/L)	TAN Max (mg/L)	TAN Avg (mg/L)	Count TAN >Chronic	Count TAN >Acute
W2280	2012	3	0.020	0.020	0.020	0	0
W2280	2013	4	0.020	0.020	0.020	0	0
W2280	2014	4	0.020	0.020	0.020	0	0
W2280	2015	4	0.040	0.051	0.043	0	0

MassDEP Chloride Data (2011-2018). (MassDEP Undated 4) (MassDEP Undated 3)

Station Code	Data Year	Chloride Count	Chloride Min (mg/L)	Chloride Max (mg/L)	Chloride Avg (mg/L)	Count Chloride >230	Count Chloride >860
W2280	2012	3	3	8	5	0	0
W2280	2013	4	4	7	5	0	0
W2280	2014	4	6	7	6	0	0
W2280	2015	4	4	13	10	0	0

MassDEP Discrete Specific Conductance Data (2011-2018) Compared to Estimated Chloride Criteria. (MassDEP Undated 4) (MassDEP Undated 3)

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
W2280	05/14/13	09/16/13	4	47	74	0	0	0	0	0	0
W2280	06/17/14	09/08/14	4	68	102	0	0	0	0	0	0
W2280	06/17/15	09/15/15	4	47	123	0	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in Bashbish Brook, therefore the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	
MassDEP staff surveyed Bashbish Brook just upstream of the confluence of Wright Brook in Mount Washington MA (W2280) during the summers of 2012, 2013, 2014, and 2015 as part of the Reference Site Network monitoring project. No objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys. The Aesthetics Use for Bashbish Brook is assessed as Fully Supporting based on the lack of any objectionable conditions documented by MassDEP staff during the summers of 2012, 2013, 2014, and 2015.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2280	MassDEP	Water Quality	Bashbish Brook	[south of Falls Road, approximately 200 feet upstream of the confluence of Wright Brook, Mount Washington]	42.106140	-73.482990

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 3)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2280	Bashbish Brook	2012	3	MassDEP aesthetics observations for station W2280 on Bashbish Brook can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2012.
W2280	Bashbish Brook	2013	5	MassDEP aesthetics observations for station W2280 on Bashbish Brook can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2013.
W2280	Bashbish Brook	2014	4	MassDEP aesthetics observations for station W2280 on Bashbish Brook can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2014.
W2280	Bashbish Brook	2015	4	MassDEP aesthetics observations for station W2280 on Bashbish Brook can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 4) (MassDEP Undated 3)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2280	2012	3	3	0
W2280	2013	5	4	0
W2280	2014	4	4	0
W2280	2015	4	4	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 4)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2280	Bashbish Brook	2012	Color	None	3	3
W2280	Bashbish Brook	2012	Objectionable Deposits	No	3	3
W2280	Bashbish Brook	2012	Odor	None	3	3
W2280	Bashbish Brook	2012	Scum	No	3	3
W2280	Bashbish Brook	2012	Turbidity	None	3	3
W2280	Bashbish Brook	2013	Color	None	4	5
W2280	Bashbish Brook	2013	Color	NR	1	5
W2280	Bashbish Brook	2013	Objectionable Deposits	No	5	5
W2280	Bashbish Brook	2013	Odor	None	5	5
W2280	Bashbish Brook	2013	Scum	No	5	5
W2280	Bashbish Brook	2013	Turbidity	None	5	5
W2280	Bashbish Brook	2014	Color	None	4	4
W2280	Bashbish Brook	2014	Objectionable Deposits	No	4	4
W2280	Bashbish Brook	2014	Odor	None	4	4
W2280	Bashbish Brook	2014	Scum	No	4	4
W2280	Bashbish Brook	2014	Turbidity	None	4	4
W2280	Bashbish Brook	2015	Color	None	4	4
W2280	Bashbish Brook	2015	Objectionable Deposits	No	4	4
W2280	Bashbish Brook	2015	Odor	None	4	4
W2280	Bashbish Brook	2015	Scum	No	4	4
W2280	Bashbish Brook	2015	Turbidity	None	4	4

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No bacteria data are available to assess the status of the Primary Contact Recreational Use for Bashbish Brook, so it is Not Assessed.	

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No bacteria data are available to assess the status of the Secondary Contact Recreational Use for Bashbish Brook, so it is Not Assessed.	

Data Sources

MassDEP. "Open file analysis of DFG 2012-2019 fish community data using 2022 CALM guidance." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 1.

MassDEP. "Open file analysis of MassDEP WPP benthic survey data (2011-2018) using 2022 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 2.

MassDEP. "Open file analysis of MassDEP WPP water quality data collected between 2011 and 2018 using 2022 CALM guidance." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 3.

MassDEP. "Open files of unpublished, validated water quality monitoring data, field sheet data, and GIS datalayers in development." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 4.

MassDFG. *Fish Community Data 1964-2019*. Database submitted to MassDEP on 24 November 2020. Division of Fisheries and Wildlife, Massachusetts Department of Fish and Game. Westborough, MA, November 24, 2020.