

Section 5-2 Androscoggin River (Friends of Merrymeeting Bay)

Androscoggin River

The Androscoggin River is the third largest river in the state of Maine. It has a length of 177 miles and drainage area of 3,450 square miles (2,730 sq. mi. in Maine).¹ The Androscoggin River's headwaters are Umbagog Lake in Maine/New Hampshire. From there it flows into New Hampshire and then back into Maine through the towns of Gilead and Bethel. It continues flowing through the towns and cities of Rumford, Mexico, Dixfield, Jay, Livermore Falls, Lewiston, Auburn, Durham, Lisbon, Lisbon Falls, Brunswick, and Topsham where it joins the Kennebec River at Merrymeeting Bay.

The Androscoggin River has a long history of industrial and municipal use over the last 200 years.¹ Beginning in the early 1800s, many dams were constructed for mills, primarily in the lower part of the river. By the late 1800s, many textile and lumber mills were in operation, mostly from Lewiston to Brunswick. Pulp and paper mills that are still in operation today were established in the late 1800s in New Hampshire, Rumford, and Jay. Beginning in the late 1920s, Central Maine Power built hydroelectric dams that impounded much of the river from Lewiston to Livermore Falls. Some of these uses continue today. "Along its course to the sea, the river is repeatedly dammed. It receives discharges from industrial and municipal sources, as well as polluted runoff from a variety of sources."² Specific problems include mill discharges, combined sewer overflows (CSOs), dam impacts (28 dams exist), and historical sediment toxins.

The Androscoggin River is assigned Class B from the Maine/New Hampshire boundary to its confluence with the Ellis River. It is assigned Class C from the confluence with the Ellis River to Merrymeeting Bay.

Friends of Merrymeeting Bay (FOMB) is a nonprofit organization that focuses on the lower part of the Androscoggin River and other waterbodies draining into Merrymeeting Bay. FOMB has been in existence since 1975 and its mission is "to preserve, protect and improve the unique ecosystem of Merrymeeting Bay"³.

¹ Maine Rivers Website- Androscoggin River Profile

² Androscoggin River Alliance Website- Androscoggin River slideshow

³ Friends of Merrymeeting Bay website

Monitoring History

- The Maine Department of Environmental Protection's (DEP) Biological Monitoring Program has been monitoring the lower Androscoggin River since 1984. This data is available on DEP's website.
- The lower Androscoggin River is monitored by Friends of Merrymeeting Bay (FOMB). They have been monitoring the lower part of the Androscoggin River, tributaries to Merrymeeting Bay, and the Bay since 1999. Their monitoring has extended up the Androscoggin at times (depending on volunteers) to Livermore Falls. FOMB joined the VRMP in 2009 with an interest in bringing about water classification upgrades where possible. They monitor bacteria at additional sites, not part of the VRMP program.
- In 2011, FOMB requested that two of the three approved sites (Water Street Mooring, WSM and Brunswick Canoe Mooring, BCM) be moved from mid-channel to shore. They submitted monitoring data from mid-channel and shore to demonstrate similarity. The Department approved relocation of these approved sites. FOMB renamed these sites Brunswick Water Street (BWS) and Brunswick Canoe Portage (BCP), respectively.
- In 2010, a water quality model to predict the effect of discharges and river flows on attainment of Maine's Water Quality Standards was developed for the lower Androscoggin River by the Maine DEP. The model report and data are available on DEP's website.
- In 2018, FOMB added three of their preexisting sites on the Kennebec River (Hallowell Boat Launch (HLK), Gardiner Waterfront Park (GRK) and Abbagadasset Point (ABK) to the VRMP program.
- For the 2020 season, sampling from the Hallowell Boat Launch (HLK) was moved to the Hallowell Kennebec North (HKN) site due to being accessible when the HLK boat launch ramp was not accessible and due to Covid-19 concerns at HLK site.

Methods and Sampling Sites

Volunteers monitor at eight sites on the main stem of the Androscoggin River and at three sites of the mainstem of the Kennebec River. All of these sites are now VRMP approved sites. In 2015, FOMB added site Durham Boat New (DBN) to replace Durham Boat Launch (DBL) and in 2016 added site Island View Lane (IVL) to replace site Bay Bridge Jetty (BBB) due to access issues. Site DBN is downstream of DBL and access is from the riverbank and site IVL is slightly upstream from BBB and access is from the float/ramp. FOMB's "bacteria only" sites (not part of the VRMP program) are currently on the Cathance (Bowdoinham Town Landing) and Kennebec (North and South Bath boat launches and Richmond-above and below the WWTP at the Town Landing Float {above} and Nash Marina Float {below}) rivers.

Monitoring is conducted once a month from May through October. Winkler titration was used for dissolved oxygen measurements at most sites until the end of 2017. Since 2018, monitors take measurements of water temperature and dissolved oxygen using a YSI meter. Specific conductance is measured using either a YSI meter or an Oakton EC 11+/11 Testr pen. Samples are collected for *E. coli* bacteria and transported

to lab space formerly at Bowdoin College, but now for access and covid reasons, the FOMB office, for analysis by FOMB volunteers using the IDEXX Colilert system.

Table 5-2-1: Friends of Merrymeeting Bay VRMP sampling sites on the Androscoggin River and Kennebec River- listed from upstream to downstream. **Sites monitored in 2020 are in bold.**

VRMP Site ID	Organization Site Code	Sample Location	Class
Androscoggin River-A158-VRMP	DBL	Durham Boat Launch	C
Androscoggin River-A149-VRMP	DBN	Durham Boat New	C
Androscoggin River-A71-VRMP	PBL	Pejepscot Boat Launch	C
Androscoggin River-A47-VRMP	FPU	Fish Park Upstream	C
Androscoggin River-A45-VRMP	FPD	Fish Park Downstream	C
Androscoggin River-A24-VRMP	BIL	Brunswick Interstate Ledges	C
Androscoggin River-A06-VRMP	BCP	Brunswick Canoe Portage	C
Androscoggin River-A-09-VRMP	BWS	Brunswick Water Street	C
Androscoggin River-A-45-VRMP	IVL	Island View Lane	C
Androscoggin River-A-50-VRMP	BBB	Bay Bridge Jetty	C
Kennebec River-K-55-VRMP	HKN	Hallowell Kennebec North	B
Kennebec River-K-58-VRMP	HLK	Hallowell Boat Launch	B
Kennebec River-K-100-VRMP	GRK	Gardiner Waterfront Park	B
Kennebec River-K-269-VRMP	ABK	Abbagadasset Point	B

Androscoggin and Kennebec River Sampling Sites

Friends of Merrymeeting Bay

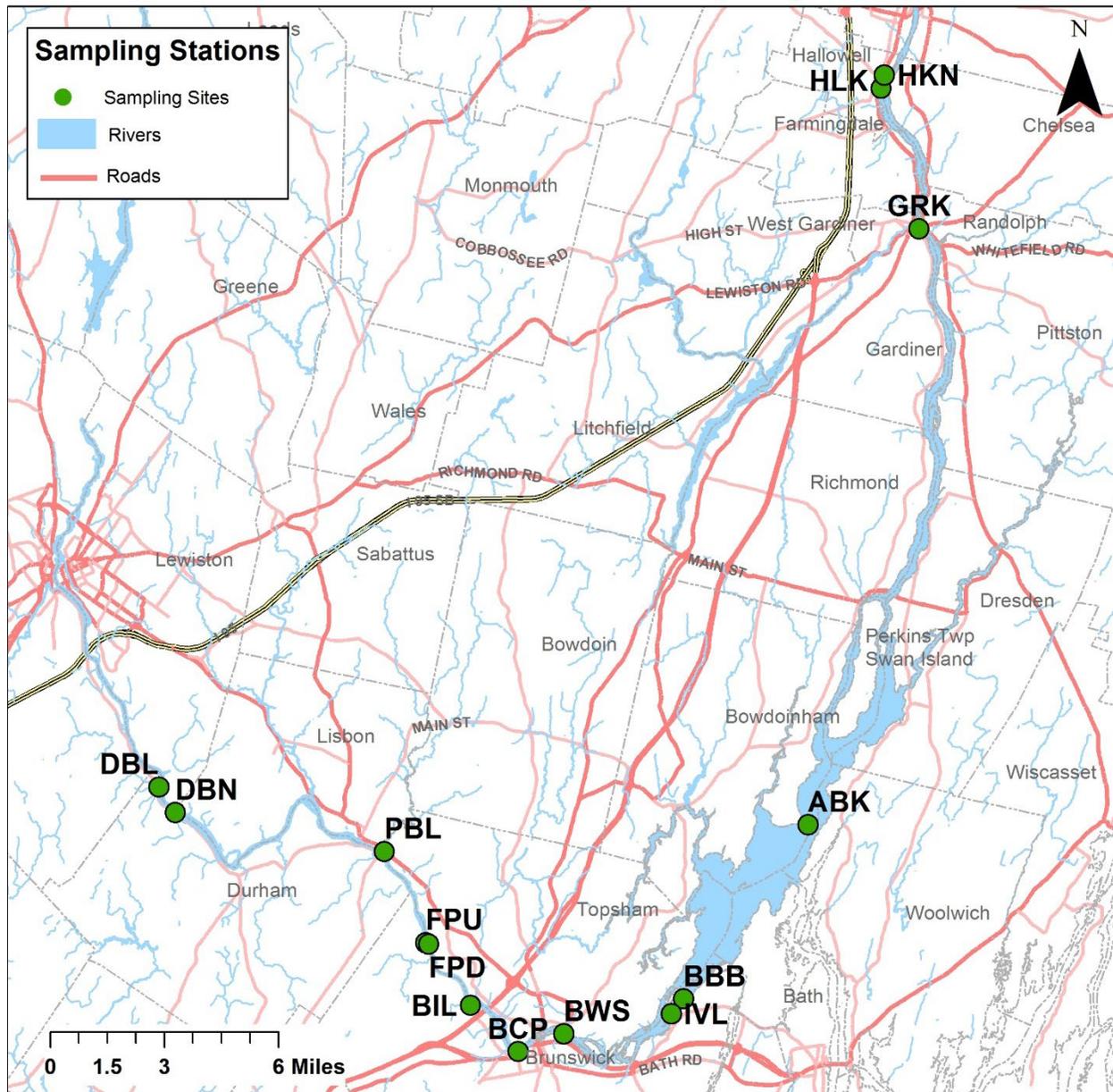


Figure 5-2-1: Map of all Friends of Merrymeeting Bay VRMP sampling sites on the Androscoggin and Kennebec Rivers.

Parameters

Dissolved Oxygen

Dissolved oxygen levels are generally lowest early in the morning and then increase during the day, peaking mid to late afternoon. FOMB monitors collect dissolved oxygen samples no later than 8 AM. Dissolved oxygen is also affected by flow conditions and temperature. During high flow conditions, more oxygen is added to the river from the atmosphere as the water is more turbulent and there is more opportunity for mixing. If flow during the summer months is higher or lower than normal, this will affect the dissolved oxygen.

Class C criteria for dissolved oxygen are a minimum of 5 mg/l or 60% saturation whichever is higher. Class B criteria for dissolved oxygen are a minimum of 7 mg/l (milligrams/liter) or 75% saturation whichever is higher. ([§465. Standards for classification of fresh surface waters](#))

Water Temperature

Maine's Regulations Relating to Temperature (06-096 CMR Chapter 582) require that discharge of pollutants not raise the temperature of any river and stream above the EPA criteria for indigenous species (23 °C maximum and 19 °C weekly average) or 0.3 °C (0.5°F) above the temperature that would naturally occur outside a mixing zone established by the Board of Environmental Protection. Pollutant is defined in statute as many things including dirt and heat. For tidal waters, discharge of pollutants may not raise the temperature more than 4 °F (2.2 °C) or more than 1.5 °F (0.8 °C) from June 1 to September 1, and may not cause the temperature of any tidal waters to exceed 85 °F (29 °C) at any point outside a mixing zone established by the Board of Environmental Protection.

Specific Conductance

Specific conductance is related to the amount of dissolved materials in the water. While there are no numerical standards, a relationship exists between conductivity and chloride which has numerical criteria. In general, streams located in urban areas tend to have high specific conductance due to polluted urban stormwater runoff. This may also in large part be due to salt buildup in surface and groundwater from road maintenance practices. Also, discharges from pulp and paper mills upstream measurably increase the conductivity of the river.

Bacteria

Escherichia coli (*E. coli*) bacteria are used as the indicator organism for freshwater. While these types of bacteria are not pathogens, their presence in the water may indicate the presence of other organisms, including bacteria and viruses, which can cause gastrointestinal illnesses.

Class C criteria for bacteria (effective August 1, 2018) are as follows: "Between April 15th and October 31st, the number of *Escherichia coli* bacteria in Class C waters may not exceed a geometric mean of 100 CFU per 100 milliliters over a 90-day interval or 236 CFU per 100 milliliters in more than 10% of the samples in any 90-day interval." Class B criteria (effective August 1, 2018) are as follows: "Between April 15th and October 31st, the number of *Escherichia coli* bacteria in these waters may not exceed a geometric mean of 64 CFU per 100 milliliters over a 90-day interval or 236 CFU per 100 milliliters in more than 10% of the samples in any 90-day interval." Geometric means are calculated instead of averages because it is

more appropriate to use geometric mean for something like bacteria where there may be one or more very high or low values that can skew the mean.

Summary of Data by Site and Parameter (2010-2020)

Levels in red did not meet classification criterion within the regulatory sampling period at that time. Red asterisks indicate a value in the note did not meet classification criterion within the regulatory sampling period at that time.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: DBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	1	7.0	7.0	7.0	5	0
2011	C	2	11.2	7.8	14.5	5	0
2012	C	1	14.5	14.5	14.5	5	0
2013	C	1	8.7	8.7	8.7	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: DBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	1	82	82	82	60	0
2011	C	2	98.4	84.0	112.8	60	0
2012	C	1	112.8	112.8	112.8	60	0
2013	C	1	86.0	86.0	86.0	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: DBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	1	22.6	22.6	22.6	n/a	n/a
2011	C	2	11.9	4.8	18.9	n/a	n/a
2012	C	1	4.8	4.8	4.8	n/a	n/a
2013	C	1	14.9	14.9	14.9	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: DBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	1	95	95	95	n/a	n/a
2011	C	2	52	35	69	n/a	n/a
2012	C	1	35	35	35	n/a	n/a
2013	C	1	58	58	58	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: DBL								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2010	C	E. Coli	1	22	22	22	236/126	0
2013	C	E. Coli	1	26	26	26	236/126	0
2015	C	E. Coli	6	21	6	579*	236/126	0

*Maximum value was in October, outside the criteria timeline at that time.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: DBN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	2	8.1	7.5	8.6	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: DBN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	2	91.8	90.5	93.0	60	0

A summary of mean, minimum and maximum water temperature ($^{\circ}\text{C}$) values at Friends of Merrymeeting Bay monitoring site: DBN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	2	22.2	19.2	25.1	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: DBN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	2	101	84	117	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: DBN								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2016	C	E. Coli	2	17	17	20	236/126	0/0
2017	C	E. Coli	4	11	10	345*	236/126	0/0
2018	C	E. Coli	5	30	4	1733**	236/100	1/0
2019	C	E. Coli	5	14	6	76	236/100	0/0
2020	C	E. Coli	6	23	4	365**	236/100	1/0

*Maximum value was in October, outside the criteria timeline at that time.

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: PBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	8.4	7.3	10.5	5	0
2011	C	7	9.5	7.2	14.2	5	0
2012	C	7	9.3	7.5	14.2	5	0
2013	C	4	8.4	7.6	9.1	5	0
2014	C	4	9.4	8.4	10.7	5	0
2015	C	6	8.9	7.5	10.3	5	0
2016	C	6	8.7	7.6	10.1	5	0
2017	C	6	8.5	7.4	10.0	5	0
2018	C	6	8.4	7.5	9.8	5	0
2019	C	6	9.0	7.5	11.7	5	0
2020	C	6	8.8	7.7	11.0	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: PBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	90	86	97	60	0
2011	C	7	94.8	85.2	111.5	60	0
2012	C	7	96.1	87.6	111.5	60	0
2013	C	4	84.9	74.3	91.8	60	0
2014	C	4	96.6	91.7	105.6	60	0
2015	C	6	94.0	89.4	96.8	60	0
2016	C	6	93.5	86.7	98.3	60	0
2017	C	6	92.9	88.8	99.8	60	0
2018	C	6	93	88.1	97	60	0
2019	C	6	94.9	86.7	104.0	60	0
2020	C	6	93.5	88.5	100.1	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: PBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	19.4	11.9	24.4	n/a	n/a
2011	C	7	16.8	5.1	25.5	n/a	n/a
2012	C	7	17.5	5.1	25.3	n/a	n/a
2013	C	4	19.7	15.6	25.7	n/a	n/a
2014	C	4	17.1	13.6	20.0	n/a	n/a
2015	C	6	18.8	11.1	24.3	n/a	n/a
2016	C	6	19.0	13.3	24.5	n/a	n/a
2017	C	6	19.4	14.3	24.8	n/a	n/a
2018	C	6	20.6	12.8	24.7	n/a	n/a
2019	C	6	18.6	10.0	24.8	n/a	n/a
2020	C	6	19.0	11.2	24.4	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: PBL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	87	58	116	n/a	n/a
2011	C	7	75	38	140	n/a	n/a
2012	C	7	75	38	99	n/a	n/a
2013	C	4	62	49	73	n/a	n/a
2014	C	1	60	60	60	n/a	n/a

2015	C	6	97	60	140	n/a	n/a
2016	C	6	114	70	152	n/a	n/a
2017	C	6	93	50	120	n/a	n/a
2018	C	6	100	72	120	n/a	n/a
2019	C	6	104	60	140	n/a	n/a
2020	C	6	92	63	130	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: PBL

Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2010	C	E. Coli	5	35	6	225	236/126	0/0
2013	C	E. Coli	4	22	18	32	236/126	0/0
2014	C	E. Coli	6	87	12	613*	236/126	1/0
2015	C	E. Coli	6	49	13	291*	236/126	0/0
2016	C	E. Coli	6	19	9	72	236/126	0/0
2017	C	E. Coli	6	15	7	1300*	236/126	0/0
2018	C	E. Coli	6	41	10	1986**	236/100	1/0
2019	C	E. Coli	6	115	22	517***	236/100	1/0
2020	C	E. Coli	6	92	11	1414****	236/100	2/0

* Maximum of 613 mpn/100ml was on 10/19/14, outside the criteria timeline at that time. The criterion was exceeded on 5/18/14 with a reading of 435 mpn/100ml.

* Maximum value was in October, outside the criteria timeline at that time.

** Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

*** Maximum of 517 mpn/100ml was on 6/16/19 and duplicate value was 131 mpn/100ml.

**** Non-October maximum value was 580 mpn/100ml on 7/12/20.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: FPU

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	8.3	7.2	10.6	5	0
2011	C	7	9.4	7.1	14.4	5	0
2012	C	7	9.3	7.5	14.4	5	0
2013	C	4	8.1	6.7	9.2	5	0
2014	C	4	9.2	8.4	10.8	5	0
2015	C	6	8.8	7.3	10.2	5	0
2016	C	6	8.6	7.7	10.1	5	0

2017	C	6	8.4	7.0	10.1	5	0
2018	C	6	8.3	7.3	9.7	5	0
2019	C	6	9.0	7.3	11.7	5	0
2020	C	6	8.5	7.6	10.7	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: FPU

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	89	85	99	60	0
2011	C	7	94.6	85.3	111.6	60	0
2012	C	7	94.8	88.1	111.6	60	0
2013	C	4	87.9	81.2	95.1	60	0
2014	C	4	96.9	91.5	107.0	60	0
2015	C	6	93.4	87.3	97.5	60	0
2016	C	6	93.8	88.4	101.0	60	0
2017	C	6	92.9	88.8	99.8	60	0
2018	C	6	90.9	84.1	96.7	60	0
2019	C	6	93.7	87.5	104.1	60	0
2020	C	6	90.9	83.5	98.3	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: FPU

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	19.6	12.3	25.2	n/a	n/a
2011	C	7	16.8	4.7	25.3	n/a	n/a
2012	C	7	17.8	4.7	25.1	n/a	n/a
2013	C	4	19.9	16.0	25.7	n/a	n/a
2014	C	4	18.2	14.9	20.5	n/a	n/a
2015	C	6	18.9	10.8	24.2	n/a	n/a
2016	C	6	19.0	9.9	25.1	n/a	n/a
2017	C	6	19.5	14.7	24.7	n/a	n/a
2018	C	6	20.0	13.0	24.5	n/a	n/a
2019	C	6	18.1	10.1	24.8	n/a	n/a
2020	C	6	20.0	11.2	25.6	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: FPU							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	89	55	118	n/a	n/a
2011	C	7	74	38	137	n/a	n/a
2012	C	7	74	38	94	n/a	n/a
2013	C	4	60	47	71	n/a	n/a
2014	C	1	70	70	70	n/a	n/a
2015	C	6	88	50	140	n/a	n/a
2016	C	6	116	67	145	n/a	n/a
2017	C	6	87	40	120	n/a	n/a
2018	C	6	101	64	120	n/a	n/a
2019	C	6	105	50	140	n/a	n/a
2020	C	6	87	62	130	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: FPU								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2010	C	E. Coli	5	27	5	152	236/126	0/0
2013	C	E. Coli	4	19	11	32	236/126	0/0
2014	C	E. Coli	6	53	8	980*	236/126	0/0
2015	C	E. Coli	6	15	3	276*	236/126	0/0
2016	C	E. Coli	6	8	1	16	236/126	0/0
2017	C	E. Coli	6	15	5	1986*	236/126	0/0
2018	C	E. Coli	6	21	5	1120**	236/100	1/0
2019	C	E. Coli	6	24	6	108	236/100	0/0
2020	C	E. Coli	6	19	8	65	236/100	0/0

*Maximum value was in October, outside the criteria timeline at that time.

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: FPD							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	8.3	7.2	10.6	5	0
2011	C	7	9.6	7.0	14.9	5	0
2012	C	7	9.3	7.5	14.9	5	0
2013	C	4	8.1	6.3	9.4	5	0
2014	C	4	9.6	8.5	11.5	5	0
2015	C	6	8.8	7.4	10.4	5	0
2016	C	6	8.6	7.7	9.9	5	0
2017	C	6	8.5	6.9	10.3	5	0
2018	C	6	8.9	7.7	10.2	5	0
2019	C	6	8.8	7.2	11.8	5	0
2020	C	6	8.4	7.4	10.7	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: FPD							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	89	85	99	60	0
2011	C	7	95.7	85.5	114.5	60	0
2012	C	7	95.3	87.7	114.5	60	0
2013	C	4	86.1	72.2	97.2	60	0
2014	C	4	99.3	92.4	114.3	60	0
2015	C	6	93.8	88.2	98.0	60	0
2016	C	6	93.7	90.4	99.4	60	0
2017	C	6	91.8	83.9	101.3	60	0
2018	C	6	95.3	90.8	100.1	60	0
2019	C	6	93.1	87.3	104.5	60	0
2020	C	6	91.9	84.1	98.3	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: FPD							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	19.8	12.2	25.1	n/a	n/a
2011	C	7	16.8	4.8	25.5	n/a	n/a

2012	C	7	17.8	4.8	25.2	n/a	n/a
2013	C	4	19.9	16.1	25.7	n/a	n/a
2014	C	4	17.5	14.9	20.3	n/a	n/a
2015	C	6	18.9	10.6	24.3	n/a	n/a
2016	C	6	18.5	9.6	25.0	n/a	n/a
2017	C	6	19.6	14.7	24.8	n/a	n/a
2018	C	6	19.2	13.1	24.9	n/a	n/a
2019	C	6	19.0	10.0	25.0	n/a	n/a
2020	C	6	19.6	11.2	25.8	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: FPD

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	4	97	78	118	n/a	n/a
2011	C	7	74	38	138	n/a	n/a
2012	C	7	74	38	100	n/a	n/a
2013	C	4	60	47	71	n/a	n/a
2014	C	1	70	70	70	n/a	n/a
2015	C	6	90	50	140	n/a	n/a
2016	C	6	119	68	154	n/a	n/a
2017	C	6	87	40	120	n/a	n/a
2018	C	6	102	66	120	n/a	n/a
2019	C	6	102	50	140	n/a	n/a
2020	C	6	86	61	120	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: FPD

Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2010	C	E. Coli	4	38	5	160	236/126	0/0
2013	C	E. Coli	4	17	6	41	236/126	0/0
2014	C	E. Coli	6	61	16	579*	236/126	0/0
2015	C	E. Coli	6	14	4	206	236/126	0/0
2016	C	E. Coli	6	7	4	17	236/126	0/0
2017	C	E. Coli	6	14	7	1986*	236/126	0/0
2018	C	E. Coli	6	42	5	727**	236/100	1/0
2019	C	E. Coli	5	22	9	70	236/100	0/0
2020	C	E. coli	6	24	10	86	236/100	0/0

*Maximum value was in October, outside the criteria timeline at that time.

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: BIL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	8.3	7.3	10.6	5	0
2011	C	7	9.6	7.0	14.7	5	0
2012	C	5	9.6	7.4	14.7	5	0
2013	C	4	8.1	6.6	9.4	5	0
2014	C	4	9.5	8.6	10.9	5	0
2015	C	6	8.7	7.4	10.2	5	0
2016	C	6	8.6	7.8	9.9	5	0
2017	C	6	8.4	7.1	10.2	5	0
2018	C	6	8.5	7.6	9.8	5	0
2019	C	6	8.5	7.1	11.8	5	0
2020	C	6	8.4	7.3	10.7	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: BIL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	89	85	99	60	0
2011	C	7	95.0	84.5	115.2	60	0
2012	C	5	96.9	87.7	115.2	60	0
2013	C	4	87.6	81.5	94.3	60	0
2014	C	4	96.9	91.7	108.2	60	0
2015	C	6	92.4	86.3	97.0	60	0
2016	C	6	93.6	89.5	99.5	60	0
2017	C	6	90.7	83.7	100.7	60	0
2018	C	6	93.2	88.2	97.9	60	0
2019	C	6	91.3	85.4	104.4	60	0
2020	C	6	90.1	81.5	97.5	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: BIL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	19.8	12.4	25.1	n/a	n/a
2011	C	7	16.7	4.9	25.1	n/a	n/a
2012	C	5	17.8	4.9	24.9	n/a	n/a
2013	C	4	19.8	16.0	25.6	n/a	n/a
2014	C	4	17.1	14.7	19.9	n/a	n/a
2015	C	6	18.7	10.1	24.1	n/a	n/a
2016	C	6	19.6	10.1	25.6	n/a	n/a
2017	C	6	19.4	14.7	24.6	n/a	n/a
2018	C	6	20.3	13.2	24.8	n/a	n/a
2019	C	6	19.5	10.1	24.8	n/a	n/a
2020	C	6	19.3	11.2	25.4	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: BIL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	89	55	119	n/a	n/a
2011	C	7	75	39	137	n/a	n/a
2012	C	5	66	39	92	n/a	n/a
2013	C	4	59	47	70	n/a	n/a
2014	C	1	70	70	70	n/a	n/a
2015	C	6	88	50	140	n/a	n/a
2016	C	6	117	68	148	n/a	n/a
2017	C	6	87	40	120	n/a	n/a
2018	C	6	101	67	120	n/a	n/a
2019	C	5	102	50	140	n/a	n/a
2020	C	6	87	62	120	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: BIL								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2010	C	E. Coli	5	28	7	148	236/126	0/0
2013	C	E. Coli	4	14	4	37	236/126	0/0
2014	C	E. Coli	6	41	5	579*	236/126	0/0

2015	C	E. Coli	6	16	4	192	236/126	0/0
2016	C	E. Coli	6	9	6	23	236/126	0/0
2017	C	E. Coli	6	15	7	1986*	236/126	0/0
2018	C	E. Coli	6	31	6	866**	236/100	1/0
2019	C	E. Coli	5	16	5	63	236/100	0/0
2020	C	E. Coli	6	26	6	67	236/100	0/0

*Maximum value was in October, outside the criteria timeline at that time.

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: BCP (note this site changed from BCM to BCP in 2011).							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	8.1	6.6	9.8	5	0
2010	C	5	8.3	7.0	11.3	5	0
2011	C	6	8.8	7.2	15.3	5	0
2012	C	6	8.2	7.1	9.8	5	0
2013	C	5	8.2	6.6	9.4	5	0
2014	C	6	8.9	7.0	11.0	5	0
2015	C	7	8.4	7.0	10.2	5	0
2016	C	6	8.7	7.1	10.5	5	0
2017	C	6	8.5	7.3	10.4	5	0
2018	C	6	9.0	7.5	10.4	5	0
2019	C	6	9.0	6.8	11.8	5	0
2020	C	6	9.0	8.0	11.6	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: BCP (note this site changed from BCM to BCP in 2011).							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	3	83	75	88	60	0
2011	C	5	94.6	82.8	115.0	60	0
2012	C	6	88.6	83.4	101.1	60	0
2013	C	5	89.4	81.1	96.5	60	0
2014	C	6	90.8	83.5	104.1	60	0
2015	C	7	90.7	83.7	97.0	60	0
2016	C	6	94.3	86.2	104.9	60	0
2017	C	6	91.4	86.8	102.6	60	0
2018	C	6	96.4	91.4	100.7	60	0
2019	C	6	94.5	81.5	105.7	60	0
2020	C	6	97.9	90.1	108.0	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: BCP (note this site changed from BCM to BCP in 2011).							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	20.5	17.1	25.0	n/a	n/a
2010	C	5	19.8	12.4	25.3	n/a	n/a
2011	C	4	11.8	4.9	19.2	n/a	n/a
2012	C	4	18.7	15.1	23.4	n/a	n/a
2013	C	5	19.2	15.7	25.5	n/a	n/a
2014	C	6	18.1	14.8	24.2	n/a	n/a
2015	C	7	19.0	10.4	24.1	n/a	n/a
2016	C	6	19.4	13.0	24.5	n/a	n/a
2017	C	6	19.5	14.6	24.6	n/a	n/a
2018	C	6	19.3	12.8	25.0	n/a	n/a
2019	C	6	18.7	10.0	25.0	n/a	n/a
2020	C	6	19.4	11.6	25.0	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: BCP (note this site changed from BCM to BCP in 2011).							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	67	39	93	n/a	n/a
2010	C	3	75	41	115	n/a	n/a
2011	C	5	80	53	131	n/a	n/a
2012	C	5	70	54	86	n/a	n/a

2013	C	5	61	48	72	n/a	n/a
2014	C	5	81	60	120	n/a	n/a
2015	C	7	103	60	160	n/a	n/a
2016	C	6	123	74	163	n/a	n/a
2017	C	6	92	50	120	n/a	n/a
2018	C	6	92	70	110	n/a	n/a
2019	C	6	105	60	150	n/a	n/a
2020	C	6	93	60	140	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: BCP (note this site changed from BCM to BCP in 2011).

Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2009	C	E. Coli	6	41	10	345	236/126	1/0
2010	C	E. Coli	4	38	20	123	236/126	0/0
2011	C	E. Coli	7	58	10	687*	236/126	0/0
2012	C	E. Coli	6	19	7	71	236/126	0/0
2013	C	E. Coli	5	18	10	27	236/126	0/0
2014	C	E. Coli	6	99	14	727*	236/126	0/0
2015	C	E. Coli	7	25	6	222	236/126	0/0
2016	C	E. Coli	6	8	2	17	236/126	0/0
2017	C	E. Coli	6	21	9	1046*	236/126	0/0
2018	C	E. Coli	6	35	11	727**	236/100	1/0
2019	C	E. Coli	5	27	8	104	236/100	0/0
2020	C	E. Coli	6	26	19	61	236/100	0/0

*Maximum value was in October, outside the criteria timeline at that time.

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: BWS (note this site changed from WSM to BWS in 2011).

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	7	8.5	7.4	9.5	5	0
2010	C	5	8.6	6.9	11.0	5	0
2011	C	7	9.8	7.7	13.7	5	0
2012	C	5	8.9	7.6	10.7	5	0
2013	C	5	8.9	7.9	9.9	5	0
2014	C	5	8.6	6.5	10.9	5	0
2015	C	6	8.9	7.2	11.0	5	0

2016	C	6	9.0	7.5	10.6	5	0
2017	C	6	8.6	7.4	10.7	5	0
2018	C	6	9.0	7.7	10.9	5	0
2019	C	6	9.3	7.2	12.0	5	0
2020	C	6	9.3	8.3	11.9	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: BWS (note this site changed from WSM to BWS in 2011).

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	92	81	103	60	0
2011	C	7	97.8	91.0	107.1	60	0
2012	C	5	96.8	87.6	105.4	60	0
2013	C	5	92.5	86.7	101.9	60	0
2014	C	6	96.3	84.5	108.4	60	0
2015	C	6	94.0	86.7	98.6	60	0
2016	C	6	97.6	90.9	105.3	60	0
2017	C	6	93.5	87.6	104.9	60	0
2018	C	6	98.8	93.3	104.5	60	0
2019	C	6	98.3	86.3	116.0	60	0
2020	C	6	99.2	91.0	107.3	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: BWS (note this site changed from WSM to BWS in 2011).

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	21.0	18.0	25.3	n/a	n/a
2010	C	5	19.8	12.2	25.3	n/a	n/a
2011	C	7	16.4	4.9	24.7	n/a	n/a
2012	C	5	19.6	14.9	24.5	n/a	n/a
2013	C	5	19.2	15.1	25.6	n/a	n/a
2014	C	6	18.5	14.4	23.6	n/a	n/a
2015	C	6	18.3	9.8	24.5	n/a	n/a
2016	C	6	19.4	13.0	24.9	n/a	n/a
2017	C	6	19.0	14.3	25.0	n/a	n/a
2018	C	6	20.2	13.4	25.0	n/a	n/a
2019	C	6	18.9	10.0	25.0	n/a	n/a
2020	C	6	19.3	11.6	25.0	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: BWS (note this site changed from WSM to BWS in 2011).							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	71	39	93	n/a	n/a
2010	C	4	103	54	112	n/a	n/a
2011	C	7	86	58	136	n/a	n/a
2012	C	5	109	105	111	n/a	n/a
2013	C	5	80	65	94	n/a	n/a
2014	C	3	73	64	85	n/a	n/a
2015	C	6	112	60	170	n/a	n/a
2016	C	6	134	97	165	n/a	n/a
2017	C	6	98	70	120	n/a	n/a
2018	C	6	101	78	125	n/a	n/a
2019	C	6	122	80	150	n/a	n/a
2020	C	6	105	60	140	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: BWS (note this site changed from WSM to BWS in 2011).								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018)	# Exceeding Criterion
2009	C	E. Coli	7	46	15	365	236/126	1/0
2010	C	E. Coli	5	26	9	86	236/126	0/0
2011	C	E. Coli	7	73	24	457*	236/126	0/0
2012	C	E. Coli	6	29	12	101	236/126	0/0
2013	C	E. Coli	5	36	17	73	236/126	0/0
2014	C	E. Coli	6	95	17	770*	236/126	1/0
2015	C	E. Coli	6	23	3	238*	236/126	0/0
2016	C	E. Coli	6	16	9	31	236/126	0/0
2017	C	E. Coli	6	22	10	727*	236/126	0/0
2018	C	E. Coli	6	71	18	1986**	236/100	1/0
2019	C	E. Coli	6	36	11	101	236/100	0/0
2020	C	E. Coli	6	25	19	50	236/100	0/0

*Maximum value was in October, outside the criteria timeline at that time.

*Maximum of 770 mpn/100ml was on 10/19/14, outside the criteria timeline at that time. The criterion was exceeded on 8/17/14 with a reading of 326 mpn/100ml.

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: IVL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	6	8.8	7.5	10.3	5	0
2017	C	6	8.5	7.0	10.6	5	0
2018	C	6	8.5	6.8	10.4	5	0
2019	C	6	8.7	6.8	11.8	5	0
2020	C	6	9.0	8.1	11.8	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: IVL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	6	94.3	88.9	102.8	60	0
2017	C	6	91.3	83.3	102.8	60	0
2018	C	6	92.7	81.4	100.5	60	0
2019	C	6	92.6	81.6	105.8	60	0
2020	C	6	96.4	90.2	106.9	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: IVL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	6	19.2	13.0	24.0	n/a	n/a
2017	C	6	19.5	14.2	24.4	n/a	n/a
2018	C	6	20.4	13.0	24.5	n/a	n/a
2019	C	6	19.2	10.0	24.2	n/a	n/a
2020	C	6	19.2	10.6	25.0	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: IVL							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2016	C	6	127	82	160	n/a	n/a
2017	C	6	88	40	120	n/a	n/a

2018	C	6	105	66	144	n/a	n/a
2019	C	6	103	50	130	n/a	n/a
2020	C	6	90	60	130	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: IVL

Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2016	C	E. Coli	6	24	8	82	236/126	0/0
2017	C	E. Coli	6	27	13	214	236/126	0/0
2018	C	E. Coli	6	35	5	866**	236/100	1/0
2019	C	E. Coli	6	28	6	167	236/100	0/0
2020	C	E. Coli	6	29	10	58	236/100	0/0

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: BBB

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	8.5	7.5	9.8	5	0
2010	C	5	8.2	6.4	10.7	5	0
2011	C	7	9.4	7.1	13.5	5	0
2012	C	6	8.4	7.2	10.3	5	0
2013	C	4	8.6	7.8	9.8	5	0
2014	C	5	8.4	6.7	10.5	5	0
2015	C	6	8.5	7.0	9.8	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: BBB

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	C	5	88	78	99	60	0
2011	C	7	94.0	84.9	107.4	60	0
2012	C	6	90.8	83.5	103.5	60	0

2013	C	4	92.1	85.2	101.1	60	0
2014	C	6	92.7	80.7	103.0	60	0
2015	C	6	88.7	83.7	96.7	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: BBB

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	6	19.4	17.5	20.9	n/a	n/a
2010	C	5	19.8	12.7	25.1	n/a	n/a
2011	C	7	16.5	5.0	24.3	n/a	n/a
2012	C	3	18.8	16.2	20.7	n/a	n/a
2013	C	4	19.7	15.7	25.4	n/a	n/a
2014	C	6	19.0	14.5	23.8	n/a	n/a
2015	C	6	18.0	8.9	24.3	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: BBB

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	C	5	64	40	93	n/a	n/a
2010	C	4	87	54	115	n/a	n/a
2011	C	7	67	35	125	n/a	n/a
2012	C	6	81	58	108	n/a	n/a
2013	C	4	57	49	71	n/a	n/a
2014	C	3	71	63	81	n/a	n/a
2015	C	6	110	70	160	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: BBB

Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo*) *revised August 1, 2018	# Exceeding Criterion
2009	C	E. Coli	4	24	15	41	236/126	0/0
2010	C	E. Coli	5	26	8	90	236/126	0/0
2011	C	E. Coli	7	81	22	816*	236/126	0/0
2012	C	E. Coli	6	34	10	78	236/126	0/0

2013	C	E. Coli	4	18	7	35	236/126	0/0
2014	C	E. Coli	6	117	24	816*	236/126	2/0
2015	C	E. Coli	6	17	1	291*	236/126	0/0

*Maximum value was in October, outside the criteria timeline at that time

*Maximum of 816 mpn/100ml was on 10/19/14, outside the criteria timeline at that time. The criterion was exceeded on 5/18/14 with a reading of 410 mpn/100ml and on 8/17/14 with a reading of 260 mpn/100ml.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: HKN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2020	B	5	7.6	6.9	8.8	7	1

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: HKN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2020	B	5	84.8	75.0	94.4	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: HKN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2020	B	5	20.1	14.0	24.6	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: HKN							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2020	B	5	106	90	130	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: HKN								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo)	# Exceeding Criterion
2020	B	E. Coli	5	40	8	548**	236/64	0

**Maximum value was in October, previously outside criteria timeline effective 8/1/18. All Wastewater Discharge permits impacting these waters will have the new timeline criteria incorporated and effective when their permits are renewed.

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: HLK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	5	8.7	7.8	10.1	7	0
2019	B	5	9.6	7.5	12.2	7	0
2020	B	1	11.2	11.2	11.2	7	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: HLK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	5	92.8	88.0	98.5	75	0
2019	B	5	96.0	90.2	105.2	75	0
2020	B	1	97.8	97.8	97.8	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: HLK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	5	18.9	13.3	24.2	n/a	n/a
2019	B	6	18.2	10.3	24.7	n/a	n/a
2020	B	1	10.2	10.2	10.2	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: HLK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	6	73	61	87	n/a	n/a
2019	B	4	61	18	110	n/a	n/a
2020	B	1	60	60	60	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: HLK								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo)	# Exceeding Criterion
2018	B	E. Coli	6	27	9	157	236/64	0/0
2019	B	E. Coli	6	19	10	40	236/64	0/0
2020	B	E. Coli	1	n/a	21	21	236/64	0/0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: GRK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	5	8.4	7.6	10.2	7	0
2019	B	5	9.0	6.9	11.3	7	1
2020	B	6	8.4	7.3	11.3	7	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: GRK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	5	91.6	88.0	98.4	75	0
2019	B	5	91.4	82.3	101.5	75	0
2020	B	6	90.0	81.2	98.4	75	0

A summary of mean, minimum and maximum water temperature ($^{\circ}\text{C}$) values at Friends of Merrymeeting Bay monitoring site: GRK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	5	19.6	13.5	25.1	n/a	n/a

2019	B	6	19.3	10.9	24.5	n/a	n/a
2020	B	6	18.6	10.4	24.2	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, $\mu\text{S}/\text{cm}$) values at Friends of Merrymeeting Bay monitoring site: GRK

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	6	85.3	64	125	n/a	n/a
2019	B	3	84.7	19	110	n/a	n/a
2020	B	6	98.3	70	130	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: GRK

Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo)	# Exceeding Criterion
2018	B	E. Coli	6	29	3	118	236/64	0/0
2019	B	E. Coli	6	19	4	89	236/64	0/0
2020	B	E. Coli	6	26	8	146	236/64	0/0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Friends of Merrymeeting Bay monitoring site: ABK

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	6	7.9	5.7	9.6	7	1
2019	B	6	8.1	7.0	10.4	7	0
2020	B	6	8.5	6.8	10.9	7	1

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring site: ABK

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	6	86.7	68.0	108.0	75	1
2019	B	6	86.9	83.4	93.0	75	0
2020	B	6	91.8	82.1	100.9	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Friends of Merrymeeting Bay monitoring site: ABK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	6	19.8	13.4	23.7	n/a	n/a
2019	B	6	19.3	10.5	24.4	n/a	n/a
2020	B	6	19.4	11.8	25.4	n/a	n/a

A summary of mean, minimum and maximum specific conductance (micro-ohms/cm, µS/cm) values at Friends of Merrymeeting Bay monitoring site: ABK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2019	B	6	1144	57	2716	n/a	n/a
2020	B	4	603	70	1450	n/a	n/a

A summary of mean, minimum and maximum salinity (PPTH) values at Friends of Merrymeeting Bay monitoring site: ABK							
Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2018	B	3	1.1	0.6	1.8	n/a	n/a
2019	B	2	0.5	0.2	0.8	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 ml) values at Friends of Merrymeeting Bay monitoring site: ABK								
Year	Class	Bacteria Type	# Sample Points	Geo-Mean	Minimum	Maximum	Criterion (Insta/geo)	# Exceeding Criterion
2018	B	E. Coli	6	32	12	74	236/64	0/0
2019	B	E. Coli	6	10	<1	44	236/64	0/0
2020	B	E. Coli	6	12	8	23	236/64	0/0

Appendix A

* Sampling depths are only reported for Tier 1 VRMP sites.

** "N/A" = normal environmental sample ; "D" = field duplicate; "L" = lab duplicate.

*** D.O. = dissolved oxygen; "Spec. Cond" = specific conductance; "TDS" = Total dissolved solids; "TSS" = total suspended solids."

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	*** D.O. (MG/L)	*** D.O. Sat. (%)	*** Spec. Cond. (US/CM)	Salinity (PPTH)	Turbidity (NTU)	*** TDS (MG/L)	*** TSS (MG/L)	E. coli Bacteria (MPN/100ML)	Enterococci (MPN/100ML)
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Androscoggin River & Kennebec River - Friends of Merrymeeting Bay: Approved Sites

BCP	ANDROSCOGGIN RIVER - A06 - VRMP	5/17/2020	7:25 AM	NA			11.6	11.6	106.1	60					31.7	
BCP	ANDROSCOGGIN RIVER - A06 - VRMP	6/14/2020	7:40 AM	NA			19.5	8.2	90.1	90					22.1	
BCP	ANDROSCOGGIN RIVER - A06 - VRMP	7/12/2020	7:30 AM	NA			24.0	8.0	95.1	60					61.3	
BCP	ANDROSCOGGIN RIVER - A06 - VRMP	8/16/2020	7:30 AM	NA			25.0	8.3	108.0	90					18.7	
BCP	ANDROSCOGGIN RIVER - A06 - VRMP	9/13/2020	7:15 AM	NA			21.0	8.4	93.6	120					18.7	
BCP	ANDROSCOGGIN RIVER - A06 - VRMP	10/10/2020	7:28 AM	NA			15.0	9.6	94.2	140					20.1	
BWS	ANDROSCOGGIN RIVER - A-09 - VRMP	5/17/2020	7:10 AM	NA			11.6	11.9	107.3	140					21.3	
BWS	ANDROSCOGGIN RIVER - A-09 - VRMP	6/14/2020	7:25 AM	NA			19.4	8.3	91.0	90					19.9	
BWS	ANDROSCOGGIN RIVER - A-09 - VRMP	7/12/2020	7:10 AM	NA			24.0	8.5	99.9	60					50.4	
BWS	ANDROSCOGGIN RIVER - A-09 - VRMP	8/16/2020	7:06 AM	NA			25.0	8.4	102.3	100					24.6	
BWS	ANDROSCOGGIN RIVER - A-09 - VRMP	9/13/2020	7:00 AM	NA			21.0	8.6	96.8	110					23.1	
BWS	ANDROSCOGGIN RIVER - A-09 - VRMP	10/10/2020	7:18 AM	NA			15.0	9.8	97.7	130					18.7	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	5/17/2020	10:50	NA											8.6	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	6/14/2020	8:40	NA											20.3	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	6/14/2020	8:40	D											12	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	7/12/2020	8:40 AM	NA											52.9	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	8/16/2020	7:30 AM	NA											4.1	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	9/13/2020	7:55 AM	NA											9.7	
DBN	ANDROSCOGGIN RIVER - A149 - VRMP	10/11/2020	10:30 AM	NA											365.4	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	5/17/2020	6:55 AM	NA			11.2	10.7	97.5	62					28.8	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	6/14/2020	6:45 AM	NA			20.3	7.3	81.5	85					10.9	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	7/12/2020	6:58 AM	NA			24.1	7.5	90.2	64					67	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	8/16/2020		NA			25.4	7.8	94.8	85					6.3	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	9/13/2020	7:15 AM	NA			20.9	7.6	85.5	107					42.8	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	10/11/2020	7:55 AM	NA			14.0	9.4	91.0	120					49.6	

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	*** D.O. (MG/L)	*** D.O. Sat. (%)	*** Spec. Cond. (US/CM)	Salinity (PPTH)	Turbidity (NTU)	*** TDS (MG/L)	*** TSS (MG/L)	E. coli Bacteria (MPN/100ML)	Enterococci (MPN/100ML)
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	5/17/2020	6:33 AM	NA			11.2	10.7	98.3	61					29.2	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	6/14/2020	6:20 AM	NA			20.4	7.5	84.1	83					9.7	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	7/12/2020	6:19 AM	NA			24.1	7.4	88.9	64					86.2	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	8/16/2020		NA			25.8	7.7	96.2	82					10.9	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	9/13/2020	6:55 AM	NA			21.3	8.0	90.1	103					24.1	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	10/11/2020	7:40 AM	NA			14.5	9.3	93.5	120					33.6	
IVL	ANDROSCOGGIN RIVER - A-45 -VRMP	5/17/2020	6:55 AM	NA			10.6	11.8	106.9	60					39.7	
IVL	ANDROSCOGGIN RIVER - A-45 -VRMP	6/14/2020	6:58 AM	NA			19.3	8.3	90.2	90					9.8	
IVL	ANDROSCOGGIN RIVER - A-45 -VRMP	7/12/2020	6:45 AM	NA			24.0	8.2	97.7	60					31.8	
IVL	ANDROSCOGGIN RIVER - A-45 -VRMP	8/16/2020	6:40 AM	NA			25.0	8.1	97.7	90					58.3	
IVL	ANDROSCOGGIN RIVER - A-45 -VRMP	9/13/2020	6:37 AM	NA			21.0	8.2	92.0	110					14.6	
IVL	ANDROSCOGGIN RIVER - A-45 -VRMP	10/10/2020	6:50 AM	NA			15.0	9.5	93.8	130					51.2	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	5/17/2020	6:20 AM	NA			11.2	10.7	98.3	62					25.5	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	6/14/2020	6:07 AM	NA			23.4	7.6	83.5	82					11	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	7/12/2020	6:06 AM	NA			24.1	7.6	89.1	62					45.5	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	8/16/2020		NA			25.6	8.1	97.4	83					7.5	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	9/13/2020	6:43 AM	NA			21.1	8.0	88.9	105					8.6	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	10/11/2020	7:30 AM	NA			14.5	9.0	88.2	130					64.7	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	5/17/2020	5:53 AM	NA			11.2	11.0	100.1	63					58.1	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	6/14/2020	5:44 AM	NA			19.9	8.1	88.5	87					10.8	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	7/12/2020	5:37 AM	NA			23.4	7.7	91.2	68					579.4	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	8/16/2020		NA			24.4	8.1	97.0	93					41.4	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	9/13/2020	6:14 AM	NA			20.5	8.6	95.1	112					27.5	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	10/11/2020	7:00 AM	NA			14.7	9.0	89.3	130					1413.6	
GRK	KENNEBEC RIVER - K-100 - VRMP	5/17/2020	7:20 AM	NA			10.4	11.3	98.4	70					20.1	
GRK	KENNEBEC RIVER - K-100 - VRMP	6/14/2020	7:18 AM	NA			19.7	7.3	81.2	90					8.4	
GRK	KENNEBEC RIVER - K-100 - VRMP	7/12/2020	7:15 AM	NA			24.2	7.7	94.6	90					44.8	
GRK	KENNEBEC RIVER - K-100 - VRMP	8/16/2020	7:00 AM	NA			23.2	7.7	93.1	100					18.5	
GRK	KENNEBEC RIVER - K-100 - VRMP	9/13/2020	7:15 AM	NA			20.3	7.5	82.3	130					16.1	
GRK	KENNEBEC RIVER - K-100 - VRMP	10/11/2020	7:20 AM	NA			13.9	9.1	90.3	110					146.4	
ABK	KENNEBEC RIVER - K-269 - VRMP	5/17/2020	7:40 AM	NA			11.8	10.9	100.9	70					12	
ABK	KENNEBEC RIVER - K-269 - VRMP	6/14/2020	7:25 AM	NA			19.2	8.9	96.8	640					8.5	
ABK	KENNEBEC RIVER - K-269 - VRMP	7/12/2020	7:20 AM	NA			24.4	7.6	90.8	250					16.1	
ABK	KENNEBEC RIVER - K-269 - VRMP	8/16/2020	6:45 AM	NA			25.4	6.8	82.1	1450					23.1	
ABK	KENNEBEC RIVER - K-269 - VRMP	9/13/2020	7:50 AM	NA			20.6	7.8	86.4						7.5	
ABK	KENNEBEC RIVER - K-269 - VRMP	10/11/2020	6:30 AM	NA			14.8	9.2	93.6						9.7	
HKN	KENNEBEC RIVER - K-55 - VRMP	6/14/2020	7:40 AM	NA			19.2	7.4	82.0	90					8.4	
HKN	KENNEBEC RIVER - K-55 - VRMP	7/12/2020	7:45 AM	NA			24.2	7.7	94.4	90					24.3	
HKN	KENNEBEC RIVER - K-55 - VRMP	8/16/2020	7:26 AM	NA			24.6	7.0	85.3	100					22.6	
HKN	KENNEBEC RIVER - K-55 - VRMP	9/13/2020	7:45 AM	NA			18.7	6.9	75.0	130					41.4	
HKN	KENNEBEC RIVER - K-55 - VRMP	10/11/2020	7:50 AM	NA			14.0	8.8	87.5	120					547.5	
HLK	KENNEBEC RIVER - K-58 - VRMP	5/17/2020	7:40 AM	NA			10.2	11.2	97.8	60					21.3	