

Section 5-4 Kennebunk River (Mousam and Kennebunk Rivers Alliance)

Kennebunk River

Kennebunk River is 15 miles long and originates at Kennebunk Pond in Lyman. The East Outlet drains to Lords Brook and the West Outlet drains to Sunken Branch Brook. Carlisle Brook and Goff Mill Brook drain directly to Kennebunk River. The river continues flowing through Arundel and Kennebunk before discharging to the Gulf of Maine in Kennebunkport at Goochs Beach. Other major tributaries include Duck Brook and Ward Brook.

The statutory class of the Kennebunk River and tributaries is Class B. Below head of tide, the river is Class SB. The primary impacts to the river are from development, recreational use, and agriculture. Kennebunk River is listed by the Department of Environmental Protection (DEP) as impaired for bacteria.

Monitoring History

- The Maine DEP Biological Monitoring Program has been monitoring the river since 1995. Monitoring data has been collected on the mainstem as well as Carlisle Brook, Lords Brook and Ward Brook. This data is available on DEP's website.
- The Mousam and Kennebunk River Alliance (MKA) began in 2009 with assistance from the Wells National Estuarine Research Reserve (NERR) and Maine Rivers for the purpose of monitoring the Kennebunk and Mousam rivers. MKA joined the Volunteer River Monitoring Program (VRMP) in 2009.
- Maine DEP's Integrated Water Quality Report lists Kennebunk River (Kennebunk Landing to Goochs Beach) and Duck Brook and tributaries as impaired for *Escherichia coli* bacteria.
- In 2012, MKA partnered with the DEP TMDL Streams staff to monitor bacteria in Duck Brook. The report is available from DEP.
- In 2017, MKA added five new sampling stations further upstream (KB-11 to KB-15) to obtain additional bacteria data further up in the watershed.

Methods and Sampling Sites

Volunteers monitor the Kennebunk River at five sites on the mainstem and six tributaries. Two sites are below head of tide and nine are freshwater sites. All of the sites are VRMP approved sites.

Monitoring is conducted biweekly from June to September. 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 and salinity is measured at the tidal sites. Grab samples for *E. coli* are collected at the freshwater sites and Enterococci bacteria at the tidal sites.

Kennebunk River Sampling Sites

Mousam and Kennebunk Rivers Alliance

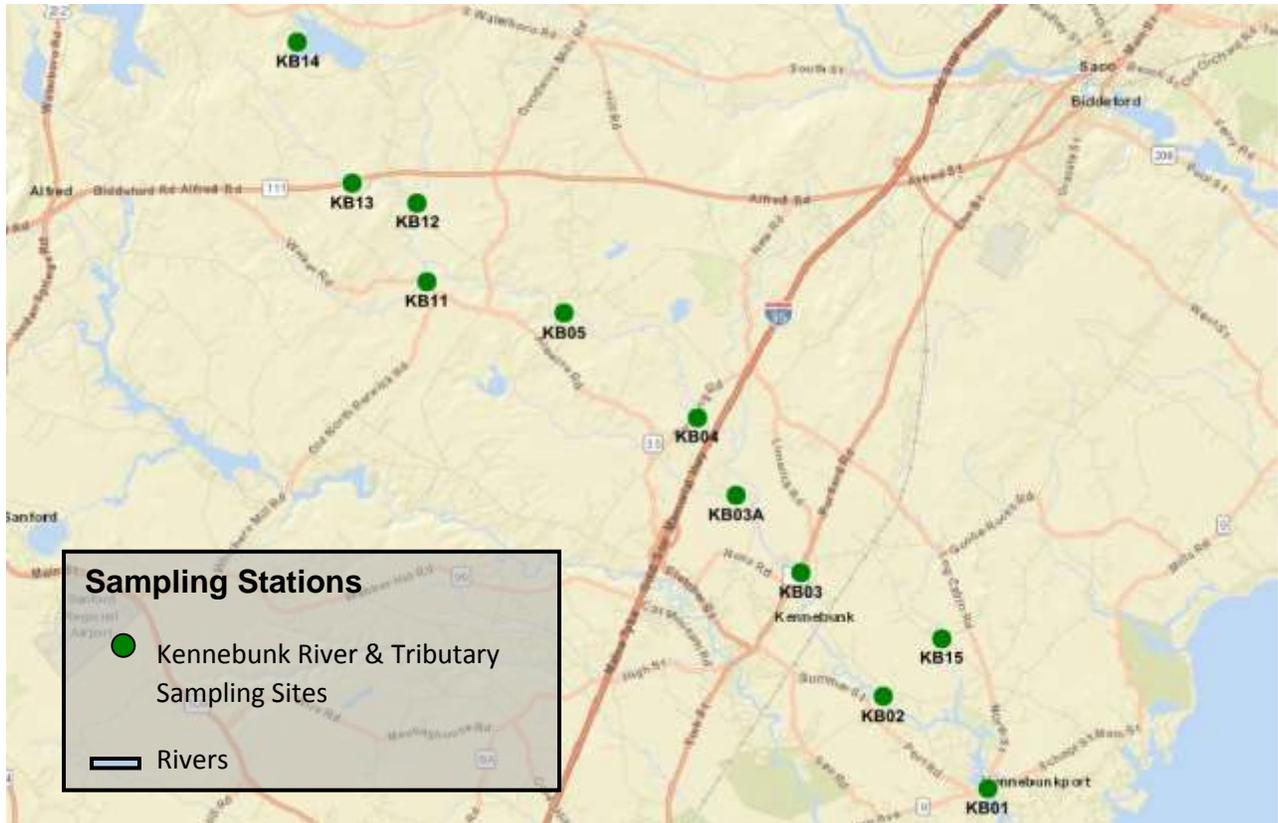


Figure 5-4-1: Map of Mousam and Kennebunk Rivers Alliance sampling sites on the Kennebunk River.

Table 5-4-1: Mousam and Kennebunk Rivers Alliance sampling sites on the Kennebunk River.

VRMP Site ID	Organization Site Code	Sample Location	Class
Kennebunk River - SKE11 - VRMP	KB-01	Route 9 Bridge	SB
Kennebunk River - SKE35 - VRMP	KB-02	Durrell's Bridge	SB
Kennebunk River - SKE66 - VRMP	KB-03	Route 1 Bridge	B
Kennebunk River - SKE103 - VRMP	KB-04	Downing Road	B
Kennebunk River - SKE148 - VRMP	KB-05	Perkins Lane	B
Ward Brook - SKEWD04 - VRMP	KB-03A	Emmons Road	B
Carlisle Brook-SKECA04-VRMP	KB-11	Walker Road	B
Lords Brook-SKELD09-VRMP	KB-12	Day Road	B
Sunken Branch Brook-SKELDSN16-VRMP	KB-13	Route 111	B
West Outlet-SKELDSNW010-VRMP	KB-14	West Outlet-Kennebunk Pond	B
Goff Mill Brook-SKEGF15-VRMP	KB-15	Sinnott Road	B

Results

Refer to Appendix A for discussion of individual site data and trends.

Dissolved Oxygen

Dissolved oxygen levels are generally lowest early in the morning and then increase during the day, peaking mid to late afternoon. Monitors should try to collect some samples early in the morning. 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 B criteria for dissolved oxygen are a minimum of 7 mg/l (milligrams/liter) or 75% saturation. To meet water quality criteria, both concentration and saturation criterion must be met. Class SB criterion for dissolved oxygen is 85% saturation.

2017 Results

Dissolved oxygen (DO) was measured three-eight times at each sampling site. At the main stem freshwater sites (KB-03, KB-04, & KB-05), Class B criterion of 7 mg/l was met for all sites and dates except for 1 date in August at site KB-04. The percent saturation criterion of 75% was met for all sites and dates, except at site KB-04 when saturation was slightly below criterion for the 2 August dates. At the tidal sites, site KB-01 met the Class SB criterion of 85% for all dates and site KB-02 met this criterion for all dates, except in August when saturation was slightly below the criterion. At the freshwater tributary sites, site KB-03A had 1 date when % saturation was slightly

below criterion, site KB-11 had 3 dates when concentration was slightly below criterion (6-7 mg/l) and site KB-12 met all criteria for both DO concentration and % saturation. Sites KB-13, KB-14, and KB-15 had 5-8 dates when DO concentration was below criterion and 3-8 dates when saturation was below criterion. Dissolved oxygen at site KB-13 was very low most of the summer; and sites KB-14 and KB-15 had 2-3 very low values.

Overall, dissolved oxygen was good to excellent for the freshwater and tidal mainstem sites. The tributary sites ranged from poor to excellent. The low dissolved oxygen levels at some of these sites may have been due in part to the lack of rain and low flow conditions. The monitors did obtain some early morning measurements (before 8:00 am). However, since one monitoring team does all the mainstem sites and one does the all the tributary sites, it is difficult to get to all the sites early.

Table 5-4-2: A summary of minimum, maximum, and mean dissolved oxygen concentration (mg/l) values at Mousam and Kennebunk Rivers Alliance monitoring sites on the Kennebunk River and tributaries.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
KB-01	SB	7	9.3	8.1	10.5	n/a	n/a
KB-02	SB	7	7.8	6.6	10.2	n/a	n/a
KB-03	B	3	9.9	8.9	10.5	7ppm	0
KB-03A	B	7	8.8	7.3	10.5	7ppm	0
KB-04	B	7	7.8	6.8	10.2	7ppm	1
KB-05	B	7	9.1	8.3	10.5	7ppm	0
KB-11	B	8	7.4	6.1	8.4	7ppm	3
KB-12	B	8	9.3	8.8	9.8	7ppm	0
KB-13	B	8	4.2	2.6	6.5	7ppm	8
KB-14	B	8	6.5	3.9	9.1	7ppm	5
KB-15	B	8	6.4	3.9	9.0	7ppm	6

Table 5-4-3: A summary of minimum, maximum, and mean dissolved oxygen saturation (%) values at Mousam and Kennebunk Rivers Alliance monitoring sites on the Kennebunk River and tributaries.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
KB-01	SB	7	107.3	96.6	115.0	85%	0
KB-02	SB	7	91.2	79.3	105.0	85%	2
KB-03	B	3	106.5	100.0	118.0	75%	0
KB-03A	B	7	89.4	73.5	105.0	75%	1
KB-04	B	7	83.4	71.5	105.0	75%	2
KB-05	B	7	93.4	85.3	100.0	75%	0
KB-11	B	8	76.0	64.6	88.6	75%	3
KB-12	B	8	93.5	89.3	102.8	75%	0
KB-13	B	8	44.8	29.4	74.3	75%	8

KB-14	B	8	75.1	42.2	107.9	75%	3
KB-15	B	8	67.7	46.6	95.8	75%	6

Figure 5-4-2: Graph of dissolved oxygen concentrations (mainstem)

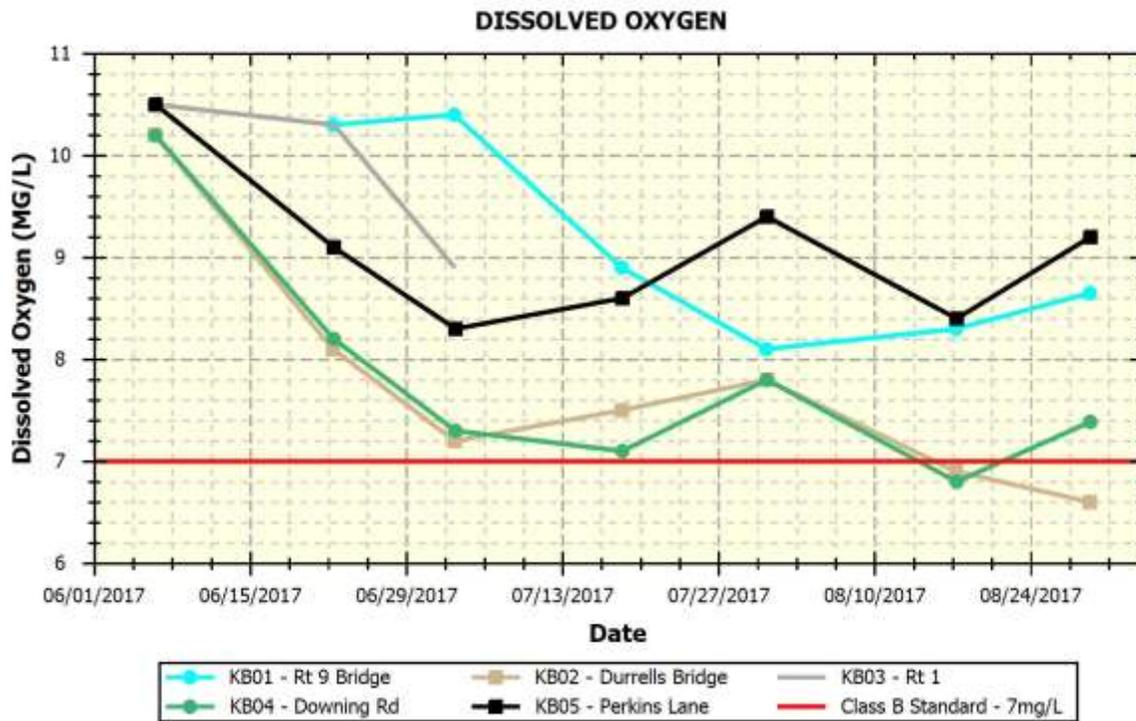


Figure 5-4-3: Graph of dissolved oxygen concentrations (tributaries)

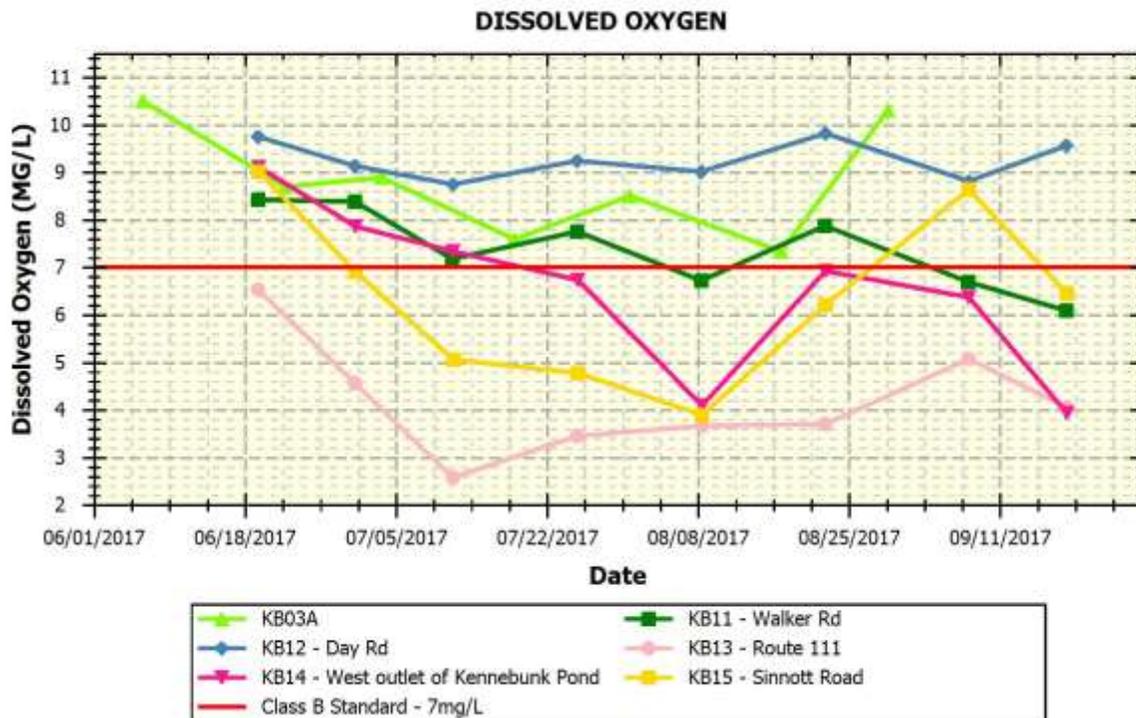


Figure 5-4-4: Graph of dissolved oxygen saturation (mainstem)

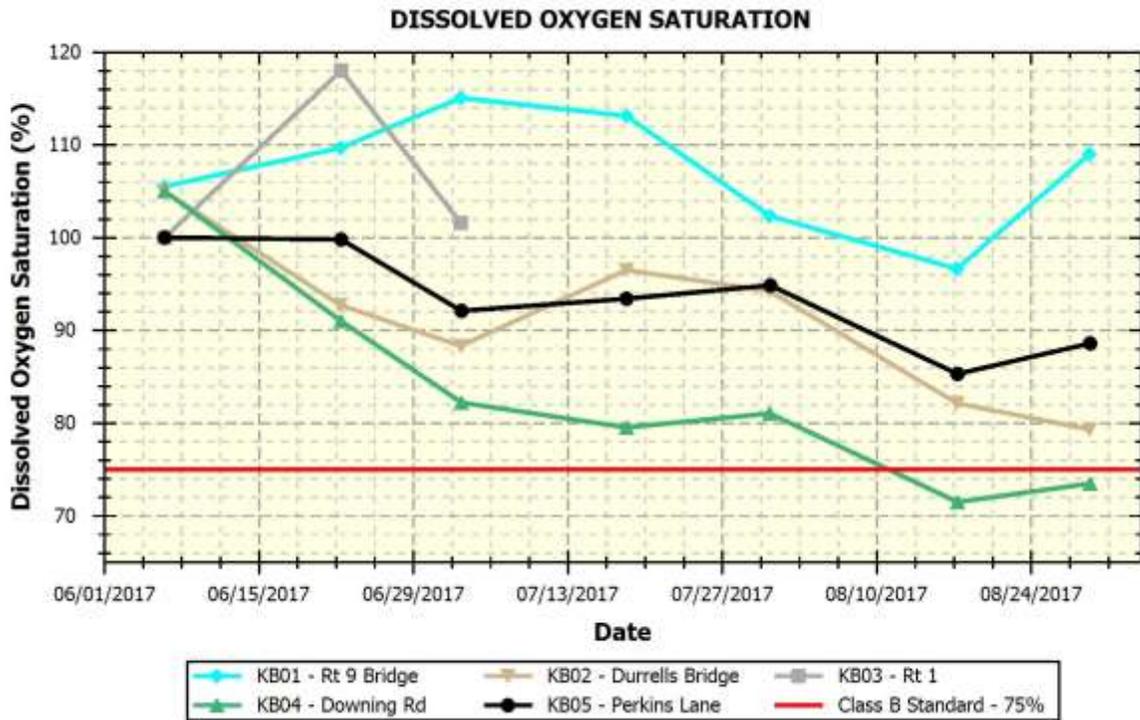
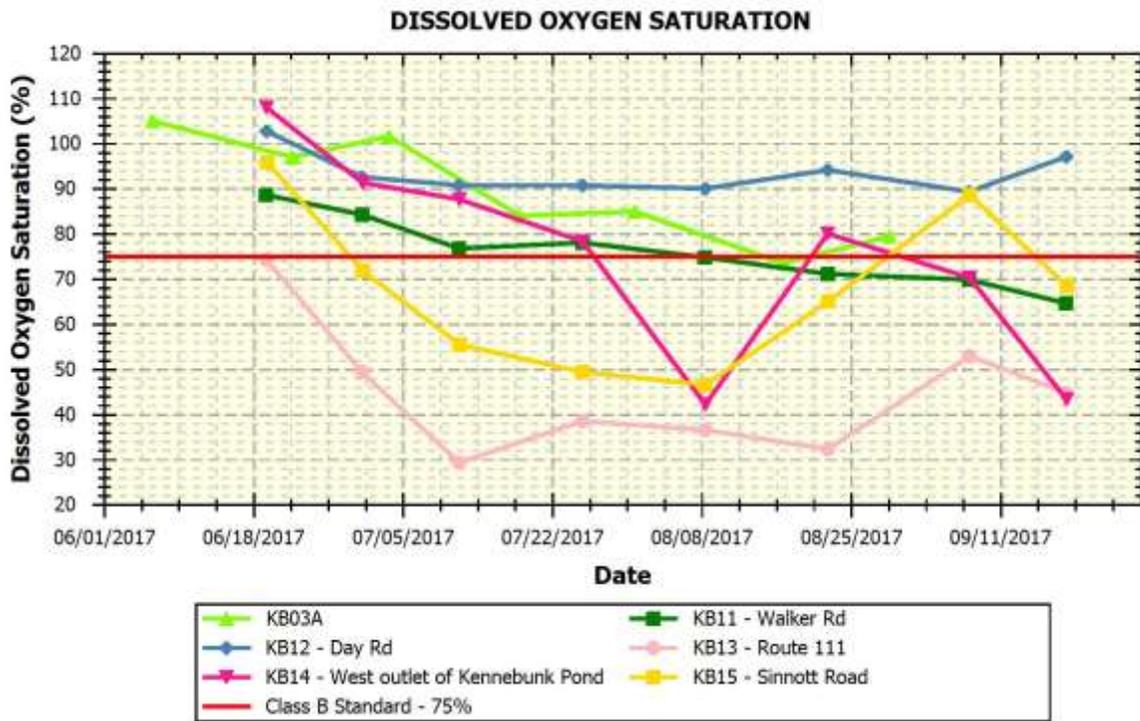


Figure 5-4-5: Graph of dissolved oxygen saturation (tributaries)



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.

2017 Results

Temperatures at the freshwater mainstem sites were all similar and followed the same pattern. The tidal sites were quite different with site KB-01 being the coldest site overall (mean temperature 14.4 °C) and site KB-02 being the warmer (mean temperature of 18.3 °C). Temperature at the mainstem sites is good to excellent. Temperatures at the tributary sites were all similar and followed the same pattern except for site KB-14 which was quite a bit warmer. This site is the West Outlet of Kennebunk Pond so it is expected that temperatures would be elevated there. Overall, temperatures at the tributary sites were excellent, except for site KB-14 which was poor to fair.

Table 5-4-4: A summary of minimum, maximum, and mean water temperature (°C) values at Mousam and Kennebunk Rivers Alliance monitoring sites on the Kennebunk River and tributary.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Exceeding Criterion
KB-01	SB	7	14.4	11.1	18.3	n/a	n/a
KB-02	SB	7	18.3	13.2	21.1	n/a	n/a
KB-03	B	3	18.9	13.0	22.1	n/a	n/a
KB-03A	B	7	16.9	12.3	20.7	n/a	n/a
KB-04	B	7	17.8	12.7	21.2	n/a	n/a
KB-05	B	7	17.0	12.4	20.6	n/a	n/a
KB-11	B	8	17.0	15.3	18.3	n/a	n/a
KB-12	B	8	16.2	14.6	17.8	n/a	n/a
KB-13	B	7	19.5	17.4	22.0	n/a	n/a
KB-14	B	8	22.0	19.9	24.4	n/a	n/a
KB-15	B	8	18.0	16.5	19.2	n/a	n/a

Figure 5-4-6: Graph of water temperature (mainstem)

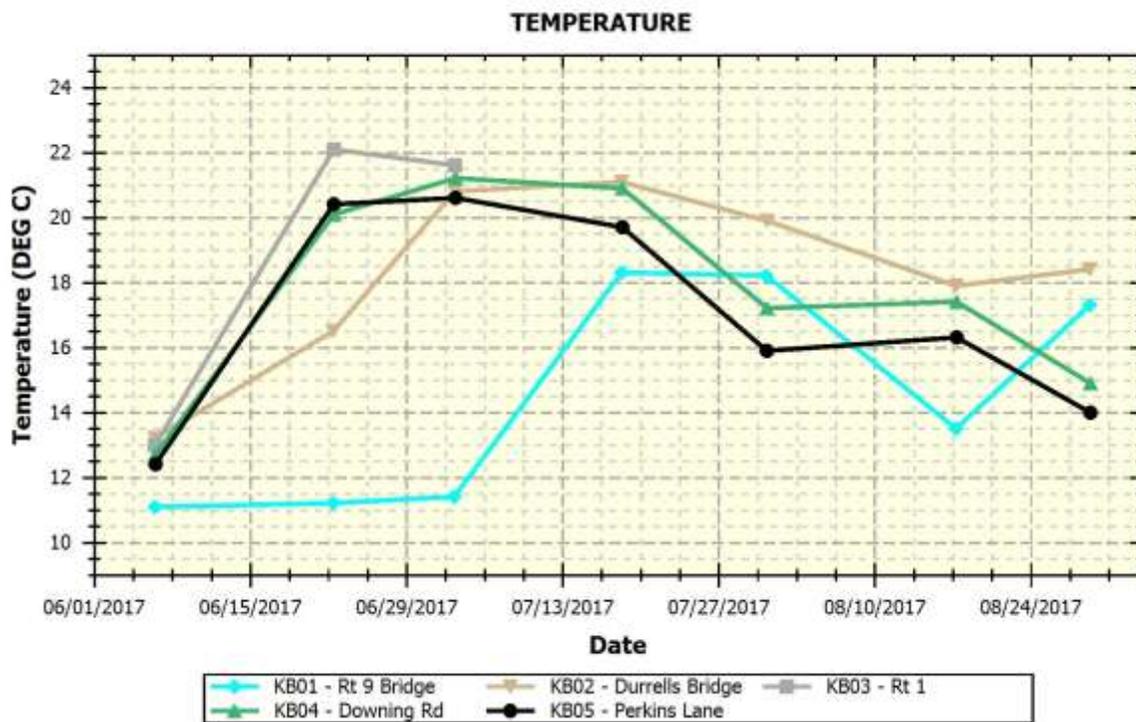
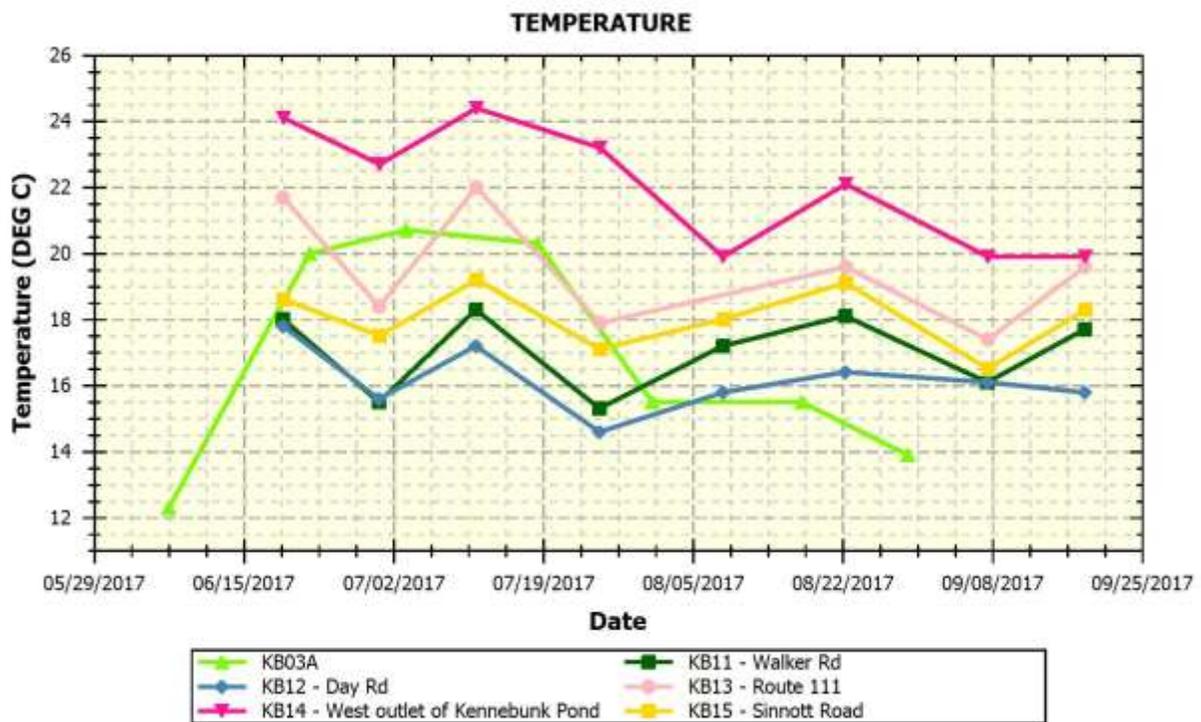


Figure 5-4-7: Graph of water temperature (tributaries)



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.

2017 Results

Specific conductance at the freshwater mainstem sites (KB-04 and KB-05) were low overall. The tributary sites were very similar with the exception of site KB-15 which was somewhat higher. Overall, specific conductance at the freshwater sites is good-excellent.

Table 5-4-5: A summary of minimum, maximum, and mean specific conductance ($\mu\text{S}/\text{cm}$) values at Mousam and Kennebunk Rivers Alliance monitoring sites on the Kennebunk River and tributary.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Exceeding Criterion
KB-01	SB	-	-	-	-	n/a	n/a
KB-02	SB	-	-	-	-	n/a	n/a
KB-03	B	1	117	117	117	n/a	n/a
KB-03A	B	6	117	89	130	n/a	n/a
KB-04	B	6	116	93	131	n/a	n/a
KB-05	B	6	106	86	121	n/a	n/a
KB-11	B	8	80	64	91	n/a	n/a
KB-12	B	8	107	91	124	n/a	n/a
KB-13	B	8	81	72	90	n/a	n/a
KB-14	B	8	93	87	109	n/a	n/a
KB-15	B	8	164	135	193	n/a	n/a

Figure 5-4-8: Graph of specific conductance (mainstem)

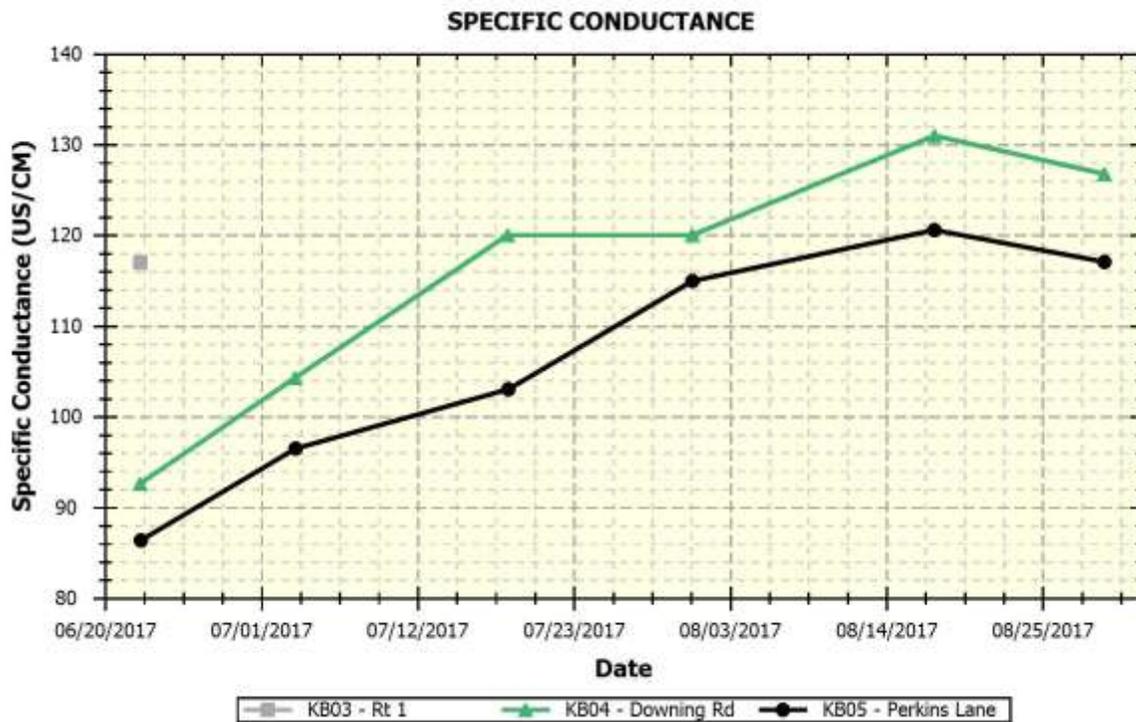
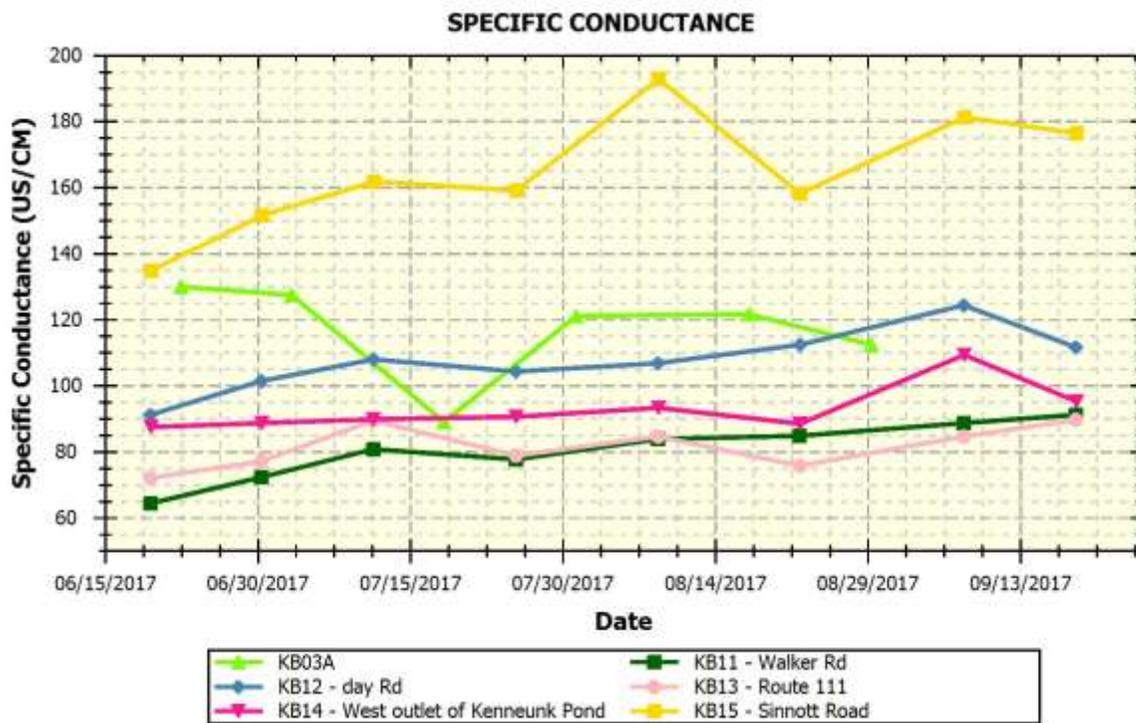


Figure 5-4-9: Graph of specific conductance (tributaries)



Bacteria

Enterococci bacteria are used as the indicator organism for marine waters and *E. coli* bacteria are used for freshwaters. While these types of bacteria are not pathogens, their presence in the water may indicate the presence of other organisms including bacteria and viruses that can cause gastrointestinal illnesses. Monitoring should include at least six samples and include a mix of dry and storm event sampling.

Class B criteria for bacteria are as follows: “Between May 15th and Sept 30th, *E. coli* of human and domestic origin shall not exceed a geometric mean of 64/100 ml (milliliters) or an instantaneous level of 236/100 ml.” Class SB criteria are as follows: “Between May 15th and September 30th, the numbers of Enterococcus bacteria of human and domestic animal origin in these waters may not exceed a geometric mean of 8 per 100 milliliters or an instantaneous level of 54 per 100 milliliters.” Geometric means are calculated instead of average because it is more appropriate to use this calculation for something like bacteria where there may be one or more very high or low values that can skew the mean

2017 Results

The freshwater mainstem sites (KB-03, KB-04 & KB-05) exceeded the Class B instantaneous criterion for E. Coli of 236 MPN/100 ml on 1-3 sampling dates in June and July. The highest values occurred on 6/22/17 when values ranged from 1046-2420 MPN/100 ml at these 3 sites. At the tidal mainstem sites (KB-01 & KB-02), Class SB criterion for Enterococci (54 MPN/100ml) was exceeded in 1-2 sampling dates in June, July and August. The geometric mean for all the mainstem freshwater and tidal sites were exceeded. The freshwater tributary sites exceeded Class B instantaneous criterion for E. Coli of 236 MPN/100 ml on 1-3 dates. Site KB-03A exceeded this criterion on 2 dates in June and July which did not seem to coincide with a rain event. Sites KB-11 and KB-12 had 3 exceedances. Heavy rain occurred on 7/25/17 and 8/8/17 which coincides with some of the high values. Sites KB-13, KB-14, and KB-15 exceeded instantaneous criterion on 1-2 dates. These mostly coincided with heavy rain events. All the freshwater tributaries exceeded the geometric mean criterion of 64 MPN/100 ml except site KB-14. Overall, bacteria ranges from fair to good for all the sites.

Table 5-4-6: A summary of minimum, maximum, and geometric means for bacteria (MPN/100 mL) values at Mousam and Kennebunk Rivers Alliance monitoring sites on the Kennebunk River and tributary.

Site	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion (Insta/geo)	# Exceeding Criterion
KB-01	SB	Enterococci	6	18	10	63	54/8	1
KB-02	SB	Enterococci	6	65	30	272	54/8	2
KB-03	B	E. Coli	4	291	115	1046	236/64	2
KB-03A	B	E. Coli	5	313	118	1414	236/64	1
KB-04	B	E. Coli	6	295	122	2420	236/64	3
KB-05	B	E. Coli	6	207	102	1553	236/64	1
KB-11	B	E. Coli	6	344	179	1300	236/64	3
KB-12	B	E. Coli	6	284	98	613	236/64	3
KB-13	B	E. Coli	6	71	29	276	236/64	1
KB-14	B	E. Coli	6	10	1	345	236/64	1
KB-15	B	E. Coli	6	179	72	517	236/64	2

*KB-01 geometric mean calculation includes two samples points below the minimum reporting limit (<10-10 was used as the value. KB-14 includes one sample point below the minimum reporting limit (<1-1 was used as the value.

Figure 5-4-10: Graph of *E. coli* (MPN/100ml) (mainstem)

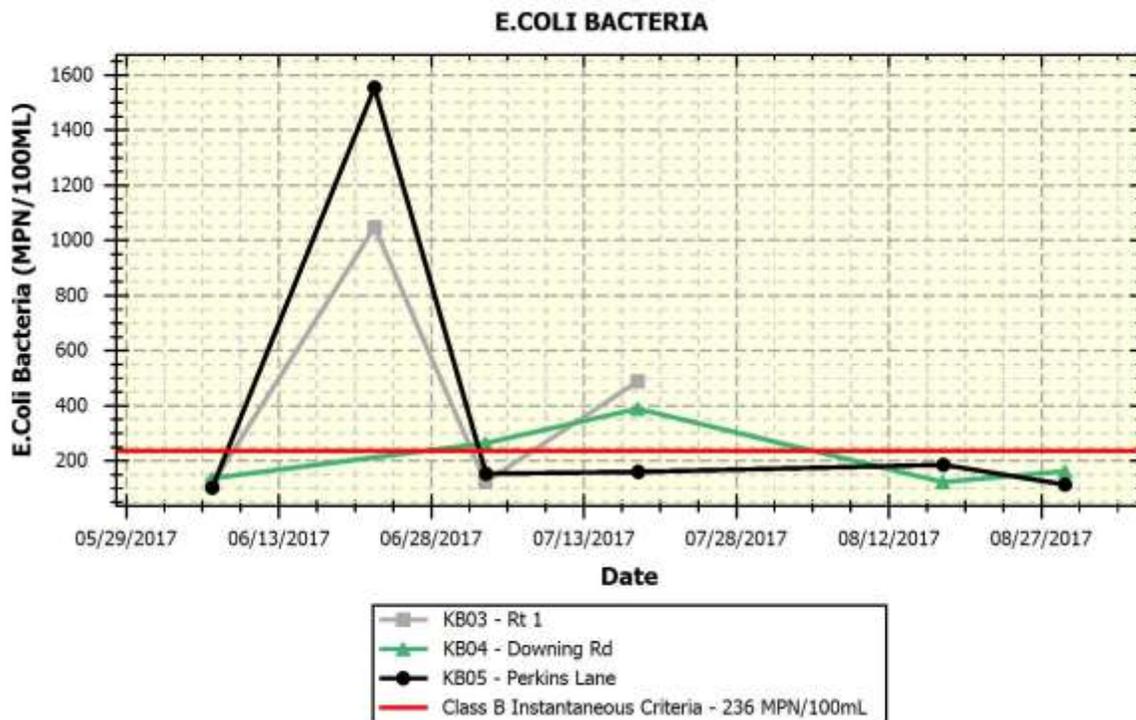


Figure 5-4-11: Graph of Enterococcus (MPN/100ml) (mainstem)

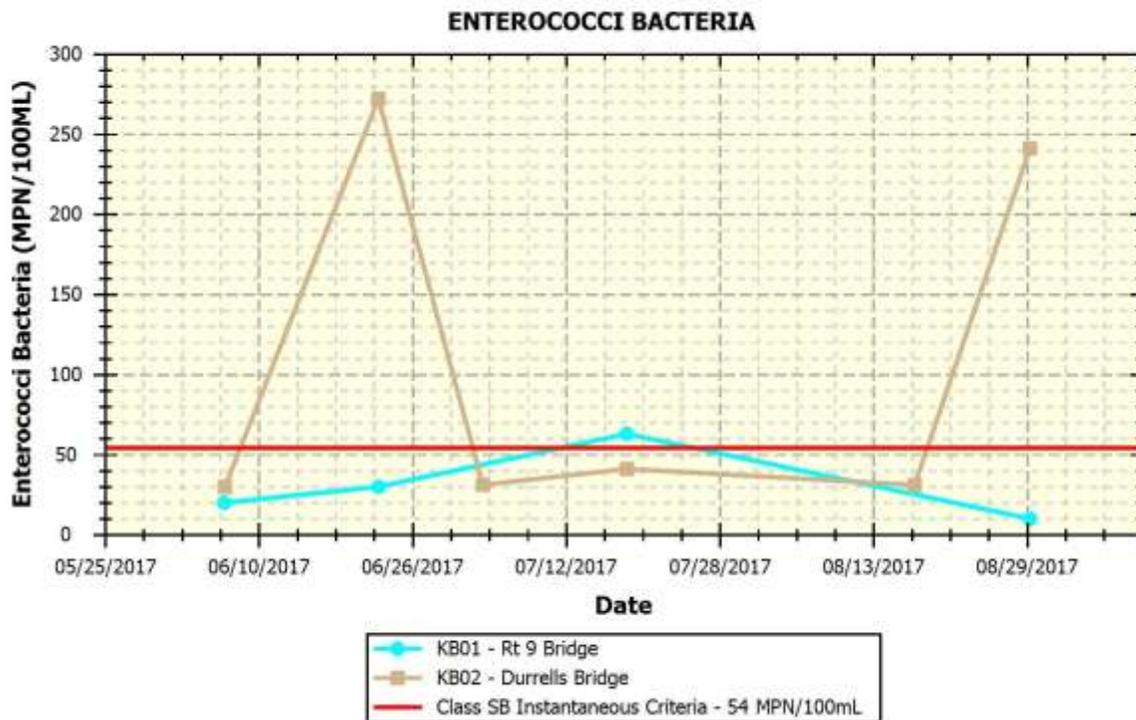
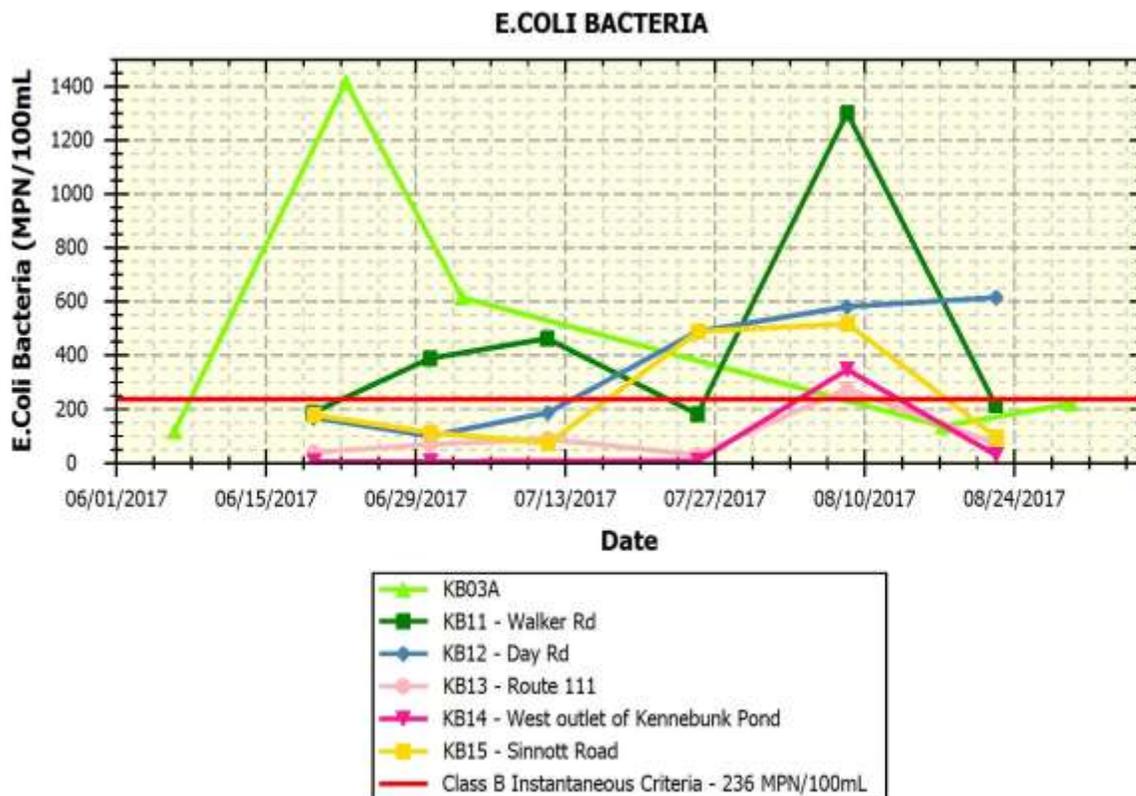


Figure 5-4-12: Graph of *E. coli* (MPN/100ml) (tributaries)



Discussion and Recommendations

There are numerous sources of pollution and other stresses to the Kennebunk River sites monitored by the Mousam and Kennebunk Rivers Alliance that could potentially have an impact on water quality. Some of those sources of pollution and stresses may include:

- Non-point source pollution (e.g., septic systems, eroded soil, fertilizers, pesticides, heavy metals, petroleum residues, road salt, wildlife and pet feces) and polluted stormwater originating from urban impervious surfaces (e.g., streets, parking lots, driveways, roofs), agriculture, and forestry.
- Ponds and impoundments (which often create more pond-like aquatic habitat conditions that may have higher water temperatures and lower dissolved oxygen concentrations than free-flowing waters).
- Natural effects of wetlands (such as contributing waters to a stream or river that have low dissolved oxygen levels due to the decomposition of large amounts of organic matter, respiration of abundant plant matter, and low re-aeration rates that is characteristic of many wetlands).

The following are recommendations for future monitoring:

- **The monitors should continue to include early morning measurements for dissolved oxygen. It is important to get some values early in the morning (before 8:00 am), particularly during the warmer summer months. Over a 24-hour period, the lowest readings occur in the early morning and highest readings in mid to late afternoon. This occurs because oxygen is used up during the night due to plant respiration and during the day, plant life is photosynthesizing, producing oxygen.**
- **The VRMP, Healthy Beaches Program staff, DEP monitoring staff, Wells NERR staff and volunteers should continue to work on bacteria monitoring. Efforts should also continue on tracking down potential bacteria sources. Healthy Beaches Program staff should perhaps continue with bacteria sampling at the sites below head of tide to provide some continuity at those locations.**
- **Bacteria sampling should include samples obtained during both baseflow and storm events.**
- **Continue monitoring at all stations to develop a long-term trend database.**

Appendix A

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

** "N/A" = normal environmental sample ; "D" = field 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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Kennebunk River & Tributaries - Mousam-Kennebunk Alliance: Approved Sites

KB-11	CARLISLE BROOK-SKECA04-VRMP	6/19/2017	10:00 AM	NA			18.0	8.4	88.6	64.4					185	
KB-11	CARLISLE BROOK-SKECA04-VRMP	6/19/2017	10:00 AM	L											148	
KB-11	CARLISLE BROOK-SKECA04-VRMP	6/30/2017	8:10 AM	NA			15.5	8.4	84.2	72.3					387	
KB-11	CARLISLE BROOK-SKECA04-VRMP	6/30/2017	8:10 AM	L											260	
KB-11	CARLISLE BROOK-SKECA04-VRMP	7/11/2017	8:10 AM	NA			18.3	7.2	76.8	80.7					461	
KB-11	CARLISLE BROOK-SKECA04-VRMP	7/25/2017	9:00 AM	NA			15.3	7.8	78.0	77.7					179	
KB-11	CARLISLE BROOK-SKECA04-VRMP	7/25/2017	9:00 AM	L											192	
KB-11	CARLISLE BROOK-SKECA04-VRMP	7/25/2017	9:00 AM	D			15.3	7.8	78.2	78.7					238	
KB-11	CARLISLE BROOK-SKECA04-VRMP	8/8/2017	8:30 AM	NA											1300	
KB-11	CARLISLE BROOK-SKECA04-VRMP	8/8/2017	8:34 AM	NA			17.2	6.7	74.8	83.8						
KB-11	CARLISLE BROOK-SKECA04-VRMP	8/22/2017	6:46 AM	NA			18.1	7.9	71.2	84.8					214	
KB-11	CARLISLE BROOK-SKECA04-VRMP	9/7/2017	9:45 AM	NA			16.1	6.7	69.9	88.7						
KB-11	CARLISLE BROOK-SKECA04-VRMP	9/18/2017	10:30 AM	NA			17.7	6.1	64.6	91.1						
KB-11	CARLISLE BROOK-SKECA04-VRMP	9/18/2017	10:30 AM	D			17.7	6.2	64.2	91.2						
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	6/19/2017	12:10 PM	NA			18.6	9.0	95.8	134.8					178	
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	6/30/2017	10:00 AM	NA			17.5	6.9	71.9	151.6					111	
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	7/11/2017	10:25 AM	NA			19.2	5.1	55.5	161.8					72	
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	7/25/2017	10:20 AM	NA			17.1	4.8	49.4	159.1					488	
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	8/8/2017	10:19 AM	NA			18.0	3.9	46.6	192.8						
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	8/8/2017	10:20 AM	NA											517	
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	8/22/2017	8:35 AM	NA			19.1	6.2	65.1	158.1					93	
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	9/7/2017	11:35 AM	NA			16.5	8.6	88.6	181.3						
KB-15	GOFF MILL BROOK-SKEGF15-VRMP	9/18/2017	12:48 PM	NA			18.3	6.5	68.4	176.5						
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	6/6/2017	11:40 AM	NA			12.7	10.2	105.0						137	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	6/22/2017	11:32 AM	NA											>2420	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	6/22/2017	11:35 AM	NA			20.1	8.2	91.0	92.6						
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	7/3/2017	8:55 AM	NA			21.2	7.3	82.2	104.3					262	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	7/18/2017	8:15 AM	NA			20.9	7.1	79.5	120					387	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	7/31/2017	8:05 AM	NA			17.2	7.8	81.0	120						
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/17/2017	8:10 AM	NA			17.4	6.8	71.5	131					122	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/17/2017	8:10 AM	D			17.6	6.8	71.5	132.1					134	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/29/2017	8:06 AM	NA			14.9	7.4	73.5	126.8					162	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/29/2017	8:06 AM	D			15.0	7.4	74.6	126.7					131	

Kennebunk River & Tributaries - Mousam-Kennebunk Alliance: Approved Sites															
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/6/2017		L											L 10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/6/2017	10:05 AM	NA			11.1	10.5	105.5			27			20
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/22/2017	10:14 AM	NA											30
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/22/2017	10:14 AM	L											10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/22/2017	10:15 AM	NA			11.2	10.3	109.7			28.9			
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/3/2017	7:00 AM	NA			11.4	10.4	115.0			29.8			L 10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/3/2017	7:00 AM	L											L 10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/18/2017	7:15 AM	NA			18.3	8.9	113.1			29.7			63
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/18/2017	7:15 AM	L											75
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/31/2017	7:05 AM	NA			18.2	8.1	102.3			29.3			
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	8/17/2017	7:10 AM	NA			13.5	8.3	96.6			30.5			L 10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	8/29/2017	7:15 AM	NA			17.3	8.7	109.0			29.8			10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	8/29/2017	7:15 AM	L											L 10
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/6/2017	11:54 AM	NA			12.4	10.5	100					102	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/22/2017	11:20 AM	NA										1553	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/22/2017	11:50 AM	NA			20.4	9.1	99.8	86.4					
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	7/3/2017	9:10 AM	NA			20.6	8.3	92.1	96.5				152	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	7/18/2017	8:32 AM	NA			19.7	8.6	93.4	103				158	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	7/31/2017	8:20 AM	NA			15.9	9.4	94.8	115					
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	8/17/2017	8:30 AM	NA			16.3	8.4	85.3	120.6				184	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	8/29/2017	8:22 AM	NA			14	9.2	88.6	117.1				112	
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	6/6/2017	10:25 AM	NA			13.2	10.2	105						30
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	6/22/2017	10:30 AM	NA			16.5	8.1	92.7			19.5			272
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	7/3/2017	7:30 AM	NA			20.8	7.2	88.3			15.9			31
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	7/18/2017	7:26 AM	NA			21.1	7.5	96.5			22.1			41
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	7/31/2017	7:18 AM	NA			19.9	7.8	94.2			20.8			
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	8/17/2017	7:25 AM	NA			17.9	6.9	82.1			27.6			31
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	8/29/2017	7:25 AM	NA			18.4	6.6	79.3			18.8			241
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/6/2017		L										131	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/6/2017	10:50 AM	NA			13	10.5	100					115	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/22/2017	10:52 AM	NA										1046	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/22/2017	11:10 AM	NA			22.1	10.3	118	117					
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	7/3/2017	7:50 AM	NA			21.6	8.9	101.6					122	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	7/18/2017	8:00 AM	NA										488	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	7/18/2017	8:00 AM	D										488	
KB-12	LORDS BROOK-SKELD09-VRMP	6/19/2017	10:30 AM	NA			17.8	9.75	102.8	91.1				166	
KB-12	LORDS BROOK-SKELD09-VRMP	6/30/2017	8:35 AM	NA			15.6	9.13	92.6	101.3				98	
KB-12	LORDS BROOK-SKELD09-VRMP	7/11/2017	8:35 AM	NA			17.2	8.75	90.7	107.9				186	
KB-12	LORDS BROOK-SKELD09-VRMP	7/25/2017	9:20 AM	NA			14.6	9.24	90.8	104.3				488	
KB-12	LORDS BROOK-SKELD09-VRMP	8/8/2017	8:49 AM	NA			15.8	9.02	90.1	106.7					
KB-12	LORDS BROOK-SKELD09-VRMP	8/8/2017	8:50 AM	NA										579	
KB-12	LORDS BROOK-SKELD09-VRMP	8/22/2017	7:10 AM	NA			16.4	9.82	94.2	112.3				613	
KB-12	LORDS BROOK-SKELD09-VRMP	8/22/2017	7:10 AM	D			16.4	8.75	90	113.2					
KB-12	LORDS BROOK-SKELD09-VRMP	8/22/2017	7:20 AM	D										461	

Kennebunk River & Tributaries - Mousam-Kennebunk Alliance: Approved Sites															
KB-12	LORDS BROOK-SKELD09-VRMP	9/7/2017	10:10 AM	NA			16.1	8.81	89.3	124.4					
KB-12	LORDS BROOK-SKELD09-VRMP	9/7/2017	10:10 AM	D			16.1	9	90.2	124.8					
KB-12	LORDS BROOK-SKELD09-VRMP	9/18/2017	11:00 AM	NA			15.8	9.57	97.1	111.6					
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	6/19/2017	10:50 AM	NA			21.7	6.54	74.3	72.1				38	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	6/30/2017	8:50 AM	NA			18.4	4.56	49.4	77.1				67	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	7/11/2017	9:04 AM	NA			22	2.58	29.4	89.4					
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	7/11/2017	9:04 AM	D			22.1	2.6	29.6	89.4					
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	7/11/2017	9:05 AM	NA										88	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	7/11/2017	9:05 AM	D										58	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	7/25/2017	9:30 AM	NA			17.9	3.45	38.6	78.8				29	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	8/8/2017	9:19 AM	NA				3.67	36.6	84.6					
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	8/8/2017	9:20 AM	NA										276	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	8/22/2017	7:41 AM	NA			19.6	3.71	32.3	75.7				71	
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	9/7/2017	10:27 AM	NA			17.4	5.08	52.9	84.6					
KB-13	SUNKEN BRANCH BROOK-SKELDSN16-VRMP	9/18/2017	11:24 AM	NA			19.6	4.06	44.7	89.6					
KB-03A	WARD BROOK-SKEWD04-VRMP	6/6/2017	11:10 AM	NA										118	
KB-03A	WARD BROOK-SKEWD04-VRMP	6/6/2017	11:15 AM	NA			12.3	10.5	105						
KB-03A	WARD BROOK-SKEWD04-VRMP	6/6/2017	11:15 AM	D			12.6	10.5	105					109	
KB-03A	WARD BROOK-SKEWD04-VRMP	6/22/2017	10:52 AM	D										1414	
KB-03A	WARD BROOK-SKEWD04-VRMP	6/22/2017	11:10 AM	NA			20	8.7	96.9	130				1414	
KB-03A	WARD BROOK-SKEWD04-VRMP	6/22/2017	11:10 AM	D			20	8.7	96.9	126					
KB-03A	WARD BROOK-SKEWD04-VRMP	7/3/2017	8:20 AM	NA			20.7	8.9	101.6	127.5				613	
KB-03A	WARD BROOK-SKEWD04-VRMP	7/3/2017	8:20 AM	D			20.6	7.6	84.5	121.9				548	
KB-03A	WARD BROOK-SKEWD04-VRMP	7/18/2017	8:00 AM	NA			20.3	7.6	84	89					
KB-03A	WARD BROOK-SKEWD04-VRMP	7/18/2017	8:00 AM	D			20.3	7.6	84.3	125.4					
KB-03A	WARD BROOK-SKEWD04-VRMP	7/31/2017	7:40 AM	NA			15.5	8.5	85	121					
KB-03A	WARD BROOK-SKEWD04-VRMP	7/31/2017	7:40 AM	D			15.4	8.6	86.9	110					
KB-03A	WARD BROOK-SKEWD04-VRMP	8/17/2017	7:45 AM	NA			15.5	7.34	73.5	121.6				135	
KB-03A	WARD BROOK-SKEWD04-VRMP	8/29/2017	7:46 AM	NA			13.9	10.3	79.5	112.4				219	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	6/19/2017	11:30 AM	NA			24.1	9.11	107.9	87.4				5	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	6/30/2017	9:15 AM	NA			22.7	7.86	91.3	88.6				4	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	7/11/2017	9:25 AM	NA			24.4	7.34	87.7	89.8				L 1	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	7/25/2017	9:50 AM	NA			23.2	6.74	78.4	90.5				6	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	8/8/2017	9:40 AM	NA			19.9	4.09	42.2	93.2				345	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	8/22/2017	8:01 AM	NA			22.1	6.93	80	88.4				27	
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	9/7/2017	11:05 AM	NA			19.9	6.37	70.3	109.2					
KB-14	WEST OUTLET-SKELDSNWO10-VRMP	9/18/2017	12:00 PM	NA			19.9	3.93	43.3	95.3					