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

Kennebunk River

The Kennebunk River is 15 miles long and originates at Kennebunk Pond in Lyman. The East Outlet becomes Lords Brook which joins Carlise Brook to form the 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 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 Carlise 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 in 2009.

• In 2012, MKA partnered with the DEP TMDL Streams staff to monitor bacteria in Duck Brook. The report is available from DEP.

Methods and Sampling Sites

Volunteers monitor the Kennebunk River at five sites on the mainstem and on site on Ward Brook. Two sites are below head of tide and four 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 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 Enterococcus bacteria at the tidal sites.

Table 5-5-1: 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

Kennebunk River Sampling Sites
Mousam and Kennebunk Rivers Alliance

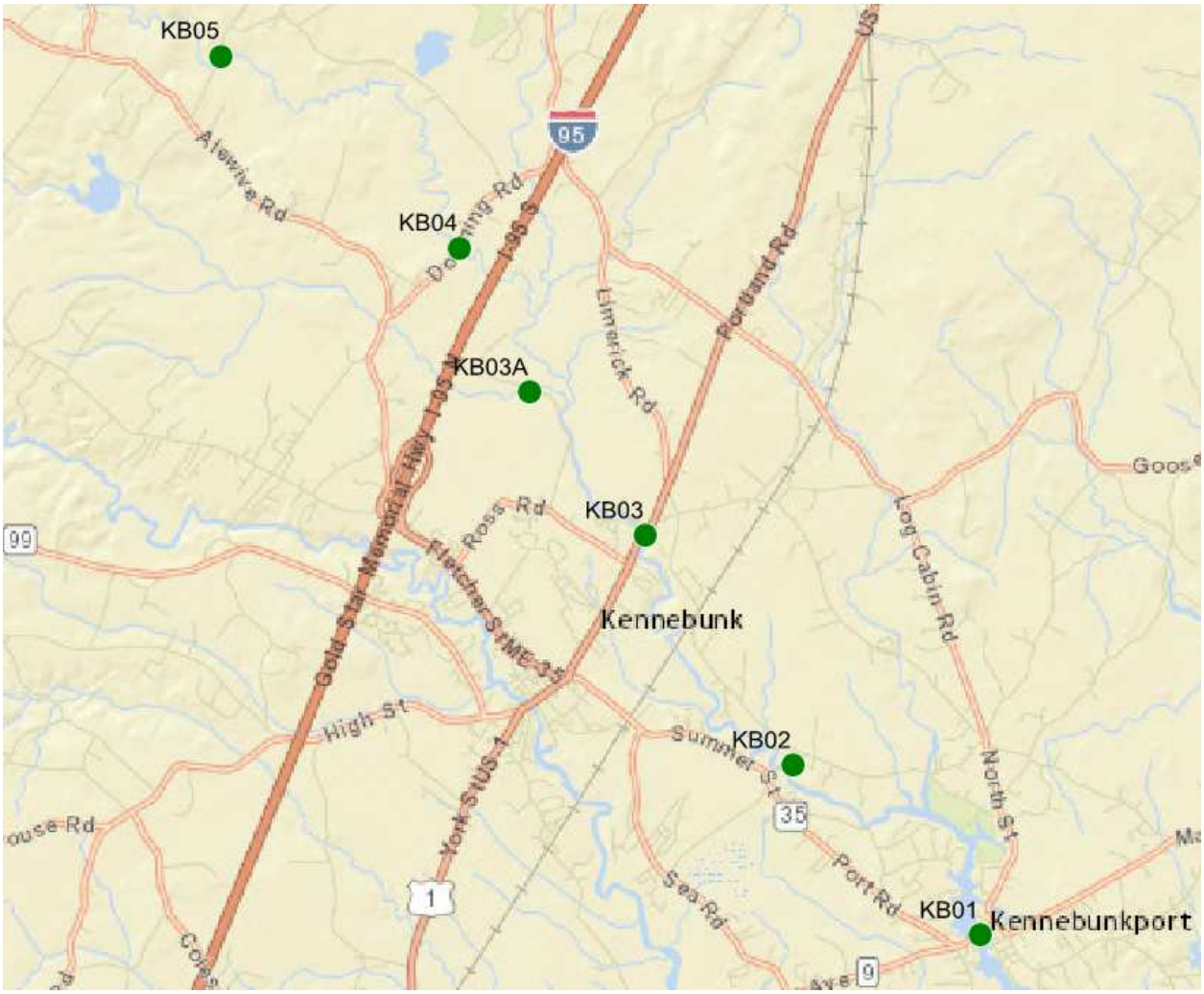


Figure 5-5-1: Map of Mousam and Kennebunk Rivers Alliance sampling sites on the Kennebunk River.

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 that 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 criteria must be met. Class SB criteria for dissolved oxygen is 85% saturation.

2015 Results:

Dissolved oxygen (DO) was measured 7 times at each sampling site. At the freshwater sites, Sites KB-03, KB-03A, and KB-05 did not meet the Class B criterion of 7 mg/l concentration on 1 sampling date. Site KB-04 did not meet this criterion on 4 of 7 sampling dates. The percent saturation of criterion of 75% was met for all the freshwater sites except site KB-04, which did not meet this criterion on 3 of 7 sampling dates. The one sampling date when the freshwater sites were all low was the 6/24/15 date when the values ranged from 5.4-6.0 mg/L. There was heavy rain in the previous 24 hours and flow level was medium-high. The reason for the low levels on this date is unknown. Dissolved oxygen at site KB-04 was slightly depressed with 4 sample dates that ranged from 5.4-6.9 mg/L. At the tidal sites, site KB-01 met the Class SB criterion of 85% saturation for all sampling dates, while site KB-02 did not meet this criterion on 5 of 7 sampling dates. The values for these 5 sample dates ranged from 77.2-84.8% so values were slightly depressed.

Overall, dissolved oxygen was good for the freshwater sites and good to excellent for the tidal sites. The monitors did obtain some early morning measurements (before 8:00 am). Since one monitoring team does all the sites, it is difficult to get to all the sites early.

Table 5-5-2: 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 tributary.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
KB-01	SB	7	9.2	8.4	10.5	n/a	n/a
KB-02	SB	7	7.4	6.6	9.1	n/a	n/a
KB-03	B	7	8.3	5.6	9.2	7	1
KB-03A	B	7	7.5	5.5	8.9	7	1

KB-04	B	7	7.0	5.4	8.9	7	4
KB-05	B	7	8.4	6.0	9.4	7	1

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

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
KB-01	SB	7	98.0	85.6	105.9	85	0
KB-02	SB	7	84.1	77.2	90.6	85	5
KB-03	B	7	94.3	89.9	99.0	75	0
KB-03A	B	7	83.9	75.0	90.2	75	0
KB-04	B	7	79.7	70.0	87.5	75	3
KB-05	B	7	93.8	88.5	98.1	75	0

Figure 5-5-2: Graph of dissolved oxygen concentrations.

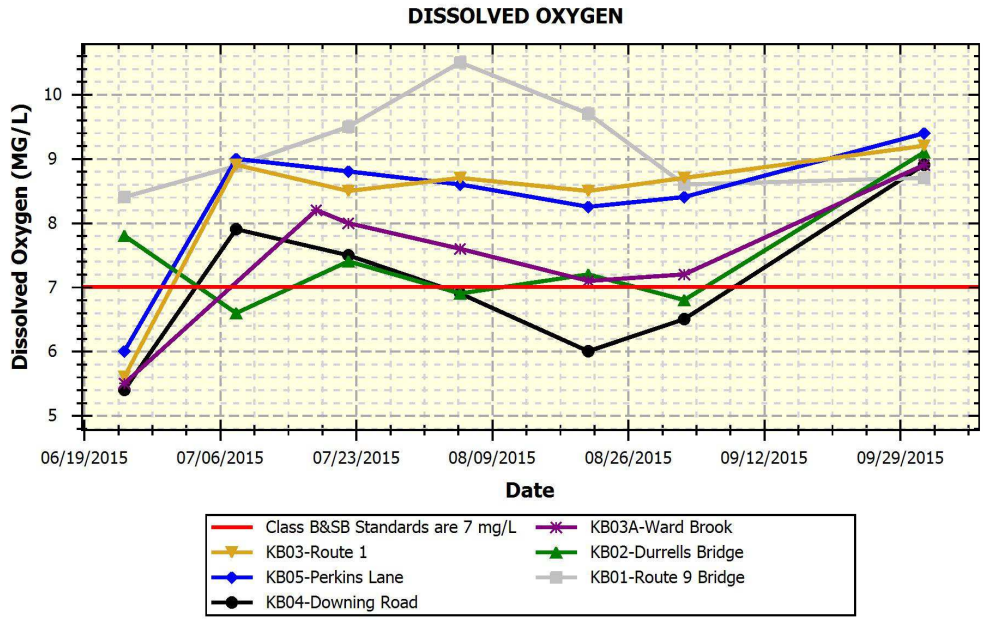
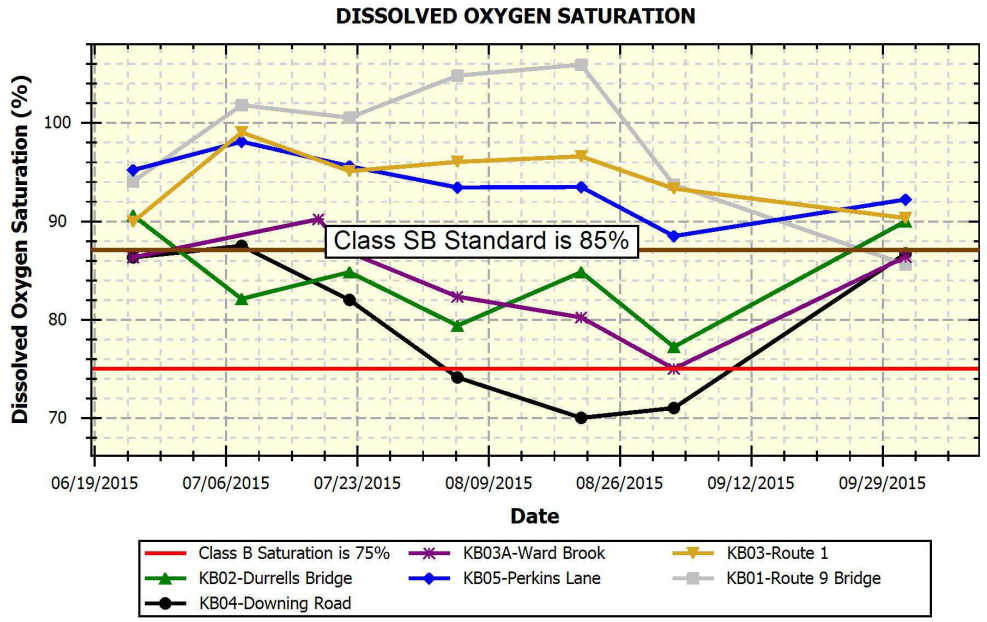


Figure 5-5-3: Graph of dissolved oxygen saturation



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.

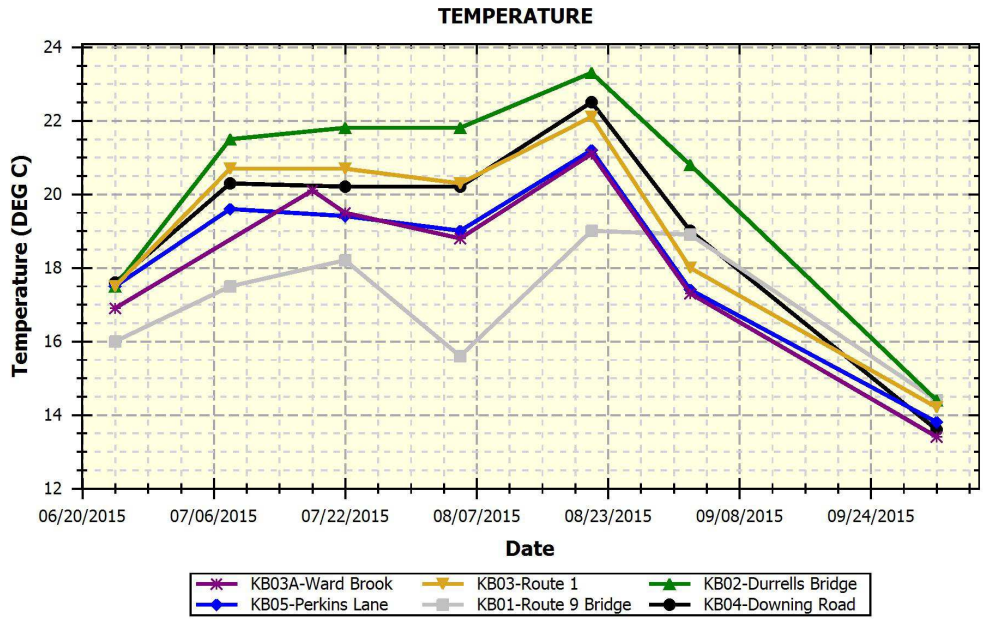
2015 Results:

Temperature at the freshwater sites were all similar and followed the same pattern. Sites KB-03 and KB-04 were generally higher than sites KB-02 and KB-03A. The highest values occurred in late August and then temperatures steadily declined. The tidal sites were quite different with site KB-01 being overall the coldest site (mean temperature 17.1 ˚C) and site KB-02 being overall the warmest (mean temperature of 20.2 ˚C). Overall, temperature at the freshwater sites is good to excellent and at the tidal sites fair to excellent.

Table 5-5-4: 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	17.1	14.4	19.0	n/a	n/a
KB-02	SB	7	20.2	14.4	23.3	n/a	n/a
KB-03	B	7	19.1	14.2	22.1	n/a	n/a
KB-03A	B	7	18.2	13.4	21.1	n/a	n/a
KB-04	B	7	19.1	13.6	22.5	n/a	n/a
KB-05	B	7	18.3	13.8	21.2	n/a	n/a

Figure 5-5-4: Graph of water temperature



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.

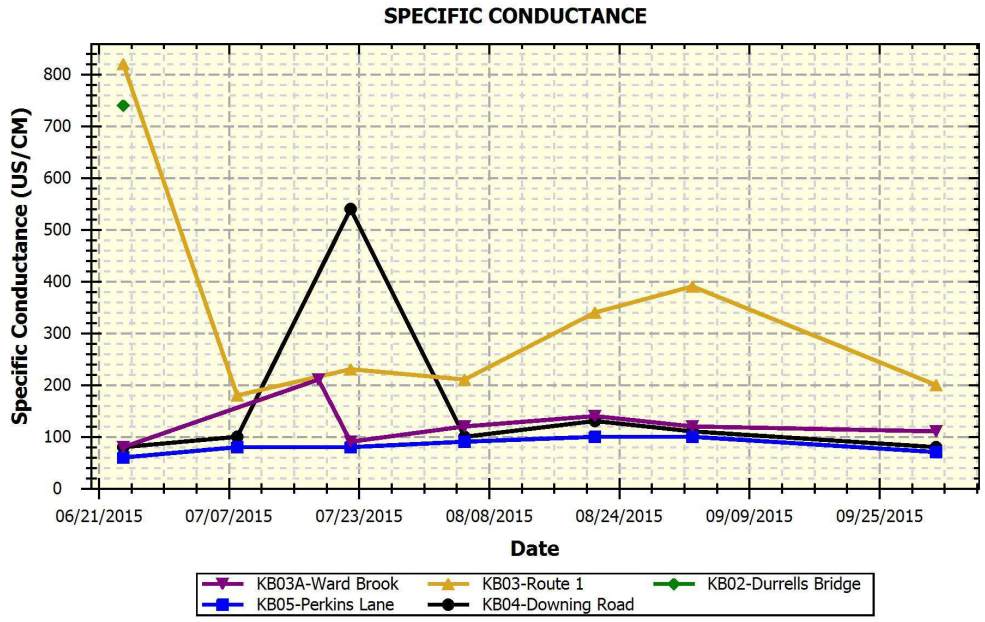
2015 Results:

Specific conductance at the freshwater sites KB-03A and KB-05 was overall low. Site KB-03 was the highest overall with a mean value of 339 µS/cm and 1 very high value of 820 µS/cm. Site KB-04 had 1 high value (540 µS/cm) with the remaining values low. Overall, specific conductance at the freshwater sites is good-excellent. The exception is site KB-03 which has somewhat elevated values and is fair.

Table 5-5-5: A summary of minimum, maximum, and mean specific conductance (µS/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	n/a
KB-02	SB	n/a				n/a	n/a
KB-03	B	7	339	180	820	n/a	n/a
KB-03A	B	7	124	80	210	n/a	n/a
KB-04	B	7	163	80	540	n/a	n/a
KB-05	B	7	83	60	100	n/a	n/a

Figure 5-5-5: Graph of specific conductance



Bacteria

Enterococcus 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 6 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

2015 Results:

The freshwater sites exceeded the Class B instanteous criterion fo 236 MPN/100 ml on 3-5 sampling dates. The geometric mean criterion of 64 MPN/100 ml was exceeded at all these sites. The tidal sites exceeded the Class SB instanteous criterion of 54 MPN/100 ml on 4-6 sampling dates. The geometric mean criterion of 8 MPN/ml was exceeded at both tidal sites. The highest values occurred on dates when heavy rain occurred either in the previous 24-48 hours or on the sampling date. On 6/24/15, there was heavy rain in the previous 24 hours; on 8/22/15 heavy rain occurred on the sampling date and on 10/2/15-there was heavy rain (3.3") in the previous 48 hours. Obviously rainfall-runoff events affect bacteria levels. Overall, bacteria at all the sites was poor. Further investigation of bacteria sources is warranted.

Table 5-5-6: 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	Type	# Sample Points	Geometric Mean	Minimum	Maximum	Criterion Inst/Geo	# Exceeding Criterion
KB-01	SB	Entero	8	106	10	6867	54/8	4
KB-02	SB	Entero	8	209	20	3282	54/8	6
KB-03	B	E. coli	8	190	75	488	236/64	4
KB-03A	B	E. coli	8	286	80	1553	236/64	4
KB-04	B	E. coli	8	295	179	770	236/64	5
KB-05	B	E. coli	8	289	96	1733	236/64	3

Figure 5-5-7: Graph of E. coli (MPN/ml)

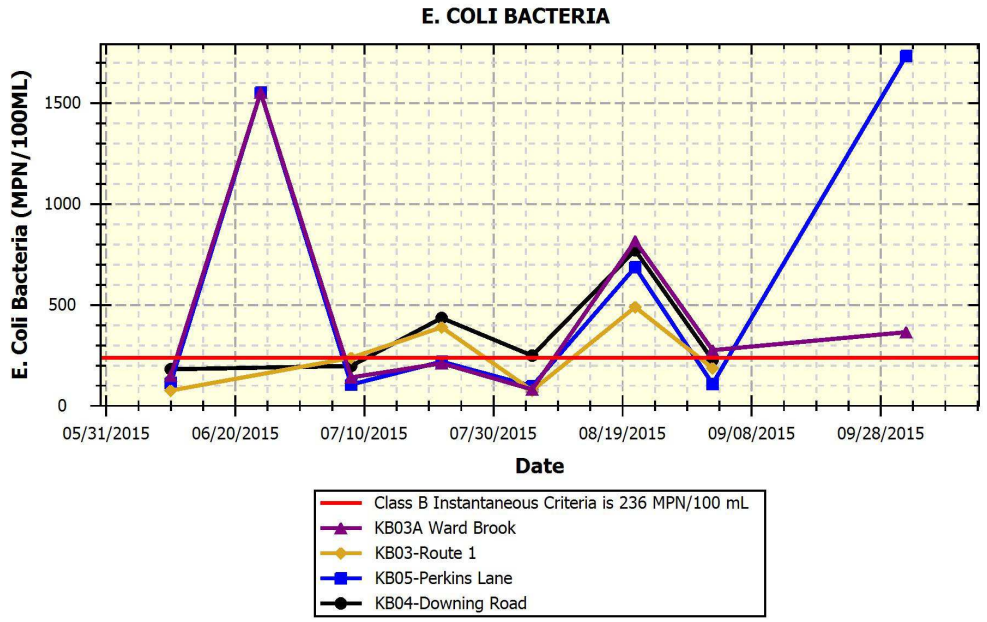
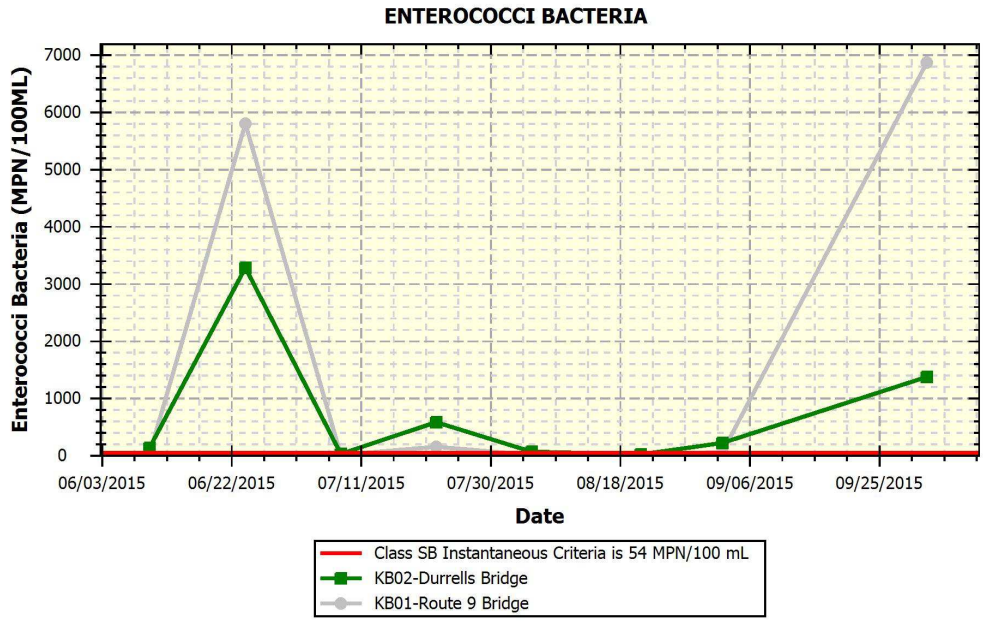


Figure 5-5-8: Graph of Enterococcus (MPN/ml)



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 stress 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/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.**
- **The VRMP, Healthy Beaches Program staff, DEP monitoring staff, Wells NERR staff and volunteers should continue to work on bacteria monitoring. Efforts should continue on tracking down potential sources. Healthy Beaches should perhaps continue with bacteria sampling at the sites below head of tide to provide some continuity there.**
- **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-1. 2011 water quality data for "Approved" and "Non-Approved" sites. Non-Approved sites do not yet meet official VRMP sample location criteria and/or require further inspection and review.
* 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; "Turb" = turbidity; "TSS" = total suspended solids"
Refer to Appendix A-2 for observational data and quality assurance/quality control (QA/QC) notes.

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	** D.O. Sat. (%)	** D.O. (MG/L)	** Spec. Cond. (US/CM)	Salinity (PPTH)	Turb-idity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)	Entero-cocci (MPN/ 100ML)
Kennebunk River, Ward Brook-Kennebunk-Mousam Alliance: Approved Sites																
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	6/10/2015	8:15 AM	NA											179	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	6/24/2015	8:40 AM	NA			17.6	86.3	5.4	80					>2420	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	7/8/2015	8:30 AM	NA			20.3	87.5	7.9	100					197	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	7/22/2015	8:50 AM	NA			20.2	82.0	7.5	540					435	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/5/2015	8:25 AM	NA			20.2	74.1	6.9	100					248	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/21/2015	8:05 AM	NA											770	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	8/21/2015	8:30 AM	NA			22.5	70.0	6.0	130						
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	9/2/2015	8:00 AM	NA											225	
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	9/2/2015	8:25 AM	NA			19.0	71.0	6.5	110						
KB-04	KENNEBUNK RIVER - SKE103 - VRMP	10/2/2015	9:35 AM	NA			13.6	86.7	8.9	80					>2420	
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/10/2015	7:10 AM	NA												20
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/10/2015	7:10 AM	L												U<10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/24/2015	7:10 AM	NA			16.0	94.0	8.4		17					5794
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	6/24/2015	7:10 AM	L												5172
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/8/2015	7:05 AM	NA			17.5	101.8	8.9		30					10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/8/2015	7:05 AM	L												41
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	7/22/2015	7:10 AM	NA			18.2	100.5	9.5		28					155
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	8/5/2015	7:05 AM	NA			15.6	104.8	10.5		33					10
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	8/21/2015	7:05 AM	NA			19.0	105.9	9.7		32					20
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	9/2/2015	7:10 AM	NA			18.9	93.7	8.6		30					63
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	9/2/2015	7:10 AM	L												85
KB-01	KENNEBUNK RIVER - SKE11 - VRMP	10/2/2015	8:10 AM	NA			14.4	85.6	8.7		8					6867
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/10/2015	8:45 AM	NA											112	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/24/2015		NA											1553	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/24/2015	8:55 AM	NA			17.5	95.2	6.0	60						
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/24/2015	8:55 AM	D			17.5	95.2	6.0	70						
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	6/24/2015	9:25 AM	D											1414	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	7/8/2015	8:50 AM	NA			19.6	98.1	9.0	80					105	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	7/22/2015	9:05 AM	NA			19.4	95.6	8.8	80					219	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	8/5/2015	8:45 AM	NA			19.0	93.4	8.6	90					96	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	8/21/2015	8:30 AM	NA											687	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	8/21/2015	8:45 AM	NA			21.2	93.5	8.3	100						
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	9/2/2015		D											115	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	9/2/2015	8:25 AM	NA											107	
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	9/2/2015	8:40 AM	NA			17.4	88.5	8.4	100						
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	9/2/2015	8:40 AM	D			17.4	89.0	8.5	100						
KB-05	KENNEBUNK RIVER - SKE148 - VRMP	10/2/2015	9:50 AM	NA			13.8	92.2	9.4	70					1733	

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	** D.O. Sat. (%)	** D.O. (MG/L)	** Spec. Cond. (US/CM)	Salinity (PPTH)	Turb-idity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)	Entero-cocci (MPN/ 100ML)
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	6/10/2015	7:30 AM	NA												132
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	6/24/2015	7:30 AM	NA			17.5	90.6	7.8	740	0.001					3282
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	7/8/2015	7:30 AM	NA			21.5	82.1	6.6		9					31
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	7/22/2015	7:35 AM	NA			21.8	84.8	7.4		5					585
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	8/5/2015	7:25 AM	NA			21.8	79.4	6.9		18					74
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	8/21/2015	7:20 AM	NA			23.3	84.8	7.2		15					20
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	8/21/2015	7:20 AM	D			23.4	85.5	7.2		15					
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	8/21/2015	7:25 AM	D												10
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	9/2/2015	7:30 AM	NA			20.8	77.2	6.8		15					226
KB-02	KENNEBUNK RIVER - SKE35 - VRMP	10/2/2015	8:25 AM	NA			14.4	90.0	9.1		0.001					1374
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/10/2015	7:55 AM	NA											75	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/10/2015	7:55 AM	L											105	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/24/2015	8:00 AM	NA			17.5	89.9	5.6	820					>2420	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	6/24/2015	8:00 AM	L											2420	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	7/8/2015	7:50 AM	NA			20.7	99.0	8.9	180					236	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	7/22/2015	8:00 AM	NA			20.7	95.1	8.5	230					387	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	8/5/2015	7:45 AM	NA			20.3	96.0	8.7	210					75	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	8/21/2015	7:50 AM	NA			22.1	96.6	8.5	340					488	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	9/2/2015	7:50 AM	NA			18.0	93.3	8.7	390					186	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	10/2/2015	8:45 AM	NA			14.2	90.3	9.2	200					>2420	
KB-03	KENNEBUNK RIVER - SKE66 - VRMP	10/2/2015	8:45 AM	L												6488
KB-03A	WARD BROOK-SKEWD04-VRMP	6/10/2015	9:00 AM	NA											147	
KB-03A	WARD BROOK-SKEWD04-VRMP	6/24/2015	8:15 AM	NA			16.9	86.3	5.5	80					1553	
KB-03A	WARD BROOK-SKEWD04-VRMP	7/8/2015	8:05 AM	NA											140	
KB-03A	WARD BROOK-SKEWD04-VRMP	7/18/2015	8:05 AM	NA			20.1	90.2	8.2	210						
KB-03A	WARD BROOK-SKEWD04-VRMP	7/22/2015	8:15 AM	NA			19.5	86.8	8.0	90					210	
KB-03A	WARD BROOK-SKEWD04-VRMP	7/22/2015	8:15 AM	D			19.5	87.1	8.0	90					187	
KB-03A	WARD BROOK-SKEWD04-VRMP	8/5/2015	8:05 AM	NA			18.8	82.3	7.6	120					80	
KB-03A	WARD BROOK-SKEWD04-VRMP	8/21/2015	8:05 AM	NA			21.1	80.2	7.1	140						
KB-03A	WARD BROOK-SKEWD04-VRMP	8/21/2015	8:45 AM	NA											816	
KB-03A	WARD BROOK-SKEWD04-VRMP	9/2/2015	8:00 AM	NA			17.3	75.0	7.2	120						
KB-03A	WARD BROOK-SKEWD04-VRMP	9/2/2015	8:40 AM	NA											276	
KB-03A	WARD BROOK-SKEWD04-VRMP	10/2/2015	9:00 AM	NA			13.4	86.4	8.9	110					365	
KB-03A	WARD BROOK-SKEWD04-VRMP	10/2/2015	9:00 AM	D			13.4	86.6	9.0	110						
KB-03A	WARD BROOK-SKEWD04-VRMP	10/2/2015	9:05 AM	D											435	