Section 5-4
Mousam River (MKRA/Wells NERR)

Mousam River

Mousam River is 23 miles long and originates at Square Pond, which flows to Mousam Lake in Shapleigh. From Mousam Lake, the river flows through the towns of Alfred and Sanford to Estes Lake. The Littlefield River and Middle Branch River flow into Estes Lake from the north. From Estes Lake, Mousam River continues through the town of Kennebunk before discharging to the Gulf of Maine at Parsons Beach. Back Creek (tidal creek) enters the Mousam River near the mouth. The river is dammed at several places along its route including at Mill Pond and No. 1 Pond in Sanford, Estes Lake, and Old Falls Pond.

Water quality in the Mousam River was impacted historically by industrial and commercial use related to mills in the towns of Sanford and Kennebunk (Baker, 1999). Today, water quality impacts are caused in large part by stormwater runoff associated with increasing development of the watershed and high levels of impervious surfaces in the town centers of Sanford and Kennebunk. Water quality is also impacted by several point source discharges to the main stem. In addition, the industrial legacy of the ten dams on the main stem of the river may also contribute to degraded water quality.

Maine DEP lists a 9.9-mile segment of the river in Sanford from the Route 224 bridge to Estes Lake as impaired due to toxics, nutrients, and biological oxygen demand (BOD). It is also listed as impaired for E. coli bacteria due to variable causes. According to the DEP Integrated Report, "Sanford has completed CSO abatement; no CSO events since 2006."[1]

According to Maine's statutory Water Classification System, the Mousam River Basin has the designations listed below. Below head of tide, the river is Class SB.

A. Mousam River, main stem.

(1) From the outlet of Mousam Lake to a point located 0.5 miles above Mill Street in Springvale – Class B.

(2) From a point located 0.5 mile above Mill Street in Springvale to its confluence with Estes Lake – Class C.

(3) From the outlet of Estes Lake to tidewater – Class B.

B. Mousam River, tributaries – Class B.

[1] State of Maine Department of Environmental Protection 2016 Integrated Water Quality Monitoring and Assessment Report

Monitoring History

• The Maine DEP Biological Monitoring Program has been monitoring the river since 1995. This data is available on DEP's website.

• The Mousam and Kennebunk Rivers Alliance (MKRA) was formed in 2009 with support from the Wells National Estuarine Research Reserve (Wells Reserve) and Maine Rivers for the purpose of monitoring and improving conditions in the Kennebunk and Mousam rivers. One of the first projects for MKRA was joining the Volunteer River Monitoring Program in 2009, with 4 teams of community volunteers.

• In 2009, Wells Reserve coordinated the volunteer data collection at 11 sites. In 2010, two sites were added to bracket the sewage outfall upstream and downstream in Sanford. Two additional sites in Sanford were added in 2012. In 2017, one of the volunteer teams was retired and monitoring was discontinued at 5 sites in the middle of the watershed.

• "Since 2012, several stormwater BMPs have been installed in Sanford and Alfred to treat urban, industrial and agricultural runoff draining to Number One Pond and Estes Lake. Remediation activities at Sanford landfill adjacent to the river were completed in 1999, landfill was capped and an up-gradient slurry wall installed. Surface and groundwater monitoring continues to assess the effect of the landfill and remediation on the river." [2]

• In 2013 the Wells Reserve and Maine Rivers conducted a study of water temperature and bacteria in the lower Mousam River between Old Falls Dam and Rogers Pond Park in Kennebunk. Continuous data loggers collected water temperature from June to September, and bacteria samples were collected every two weeks. The Mousam River Stream Temperature Study Report is available at www.wellsreserve.org.

Methods and Sampling Sites

Mousam Kennebunk Rivers Alliance has eleven sites on the main stem. Four tributary sites are located on the Middle Branch, Littlefield River and Back Creek. All sites are freshwater except sites MOUR04 and BC02. Previous reports identified Station MOUR35 as Class SB, but it has since been determined that this site is just above the hydraulic head of tide and is freshwater. All of the Mousam River sites are VRMP approved.

Monitoring is conducted biweekly from June through 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 some of the freshwater sites and Enterococcus bacteria at the tidal sites. Bacteria samples are transported to Nelson Lab for analysis.

[2] State of Maine Department of Environmental Protection 2016 Integrated Water Quality Monitoring and Assessment Report

Table 5-4-1: Mousam and Kennebunk Rivers Alliance/Wells Reserve sampling sites for the Mousam River. **Sites monitored in 2019 are in bold.**

Main Stem Sites (Ordered from upstream to downstream)				
VRMP Site ID	**Organization Site Code**	**Sample Location**	**River Mile**	**Class**
SMU290	**MOUR290**	**Headwaters**	**25.6**	**B**
SMU280	**MOUR280**	**S Curve Road**	**24.6**	**B**
SMU250	**MOUR250**	**Behind YMCA**	**21.6**	**C**
SMU232	**MOUR232**	**High Street/Weaver Dr**	**19.7**	**C**
SMU204	MOUR204	Off Route 4	16.9	C
SMU163	MOUR163	New Dam Road	12.8	C
SMU144	MOUR144	Whicher's Hill Road	10.9	B
SMU80	**MOUR80**	**Mill Street**	**4.6**	**B**
SMU39	**MOUR39**	**Berry Ct.**	**0.5**	**B**
SMU35	**MOUR35**	**Roger's Pond**	**0.1**	**B**
SMU04	**MOUR04**	**Route 9 Bridge**	**0.4**	**SB**
Tributary Sites				
Middle Branch Mousam River SMUMB58	MOURMB58	Mast Road	6.9	B
Middle Branch Mousam River SMUMB33	MOURMB33	Swett's Bridge	4.4	B
Littlefield River SMUMBLR18	LR18	Back Road	2.2	B
Back Creek SMUBC02	**BC02**	**Above Parson's Beach**	**0.2**	**SB**

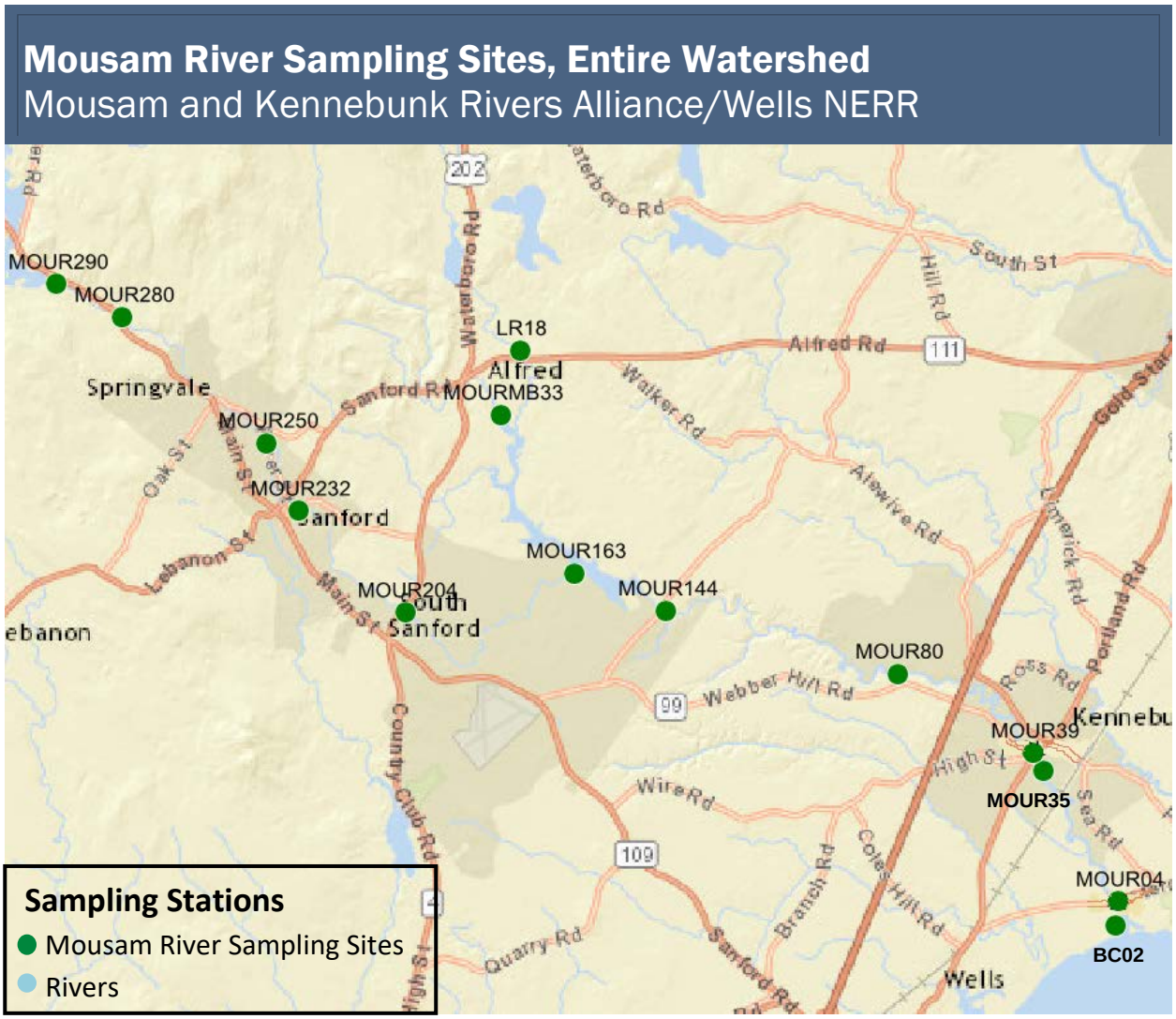

Figure 5-4-1: Map of Mousam and Kennebunk Rivers Alliance/Wells Reserve sampling sites on Mousam River.

Parameters

Dissolved Oxygen

Dissolved oxygen (DO) levels are generally lowest early in the morning and then increase during the day, peaking in the 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, dissolved oxygen will be affected.

Class B criteria for dissolved oxygen are a minimum of 7 mg/l (milligrams/liter) or 75% saturation. Class C criteria for dissolved oxygen are a minimum of 5 mg/l or 60 % saturation. To meet water quality criteria, both concentration and saturation standards must be met. The Class SB criterion is 85% 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. These temperature criteria do not apply to this VRMP data.

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 higher 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.

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 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." Class SB criteria (effective August 1, 2018) are as follows: "Between April 15th and October 31st, the number of enterococcus bacteria in these waters may not exceed a geometric mean of 8 CFU per 100 milliliters in any 90-day interval or 54 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 this calculation for something like bacteria where there may be one or more very high or low values that can skew the mean.

Discussion and Recommendations

There are numerous sources of pollution and other stresses to the Mousam River and tributary 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, rooftops) (even though urban development and roads are fairly sparse in the watershed), agriculture, and forestry.
- Point source pollution (pollution originating from a direct discharge including wastewater treatment plant discharge, combined sewer overflows and overboard discharges).
- 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 larger 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:

- Monitoring should continue to focus on early morning (before 8:00 am) sampling to best document potential dissolved oxygen problems. 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. This is particularly important during the summer months of July through early September when temperatures are warmest and dissolved oxygen tends to be at the lowest levels.
- Bacteria sampling should include sampling during both dry and wet weather conditions (one to two storm events) and include at least six to seven samples. This is important to calculate an accurate geometric mean value.
- Recruit new volunteers so that all the monitoring sites can be consistently monitored from year to year.
- Continue monitoring at all stations to continue building a long-term trend database.

Summary of Data by Site and Parameter (2009-2019)

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR290**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	8.0	7.5	8.7	7	0
2011	B	9	8.2	7.4	8.9	7	0
2012	B	8	8.0	7.3	8.9	7	0
2013	B	7	7.9	7.1	8.9	7	0
2014	B	4	8.3	7.4	9.2	7	0
2015	B	4	8.0	7.6	8.1	7	0
2016	B	4	7.4	7.2	7.8	7	0
2017	B	3	7.6	7.0	8.2	7	0
2018	B	6	7.3	6.8	8.5	7	3
2019	B	5	7.5	6.8	8.8	7	1

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR290**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	94	92	94	75	0
2011	B	9	95.0	88.6	97.7	75	0
2012	B	8	92.6	88.8	95.9	75	0
2013	B	7	92.5	85.4	103.6	75	0
2014	B	4	93.7	86.4	107.5	75	0
2015	B	4	92.8	88.9	96.0	75	0
2016	B	4	88.1	86.4	89.8	75	0
2017	B	3	88.9	84.2	96.1	75	0
2018	B	6	84.8	80.4	90.6	75	0
2019	B	5	88.4	81.1	91.7	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR290**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	23.6	19.3	28.4	n/a	n/a

2011	B	9	22.6	19.8	26.1	n/a	n/a
2012	B	8	23.3	19.0	26.0	n/a	n/a
2013	B	7	22.3	18.2	24.5	n/a	n/a
2014	B	4	23.3	21.4	25.2	n/a	n/a
2015	B	4	22.2	20.5	23.5	n/a	n/a
2016	B	4	24.1	21.4	25.4	n/a	n/a
2017	B	3	21.9	20.2	23.5	n/a	n/a
2018	B	6	22.9	18.5	25.5	n/a	n/a
2019	B	5	24.5	20.4	26.4	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR290**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	7	56	55	57	n/a	n/a
2011	B	9	59	56	64	n/a	n/a
2012	B	8	66	54	70	n/a	n/a
2013	B	7	70	70	70	n/a	n/a
2014	B	4	80	80	80	n/a	n/a
2015	B	4	83	80	90	n/a	n/a
2016	B	4	84	81	85	n/a	n/a
2017	B	3	83	80	85	n/a	n/a
2018	B	6	88	81	92	n/a	n/a
2019	B	5	86	60	104	n/a	n/a

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR280**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	8.2	7.7	8.8	7	0
2011	B	9	8.1	7.2	8.9	7	0
2012	B	8	7.8	7.2	8.7	7	0
2013	B	7	8.0	7.2	9.4	7	0
2014	B	4	8.0	7.2	8.9	7	0
2015	B	4	7.8	7.4	8.3	7	0
2016	B	4	7.5	7.2	7.9	7	0
2017	B	3	7.9	7.6	8.4	7	0
2018	B	6	7.5	7.1	8.8	7	0
2019	B	5	7.5	7.2	8.1	7	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR280**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	94	91	96	75	0
2011	B	9	93.6	87.4	97.2	75	0
2012	B	8	90.0	85.2	97.2	75	0
2013	B	7	89.3	83.3	98.3	75	0
2014	B	4	91.8	86.9	105.2	75	0
2015	B	4	89.0	86.1	94.1	75	0
2016	B	4	86.7	85.4	87.6	75	0
2017	B	3	90.2	86.1	96.5	75	0
2018	B	6	85.2	80.9	94.2	75	0
2019	B	5	86.0	81.7	88.9	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR280**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	22.7	18.9	27.2	n/a	n/a
2011	B	9	22.1	18.5	25.9	n/a	n/a
2012	B	7	22.6	18.8	24.6	n/a	n/a

2013	B	7	20.7	16.2	22.7	n/a	n/a
2014	B	4	22.5	20.1	24.3	n/a	n/a
2015	B	4	21.0	19.2	21.9	n/a	n/a
2016	B	4	23.0	20.0	25.1	n/a	n/a
2017	B	3	21.2	20.0	21.9	n/a	n/a
2018	B	6	23.1	18.9	25.8	n/a	n/a
2019	B	5	22.8	19.5	24.7	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR280**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2010	B	8	57	55	59	n/a	n/a
2011	B	9	59	55	62	n/a	n/a
2012	B	8	67	64	69	n/a	n/a
2013	B	7	70	70	70	n/a	n/a
2014	B	4	78	70	80	n/a	n/a
2015	B	4	90	80	100	n/a	n/a
2016	B	4	84	82	86	n/a	n/a
2017	B	2	81	78	84	n/a	n/a
2018	B	6	89	84	96	n/a	n/a
2019	B	5	106	77	128	n/a	n/a

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR250**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	8.6	7.8	9.4	5	0
2013	C	7	8.4	7.6	9.7	5	0
2014	C	4	8.3	7.8	9.3	5	0
2015	C	4	8.4	7.9	8.7	5	0
2016	C	4	7.9	7.7	8.0	5	0
2017	C	3	8.4	8.1	8.9	5	0
2018	C	6	8.1	7.2	9.3	5	0
2019	C	5	7.9	7.6	8.6	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR250**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	96.7	93.3	104.6	60	0
2013	C	7	94.1	89.8	98.5	60	0
2014	C	4	96.7	90.2	112.0	60	0
2015	C	4	93.8	91.2	96.1	60	0
2016	C	4	92.3	90.2	94.5	60	0
2017	C	3	95.4	91.0	102.6	60	0
2018	C	6	91.3	86.4	98.3	60	0
2019	C	5	92.5	90.1	94.1	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR250**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	22.0	18.9	24.8	n/a	n/a
2013	C	7	21.0	16.2	23.6	n/a	n/a
2014	C	4	22.8	20.1	24.7	n/a	n/a
2015	C	4	22.7	19.8	24.1	n/a	n/a
2016	C	4	23.3	21.4	24.8	n/a	n/a
2017	C	3	21.3	19.5	22.6	n/a	n/a
2018	C	6	22.4	18.0	25.1	n/a	n/a
2019	C	5	23.7	19.0	24.9	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR250**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	75	54	85	n/a	n/a
2013	C	7	83	80	90	n/a	n/a
2014	C	4	90	90	90	n/a	n/a
2015	C	4	105	100	110	n/a	n/a
2016	C	4	96	93	100	n/a	n/a
2017	C	2	100	90	109	n/a	n/a
2018	C	6	110	99	132	n/a	n/a
2019	C	5	136	87	159	n/a	n/a

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: MOUR232							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	8.6	7.7	9.6	5	0
2013	C	7	8.4	7.6	9.3	5	0
2014	C	4	8.6	8.2	9.3	5	0
2015	C	4	8.3	7.9	8.8	5	0
2016	C	4	8.0	7.9	8.1	5	0
2017	C	3	8.5	8.1	9.0	5	0
2018	C	6	8.2	7.7	9.5	5	0
2019	C	4	8.1	7.6	8.6	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: MOUR232							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	96.6	93.1	105.2	60	0
2013	C	7	95.3	90.8	98.3	60	0
2014	C	4	101.9	96.3	114.5	60	0
2015	C	4	95.4	93.7	97.6	60	0
2016	C	4	95.1	94.2	95.7	60	0
2017	C	3	97.4	93.7	102.7	60	0
2018	C	6	94.9	92.0	100.5	60	0
2019	C	5	96.2	92.4	99.2	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: MOUR232							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2012	C	8	22.1	18.8	25.0	n/a	n/a
2013	C	7	21.6	16.4	24.6	n/a	n/a
2014	C	4	23.8	20.7	25.9	n/a	n/a
2015	C	4	23.6	21.1	25.2	n/a	n/a

2016	C	4	23.9	22.3	25.3	n/a	n/a
2017	C	3	22.2	20.2	23.8	n/a	n/a
2018	C	6	23.2	18.6	25.4	n/a	n/a
2019	C	4	23.4	19.8	24.9	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR232**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2012	C	8	83	76	95	n/a	n/a
2013	C	7	91	90	100	n/a	n/a
2014	C	4	105	100	110	n/a	n/a
2015	C	4	118	110	120	n/a	n/a
2016	C	4	106	101	113	n/a	n/a
2017	C	2	119	105	132	n/a	n/a
2018	C	6	132	119	163	n/a	n/a
2019	C	5	154	105	186	n/a	n/a

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR204**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	7.8	6.2	8.6	5	0
2011	C	7	7.6	7.0	8.9	5	0
2012	C	8	7.4	6.9	8.3	5	0
2013	C	5	7.4	6.7	7.8	5	0
2014	C	6	7.4	6.6	8.8	5	0
2015	C	6	7.4	6.8	8.2	5	0
2016	C	4	6.8	6.3	7.1	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR204**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	92	79	106	60	0
2011	C	7	88.4	75.7	107.0	60	0
2012	C	8	83.8	79.6	92.1	60	0
2013	C	5	82.2	71.4	90.0	60	0
2014	C	6	82.8	73.0	92.6	60	0
2015	C	6	85.0	77.5	89.5	60	0
2016	C	4	81.3	73.4	85.2	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR204**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	23.8	19.0	26.0	n/a	n/a
2011	C	7	22.9	18.3	25.1	n/a	n/a
2012	C	8	21.6	14.5	25.4	n/a	n/a
2013	C	5	20.8	17.2	25.0	n/a	n/a
2014	C	6	21.3	16.0	24.3	n/a	n/a
2015	C	6	22.1	18.6	25.8	n/a	n/a
2016	C	4	24.9	22.9	27.4	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR204**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	124	110	149	n/a	n/a
2011	C	7	126	102	159	n/a	n/a
2012	C	8	125	74	151	n/a	n/a
2013	C	5	128	110	150	n/a	n/a
2014	C	6	147	110	180	n/a	n/a
2015	C	6	207	170	240	n/a	n/a
2016	C	4	170	161	184	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR204**								
Year	**Class**	**Bacteria Type**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion Instant/Geo**	**# Exceeding Criterion**
2010	C	E.Coli	7	13	4	190	236/126	0
2011	C	E.Coli	7	40	15	435	236/126	1
2012	C	E.Coli	8	20	3	153	236/126	0
2013	C	E.Coli	7	28	5	93	236/126	0
2014	C	E.Coli	5	72	12	2420	236/126	1
2015	C	E.Coli	7	12	4	137	236/126	0
2016	C	E.Coli	4	5	3	12	236/126	0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR163**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	7.8	6.5	9.5	5	0
2011	C	7	7.3	6.2	8.5	5	0
2012	C	8	7.3	6.7	8.8	5	0
2013	C	4	7.6	6.4	8.9	5	0
2014	C	6	7.3	6.6	8.8	5	0
2015	C	6	7.2	6.4	8.4	5	0
2016	C	4	6.2	5.6	7.0	5	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR163**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	90	76	111	60	0
2011	C	7	82.3	73.4	96.4	60	0
2012	C	8	80.3	76.6	86.5	60	0
2013	C	4	82.3	73.6	90.0	60	0
2014	C	6	79.7	75.0	85.5	60	0
2015	C	6	79.6	74.0	84.5	60	0
2016	C	4	72.3	65.8	80.0	60	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR163**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	22.8	18.2	25.5	n/a	n/a
2011	C	7	21.3	18.0	23.5	n/a	n/a
2012	C	8	20.2	14.7	23.7	n/a	n/a
2013	C	4	20.5	16.9	22.7	n/a	n/a
2014	C	6	19.9	12.4	23.6	n/a	n/a
2015	C	6	20.7	18.1	23.4	n/a	n/a
2016	C	4	23.0	21.4	25.0	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR163**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2010	C	7	92	75	103	n/a	n/a
2011	C	7	101	80	123	n/a	n/a
2012	C	8	105	70	127	n/a	n/a
2013	C	4	108	60	140	n/a	n/a
2014	C	6	140	110	160	n/a	n/a
2015	C	6	162	130	210	n/a	n/a
2016	C	4	152	134	170	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR163**								
Year	**Class**	**Bacteria Type**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion Instant/Geo**	**# Exceeding Criterion**
2010	C	E. Coli	7	71	40	104	236/126	0
2011	C	E. Coli	7	72	22	411	236/126	1
2012	C	E. Coli	8	56	20	147	236/126	0
2013	C	E. Coli	6	59	24	196	236/126	0
2014	C	E. Coli	5	83	28	2420	236/126	1
2015	C	E. Coli	7	58	34	184	236/126	0
2016	C	E. Coli	4	50	34	79	236/126	0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR144**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	9.9	7.8	11.6	7	0
2010	B	7	8.1	7.2	9.3	7	0
2011	B	7	8.4	8.0	8.9	7	0
2012	B	8	8.2	7.4	9.9	7	0
2013	B	5	7.9	7.1	8.8	7	0
2014	B	6	8.3	7.5	9.8	7	0
2015	B	6	8.0	7.3	9.0	7	0
2016	B	4	7.1	6.7	7.4	7	1

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR144**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	96.7	90.0	100.1	75	0
2010	B	7	93	83	101	75	0
2011	B	7	96.2	92.0	107.1	75	0
2012	B	8	92.2	86.6	97.5	75	0
2013	B	5	87.8	84.6	93.4	75	0
2014	B	6	92.8	86.6	101.5	75	0
2015	B	6	90.6	78.5	95.4	75	0
2016	B	4	85.5	77.8	89.6	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR144**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	13.9	8.0	20.0	n/a	n/a
2010	B	7	22.8	20.0	25.0	n/a	n/a
2011	B	7	21.9	18.6	24.5	n/a	n/a
2012	B	8	21.3	14.4	24.7	n/a	n/a
2013	B	5	21.2	18.2	24.3	n/a	n/a
2014	B	6	20.7	17.0	23.7	n/a	n/a
2015	B	6	21.2	17.9	23.4	n/a	n/a

2016	B	4	24.3	22.8	26.0	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR144**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	80	12	118	n/a	n/a
2010	B	7	105	98	110	n/a	n/a
2011	B	7	113	101	129	n/a	n/a
2012	B	8	101	55	125	n/a	n/a
2013	B	5	128	110	140	n/a	n/a
2014	B	6	150	130	170	n/a	n/a
2015	B	6	173	140	200	n/a	n/a
2016	B	4	166	156	175	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR144**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	E. Coli	--	--	--	--	236/64	--
2010	B	E. Coli	7	11	6	36	236/64	0
2011	B	E. Coli	7	15	5	41	236/64	0
2012	B	E. Coli	8	11	1	261	236/64	1
2013	B	E. Coli	7	10	2	22	236/64	0
2014	B	E. Coli	5	10	3	58	236/64	0
2015	B	E. Coli	7	7	2	45	236/64	0
2016	B	E. Coli	4	5	1	11	236/64	0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR80**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	8.8	6.4	10.6	7	1
2010	B	8	7.8	7.2	8.8	7	0
2011	B	6	7.2	6.4	8.5	7	3
2012	B	6	7.5	6.4	8.6	7	2
2013	B	7	6.7	4.0	8.0	7	3
2014	B	6	6.4	5.6	7.1	7	4
2015	B	8	7.6	6.6	8.5	7	1
2016	B	4	7.5	6.6	8.0	7	1
2017	B	8	7.9	7.2	8.7	7	0
2018	B	9	7.3	6.7	8.2	7	3
2019	B	6	7.5	6.5	8.3	7	1

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR80**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	88.6	74.8	98.5	75	0
2010	B	8	92	79	106	75	0
2011	B	6	82.0	72.0	102.2	75	1
2012	B	6	85.2	74.9	97.5	75	1
2013	B	7	76.0	42.3	85.7	75	1
2014	B	6	73.8	65.0	82.1	75	3
2015	B	8	87.7	72.4	93.6	75	1
2016	B	8	86.9	74.7	95.6	75	1
2017	B	8	89.7	81.6	98.8	75	0
2018	B	9	86.1	78.5	94.6	75	0
2019	B	6	84.1	77.9	90.6	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR80**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	16.5	9.7	23.8	n/a	n/a
2010	B	8	23.3	18.3	25.7	n/a	n/a

2011	B	6	21.4	19.8	23.5	n/a	n/a
2012	B	6	21.4	15.6	25.5	n/a	n/a
2013	B	7	21.1	15.7	25.7	n/a	n/a
2014	B	6	22.1	18.5	23.5	n/a	n/a
2015	B	8	22.3	18.1	26.1	n/a	n/a
2016	B	8	22.4	19.9	25.6	n/a	n/a
2017	B	8	22.0	19.6	24.3	n/a	n/a
2018	B	9	23.6	19.3	26.8	n/a	n/a
2019	B	7	21.5	17.5	24.9	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR80**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	4	95	80	111	n/a	n/a
2010	B	8	84	78	120	n/a	n/a
2011	B	6	97	71	111	n/a	n/a
2012	B	5	74	60	97	n/a	n/a
2013	B	7	100	23	130	n/a	n/a
2014	B	6	120	17	160	n/a	n/a
2015	B	8	159	140	190	n/a	n/a
2016	B	8	166	153	177	n/a	n/a
2017	B	7	140	113	160	n/a	n/a
2018	B	9	188	153	205	n/a	n/a
2019	B	7	150	131	163	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR80**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	--	--	--	--	--	--	--
2010	B	E. Coli	8	14	1	249	236/64	1
2011	B	E. Coli	6	21	8	31	236/64	0
2012	B	E. Coli	4	10	8	28	236/64	0
2013	B	E. Coli	3	15	3	124	236/64	0
2014	B	E. Coli	7	17	3	172	236/64	0
2015	B	E. Coli	8	17	6	44	236/64	0
2016	B	E. Coli	7	7	2	39	236/64	0

2017	B	E. Coli	6	20	6	47	236/64	0
2018	B	E. Coli	8	20	4	53	236/64	0
2019	B	E. Coli	7	9	<1	55	236/64	0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR39**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	9.1	7.1	11.3	7	0
2010	B	8	7.6	6.6	8.9	7	2
2011	B	6	7.4	6.8	8.2	7	1
2012	B	6	8.0	7.0	8.9	7	0
2013	B	7	7.2	5.9	7.9	7	3
2014	B	6	6.9	6.6	7.6	7	5
2015	B	8	7.7	7.2	8.9	7	0
2016	B	8	7.0	6.0	8.4	7	4
2017	B	8	7.5	6.7	8.0	7	1
2018	B	9	7.1	6.6	8.1	7	5
2019	B	6	7.5	6.5	8.4	7	1

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR39**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	91.6	84.4	98.5	75	0
2010	B	8	90	84	98	75	0
2011	B	6	83.1	77.2	90.5	75	0
2012	B	6	88.0	82.1	92.7	75	0
2013	B	7	81.5	65.9	88.1	75	1
2014	B	6	79.8	77.3	86.2	75	0
2015	B	8	86.8	77.8	94.5	75	0
2016	B	8	79.3	65.1	89.2	75	3
2017	B	8	84.1	78.4	87.9	75	0
2018	B	9	81.7	76.8	86.9	75	0
2019	B	6	82.7	74.7	87.0	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR39**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	16.3	9.2	23.8	n/a	n/a
2010	B	8	22.2	17.7	25.5	n/a	n/a

2011	B	6	21.0	19.2	23.7	n/a	n/a
2012	B	6	21.1	15.0	24.7	n/a	n/a
2013	B	7	20.9	15.5	25.0	n/a	n/a
2014	B	6	22.1	20.7	23.7	n/a	n/a
2015	B	8	21.3	17.3	24.3	n/a	n/a
2016	B	8	21.6	18.8	24.8	n/a	n/a
2017	B	8	21.4	18.8	23.2	n/a	n/a
2018	B	9	22.6	18.5	26.3	n/a	n/a
2019	B	7	21.0	17.0	24.1	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR39**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	4	99	95	105	n/a	n/a
2010	B	8	99	88	115	n/a	n/a
2011	B	6	106	82	119	n/a	n/a
2012	B	6	81	61	99	n/a	n/a
2013	B	7	102	14	130	n/a	n/a
2014	B	6	143	130	160	n/a	n/a
2015	B	8	163	150	170	n/a	n/a
2016	B	8	186	164	220	n/a	n/a
2017	B	7	148	122	169	n/a	n/a
2018	B	8	192	158	211	n/a	n/a
2019	B	7	152	121	169	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR39**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	--	--	--	--	--	--	--
2010	B	E. Coli	7	63	32	299	236/64	1
2011	B	E. Coli	6	52	33	81	236/64	0
2012	B	E. Coli	6	42	23	158	236/64	0
2013	B	E. Coli	8	32	20	91	236/64	0
2014	B	E. Coli	7	68	4	155	236/64	0
2015	B	E. Coli	8	66	36	196	236/64	0
2016	B	E. Coli	7	89	47	249	236/64	1

2017	B	E. Coli	6	71	56	115	236/64	0
2018	B	E. Coli	8	90	45	579	236/64	1
2019	B	E. Coli	7	43	<1	260	236/64	1

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR35**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	4	9.9	8.0	12.0	7	0
2010	B	8	8.8	8.1	9.9	7	0
2011	B	6	8.8	8.5	9.2	7	0
2012	B	6	8.9	8.5	10.1	7	0
2013	B	7	8.3	7.0	9.3	7	0
2014	B	6	8.1	7.8	8.4	7	0
2015	B	8	8.4	7.9	9.4	7	0
2016	B	7	8.7	8.0	9.3	7	0
2017	B	8	8.5	8.0	9.0	7	0
2018	B	9	8.2	7.4	9.0	7	0
2019	B	6	8.7	7.9	9.6	7	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR35**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	4	100.9	96.8	104.2	75	0
2010	B	8	101	98	105	75	0
2011	B	6	97.0	91.9	99.6	75	0
2012	B	6	98.8	95.0	103.1	75	0
2013	B	7	93.6	88.6	97.1	75	0
2014	B	6	92.6	89.6	94.8	75	0
2015	B	8	95.6	85.6	100.6	75	0
2016	B	7	96.9	90.3	102.1	75	0
2017	B	8	95.9	92.6	97.8	75	0
2018	B	9	94.1	91.8	96.1	75	0
2019	B	6	96.8	93.1	100.1	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR35**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	4	16.8	9.2	23.8	n/a	n/a
2010	B	8	22.1	17.6	25.3	n/a	n/a
2011	B	6	21.0	19.1	23.2	n/a	n/a
2012	B	6	21.1	15.1	25.1	n/a	n/a
2013	B	7	20.6	14.9	24.7	n/a	n/a
2014	B	6	22.0	20.5	23.9	n/a	n/a
2015	B	8	21.2	17.6	24.2	n/a	n/a
2016	B	7	21.2	19.0	24.7	n/a	n/a
2017	B	8	21.2	18.7	22.9	n/a	n/a
2018	B	9	22.1	18.4	26.1	n/a	n/a
2019	B	7	20.9	16.8	23.7	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOUR35**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	3	202	89	280	n/a	n/a
2012	B	5	89	54	115	n/a	n/a
2013	B	7	70	70	70	n/a	n/a
2015	B	8	169	150	180	n/a	n/a
2016	B	4	183	163	197	n/a	n/a
2017	B	7	151	128	173	n/a	n/a
2018	B	8	193	160	210	n/a	n/a
2019	B	7	153	119	170	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR35**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	--	--	--	--	--	--	--
2010	B	Entero	7	87	41	187	54/8	5
2011	B	Entero	5	51	31	160	54/8	1

2012	B	Entero	6	42	10	97	54/8	3
2013	B	E. Coli	8	62	33	113	236/64	0
2015	B	E. Coli	7	70	31	148	236/64	0
2016	B	E. Coli	8	83	44	206	236/64	0
2017	B	E. Coli	6	126	38	548	236/64	1
2018	B	E. Coli	8	54	28	238	236/64	1
2019	B	E. Coli	7	32	1	361	236/64	1

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOUR04**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	SB	5	9.4	7.5	11.3	n/a	n/a
2010	SB	8	10.2	8.8	13.1	m/a	n/a
2011	SB	6	9.5	8.9	10.7	n/a	n/a
2012	SB	5	8.6	7.6	9.3	n/a	n/a
2014	SB	5	8.1	7.4	10.6	n/a	n/a
2015	SB	8	8.7	7.0	10.5	n/a	n/a
2016	SB	7	8.2	6.8	9.4	n/a	n/a
2017	SB	8	10.3	8.4	11.5	n/a	n/a
2018	SB	9	8.4	6.6	11.7	n/a	n/a
2019	SB	6	8.0	6.3	11.5	n/a	n/a

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOUR04**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	SB	5	93.0	84.6	101.4	85	1
2010	SB	8	110	89	125	85	0
2011	SB	6	101.5	96.6	106.2	85	0
2012	SB	5	95.4	86.4	103.3	85	0
2014	SB	5	88.0	80.1	107.2	85	3
2015	SB	8	91.4	78.1	101.0	85	1
2016	SB	7	86.3	69.5	97.8	85	3
2017	SB	8	105.5	93.9	113.8	85	0
2018	SB	9	98.0	81.7	111.6	85	1
2019	SB	6	89.9	77.5	108.0	85	2

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOUR04**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	SB	5	15.3	10.7	21.5	n/a	n/a
2010	SB	8	16.8	12.4	22.4	n/a	n/a
2011	SB	6	16.7	15.2	18.1	n/a	n/a

2012	SB	5	17.8	16.9	18.6	n/a	n/a
2014	SB	5	20.0	15.8	21.2	n/a	n/a
2015	SB	8	18.7	14.0	22.1	n/a	n/a
2016	SB	7	17.8	16.4	19.7	n/a	n/a
2017	SB	8	16.6	12.5	20.8	n/a	n/a
2018	SB	9	17.6	13.6	20.5	n/a	n/a
2019	SB	7	17.7	12.2	19.9	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOUR04**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	SB	--	--	--	--	--	--	--
2010	SB	Entero	8	35	<10	203	54/8	5
2011	SB	Entero	3	52	<10	85	54/8	1
2012	SB	Entero	--	--	--	--	54/8	--
2014	SB	E. Coli	5	164	7	411	236/64	4
2015	SB	Entero	8	76	20	250	54/8	4
2016	SB	Entero	7	18	10	75	54/8	1
2017	SB	Entero	6	13	10	41	54/8	0
2018	SB	Entero	9	11	<10	41	54/8	0
2019	SB	Entero	7	50	<10	465	54/8	3

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOURMB58**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	9.9	8.4	11.5	7	0
2010	B	7	7.5	6.3	8.5	7	1
2011	B	7	7.8	6.7	9.2	7	1
2012	B	8	8.0	7.1	10.1	7	0

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOURMB58**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	90.8	83.0	97.7	75	0
2010	B	7	83	71	93	75	1
2011	B	7	83.6	75.6	92.8	75	0
2012	B	8	83.5	76.8	93.2	75	0

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOURMB58**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	12.3	8.4	19.0	n/a	n/a
2010	B	7	20.2	15.7	23.0	n/a	n/a
2011	B	7	19.1	16.0	21.8	n/a	n/a
2012	B	8	23.2	19.0	26.0	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOURMB58**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	--	--	--	--	--	--	--
2010	B	E. Coli	6	43	15	160	236/64	0

2011	B	--	--	--	--	--	--	--
2012	B	--	--	--	--	--	--	--

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **MOURMB33**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	9.2	7.7	11.2	7	0
2010	B	7	7.6	7.0	8.8	7	0
2011	B	7	7.7	7.2	8.7	7	0
2012	B	8	7.5	6.7	10.1	7	2
2013	B	5	8.4	7.5	9.4	7	0
2014	B	6	7.9	7.0	8.9	7	0
2015	B	6	7.2	5.6	9.2	7	4
2016	B	4	6.3	5.9	6.6	7	4

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **MOURMB33**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	84.8	75.4	94.4	75	0
2010	B	7	81	76	85	75	0
2011	B	7	81.1	76.2	88.2	75	0
2012	B	8	77.1	66.3	93.5	75	3
2013	B	5	84.7	77.7	93.3	75	0
2014	B	6	81.8	70.6	92.2	75	1
2015	B	6	73.1	55.8	85.9	75	4
2016	B	4	66.1	64.0	68.2	75	4

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **MOURMB33**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	12.3	8.2	18.0	n/a	n/a
2010	B	7	18.3	14.4	21.6	n/a	n/a
2011	B	7	17.9	16.1	18.9	n/a	n/a

2012	B	8	22.6	18.8	24.6	n/a	n/a
2013	B	5	16.1	12.3	19.4	n/a	n/a
2014	B	6	17.9	12.5	21.4	n/a	n/a
2015	B	6	16.7	14.5	19.9	n/a	n/a
2016	B	4	17.3	16.3	19.0	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **MOURMB33**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	75	41	102	n/a	n/a
2010	B	7	103	60	152	n/a	n/a
2011	B	7	96	60	138	n/a	n/a
2012	B	8	67	64	69	n/a	n/a
2013	B	5	116	50	210	n/a	n/a
2014	B	6	120	60	180	n/a	n/a
2015	B	6	190	80	260	n/a	n/a
2016	B	4	261	204	300	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **MOURMB33**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	--	--	--	--	--	--	--
2010	B	E. Coli	6	51	11	365	236/64	1
2011	B	E. Coli	7	164	44	866	236/64	2
2012	B	E. Coli	8	127	69	201	236/64	0
2013	B	E. Coli	6	137	37	345	236/64	3
2014	B	E. Coli	5	124	48	2420	236/64	1
2015	B	E. Coli	7	74	28	225	236/64	0
2016	B	E. Coli	4	48	12	148	236/64	0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **LR18**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	5.9	2.7	8.9	7	3
2010	B	2	6.5	5.0	8.1	7	1
2011	B	7	4.9	3.4	6.7	7	7
2012	B	8	4.4	3.1	5.7	7	8
2013	B	5	3.7	2.1	4.8	7	5
2014	B	6	4.4	2.8	6.4	7	6
2015	B	6	4.6	3.5	5.5	7	6
2016	B	4	5.4	5.3	5.6	7	4

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **LR18**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	55.0	29.0	75.4	75	4
2010	B	2	74	58	90	75	1
2011	B	7	56.7	37.8	77.0	75	6
2012	B	8	48.2	35.0	57.9	75	8
2013	B	5	39.8	23.1	49.0	75	5
2014	B	6	48.8	31.5	66.0	75	6
2015	B	6	51.5	41.8	58.6	75	6
2016	B	4	62.1	59.1	66.4	75	4

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **LR18**							
Year	**Class**	**# Sample Points**	**Mean**	**Minimum**	**Maximum**	**Criterion**	**# Not Meeting Criterion**
2009	B	5	14.0	8.8	21.0	n/a	n/a
2010	B	2	21.5	20.0	23.0	n/a	n/a
2011	B	7	21.6	17.7	23.9	n/a	n/a
2012	B	8	20.2	13.4	24.0	n/a	n/a
2013	B	5	19.4	15.2	22.1	n/a	n/a
2014	B	6	20.4	15.0	23.6	n/a	n/a
2015	B	6	21.1	18.3	24.4	n/a	n/a

2016	B	4	22.7	21.3	25.5	n/a	n/a

A summary of mean, minimum and maximum specific conductivity (µS /cm) values at Wells NERR monitoring station: **LR18**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	B	5	72	56	85	n/a	n/a
2010	B	2	84	80	87	n/a	n/a
2011	B	7	103	95	114	n/a	n/a
2012	B	8	91	46	103	n/a	n/a
2013	B	5	98	80	120	n/a	n/a
2014	B	6	102	80	110	n/a	n/a
2015	B	6	125	119	140	n/a	n/a
2016	B	4	139	123	146	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **LR18**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	B	--	--	--	--	--	--	--
2010	B	E. Coli	4	12	5	59	236/64	0
2011	B	E. Coli	7	38	3	276	236/64	1
2012	B	E. Coli	8	56	29	461	236/64	1
2013	B	E. Coli	7	57	19	365	236/64	1
2014	B	E. Coli	5	90	17	2420	236/64	1
2015	B	E. Coli	7	34	15	131	236/64	0
2016	B	E. Coli	4	27	21	37	236/64	0

A summary of mean, minimum and maximum dissolved oxygen concentration (mg/l) values at Wells NERR monitoring station: **BC02**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	SB	5	8.2	5.5	11.7	n/a	n/a
2010	SB	7	10.3	9.1	13.1	n/a	n/a
2011	SB	6	9.5	8.7	10.2	n/a	n/a
2012	SB	6	8.4	6.7	10.3	n/a	n/a
2013	SB	6	8.7	7.2	10.4	n/a	n/a
2014	SB	6	8.1	7.1	10.4	n/a	n/a
2015	SB	2	8.8	8.5	9.2	n/a	n/a
2016	SB	5	7.4	5.9	8.6	n/a	n/a
2017	SB	8	9.8	8.1	11.3	n/a	n/a
2018	SB	8	7.6	5.7	9.5	n/a	n/a
2019	SB	6	7.1	5.4	9.8	n/a	n/a

A summary of mean, minimum and maximum dissolved oxygen saturation (%) values at Wells NERR monitoring station: **BC02**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	SB	5	79.0	60.5	101.2	85	3
2010	SB	7	109	98	125	85	0
2011	SB	6	99.0	93.6	105.8	85	0
2012	SB	6	89.9	72.5	104.3	85	1
2013	SB	6	90.6	76.2	99.7	85	2
2014	SB	6	82.5	70.5	105.1	85	5
2015	SB	2	87.0	85.0	89.0	85	0
2016	SB	5	77.8	61.6	90.1	85	3
2017	SB	8	99.9	83.7	106.5	85	1
2018	SB	8	91.5	70.6	112.5	85	4
2019	SB	6	81.3	65.9	107.8	85	4

A summary of mean, minimum and maximum water temperature (°C) values at Wells NERR monitoring station: **BC02**

Year	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
2009	SB	5	14.2	10.7	18.8	n/a	n/a

2010	SB	7	16.7	12.4	21.1	n/a	n/a
2011	SB	6	16.1	13.0	18.0	n/a	n/a
2012	SB	6	16.1	14.8	17.9	n/a	n/a
2013	SB	6	17.4	13.9	20.4	n/a	n/a
2014	SB	6	17.0	13.8	20.3	n/a	n/a
2015	SB	2	15.4	13.6	17.2	n/a	n/a
2016	SB	5	17.6	15.6	19.8	n/a	n/a
2017	SB	8	16.4	12.5	18.9	n/a	n/a
2018	SB	8	17.0	13.5	20.6	n/a	n/a
2019	SB	7	16.5	12.2	19.1	n/a	n/a

A summary of geometric mean, minimum and maximum bacteria (MPN/100 mL) values at Wells NERR monitoring station: **BC02**

Year	Class	Bacteria Type	# Sample Points	Mean	Minimum	Maximum	Criterion Instant/Geo	# Exceeding Criterion
2009	SB	--	--	--	--	--	--	--
2010	SB	--	--	--	--	--	--	--
2011	SB	--	--	--	--	--	--	--
2012	SB	Entero	5	13	<10	20	54/8	0
2013	SB	Entero	5	18	10	41	54/8	0
2014	SB	Entero	6	87	20	504	54/8	3
2015	SB	Entero	3	--	10	148	54/8	2
2016	SB	Entero	6	16	10	52	54/8	0
2017	SB	Entero	6	14	10	41	54/8	0
2018	SB	Entero	8	12	<10	63	54/8	1
2019	SB	Entero	7	41	<10	1190	54/8	3

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)	Entero-cocci (MPN/ 100ML)
Mousam River - Mousam and Kennebunk Rivers Alliance/Wells Reserve: Approved Sites																
BC-02	BACK CREEK - SMUBC02 - VRMP	6/14/2019	8:57 AM	NA			12.2	9.8	107.8		27.2					U<10
BC-02	BACK CREEK - SMUBC02 - VRMP	6/25/2019	9:03 AM	NA			15.8	8.0	94.0		25.6					U<10
BC-02	BACK CREEK - SMUBC02 - VRMP	6/25/2019	9:03 AM	D			15.8	8.0	93.3		25.6					10
BC-02	BACK CREEK - SMUBC02 - VRMP	7/23/2019	8:54 AM	NA			17.8	5.4	65.9		18.2					794
BC-02	BACK CREEK - SMUBC02 - VRMP	8/7/2019	9:11 AM	NA			18.7				26.4					10
BC-02	BACK CREEK - SMUBC02 - VRMP	8/21/2019	9:14 AM	NA			18.6	5.6	68.6		24.3					10
BC-02	BACK CREEK - SMUBC02 - VRMP	9/4/2019	9:09 AM	NA			19.1	6.0	72.7		23.5					85
BC-02	BACK CREEK - SMUBC02 - VRMP	9/18/2019	9:04 AM	NA			13.9	6.8	66.8		25.8					1190
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	6/14/2019	8:35 AM	NA			12.2	11.5	108.0		26.9					U<10
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	6/25/2019	8:43 AM	NA			17.9	8.3	93.7		11.9					74
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	7/23/2019	8:35 AM	NA			19.7	6.3	77.5		15.5					465
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	8/7/2019	8:52 AM	NA			18.6				23					31
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	8/21/2019	8:52 AM	NA			19.9	7.0	85.8		16.8					20
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	9/4/2019	8:52 AM	NA			19.8	7.5	89.8		13.7					20
MOUR-04	MOUSAM RIVER - SMU04 - VRMP	9/18/2019	8:45 AM	NA			15.8	7.4	84.3		15.1					373
MOUR-232	MOUSAM RIVER - SMU232-VRMP	6/21/2019	7:30 AM	NA			19.8	8.6	93.7	104.7						
MOUR-232	MOUSAM RIVER - SMU232-VRMP	7/11/2019	7:33 AM	NA			24.9	7.6	92.4	165.1						
MOUR-232	MOUSAM RIVER - SMU232-VRMP	7/23/2019	7:36 AM	NA					99.2	186.1						
MOUR-232	MOUSAM RIVER - SMU232-VRMP	8/7/2019	7:40 AM	NA			24.8	8.1	98.5	160.5						
MOUR-232	MOUSAM RIVER - SMU232-VRMP	8/21/2019	7:30 AM	NA			24.0	8.1	97.0	152.2						
MOUR-250	MOUSAM RIVER - SMU250 - VRMP	6/21/2019	7:20 AM	NA			19.0	8.6	92.5	87						
MOUR-250	MOUSAM RIVER - SMU250 - VRMP	7/11/2019	7:22 AM	NA			24.3	7.6	90.1	144.7						
MOUR-250	MOUSAM RIVER - SMU250 - VRMP	7/23/2019	7:22 AM	NA			24.8	7.8	94.0	157.3						
MOUR-250	MOUSAM RIVER - SMU250 - VRMP	7/23/2019	7:22 AM	D			24.9	7.8	93.8	158.5						
MOUR-250	MOUSAM RIVER - SMU250 - VRMP	8/7/2019	7:25 AM	NA			24.5	7.9	90.4	141.1						
MOUR-250	MOUSAM RIVER - SMU250 - VRMP	8/21/2019	7:21 AM	NA			24.4	7.9	94.1	129.8						
MOUR-280	MOUSAM RIVER - SMU280 - VRMP	6/21/2019	7:10 AM	NA			19.5	8.1	81.7	77						
MOUR-280	MOUSAM RIVER - SMU280 - VRMP	7/11/2019	7:11 AM	NA			23.1	7.2	83.1	114.4						
MOUR-280	MOUSAM RIVER - SMU280 - VRMP	7/23/2019	7:12 AM	NA			23.5	7.6	88.9	127.9						
MOUR-280	MOUSAM RIVER - SMU280 - VRMP	8/7/2019	7:15 AM	NA			24.7	7.3	87.8	125.5						
MOUR-280	MOUSAM RIVER - SMU280 - VRMP	8/21/2019	7:10 AM	NA			23.1	7.6	88.4	87.6						
MOUR-290	MOUSAM RIVER - SMU290 - VRMP	6/21/2019	7:00 AM	NA			20.4	8.8	91.1	60						

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)	Entero-cocci (MPN/ 100ML)
MOUR-290	MOUSAM RIVER - SMU290 - VRMP	7/11/2019	7:00 AM	NA			24.7	6.8	81.1	88.8						
MOUR-290	MOUSAM RIVER - SMU290 - VRMP	7/23/2019	7:05 AM	NA			26.4	7.0	87.5	103.6						
MOUR-290	MOUSAM RIVER - SMU290 - VRMP	8/7/2019	7:05 AM	NA			26.2	7.3	90.8	90.7						
MOUR-290	MOUSAM RIVER - SMU290 - VRMP	8/21/2019	7:00 AM	NA			25.0	7.7	91.7	86.5						
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	6/14/2019	8:08 AM	NA			17.0	9.6	99.3	119.4					57	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	6/25/2019	8:12 PM	NA			20.3	8.8	98.0	138.7					32	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	7/23/2019	8:10 AM	NA			23.5	7.9	93.1	157.1					361	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	8/7/2019	8:26 AM	NA			23.7			169.9					22	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	8/21/2019	8:21 AM	NA			23.5	8.5	100.1	167					1	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	9/4/2019	8:19 AM	NA			21.1	8.6	96.3	163					42	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	9/4/2019	8:19 AM	D			21.1	8.6	96.2	163.1					43	
MOUR-35	MOUSAM RIVER - SMU35 - VRMP	9/18/2019	8:16 AM	NA			16.8	9.3	94.5	145.2					58	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	6/14/2019	7:43 AM	NA			17.4	8.4	87.0	121.3					110	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	6/25/2019	7:56 AM	NA			20.1	7.8	85.1	138.6					115	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	7/23/2019	7:46 AM	NA			24.1	6.5	74.7	159					260	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	8/7/2019	8:03 AM	NA			23.8			168.1					34	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	8/21/2019	8:03 AM	NA			23.4	7.1	81.9	169.1					U<1	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	9/4/2019	8:01 AM	NA			21.1	7.6	86.3	163.5					43	
MOUR-39	MOUSAM RIVER - SMU39 - VRMP	9/18/2019	7:54 AM	NA			17.0	7.9	81.3	147					120	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	6/14/2019	7:03 AM	NA			17.8	8.3	87.7	131.1					55	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	6/25/2019	7:08 AM	NA			20.8	7.7	86.4	136.5					13	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	7/23/2019	7:00 AM	NA			24.9	6.5	78.9	153.4					13	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	8/7/2019	6:58 AM	NA			24.4			162.6					38	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	8/7/2019	6:58 AM	D						162.5					23	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	8/21/2019	7:04 AM	NA			24.1	7.6	90.6	157.4					U<1	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	9/4/2019	7:10 AM	NA			21.3	7.4	83.2	157.9					3	
MOUR-80	MOUSAM RIVER - SMU80 - VRMP	9/18/2019	7:03 AM	NA			17.5	7.3	77.9	138.8					9	