



MONTHLY REPORTING PERIOD - MARCH, 2018

1. SUMMARY

The list below provides a summary of the water quality information collected by BMID in March, 2018. Documentation and figures are provided on the following pages to support this submission.

Source	March 2018	
	Total (US Gals)	Total (Mega Litres)
Mission Creek	52,009,000	196.85
Well 4	0	0
Well 5	629,000	2.38
Scotty Creek (Irrigation Only)	0	0
Total	52,638,000	199.23

1. Turbidity levels at the Distribution Intake remained below 1.0 NTU for all of March. Peak turbidity at the Distribution Intake was 0.40 NTU at various times during late March, 2018;
2. The highest monthly turbidity level recorded at the first customer (Booster #1) was 0.60 NTU on March 24, 2018 and average monthly turbidity was 0.47 NTU;
3. Mission Creek experienced normal flows for early spring as the lower elevations of the watershed began melting;
4. BMID's Scotty Creek source, used for irrigation in the north end, was shut-off for the season on September 10, 2017;
5. Well #5 was used throughout March as a source for domestic water in the north-end of the system, in conjunction with Mission Creek system water, as determined by usage and pressures in the area;
6. A new dedicated sample location was added at 3976 Highway 97 North, which will take the place of the former sample site previously located at 612 Adams Rd;
7. *E. Coli* levels at Mission Creek's Point of Diversion were average during March. The highest raw water *E. Coli* count was 10 on March 20, 2018;
8. *E. Coli* levels at the Distribution Intake had low counts on all samples throughout the month, with a peak count of 1 on March 09, 2018;
9. No *E. Coli* and no *Coliforms* were found in treated water in the distribution system through third-party analysis. In addition, no positive bacteria tests were found from the in-house presence-absence tests during routine testing;
10. BMID's Water Treatment Plant resumed normal operations on March 15, 2018. The WTP will remain in use throughout the spring and summer until the Mission Creek water source is of sufficient quality to by-pass treatment;

1.0 FLOWS - MARCH, 2018

Maximum est. Daily Flow was on March 19, 2018 at 2,460,000 US gallons (9.31 ML)

Minimum est. Daily Flow was on March 27, 2018 at 1,019,000 US gallons (3.86 ML)

Mission Creek provided 99% of domestic flow throughout March.

Figure 1.1 - Domestic Water System Flow

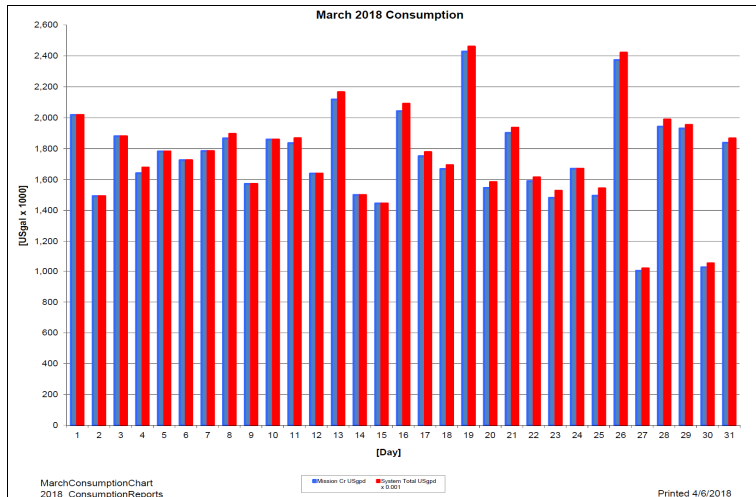


Table 1.2 - March, 2018 Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	System Total	System Total
2018	Usgpd	Usgpd	Usgpd	Usgpd	ML/Day
1-Mar	2,018,000	0	0.0	2,018,000	7.64
2-Mar	1,493,000	0	0.0	1,493,000	5.65
3-Mar	1,880,000	0	0.0	1,880,000	7.12
4-Mar	1,641,000	0	37,000.0	1,678,000	6.35
5-Mar	1,782,000	0	0.0	1,782,000	6.74
6-Mar	1,725,000	0	0.0	1,725,000	6.53
7-Mar	1,784,000	0	0.0	1,784,000	6.75
8-Mar	1,866,000	0	30,000.0	1,896,000	7.18
9-Mar	1,572,000	0	0.0	1,572,000	5.95
10-Mar	1,859,000	0	0.0	1,859,000	7.04
11-Mar	1,836,000	0	32,000.0	1,868,000	7.07
12-Mar	1,639,000	0	0.0	1,639,000	6.20
13-Mar	2,118,000	0	47,000.0	2,165,000	8.19
14-Mar	1,500,000	0	0.0	1,500,000	5.68
15-Mar	1,446,000	0	0.0	1,446,000	5.47
16-Mar	2,042,000	0	49,000.0	2,091,000	7.91
17-Mar	1,752,000	0	26,000.0	1,778,000	6.73
18-Mar	1,668,000	0	25,000.0	1,693,000	6.41
19-Mar	2,428,000	0	32,000.0	2,460,000	9.31
20-Mar	1,546,000	0	38,000.0	1,584,000	6.00
21-Mar	1,902,000	0	34,000.0	1,936,000	7.33
22-Mar	1,590,000	0	25,000.0	1,615,000	6.11
23-Mar	1,482,000	0	46,000.0	1,528,000	5.78
24-Mar	1,670,000	0	0.0	1,670,000	6.32
25-Mar	1,496,000	0	47,000.0	1,543,000	5.84
26-Mar	2,373,000	0	48,000.0	2,421,000	9.16
27-Mar	1,003,000	0	16,000.0	1,019,000	3.86
28-Mar	1,942,000	0	47,000.0	1,989,000	7.53
29-Mar	1,930,000	0	24,000.0	1,954,000	7.40
30-Mar	1,026,000	0	26,000.0	1,052,000	3.98
31-Mar	1,838,000	0	28,000.0	1,866,000	7.06
Totals Usgpd	52,009,000	0	629,000	52,638,000	199.23
Totals ML	196.85	0.00	2.38		
Avg's	1,733,633	6.56		1,754,600	6.64
Max	2,428,000	9.19		2,460,000	9.31
Min	1,003,000	3.80		1,019,000	3.86

2.0 RAW WATER QUALITY - BACTERIOLOGICAL MONITORING

Raw water samples were taken at three points at BMID settling ponds before chlorination

Samples were taken twice per week at the Distribution Intake's Point of Disinfection and at the Mission Creek raw water Point of Diversion; one sample is taken per week at Stevens Pond outlet (point halfway between WTP Outlet and Distribution Intake).

Samples from the previous month are also provided to show a two month trend

Figure 2.1 - E.Coli Readings (CARO Lab results) February 2018 - March 2018

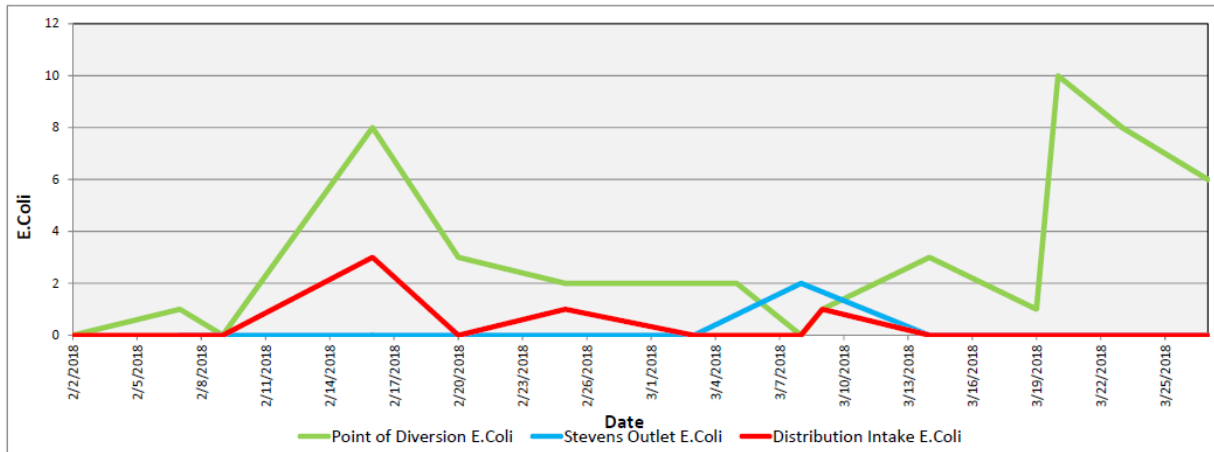


Table 2.2 - E.Coli Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
2-Feb-18	0		0
7-Feb-18	1	0	0
9-Feb-18	0		0
16-Feb-18	8	0	3
20-Feb-18	3		0
25-Feb-18	2		1
3-Mar-18	2	0	0
5-Mar-18	2		0
8-Mar-18	0	2	0
9-Mar-18	1		1
14-Mar-18	3	0	0
19-Mar-18	1		0
20-Mar-18	10	0	0
23-Mar-18	8		0
27-Mar-18	6	0	0

Stevens or WTP Intake (Raw) - Sampling of raw water at intake from Mission Creek

Stevens Outlet (Raw) - Sampling point after exiting 142,000 m³ 1st upper balancing reservoir (Stevens Res.)

Hadden Outlet (Raw) - Sampling point after exiting 75,000 m³ 2nd lower balancing reservoir (Hadden Res.)
 (Hadden Outlet = Distribution Intake - Point of Disinfection)

3.0 RAW AND TREATED WATER TURBIDITY

Turbidity for the Mission Creek source was measured at Booster Station No. 1 on Gallagher's Road, the first-customer, through March 2018. The highest turbidity recorded at this location was 0.60 NTU on March 24, 2018.

Figure 3.1 – Daily Turbidity Readings (Distribution Intake and Booster Station 1)

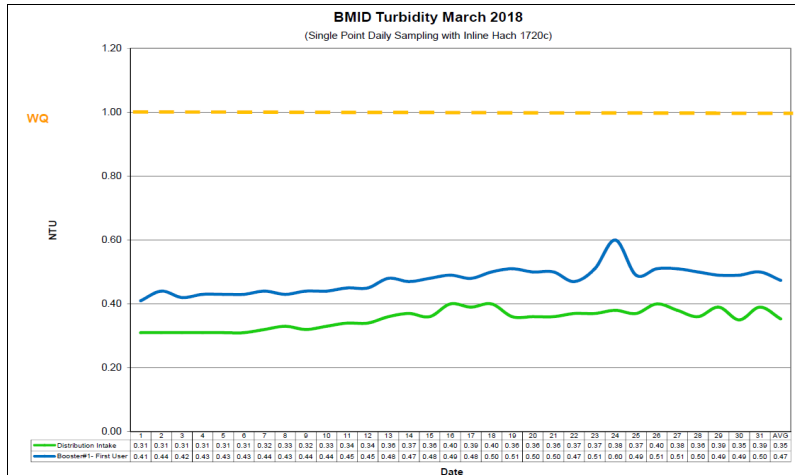


Table 3.2 - Daily Monitoring Record – Turbidity at Distribution Intake & Bst Stn 1

Turbidity Point Sampling for March 2018				
Date	Distribution Intake		Booster#1- First User	
	Sample Time	[NTU]	Sample Time	[NTU]
1	11:32 AM	0.31	10:52 AM	0.41
2	9:05 AM	0.31	8:25 AM	0.44
3	11:00 AM	0.31	10:28 AM	0.42
4	9:51 AM	0.31	9:23 AM	0.43
5	8:58 AM	0.31	8:22 AM	0.43
6	8:57 AM	0.31	8:00 AM	0.43
7	9:20 AM	0.32	8:07 AM	0.44
8	10:26 AM	0.33	9:40 AM	0.43
9	8:25 AM	0.32	7:54 AM	0.44
10	10:28 AM	0.33	9:56 AM	0.44
11	11:25 AM	0.34	11:05 AM	0.45
12	9:30 AM	0.34	8:52 AM	0.45
13	12:03 PM	0.36	2:01 PM	0.48
14	2:25 PM	0.37	8:44 AM	0.47
15	8:06 AM	0.36	7:44 AM	0.48
16	1:32 PM	0.40	11:45 AM	0.49
17	11:49 AM	0.39	11:00 AM	0.48
18	12:25 PM	0.40	11:30 AM	0.50
19	9:07 AM	0.36	8:07 AM	0.51
20	8:36 AM	0.36	8:07 AM	0.50
21	9:07 AM	0.36	8:16 AM	0.50
22	9:24 AM	0.37	8:50 AM	0.47
23	8:49 AM	0.37	8:09 AM	0.51
24	8:26 AM	0.38	7:57 AM	0.60
25	8:14 AM	0.37	7:48 AM	0.49
26	1:17 PM	0.40	3:39 AM	0.51
27	8:35 AM	0.38	7:57 AM	0.51
28	8:40 AM	0.36	8:21 AM	0.50
29	2:30 PM	0.39	12:54 PM	0.49
30	7:50 AM	0.35	7:24 AM	0.49
31	9:31 AM	0.39	8:57 AM	0.50
AVG		0.35		0.47

4.0 CHLORINE CONTACT TIME

Temperature, pH, current flow and chlorine residual levels are recorded to determine the CT levels that are required to provide 3 log inactivation of *Giardia*. Chlorine Contact times exceeded the CT levels required to provide 3 log (99.9%) inactivation of *Giardia Lamblia* throughout the month of March, 2018.

Figure 4.1 - CT Trending – BMID Mission Creek Source – March 2018

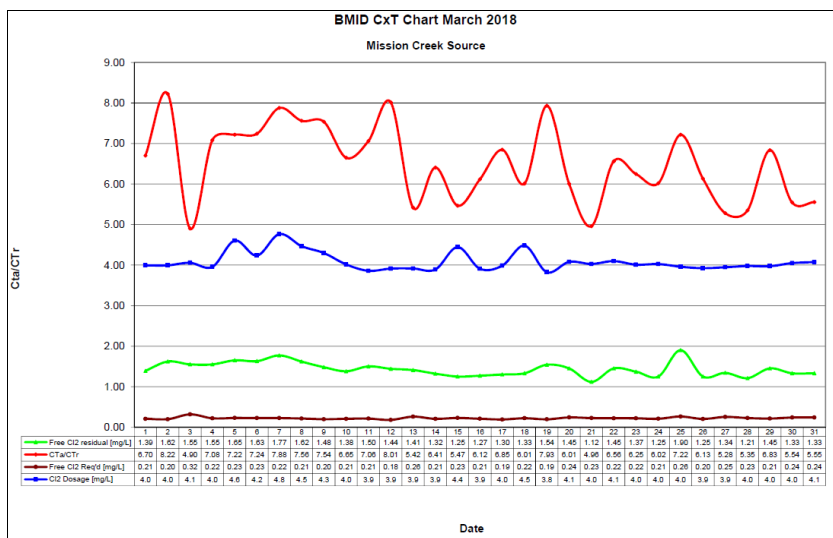


Table 4.2 - CT Table – Mission Creek Source

BMID March 2018													
Mission Creek Source													
DATE	pH	TEMP	PEAK	Free Cl ₂	CT	CT	CTa/CTr	Free Cl ₂	Cl ₂	VOLUME	TIME	FLOW	Cl ₂ DOSAGE
	(highest)	(lowest)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL		PRESENT	PRESENT
March		[°C]	[USgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]	[mins]	6873	[PPD]
1	7.77	1.7	1967	1.39	1872.4	279.4	6.70	0.21	4.0	2649600	1347	1313	63
2	7.78	1.6	1816	1.62	2363.6	287.5	8.22	0.20	4.0	2649600	1459	1125	54
3	7.79	1.6	2909	1.55	1411.8	287.9	4.90	0.32	4.1	2649600	911	1272	62
4	7.78	1.6	2021	1.55	2032.1	286.9	7.08	0.22	4.0	2649600	1311	1472	70
5	7.80	1.7	2091	1.65	2090.8	289.6	7.22	0.23	4.6	2649600	1267	1193	66
6	7.80	1.6	2060	1.63	2096.5	289.5	7.24	0.23	4.2	2649600	1286	1179	60
7	7.81	1.8	2044	1.77	2294.4	291.3	7.88	0.22	4.8	2649600	1296	1188	68
8	7.82	1.6	1948	1.62	2203.5	291.4	7.56	0.21	4.5	2649600	1360	1192	64
9	7.84	1.5	1780	1.48	2203.0	292.3	7.54	0.20	4.3	2649600	1489	1336	69
10	7.86	1.4	1875	1.38	1950.1	293.3	6.65	0.21	4.0	2649600	1413	1326	64
11	7.85	1.5	1918	1.50	2072.2	293.5	7.06	0.21	3.9	2649600	1381	1380	64
12	7.87	1.4	1614	1.44	2364.0	295.0	8.01	0.18	3.9	2649600	1642	1297	61
13	7.89	1.4	2324	1.41	1607.5	296.7	5.42	0.26	3.9	2649600	1140	1041	49
14	7.89	1.3	1847	1.32	1893.6	295.6	6.41	0.21	3.9	2649600	1435	941	41
15	8.04	1.3	1955	1.25	1694.1	309.9	5.47	0.23	4.4	2649600	1355	1292	69
16	8.07	1.3	1756	1.27	1916.3	313.3	6.12	0.21	3.9	2649600	1509	1128	53
17	7.14	1.3	2229	1.30	1545.3	225.7	6.85	0.19	4.0	2649600	1189	1775	85
18	8.15	1.3	1817	1.33	1939.4	322.6	6.01	0.22	4.5	2649600	1458	1300	70
19	8.20	1.5	1557	1.54	2620.7	330.4	7.93	0.19	3.8	2649600	1702	1327	61
20	8.31	1.5	1873	1.45	2051.2	341.5	6.01	0.24	4.1	2649600	1415	1265	62
21	8.27	1.2	1808	1.12	1638.4	330.4	4.96	0.23	4.0	2649600	1485	1281	62
22	8.38	1.5	1676	1.45	2292.3	349.3	6.56	0.22	4.1	2649600	1581	1178	58
23	8.21	1.4	1763	1.37	2059.0	329.6	6.25	0.22	4.0	2649600	1503	1266	61
24	8.25	1.3	1657	1.25	1998.8	332.2	6.02	0.21	4.0	2649600	1599	1199	58
25	8.27	1.3	1965	1.90	2562.0	355.0	7.22	0.26	4.0	2649600	1348	1303	62
26	8.07	1.3	1725	1.25	1920.0	313.0	6.13	0.20	3.9	2649600	1536	1124	53
27	8.38	1.3	1933	1.34	1836.8	347.9	5.28	0.25	3.9	2649600	1371	1223	58
28	8.35	1.2	1751	1.21	1831.0	342.4	5.35	0.23	4.0	2649600	1513	1318	63
29	8.39	1.5	1604	1.45	2395.2	350.5	6.83	0.21	4.0	2649600	1652	1215	58
30	8.40	1.3	1816	1.33	1940.5	350.0	5.54	0.24	4.0	2649600	1459	1562	76
31	8.44	1.3	1790	1.33	1968.7	354.5	5.55	0.24	4.1	2649600	1480	1593	78
Averages	8.03	1.42	1900	1.43	2039.9	311.9	6.17	0.22	4.0				

5.0 WATER DISTRIBUTION SAMPLING (TREATED)

Third Party Analysis (CARO Analytical Services)

- Samples taken once per week at eight locations around the BMID service area
- 37 samples were found to be absent of Coliforms.
- 37 samples were found to be absent of *E. Coli*.

Table 5.1 - CARO Independent Lab

Date	PRV 7		Booster 1		Ellison Blow-Off		Ellison School		612 Adams Rd		3976 Highway 97		Prospect Reservoir		Tower Reservoir		Well #5	
	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli	Coliforms	E.coli
5-Feb-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Feb-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Mar-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Mar-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Mar-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Mar-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Mar-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Testing – Total Coliforms – E.Coli

In-House Analysis (BMID Staff)

- Presence/Absence samples taken on a three week cycle at ten sites around the BMID service area.
- All samples were found to be absent of both Total Coliforms and *E. Coli*.

Table 5.2 - BMID In-house Testing – Presence Absence

Location	3/5/2018				3/12/2018				3/19/2018				3/26/2018			
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
Sylvania Cres 170 Kneller Rd	1.41	4.0	-	X	0.25	6.0	-	X					0.83	4.8	-	X
2105 Morrison Pearson School	1.09	5.4	-	X					0.78	5.2	-	X	0.73	5.4	-	X
Staymen Rd PRV #10	0.94	4.2	-	X	0.88	4.0	-	X					0.81	4.8	-	X
260 Campion Rd									0.80	7.0	-	X				
Fenwick Rd 2931 Belgo Rd					0.96	6.0	-	X	0.77	6.2	-	X				

- BMID Population = 22,550

RECOMMENDED TESTS

- Recommended number of samples per month = 22
 (as per Guide for Canadian Drinking Water Quality)

ACTUAL TESTS

- Total tests by BMID staff (presence/absence) = 12
- Total tests sampled by BMID and tested by Caro Labs = 37
- Total tests sampled in BMID treated distribution system = 49 (Zero Positive Samples)