



MONTHLY REPORTING PERIOD - JANUARY, 2017

1. SUMMARY

The list below provides a summary of the water quality information collected by BMID in January, 2017. Documentation and figures are provided on the following pages to support this submission.

Source	January 2017	
	Total (US Gals)	Total (Mega Litres)
Mission Creek	55,801,000	211.21
Well 4	0	0
Well 5	1,005,000	3.80
Scotty Creek (Irrigation Only)	0	0
Total	56,806,000	215.01

1. Turbidity levels at Hadden Pond Outlet, remained below 1.0 NTU for all of January. Peak turbidity at the intake was 0.51 NTU on January 01, 2017;
2. The highest monthly turbidity level recorded at the first customer (Booster #1) was 0.54 NTU on January 01, 2017 and average monthly turbidity was 0.49 NTU;
3. Mission Creek had average flows for January as temperatures in the Mission Creek watershed remained well below freezing, resulting in stable flows throughout the month;
4. *E.Coli* levels at the raw water intake on Mission Creek were average during January. The highest raw water *E.Coli* count was 6 on January 24, 2017;
5. *E.Coli* levels at the point immediately prior to disinfection (Hadden Outlet) had zero counts on most samples during January, with a peak count of 1 on January 05, 2017;
6. No *E.Coli* and no Coliforms were found in treated water in the distribution system through third-party analysis and no positive bacteria tests were found from the in-house presence-absence tests;
7. Well #5 was used throughout January 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;
8. BMID's Water Treatment Plant was shut down for the winter on December 3, 2016 as water quality in Mission Creek was of high enough quality to allow BMID to bypass the WTP;

1.0 FLOWS - JANUARY, 2017

Maximum est. Daily Flow was on January 18, 2017 at 2,611,000 US gallons (9.88 ML)

Minimum est. Daily Flow was on January 20, 2017 at 1,220,000 US gallons (4.62 ML)

Mission Creek provided 98% of domestic flow throughout January.

Figure 1.1 - Domestic Water System Flow

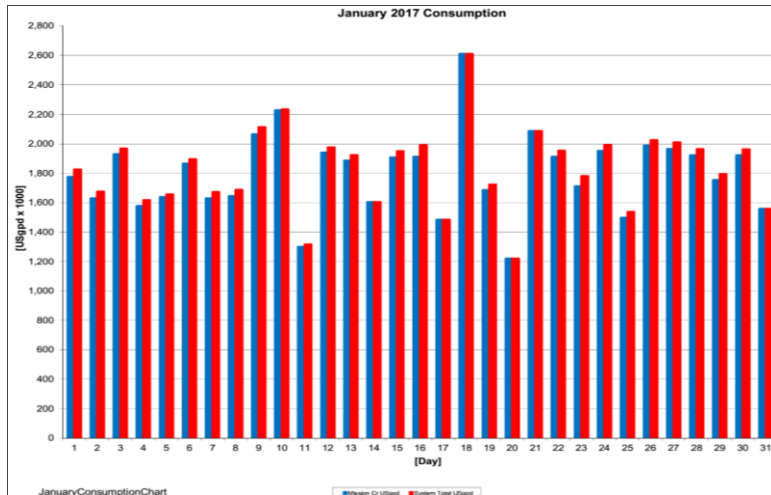


Table 1.2 - January, 2017 Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	System Total	System Total
2017	Usqpd	Usqpd	Usqpd	Usqpd	ML/Day
1-Jan	1,775,000	0	51,000.0	1,826,000	6.91
2-Jan	1,630,000	0	45,000.0	1,675,000	6.34
3-Jan	1,929,000	0	39,000.0	1,968,000	7.45
4-Jan	1,577,000	0	40,000.0	1,617,000	6.12
5-Jan	1,639,000	0	18,000.0	1,657,000	6.27
6-Jan	1,866,000	0	30,000.0	1,896,000	7.18
7-Jan	1,629,000	0	43,000.0	1,672,000	6.33
8-Jan	1,644,000	0	43,000.0	1,687,000	6.39
9-Jan	2,065,000	0	48,000.0	2,113,000	8.00
10-Jan	2,228,000	0	6,000.0	2,234,000	8.46
11-Jan	1,300,000	0	17,000.0	1,317,000	4.98
12-Jan	1,940,000	0	36,000.0	1,976,000	7.48
13-Jan	1,886,000	0	38,000.0	1,924,000	7.28
14-Jan	1,605,000	0	0.0	1,605,000	6.07
15-Jan	1,907,000	0	43,000.0	1,950,000	7.38
16-Jan	1,911,000	0	79,000.0	1,990,000	7.53
17-Jan	1,484,000	0	0.0	1,484,000	5.62
18-Jan	2,611,000	0	0.0	2,611,000	9.88
19-Jan	1,686,000	0	37,000.0	1,723,000	6.52
20-Jan	1,220,000	0	0.0	1,220,000	4.62
21-Jan	2,087,000	0	0.0	2,087,000	7.90
22-Jan	1,912,000	0	41,000.0	1,953,000	7.39
23-Jan	1,712,000	0	69,000.0	1,781,000	6.74
24-Jan	1,952,000	0	40,000.0	1,992,000	7.54
25-Jan	1,498,000	0	39,000.0	1,537,000	5.82
26-Jan	1,987,000	0	37,000.0	2,024,000	7.66
27-Jan	1,965,000	0	44,000.0	2,009,000	7.60
28-Jan	1,922,000	0	41,000.0	1,963,000	7.43
29-Jan	1,754,000	0	41,000.0	1,795,000	6.79
30-Jan	1,922,000	0	40,000.0	1,962,000	7.43
31-Jan	1,558,000	0	0.0	1,558,000	5.90
Totals Usqpd	55,801,000	0	1,005,000	56,806,000	215.01
Totals ML	211.21	0.00	3.80		
Avg's	1,808,100	6.84		1,841,600	6.97
Max	2,611,000	9.88		2,611,000	9.88
Min	1,220,000	4.62		1,220,000	4.62

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 Hadden Reservoir Outlet (point of disinfection) and at the raw water intake on Mission Creek; one sample is taken per week at Stevens (east, upstream settling basin) outlet.

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

Figure 2.1 - E.Coli Readings (CARO Lab results) December 2016 - January 2017

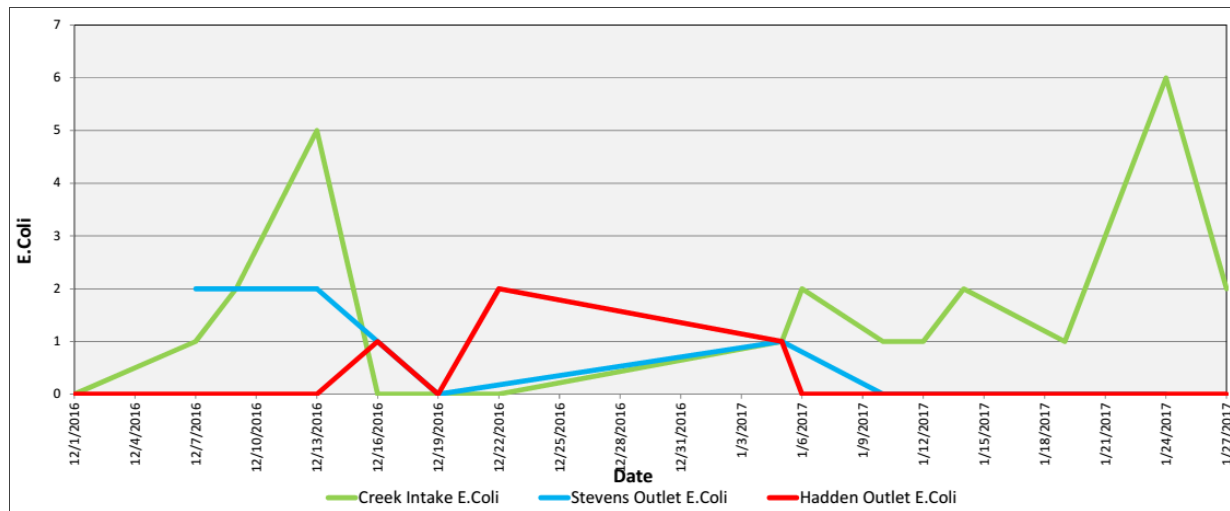


Table 2.2 - E.Coli Readings (CARO Labs)

Date	Creek Intake E.Coli	Stevens Outlet E.Coli	Hadden Outlet E.Coli
1-Dec-16	0		0
7-Dec-16	1	2	0
9-Dec-16	2		0
13-Dec-16	5	2	0
16-Dec-16	0		1
19-Dec-16	0	0	0
22-Dec-16	0		2
5-Jan-17	1	1	1
6-Jan-17	2		0
10-Jan-17	1	0	0
12-Jan-17	1		0
14-Jan-17	2	0	0
19-Jan-17	1		0
24-Jan-17	6	0	0
27-Jan-17	2		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 = 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 January 2017. The highest turbidity recorded at this location was 0.54 NTU on January 01, 2017.

Figure 3.1 – Daily Turbidity Readings (Hadden and Bst Stn 1)

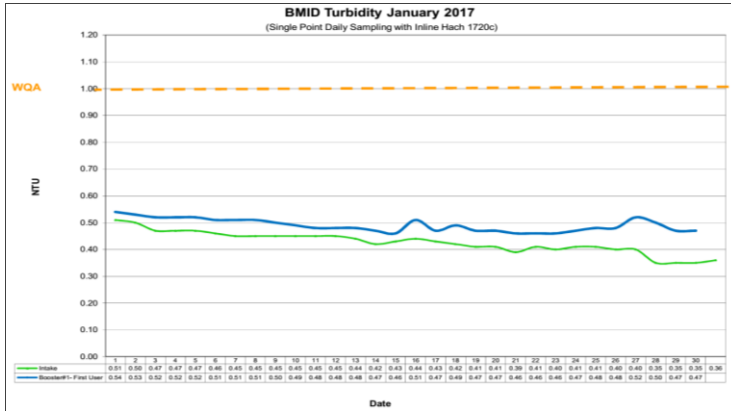


Table 3.2 - Daily Monitoring Record – Turbidity at Intake & Bst Stn 1

Turbidity Point Sampling for January 2017				
Date	Intake		Booster#1- First User	
	Sample Time	[NTU]	Sample Time	[NTU]
1	10:37 AM	0.51	11:25 AM	0.54
2	12:15 PM	0.50	11:21 AM	0.53
3	2:10 PM	0.47	9:36 AM	0.52
4	9:35 AM	0.47	8:39 AM	0.52
5	8:35 AM	0.47	8:05 AM	0.52
6	9:08 AM	0.46	8:36 AM	0.51
7	8:50 AM	0.45	8:19 AM	0.51
8	9:51 AM	0.45	8:28 AM	0.51
9	8:30 AM	0.45	8:00 AM	0.50
10	7:20 AM	0.45	12:00 PM	0.49
11	10:45 AM	0.45	8:25 AM	0.48
12	8:28 AM	0.45	7:55 AM	0.48
13	9:21 AM	0.44	8:28 AM	0.48
14	9:05 AM	0.42	8:27 AM	0.47
15	9:24 AM	0.43	8:55 AM	0.46
16	8:37 AM	0.44	9:15 AM	0.51
17	9:30 AM	0.43	8:40 AM	0.47
18	11:12 AM	0.42	3:28 PM	0.49
19	8:36 AM	0.41	1:25 PM	0.47
20	9:47 AM	0.41	8:55 AM	0.47
21	9:36 AM	0.39	9:15 AM	0.46
22	9:56 AM	0.41	9:38 AM	0.46
23	8:40 AM	0.40	8:15 AM	0.46
24	8:31 AM	0.41	7:55 AM	0.47
25	8:28 AM	0.41	7:52 AM	0.48
26	8:40 AM	0.40	7:57 AM	0.48
27	8:41 AM	0.40	8:00 AM	0.52
28	11:46 AM	0.35	11:03 AM	0.50
29	10:53 AM	0.35	9:49 AM	0.47
30	9:22 AM	0.35	8:45 AM	0.47
31	9:25 AM	0.36	7:51 AM	0.47
AVG		0.43		0.49

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 January, 2017.

Figure 4.1 - CT Trending – BMID Mission Creek Source – January 2017

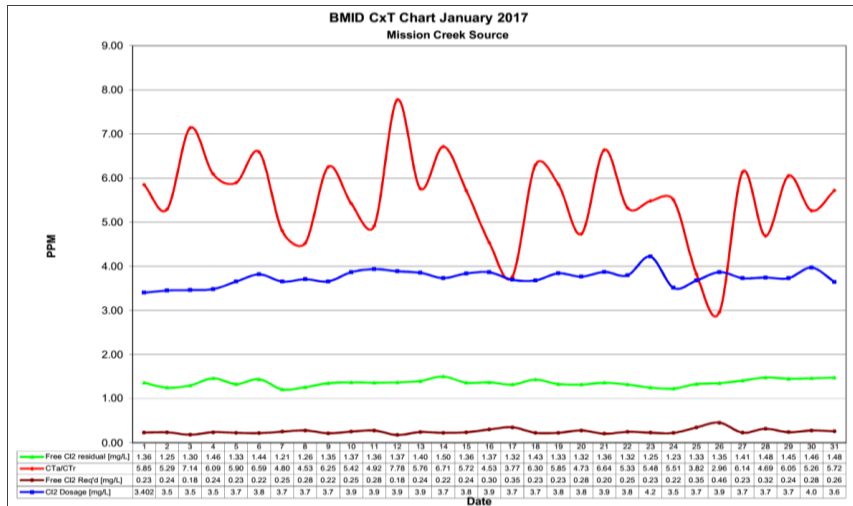


Table 4.2 - CT Table – Mission Creek Source

BMID January 2017 Mission Creek Source													
DATE	pH (highest)	TEMP (lowest)	PEAK FLOW	Free Cl ₂ residual	CT achieved	CT req'd	CTa/CTr	Free Cl ₂ Req'd	Cl ₂ Dosage	VOLUME TOTAL	TIME	FLOW PRESENT	CL ₂ DOSAGE PRESENT
January		[°C]	[Usgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]	[mins]		[PPD]
1	7.94	1.7	2095	1.36	1720.027	294.13	5.85	0.23	3.4023	2649600	1265	2030	83
2	7.95	1.7	2147	1.25	1542.6	291.4	5.29	0.24	3.5	2649600	1234	1423	59
3	7.94	1.6	1640	1.30	2100.3	294.2	7.14	0.18	3.5	2649600	1616	1130	47
4	7.95	1.4	2085	1.46	1855.4	304.6	6.09	0.24	3.5	2649600	1271	1768	74
5	7.93	1.6	2031	1.33	1735.1	294.2	5.90	0.23	3.7	2649600	1305	1663	73
6	7.96	1.6	1925	1.44	1982.0	300.8	6.59	0.22	3.8	2649600	1376	1134	52
7	7.95	1.6	2286	1.21	1402.5	292.0	4.80	0.25	3.7	2649600	1159	1799	79
8	7.95	1.8	2546	1.26	1311.3	289.7	4.53	0.28	3.7	2649600	1041	1302	58
9	7.98	1.4	1881	1.35	1901.6	304.1	6.25	0.22	3.7	2649600	1409	1092	48
10	7.99	1.5	2204	1.37	1647.0	303.7	5.42	0.25	3.9	2649600	1202	1076	50
11	8.00	1.5	2408	1.36	1496.5	304.3	4.92	0.28	3.9	2649600	1100	1099	52
12	7.97	1.4	1537	1.37	2361.7	303.7	7.78	0.18	3.9	2649600	1724	1263	59
13	7.96	1.5	2135	1.40	1737.4	301.6	5.76	0.24	3.9	2649600	1241	2052	95
14	7.98	1.6	1943	1.50	2045.5	304.7	6.71	0.22	3.7	2649600	1364	1404	63
15	8.00	1.5	2071	1.36	1740.0	304.3	5.72	0.24	3.8	2649600	1279	1345	62
16	7.98	1.4	2627	1.37	1381.8	304.7	4.53	0.30	3.9	2649600	1009	2240	104
17	8.07	1.5	2993	1.32	1168.6	310.2	3.77	0.35	3.7	2649600	885	1216	54
18	7.95	1.6	2010	1.43	1885.0	299.4	6.30	0.23	3.7	2649600	1318	1131	50
19	7.76	1.6	2169	1.33	1624.7	277.5	5.85	0.23	3.8	2649600	1222	1842	85
20	7.90	1.7	2558	1.32	1367.3	288.9	4.73	0.28	3.8	2649600	1036	1260	57
21	7.92	1.7	1858	1.36	1939.4	292.1	6.64	0.20	3.9	2649600	1426	1375	64
22	7.97	1.7	2220	1.32	1575.4	295.8	5.33	0.25	3.8	2649600	1194	2084	95
23	7.96	1.6	2053	1.25	1613.2	294.4	5.48	0.23	4.2	2649600	1291	1124	57
24	7.95	1.6	2022	1.23	1611.8	292.7	5.51	0.22	3.5	2649600	1310	1350	57
25	8.00	1.6	3061	1.33	1151.2	301.2	3.82	0.35	3.7	2649600	866	2376	105
26	8.00	1.6	3998	1.35	894.7	301.9	2.96	0.46	3.9	2649600	663	1635	76
27	8.03	1.7	1997	1.41	1870.8	304.8	6.14	0.23	3.7	2649600	1327	1427	64
28	8.10	1.8	2679	1.48	1463.8	312.1	4.69	0.32	3.7	2649600	989	2044	92
29	8.20	1.8	1977	1.45	1947.3	321.7	6.05	0.24	3.7	2649600	1340	1584	71
30	8.29	1.6	2187	1.46	1768.8	336.2	5.26	0.28	4.0	2649600	1212	1719	82
31	8.38	1.6	1977	1.48	1983.5	346.8	5.72	0.26	3.6	2649600	1340	1278	56
Averages	8.00	1.6	2236	1.36	1671.8	302.2	5.53	0.26	3.7				

5.0 WATER DISTRIBUTION SAMPLING (TREATED)

Third Party Analysis (CARO Analytical Services)

- Samples taken once per week at seven locations around the BMID service area
- 26 samples were found to be absent of Coliforms.
- 26 samples were found to be absent of *E.Coli*.
- Zero samples were had Coliforms or *E.Coli* present.

Table 5.1 - CARO Independent Lab Testing – Total Coliforms – E.Coli

Date	PRV 7		Booster 1		Ellison Blow-Off		612 Adams Rd		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
7-Dec-16	0	0	0	0	0	0	0	0	0	0	0	0	-	-
13-Dec-16	0	0	0	0	0	0	0	0	0	0	0	0	-	-
19-Dec-16	0	0	0	0	0	0	0	0	0	0	0	0	-	-
5-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	-	-
10-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	-	-
17-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Jan-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	1/3/2017				1/9/2017				1/16/2017				1/23/2017				1/30/2017			
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
2670 Enterprise Way	0.68	10.2	-	X	0.74	6.0	-	X	1.00	4.2	-	X	0.48	8.0	-	X	0.96	3.4	-	X
#5 217 Franklin Rd	0.24	1.2	-	X																
2105 Morrison	0.68	8.0	-	X	0.81	5.4	-	X	0.36	4.0	-	X	0.58	3.4	-	X	0.96	4.2	-	X
654 Mayfair Ct																				
800 Galbraith Ct	0.68	8.0	-	X	0.92	6.0	-	X	0.36	4.0	-	X	0.58	3.4	-	X	1.04	4.0	-	X
1625 Hyashi																				
PRV #10	0.68	8.0	-	X	0.08	5.0	-	X	0.73	4.8	-	X	0.58	3.4	-	X	0.32	3.6	-	X
260 Campion Rd																				
2821 Fenwick Rd	0.68	8.0	-	X	0.08	5.0	-	X	0.73	4.8	-	X	0.58	3.4	-	X	0.32	3.6	-	X
2931 Belgo Rd																				

- BMID Population = 22,400

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) = 17
- Total tests sampled by BMID and tested by Caro Labs = 26
- Total tests sampled in BMID treated distribution system = 43 (Zero positive samples)