



MONTHLY REPORTING PERIOD - AUGUST, 2017

1. SUMMARY

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

August 2017		
Source	Total (US Gals)	Total (Mega Litres)
Mission Creek	766,374,000	2,900.73
Well 4	0	0
Well 5	37,513,000	141.99
Scotty Creek (Irrigation Only)	50,857,000	192.49
Total	854,744,000	3,235.21

1. Turbidity levels at the Distribution Intake (Hadden Pond Outlet), remained below 1.0 NTU for all of August. Peak turbidity at the Distribution Intake was 0.46 NTU on August 9, 2017;
2. The highest monthly turbidity level recorded at the first customer (Booster #1) was 0.52 NTU on August 10, 2017 and average monthly turbidity was 0.35 NTU;
3. Mission Creek experienced low flows for all of August as dry conditions in the watershed continued throughout the month. The watershed witnessed above-average temperatures and very little precipitation throughout August. As a result, BMID began to release water from its upstream reservoirs in July which continued into August;
4. BMID's Scotty Creek intake, used for irrigation water, was utilized throughout August due to high irrigation usage in the north-end for the entire month;
5. *E.Coli* levels at the Point of Diversion (Mission Creek) were average during August. The highest raw water *E.Coli* count was 30 on August 2, 2017;
6. *E.Coli* levels at the Distribution Intake (Hadden Outlet) had low counts on all samples during August, with a peak count of 3 on August 11, 2017;
7. 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;
8. Well #5 was used throughout August as a source for domestic and irrigation water in the north-end of the system in conjunction with Mission Creek system water as determined by usage and pressures in the area;
9. BMID's Water Treatment Plant continued operations as water quality in Mission Creek required chemical treatment to achieve desired turbidity and colour levels;

1.0 FLOWS - AUGUST, 2017

Maximum est. Daily Flow was on August 23, 2017 at 34,550,000 US gallons (130.77 ML)

Minimum est. Daily Flow was on August 15, 2017 at 21,740,500 US gallons (82.29 ML)

Mission Creek provided 96% of domestic flow throughout August.

Figure 1.1 - Domestic Water System Flow

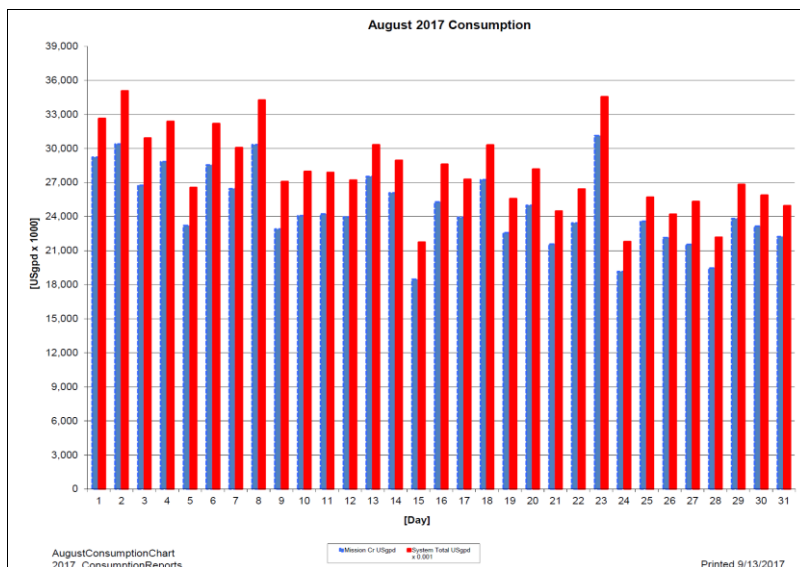


Table 1.2 - August, 2017 Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	Scotty Crk	System Total	System Total
2017	Usgpd	Usgpd	Usgpd	Usgpd	Usgpd	ML/Day
1-Aug	29,231,000	0	1,245,000.0	2,170,000.0	32,646,000	123.57
2-Aug	30,391,000	0	1,561,500.0	1,561,500.0	33,514,000	126.85
3-Aug	26,751,000	0	1,561,500.0	2,606,000.0	30,918,500	117.03
4-Aug	28,845,000	0	1,381,000.0	1,381,000.0	31,607,000	119.63
5-Aug	23,208,000	0	1,152,000.0	2,205,000.0	26,565,000	100.55
6-Aug	28,542,000	0	1,310,000.0	1,310,000.0	31,162,000	117.95
7-Aug	26,454,000	0	1,320,000.0	2,295,000.0	30,069,000	113.81
8-Aug	30,336,000	0	1,489,000.0	1,489,000.0	33,314,000	126.09
9-Aug	22,906,000	0	1,579,000.0	2,605,000.0	27,090,000	102.54
10-Aug	24,084,000	0	1,357,000.0	1,357,000.0	26,798,000	101.43
11-Aug	24,236,000	0	1,150,000.0	2,501,000.0	27,887,000	105.55
12-Aug	23,969,000	0	1,101,000.0	1,101,000.0	26,171,000	99.06
13-Aug	27,530,000	0	720,000.0	2,075,000.0	30,325,000	114.78
14-Aug	26,088,000	0	892,500.0	892,500.0	27,873,000	105.50
15-Aug	18,475,000	0	892,500.0	2,373,000.0	21,740,500	82.29
16-Aug	25,287,000	0	1,135,000.0	1,135,000.0	27,557,000	104.30
17-Aug	23,926,000	0	1,071,000.0	2,283,000.0	27,280,000	103.25
18-Aug	27,247,000	0	942,000.0	942,000.0	29,131,000	110.26
19-Aug	22,581,000	0	1,026,000.0	1,979,000.0	25,586,000	96.84
20-Aug	24,994,000	0	1,142,000.0	1,142,000.0	27,278,000	103.25
21-Aug	21,574,000	0	960,000.0	1,951,000.0	24,485,000	92.68
22-Aug	23,447,000	0	1,079,000.0	1,079,000.0	25,605,000	96.91
23-Aug	31,126,000	0	1,414,000.0	2,010,000.0	34,550,000	130.77
24-Aug	19,167,000	0	1,491,000.0	1,491,000.0	22,149,000	83.83
25-Aug	23,595,000	0	970,000.0	1,141,000.0	25,706,000	97.30
26-Aug	22,150,000	0	341,000.0	341,000.0	22,832,000	86.42
27-Aug	21,559,000	0	1,971,000.0	1,804,000.0	25,334,000	95.89
28-Aug	19,467,000	0	1,374,000.0	1,374,000.0	22,215,000	84.08
29-Aug	23,820,000	0	1,358,000.0	1,647,000.0	26,825,000	101.53
30-Aug	23,154,000	0	1,206,000.0	1,206,000.0	25,566,000	96.77
31-Aug	22,234,000	0	1,321,000.0	1,410,000.0	24,965,000	94.49
Totals Usgpd	766,374,000	0	37,513,000	50,857,000	854,744,000	3235.21
Totals ML	2,900.73	0.00	141.99	192.49		
Avg's	24,721,742	93.57			27,659,300	104.36
Max	31,126,000	117.81			34,550,000	130.77
Min	18,475,000	69.93			21,740,500	82.29

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 (Hadden Pond) and at the raw water Point of Diversion (Mission Creek Intake); 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) July 2017 - August 2017

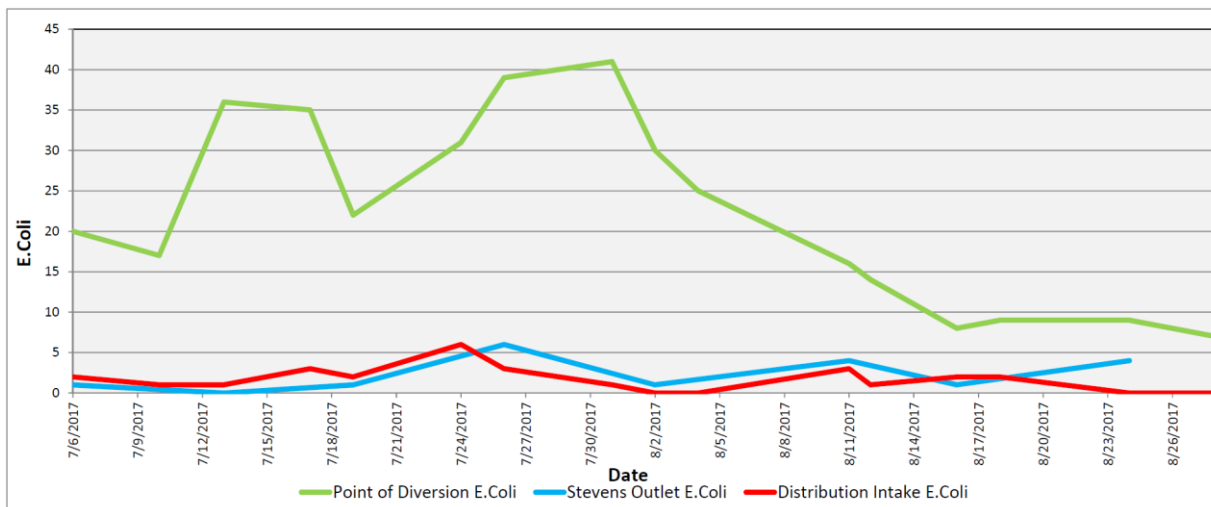


Table 2.2 - E.Coli Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
6-Jul-17	20	1	2
10-Jul-17	17	1	1
13-Jul-17	36	0	1
17-Jul-17	35	3	2
19-Jul-17	22	1	6
24-Jul-17	31	6	3
26-Jul-17	39	1	1
31-Jul-17	41	0	0
2-Aug-17	30	4	3
4-Aug-17	25	1	1
11-Aug-17	16	1	2
12-Aug-17	14	4	0
16-Aug-17	8	1	0
18-Aug-17	9	1	0
24-Aug-17	9	1	0
28-Aug-17	7	1	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 August 2017. The highest turbidity recorded at this location was 0.52 NTU on August 10, 2017.

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

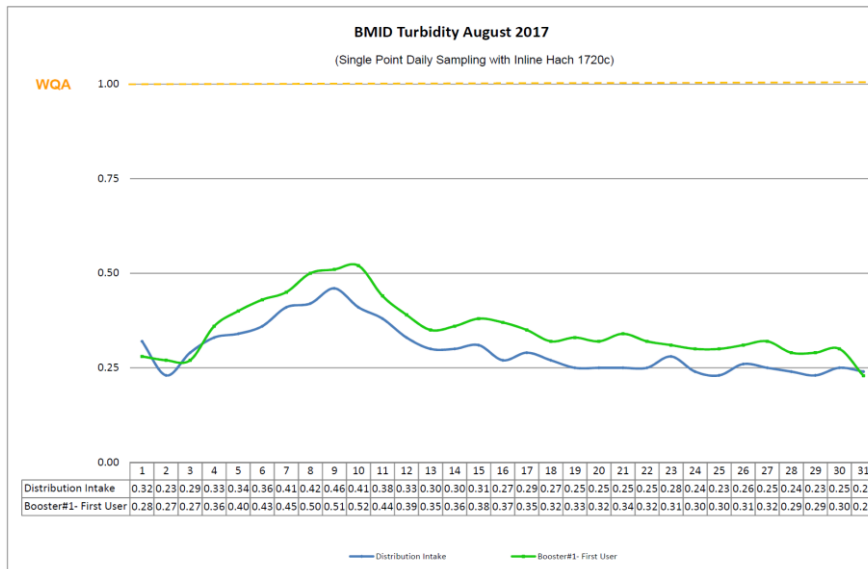


Table 3.2 - Daily Monitoring Record – Turbidity at Distribution Intake & Bst Stn 1

Turbidity Point Sampling for August 2017				
Date	Distribution Intake		Booster#1- First User	
	Sample Time	[NTU]	Sample Time	[NTU]
1	8:51 AM	0.32	8:10 AM	0.28
2	10:30 AM	0.23	9:30 AM	0.27
3	10:06 AM	0.29	8:38 AM	0.27
4	7:44 AM	0.33	2:08 PM	0.36
5	8:31 AM	0.34	7:18 AM	0.40
6	9:33 AM	0.36	9:09 AM	0.43
7	8:40 AM	0.41	8:13 AM	0.45
8	11:36 AM	0.42	11:10 AM	0.50
9	9:07 AM	0.46	8:27 AM	0.51
10	8:41 AM	0.41	7:56 AM	0.52
11	8:39 AM	0.38	7:42 AM	0.44
12	8:55 AM	0.33	8:00 AM	0.39
13	8:27 AM	0.30	8:02 AM	0.35
14	1:34 PM	0.30	1:08 PM	0.36
15	8:12 AM	0.31	7:44 AM	0.38
16	8:35 AM	0.27	8:01 AM	0.37
17	8:12 AM	0.29	7:41 AM	0.35
18	8:41 AM	0.27	7:59 AM	0.32
19	7:05 AM	0.25	6:39 AM	0.33
20	8:55 AM	0.25	8:20 AM	0.32
21	8:38 AM	0.25	8:02 AM	0.34
22	8:36 AM	0.25	7:57 AM	0.32
23	2:39 PM	0.28	1:30 PM	0.31
24	8:25 AM	0.24	7:45 AM	0.30
25	8:58 AM	0.23	8:31 AM	0.30
26	12:24 PM	0.26	11:40 AM	0.31
27	12:40 PM	0.25	12:17 PM	0.32
28	9:03 AM	0.24	8:22 AM	0.29
29	8:37 AM	0.23	8:00 AM	0.29
30	8:36 AM	0.25	7:50 AM	0.30
31	9:08 AM	0.24	8:25 AM	0.23
Average		0.30		0.35

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 Lambli*a throughout the month of August, 2017.

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

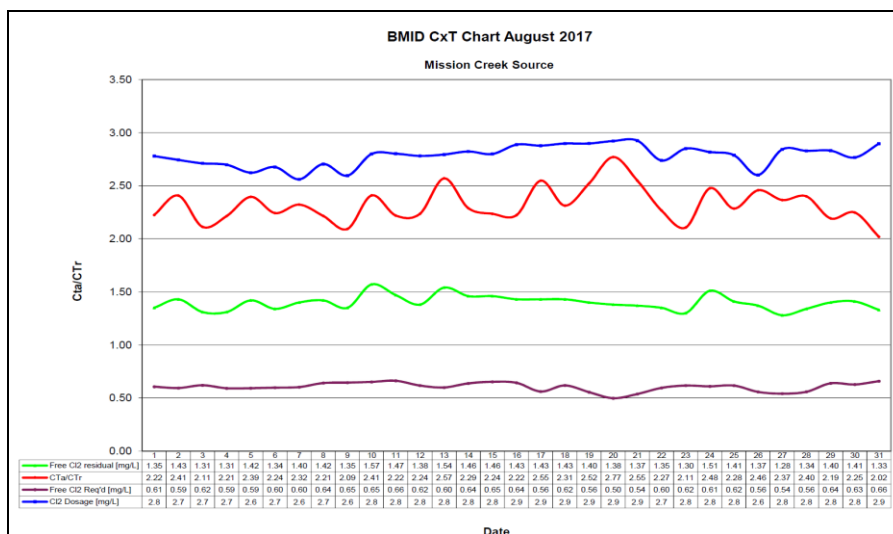


Table 4.2 - CT Table – Mission Creek Source

BMID August 2017													
Mission Creek Source													
DATE	pH	TEMP	PEAK	Free Cl:	CT	CT	CTa/CTr	Free Cl:	Cl:	VOLUME	TIME	FLOW	CL: DOSAGE
	(highest)	(lowest)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL		PRESENT	PRESENT
August		[°C]	[USgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]	[mins]	[USGPM]	[PPD]
1	7.20	18.6	22991	1.35	155.6	69.9	2.22	0.61	2.8	2649600	115	21408	715
2	7.22	18.4	21840	1.43	173.5	72.1	2.41	0.59	2.7	2649600	121	17048	562
3	7.23	18.2	22697	1.31	152.9	72.4	2.11	0.62	2.7	2649600	117	17929	584
4	7.21	18.2	21818	1.31	159.1	71.9	2.21	0.59	2.7	2649600	121	17706	574
5	7.18	18.3	21996	1.42	171.1	71.4	2.39	0.59	2.6	2649600	120	16435	518
6	7.23	18.4	22101	1.34	160.6	71.6	2.24	0.60	2.7	2649600	120	17882	575
7	7.22	18.5	22390	1.40	165.7	71.3	2.32	0.60	2.6	2649600	118	18428	567
8	7.22	18.4	23593	1.42	159.5	72.0	2.21	0.64	2.7	2649600	112	15910	517
9	7.22	18.0	23267	1.35	153.7	73.5	2.09	0.65	2.6	2649600	114	16259	507
10	7.23	17.6	22271	1.57	186.8	77.5	2.41	0.65	2.8	2649600	119	15428	519
11	7.20	17.5	22952	1.47	169.7	76.5	2.22	0.66	2.8	2649600	115	15593	525
12	7.21	17.7	21818	1.38	167.6	75.0	2.24	0.62	2.8	2649600	121	14366	480
13	7.21	18.0	21275	1.54	191.8	74.7	2.57	0.60	2.8	2649600	125	12927	434
14	7.24	17.7	22101	1.46	175.0	76.5	2.29	0.64	2.8	2649600	120	14683	498
15	7.25	17.6	22390	1.46	172.8	77.3	2.24	0.65	2.8	2649600	118	16262	547
16	7.23	17.3	21829	1.43	173.6	78.1	2.22	0.64	2.9	2649600	121	15768	547
17	7.23	17.3	19048	1.43	198.9	78.1	2.55	0.56	2.9	2649600	139	17553	607
18	7.22	17.4	21207	1.43	178.7	77.3	2.31	0.62	2.9	2649600	125	18612	648
19	7.21	17.7	19584	1.40	189.4	75.1	2.52	0.56	2.9	2649600	135	15909	554
20	7.20	17.7	17671	1.38	206.9	74.7	2.77	0.50	2.9	2649600	150	15127	531
21	7.20	17.0	18184	1.37	199.6	78.3	2.55	0.54	2.9	2649600	146	16502	580
22	7.21	16.6	19564	1.35	182.8	80.7	2.27	0.60	2.7	2649600	135	15774	519
23	7.22	17.1	21036	1.30	163.7	77.8	2.11	0.62	2.8	2649600	126	16704	572
24	7.19	17.6	21276	1.51	188.0	76.0	2.48	0.61	2.8	2649600	125	15123	512
25	7.21	17.4	21290	1.41	175.5	76.8	2.28	0.62	2.8	2649600	124	14508	486
26	7.22	17.4	19247	1.37	188.6	76.8	2.46	0.56	2.6	2649600	138	13691	428
27	7.23	16.4	17542	1.28	193.3	81.7	2.37	0.54	2.8	2649600	151	13700	468
28	7.22	16.5	18168	1.34	195.4	81.4	2.40	0.56	2.8	2649600	146	15240	518
29	7.22	16.7	20933	1.40	177.2	80.8	2.19	0.64	2.8	2649600	127	14288	486
30	7.21	16.7	20617	1.41	181.2	80.6	2.25	0.63	2.8	2649600	129	15286	508
31	7.21	16.0	20811	1.33	169.3	83.9	2.02	0.66	2.9	2649600	127	14626	509
Averages	7.22	17.55	21080.9	1.40	176.70	76.18	2.32	0.60	2.78				

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
- 32 samples were found to be absent of Coliforms.
- 32 samples were found to be absent of *E.Coli*.

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

Date	PRV 7		Booster 1		Ellison Blow-Off		Ellison School		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	Coliforms	E.coli
6-Jul-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Jul-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Jul-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Jul-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Aug-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Aug-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Aug-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Aug-17	0	0	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	8/1/2017				8/8/2017				8/15/2017				8/21/2017				8/28/2017			
	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.	Cl2	Temp	Pres.	Abs.
2670 Enterprise Way					0.85	23.6	-	X									1.00	21.8	-	X
#5 217 Franklin Rd									0.47	20.6	-	X								
2105 Morrison					1.04	23.0	-	X									1.07	22.6	-	X
654 Mayfair Ct	1.13	25.4	-	X					0.61	20.4	-	X	1.01	20.2	-	X				
800 Galbraith Ct									0.94	23.4	-	X								
1200 Belgo Rd					1.04	20.2	-	X									1.03	19.2	-	X
PRV #10																				
260 Campion Rd	0.79	25.0	-	X									0.16	24.2	-	X				
2821 Fenwick Rd									0.20	23.2	-	X								
2931 Belgo Rd	1.28	23.8	-	X									1.14	23.6	-	X				

- 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) = 16
- Total tests sampled by BMID and tested by Caro Labs = 32
- Total tests sampled in BMID treated distribution system = 48 (Zero Positive Samples)