



MONTHLY REPORTING PERIOD - SEPTEMBER, 2024

SUMMARY

This document provides a summary of the water quantity and quality information collected by BMID in September 2024. Documentation and figures are provided on the following pages to support this submission.

WATER SUPPLY & USAGE SUMMARY

1. Water usage data for September, 2024 is as follows:

Source	Total (US Gallons)	Total (Mega Litres)
Mission Creek	306,924,064	1,161.71
Well 4	4,272,139	16.17
Well 5	17,862,309	67.61
Well 6 (Irrigation Only)	10,343,824	39.15
Scotty Creek (Irrigation Only)	209,560	0.79
Total	339,611,895	1,285.43

2. BMID began withdrawing stored water from high-elevation reservoirs earlier in the summer to supplement Mission Creek flows during the summer. BMID utilized the upper elevation reservoirs to maintain acceptable flows in Mission creek for both domestic and irrigation consumption as well as maintaining fish flows in the creek throughout September;
3. The Scotty Creek source was used to supplement irrigation flows in the north-end of the system during periods of high irrigation demands. The Scotty Creek system was in operation for the first three days of September. The Scotty Creek source was placed on stand-by for the remainder of the month;
4. Well #5, used as the primary water source in the north-end of the system for both irrigation and domestic consumption, resumed operations on April 22, 2024, as system flows increased. Well #5 operated throughout the first half of September to meet irrigation and domestic demands;
5. Well #4, used as a primary source for domestic water in the north-end of the distribution system during low-flow periods was in operation during the second half of September when flows reduced due to cooler weather. Well #4 will remain operational for the remainder of the year as system flows reduce during the autumn;
6. Well #6, which supplies water to the north-end irrigation distribution system, resumed operation on May 6th. Well #6 is used during times of high irrigation demands. The well was in operation from September 2-12 and September 17-24. Well #6 was placed in standby mode for the remainder of the year;
7. A portion of the BMID's transmission main west of the Mission Creek Intake and east of the tunnel is located on an unstable slope. Slope movement continues to be monitored. It is currently stable and is not moving;

WATER QUALITY SUMMARY

1. BMID is investigating the use of Well #6 as a possible future potable water source. Initial potability testing took place in June and monthly bacterial samples continued into the summer. Well 6 was not tested in September as the well was not in use at the end of the month. Testing will continue for the next year to verify its water quality characteristics;
2. The WTP was in operation throughout September as Mission Creek experienced increased turbidity and colour in the raw water. The WTP will remain in operation until turbidity and colour levels in Mission Creek reduce later in the year;
3. Raw water turbidity levels in Mission Creek peaked, due to a rainfall event, at 1.24 NTU on September 26th. Average daily raw water turbidity for September was 0.59 NTU at the Grit Pond;
4. The highest turbidity level at the Distribution Intake was 0.45 NTU on September 23rd 2024. Average settled water turbidity for September was 0.28 NTU at the Distribution Intake at the lower end of Hadden Reservoir. The lowest daily average recording was 0.20 NTU on September 24th and 25th, 2024;
5. The highest turbidity level at the first customer (Booster #1) was 0.39 NTU on September 23rd. Average monthly turbidity at the first customer was 0.15 NTU, while the lowest daily average turbidity was 0.07 NTU on September 14th;
6. Average daily turbidity at the UV station peaked at 0.41 NTU on September 10th. Average monthly turbidity at the UV disinfection station was 0.35 NTU;
7. BMID's Ultraviolet Treatment Facility treated 1,161,834 m³ of water, 236 m³ of which was Off-Spec (0.020%);
8. Regarding microbiological readings, BMID resumed withdrawing water from the upper elevation reservoirs in mid-summer. As water continued to be withdrawn from the upper elevation reservoirs, there was an expected increase in microbiological readings;
9. *E.Coli* levels at Mission Creek's Point-of-Diversion (creek intake prior to WTP) had normal counts for September. The September 23rd sample had the peak count of 5 *E.Coli* Coliforms. The average monthly *E.Coli* count was 3, based on 4 samples;
10. *E.Coli* levels in the raw water at the water distribution system intake at the east end of Hadden Reservoir, immediately prior to disinfection, had a peak count of 2 coliforms on September 9th. The average monthly *E.Coli* count was 0.5 coliforms based on 4 samples. Reduction in *E.Coli* levels is due to the effectiveness of the Water Treatment Plant as well as the settling of particles as water passes through Stevens and Hadden Reservoirs;
11. No *E.Coli* or *Total Coliforms* were found in treated water in the distribution system through third-party analysis. In addition, zero positive samples were detected by BMID's in-house presence/absence testing throughout September;

1.0 FLOWS - SEPTEMBER, 2024

The Maximum Daily Flow was on September 7th at 17,716,098 US gallons (67.06 ML)

The Minimum Daily Flow was on September 30th, at 5,684,600 US gallons (21.52 ML)

Mission Creek provided just over 90% of domestic and irrigation flow supplied in September.

Figure 1.1 - Domestic Water System Flow

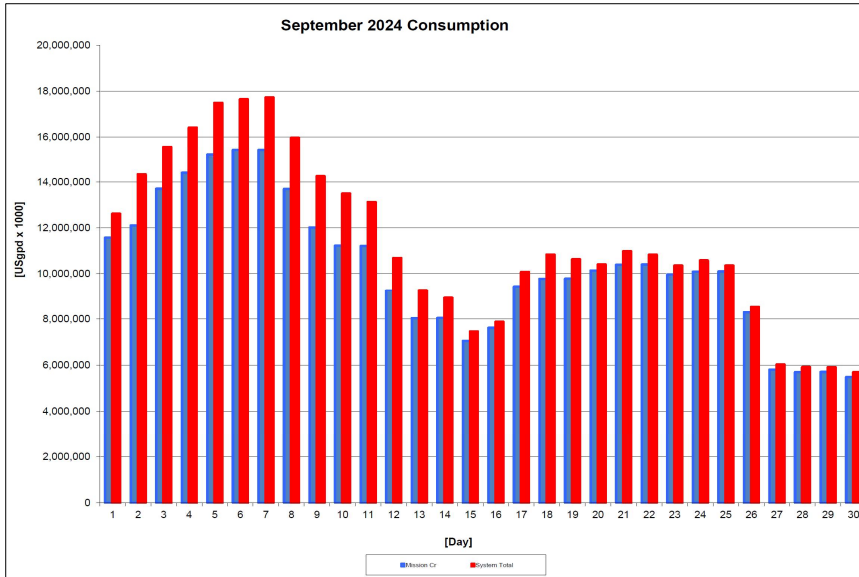


Table 1.2 - September 2024 - Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	Well #6	Scotty Crk	System Total	System Total
2024	Usgpd	Usgpd	Usgpd	Usgpd	Usgpd	Usgpd	ML/Day
1-Sep	11,576,677	315,982	603,018	0	103,582	12,599,259	47.69
2-Sep	12,099,157	161,440	1,616,723	340,225	103,582	14,321,126	54.21
3-Sep	13,704,134	0	1,700,616	145,741	2,396	15,552,887	58.87
4-Sep	14,399,382	0	1,288,880	714,574	0	16,402,836	62.08
5-Sep	15,194,698	0	1,374,720	909,330	0	17,478,747	66.16
6-Sep	15,389,287	0	1,335,657	907,883	0	17,632,827	66.74
7-Sep	15,389,763	0	1,418,115	908,221	0	17,716,098	67.06
8-Sep	13,692,008	0	1,328,138	936,004	0	15,956,151	60.39
9-Sep	12,013,090	0	1,317,204	910,077	0	14,240,371	53.90
10-Sep	11,226,887	0	1,330,461	927,524	0	13,484,872	51.04
11-Sep	11,201,923	0	1,074,192	839,657	0	13,115,772	49.64
12-Sep	9,258,093	0	1,111,012	305,606	0	10,674,711	40.40
13-Sep	8,033,391	0	1,225,440	0	0	9,258,831	35.04
14-Sep	8,037,618	0	864,953	0	0	8,902,571	33.70
15-Sep	7,044,965	157,633	243,906	0	0	7,446,504	28.19
16-Sep	7,613,226	240,426	14,875	0	0	7,868,528	29.78
17-Sep	9,434,243	275,688	14,400	339,396	0	10,063,726	38.09
18-Sep	9,777,851	272,058	0	775,210	0	10,825,119	40.97
19-Sep	9,783,663	273,992	0	564,720	0	10,622,374	40.21
20-Sep	10,140,110	254,306	0	0	0	10,394,416	39.34
21-Sep	10,391,338	271,712	0	309,984	0	10,973,033	41.53
22-Sep	10,398,629	276,826	0	143,484	0	10,818,939	40.95
23-Sep	9,965,783	219,557	0	158,102	0	10,343,442	39.15
24-Sep	10,087,223	275,751	0	208,087	0	10,571,062	40.01
25-Sep	10,093,906	250,354	0	0	0	10,344,260	39.15
26-Sep	8,286,996	213,423	0	0	0	8,500,419	32.17
27-Sep	5,804,334	214,588	0	0	0	6,018,922	22.78
28-Sep	5,698,137	205,997	0	0	0	5,904,134	22.35
29-Sep	5,702,575	192,783	0	0	0	5,895,359	22.31
30-Sep	5,484,977	199,623	0	0	0	5,684,600	21.52
Totals Usgpd	306,924,064	4,272,139	17,862,309	10,343,824	209,560	339,611,895	1,285.43
Totals ML	1,161.71	16.17	67.61	39.15	0.79		
Avg's	10,230,802	38.72				11,320,397	42.85
Max	15,389,763	58.25				17,716,098	67.06
Min	5,484,977	20.76				5,684,600	21.52

2.0 RAW WATER QUALITY - BACTERIOLOGICAL MONITORING

Raw water samples were taken at three points at BMID settling ponds before chlorination. Samples were taken at the Mission Creek raw water intake, the outlet for Stevens Pond, and the point of disinfection at the end of Hadden Reservoir.

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

The E.Coli readings confirm the WTP's effectiveness in reducing raw water quality risks with coagulation, flocculation and sedimentation processes followed by settling times across Stevens and Hadden Reservoirs.

Figure 2.1 - Raw Water *E.Coli* Readings (CARO Lab results) August 2024 - September 2024

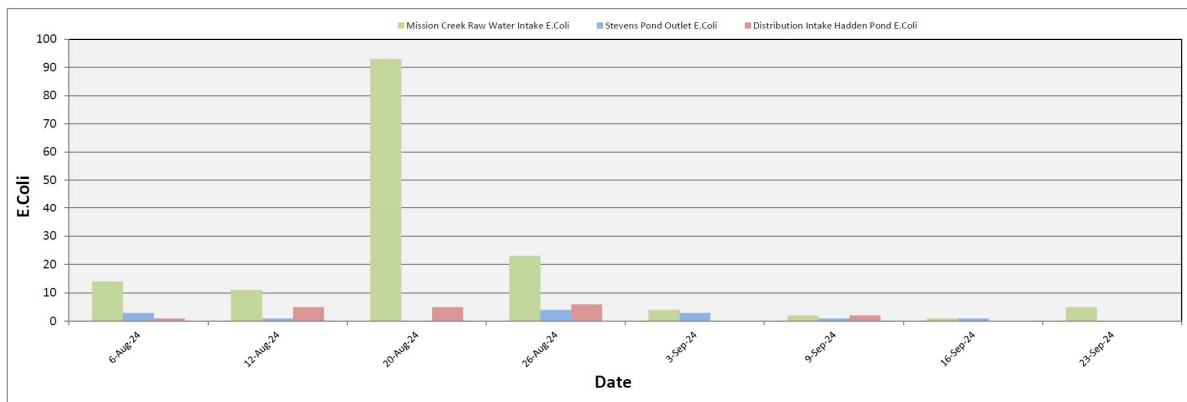


Table 2.1 - *E.Coli* Readings (CARO Labs)

Date	Mission Creek Raw Water Intake E.Coli	Stevens Pond Outlet E.Coli	Distribution Intake Hadden Pond E.Coli
6-Aug-24	14	3	1
12-Aug-24	11	1	5
20-Aug-24	93	0	5
26-Aug-24	23	4	6
3-Sep-24	4	3	0
9-Sep-24	2	1	2
16-Sep-24	1	1	0
23-Sep-24	5	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 is measured online at four locations, Mission Creek raw water intake, the Distribution Intake, the UV treatment plant, and Booster#1. The first user of the BMID system is located near Booster #1 . The highest turbidity level recorded at this location was 0.39 NTU on September 23rd, 2024. The lowest turbidity level was 0.07 NTU and the average turbidity was 0.15 NTU.

The distribution intake is where the water leaves Hadden Reservoir and enters a closed conduit. Turbidity levels are greatly reduced through the settling process as Mission Creek water makes its way through the reservoirs.

Figure 3.1 – Daily Turbidity Readings (Mission Creek Raw - Distribution Intake - Booster Station 1 and UV Plant)

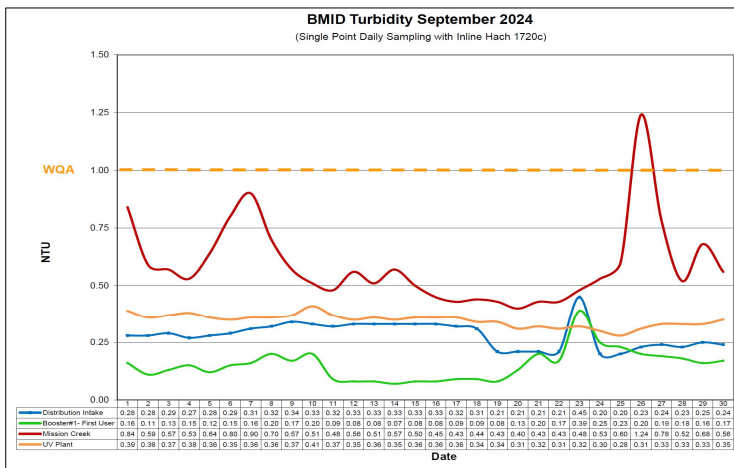


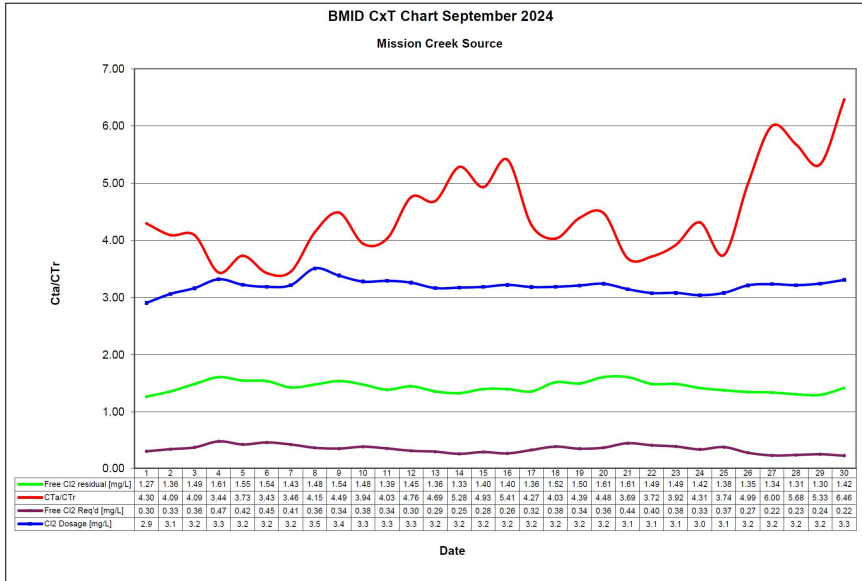
Table 3.1 - Daily Monitoring Record – Turbidity at On-Line Turbidity Analyzers

Turbidity Point Sampling for September 2024				
Date	Mission Creek Intake Daily Average [NTU]	Distribution Intake Daily Average [NTU]	Booster#1- First User Daily Average [NTU]	UV Plant Daily Average [NTU]
1	0.84	0.28	0.16	0.39
2	0.59	0.28	0.11	0.36
3	0.57	0.29	0.13	0.37
4	0.53	0.27	0.15	0.38
5	0.64	0.28	0.12	0.36
6	0.80	0.29	0.15	0.35
7	0.90	0.31	0.16	0.36
8	0.70	0.32	0.20	0.36
9	0.57	0.34	0.17	0.37
10	0.51	0.33	0.20	0.41
11	0.48	0.32	0.09	0.37
12	0.56	0.33	0.08	0.35
13	0.51	0.33	0.08	0.36
14	0.57	0.33	0.07	0.35
15	0.50	0.33	0.08	0.36
16	0.45	0.33	0.08	0.36
17	0.43	0.32	0.09	0.36
18	0.44	0.31	0.09	0.34
19	0.43	0.21	0.08	0.34
20	0.40	0.21	0.13	0.31
21	0.43	0.21	0.20	0.32
22	0.43	0.21	0.17	0.31
23	0.48	0.45	0.39	0.32
24	0.53	0.20	0.25	0.30
25	0.60	0.20	0.23	0.28
26	1.24	0.23	0.20	0.31
27	0.78	0.24	0.19	0.33
28	0.52	0.23	0.18	0.33
29	0.68	0.25	0.16	0.33
30	0.56	0.24	0.17	0.35
Average	0.59	0.28	0.15	0.35

4.0 CHLORINE CONTACT TIME

Temperature, pH, peak 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 September, 2024.

Figure 4.1 - CT Trending – BMID Mission Creek Source – September 2024



CTa – CT achieved
CTr – CT Required

The minimum CT that BMID achieved was 3.43 X that of what was required

Table 4.2 - CT Table – Mission Creek Source

BMID September 2024													
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
	(Average)	(Present)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL	[mins]	Daily Average	Average
September		[°C]	[USgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]		[USGPM]	[PPD]
1	7.26	17.5	10243	1.27	328.5	76.5	4.30	0.30	2.9	2649600	259	8211	287
2	7.30	17.3	11073	1.36	325.4	79.5	4.09	0.33	3.1	2649600	239	8566	315
3	7.31	17.2	11846	1.49	333.3	81.5	4.09	0.36	3.2	2649600	224	9706	369
4	7.38	17.0	14471	1.61	294.8	85.8	3.44	0.47	3.3	2649600	183	10207	407
5	7.38	17.1	12999	1.55	315.9	84.7	3.73	0.42	3.2	2649600	204	10775	417
6	7.35	17.4	14522	1.54	281.0	82.0	3.43	0.45	3.2	2649600	182	10900	418
7	7.33	17.1	13350	1.43	283.8	82.1	3.46	0.41	3.2	2649600	198	9711	376
8	7.32	17.0	11418	1.48	343.4	82.8	4.15	0.36	3.5	2649600	232	8500	359
9	7.27	16.6	10813	1.54	377.4	84.1	4.49	0.34	3.4	2649600	245	7616	310
10	7.31	16.1	11324	1.48	346.3	87.9	3.94	0.38	3.3	2649600	234	7926	313
11	7.33	15.9	10280	1.39	358.3	88.9	4.03	0.34	3.3	2649600	258	6547	259
12	7.31	15.5	8847	1.45	434.2	91.3	4.76	0.30	3.3	2649600	299	5624	220
13	7.37	15.5	8317	1.36	433.3	92.4	4.69	0.29	3.2	2649600	319	5687	216
14	7.38	15.6	7261	1.33	485.3	91.8	5.28	0.25	3.2	2649600	365	4445	170
15	7.36	15.1	7909	1.40	469.0	95.1	4.93	0.28	3.2	2649600	335	4979	191
16	7.27	14.9	7350	1.40	504.7	93.3	5.41	0.26	3.2	2649600	361	5395	209
17	7.35	14.9	8825	1.36	408.3	95.7	4.27	0.32	3.2	2649600	300	6683	256
18	7.36	14.7	10091	1.52	399.1	99.0	4.03	0.38	3.2	2649600	263	6926	265
19	7.40	14.7	9024	1.50	440.4	100.3	4.39	0.34	3.2	2649600	294	6912	267
20	7.37	14.2	9184	1.61	464.5	103.8	4.48	0.36	3.2	2649600	289	7186	280
21	7.39	13.2	10328	1.61	413.0	112.0	3.69	0.44	3.1	2649600	257	7359	278
22	7.40	13.1	9489	1.49	416.0	111.9	3.72	0.40	3.1	2649600	279	7058	261
23	7.38	13.6	9387	1.49	420.6	107.3	3.92	0.38	3.1	2649600	282	6787	251
24	7.15	14.0	9164	1.42	410.6	95.2	4.31	0.33	3.0	2649600	289	7153	262
25	7.36	13.9	9466	1.38	386.3	103.1	3.74	0.37	3.1	2649600	280	5875	218
26	7.33	13.8	6999	1.35	511.1	102.4	4.99	0.27	3.2	2649600	379	4118	159
27	7.28	13.5	5772	1.34	615.1	102.5	6.00	0.22	3.2	2649600	459	3855	150
28	7.29	13.5	5963	1.31	582.1	102.5	5.68	0.23	3.2	2649600	444	4045	156
29	7.30	13.5	6285	1.30	548.0	102.8	5.33	0.24	3.2	2649600	422	3877	151
30	7.27	12.8	5384	1.42	698.9	108.2	6.46	0.22	3.3	2649600	492	3061	122
Averages	7.33	15.21	9579	1.44	420.959	94.2	4.44	0.33	3.20				

5.0 ULTRAVIOLET DISINFECTION

Total Water Treated: 1,161,834 m³ 100.00%
 On-Spec Water: 1,161,598 m³ 99.98%
 Off-Spec Water: 236 m³ 0.02%

Average monthly chlorine residual before UV Treatment was 1.56 mg/L
 The average monthly chlorine residual after UV treatment and re-chlorination was 1.50 mg/L.

Figure 5.1 - UV Disinfection – BMID Mission Creek Source – September 2024

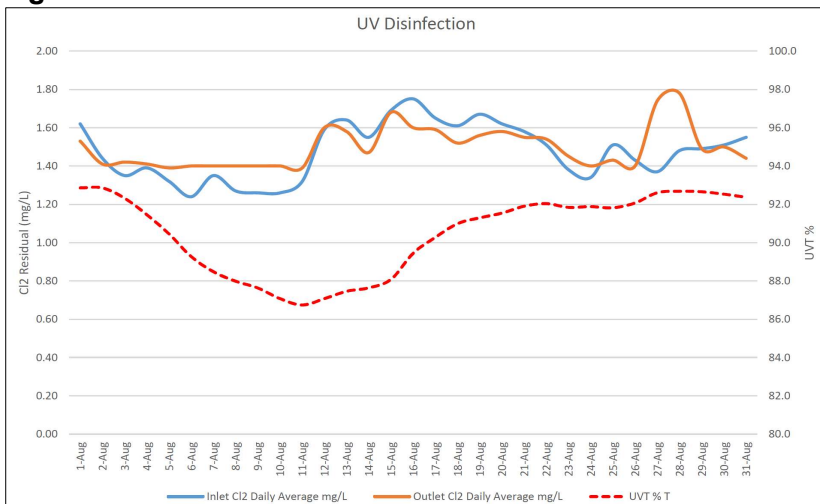


Table 5.2 - UV Disinfection Table – Mission Creek Source

Date	Inlet Cl2	Outlet Cl2	UVT	Turbidity		In Spec Water	Off Spec	Off Spec %
	Daily	Daily				Volume	Water	of Water
	mg/L	mg/L	% T	NTU	Cubic Meters	Cubic Meters	Percentage	
1-Sep	1.20	1.40	92.0	0.39		43,823	0	0.00%
2-Sep	1.33	1.44	92.0	0.36		45,800	0	0.00%
3-Sep	1.60	1.43	91.5	0.37		51,876	0	0.00%
4-Sep	1.58	1.74	91.9	0.38		54,508	0	0.00%
5-Sep	1.69	1.84	92.0	0.36		57,518	0	0.00%
6-Sep	1.63	1.59	91.8	0.35		58,255	0	0.00%
7-Sep	1.50	1.53	91.2	0.36		58,257	0	0.00%
8-Sep	1.55	1.57	90.1	0.36		51,830	0	0.00%
9-Sep	1.68	1.59	89.6	0.37		45,356	118	0.26%
10-Sep	1.50	1.42	89.5	0.41		42,380	118	0.28%
11-Sep	1.53	1.43	89.9	0.37		42,404	0	0.00%
12-Sep	1.67	1.45	90.3	0.35		35,046	0	0.00%
13-Sep	1.48	1.45	90.6	0.36		30,410	0	0.00%
14-Sep	1.45	1.42	91.0	0.35		30,426	0	0.00%
15-Sep	1.60	1.44	91.1	0.36		26,668	0	0.00%
16-Sep	1.61	1.49	90.8	0.36		28,819	0	0.00%
17-Sep	1.59	1.51	91.2	0.36		35,713	0	0.00%
18-Sep	1.66	1.56	91.3	0.34		37,013	0	0.00%
19-Sep	1.60	1.55	91.3	0.34		37,035	0	0.00%
20-Sep	1.74	1.60	91.2	0.31		38,385	0	0.00%
21-Sep	1.82	1.67	91.0	0.32		39,336	0	0.00%
22-Sep	1.64	1.54	90.8	0.31		39,363	0	0.00%
23-Sep	1.61	1.51	90.7	0.32		37,725	0	0.00%
24-Sep	1.61	1.46	90.8	0.30		38,184	0	0.00%
25-Sep	1.46	1.40	91.1	0.28		38,210	0	0.00%
26-Sep	1.42	1.42	91.2	0.31		31,370	0	0.00%
27-Sep	1.54	1.42	91.2	0.33		21,972	0	0.00%
28-Sep	1.44	1.44	61.1	0.33		21,570	0	0.00%
29-Sep	1.45	1.40	91.1	0.33		21,587	0	0.00%
30-Sep	1.58	1.43	90.9	0.35		20,763	0	0.00%
Average	1.56	1.50	90.01	0.35	Total	1,161,597.80	236.4	0.020%

6.0 WATER DISTRIBUTION SAMPLING (TREATED)

Third Party Analysis (CARO Analytical Services)

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

Table 6.1 - CARO Independent Lab Testing – Total Coliforms – *E. Coli*

Date	2921 Belgo Rd		Booster 1		Elison Blow-Off		Elison School		3976 Highway 97		Prospect Reservoir		Tower Reservoir		Well #5		Well #4		Kirschner Res		Pearson School	
	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	Coliforms	E.coli	Coliforms	E.coli
8-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Aug-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Sep-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Sep-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Sep-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Sep-24	0	0	0	0	0	0	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 seven sites around the BMID service area.
- All 9 samples were found to be absent of both *Total Coliforms* and *E. Coli*.

Table 6.2 - BMID In-house Testing – Presence Absence

Location	9/3/2024				9/9/2024				9/16/2024				9/23/2024			
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
Sylvania Cres					0.95	21.4	-	X								
170 Kneller Rd					0.78	21.4	-	X								
2105 Morrison									1.12	19.6	-	X				
Staymen Rd									0.86	19.2	-	X				
260 Campion Rd	0.06	21.6	-	X									0.02	24.8	-	X
Fenwick Rd	0.44	21.2	-	X									0.59	22.8	-	X
Solly Ct					0.99	20.8	-	X								

- BMID Population = 28,000

RECOMMENDED TESTS

- Recommended number of samples per month = 28
(as per Guide for Canadian Drinking Water Quality)

ACTUAL TESTS

- Total tests by BMID staff (presence/absence) = 9
- Total tests sampled by BMID and tested by Caro Labs 24
- Total tests sampled in BMID treated distribution system = 33
- 0 Positive *E. Coli* and Total Coliform Samples