



MONTHLY REPORTING PERIOD - JULY, 2024

SUMMARY

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

WATER SUPPLY & USAGE SUMMARY

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

Source	Total (US Gallons)	Total (Mega Litres)
Mission Creek	646,705,287	2,447.78
Well 4	0	0
Well 5	24,828,345	93.98
Well 6 (Irrigation Only)	5,744,648	21.74
Scotty Creek (Irrigation Only)	1,777,221	4.46
Total	678,455,501	2,567.95

2. BMID began withdrawing stored water from high-elevation reservoirs in mid-July to supplement Mission Creek flows during the summer. Precipitation levels in July were minimal, therefore 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;
3. BMID finished the installation of remote-control gates for Belgo Reservoir. This project is to assist in maintaining constant downstream flows in Mission Creek and optimize storage held in reservoirs;
4. The Scotty Creek source was made ready for the upcoming irrigation season in the north-end of the system on May 14th, however, the system remained in stand-by mode until July 4th when irrigation demands increased. The Scotty Creek source was utilized for the remainder of July;
5. 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 July to meet irrigation and domestic demands;
6. Well #4, used as a primary source for domestic water in the north-end of the distribution system during low-flow periods, was not in operation in July. Well #4 will remain in stand-by until flows reduce later in the fall;
7. 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 demand, and ran throughout July 2024;
8. 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 July. Testing will continue for the next year to determine the quality of the source;
2. The WTP was in operation throughout July 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 at 2.03 NTU on July 3rd. Average daily raw water turbidity for July was 1.03 NTU at the Grit Pond;
4. The highest turbidity level at the Distribution Intake was 0.32 NTU on July 2nd, 2024. Average settled water turbidity for July was 0.24 NTU at the Distribution Intake at the lower end of Hadden Reservoir. The lowest daily average recording was 0.15 NTU on July 30th;
5. The highest turbidity level at the first customer (Booster #1) was 0.36 NTU on July 7th. Average monthly turbidity at the first customer was 0.16 NTU, while the lowest daily average turbidity was 0.05 NTU on July 26th;
6. Average daily turbidity at the UV station peaked at 0.90 NTU on July 8th. The turbidity meter reads consistently higher at this location, however, the turbidity results upstream and downstream of the UV plant show consistently lower turbidity results. Average monthly turbidity at the UV disinfection station was 0.52 NTU;
7. BMID's Ultraviolet Treatment Facility treated 2,448,046 m³ of water, 1,659 m³ of which was Off-Spec (0.068%);
8. Regarding microbiological readings, BMID resumed withdrawing water from the upper elevation reservoirs in mid-July. As upper elevation water temperature increases for the summer, there is 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 July. The July 5th sample had the peak count of 74 coliforms. The average monthly *E.Coli* count was 29, based on 5 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 4 coliforms on July 22nd. The average monthly *E.Coli* count was 1.8 coliforms based on 5 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 July;

1.0 FLOWS - JULY, 2024

The Maximum Daily Flow was on July 21st at 26,702,864 US gallons (101.07 ML)

The Minimum Daily Flow was on July 3rd, at 9,188,966 US gallons (34.78 ML)

Mission Creek provided just over 95% of domestic and irrigation flow supplied in July.

Figure 1.1 - Domestic Water System Flow

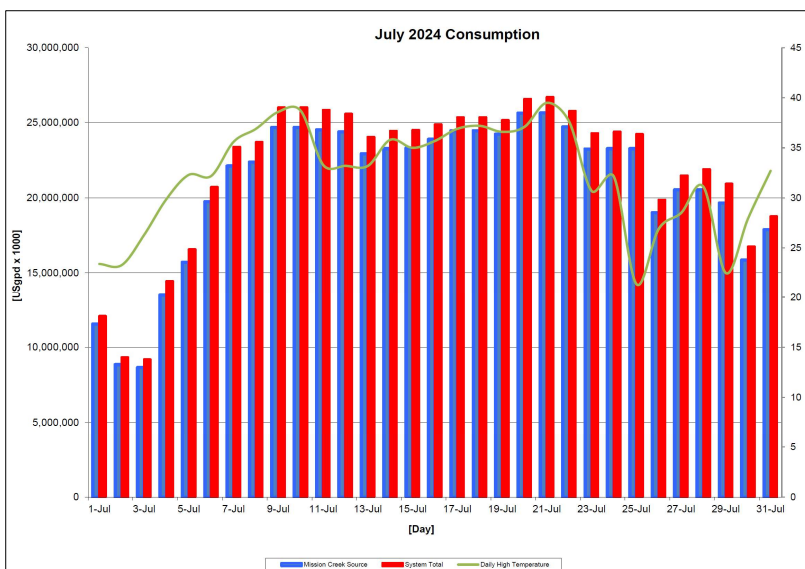


Table 1.2 - July 2024 - Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	Well #6	Scotty Crk	System Total	System Total
2024	Usqpd	Usqpd	Usqpd	Usqpd	Usqpd	Usqpd	ML/Day
1-Jul	11,537,659	0	533,687	0	0	12,071,346	45.69
2-Jul	8,840,754	0	484,419	0	0	9,325,173	35.30
3-Jul	8,662,068	0	515,509	11,389	0	9,188,966	34.78
4-Jul	13,472,164	0	804,207	171,283	8,560	14,456,215	54.72
5-Jul	15,701,089	0	838,647	0	27,914	16,567,651	62.71
6-Jul	19,741,626	0	836,101	101,070	35,552	20,714,349	78.40
7-Jul	22,118,091	0	832,059	407,260	32,750	23,390,159	88.53
8-Jul	22,379,595	0	827,217	476,063	28,498	23,711,373	89.75
9-Jul	24,689,885	0	828,654	478,571	26,143	26,023,252	98.50
10-Jul	24,688,802	0	830,548	476,557	32,786	26,028,692	98.52
11-Jul	24,535,318	0	826,451	456,266	33,885	25,851,920	97.85
12-Jul	24,394,197	0	815,823	345,330	39,693	25,595,044	96.88
13-Jul	22,938,504	0	835,036	227,098	51,815	24,052,453	91.04
14-Jul	23,277,067	0	830,997	289,692	54,142	24,451,898	92.55
15-Jul	23,335,528	0	838,111	287,491	54,978	24,516,107	92.79
16-Jul	23,900,698	0	837,781	98,110	51,524	24,888,112	94.20
17-Jul	24,471,071	0	837,585	0	51,295	25,359,951	95.99
18-Jul	24,471,811	0	842,335	0	51,383	25,365,529	96.01
19-Jul	24,247,450	0	837,797	40,638	50,780	25,176,663	95.29
20-Jul	25,644,787	0	838,457	50,218	49,062	26,582,525	100.61
21-Jul	25,645,686	0	836,109	168,794	52,276	26,702,864	101.07
22-Jul	24,722,933	0	828,514	181,827	46,453	25,779,727	97.58
23-Jul	23,253,450	0	831,562	162,159	52,414	24,299,586	91.97
24-Jul	23,276,987	0	835,551	239,364	53,654	24,405,556	92.38
25-Jul	23,277,754	0	830,276	91,326	48,735	24,248,090	91.78
26-Jul	19,006,198	0	822,953	0	33,461	19,862,612	75.18
27-Jul	20,541,909	0	836,663	65,438	40,853	21,484,863	81.32
28-Jul	20,542,622	0	828,170	494,266	34,740	21,899,798	82.89
29-Jul	19,657,408	0	825,045	424,438	31,057	20,937,948	79.25
30-Jul	15,860,042	0	841,228	0	52,357	16,753,627	63.41
31-Jul	17,872,134	0	840,853	0	50,464	18,763,451	71.02
Totals Usqpd	646,705,287	0	24,828,345	5,744,648	1,177,221	678,455,501	2567.95
Totals ML	2,447.78	0.00	93.98	21.74	4.46		
Avg's	20,861,461	78.96				21,885,661	82.84
Max	25,645,686	97.07				26,702,864	101.07
Min	8,662,068	32.79				9,188,966	34.78

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 Distribution Intake’s Point of Disinfection and at the Mission Creek raw water Point of Diversion and 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

The control gates on BMID’s high-elevation reservoirs were opened in mid-July to supplement the flow to Mission Creek. 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) June 2024 - July 2024

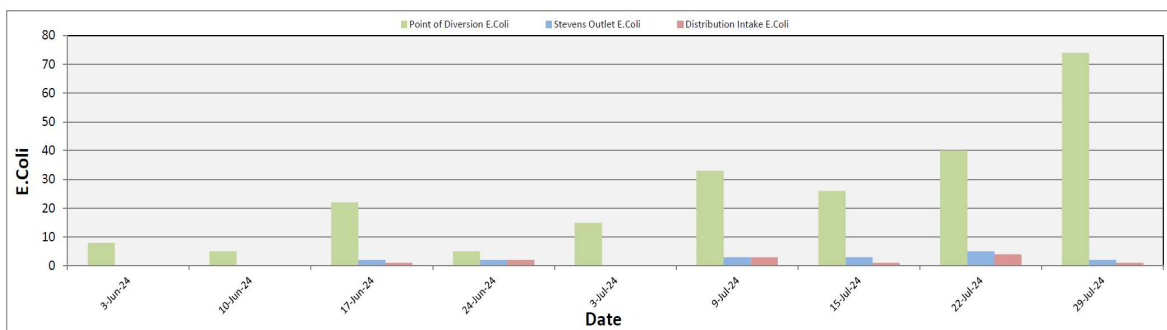


Table 2.1 - *E.Coli* Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
3-Jun-24	8	0	0
10-Jun-24	5	0	0
17-Jun-24	22	2	1
24-Jun-24	5	2	2
3-Jul-24	15	0	0
9-Jul-24	33	3	3
15-Jul-24	26	3	1
22-Jul-24	40	5	4
29-Jul-24	74	2	1

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

Through July 2024, turbidity for the Mission Creek source was measured at Booster Station No. 1 on Gallagher’s Road, which is the approximate location of the first-customer. The highest turbidity level recorded at this location was 0.36 NTU on July 7th, 2024. The lowest turbidity level was 0.05 NTU and the average turbidity was 0.16 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)

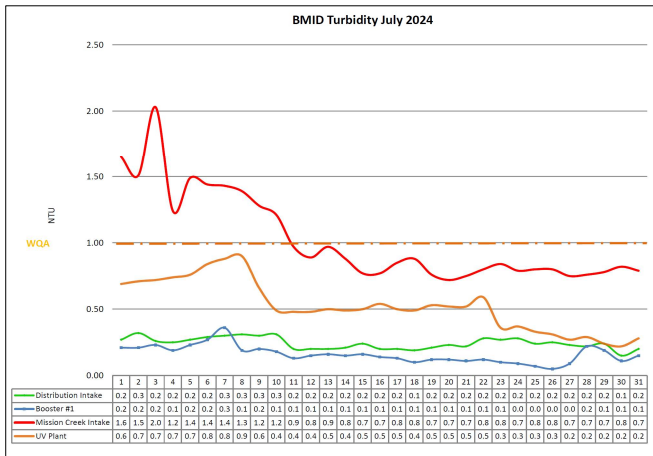


Table 3.1 - Daily Monitoring Record – Turbidity at On-Line Turbidity Analysers

Turbidity Point Sampling for July 2024				
Date	Mission Creek Intake	Distribution Intake	Booster#1- First User	UV Plant
	Daily Average [NTU]	Daily Average [NTU]	Daily Average [NTU]	Daily Average [NTU]
1	1.65	0.27	0.21	0.69
2	1.51	0.32	0.21	0.71
3	2.03	0.26	0.23	0.72
4	1.24	0.25	0.19	0.74
5	1.49	0.27	0.23	0.76
6	1.44	0.29	0.27	0.84
7	1.43	0.30	0.36	0.88
8	1.39	0.31	0.19	0.90
9	1.28	0.30	0.20	0.66
10	1.21	0.31	0.18	0.49
11	0.97	0.20	0.13	0.48
12	0.89	0.20	0.15	0.48
13	0.97	0.20	0.16	0.50
14	0.88	0.21	0.15	0.49
15	0.77	0.24	0.16	0.50
16	0.77	0.20	0.14	0.54
17	0.85	0.20	0.13	0.50
18	0.88	0.19	0.10	0.49
19	0.76	0.21	0.12	0.53
20	0.72	0.23	0.12	0.52
21	0.75	0.22	0.11	0.52
22	0.80	0.28	0.12	0.59
23	0.84	0.27	0.10	0.36
24	0.79	0.28	0.09	0.37
25	0.80	0.24	0.07	0.33
26	0.80	0.25	0.05	0.31
27	0.75	0.23	0.09	0.27
28	0.76	0.22	0.22	0.29
29	0.78	0.24	0.19	0.24
30	0.82	0.15	0.11	0.22
31	0.79	0.20	0.15	0.28
AVG	1.03	0.24	0.16	0.52

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 July, 2024.

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

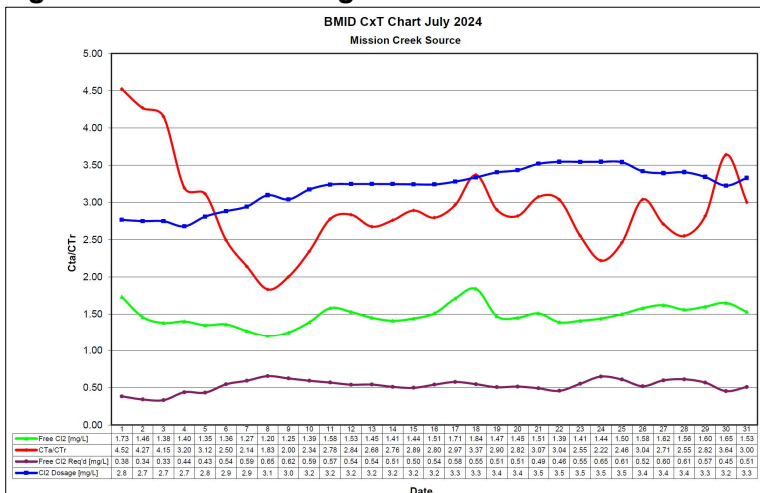


Table 4.2 - CT Table – Mission Creek Source

BMID July 2024 Mission Creek Source													
DATE	pH (Average)	TEMP (Present) [°C]	PEAK FLOW [Usgpm]	Free Cl2 [mg/L]	CT achieved	CT req'd	Cta/CTR	Free Cl2 Req'd [mg/L]	Cl2 Dosage [mg/L]	VOLUME TOTAL [USgal]	TIME [mins]	FLOW Daily Average [USGPM]	CL2 DOSAGE Average [PPD]
July 1	8.13	16.3	8,585	1.73	533.9	118.1	4.52	0.38	2.8	2649600	309	6,251	208
2	7.92	16.3	8,448	1.46	457.9	107.3	4.27	0.34	2.7	2649600	314	5,672	187
3	7.76	17.0	9,178	1.38	398.4	95.9	4.15	0.33	2.7	2649600	289	6,133	203
4	7.62	17.4	13,039	1.40	284.5	89.0	3.20	0.44	2.7	2649600	203	9,574	308
5	7.59	17.9	13,569	1.35	263.6	84.6	3.12	0.43	2.8	2649600	195	11,122	376
6	7.65	18.6	17,518	1.36	205.7	82.4	2.50	0.54	2.9	2649600	151	14,008	485
7	7.86	18.9	18,297	1.27	183.9	85.9	2.14	0.59	2.9	2649600	145	15,679	555
8	8.00	19.4	20,103	1.20	158.2	86.3	1.83	0.65	3.1	2649600	132	15,881	591
9	7.98	20.1	20,134	1.25	164.5	82.2	2.00	0.62	3.0	2649600	132	17,446	637
10	7.96	20.8	19,892	1.39	185.2	79.0	2.34	0.59	3.2	2649600	133	17,394	664
11	7.87	21.6	20,391	1.58	205.3	73.9	2.78	0.57	3.2	2649600	130	17,285	673
12	7.83	21.5	19,575	1.53	207.1	73.0	2.84	0.54	3.2	2649600	135	16,208	633
13	7.85	21.1	19,144	1.45	200.7	75.0	2.68	0.54	3.2	2649600	138	15,975	624
14	7.79	21.5	19,019	1.41	196.4	71.2	2.76	0.51	3.2	2649600	139	16,453	642
15	7.76	21.1	18,163	1.44	210.1	72.6	2.89	0.50	3.2	2649600	146	16,081	627
16	7.80	21.0	19,161	1.51	208.8	74.7	2.80	0.54	3.2	2649600	138	16,893	658
17	7.86	21.0	19,655	1.71	230.5	77.7	2.97	0.58	3.3	2649600	135	17,349	684
18	7.80	22.0	20,154	1.84	241.9	71.8	3.37	0.55	3.3	2649600	131	17,206	690
19	7.74	22.5	20,439	1.47	190.6	65.7	2.90	0.51	3.4	2649600	130	16,856	690
20	7.63	22.3	21,321	1.45	180.2	63.9	2.82	0.51	3.4	2649600	124	18,212	752
21	7.53	22.3	20,959	1.51	190.9	62.1	3.07	0.49	3.5	2649600	126	17,498	740
22	7.35	21.2	19,561	1.39	188.3	62.0	3.04	0.46	3.5	2649600	135	16,469	702
23	7.60	20.3	20,225	1.41	184.7	72.4	2.55	0.55	3.5	2649600	131	16,455	701
24	7.73	19.1	20,819	1.44	183.3	82.6	2.22	0.65	3.5	2649600	127	16,482	702
25	7.86	19.3	18,845	1.50	210.9	85.7	2.46	0.61	3.5	2649600	141	13,432	572
26	7.91	19.5	15,889	1.58	263.5	86.7	3.04	0.52	3.4	2649600	167	12,953	532
27	7.98	19.3	17,555	1.62	244.5	90.3	2.71	0.60	3.4	2649600	151	14,588	595
28	8.05	19.3	17,632	1.56	234.4	91.9	2.55	0.61	3.4	2649600	150	13,935	571
29	8.07	19.3	16,194	1.60	261.8	92.9	2.82	0.57	3.3	2649600	164	11,206	450
30	8.00	19.5	13,355	1.65	327.4	89.9	3.64	0.45	3.2	2649600	198	10,427	404
31	8.09	19.8	15,047	1.53	269.4	89.7	3.00	0.51	3.3	2649600	176	12,696	508
Averages	7.82	19.91	17479	1.48	240.851	81.8	2.90	0.5259	3.214		162	14,586	560

5.0 ULTRAVIOLET DISINFECTION

Total Water Treated: 2,448,046.3 m³ 100.00%
 On-Spec Water: 2,446,386.9 m³ 99.932%
 Off-Spec Water: 1,659.4 m³ 0.068%

Average monthly chlorine residual before UV Treatment was 1.59 mg/L
 The average monthly chlorine residual after UV treatment and re-chlorination was 1.53 mg/L.

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

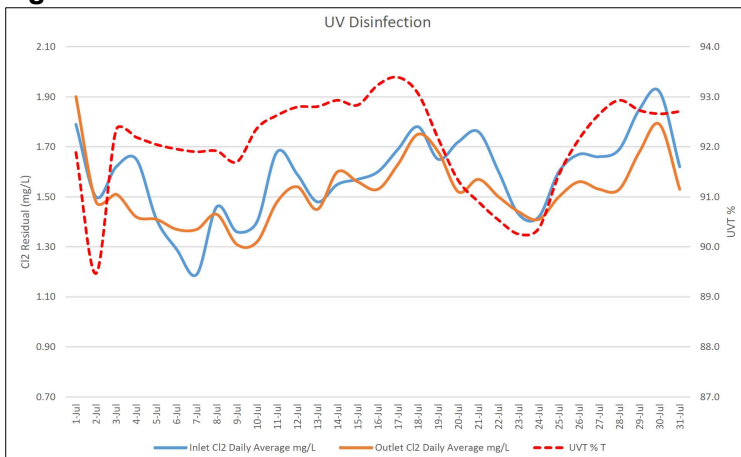


Table 5.2 - UV Disinfection Table – Mission Creek Source

	Inlet Cl ₂ Daily	Outlet Cl ₂ Daily		UVT	Turbidity		In Spec Water Volume	Off Spec Water Volume	Off Spec % of Water Volume
Date	mg/L	mg/L		% T	NTU		Cubic Meters	Cubic Meters	Percentage
1-Jul	1.79	1.90		91.9	0.69		43,674.80	0	0.00%
2-Jul	1.50	1.48		89.5	0.71		33,465.90	0	0.00%
3-Jul	1.62	1.51		92.3	0.72		32,789.50	0	0.00%
4-Jul	1.65	1.42		92.2	0.74		50,997.70	0	0.00%
5-Jul	1.41	1.41		92.0	0.76		59,435.10	0	0.00%
6-Jul	1.29	1.37		92.0	0.84		74,730.20	0	0.00%
7-Jul	1.19	1.37		91.9	0.88		83,726.10	0	0.00%
8-Jul	1.46	1.43		91.9	0.90		84,708.90	7.1	0.01%
9-Jul	1.36	1.31		91.7	0.66		93,183.40	278	0.30%
10-Jul	1.40	1.32		92.4	0.49		93,186.40	270.9	0.29%
11-Jul	1.68	1.48		92.6	0.48		92,876.30	0	0.00%
12-Jul	1.59	1.54		92.8	0.48		92,342.10	0	0.00%
13-Jul	1.48	1.45		92.8	0.50		86,665.00	166.7	0.19%
14-Jul	1.55	1.60		92.9	0.49		87,946.60	166.7	0.19%
15-Jul	1.57	1.56		92.8	0.50		87,949.60	385	0.44%
16-Jul	1.60	1.53		93.2	0.54		90,089.00	385	0.43%
17-Jul	1.69	1.63		93.4	0.50		92,633.10	0	0.00%
18-Jul	1.78	1.75		93.1	0.49		92,635.90	0	0.00%
19-Jul	1.65	1.68		92.2	0.53		91,786.60	0	0.00%
20-Jul	1.72	1.52		91.3	0.52		97,076.10	0	0.00%
21-Jul	1.76	1.57		90.9	0.52		97,079.50	0	0.00%
22-Jul	1.60	1.50		90.5	0.59		93,586.50	0	0.00%
23-Jul	1.43	1.44		90.3	0.36		88,023.90	0	0.00%
24-Jul	1.42	1.41		90.4	0.37		88,113.00	0	0.00%
25-Jul	1.60	1.50		91.4	0.33		88,115.90	0	0.00%
26-Jul	1.67	1.56		92.2	0.31		71,946.30	0	0.00%
27-Jul	1.66	1.53		92.7	0.27		77,759.60	0	0.00%
28-Jul	1.69	1.53		92.9	0.29		77,762.30	0	0.00%
29-Jul	1.85	1.68		92.7	0.24		74,411.40	0	0.00%
30-Jul	1.92	1.79		92.7	0.22		60,036.80	0	0.00%
31-Jul	1.62	1.53		92.7	0.28		67,653.40	0	0.00%
Average	1.59	1.53		92.07		Total	2,446,386.90	1659.4	0.068%

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

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

Date	2921 Belg0 Rd		Booster 1		Elison Blow-Off		Elison School		3976 Highway 97		Prospect Reservoir		Tower Reservoir		Well #6		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
3-Jun-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Jun-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Jun-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Jun-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Jul-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Jul-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 12 samples were found to be absent of both *Total Coliforms* and *E. Coli*.

Table 6.2 - BMID In-house Testing – Presence Absence

Location	07/03/2024				7/9/2024				7/15/2024				7/22/2024				7/29/2024			
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.
Sylvania Cres					0.93	21.8	-	X									1.00	20.2	-	X
170 Kneller Rd					0.34	21.6	-	X									1.17	20.6	-	X
2105 Morrison									1.29	24.4	-	X								
Staymen Rd									1.02	21.4	-	X								
260 Campion Rd	0.08	17.8	-	X									0.01	21.8	-	X				
Fenwick Rd	0.41	18.2	-	X									0.52	22.6	-	X				
Solly Ct					0.93	20.4	-	X									1.05	19.8	-	X

7.0 WELL #6 POTENTIAL POTABILITY TESTING

- BMID will take monthly bacterial samples on the raw water at Well #6 to determine the potential potability of the source. Results are as follows:

Table 7.1 - Well 6 Monthly Bacterial Testing

Well 6 Bacterial Testing		
Date	Total Coliforms	E.Coli Coliforms
24-Jun-24	0	0
29-Jul-24	0	0

- 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) = 12
- Total tests sampled by BMID and tested by Caro Labs 30
- Total tests sampled in BMID treated distribution system = 42
- 0 Positive *E. Coli* and Total Coliform Samples