



MONTHLY REPORTING PERIOD - JANUARY, 2024

SUMMARY

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

WATER SUPPLY & USAGE SUMMARY

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

Source	Total (US Gallons)	Total (Mega Litres)
Mission Creek	67,200,406	254.35
Well 4	3,565,502	13.50
Well 5	0	0
Well 6 (Irrigation Only)	0	0
Scotty Creek (Irrigation Only)	0	0
Total	70,765,909	267.85

2. The control gates for all of BMID's high-elevation reservoirs are closed for the season. The reservoirs will be opened after spring freshet 2024, to supplement flows in Mission Creek during the summer/fall;
3. BMID's Scotty Creek source supplying irrigation water to the north-end of the service area, was placed in stand-by mode on September 8th, 2023. The Scotty Creek source will remain in stand-by until irrigation demands increase in the summer of 2024;
4. Well #5, used as the primary water source in the north-end of the system for both irrigation and domestic consumption, was placed in stand-by mode on September 29th, 2023. Well #5 will resume operations in the summer of 2024 as irrigation demands increase in the north-end;
5. Well #4, used as a primary source for domestic water in the north-end of the distribution system during low-flow periods, resumed operation on September 27th, 2023. Well #4 was in operation throughout January and will remain in service until the spring/summer of 2024;
6. Well #6, which supplies water to the north-end irrigation distribution system, was placed in stand-by mode on September 24th, 2023. Well #6 will resume operations in the summer of 2024;
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. The WTP was in operation for only one day (Jan 31st) as Mission Creek had experienced increased turbidity and colour in the raw water. The WTP remained in stand-by mode for the remainder of January as Mission Creek had acceptable turbidity and colour in the raw water. The WTP will remain available to treat water if raw water quality diminishes;
2. The UV plant incorrectly recorded 233 cubic meters of Off-Spec water on January 2nd the 3rd, 2024. The UV station was undergoing routine maintenance (CIP) on one of the reactors. The water volume in the reactor was recorded as Off spec however, UV disinfection continued, uninterrupted, throughout the incident;
3. Comprehensive (Full Parameters) samples, taken twice yearly, were collected on January 8th. Results from these samples are available on BMID's website;
4. Testing for disinfection by-products took place on January 19th 2024. All THM samples were found to be within Health Canada Guidelines. In addition, all but one HAA sample was found to be within the recommended guideline. Taken as a quarterly average, both THM and HAA samples achieved the recommended guideline;
5. Raw water turbidity levels in Mission Creek peaked at 1.52 NTU on January 31st. Average daily raw water turbidity for January was 0.58 NTU at the Mission Creek Intake;
6. The highest turbidity level at the Distribution Intake (end of Hadden Reservoir) was 0.66 NTU on January 5th, 2024. Average settled water turbidity for January was 0.46 NTU at the Distribution Intake at the lower end of Hadden Reservoir;
7. The highest turbidity level at the first customer (Booster #1) was 0.47 NTU on January 16-17th. Average monthly turbidity at the first customer was 0.41 NTU;
8. Average daily turbidity at the UV station peaked at 0.77 NTU on January 13-16th. The turbidity meter reads consistently higher at this location, however, the turbidity results upstream and downstream of the UV plant have lower turbidity results. Average monthly turbidity at the UV disinfection station was 0.72 NTU;
9. BMID's Ultraviolet Treatment Facility treated 254,381 m³ of water, 313 m³ of which was Off-Spec (0.123%);
10. Regarding microbiological readings, BMID ceased withdrawing water from the upper elevation reservoirs earlier in the fall. Throughout the remainder of winter, Mission Creek is expected to have stable microbiological readings as freezing conditions continue in the watershed;
11. *E.Coli* levels at Mission Creek's Point-of-Diversion (creek intake prior to WTP) had normal counts for January, apart from January 22nd. The January 22nd sample had the peak monthly count of 28 coliforms. The average monthly *E.Coli* was 8.2, based on 5 samples;
12. *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 1 on January 22nd and January 29th. Average *E.Coli* reading for the month was 0.4 coliforms/sample 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;
13. 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 January;

1.0 FLOWS - JANUARY, 2024

The Maximum Daily Flow was on January 2nd, at 2,830,021 US gallons (10.71 ML)

The Minimum Daily Flow was on January 8th, at 2,010,982 US gallons (7.61 ML)

Mission Creek provided 95% of domestic flow supplied in January.

Figure 1.1 - Domestic Water System Flow

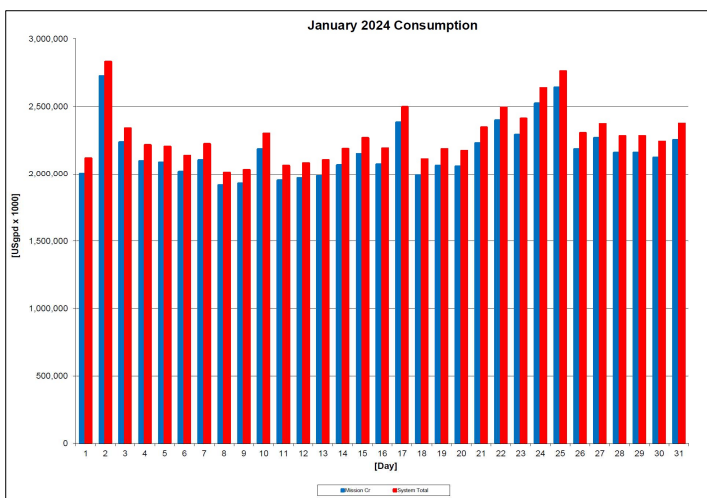


Table 1.2 - January 2024 - Daily Consumption Report

Year	Mission Cr	Well #4	Well #5	Well #6	System Total	System Total
2024	Usgpd	Usgpd	Usgpd	Usgpd	Usgpd	ML/Day
1-Jan	2,002,979	114,650	-	-	2,117,628	8.02
2-Jan	2,723,296	106,725	-	-	2,830,021	10.71
3-Jan	2,236,031	102,498	-	-	2,338,529	8.85
4-Jan	2,095,809	119,669	-	-	2,215,478	8.39
5-Jan	2,086,113	117,291	-	-	2,203,405	8.34
6-Jan	2,017,825	119,405	-	-	2,137,230	8.09
7-Jan	2,104,262	118,877	-	-	2,223,139	8.41
8-Jan	1,911,126	99,856	-	-	2,010,982	7.61
9-Jan	1,923,542	107,781	-	-	2,031,323	7.69
10-Jan	2,185,019	115,442	-	-	2,300,462	8.71
11-Jan	1,947,370	115,706	-	-	2,063,077	7.81
12-Jan	1,963,406	118,612	-	-	2,082,018	7.88
13-Jan	1,982,717	121,518	-	-	2,104,235	7.96
14-Jan	2,067,014	119,933	-	-	2,186,947	8.28
15-Jan	2,149,568	117,556	-	-	2,267,123	8.58
16-Jan	2,073,116	118,348	-	-	2,191,464	8.29
17-Jan	2,382,673	113,329	-	-	2,496,002	9.45
18-Jan	1,993,521	116,763	-	-	2,110,284	7.99
19-Jan	2,063,764	122,047	-	-	2,185,811	8.27
20-Jan	2,058,323	115,178	-	-	2,173,501	8.23
21-Jan	2,230,695	114,914	-	-	2,345,609	8.88
22-Jan	2,398,180	94,045	-	-	2,492,224	9.43
23-Jan	2,291,798	118,877	-	-	2,410,674	9.12
24-Jan	2,522,565	113,329	-	-	2,635,894	9.98
25-Jan	2,640,904	118,877	-	-	2,759,780	10.45
26-Jan	2,185,495	118,612	-	-	2,304,107	8.72
27-Jan	2,267,837	102,762	-	-	2,370,599	8.97
28-Jan	2,158,814	122,839	-	-	2,281,653	8.64
29-Jan	2,159,738	122,575	-	-	2,282,313	8.64
30-Jan	2,123,150	117,820	-	-	2,240,970	8.48
31-Jan	2,253,757	119,669	-	-	2,373,426	8.98
Totals Usgpd	67,200,406	3,565,502	0	0	70,765,909	267.85
Totals ML	254.35	13.50	0.00	0.00		
Avg's	2,164,888	8.19			2,279,749	8.63
Max	2,723,296	10.31			2,830,021	10.71
Min	1,911,126	7.23			2,010,982	7.61

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 closed throughout January, making for a greater contribution of ground water to the overall flow of Mission Creek leading to reduced E.Coli levels in the raw water.

Figure 2.1 - Raw Water *E.Coli* Readings (CARO Lab results) December 2023 - January 2024

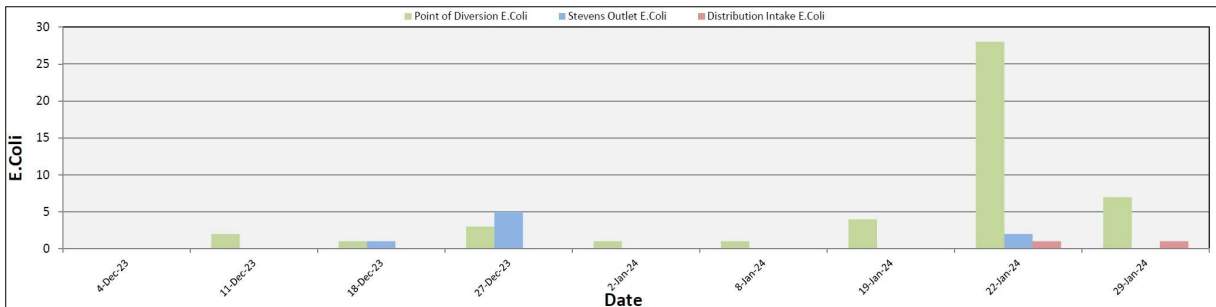


Table 2.1 - *E.Coli* Readings (CARO Labs)

Date	Point of Diversion E.Coli	Stevens Outlet E.Coli	Distribution Intake E.Coli
4-Dec-23	0	0	0
11-Dec-23	2	0	0
18-Dec-23	1	1	0
27-Dec-23	3	5	0
2-Jan-24	1	0	0
8-Jan-24	1	0	0
19-Jan-24	4	0	0
22-Jan-24	28	2	1
29-Jan-24	7	0	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 January 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 0.47 NTU on January 16-17th 2024. The lowest turbidity level was 0.34 NTU and the average turbidity was 0.41 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)

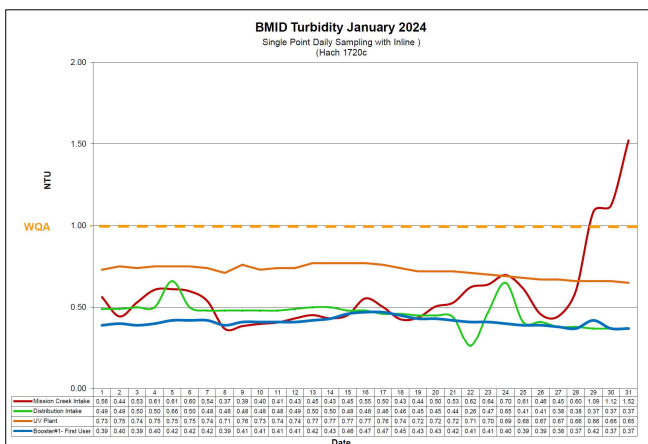


Table 3.1 - Daily Monitoring Record – Turbidity at On-Line Turbidity Analysers

Turbidity Point Sampling for January 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	0.56	0.49	0.39	0.73
2	0.44	0.49	0.40	0.75
3	0.53	0.50	0.39	0.74
4	0.61	0.50	0.40	0.75
5	0.61	0.66	0.42	0.75
6	0.60	0.50	0.42	0.75
7	0.54	0.48	0.42	0.74
8	0.37	0.48	0.39	0.71
9	0.39	0.48	0.41	0.76
10	0.40	0.48	0.41	0.73
11	0.41	0.48	0.41	0.74
12	0.43	0.49	0.41	0.74
13	0.45	0.50	0.42	0.77
14	0.43	0.50	0.43	0.77
15	0.45	0.48	0.46	0.77
16	0.55	0.48	0.47	0.77
17	0.50	0.46	0.47	0.76
18	0.43	0.46	0.45	0.74
19	0.44	0.45	0.43	0.72
20	0.50	0.45	0.43	0.72
21	0.53	0.44	0.42	0.72
22	0.62	0.26	0.41	0.71
23	0.64	0.47	0.41	0.70
24	0.70	0.65	0.40	0.69
25	0.61	0.41	0.39	0.68
26	0.46	0.41	0.39	0.67
27	0.45	0.38	0.38	0.67
28	0.60	0.38	0.37	0.66
29	1.09	0.37	0.42	0.66
30	1.12	0.37	0.37	0.66
31	1.52	0.37	0.37	0.65
AVG	0.58	0.46	0.41	0.72

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 January, 2024.

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

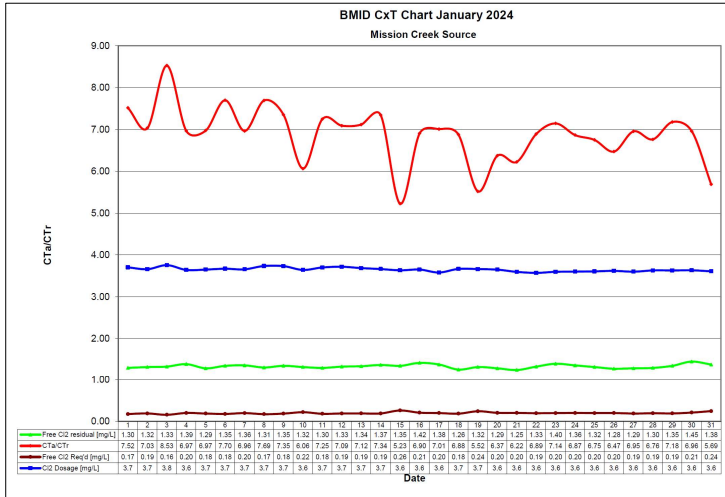


Table 4.2 - CT Table – Mission Creek Source

BMID January 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
January	Average	(Present)	FLOW	residual	achieved	req'd		Req'd	Dosage	TOTAL	[mins]	Daily Average	Average
		[°C]	[Usgpm]	[mg/L]				[mg/L]	[mg/L]	[USgal]		USGPM	[PPD]
1	7.48	3.3	2058	1.30	1673.6	222.7	7.52	0.17	3.7	2649600	1287	1396	62
2	7.48	3.5	2259	1.32	1547.9	220.1	7.03	0.19	3.7	2649600	1173	1453	64
3	7.48	3.4	1862	1.33	1892.1	221.9	8.53	0.16	3.8	2649600	1423	1256	57
4	7.48	3.5	2383	1.39	1545.4	221.8	6.97	0.20	3.6	2649600	1112	1483	65
5	7.48	3.5	2234	1.29	1529.9	219.4	6.97	0.18	3.7	2649600	1186	1470	65
6	7.46	3.2	2076	1.35	1723.3	223.9	7.70	0.18	3.7	2649600	1277	1428	63
7	7.43	3.4	2366	1.36	1522.7	218.7	6.96	0.20	3.7	2649600	1120	1481	65
8	7.43	3.5	2090	1.31	1660.9	215.9	7.69	0.17	3.7	2649600	1268	1341	60
9	7.43	3.2	2197	1.35	1628.2	221.5	7.35	0.18	3.7	2649600	1206	1342	60
10	7.43	3.4	2650	1.32	1319.7	217.7	6.06	0.22	3.6	2649600	1000	1537	67
11	7.47	3.1	2113	1.30	1630.2	225.0	7.25	0.18	3.7	2649600	1254	1369	61
12	7.48	2.8	2149	1.33	1640.2	231.3	7.09	0.19	3.7	2649600	1233	1363	61
13	7.52	3.2	2183	1.34	1626.1	228.5	7.12	0.19	3.7	2649600	1214	1400	62
14	7.53	2.9	2104	1.37	1725.2	234.9	7.34	0.19	3.7	2649600	1259	1456	64
15	7.50	2.8	2932	1.35	1220.2	233.5	5.23	0.26	3.6	2649600	904	1514	66
16	7.48	2.7	2317	1.42	1624.2	235.2	6.90	0.21	3.6	2649600	1144	1462	64
17	7.46	2.7	2244	1.38	1629.7	232.6	7.01	0.20	3.6	2649600	1181	1679	72
18	7.43	2.8	2154	1.26	1549.9	225.4	6.88	0.18	3.7	2649600	1230	1409	62
19	7.43	2.9	2812	1.32	1243.8	225.4	5.52	0.24	3.7	2649600	942	1450	64
20	7.42	2.9	2397	1.29	1425.7	223.8	6.37	0.20	3.6	2649600	1105	1455	64
21	7.38	3.1	2458	1.25	1347.2	216.5	6.22	0.20	3.6	2649600	1078	1581	68
22	7.37	2.9	2317	1.33	1521.2	220.8	6.89	0.19	3.6	2649600	1144	1689	73
23	7.29	2.7	2370	1.40	1564.9	219.0	7.14	0.20	3.6	2649600	1118	1617	70
24	7.46	3.1	2325	1.36	1549.7	225.7	6.87	0.20	3.6	2649600	1139	1589	69
25	7.48	2.6	2212	1.32	1581.2	234.3	6.75	0.20	3.6	2649600	1198	1557	68
26	7.44	2.8	2312	1.28	1467.0	226.7	6.47	0.20	3.6	2649600	1146	1543	67
27	7.46	2.8	2150	1.29	1589.7	228.6	6.95	0.19	3.6	2649600	1232	1602	69
28	7.46	2.8	2225	1.30	1547.8	228.9	6.76	0.19	3.6	2649600	1191	1522	66
29	7.42	2.8	2197	1.35	1628.2	226.9	7.18	0.19	3.6	2649600	1206	1522	66
30	7.42	2.8	2408	1.45	1595.7	229.3	6.96	0.21	3.6	2649600	1100	1500	66
31	7.41	2.6	2795	1.38	1308.1	230.0	5.69	0.24	3.6	2649600	948	1591	69
Averages	7.45	3.0	2302	1.34	1550.3	225.3	6.88	0.20	3.7	2649600	1162	1486	65

5.0 ULTRAVIOLET DISINFECTION

Total Water Treated: 254,381 m³ 100.00%
 On-Spec Water: 254,068 m³ 99.877%
 Off-Spec Water: 313 m³ 0.123%

Average monthly chlorine residual before UV Treatment was 1.51 mg/L
 The average monthly chlorine residual after UV treatment and re-chlorination was 1.42 mg/L.

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

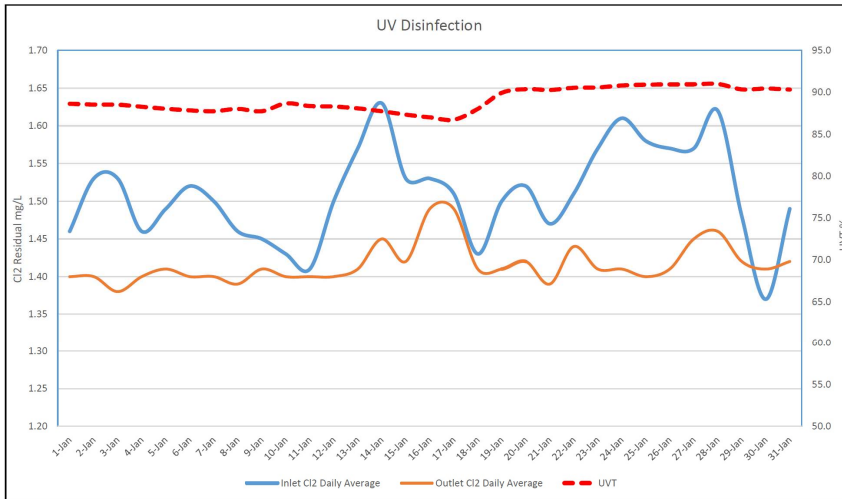


Table 5.2 - UV Disinfection Table – Mission Creek Source

	Inlet Cl2	Outlet Cl2			In Spec Water	Off Spec	Off Spec % of
Date	Daily Average	Daily Average	UVT	Turbidity	Volume	Water Volume	Water Volume
	mg/L	mg/L	% T	NTU	Cubic Meters	Cubic Meters	Percentage
1-Jan	1.46	1.4	88.6	0.73	7582	0	0.00%
2-Jan	1.53	1.4	88.5	0.75	10087	221.8	2.20%
3-Jan	1.53	1.38	88.5	0.74	8453	11.1	0.13%
4-Jan	1.46	1.4	88.3	0.75	7934	0	0.00%
5-Jan	1.49	1.41	88.0	0.75	7881	16	0.20%
6-Jan	1.52	1.4	87.8	0.75	7638	0.8	0.01%
7-Jan	1.50	1.4	87.7	0.74	7954	11.7	0.15%
8-Jan	1.46	1.39	88.0	0.71	7234	0.6	0.01%
9-Jan	1.45	1.41	87.7	0.76	7264	17.2	0.24%
10-Jan	1.43	1.4	88.7	0.73	8270	0.9	0.01%
11-Jan	1.41	1.4	88.4	0.74	7359	12.6	0.17%
12-Jan	1.50	1.4	88.3	0.74	7432	0.6	0.01%
13-Jan	1.57	1.41	88.1	0.77	7505	0	0.00%
14-Jan	1.63	1.45	87.7	0.77	7825	0	0.00%
15-Jan	1.53	1.42	87.3	0.77	8137	0	0.00%
16-Jan	1.53	1.49	87.0	0.77	7848	0	0.00%
17-Jan	1.51	1.49	86.7	0.76	9019	0	0.00%
18-Jan	1.43	1.41	88.0	0.74	7546	0	0.00%
19-Jan	1.50	1.41	89.9	0.72	7812	0	0.00%
20-Jan	1.52	1.42	90.4	0.72	7792	0	0.00%
21-Jan	1.47	1.39	90.3	0.72	8444	0	0.00%
22-Jan	1.51	1.44	90.5	0.71	9078	0	0.00%
23-Jan	1.57	1.41	90.6	0.70	8675	0	0.00%
24-Jan	1.61	1.41	90.8	0.69	9530	18.6	0.20%
25-Jan	1.58	1.4	90.9	0.68	9996	0.9	0.01%
26-Jan	1.57	1.41	90.9	0.67	8273	0	0.00%
27-Jan	1.57	1.45	91.0	0.67	8585	0	0.00%
28-Jan	1.62	1.46	91.0	0.66	8172	0	0.00%
29-Jan	1.48	1.42	90.3	0.66	8176	0	0.00%
30-Jan	1.37	1.41	90.5	0.66	8037	0	0.00%
31-Jan	1.49	1.42	90.3	0.65	8531	0	0.00%
Average	1.51	1.42	89.1	Total	254068.46	312.8	0.123%

*The January 4th Off-Spec water was a result of a programming error during routine maintenance.

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
- 29 samples were found to be absent of Coliforms.
- 29 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 #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
4-Dec-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Dec-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Dec-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Dec-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Jan-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Jan-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Jan-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Jan-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Jan-24	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	1/2/2024				1/18/2024				1/22/2024				1/29/2024				
	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	Cl2	Temp.	Pres.	Abs.	
Sylvania Cres					0.86	8.8	-	X									
170 Kneller Rd					0.76	8.4	-	X									
2105 Morrison	0.61	12.2	-	X					0.87	10.8	-	X					
Staymen Rd	0.64	11.0	-	X					0.81	5.6	-	X					
260 Campion Rd													0.59	8.4	-	X	
Fenwick Rd													0.64	7.4	-	X	
Solly Ct					0.77	8.4	-	X									

Table 6.3 - BMID Disinfection By-product Testing – THM and HAA

19-Jan-24		
Location	THM (mg/L)	HAA (mg/L)
Kirschner Reservoir	0.0644	0.0948
Pearson School	0.0507	0.0701
2921 Belgo Rd	0.0812	0.0658
Ellison School*	0.00581	<0.00200
3976 Hwy 97 N	0.0522	0.0682

*Primarily Well Water Supply

- Both THM and HAA quarterly average results are within the limits as set out in the Guidelines for Canadian Drinking Water Quality
- 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 29
- Total tests sampled in BMID treated distribution system = 38
- 0 Positive *E. Coli* and Total Coliform Samples