BLACK MOUNTAIN IRRIGATION DISTRICT
285 Gray Road
Kelowna, B.C.
V1X 1W8

Office: (250) 765-5169
Fax: (250) 765-0277
www.bmid.ca

BMID FILE: 486

# MONTHLY REPORTING PERIOD - MAY, 2024

## SUMMARY

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

### WATER SUPPLY & USAGE SUMMARY

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

| Source | Total (US Gallons) | Total (Mega Litres) |
|---|---|---|
| Mission Creek | 270,437,658 | 1,023.61 |
| Well 4 | 3,772,612 | 14.28 |
| Well 5 | 23,798,547 | 90.08 |
| Well 6 (Irrigation Only) | 7,063,584 | 26.74 |
| Scotty Creek (Irrigation Only) | 2,088 | 0.01 |
| Total | 305,074,489 | 1,154,71 |

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 was made ready for the upcoming season on May 14th, however, the system 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, resumed operations on April 22, 2024, as system flows increased for the spring. Well #5 only operated between May 2nd and May 21st during the month, as Well #5's operation is dictated by system demand;
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 between May 1st and May 6th as well as May 21st to May 31st when lower system flows matched Well #4's pumping capacities;
6. Well #6, which supplies water to the north-end irrigation distribution system, resumed operation on May 6th until May 19th when irrigation demands decreased due to the cooler and wet weather. Well# 6 will resume operations when flows increase later in the spring/summer;
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. No testing took place at BMID's dedicated sample station at 3976 Highway 97 due to a vehicle damaging the sample station. BMID crews will repair the sample station at a later date;
2. The WTP was in operation throughout May as Mission Creek experienced increased turbidity and colour in the raw water from spring freshet. The WTP will remain in operation until turbidity and colour levels in Mission Creek reduce in the late fall/early winter;
3. Raw water turbidity levels in Mission Creek peaked at 28.37 NTU on May 12th. Average daily raw water turbidity for May was 6.61 NTU at the Mission Creek Intake;
4. The highest turbidity level at the Distribution Intake was 1.00 NTU on May 26th, 2024. Average settled water turbidity for May was 0.54 NTU at the Distribution Intake at the lower end of Hadden Reservoir;
5. The highest turbidity level at the first customer (Booster #1) was 0.84 NTU on May 21st. Average monthly turbidity at the first customer was 0.45 NTU;
6. Average daily turbidity at the UV station peaked at 1.20 NTU on May 10th. 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 0.83 NTU;
7. BMID's Ultraviolet Treatment Facility treated 1,023,718 $m^3$ of water, 469 $m^3$ of which was Off-Spec (0.046%);
8. A brief Off-Spec incident occurred on May 18, when flows at the UV treatment facility increased during the daily reactor changeover. The UV reactor responded to the change in flow appropriately, however there was a delay while the reactor increased power. Primary disinfection through chlorination was maintained throughout the incident;
9. Regarding microbiological readings, BMID ceased withdrawing water from the upper elevation reservoirs earlier in the fall of 2023. However, snowmelt in the upper watershed has led to increased, microbiological readings during the freshet period in spring 2024;
10. *E.Coli* levels at Mission Creek's Point-of-Diversion (creek intake prior to WTP) had normal counts for May. The May 13th sample had the peak monthly count of 10 coliforms. The average monthly *E.Coli* was 4.75, based on 4 samples;
11. *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 zero counts on three of four samples. The fourth sample only had a single *E.Coli* count. 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;
12. 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 May;

## 1.0 FLOWS - MAY, 2024

The Maximum Daily Flow was on May 12th, at 18,853,156 US gallons (71.36 ML)

The Minimum Daily Flow was on May 24th, at 4,485,613 US gallons (16.98 ML)

Mission Creek provided just under 89% of domestic and irrigation flow supplied in May.

**Figure 1.1 - Domestic Water System Flow**

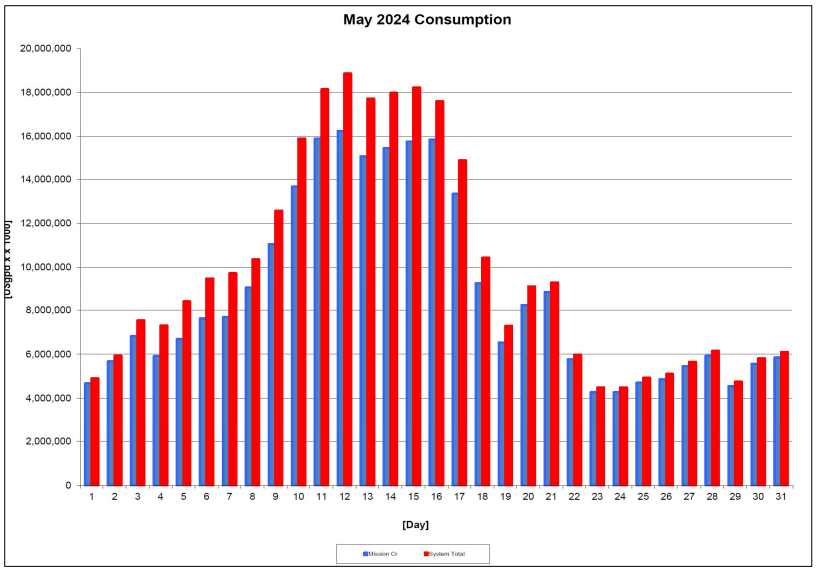



**Table 1.2 - May 2024 - Daily Consumption Report**

| 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-May | 4,670,402 | 228,507 | 0 | 0 | 0 | 4,898,910 | 18.54 |
| 2-May | 5,673,781 | 252,018 | 7,133 | 0 | 0 | 5,932,931 | 22.46 |
| 3-May | 6,818,649 | 247,527 | 473,921 | 0 | 0 | 7,540,097 | 28.54 |
| 4-May | 5,918,694 | 264,170 | 1,120,081 | 0 | 0 | 7,302,945 | 27.64 |
| 5-May | 6,686,669 | 301,682 | 1,414,366 | 0 | 0 | 8,402,717 | 31.80 |
| 6-May | 7,622,789 | 127,066 | 1,267,488 | 472,296 | 0 | 9,489,638 | 35.92 |
| 7-May | 7,686,692 | 0 | 1,077,285 | 960,432 | 0 | 9,724,409 | 36.81 |
| 8-May | 9,029,769 | 0 | 1,199,332 | 128,568 | 0 | 10,357,669 | 39.20 |
| 9-May | 11,051,768 | 0 | 1,349,645 | 171,072 | 0 | 12,572,484 | 47.59 |
| 10-May | 13,661,338 | 0 | 1,689,103 | 546,480 | 0 | 15,896,921 | 60.17 |
| 11-May | 15,895,520 | 0 | 1,628,344 | 613,536 | 0 | 18,137,400 | 68.65 |
| 12-May | 16,244,808 | 0 | 1,684,084 | 924,264 | 0 | 18,853,156 | 71.36 |
| 13-May | 15,045,996 | 0 | 1,699,141 | 963,864 | 0 | 17,709,001 | 67.03 |
| 14-May | 15,414,357 | 0 | 1,670,347 | 885,984 | 2,088 | 17,972,776 | 68.03 |
| 15-May | 15,757,860 | 0 | 1,634,684 | 823,416 | 0 | 18,215,960 | 68.95 |
| 16-May | 15,848,075 | 0 | 1,451,614 | 296,472 | 0 | 17,596,161 | 66.60 |
| 17-May | 13,338,176 | 0 | 1,364,438 | 162,624 | 0 | 14,865,238 | 56.26 |
| 18-May | 9,273,917 | 0 | 1,087,060 | 72,336 | 0 | 10,433,312 | 39.49 |
| 19-May | 6,525,497 | 0 | 719,335 | 42,240 | 0 | 7,287,072 | 27.58 |
| 20-May | 8,232,868 | 0 | 895,008 | 0 | 0 | 9,127,876 | 34.55 |
| 21-May | 8,817,559 | 125,745 | 366,140 | 0 | 0 | 9,309,444 | 35.24 |
| 22-May | 5,774,192 | 199,448 | 0 | 0 | 0 | 5,973,641 | 22.61 |
| 23-May | 4,270,314 | 222,167 | 0 | 0 | 0 | 4,492,481 | 17.00 |
| 24-May | 4,269,257 | 216,355 | 0 | 0 | 0 | 4,485,613 | 16.98 |
| 25-May | 4,709,394 | 214,242 | 0 | 0 | 0 | 4,923,636 | 18.64 |
| 26-May | 4,859,391 | 245,414 | 0 | 0 | 0 | 5,104,805 | 19.32 |
| 27-May | 5,450,714 | 204,732 | 0 | 0 | 0 | 5,655,445 | 21.41 |
| 28-May | 5,927,095 | 226,130 | 0 | 0 | 0 | 6,153,225 | 23.29 |
| 29-May | 4,552,027 | 192,580 | 0 | 0 | 0 | 4,744,607 | 17.96 |
| 30-May | 5,560,134 | 256,245 | 0 | 0 | 0 | 5,816,379 | 22.01 |
| 31-May | 5,849,957 | 248,584 | 0 | 0 | 0 | 6,098,541 | 23.08 |
| Totals Usgpd | 270,437,658 | 3,772,612 | 23,798,547 | 7,063,584 | 2,088 | 305,074,489 | 1154.71 |
| Totals ML | 1,023.61 | 14.28 | 90.08 | 26.74 | 0.01 | 1,155 | |
| Avg's | 8,723,795 | 33.02 | | | | 9,841,113 | 37.25 |
| Max | 16,244,808 | 61.49 | | | | 18,853,156 | 71.36 |
| Min | 4,269,257 | 16.16 | | | | 4,485,613 | 16.98 |

## 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 May, resulting in a higher percentage of surface runoff and groundwater contributing to Mission Creek's flow.

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

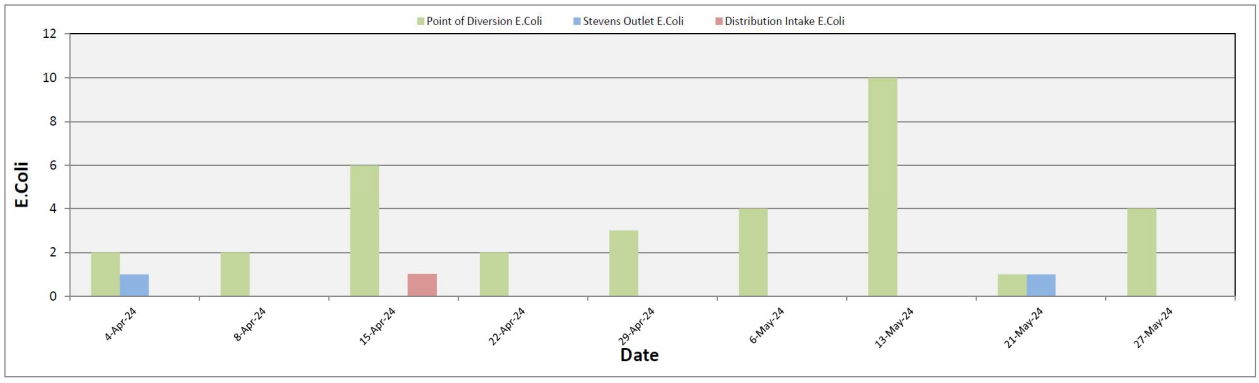



**Table 2.1 - *E.Coli* Readings (CARO Labs)**

| Date | Point of Diversion E.Coli | Stevens Outlet E.Coli | Distribution Intake E.Coli |
|---|---|---|---|
| 4-Apr-24 | 2 | 1 | 0 |
| 8-Apr-24 | 2 | 0 | 0 |
| 15-Apr-24 | 6 | 0 | 1 |
| 22-Apr-24 | 2 | 0 | 0 |
| 29-Apr-24 | 3 | 0 | 0 |
| 6-May-24 | 4 | 0 | 0 |
| 13-May-24 | 10 | 0 | 0 |
| 21-May-24 | 1 | 1 | 0 |
| 27-May-24 | 4 | 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 $m^3$ 1st upper balancing reservoir (Stevens Res.)
Hadden Outlet (Raw) - Sampling point after exiting 75,000 $m^3$ 2nd lower balancing reservoir (Hadden Res.)
(*Hadden Outlet = Distribution Intake - Point of Disinfection*)

## 3.0 RAW AND TREATED WATER TURBIDITY

Through May 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 0.84 NTU on May 21st 2024. The lowest turbidity level was 0.29 NTU and the average turbidity was 0.45 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)**

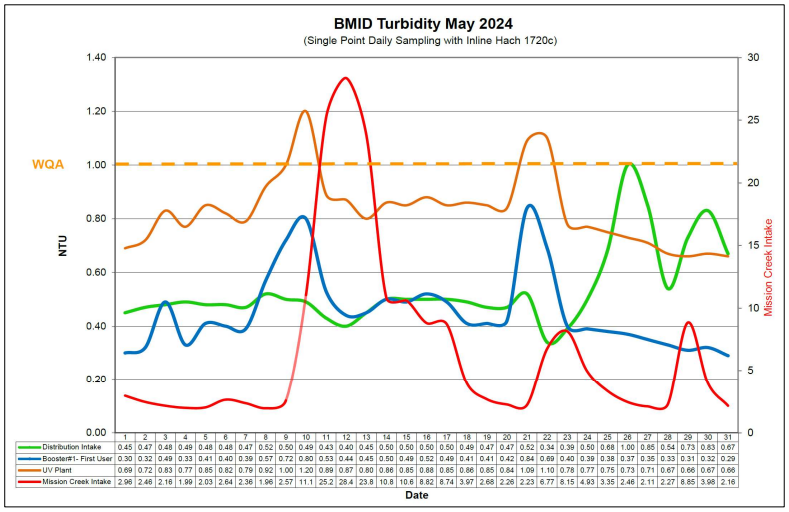


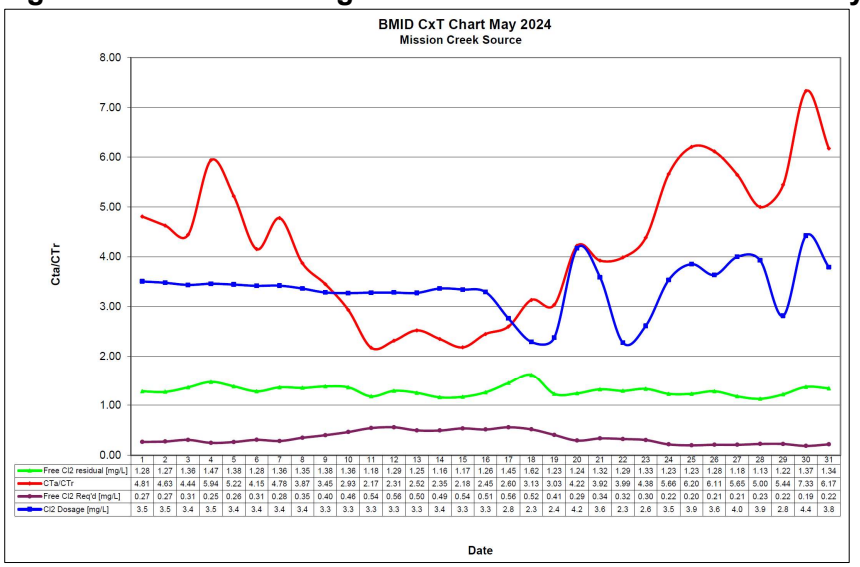

**Table 3.1 - Daily Monitoring Record – Turbidity at On-Line Turbidity Analysers**

| Turbidity Point Sampling for May 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 | 2.96 | 0.45 | 0.30 | 0.69 |
| 2 | 2.46 | 0.47 | 0.32 | 0.72 |
| 3 | 2.16 | 0.48 | 0.49 | 0.83 |
| 4 | 1.99 | 0.49 | 0.33 | 0.77 |
| 5 | 2.03 | 0.48 | 0.41 | 0.85 |
| 6 | 2.64 | 0.48 | 0.40 | 0.82 |
| 7 | 2.36 | 0.47 | 0.39 | 0.79 |
| 8 | 1.96 | 0.52 | 0.57 | 0.92 |
| 9 | 2.57 | 0.50 | 0.72 | 1.00 |
| 10 | 11.05 | 0.49 | 0.80 | 1.20 |
| 11 | 25.22 | 0.43 | 0.53 | 0.89 |
| 12 | 28.37 | 0.40 | 0.44 | 0.87 |
| 13 | 23.82 | 0.45 | 0.45 | 0.80 |
| 14 | 10.84 | 0.50 | 0.50 | 0.86 |
| 15 | 10.61 | 0.50 | 0.49 | 0.85 |
| 16 | 8.82 | 0.50 | 0.52 | 0.88 |
| 17 | 8.74 | 0.50 | 0.49 | 0.85 |
| 18 | 3.97 | *0.49* | 0.41 | 0.86 |
| 19 | 2.68 | *0.47* | 0.41 | 0.85 |
| 20 | 2.26 | *0.47* | 0.42 | 0.84 |
| 21 | 2.23 | *0.52* | 0.84 | 1.09 |
| 22 | 6.77 | *0.34* | 0.69 | 1.10 |
| 23 | 8.153 | *0.39* | 0.40 | 0.78 |
| 24 | 4.93 | *0.50* | 0.39 | 0.77 |
| 25 | 3.35 | *0.68* | 0.38 | 0.75 |
| 26 | 2.46 | *1.00* | 0.37 | 0.73 |
| 27 | 2.11 | *0.85* | 0.35 | 0.71 |
| 28 | 2.27 | *0.54* | 0.33 | 0.67 |
| 29 | 8.853 | *0.73* | 0.31 | 0.66 |
| 30 | 3.98 | *0.83* | 0.32 | 0.67 |
| 31 | 2.16 | *0.67* | 0.29 | 0.66 |
| AVG | 6.61 | 0.54 | 0.45 | 0.83 |

## 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 May, 2024.

**Figure 4.1 - CT Trending – BMID Mission Creek Source – May 2024**




| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Free Cl2 residual [mg/L] | 1.28 | 1.27 | 1.36 | 1.47 | 1.38 | 1.28 | 1.36 | 1.35 | 1.38 | 1.36 | 1.18 | 1.29 | 1.25 | 1.16 | 1.17 | 1.26 | 1.45 | 1.62 | 1.23 | 1.24 | 1.32 | 1.29 | 1.33 | 1.23 | 1.23 | 1.28 | 1.18 | 1.13 | 1.22 | 1.37 | 1.34 |
| CTa/CTr | 4.81 | 4.63 | 4.44 | 5.94 | 5.22 | 4.15 | 4.78 | 3.87 | 3.45 | 2.93 | 2.17 | 2.31 | 2.52 | 2.35 | 2.18 | 2.45 | 2.60 | 3.13 | 3.03 | 4.22 | 3.92 | 3.99 | 4.38 | 5.66 | 6.20 | 6.11 | 5.65 | 5.00 | 5.44 | 7.33 | 6.17 |
| Free Cl2 Req'd [mg/L] | 0.27 | 0.27 | 0.31 | 0.25 | 0.26 | 0.31 | 0.28 | 0.35 | 0.40 | 0.46 | 0.54 | 0.56 | 0.50 | 0.49 | 0.54 | 0.51 | 0.56 | 0.52 | 0.41 | 0.29 | 0.34 | 0.32 | 0.30 | 0.22 | 0.20 | 0.21 | 0.21 | 0.23 | 0.22 | 0.19 | 0.22 |
| Cl2 Dosage [mg/L] | 3.5 | 3.5 | 3.4 | 3.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.4 | 3.3 | 3.3 | 2.8 | 2.3 | 2.4 | 4.2 | 3.6 | 2.3 | 2.6 | 3.5 | 3.9 | 3.6 | 4.0 | 3.9 | 2.8 | 4.4 | 3.8 |

**Table 4.2 - CT Table – Mission Creek Source**

| DATE | BMID May 2024 Mission Creek Source | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | | Daily Average | Average |
| May | | [°C] | [Usgpm] | [mg/L] | | | | [mg/L] | [mg/L] | [USgal] | [mins] | [Usgpm] | [PPD] |
| 1 | 7.13 | 11.6 | 6422 | 1.28 | 528.1 | 109.8 | 4.81 | 0.27 | 3.5 | 2649600 | 413 | 3307 | 139.30 |
| 2 | 7.13 | 11.1 | 6405 | 1.27 | 525.4 | 113.6 | 4.63 | 0.27 | 3.5 | 2649600 | 414 | 3997 | 167.00 |
| 3 | 7.11 | 11.0 | 7076 | 1.36 | 509.3 | 114.7 | 4.44 | 0.31 | 3.4 | 2649600 | 374 | 4832 | 199.40 |
| 4 | 7.12 | 11.9 | 5994 | 1.47 | 649.8 | 109.4 | 5.94 | 0.25 | 3.5 | 2649600 | 442 | 4192 | 174.20 |
| 5 | 7.12 | 11.8 | 6422 | 1.38 | 569.3 | 109.1 | 5.22 | 0.26 | 3.4 | 2649600 | 413 | 4734 | 195.80 |
| 6 | 7.12 | 11.7 | 7518 | 1.28 | 451.1 | 108.7 | 4.15 | 0.31 | 3.4 | 2649600 | 352 | 5397 | 221.50 |
| 7 | 7.12 | 11.9 | 6976 | 1.36 | 516.6 | 108.1 | 4.78 | 0.28 | 3.4 | 2649600 | 380 | 5444 | 223.70 |
| 8 | 7.13 | 12.6 | 8950 | 1.35 | 399.7 | 103.3 | 3.87 | 0.35 | 3.4 | 2649600 | 296 | 6399 | 258.40 |
| 9 | 7.14 | 13.6 | 10924 | 1.38 | 334.7 | 97.1 | 3.45 | 0.40 | 3.3 | 2649600 | 243 | 7842 | 309.40 |
| 10 | 7.12 | 13.4 | 12613 | 1.36 | 285.7 | 97.5 | 2.93 | 0.46 | 3.3 | 2649600 | 210 | 9693 | 381.00 |
| 11 | 7.13 | 12.9 | 14516 | 1.18 | 215.4 | 99.1 | 2.17 | 0.54 | 3.3 | 2649600 | 183 | 11254 | 443.40 |
| 12 | 7.12 | 12.2 | 14071 | 1.29 | 242.9 | 105.1 | 2.31 | 0.56 | 3.3 | 2649600 | 188 | 11521 | 454.20 |
| 13 | 7.12 | 12.8 | 13097 | 1.25 | 252.9 | 100.3 | 2.52 | 0.50 | 3.3 | 2649600 | 202 | 10660 | 419.40 |
| 14 | 7.11 | 12.8 | 13255 | 1.16 | 231.9 | 98.8 | 2.35 | 0.49 | 3.4 | 2649600 | 200 | 10660 | 430.70 |
| 15 | 7.10 | 12.6 | 14228 | 1.17 | 217.9 | 100.0 | 2.18 | 0.54 | 3.3 | 2649600 | 186 | 10926 | 438.70 |
| 16 | 7.10 | 12.0 | 12950 | 1.26 | 257.8 | 105.4 | 2.45 | 0.51 | 3.3 | 2649600 | 205 | 11171 | 441.90 |
| 17 | 7.00 | 11.4 | 13700 | 1.45 | 280.4 | 108.0 | 2.60 | 0.56 | 2.8 | 2649600 | 193 | 11221 | 372.20 |
| 18 | 7.00 | 12.1 | 13101 | 1.62 | 327.6 | 104.6 | 3.13 | 0.52 | 2.3 | 2649600 | 202 | 9448 | 259.80 |
| 19 | 7.02 | 11.3 | 10049 | 1.23 | 324.3 | 106.9 | 3.03 | 0.41 | 2.4 | 2649600 | 264 | 6526 | 186.10 |
| 20 | 7.01 | 11.4 | 7352 | 1.24 | 446.9 | 105.9 | 4.22 | 0.29 | 4.2 | 2649600 | 360 | 4647 | 232.90 |
| 21 | 6.96 | 11.2 | 8385 | 1.32 | 417.1 | 106.3 | 3.92 | 0.34 | 3.6 | 2649600 | 316 | 5839 | 251.80 |
| 22 | 6.93 | 11.7 | 8479 | 1.29 | 403.1 | 101.2 | 3.99 | 0.32 | 2.3 | 2649600 | 312 | 6247 | 170.50 |
| 23 | 6.96 | 11.7 | 7820 | 1.33 | 450.6 | 102.8 | 4.38 | 0.30 | 2.6 | 2649600 | 339 | 4095 | 128.50 |
| 24 | 6.93 | 11.9 | 5812 | 1.23 | 560.8 | 99.0 | 5.66 | 0.22 | 3.5 | 2649600 | 456 | 3020 | 128.20 |
| 25 | 6.92 | 11.9 | 5324 | 1.23 | 612.2 | 98.7 | 6.20 | 0.20 | 3.9 | 2649600 | 498 | 3036 | 140.50 |
| 26 | 6.92 | 12.2 | 5706 | 1.28 | 594.4 | 97.2 | 6.11 | 0.21 | 3.6 | 2649600 | 464 | 3324 | 145.10 |
| 27 | 6.92 | 12.9 | 6054 | 1.18 | 516.4 | 91.5 | 5.65 | 0.21 | 4.0 | 2649600 | 438 | 3443 | 165.50 |
| 28 | 6.89 | 12.3 | 6397 | 1.13 | 468.1 | 93.7 | 5.00 | 0.23 | 3.9 | 2649600 | 414 | 3843 | 181.30 |
| 29 | 6.91 | 12.1 | 6134 | 1.22 | 527.0 | 96.8 | 5.44 | 0.22 | 2.8 | 2649600 | 432 | 4176 | 141.20 |
| 30 | 6.90 | 12.5 | 5190 | 1.37 | 699.4 | 95.4 | 7.33 | 0.19 | 4.4 | 2649600 | 511 | 3213 | 170.80 |
| 31 | 6.90 | 12.5 | 6046 | 1.34 | 587.3 | 95.1 | 6.17 | 0.22 | 3.8 | 2649600 | 438 | 3931 | 179.10 |
| Average | 7.04 | 12.10 | 8934 | 1.2987 | 432.38 | 103 | 4.23 | 0.346 | 3.4 | 2649600 | 333 | 6388 | 250.05 |

## 5.0 ULTRAVIOLET DISINFECTION

| | | |
|---|---|---|
| Total Water Treated: | 1,023,718 $m^3$ | 100.00% |
| On-Spec Water: | 1,023,249 $m^3$ | 99.954% |
| Off-Spec Water: | 469 $m^3$ | 0.046% |

Average monthly chlorine residual before UV Treatment was 1.36 mg/L
The average monthly chlorine residual after UV treatment and re-chlorination was 1.41 mg/L.

**Figure 5.1 - UV Disinfection – BMID Mission Creek Source – May 2024**

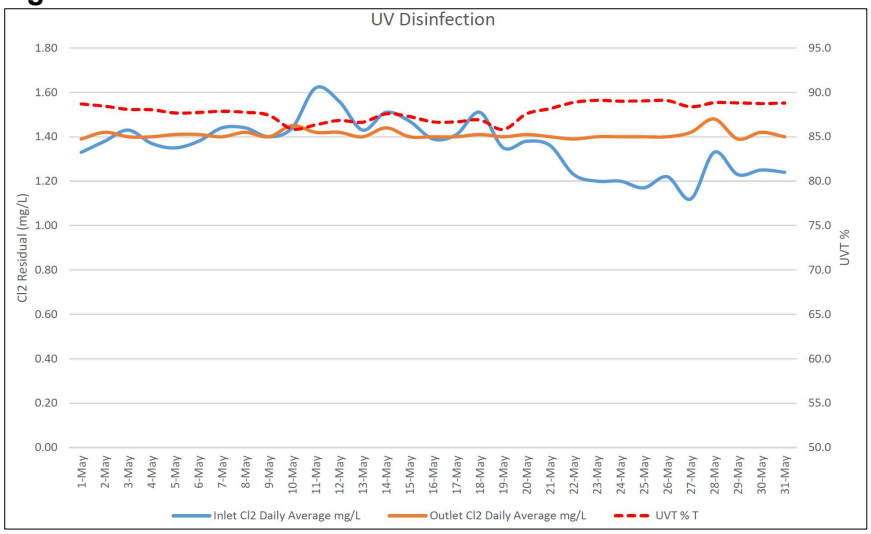



**Table 5.2 - UV Disinfection Table – Mission Creek Source**

| | Inlet Cl2 Daily | Outlet Cl2 Daily | UVT | Turbidity | | In Spec Water | Off Spec Water | Off Spec % of Water Volume |
|---|---|---|---|---|---|---|---|---|
| Date | mg/L | mg/L | % T | NTU | | Cubic Meters | Cubic Meters | Percentage |
| 1-May | 1.33 | 1.39 | 88.7 | 0.69 | | 17679 | 0 | 0.00% |
| 2-May | 1.38 | 1.42 | 88.4 | 0.72 | | 21414 | 64 | 0.30% |
| 3-May | 1.43 | 1.40 | 88.1 | 0.83 | | 25808 | 3 | 0.01% |
| 4-May | 1.37 | 1.40 | 88.1 | 0.77 | | 22405 | 0 | 0.00% |
| 5-May | 1.35 | 1.41 | 87.7 | 0.85 | | 25312 | 0 | 0.00% |
| 6-May | 1.38 | 1.41 | 87.7 | 0.82 | | 28797 | 58 | 0.20% |
| 7-May | 1.44 | 1.40 | 87.9 | 0.79 | | 29094 | 3 | 0.01% |
| 8-May | 1.44 | 1.42 | 87.8 | 0.92 | | 34181 | 0 | 0.00% |
| 9-May | 1.40 | 1.40 | 87.4 | 1.00 | | 41836 | 0 | 0.00% |
| 10-May | 1.44 | 1.45 | 85.9 | 1.20 | | 51710 | 4 | 0.01% |
| 11-May | 1.62 | 1.42 | 86.4 | 0.89 | | 60171 | 0 | 0.00% |
| 12-May | 1.56 | 1.42 | 86.8 | 0.87 | | 61493 | 0 | 0.00% |
| 13-May | 1.43 | 1.40 | 86.6 | 0.80 | | 56955 | 0 | 0.00% |
| 14-May | 1.51 | 1.44 | 87.6 | 0.86 | | 58350 | 0 | 0.00% |
| 15-May | 1.47 | 1.40 | 87.3 | 0.85 | | 59650 | 0 | 0.00% |
| 16-May | 1.39 | 1.40 | 86.7 | 0.88 | | 59925 | 66 | 0.11% |
| 17-May | 1.41 | 1.40 | 86.7 | 0.85 | | 50487 | 3 | 0.01% |
| 18-May | 1.51 | 1.41 | 86.9 | 0.86 | | 34863 | 242 | 0.70% |
| 19-May | 1.35 | 1.40 | 85.8 | 0.85 | | 24690 | 12 | 0.05% |
| 20-May | 1.38 | 1.41 | 87.6 | 0.84 | | 31165 | 0 | 0.00% |
| 21-May | 1.36 | 1.40 | 88.2 | 1.09 | | 33378 | 0 | 0.00% |
| 22-May | 1.23 | 1.39 | 88.9 | 1.10 | | 21858 | 0 | 0.00% |
| 23-May | 1.20 | 1.40 | 89.1 | 0.78 | | 16165 | 0 | 0.00% |
| 24-May | 1.20 | 1.40 | 89.0 | 0.77 | | 16161 | 0 | 0.00% |
| 25-May | 1.17 | 1.40 | 89.0 | 0.75 | | 17827 | 0 | 0.00% |
| 26-May | 1.22 | 1.40 | 89.1 | 0.73 | | 18395 | 0 | 0.00% |
| 27-May | 1.12 | 1.42 | 88.4 | 0.71 | | 20633 | 0 | 0.00% |
| 28-May | 1.33 | 1.48 | 88.8 | 0.67 | | 22437 | 0 | 0.00% |
| 29-May | 1.23 | 1.39 | 88.8 | 0.66 | | 17231 | 0 | 0.00% |
| 30-May | 1.25 | 1.42 | 88.7 | 0.67 | | 21036 | 12 | 0.06% |
| 31-May | 1.24 | 1.40 | 88.8 | 0.66 | | 22144 | 1 | 0.00% |
| Average | 1.36 | 1.41 | 87.8 | 0.83 | Total | 1023249 | 469 | 0.046% |

## 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*

| | 2921 Belgo Rd | | Booster 1 | | Ellison Blow-Off | | Ellison School | | 3976 Highway 97 | | Prospect Reservoir | | Tower Reservoir | | Well #4 | | Kirschner Res | | Pearson School | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 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-Apr-24 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-Apr-24 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | |
| 15-Apr-24 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| 22-Apr-24 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | |
| 29-Apr-24 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| 6-May-24 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0 | | | | |
| 13-May-24 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| 21-May-24 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0 | | | | |
| 27-May-24 | 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 10 samples were found to be absent of both *Total Coliforms* and *E.Coli*.

### Table 6.2 - BMID In-house Testing – Presence Absence

| | 5/6/2024 | | | | 5/13/2024 | | | | 5/20/2024 | | | | 5/27/2024 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. | Cl2 | Temp. | Pres. | Abs. |
| Sylvania Cres | 0.75 | 16.4 | - | X | | | | | | | | | 0.86 | 17.2 | - | X |
| 170 Kneller Rd | 0.74 | 16.8 | - | X | | | | | | | | | 0.82 | 17.2 | - | X |
| 2105 Morrison | | | | | 1.04 | 17.2 | - | X | | | | | | | | |
| Staymen Rd | | | | | 0.69 | 17.4 | - | X | | | | | | | | |
| 260 Campion Rd | | | | | | | | | 0.10 | 16.2 | - | X | | | | |
| Fenwick Rd | | | | | | | | | 0.44 | 14.4 | - | X | | | | |
| Solly Ct | 0.83 | 14.4 | - | X | | | | | | | | | 0.09 | 16.6 | - | 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) = 10
- Total tests sampled by BMID and tested by Caro Labs 24
- Total tests sampled in BMID treated distribution system = 34
- 0 Positive *E.Coli* and Total Coliform Samples