



Derek Clarke, Drinking Water Officer
Office of Drinking Water, Manitoba Sustainable Development
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February 14, 2020

RE: CORRECTIVE ACTION REPORT FOR WINNIPEG PUBLIC WATER SYSTEM, 252.00

Incident No: CAR_08-2019

Reported to ODW: September 9, 2019 and September 23, 2019

Reported by: Louis Rivard, Superintendent of Water Services

Approved by: Nancy Crawford, Compliance Reporting Branch Head

Incident Date: September 8, 2019 and September 22, 2019

Incident Location: Winnipeg 3-Dist NW02_ Analyzer

Incident Type: Low Disinfectant Residual in Distribution System, 22(1) MR 40/2007

Online chlorine analyzer readings were below 0.1 mg/L on:

Sunday, September 8, 2019 at 23:50 to Monday, September 9, 2019 at 00:20

Sunday, September 22, 2019 from 22:05 to 22:40

Description of Corrective Actions:

Water Services:

Reported the issue to ODW, collected water samples from nearby hydrants to confirm chlorine levels in the area, and confirmed that the chlorine analyzer was reading accurately.

Reviewed records of water main work - work had been done in the afternoon of September 8 on a feeder main a few blocks away. Although the work resulted in four calls about discoloured water, it is unlikely that it caused the drop in chlorine residual several hours later.

Reviewed chlorine analyzer data - the analyzer is located in the basement of NW02 immediately upstream of an eyewash station. If the continuous water feed to the analyzer is turned off the chlorine level will gradually decrease due to stagnation, but because the decreases occurred overnight this is unlikely to be the cause. A meter was recently installed on the line feeding the analyzer in order to monitor water flow. The low chlorine events do not appear to be related to the daily McPhillips/ Hurst shutdowns and there were no pressure drops in the system during the events.



Engineering Services:

Reviewed water meter readings at NW02 and adjacent buildings – although daily water consumption was variable at NW02 and the adjacent buildings during this time period, there was no correlation between water consumption and chlorine levels at NW02.

Environmental Standards:

Analyzed samples from NW02 for bacteria, turbidity, temperature, and free and total chlorine and confirmed analyzer reading at the time of sampling.

Inspected internal plumbing at NW02 - this location has premise isolation backflow prevention on the incoming water line but does have some unprotected cross connections within the internal plumbing system. Because the low chlorine readings occurred overnight on weekends, we feel it is unlikely that backflow within the internal plumbing system is the cause.

Inspected internal plumbing at an adjacent building with seasonal fluctuations in water usage – this location has premise isolation backflow prevention on all incoming water lines. Backflow of water from this building is not likely the cause of the low chlorine at NW02.

Next Steps:

Corrosion and scale within the cast iron water main servicing the area, warm water temperature, and seasonal decreases in water consumption may be contributing to the low chlorine at NW02. We will continue to monitor this location and will assess if a long term solution such as replacing the water main is required.

Test Results: See attached

LIMS Reference No: 238198, 240542, 242414, and 244301

EMERGENCY REPORTING IS REQUIRED WHERE A POTENTIAL HEALTH RISK IS INVOLVED. FOLLOW THE INSTRUCTIONS OF YOUR DRINKING WATER OFFICER IN SITUATIONS REQUIRING IMMEDIATE REPORTING

N:\Environmental Standards\Analytical Services\Government Agencies\Office of Drinking Water\Corrective Action Reports



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Date Sampled	Time Sampled (hrs)	Online Analyzer Free Chlorine (mg/L)	NW02 Tap Free Chlorine (mg/L)	Hydrant #378 Free Chlorine (mg/L)
20-Sep-19	5:10	0.35	0.33	0.74
20-Sep-19	23:50	0.71	0.79	0.52
21-Sep-19	5:10	0.35	0.37	0.31
21-Sep-19	23:30	0.21	0.23	0.26
22-Sep-19	5:10	0.42	0.40	0.52
22-Sep-19	23:28	0.16	0.13	0.39
23-Sep-19	5:05	0.41	0.39	0.48
23-Sep-19	23:38	0.57	0.52	0.49
24-Sep-19	5:01	0.36	0.28	0.43
25-Sep-19	0:00	0.38	0.23	1.35
25-Sep-19	5:00	0.38	0.48	0.58
26-Sep-19	0:00	0.71	0.71	0.81
26-Sep-19	5:00	0.26	0.14	0.84
27-Sep-19	0:40	0.56	0.66	0.40
27-Sep-19	5:10	0.41	0.49	0.40
28-Sep-19	0:00	0.50	0.58	1.26
28-Sep-19	5:10	0.32	0.39	0.76
28-Sep-19	23:30	0.72	0.71	0.88
29-Sep-19	5:10	0.18	0.16	1.18
29-Sep-19	23:40	0.55	0.30	1.68
30-Sep-19	5:00	0.41	0.24	1.31
30-Sep-19	23:29	0.66	0.61	0.26



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Sample Name	Sample Number	Date Sampled	E Coli (MPNU/100mL)	Total Coliform (MPNU/100mL)	Online Analyzer Free Chlorine (mg/L)	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Turbidity-field (ntu)	Temperature (°C)	Time Sampled (hrs)
NW02	238198	4-Sep-19	<1	<1	N/A	0.41	0.56	0.21	15.2	9:47
NW02_Analyzer	N/A	8-Sep-19	N/A	N/A	0.100	N/A	N/A	N/A	N/A	23:45
NW02_Analyzer	N/A	8-Sep-19	N/A	N/A	0.097	N/A	N/A	N/A	N/A	23:50
NW02_Analyzer	N/A	8-Sep-19	N/A	N/A	0.096	N/A	N/A	N/A	N/A	23:55
NW02_Analyzer	N/A	9-Sep-19	N/A	N/A	0.095	N/A	N/A	N/A	N/A	0:00
NW02_Analyzer	N/A	9-Sep-19	N/A	N/A	0.094	N/A	N/A	N/A	N/A	0:05
NW02_Analyzer	N/A	9-Sep-19	N/A	N/A	0.093	N/A	N/A	N/A	N/A	0:10
NW02_Analyzer	N/A	9-Sep-19	N/A	N/A	0.093	N/A	N/A	N/A	N/A	0:15
NW02_Analyzer	N/A	9-Sep-19	N/A	N/A	0.097	N/A	N/A	N/A	N/A	0:20
NW02_Analyzer	N/A	9-Sep-19	N/A	N/A	0.103	N/A	N/A	N/A	N/A	0:25
NW02	240542	11-Sep-19	<1	<1	0.74	0.81	1.02	0.30	16.9	9:32
NW02	242414	18-Sep-19	<1	<1	0.76	0.84	1.04	0.14	16.3	9:42
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.248	N/A	N/A	N/A	N/A	22:00
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.099	N/A	N/A	N/A	N/A	22:05
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.089	N/A	N/A	N/A	N/A	22:10
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.109	N/A	N/A	N/A	N/A	22:15
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.109	N/A	N/A	N/A	N/A	22:20
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.087	N/A	N/A	N/A	N/A	22:25
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.082	N/A	N/A	N/A	N/A	22:30
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.087	N/A	N/A	N/A	N/A	22:35
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.093	N/A	N/A	N/A	N/A	22:40
NW02_Analyzer	N/A	22-Sep-19	N/A	N/A	0.107	N/A	N/A	N/A	N/A	22:45
NW02	244301	25-Sep-19	<1	<1	0.76	0.87	1.07	0.65	16.3	9:37

NOTES/COMMENTS:

1. All microbiological tests performed by contract laboratory.
2. N/A-Not Analyzed.