



Kale Black, Sr. Drinking Water Officer
Office of Drinking Water, Manitoba Sustainable Development
309 – 25 Tupper Street North
Portage La Prairie, MB R1N 3K1

December 22, 2020

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

Incident No: CAR-22-2020-APC

Reported to ODW: August 30, 2020 and September 3, 2020

Reported by: Mike Gottfried, Maintenance Supervisor (August 30); Louis Rivard, Superintendent of Water Services (September 3)

Approved by: Nancy Crawford, Compliance Reporting Branch Head

Incident Date: August 13, 29, and 30; September 3 and 7, 2020

Incident Location: Winnipeg 3-Dist Assiniboine Park

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

Description of Event and Corrective Actions:

A WQ Investigation conducted in 2015 in response to persistent low chlorine readings at distribution system monitoring location SW03 revealed that the issues originated in the Assiniboine Park Conservatory (APC) (refer to CAR-08-2015). As part of the investigation, an online chlorine analyzer was installed in the Qualico Centre; analyzer readings are received daily at 09:00. In addition, chlorine levels throughout the park have been routinely monitored by both APC and City of Winnipeg staff since this time. To ensure acceptable chlorine levels are maintained:

- taps are run at various locations around APC to promote water turnover within the service lines; and
- one of the feeds to APC is shut off seasonally to change the flow patterns.

Despite these efforts, low chlorine residual was experienced at APC on August 13, 29, and 30 and September 3 and 7, 2020; incident descriptions and corrective actions are as follows:

August 13, 2020: The Duck Pond (closet tap) grab sample taken by Water Services (WS) at 11:40 was 0.09 mg/L free chlorine. The taps that normally run to waste were found off. The City contacted APC to turn the taps back on. The Duck Pond (closet tap) grab sample taken by Environmental Standards (ES) at 11:39 on August 14 was 0.25 mg/L free chlorine.

August 29 and 30, 2020: The Qualico Centre online free chlorine analyzer readings were below 0.1 mg/L from 13:35 to 15:35 on August 29 with a minimum value 0.063 mg/L at 14:50. Upon receiving the analyzer readings at 09:00 on August 30 the following actions were taken:

- WS ran water to waste from the hydrant at the Qualico Centre
- WS performed free chlorine testing - Pavilion (men's washroom) grab sample was 0.02 mg/L at 11:30, Duck Pond (closet tap) grab sample was 0.02 mg/L at 11:45, and Qualico Centre (closet tap) grab sample was 0.11 mg/L at 11:55
- WS notified ODW at 13:12 of the low chlorine readings
- WS performed further free chlorine testing - Pavilion (men's washroom) grab sample was 0.04 mg/L at 16:35, Duck Pond (closet tap) grab sample was 0.04 mg/L at 16:20, and Qualico Centre hydrant grab sample was 0.25mg/L at 16:15
- WS continued running water to waste from the Qualico Centre hydrant until the morning of August 31
- APC took samples on August 31 and the free chlorine results were 0.44 mg/L at the Duck Pond (closet tap) and 0.32 mg/L at the Pavilion (men's washroom)

September 3, 2020: ES grab sample from the Gateway to the Arctic Building at 14:12 was 0.02 mg/L free chlorine (Note: It was later confirmed that the sample was taken from the kitchen tap which hadn't been used since March as it was shutdown due to COVID). The follow actions were taken:

- WS and ES took grab samples from several buildings and hydrants throughout and surrounding APC to assess chlorine levels. The sample taken at 15:57 from the hydrant outside the Pavilion had 0.08 mg/L free chlorine, the other samples ranged between 0.10 and 0.72 mg/L free chlorine
- WS notified ODW of the low chlorine readings
- WS ran water to waste from the hydrant at the Administration Building for several hours
- The Park/Nanton feed to APC was shutoff and water at this location was run to waste to increase the turnover of the water within the park
- WS took samples on September 4 and the free chlorine results were 0.20 mg/L at the Qualico Centre (closet tap) and 0.20 mg/L at Park/Nanton (meter pit).



September 7, 2020: The Duck Pond (closet tap) grab sample taken by WS at 09:20 was 0.04 mg/L free chlorine. The taps that normally run to waste were found off. The City contacted APC to turn the taps back on. The Duck Pond (closet tap) grab sample taken by WS on September 8 at 09:20 was 0.25 mg/L free chlorine.

Next steps: The 2021 water main renewal program includes water mains in the residential area east of the park with a goal to improve the quality of water entering the park through the Park Bv/Nanton Bv meter pit. Following the renewals, we will review chlorine/meter data to determine the impact on water quality. Once the diversity gardens building is complete we will monitor the impact on water demand and turnover within the park. If water quality issues continue, we will explore changes to the APC's water distribution system.

Test Results: See attached

Reference No: See attached

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



Water and Waste Eaux et déchets

Sample Name	Sample Number	Date Sampled	Time Sampled (hrs)	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Turbidity-field (ntu)	Temperature (°C)
Qualico Center Assiniboine Park	321237	28-Jul-20	12:24	0.37	0.54	0.31	10.0
Pavilion at Assiniboine Park	321239	28-Jul-20	10:58	0.43	0.69	0.63	10.7
Qualico Center Assiniboine Park	321240	5-Aug-20	12:25	0.45	0.66	0.19	10.7
Duck Pond at Assiniboine Park	321241	5-Aug-20	12:40	0.37	0.57	0.32	10.6
Pavilion at Assiniboine Park	321242	5-Aug-20	12:58	0.31	0.51	0.33	12.9
Qualico Center Assiniboine Park	324651	11-Aug-20	12:16	0.43	0.60	0.37	10.7
Duck Pond at Assiniboine Park	324652	11-Aug-20	12:02	0.20	0.56	0.36	11.7
Pavilion at Assiniboine Park	324653	11-Aug-20	11:50	0.29	0.52	0.36	11.7
Qualico Center (closet tap)	na	13-Aug-20	11:30	0.31	na	na	na
Duck Pond (closet tap)	na	13-Aug-20	11:40	0.09	na	na	na
Qualico Center Assiniboine Park	325499	14-Aug-20	11:13	0.32	0.54	0.27	11.9
Duck Pond at Assiniboine Park	325500	14-Aug-20	11:39	0.25	0.44	0.26	10.6
Pavilion at Assiniboine Park	325501	14-Aug-20	10:40	0.32	0.54	0.71	11.9
SW03_Roblin Blvd @ Wexford St	325716	14-Aug-20	12:06	0.68	0.88	0.17	14.9
Qualico Center Assiniboine Park	325502	18-Aug-20	11:22	0.29	0.51	0.28	11.5
Duck Pond at Assiniboine Park	325503	18-Aug-20	11:47	0.24	0.45	0.30	10.8
Pavilion at Assiniboine Park	325504	18-Aug-20	12:06	0.32	0.52	0.39	12.4
Qualico Center Assiniboine Park	326305	25-Aug-20	12:31	0.33	0.47	0.25	12.4
Duck Pond at Assiniboine Park	326306	25-Aug-20	12:18	0.31	0.45	0.26	12.2
Pavilion at Assiniboine Park	326307	25-Aug-20	12:00	0.31	0.50	0.45	14.0
Pavilion (men's washroom)	na	30-Aug-20	11:30	0.02	na	na	na
Duck Pond (closet tap)	na	30-Aug-20	11:45	0.02	na	na	na
Qualico Center (closet tap)	na	30-Aug-20	11:55	0.11	na	na	na
Qualico Centre (Hydrant)	na	30-Aug-20	16:15	0.25	na	na	na
Duck Pond (closet tap)	na	30-Aug-20	16:20	0.04	na	na	na
Pavilion (men's washroom)	na	30-Aug-20	16:35	0.04	na	na	na
Qualico Center Assiniboine Park	330135	1-Sep-20	11:30	0.18	0.38	0.24	14.7
Duck Pond at Assiniboine Park	330136	1-Sep-20	11:58	0.12	0.32	0.26	12.5
Pavilion at Assiniboine Park	330137	1-Sep-20	12:17	0.18	0.37	0.25	14.0
SW03_Roblin Blvd @ Wexford St	330946	3-Sep-20	12:59	0.54	0.76	0.15	18.0
Arctic Building Gateway at Assiniboine Park	330947	3-Sep-20	2:12	0.02	0.07	0.31	13.9
Administration Building at Assiniboine Park	330948	3-Sep-20	3:11	0.14	0.34	0.56	13.0
Leaf Building/Area at Assiniboine Park	330949	3-Sep-20	1:41	0.22	0.34	0.19	11.9
Main Entrance Building at Assiniboine Park	330950	3-Sep-20	1:38	0.71	0.89	1.03	16.8
Storage Building at Assiniboine Park	330951	3-Sep-20	2:22	0.15	0.37	0.22	13.8
Duck Pond at Assiniboine Park	330952	3-Sep-20	2:44	0.17	0.36	0.24	12.9
Heavy Horse building at Assiniboine Park	330953	3-Sep-20	2:26	0.41	0.62	0.17	14.6
Park/Nanton Meter Pit at Assiniboine Park	330954	3-Sep-20	3:31	0.24	0.43	0.33	15.3
Pavilion at Assiniboine Park	330956	3-Sep-20	1:58	0.18	0.35	0.31	13.9
Qualico Center Assiniboine Park	330957	3-Sep-20	2:58	0.18	0.37	0.26	14.7
Washroom Building #74 at Assiniboine Park	330958	3-Sep-20	2:51	0.18	0.33	0.33	13.4
Washroom Building near Picnic shelter at Assiniboine Park	330959	3-Sep-20	2:29	0.20	0.40	0.25	14.1
Hydrant (Education Trailer)	331186	3-Sep-20	3:04	0.10	0.25	0.39	13.9
Hydrant (Storage Building)	330962	3-Sep-20	3:56	0.15	0.34	0.90	14.6
Hydrant (Pavillion)	330961	3-Sep-20	3:57	0.08	0.25	0.38	15.1
Hydrant (Qualico Centre)	330963	3-Sep-20	4:15	0.17	0.37	0.28	14.7
Hydrant (Building #25)	330964	3-Sep-20	4:34	0.72	0.87	0.59	15.6
Hydrant (Roblin at Main Entrance)	330960	3-Sep-20	4:59	0.72	0.95	0.24	17.1
Hydrant (Caribou Building)	331185	3-Sep-20	5:19	0.15	0.35	1.88	14.2

NOTES/COMMENTS:

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



Water and Waste Eaux et déchets

Sample Name	Sample Number	Date Sampled	Time Sampled (hrs)	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Turbidity-field (ntu)	Temperature (°C)
Park/Nanton (meter pit)	na	4-Sep-20	10:50	0.20	na	na	na
Qualico Center (closet tap)	na	4-Sep-20	12:20	0.20	na	na	na
Park/Nanton (meter pit)	na	7-Sep-20	8:50	0.22	na	na	na
Pavilion (men's washroom)	na	7-Sep-20	9:00	0.22	na	na	na
Duck Pond (closet tap)	na	7-Sep-20	9:20	0.04	na	na	na
Qualico Center (closet tap)	na	7-Sep-20	9:25	0.35	na	na	na
Park/Nanton (meter pit)	na	8-Sep-20	9:00	0.21	na	na	na
Pavilion (men's washroom)	na	8-Sep-20	9:10	0.47	na	na	na
Duck Pond (closet tap)	na	8-Sep-20	9:20	0.25	na	na	na
Qualico Center (closet tap)	na	8-Sep-20	9:35	0.45	na	na	na
Qualico Center Assiniboine Park	332674	9-Sep-20	11:29	0.42	0.62	0.13	12.8
Duck Pond at Assiniboine Park	332675	9-Sep-20	11:19	0.48	0.70	0.13	12.8
Pavilion at Assiniboine Park	332676	9-Sep-20	11:01	0.51	0.65	0.15	13.7
Qualico Center Assiniboine Park	333925	15-Sep-20	11:43	0.51	0.63	0.14	12.9
Duck Pond at Assiniboine Park	333926	15-Sep-20	11:31	0.52	0.65	0.21	13.3
Pavilion at Assiniboine Park	333927	15-Sep-20	11:17	0.48	0.65	0.28	13.6
Qualico Center Assiniboine Park	336358	22-Sep-20	12:08	0.77	0.97	0.14	13.6
Duck Pond at Assiniboine Park	336359	22-Sep-20	11:54	0.74	0.96	0.16	13.2
Pavilion at Assiniboine Park	336360	22-Sep-20	11:40	0.75	0.95	0.72	14.0
Qualico Center Assiniboine Park	337533	29-Sep-20	9:43	0.60	0.88	0.51	12.5
Duck Pond at Assiniboine Park	337534	29-Sep-20	9:52	0.46	0.77	0.32	12.7
Pavilion at Assiniboine Park	337535	29-Sep-20	10:09	0.69	0.90	0.23	13.4
Nanton Street sample Point at Assiniboine Park	337536	29-Sep-20	10:29	0.21	0.43	0.35	13.7
Qualico Center Assiniboine Park	339205	6-Oct-20	9:55	0.60	0.85	0.20	12.5
Duck Pond at Assiniboine Park	339206	6-Oct-20	10:19	0.51	0.82	0.16	13.2
Pavilion at Assiniboine Park	339207	6-Oct-20	10:36	0.63	0.86	0.15	13.0
Nanton Street sample Point at Assiniboine Park	339208	6-Oct-20	10:48	0.40	0.64	0.16	13.1
Qualico Center Assiniboine Park	341490	14-Oct-20	10:30	0.68	0.92	0.15	11.9
Duck Pond at Assiniboine Park	341491	14-Oct-20	10:40	0.54	0.81	0.13	12.8
Pavilion at Assiniboine Park	341492	14-Oct-20	10:00	0.75	0.92	0.12	12.4
Nanton Street sample Point at Assiniboine Park	341493	14-Oct-20	9:52	0.50	0.75	0.23	11.7
Qualico Center Assiniboine Park	343005	20-Oct-20	10:28	0.52	0.83	0.15	11.5
Duck Pond at Assiniboine Park	343006	20-Oct-20	10:15	0.51	0.78	0.13	12.0
Pavilion at Assiniboine Park	343007	20-Oct-20	10:05	0.58	0.83	0.20	11.9
Nanton Street sample Point at Assiniboine Park	343008	20-Oct-20	9:43	0.34	0.54	0.24	11.8
SW03_Roblin Blvd @ Wexford St	343527	22-Oct-20	11:18	0.70	0.95	0.14	16.1
Qualico Center Assiniboine Park	343528	22-Oct-20	10:38	0.22	0.47	0.19	12.1
Duck Pond at Assiniboine Park	343529	22-Oct-20	10:22	0.23	0.48	0.98	12.5
Pavilion at Assiniboine Park	343530	22-Oct-20	10:08	0.27	0.49	0.27	12.4
Nanton Street sample Point at Assiniboine Park	343531	22-Oct-20	10:58	0.34	0.51	0.63	12.2
Nanton Street sample Point at Assiniboine Park	344612	27-Oct-20	9:08	0.31	0.52	0.23	10.7
Pavilion at Assiniboine Park	344613	27-Oct-20	9:23	0.32	0.53	0.35	11.6
Duck Pond at Assiniboine Park	344614	27-Oct-20	9:35	0.22	0.46	0.22	11.5
Qualico Center Assiniboine Park	344615	27-Oct-20	9:47	0.29	0.45	0.38	11.4
Nanton Street sample Point at Assiniboine Park	346707	3-Nov-20	10:30	0.27	0.55	0.35	10.4
Pavilion at Assiniboine Park	346708	3-Nov-20	10:46	0.31	0.48	0.48	11.1
Duck Pond at Assiniboine Park	346709	3-Nov-20	10:58	0.22	0.43	0.34	11.5
Qualico Center Assiniboine Park	346710	3-Nov-20	11:12	0.27	0.50	0.25	11.1

NOTES/COMMENTS:

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



Sample Name	Date and Time Sampled	Online Analyzer Free Chlorine (mg/L)
Qualico Center Assiniboine Park	8/29/2020 1:00:05 PM	0.136
Qualico Center Assiniboine Park	8/29/2020 1:05:05 PM	0.132
Qualico Center Assiniboine Park	8/29/2020 1:10:05 PM	0.129
Qualico Center Assiniboine Park	8/29/2020 1:15:05 PM	0.124
Qualico Center Assiniboine Park	8/29/2020 1:20:05 PM	0.119
Qualico Center Assiniboine Park	8/29/2020 1:25:05 PM	0.111
Qualico Center Assiniboine Park	8/29/2020 1:30:05 PM	0.105
Qualico Center Assiniboine Park	8/29/2020 1:35:05 PM	0.100
Qualico Center Assiniboine Park	8/29/2020 1:40:05 PM	0.100
Qualico Center Assiniboine Park	8/29/2020 1:45:05 PM	0.094
Qualico Center Assiniboine Park	8/29/2020 1:50:05 PM	0.090
Qualico Center Assiniboine Park	8/29/2020 1:55:05 PM	0.086
Qualico Center Assiniboine Park	8/29/2020 2:00:05 PM	0.081
Qualico Center Assiniboine Park	8/29/2020 2:05:05 PM	0.077
Qualico Center Assiniboine Park	8/29/2020 2:10:05 PM	0.073
Qualico Center Assiniboine Park	8/29/2020 2:15:05 PM	0.070
Qualico Center Assiniboine Park	8/29/2020 2:20:05 PM	0.067
Qualico Center Assiniboine Park	8/29/2020 2:25:05 PM	0.065
Qualico Center Assiniboine Park	8/29/2020 2:30:05 PM	0.065
Qualico Center Assiniboine Park	8/29/2020 2:35:05 PM	0.064
Qualico Center Assiniboine Park	8/29/2020 2:40:05 PM	0.064
Qualico Center Assiniboine Park	8/29/2020 2:45:05 PM	0.064
Qualico Center Assiniboine Park	8/29/2020 2:50:05 PM	0.063
Qualico Center Assiniboine Park	8/29/2020 2:55:05 PM	0.065
Qualico Center Assiniboine Park	8/29/2020 3:00:05 PM	0.067
Qualico Center Assiniboine Park	8/29/2020 3:05:05 PM	0.068
Qualico Center Assiniboine Park	8/29/2020 3:10:05 PM	0.072
Qualico Center Assiniboine Park	8/29/2020 3:15:05 PM	0.072
Qualico Center Assiniboine Park	8/29/2020 3:20:05 PM	0.076
Qualico Center Assiniboine Park	8/29/2020 3:25:05 PM	0.082
Qualico Center Assiniboine Park	8/29/2020 3:30:05 PM	0.092
Qualico Center Assiniboine Park	8/29/2020 3:35:05 PM	0.095
Qualico Center Assiniboine Park	8/29/2020 3:40:05 PM	0.102
Qualico Center Assiniboine Park	8/29/2020 3:45:05 PM	0.106
Qualico Center Assiniboine Park	8/29/2020 3:50:05 PM	0.108
Qualico Center Assiniboine Park	8/29/2020 3:55:05 PM	0.108
Qualico Center Assiniboine Park	8/29/2020 4:00:05 PM	0.108

NOTES/COMMENTS:

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