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February 23, 2018

Municipality of West Grey
402813 Grey Road 4
RR#2
Durham, ON
N0G 1R0

Attention: Brent Glasier, Direct of Infrastructure and Public Works

**RE: Durham Drinking Water System
2017 Annual Report**

Dear Brent,

Please find attached the 2017 Annual Operations Report for the Durham drinking water system, in accordance with Section 11(1) of O. Reg. 170/03. This report covers the period from January 1 to December 31 and meets the requirement of being prepared by February 28 of this year.

Please ensure that a copy of this report is given, without charge, to every person who requests a copy. In addition, please make certain that effective steps are taken to advise residents that copies of the report are available, and of how a copy can be obtained.

Finally, as per Schedule 22 of O. Reg. 170/03, please ensure that at least a copy of the Summary Report is given to the members of municipal council no later than March 31, 2018.

If you have any questions regarding the report, we would be pleased to address them and you should contact the undersigned accordingly.

Sincerely,

AMERICAN WATER CANADA CORP.

Greg Prangley
Project Manager, Ontario Regional Projects

2017 ANNUAL REPORT FOR WATER SYSTEMS

Part 1 – ANNUAL REPORT (as required by O. Reg. 170/03, Section 11)

Drinking-Water System Number:	220001771
Drinking-Water System Name:	Durham Drinking Water System
Drinking-Water System Owner:	Municipality of West Grey
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 – December 31, 2017

Complete if your Category is Large Municipal Residential or Small Municipal Residential	Complete for all other Categories
Does your Drinking-Water System serve more than 10,000 people? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Number of Designated Facilities served: n/a
Is your annual report available to the public at no charge on a web site on the Internet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Did you provide a copy of your annual report to all Designated Facilities you serve? <input type="checkbox"/> Yes <input type="checkbox"/> No
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. Municipality of West Grey Grey Road #4 Durham, ON NOG 1R0	Number of Designated Facilities served: n/a
	Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? <input type="checkbox"/> Yes <input type="checkbox"/> No

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
n/a	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

n/a

Indicate how you notified system users that your annual report is available, and is free of charge.

<input checked="" type="checkbox"/> Public access/notice via the Web	<input checked="" type="checkbox"/> Public access/notice via Government Office	<input type="checkbox"/> Public access/notice via a newspaper
<input type="checkbox"/> Public access/notice via Public Request	<input type="checkbox"/> Public access/notice via a Public Library	<input checked="" type="checkbox"/> Public access/notice via other method INCLUDED WITH TAX NOTICE

Describe your Drinking Water System

Well No. 1B Pumphouse

A GUDI well, 300mm diameter and 77 m deep equipped with a VFD submersible well pump rated at 17 L/s at a TDH of 71-133 m. The pumphouse enclosure building is 4.9 m x 3.1 m x 3.3 m high and houses the water treatment equipment including, but not limited to, flow meters, UV disinfection system,

cartridge filters, sodium hypochlorite disinfection system, online chlorine and turbidity analyzers, low level alarms, autodialer and backup diesel generator.

Well No. 2 Pumphouse

A GUDI well, 300mm diameter and 74.7 m deep equipped with a VFD submersible well pump rated at 17 L/s at a TDH of 75-139 m. The pumphouse contains the water treatment equipment including, but not limited to, flow meters, UV disinfection system, cartridge filters, sodium hypochlorite disinfection system, online chlorine and turbidity analyzers, low level alarms, autodialer and backup power source available.

Well #2A is located just outside the well#2 pumphouse. It is a 250mm diameter well about 68m deep. The variable speed submersible pump has a capacity of 1134L/min. The capacity of the wellhouse has not changed.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite 12% v/v

Please provide a brief description and a breakdown of monetary expenses incurred

Commissioning of well #2A
Installation of contact chamber to meet CT

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Units	Corrective Action	Corrective Action Date
March 25/17	Low chlorine (CT)	0.38	Mg/L	None. After calculations, it was determined CT was met in current conditions	03/27/17
May 21/17	Data recording failure (well #2 turbidity)	n/a	n/a	Meter reset. Electrician connected meter to backup UPS	05/23/17

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period

	Number of Samples	Range of E.Coli Results (min #) - (max #)	Range of Total Coliform Results (min #) - (max #)	Number of HPC Samples	Range of HPC Results (min #) - (max #)
Raw (well 1B)	52	0	0	n/a	n/a
Raw (well 2)	52	0	0	n/a	n/a
Raw (well #2A)	42*	0	0	n/a	n/a
Treated POE 1	52	0	0	52	0-2
Treated POE 2	52	0	0	52	0-3
Distribution	156	0	0	52	0-17

*new well commissioned in March

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report

	Number of Grab Samples	Range of Results (min #) – (max #)	Units
Turbidity – well 1B Treated	8760	0.01-1.00	NTU
Turbidity – Well 2 Treated	8760	0.05-0.96	NTU
Chlorine – Well 1B Treated	8760	0.08-2.00	mg/L
Chlorine – Well 2 Treated	8760	0.40-2.00	mg/L
Chlorine - Distribution	465	0.68-1.54	mg/L

There were no instances of untreated water being delivered into the distribution system. Well pumps automatically shut off when chlorine levels drop below a preset value. SCADA system reads all values, even when well pumps are off or equipment service is being conducted

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument

Date of legal instrument issued	Parameter	Date Sampled	Range of Results	Unit of Measure
December 1, 2009	UV transmittance (#1B)	Jan-Dec. 2017	99.0-100.0	% transmittance
December 1, 2009	UV transmittance (#2)	Jan-Dec. 2017	98.0-100.0	% transmittance

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value POE 1	Result Value POE 2	Distribution	Unit of Measure	Exceedance
Antimony	Aug. 14/17	ND	ND	-	mg/L	NO
Arsenic	Aug. 14/17	ND	ND	-	mg/L	NO
Barium	Aug. 14/17	0.018	0.015	-	mg/L	NO
Boron	Aug. 14/17	0.011	0.018	-	mg/L	NO
Cadmium	Aug. 14/17	ND	ND	-	mg/L	NO
Chromium	Aug. 14/17	ND	ND	-	mg/L	NO
Lead-see summary below						
Mercury	Aug. 14/17	ND	ND	-	mg/L	NO
Selenium	Aug. 14/17	ND	ND	-	mg/L	NO
Sodium	Aug. 14/17	5.6	11	-	mg/L	NO
Uranium	Aug. 14/17	0.002	0.0032	-	mg/L	NO
Fluoride	Aug. 15/16	0.18	0.61	-	mg/L	NO
Nitrite	Feb 6/17	ND	ND	-	mg/L	NO
Nitrate	Feb 6/17	1.40	0.65	-	mg/L	NO
Nitrite	May 8/17	ND	ND	-	mg/L	NO
Nitrate	May 8/17	1.12	0.64	-	mg/L	NO
Nitrite	Aug. 14/17	ND	ND	-	mg/L	NO
Nitrate	Aug. 14/17	1.16	0.74	-	mg/L	NO
Nitrite	Nov 6/17	ND	ND	-	mg/L	NO
Nitrate	Nov 6/17	1.09	0.70	-	mg/L	NO

Summary of Lead Results during this reporting period (Winter: Dec. 15/16-April 15/17; Summer: June 15-Oct. 15/17)

Sampling Period	Range of Results (µg/L) from Residential Samples (# of Samples taken)	Non-residential locations	Distribution System	Any Adverse Water Quality Incidents?
Winter	n/a	n/a	ND (2)	NO
Summer	n/a	n/a	ND (2)	NO

No further residential sampling is required for this system

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value POE 1	Result Value POE 2	Unit of Measure	Exceedance
Alachlor	Aug. 14/17	ND	ND	µg/L	NO
Atrazine + N-dealkylated metabolites	Aug. 14/17	ND	ND	µg/L	NO
Azinphos-methyl	Aug. 14/17	ND	ND	µg/L	NO
Benzene	Aug. 14/17	ND	ND	µg/L	NO
Benzo(a)pyrene	Aug. 14/17	ND	ND	µg/L	NO
Bromoxynil	Aug. 14/17	ND	ND	µg/L	NO
Carbaryl	Aug. 14/17	ND	ND	µg/L	NO
Carbofuran	Aug. 14/17	ND	ND	µg/L	NO
Carbon Tetrachloride	Aug. 14/17	ND	ND	µg/L	NO
Chlorpyrifos	Aug. 14/17	ND	ND	µg/L	NO
Diazinon	Aug. 14/17	ND	ND	µg/L	NO
Dicamba	Aug. 14/17	ND	ND	µg/L	NO
1,2-Dichlorobenzene	Aug. 14/17	ND	ND	µg/L	NO
1,4-Dichlorobenzene	Aug. 14/17	ND	ND	µg/L	NO
1,2-Dichloroethane	Aug. 14/17	ND	ND	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	Aug. 14/17	ND	ND	µg/L	NO
Dichloromethane	Aug. 14/17	ND	ND	µg/L	NO
2,4 Dichlorophenol	Aug. 14/17	ND	ND	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug. 14/17	ND	ND	µg/L	NO
Diclofop-methyl	Aug. 14/17	ND	ND	µg/L	NO
Dimethoate	Aug. 14/17	ND	ND	µg/L	NO
Diquat	Aug. 14/17	ND	ND	µg/L	NO
Diuron	Aug. 14/17	ND	ND	µg/L	NO

Glyphosate	Aug. 14/17	ND	ND	µg/L	NO
Malathion	Aug. 14/17	ND	ND	µg/L	NO
MCPA	Aug. 14/17	ND	ND	mg/L	N/A
Metolachlor	Aug. 14/17	ND	ND	µg/L	NO
Metribuzin	Aug. 14/17	ND	ND	µg/L	NO
Monochlorobenzene	Aug. 14/17	ND	ND	µg/L	NO
Paraquat	Aug. 14/17	ND	ND	µg/L	NO
Pentachlorophenol	Aug. 14/17	ND	ND	µg/L	NO
Phorate	Aug. 14/17	ND	ND	µg/L	NO
Picloram	Aug. 14/17	ND	ND	µg/L	NO
Polychlorinated Biphenyls(PCB)	Aug. 14/17	ND	ND	µg/L	NO
Prometryne	Aug. 14/17	ND	ND	µg/L	NO
Simazine	Aug. 14/17	ND	ND	µg/L	NO
THM (NOTE: show latest annual average)	Q1-Q4 2017	5.91 (distribution)		µg/L	NO
Terbufos	Aug. 14/17	ND	ND	µg/L	NO
Tetrachloroethylene	Aug. 14/17	ND	ND	µg/L	NO
2,3,4,6-Tetrachlorophenol	Aug. 14/17	ND	ND	µg/L	NO
Triallate	Aug. 14/17	ND	ND	µg/L	NO
Trichloroethylene	Aug. 14/17	ND	ND	µg/L	NO
2,4,6-Trichlorophenol	Aug. 14/17	ND	ND	µg/L	NO
Trifluralin	Aug. 14/17	ND	ND	µg/L	NO
Vinyl Chloride	Aug. 14/17	ND	ND	µg/L	NO

ND = Non-Detect

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
None				

Part 2 – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)

Non-Compliance with Legislations, Regulations, Approvals & Orders

During this period, the Facility was operated in full compliance with the Act, the regulations and the Facility's approval, save and except for the following:

1) Continuous monitoring of each filter effluent line was not being performed for turbidity.

Action(s) Required:

An electrician, retained to connect all continuous analyzers and flow meters to the UPS unit at Well #2/2A, completed works ensuring that continuous power will be maintained during power outages. No further action required.

2) Operators were not examining continuous monitoring test results or they were not examining the results within 72 hours of the test.

Action(s) Required:

The DWS operating authority and operators are reminded to conduct a daily review of the SCADA reports within 72 hours and sign/initial and date the trend sheet reports verifying their review. The owner is required to update the operations and maintenance manual procedures to ensure continuous monitoring test results recorded are examined by operators within 72 hours after the tests are conducted, including documentation of the review in the daily log books for each DWS well/treatment location.

3) Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was not performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and/or was not recording data with the prescribed format.

Action(s) Required:

An electrician, retained to connect all DWS continuous analyzers and flow meters to the UPS unit at Well #2/2A, completed works ensuring that continuous power will be maintained during power outages. No further action is required.

4) The operations and maintenance manuals did not contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.

Action(s) Required:

The Owner/Operating Authority shall retain a qualified consultant to review the Manual and make necessary updates

5) The operations and maintenance manuals did not meet the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.

Action(s) Required:

Please reference the MOECC requirements immediately above.

6) Logbooks were not properly maintained and/or did not contain the required information.

Action(s) Required:

The owner/operating authority shall provide Ontario Regulation 128/04 Record Keeping training to DWS operators

Month	Average Flow Well #1B	Maximum Flow Well #1B	Average Flow Well #2	Maximum Flow Well #2	Average Flow Well #2A	Maximum Flow Well #2A
January	563	824	478	617	n/a	n/a
February	543	721	377	434	n/a	n/a
March	481	580	420	560	207*	414
April	467	643	362	645	192**	341
May	455	534	385	529	62.5***	311
June	483	589	274	495	201	407
July	468	548	463	531	0.16	2.60
August	468	520	441	507	0.13	3.00
September	478	529	463	518	0.12	3.00
October	472	520	437	476	0.32	4.5
November	492	552	467	545	0.64	12.4
December	493	946	420*	578	5.44	68.9
AVERAGE	488	n/a	366	n/a	42.6	n/a
MAXIMUM	-	824	-	647	-	414
SYSTEM CAPACITY	1469	1469	1469	1469	1469	1469
% CAPACITY	35.8%	69.4%	25.5%	39.5%	2.6%	25.3%

* well 2A ran for a total of 9 days in March. Four of those were test days with minimal usage

**well ran from April 16-30 only

*** Well 2A was off from May 10-30 while additional filters were being ordered

Well #2A turned off starting June 28 due to high turbidity and plugging of filters. Typically only run briefly for weekly sampling