



A Natural Attraction

Frankford Water Treatment Plant & Water Distribution System



2009 Annual and Summary Report



**PUBLIC WORKS &
ENVIRONMENTAL SERVICES**

2009 Annual & Summary Report
Frankford WTP & Water Distribution
Table of Contents

Table of Contents

I. Annual Report.....	1
II. Summary Report.....	8
III. Summary and Comparison of Quantities and Flow Rates.....	10



**PUBLIC WORKS & ENVIRONMENTAL
SERVICES**

**2009 Annual & Summary Report
Frankford WTP & Water Distribution system
Annual Report**

Drinking-Water System Number: **210001889**
Drinking-Water System Name: **Frankford Water Treatment Plant & Water
Distribution system**
Drinking-Water System Owner: **The Corporation of the City of Quinte West**
Drinking-Water System Category: **Large Municipal Residential System**
Period being reported: **January 1, 2009-December 31, 2009**

Does your Drinking-Water System serve more than 10,000 people?

No

**Is your annual report available to the public at no charge on a web site on the
Internet?**

Yes - please visit www.quintewest.ca

**Location where Summary Report required under O. Reg. 170/03 Schedule 22 will
be available for inspection.**

City Hall
7 Creswell Drive
Trenton, ON, K8V 5R6

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

None

**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?**

Not Applicable.



PUBLIC WORKS & ENVIRONMENTAL SERVICES

**2009 Annual & Summary Report
Frankford WTP & Water Distribution system
Annual Report**

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

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method:

Describe your Drinking-Water System

The Frankford Water Treatment plant drafts water via a 240.5 m long, 450 mm diameter raw water intake pipe, extending 50 m into the Trent River approximately 240 m east of the Water Treatment plant. This conventional chemically assisted filtration plant has a rated capacity of 3, 045.8 m³/day. The Plant houses two Ecodyne package plants. Processes used at the filtration plant include solids recirculating re-activator type flocculator/clarifier units with tube settlers and automated sludge withdrawal system, dual media high rate gravity filters, and Granular Activated Carbon (GAC) adsorption filters. Chlorine gas is applied as a disinfectant before filtered water enters two interconnected un-baffled clear wells with a combined capacity of 850 m³. The potable water is then pumped into the distribution system via a set of three high lift pumps ran independently to supply water to the distribution as well as the elevated water storage tower which has an operating capacity of 1890 m³. The Frankford WTP supplies water to approximately 3000 people in the community of Frankford.

List all water treatment chemicals used over this reporting period:

- Aluminum Sulphate (alum)
- Chlorine Gas
- SuperFloc A130 (Polymer)
- SternPac

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

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

- In-line Static mixer installed
- Two 1" valves were installed for filling the backwash compartment
- One new chlorine analyzer was installed
- Stern-Pac (coagulant) test system installed
- Water Tower mixing system installed
- Several electric actuators were replaced on the filter system
- The polymer system was refurbished and returned to service
- Two variable frequency drives were replaced on the low lift pumps
- Two air compressor heads were replaced



PUBLIC WORKS & ENVIRONMENTAL SERVICES

**2009 Annual & Summary Report
Frankford WTP & Water Distribution system
Annual Report**

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 (mm/dd/yy)	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date (mm/dd/yy)
01/24/09	High Chlorine residual	FCI2 residual > 4.0 mg/L for 4 min. 15 sec.	mg/L	Time delays removed from HI / LO alarms. Believe this was an isolated incident	02/11/09
02/06/09	High Turbidity in Treated Water	1.25	NTU	Laboratory reported this as an exceedance. (tested at lab) Trending does not show any spikes for day. <i>*This is not reportable under Reg. 170/03</i>	02/11/09
03/23/09	Filter Effluent Turbidity > 1 NTU more than 15 minutes	> 1.0	NTU	Isolated incident, monitored carefully afterwards. Filter in backwash when operator arrived on scene.	April 24, 2009
04/07/09	Lead exceedance	23.1	ug/L	Customer notified; no further action required.	04/07/09
05/24/09	High Chlorine residual in Distribution	> 4.00 mg/L for 20 sec.	mg/L	Not a true reading of the water quality as it only lasted 20 sec. <i>*This is not a reportable incident under Reg. 170/03</i>	05/25/09
08/29/09	Low Distribution FCI2 residual reading at Tower	0.00	mg/L	Main break in distribution causing tower level to drop, therefore dropping FCI2 residual in tower. Multiple residuals collected in distribution system, all were within regulatory limits. A mixing system was installed in the tower to improve water quality.	08/31/09
11/11/09	Low system pressure	Pressure transmitter at base of tower reading 'zero'. Plant distribution pressure reading 53 psi	psi	Plant running off high lift pressure as tower out of service for maintenance. Pressure transmitter at Tower not representative of distribution system pressure. <i>*In hindsight, this was not a reportable incident</i>	11/13/09

12/03/09	Filtered water turbidity (Filter B) greater than 0.3 NTU for less than 95% of the month	92.3	percent	Air Scour on filters not working for two days of month. Filters had longer run-times throughout month due to Tower maintenance. Tower put back in service, filter run-times shorter	12/04/09
12/22/09	Turbidity analyzer faulty read for 55 min. while filter in service	Inability to accurately record filter effluent turbidity readings	NTU	Turbidity analyzer replaced once programming ruled out as the issue. Filter immediately shut down once operator realized turbidity analyzer in question	12/24/09
12/31/09	Filtered water turbidity (Filters 1A and 1B) greater than 0.3 NTU for less than 95% of the month	Filter 1A = 94.4% Filter 1B = 88.8%	percent	On Dec. 12/2009 the City started using a new coagulant, SternPac, to try and improve filter effluent turbidities in colder weather. This greatly improved filter turbidities for the end of the month, however the plant was still operating with alum at the beginning of the month and this is what caused the filter effluent average turbidity to be below 95% on these filters	01/14/10

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	0-54	0-10000	0	
Treated	52	0-0	0-0	52	0-4
Distribution	158	0-0	0-0	53	0-23



PUBLIC WORKS & ENVIRONMENTAL SERVICES

**2009 Annual & Summary Report
Frankford WTP & Water Distribution system
Annual Report**

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 #)
Turbidity	8760	0.00-2.00
Chlorine	8760	0.70-3.95
Chlorine - Distribution	8760	0.00-5.00

** A notice 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 failed to be reported to Spills Action Centre for an incident on August 4, 2009. There was a thunderstorm this day which knocked out communication to Tower. Following the power interruption, the chlorine analyzer drops to zero for a period of approximately one hour. Please see summary report for additional details.*

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

Not applicable.

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	02/11/09	0.03	ug/L	no
Arsenic	02/11/09	0.4	ug/L	no
Barium	02/11/09	28.8	ug/L	no
Boron	02/11/09	7.3	ug/L	no
Cadmium	02/11/09	0.003	ug/L	no
Chromium	02/11/09	0.5	ug/L	no
Mercury	02/11/09	0.02	ug/L	no
Selenium	02/11/09	1	ug/L	no
Sodium	02/11/09 06/24/09 08/11/09	8.16 6.55 7.01	mg/L	no
Uranium	02/11/09	0.001	ug/L	no
Fluoride	02/11/09 06/24/09 08/11/09	0.06 0.06 0.06	mg/L	no
Nitrate	02/11/09 06/24/09 08/11/09 11/10/09	0.285 0.098 0.057 0.078	mg/L	no
Nitrite	02/11/09 06/24/09 08/11/09 11/10/09	0.005 0.005 0.005 0.005	mg/L	no



PUBLIC WORKS & ENVIRONMENTAL SERVICES

**2009 Annual & Summary Report
Frankford WTP & Water Distribution system
Annual Report**

Summary of lead testing under Schedule 15.1 during this reporting period:

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing – Non residential	2	0.80-2.3	0
Plumbing – Residential	20	0.08-23.1	1
Distribution	4	0.06-1.86	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	02/11/09	0.00011	mg/L	no
Aldicarb	02/11/09	0.0003	mg/L	no
Aldrin + Dieldrin	02/11/09	0.000067	mg/L	no
Atrazine + N-dealkylated metabolites	02/11/09	0.00012	mg/L	no
Azinphos-methyl	02/11/09	0.00021	mg/L	no
Bendiocarb	02/11/09	0.00013	mg/L	no
Benzene	02/11/09	0.00037	mg/L	no
Benzo(a)pyrene	02/11/09	0.000004	mg/L	no
Bromoxynil	02/11/09	0.00033	mg/L	no
Carbaryl	02/11/09	0.00016	mg/L	no
Carbofuran	02/11/09	0.00037	mg/L	no
Carbon Tetrachloride	02/11/09	0.00041	mg/L	no
Chlordane (Total)	02/11/09	0.11	ug/L	no
Chlorpyrifos	02/11/09	0.00018	mg/L	no
Cyanazine	02/11/09	0.00018	mg/L	no
Diazinon	02/11/09	0.000081	mg/L	no
Dicamba	02/11/09	0.00020	mg/L	no
1,2-Dichlorobenzene	02/11/09	0.00050	mg/L	no
1,4-Dichlorobenzene	02/11/09	0.00021	mg/L	no
Dichlorodiphenyltrichloroethane (DDT) + metabolites	02/11/09	0.00014	mg/L	no
1,2-Dichloroethane	02/11/09	0.00043	mg/L	no
1,1-Dichloroethylene (vinylidene chloride)	02/11/09	0.00041	mg/L	no
Dichloromethane	02/11/09	0.00034	mg/L	no
2-4 Dichlorophenol	02/11/09	0.00015	mg/L	no
2,4-Dichlorophenoxy acetic acid (2,4-D)	02/11/09	0.00019	mg/L	no
Diclofop-methyl	02/11/09	0.00040	mg/L	no
Dimethoate	02/11/09	0.00012	mg/L	no
Dinoseb	02/11/09	0.00036	mg/L	no
Diquat	02/11/09	0.001	mg/L	no
Diuron	02/11/09	0.000087	mg/L	no

Glyphosate	02/11/09	0.006	mg/L	no
Heptachlor + Heptachlor Epoxide	02/11/09	0.00011	mg/L	no
Lindane (Total)	02/11/09	0.000056	mg/L	no
Malathion	02/11/09	0.000091	mg/L	no
Methoxychlor	02/11/09	0.00014	mg/L	no
Metolachlor	02/11/09	0.000092	mg/L	no
Metribuzin	02/11/09	0.00012	mg/L	no
Monochlorobenzene	02/11/09	0.00058	mg/L	no
Paraquat	02/11/09	0.001	mg/L	no
Parathion	02/11/09	0.00018	mg/L	no
Pentachlorophenol	02/11/09	0.00015	mg/L	no
Phorate	02/11/09	0.00011	mg/L	no
Picloram	02/11/09	0.00025	mg/L	no
Polychlorinated Biphenyls(PCB)	02/11/09	0.00004	mg/L	no
Prometryne	02/11/09	0.00023	mg/L	no
Simazine	02/11/09	0.00015	mg/L	no
THM (NOTE: show latest annual average)	11/10/09	73.5	ug/L	no
Temephos	02/11/09	0.00031	mg/L	no
Terbufos	02/11/09	0.00012	mg/L	no
Tetrachloroethylene	02/11/09	0.00045	mg/L	no
2,3,4,6-Tetrachlorophenol	02/11/09	0.00014	mg/L	no
Triallate	02/11/09	0.0001	mg/L	no
Trichloroethylene	02/11/09	0.00038	mg/L	no
2,4,6-Trichlorophenol	02/11/09	0.00025	mg/L	no
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	02/11/09	0.00022	mg/L	no
Trifluralin	02/11/09	0.00012	mg/L	no
Vinyl Chloride	02/11/09	0.00017	mg/L	no

*** Quarterly samples were not collected in accordance with Reg. 170/03, Schedule 6, section 6-1.1(4), "frequency of sampling" requirements. Samples were re-collected after the 120 day sampling limit.*

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

Parameter	Result Value	Unit of Measure	Date of last Sample
Trihalomethanes (total)	73.5	ug/L	11/10/09



Summary Report – O. Reg. 170/03 Schedule 22 Requirement

Under Schedule 22 of O. Reg. 170/03, the Ministry of Environment requires that a copy of the Safe Drinking Water Act, regulations, the system’s approvals, and any order that the system failed to meet at any time during the reporting period be provided to the members of the municipal council.

The following is a list of the Acts and Regulations which have been provided to municipal council electronically:

- ✚ The Safe Drinking Water Act, 2002
- ✚ O. Reg. 128/04 – Certification of Drinking Water Operators
- ✚ O. Reg. 169/03 – Ontario Drinking Water Quality Standards
- ✚ O. Reg. 170/03 – Drinking Water Systems (Please see ‘Application of Schedules’ table below for applicable schedules pertinent to Large Municipal Residential Systems)
- ✚ O. Reg. 188/07 – Licensing of Municipal Drinking Water Systems
- ✚ O. Reg. 242/05 – Compliance and Enforcement
- ✚ O. Reg. 248/03 – Drinking Water Testing Services
- ✚ Procedure for Disinfection of Drinking Water in Ontario

- ✚ The systems Certificate of Approval # 5928-7NQL4D
- ✚ Permit to Take Water (PTTW) # 90-P-4067

TABLE
Application of schedules
O. Reg. 170/03

Item	Drinking Water Systems	Applicable Schedules				
		Treatment	Operational Checks, Sampling and Testing	Adverse Test Results and Other Problems	Reports	Chemical Testing Parameters
1.	Large municipal residential systems	1, 4	6, 7, 10, 13, 15.1	16, 17	22	23, 24

O. Reg. 170/03, s. 4; O. Reg. 247/06, s. 2; O. Reg. 399/07, s. 1.

** Please note that the Act and Regulations provided have potentially been amended since these documents were saved electronically. For the most current and up to date consolidated laws, please visit www.e-laws.gov.on.ca.*



**PUBLIC WORKS &
ENVIRONMENTAL SERVICES**

**2009 Annual & Summary Report
Frankford WTP & Water Distribution
Summary Report**

For 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 during this reporting period, please refer to the table on page 3 of this Report. Additional non-compliance issues were raised while generating this annual report. They are as follows:

- ✚ Quarterly samples were not collected in accordance with O. Reg. 170/03 Schedule 6, section 6-1.1(4). Samples were collected as per regulation originally, however they were not submitted to the lab. Re-samples were collected after the 120 day sampling period limit.
- ✚ ***Corrective Measure: A sample schedule has been formulated for 2010. A Compliance Coordinator has been hired to review sample results and sample submissions to ensure that the operations staff meet regulatory requirements.***
- ✚ There were two separate reportable incidents throughout the inspection period where 'Notice of Issue Resolution' or 'Corrective Action' reports under Schedule 16 (9) of O. Reg. 170/03 should have been made within seven days. These reports were not made within the allowable time frame.
- ✚ ***Corrective Measure: A Common Operating Directive has been issued for Reporting of Adverse Water Quality. (See section 11 of Common Operating Directives manual).***
- ✚ On August 4, 2009 a report under section 16-4 or Schedule 16 of O. Reg. 170/03 should have been made in regards to a low free chlorine residual measurement at the Elevated Tower. Shortly after communications were restored with the Tower due to thunderstorm knocking out communication, the measured free chlorine dropped to zero for approximately one hour. Free chlorine level returned to normal after this.
- ✚ ***Corrective Measure: An abnormal occurrence log sheet has been generated for operators to record such anomalous information to better assist operators with record-keeping. Reports have since been made to the MOE and Health Unit for this issue.***



Summary of Quantities and Flow Rates

Raw Water - PTTW limit of 3, 045.8 m³ /d or 35.23 L/s				
Month	Monthly Average Flow (m³)	Max Daily Flow (m³)	Max Daily Peak Flow rate (L/s)	Total Monthly Flow (m³)
January	1,240	1,836	34.0	38,439
February	1,176	1,276	18.0	32,923
March	1,329	1,645	35.0	41,189
April	1,273	1,405	23.0	38,199
May	1,304	1,519	21.0	40,430
June	1,451	1,888	36.0	43,526
July	1,339	1,542	50.0	41,507
August	1,313	1,626	23.0	40,715
September	1,404	1,881	23.0	42,130
October	1,268	1,480	32.0	39,309
November	1,201	1,830	31.0	36,015
December	1,380	1,729	30.0	42,785
Total Raw Water Flow 2009 (m³) -				477,168
Treated Water - Rated Capacity of 3, 353 m³ /d				
Month	Monthly Average Flow (m³)	Max Daily Flow (m³)	Max Daily Peak Flow rate (L/s)	Total Monthly Flow (m³)
January	1,015	1,269	35.0	31,467
February	937	1,067	23.0	26,223
March	1,034	1,408	36.0	32,064
April	1,047	1,163	31.0	31,406
May	1,078	1,324	45.0	33,426
June	1,188	1,541	29.0	35,650
July	1,149	1,363	100.0	35,632
August	1,108	1,456	61.0	34,339
September	1,221	1,488	58.0	36,624
October	1,132	1,327	47.0	35,083
November	1,813	2,074	56.0	54,394
December	1,160	1,430	34.0	35,965
Total Treated Water Flow 2009 (m³) -				422,274
Comparison of Quantities and Flow Rates for Treated Water				
Actual Annual Average Daily Flow (m ³)=		1,157	34.5 % of Rated Capacity	
Actual Max Daily flow (m ³) =		2,074	61.9 % of Rated Capacity	

**** Raw Water instantaneous flow exceedances in June and July lasted no more than 6 sec.**