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Ontario

April 23, 2004

2004-ALP-MD

APR 28 2004

Planning & Engineering
Richard
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Ms. Elise Campbell, Deputy Treasurer
The Township of Alfred/Plantagenet
P.O. Box 350
205 Old Highway 17
Plantagenet, Ontario K0B 1L0

Dear Ms. Campbell:

Re: Compliance Inspection - 2003/04
Alfred/Lefaivre Water Treatment Plant & Distribution System

The Alfred/Lefaivre Water Treatment Plant and Distribution System were inspected on February 23, 2004 by Gerald Menard, Inspector, Drinking Water Inspection Program, Eastern Region. Enclosed is a copy of the inspection report.

A copy of the enclosed report will also be sent to Mr. Jacques Breen, Operations Manager, Ontario Clean Water Agency; Mr. J.P. Gelinas, Compliance Technician, Alfred/Lefaivre Water Treatment Plant; Dr. Robert Bourdeau, Medical Officer of Health for the Eastern Ontario Health Unit; Mr. Mirek Tybinkowski, Water & Wastewater Specialist, Ministry of the Environment, Safe Drinking Water Branch, Approvals & Licensing and Mr. Richard Pilon, Director of Planning and Engineering, South Nation Conservation Authority.

Your attention is directed to Section 7 "Summary of Best Practices Recommendations" of this report. Compliance of this Water Treatment Plant and Distribution System is assessed against O. Reg 459/00 up to May 31, 2003 and O. Reg 170/03 which was declared June 1, 2003. Please respond by **May 31, 2004** detailing how the municipality plans to address these issues.

Should you have any questions pertaining to the report, please do not hesitate to contact Gerald Menard at this office at extension 224.

Yours truly,

James Mahoney

James Mahoney
Supervisor

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Drinking Water Inspection Program
Kingston District/Eastern Region

enclosure

cc: Mr. Jacques Breen, Operations Manager, Ontario Clean Water Agency
Mr. J.P. Gelinas, Compliance Technician, Alfred/Lefaivre Water Treatment Plant
Dr. Robert Bourdeau, Medical Officer of Health, Eastern Ontario Health Unit
Mr. Mirek Tybinkowski, Water & Wastewater Specialist, Ministry of the Environment, Safe Drinking Water Branch, Approvals & Licensing
Mr. Richard Pilon, Director of Planning & Engineering, South Nation Conservation Authority
SI PC AT MA 241 (32680) Cornwall Area Office

Ontario

Ministry of the Environment
Drinking Water Inspection Report

ALFRED/LEFAIVRE WATER TREATMENT PLANT INSPECTION REPORT

INSPECTION DETAILS

Location:	Alfred/Lefaivre Water Treatment Plant 2015 Lajoie Street, Box 252, Lefaivre, Ontario K0B 1J0
Water Works Type:	Surface Water Treatment With Distribution
Water Works Number:	220002841
Inspection Type:	Announced
Date of Inspection:	February 23, 2004
Date of Previous Inspection:	March 3-4, 2003
Inspection Number:	162-04

CONTACT INFORMATION

Municipality/Owner
P.O. Box 710
Plantagenet, Ontario
K0B 1L0

Phone: (613) 673-4797
Fax: (613) 673-4812

Contact Name: Elise Campbell
Deputy Treasurer

Operating Authority
Ontario Clean Water Agency (OCWA)

Inspector: Gerald Menard
Cornwall District
Eastern Region
(613) 933-7402
Ext. 224

Status of Report: Final

Distribution Date: April 23, 2004

Inspected under O.Reg. 459/00 of the Ontario Water Resources Act and O.Reg. 170/03 of the Safe Drinking Water Act

Ontario

Ministry of the Environment
Drinking Water Inspection Report

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SECTION 1 INTRODUCTION

1.1 INSPECTION OBJECTIVES

In February 2004, Gerald Menard of the Ministry of the Environment's (MOE) Drinking Water Inspections Program conducted an inspection of the Alfred/Lefaivre Water Treatment System, including the water treatment plant (WTP) and water distribution system (WDS). The purpose of the inspection was to assess compliance with those aspects of applicable legislation, regulations, policies, standards, guidelines, permits, approvals, and orders, including recognized best management practices, that pertain to the delivery of potable water by the facility. Specifically, this includes a review and assessment of operating practices as they relate to the following documents:

- The Safe Drinking Water Act, 2002
- Drinking Water Systems Regulation (O. Reg. 170/03)
- Drinking Water Protection Regulation (O. Reg. 459/00)
- Operator Certification Regulation (Water Works and Sewage Works - O. Reg. 435/93)
- Certificates of Approval
- Permit to Take Water
- Previous Ministry Inspection Report, dated March 3, 2003
- Engineer's Report dated November 2000
- Ontario Drinking Water Quality Standards (O. Reg. 169/03)

Available data and other information, including all certificates of approval, were reviewed for the period of time since the previous MOE Inspection (March 3, 2003). The inspection included a site visit to the facility, which was conducted on February 23, 24 2004. Samples from source water, treated water and distribution system water were obtained for laboratory analysis and field measurements for free chlorine residual, total chlorine residual and turbidity were taken.

Plant operators were interviewed to discuss components of the system, including the water source, treatment processes, operation and maintenance procedures, process control, planned upgrades, operation limitations, monitoring programs, and management procedures. Records were requested and reviewed for the period starting from the previous MOE Inspection through to the date of the site visit.

The following report provides a description of the Alfred/Lefaivre water treatment and distribution system, a summary of the abatement measures requested following the previous MOE inspection, a description of the findings resulting from this inspection, and a water quality assessment. This report also specifies required regulatory actions and recommended best

management practices.

The ministry is implementing a rigorous and comprehensive approach to the inspection of water systems that focuses on the source, treatment, and distribution components as well as water system management practices.

Table 1 **AUTHORIZING AND CONTROL DOCUMENTS REVIEWED**

CERTIFICATES OF APPROVAL		
Certificate #	**Date Issued**	**Description**
9014-5JASMT	Feb 28, 2003	A surface water treatment plant serving the hamlet of Lefaivre and the Village of Alfred, located on the South side of the Ottawa river in the hamlet of Lefaivre, approximately 300 m east of the intersection of County Roads 24 and 15, rated at a maximum daily flow of 2,900 cu, m/day and consisting of a river intake, low lift pumping station, raw water wet well, coagulation, flocculation, clarification, high rate filters, clearwell, high lift pumps, chemical feed systems, residue management, standy power, plant instrument and control system, water treatment plant building, two distinct water distribution systems and an elevated storage tank.
PERMIT TO TAKE WATER		
Permit #	**Expiry Date**	**Description**
90 - P- 4027	none specified	Issued for the taking of water from the Ottawa River, from a location on Lot 30, Concession 1 BF, Township of Alfred and Plantagenet. The supply of taking shall not exceed 2,040 litres per minute, or 2,900,000 litres per day.

SECTION 2 EXISTING WATER SYSTEM DESCRIPTION

2.1 WATER SOURCE

The Alfred/Lefaivre Water Treatment Plant draws water from the Ottawa River through a 900 mm up-turned flared elbow intake structure and a 500 mm diameter intake pipe, that extends approximately 100 meters into the river from the shoreline. The low lift pumping station consists of a concrete block and steel clad building located immediately north of the main water treatment plant at the shore of the river housing the following: wet well, two (2) removable inlet screens, four (4) vertical turbine low lift pumps each rated at a total dynamic head of 12 m. The pumps are controlled by the treated water level in the clearwell. The inlet mesh screens are cleaned 4-5 times per year.

The source water is generally low in dissolved solids, chlorides, nitrates, alkalinity, and has a neutral pH. Dissolved organic carbon ranges from 5.0 to 6.0 mg/L. Source water turbidity is generally greater than 1 NTU and can fluctuate with periods of precipitation and spring-runoff. Microbiological sampling results for the raw water indicate that the raw water contains an average of 40 E-coli/100 ml and 600 total coliforms/100 ml.

The Engineer's Report for the water works identifies that the Ottawa River is subject to potential contamination from a variety of sources including storm water runoff, municipal wastewater effluent, industrial discharges, agricultural runoff and is therefore subject at times to microbiological contamination. The land use within the immediate watershed around the plant consists of residential, agricultural and commercial uses.

The intake was last inspected in June 2003. No zebra mussels were observed at the time of the intake inspection. Chlorination is provided at the intake for zebra mussel control in the summer months when the temperature is greater than 10 degrees C. When the temperature drops below 10 degrees in the fall, chlorination at the intake is halted and replaced by pre-chlorination at the low lift pumping station.

The plant is classified as a Class IV Water Treatment Facility (Certificate Number 1611, issued June 1, 1991). A full description of the intake works and low lift pumping station is provided in detail in the current Certificate of Approval attached to this report in "**Appendix A.**"

GPS coordinates for the low lift pumping station can be found in "**Appendix D.**"

2.2 TREATMENT PROCESSES

Raw water from the Ottawa river flows by gravity through an intake crib to a low lift pumping station where the water is then pumped to a conventional surface water treatment plant. The Water Treatment Plant consists of one solids recirculation-reactivator-type flocculator/clarifier unit, two double compartment (4 compartments in total) dual media (anthracite/sand) filters, a two-compartment clearwell, two high lift pumping facilities, chemical feed facilities, disinfection facilities, flow metering, process wastewater treatment, a sanitary sewage system and standby power.

The raw water may be pre-chlorinated for zebra mussel control from a chlorination system consisting of three chemical feed pumps rated at 7.56 L/h at 670 kilopascals ("kPa"), 6.94 L/h at 670 kPa and 3.78 L/h at 1000 kPa; two 450 L capacity and one 150 L capacity sodium hypochlorite day tanks, complete with piping, valves and monitoring and control systems. During the inspection, pre-chlorination was being applied at the low lift pumping station ahead of the filters. In addition, sodium hypochlorite solution is applied for post-chlorination prior to a static mixer and ahead of the clearwell, and to the Village of Alfred transmission main.

Raw water enters the low-lift pumping station, passes through two removable inlet screens and flows into a 5.5 m long by 5.5 m wide by 4 m deep wet well. The screened raw water is transferred from the wet well by four vertical turbine low-lift pumps through a 10 m long, 200 mm diameter transmission main to the solids recirculation-reactivator clarifier. Two low lift pumps are each rated at 33.3 liters per second ("L/s"), a third is rated at 14.7 L/s and the fourth low lift pump is rated at 8.8 L/s. Three of the low lift pumps serve as duty pumps, while one of the 33.3 L/s capacity pumps functions as a standby pump. All pumps are rated to pump against a total dynamic head ("TDH") of 12 m.

Soda ash is added to the raw water via the raw water transmission line within the low lift pumping station and before the static mixer ahead of the clearwell. Soda ash is added to the process for pH and alkalinity control, to aid in the coagulation-flocculation process and to prevent corrosion within the distribution system and plumbing. Soda ash is delivered to the process using a chemical metering system consisting of: one chemical feed pump rated a 37.8 L/h at 345 kPa; one make-up system including a mixer and a 1090 L mixing tank; one 1090 L aging tank and one 1090 L day tank, complete with piping and control systems.

A coagulant, pre-hydoxylated aluminum sulphate ("PHAS") is added to the raw water for the purpose of coagulation and flocculation. The coagulant is injected into the raw water transmission line prior to a static mixer located within the transmission line and prior to the solids recirculation-reactivator clarifier. The coagulant is delivered to the raw water transmission

line from a chemical feed system consisting of: a 9100 L liquid chemical storage tank, one 450 L day tank and two chemical metering pumps (one duty and one standby), each capable of delivering 37.8 litres per hour ("L/h").

Magnafloc LT25 polyelectrolyte (a coagulation aid) is added before the static mixer located ahead of the clarifier in the raw water transmission line or to the flocculation zone inlet of the solids recirculation-reactivator clarifier. The polyelectrolyte is delivered to the treatment process using a chemical feed system consisting of two chemical feed pumps (one duty, one spare) each rated at 37.8 L/h at 345 kPa and a polyelectrolyte makeup system with a mixer, a 1090 L mixing tank and two 1090 L day tanks, complete with piping and control systems.

The coagulated water enters a 10.4 m diameter by 5 m deep solids recirculation-reactivator clarifier. The clarifier is equipped with piping to allow bypassing of the clarifier for maintenance purposes and operation of the WTP in direct filtration mode. The solids recirculation-reactivator clarifier combines the processes of mixing, flocculation, and sedimentation in a single compartmented tank. The coagulated water is mixed under a central cone-shaped skirt where a high-floc concentration is maintained. Flow passes under the skirt and is directed through a sludge blanket that forms in the bottom of the clarifier, promoting growth of larger conglomerated particles. The larger particles settle or become trapped through a filtering effect created by the heavier settled particles. The clarified water rises upward in a peripheral settling zone to a circular inboard trough suspended at the surface of the clarifier. As the solids build-up in the settling zone of the clarifier, they are periodically removed by an automatic sludge withdrawal system. The solids recirculation-reactivator clarifier has a design upflow rate of 1.75 metres per hour ("m/h").

Settled water flows from the solids recirculation-reactivator clarifier, through piping onto two 3.65 m diameter by 3 m high double compartment (4 compartments in total) dual media (anthracite/sand) filters. Each filter vessel is equipped with a common integral backwash storage tank for the supply of backwash water during automatic backwashing; backwash troughs; air surface wash and an underdrain system. Each filter unit is capable of operating at a filtration rate of 11.6 m/h or 5.8 m/h with both filters in operation. Filter effluent turbidity is continuously monitored using ABB 4670 Series continuous monitoring turbidimeters (one on each filter vessel only) which draw sample streams from each common filter effluent line. The turbidimeters are equipped with alarms. The high level alarm is set at 0.4 NTU.

Filter backwashing is normally initiated manually. The filters are backwashed on a weekly basis. The backwash cycle usually lasts 35 minutes with the last 10 minutes being filter to waste. Backwash water is supplied from each of the integral backwash storage tanks located on the top of each filter vessel.

All process wastewater (filter backwash water and clarifier solids) is directed to a 48 m^3 volume equalization tank. From the equalization tank, the process wastewater flows to and is settled in a 16 m^2, variable depth settling tank. The settled process wastewater enters a 77 m^3 volume decanting tank, is decanted and directed through piping, and discharged to the Ottawa River. The supernatant discharge is monitored for suspended solids, and must not exceed a concentration of 25 mg/L, based on an annual arithmetic mean of all individual concentrations of suspended solids in the effluent sampled or measured, or both, during a calendar year. The process wastewater treatment system has been designed to allow recirculation of supernatant to the low-lift pumping station. Sanitary sewage is treated on site by a sub-surface sewage system consisting of a septic tank and tile field.

Filtered water flows via overflow piping and a filtered water header to a two-compartment, unbaffled clearwell having a total volume of 660 m^3. Fluoride is added to the water in the form of hydrofluosilicic acid, prior to a static mixer and ahead of the clearwell. The hydrofluosilicic acid is delivered using a chemical feed system consisting of one chemical feed pump rated at 3.78 L/h at 1100 kPa drawing hydrofluosilicic acid from a shipping container placed on a weigh scale, located in a dedicated ventilated room.

The WTP is equipped with one 125 kW stationary diesel powered generator, to supply power to the WTP in the event of a power failure. The generator is housed in a separate ventilated room external to the process area of the WTP. Diesel fuel is supplied to the generator from an aboveground storage tank ("AGST") located within the same room as the generator set.

The on-line water quality analyzers are alarmed and transmit signals to an Outpost5 data acquisition system. The water quality analyzers also transmit alarms to a central alarm panel/dialer. The system was designed to monitor the WTP process and equipment, pumping and storage requirements and alarm systems. The data collected by the on-line analyzers may be trended using the Outpost5.

The WTP processes are housed within a metal clad building with approximate dimensions of 40 m by 15 m and an adjoining brick and concrete block building having approximate dimensions of 20.6 m by 8 m housing a laboratory, workshop, garage, office and washroom facilities.

A process diagram of the Alfred WTP has been included in "**Appendix C**" of this report.

2.3 Distribution System

The water distribution system for the Hamlet of Lefaivre and Village of Alfred serves a population of approximately 2,000. The system includes an elevated steel storage tank, 85 hydrants and 24 km of watermains.

The elevated storage tank is located on Larocque Street. The tank is a composite-type storage structure (metal tank on a concrete pedestal) and has a holding capacity of 1562 m^3. During the inspection it was noted that the tank is surrounded by an 2.4 m security fence, complete with barbed wire and access gates. The tank is equipped with level controls that transmit to the WTP.

The Alfred WDS has been classified as a Class 2 Water Distribution System.

GPS coordinates for the storage facility can be found in "**Appendix D.**"

SECTION 3 INSPECTION FINDINGS

3.1 OPERATIONS

3.1.1 Source/Supply

A detailed description of the location and configuration of the source, pumping station and water treatment plant is provided in Section 2 of this report.

The Waterworks has a valid Permit To Take Water (PTTW) that specifies that the rate of taking from the Ottawa River shall not exceed 2,900 cu, metres per day. Additionally, Conditions 1.2 and 1.3 of the amended Certificate of Approval specify that the flows into the water plant are not to exceed the maximum flow rate of 2,900 cu. metres per day. Flows into and through the water treatment plant are monitored by three (3) on-line flow meters.

During the on-site inspection, the inspector used the raw water sampling tap located in the water treatment plant laboratory to collect a sample. The laboratory raw water sample tap is connected to the end of the transmission line as it enters the water treatment plant. The raw water sampling tap was flushed for five minutes prior to sample collection. Samples were collected in laboratory prepared sample bottles containing the preservative sodium thiosulphate. The raw water samples were submitted to the MOE Laboratory in Toronto for analyses of Total Coliforms, *E. Coli*, and heterotrophic plate count. The results of the onsite analysis of the raw water indicated that the turbidity was 3.33 NTU, and the temperature of the raw water was 2°C. At present, the Township

of Alfred/Plantagenet does not have a formal source protection plan for the raw water source.

Permit To Take Water Assessment

SOURCE – PERMIT TO TAKE WATER ASSESSMENT				
PERMIT NUMBERS	**SOURCE**	**RENEWAL DATES**	**PERMITTED AMOUNT OF TAKING**	**UNITS**
90-P-4027	Ottawa River	No renewal, valid indefinitely.	2,040	L/min
90-P-4027	Ottawa River	No renewal, valid indefinitely.	2,900,000	L/day

Permit to Take Water ("PTTW" or "the permit") Number 90-P-4027 was issued on April 27th, 1998. The PTTW is valid indefinitely or until such time as there are changes in the rate, amount or method of water taking. The PTTW has been issued to the Township of Alfred and Plantagenet and authorizes the withdrawal of water from the Ottawa River.

OCWA records the maximum daily instantaneous rate of taking in m^3/d, and the daily quantity of water taken from the Ottawa River in m^3/d. The maximum daily instantaneous rate of taking (m^3/d), the total volume of water taken (m^3), the total number of hours water is taken and the average rate of taking (L/s) is recorded for each month in an Annual Record of Water Taking. These records are generated by OCWA's Process Data Collection database (known as "PDC") from daily information that is either automatically collected or manually entered into the database. The Annual Records of Water Taking are maintained at the WTP and have also been submitted to the Ministry of the Environment on a regular basis. A review of the operational records for the period from March 3, 2003 to February 23, 2004 found that the maximum daily instantaneous rate of taking and the maximum daily taking allowed by the PTTW was not exceeded.

A copy of PTTW Number 90-P-4027 and the annual record of water taking can be found in "**Appendix B**"of this report.

3.1.2 Treatment Processes

A detailed description of the configuration of the water treatment plant is provided in Section 2.2 of this report. The conventional water treatment plant, clear water reservoir, and disinfection and chemical feed systems were installed as described in the amended Certificate of Approval. A process flow diagram is provided in "**Appendix C**."

Treatment equipment outlined in the "Proposed Water Work Upgrades" portion of the Amended Certificate of Approval were completed by December 31, 2003.

Online turbidimeters are installed on the discharge line from each of the four filter units, and on the treated water discharge line downstream of the high lift pumps. The high level alarm on the turbidimeters is set at 0.4 NTU. There is also a chart recorder for turbidity measurements common to all four (4) filters. When the effluent filtered turbidity is maintained at 0.5 NTU or lower 95% of the time, the plant is given 0.5 log removal credit towards their CT calculation. In the event that the turbidity exceeds 0.4 NTU, then the operator on duty is notified electronically via the on-call pager.

At the time of the inspection, sodium hypochlorite solution was being added at the low lift lift pumping station. Stephane Barbarie indicated that the free chlorine residual at the pre-chlorination stage is being kept between 0.15 to 0.50 mg/L.

The post chlorine concentration is monitored with an online chlorine analyzer installed on the treated water discharge line downstream of the clearwell. The low and high alarms on the chlorine analyzers are set at 0.55 mg/L free chlorine and 2.20 mg/L free chlorine respectively. In the event that the concentration of free chlorine is below the minimum or exceeds the maximum the operator on duty is notified electronically via the on-call pager.

The operator is aware of the required concentration- time (CT) and it is checked 5 days per week. The treatment process provides the required chlorine contact time as specified by the MOE Procedure B13-3 (Chlorination of Potable Water Supplies in Ontario) and as required by the amended Certificate of Approval. The CT calculations are provided in Appendix F of the Engineer's Report (Stantec, 2000).

The fluoride concentration is monitored with an on-line fluoride analyzer installed after the filters and before the clearwell. The low and high residual alarms on the fluoride analyzer are set at 0.40 and 1.40 mg/L respectively. Any deviation from these set points will result in the on-call operator being paged.

Our review of calibration records revealed that all flow measuring devices are calibrated on a yearly basis while the chlorine analyzers, fluoride analyzer, on-line pH meter and turbidimeters are calibrated on a monthly basis. The calibrations were performed by Stephane Barbarie who is a certified technician. Copies of these records are contained in "**Appendix E.**"

The owner maintains documentation indicating that all chemicals used in the treatment process and all materials contacting the water have met the ANSI/NSF Standard 60 and AAWA Standards.

The rated capacity of the plant is 2900 cubic meters per day. The 2001 to 2003 flow data provided by OCWA shows that the system has operated at between approximately 74% and 94% capacity over the past three years. The plant's rated capacity figure is obtained from the amended Certificate for the plant and the Engineer's Report. The maximum treated water flow rates were close to the plant's rated capacity in 2002 and 2003. Elise Campbell, Deputy Treasurer with the Township of Alfred/Plantagenet has indicated that a letter will be inserted with the water bill to all the users, promoting water conservation. If no noticeable improvement is achieved voluntarily by year's end, the Township of Alfred/Plantagenet will likely introduce the installation of water meters at all residences in 2005.

TREATED WATER CAPACITY ASSESSMENT			
ITEM	**2001**	**2002**	**2003**
Avg. Day flow m^3 /day	1,003	1,113	1,139
Max Day flow m^3 /day	2,154	2,557	2,721
Rated Capacity m^3 /day	2,900	2,900	2,900
% (Maximum Day/Rated Capacity)	74.3 %	88.2 %	93.8%

The Township of Alfred/Plantagenet has a by-law with respect to watering lawns. By-law 86-97 which regulates water consumption during the summer months stipulates that no person shall use or allow to be used water at any time between June 1 and September 30 in any year for the purpose of watering lawns, gardens, flowers, hedges or any other vegetation outside any building except as hereinafter provided:

a) Residents of odd-numbered buildings shall be permitted to water lawns and gardens on odd numbered days between the hours of 7:00 p.m. and 10:00 p.m.

b) Residents of even-numbered buildings shall be permitted to water lawns and gardens on even numbered days between the hours of 7:00 p.m. and 10:00 p.m.

In addition to the sampling and analysis requirements of O. Reg. 170/03, the Operating Authority must collect raw water samples quarterly for the following parameters: organic nitrogen, dissolved organic carbon and color as per Certificate of Approval, Section 2.1, (g), (i).

No pesticides are applied or stored around, over, or the immediate vicinity of the water system

3 .1.3 Process Wastewater

A detailed description of the on-site process wastewater facilities is provided in Section 2.2 of the report.

Process wastewater generated from filter backwashing and desludging of the solids recirculation-reactivator clarifier is discharged to an equalization tank, followed by a settling tank and a decanting tank. Supernatant is discharged from the decanting tank through piping to the Ottawa River. Settled solids are periodically removed from the settling tank using a vacuum truck and transported to a nearby municipal sewage works for final treatment. On July 7, 2003 seven (7) loads of sludge were collected. On September 11, 2003, three (3) loads of sludge were collected. On November 20, 2003, five (5) loads of sludge were collected. On February 3, 2004, three (3) loads of sludge were collected. The sludge was then hauled to the Alfred lagoons.

Condition 1.5 of CofA No. 9014-5JASMT limits the effluent from the process wastewater treatment facility to an annual average concentration of suspended solids of 25 mg/L or less, based on the arithmetic mean of all individual concentrations of suspended solids in the effluent sampled or measured, or both, during a calendar year. A summary of the analytical results for the process wastewater effluent quality provided by OCWA is presented in the following table:

Sample Date	Total Suspended Solids (mg/L)	Arithmetic Mean, mg/L for the 2003 Calendar Year
March 7/03	<3	<6
April 11/03	6	
May 28/03	9	
June 25/03	4	

Sample Date	Total Suspended Solids, (mg/L)	Arithmetic Mean, mg/L for the 2003 Calendar Year
July 16/03	6	
August/03	-	
September 15/03	7	
October/03	-	
November 20/03	<3	
December 22/03	13	
January 20/04	3	
February 17/04	3	

The arithmetic mean of the suspended solids concentrations for the analytical results provided for the 2003 calendar year was determined to be less than 6 mg/L. Based on the analytical results, the process wastewater treatment facility effluent meets the requirements contained in Condition 1.5 of CofA No. 9014-5JASMT. Condition 2.1 (g) (ii) of CofA No. 9014-5JASMT requires composite samples of the process wastewater effluent to be collected from the point of discharge to the Ottawa River and analyzed for suspended solids at a monthly frequency. The composite samples must be made up of at least three individual samples collected at equal time intervals over a discharge event, with the first sample being taken near the beginning and the last sample being taken near the end of the discharge event. The operating authority did not collect backwash/wastewater samples in August and October.

3.1.4 Distribution System

Maintenance Programs

Maintenance and repairs performed within the distribution system including: repairs to water mains, water main replacement, valve repairs/replacement, hydrant repair/replacement and water main flushing are recorded in work orders generated using OCWA's Preventative Maintenance Program ("PMP").

Maintenance and repairs to the distribution system are performed in accordance with AWWA Standards. OCWA on behalf of the Township of Alfred and Plantagenet, has adopted for example, the ANSI/AWWA C651-99 Standards for Disinfecting Water Mains, ANSI/AWWA C652-02 Disinfecting Water Storage Structures, and other related AWWA Standards. A set of ANSI/AWWA Standards is maintained in Jacques Breen's office at the WTP. The Standards are accessible to all staff when required.

With regard to watermain disinfection, J.P. Gelinas reported the following:

- watermain breaks are normally repaired under pressure;
- where a section of a main must be isolated, AWWA Standards for disinfection are followed;
- there have been no new water mains installed within the Hamlet of Lefaivre or the Village of Alfred within the last two years; and,
- new water main installation usually falls under the responsibility of contractors and engineering consultants retained by the Township of Alfred and Plantagenet.

J.P. Gelinas reported the following with respect to maintenance of the Alfred and Lefaivre distribution systems:

- valves within the distribution systems are not regularly exercised or inspected; the valves are operated as required. Many valves have been paved-over; therefore, the valves are not readily accessible for routine operation;
- watermains are flushed annually each spring, to remove accumulated silt and build up of organic matter;
- all fire hydrants are operated during flushing of the distribution systems each spring. If hydrants are found to be malfunctioning or inoperable, they are repaired or replaced. The hydrants are winterized each fall. Hydrants are <u>not</u> routinely flow tested;
- a program does not exist for swabbing water mains; and
- there is no formal, regularly scheduled leak detection program for the water distribution systems.

The inspector was informed that the Township of Alfred and Plantagenet does not have a program for the active replacement of water mains. The majority of water mains in the distribution systems were newly installed in the early 1990's and have been manufactured from polyethylene. Since most of the watermains are only approximately 13 years of age and have been constructed of durable

materials, there has been little need for replacement. Consequently, watermains are repaired or replaced on an as required basis.

Cross Connection and Backflow Prevention

The operating authority and the Township of Alfred/Plantagenet both report that no pesticides are used anywhere in the water supply system. No major industries are presently connected to the water distribution system. At present, there is no by-law addressing potential cross-connections such as wells and cisterns. According to Elise Campbell, only members of the fire department have access to fire hydrants.

Storage Structure and Booster Station Assessment

A visual inspection of the Larocque Street elevated storage tank found that it appeared to be in excellent condition, with no obvious exterior corrosion, cracking or leaks. The security fencing around the WTP site and the Larocque Street elevated storage tank appeared to be in good repair with no obvious breaches.Stephane Barbarie indicated that at the current rate, there is approximately two days worth of water in the elevated storage tank in the winter and one days worth in the summer.

3.2 WATER SYSTEM MANAGEMENT PRACTICES

3.2.1 Operational Manuals

A thorough Operations manual is available to the operators. The operations manual provides detailed descriptions and operational procedures for each unit process in the treatment train from the intake structure to the point where treated water enters the distribution system. The operations manual is kept in the lab/administration building and contains the following information:

- up-to-date floor plans, drawings and process descriptions
- a section outlining the sampling, monitoring and reporting for the waterworks
- a process to ensure that all equipment used in the process is monitored, inspected and evaluated
- procedures for disinfection and repair of watermains

The operations manual must contain the following elements:

- a sampling plan (Schedule, procedures, etc.). The sampling plan should include varying the schedule such that sampling is not only done during optical conditions (e.g. low demand periods).
- guidance as to how often sediments should be removed and how often the levels of sediment should be checked.
- procedures for newly backwashed filters are brought back into service at low rates and are gradually increased in order to minimize post-backwash turbidity spikes.

The operations manual was last updated by Stephane Barbarie in January 2004.

3.2.2 Logbooks

A review of the facility's operations logbook revealed that all significant information concerning the operation of the facility, any repairs and maintenance are duly recorded.

The identity of the person acting as Operator-in-Charge (OIC) is being documented in the log book. All entries are made chronologically. There is a specific record being maintained of time spent by each individual at the waterworks facility such that an annual roll-up of the time spent at the facility or as the OIC can be retrieved manually as required in Section 20 of O. Reg. 435/93.

The log book also contained the following elements:

- the names of all operators on duty during the shift.
- any departures from normal operating procedures that occurred during the shift and the time they occurred.
- time spent as Operator in Charge. The operator reported that a roll-up is done manually at year end.
- the disinfection chlorine residual is recorded for water samples taken in the distribution system.
- identification of any situations in which any unusual or abnormal conditions were observed, any action that was taken and any conclusions drawn from the observations.
- any equipment that was taken out of service or ceased to operate during the shift, and any action taken to maintain or repair.

- operating status records at the end of every operating shift.
- raw water temperature, pH, alkalinity, turbidity, color, flow.
- treated water temperature, pH, alkalinity, turbidity, color, aluminum residual, free and total chlorine residual, fluoride residual.
- raw water flow, effluent filter flow.
- coagulant used, polymer used, chlorine used, soda ash and fluoride used.
- coagulant, polymer and chlorine and fluoride dosages.

The log books are maintained at the treatment plant.

3.2.3 Contingency and Emergency Planning

The Township of Alfred/Lefaivre has a Contingency Plan, a copy of which is available at the water treatment plant and at the Municipal Office. A copy of the plan's Index is contained in **Appendix "H."**

The Contingency Plan for the facility includes a detailed contact list, a list of suppliers and contractors that may be of assistance during a contingency, a listing of other relevant agencies that may require communication during a contingency, a schedule for testing and updating the Contingency Plan and twenty-seven separate contingency procedures.

The contingency procedures include instructions for the following conditions: spill reporting, contaminated raw water supply, power failure, standby power failure, disinfection failure (chlorinator malfunction), high chlorine residual, low chlorine residual, water supply shortage, high turbidity, alarm system failure, frozen intake pipe, raw well chamber inlet blocked/damage, low-lift pump system failure, broken trunk from low lift station, air system failure, chemical feed system failure alum/polyelectrolyte, clarifier system failure, clearwell water level alarms failure, filter failure, vandalism, basement/tunnel flood, confined space rescue, spill of sodium hypochlorite, spill of aluminum sulphate, non-compliance, indicators of adverse water and high lift pump failures.

The Plant Contingency Plan does not contain contingency measures for when the plant operator in overall responsibility is absent or unable to act for a period of time including notification of the Director if the absence will be sixty (60) days or longer.

3.2.4 Security

The raw water intake consists of a 120 m long, 500 mm diameter polyethylene pipe that is submerged in the Ottawa River. The intake is not accessible to the public or vandals. A large visible sign has been placed on the shore of the Ottawa River immediately north of the low-lift building to alert boaters or pleasure craft traveling the River to avoid anchoring in the area of the intake. The raw water transmission main is below grade between the low-lift building and the WTP process building. The transmission main is also located within a 1.8 m chainlink security fence that is equipped with barbed wire and a locking access gate, and surrounds the perimeter of the WTP property.

The inspection revealed that the on-site below grade reservoir is covered and is equipped with one locking access hatch. The access hatch is equipped with two locking hasps. The reservoir is equipped with two air vents.

The low-lift building is equipped with intrusion alarm sensors on all entrance doors. The alarm sensors if triggered send a signal to a central alarm panel/dialer, which in turn, alerts the OCWA on-call pager. The pager is assigned on rotation to an OCWA operator.

The security fence has been signed along the perimeter to warn of "No Trespassing" in accordance with the *Trespass to Property Act*. In addition, all entrance doors associated with hallways to the WTP process and low-lift buildings have been equipped with door switches and/or motion sensors. These security devices have been wired to a central alarm panel/dialer, that in turn, pages the OCWA on-call operator in the event of an alarm condition.

A 1.8 m security fence, complete with barbed wire and locking access gates, is installed around the base of the Larocque Street elevated storage. The access gates have been secured with padlocks. The security fence has been marked with "No Trespassing" in accordance with the *Trespass to Property Act.*

The security fencing around the WTP site and the Larocque Street elevated storage tank appeared to be in good repair with no obvious breaches.

3.2.5 Communication with Consumers

Condition 3.14 of CofA No. 9014-5JASMT requires the Township of Alfred and Plantagenet to ensure that procedures are established and followed for receiving, responding to, and recording complaints about any aspects of the works, including recording the steps that were taken, if any, to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.

The Ontario Clean Water Agency, on behalf of the Township of Alfred and Plantagenet, records complaints about any aspects of the water works, using a database known as OPEX. The OPEX database was developed by OCWA for internal reporting and recording of incidents related to community complaints, environmental incidents and health and safety incidents. Copies of the completed complaint records are printed and maintained in a 3-ring binder at the WTP. The complaint record, known as "Ontario Clean Water Agency Community Complaints" includes sections for recording: the facility name, time and date of the complaint; the name, address and phone number of the complainant; the nature of the complaint; details concerning the description of the complaint; action taken in response to the complaint; and, identifying and describing the source if the complaint. Regular communiques are included with the water bills instructing the users where the documents can be obtained.

Our review revealed that the following documents are available during normal business hours at the water treatment plant:

- all reports on the analysis of water samples taken under section 7 of O. Reg. 459/00 are available. Please note that since the date this inspection was performed O. Reg. 459/00 has been superceded by the Drinking-Water Systems Regulation (O. Reg. 170/03).
- all approvals, orders, and directions related to the drinking-water system.
- reports prepared under section 12 of O. Reg. 459/00 (quarterly reports).
- a copy of O. Reg. 459/00 and the Ontario Drinking Water Standards.

The operator advised the writer that the process used to communicate the availability of Quarterly Reports is as follows:

(i) Regular communiques in water bills sent by the municipality.

(ii) The municipality has all Quarterly Reports available to the Public at the Village Hall.

3.2.6 Operator Certification and Training

The Alfred/Lefaivre waterworks is categorized as a Class 4 treatment system and a Class 2 distribution system. The Operator in Overall Responsibility, Jacques Breen, holds a valid licence of the same class or higher for both water treatment and distribution system in accordance with Regulation 435/93, and therefore the waterworks is in compliance with Condition 3.3 of the amended CofA.

There have been no circumstances recorded wherein the person responsible for overall operation of the facility was unable to act since the last inspection. Should Jacques Breen, Area Operations Manager of OCWA, be unable to act, the responsibility would fall to Maurice Benoit, the Assistant Area Manager and failing that, J.P. Gelinas OCWA's compliance advisor.

The three regular operators at the facility are Stephane Barbarie, Charles Gagnon, and Mario Ethier. Mr. Barbarie is certified as a Class 3 water treatment operator and a Class 2 water distribution operator. Mr. Gagnon and Mr. Ethier are both certified as a Class 1 water treatment operator and a Class 1 water distribution operator respectively. Details of the operator licences are summarized in "**Appendix K**". The operator licences were conspicuously displayed as required under Regulation 435/93 Section 9.

Two summer students , Marie-Josee Dion and Kristine St-Pierre were hired to check free chlorine residuals on the distribution system on a daily basis. Kristine and Marie-Josee have been doing that job since June 2003. Both students hold a O.I.T. license in Water Treatment and Water Distribution. Copies of their licenses are included in "**Appendix K**".

As of February 23, 2004, all operators had received the required forty hours of training for 2003 as required under Regulation 435/93 Section 17.

SECTION 4 WATER QUALITY AND MONITORING

4.1 WATER QUALITY MONITORING

During the February 23, 2004 site visit, the Inspector collected distribution system samples from the following locations: the sample tap at Depanneur Lalonde (561 Rue St-Philippe); the cold water tap in the washroom at the Fire Station (261 Rue St-Philippe), and the cold water tap in the kitchen at the GEM store (2070 Rue Lajoie). At all three locations, the Inspector collected samples for the onsite analyses of chlorine residual and turbidity. The Inspector used a Ministry owned Hach Pocket Colorimeter and a portable 2100P Hach Turbidity meter to perform the analyses. Water samples were collected in laboratory prepared sample bottles containing the preservative sodium thiosulphate, and were subsequently submitted to the MOE Laboratory in Toronto for analyses of the following parameters: Total Coliforms, *E. Coli*, and a heterotrophic plate count.

The results from the on-site analyses of free chlorine are provided in the following table.

Free & Total Chlorine Residual Results & Turbidity Alfred/Lefaivre Distribution System - February 23, 2004			
	Depanneur Lalonde	Fire Station	GEM Store
Turbidity (NTU)	0.26	0.22	0.29
Free Chlorine (mg/L) Total Chlorine (mg/L)	0.87 0.99	0.89 1.06	0.78 0.91

The results of the onsite analyses of free chlorine chlorine residual in the Alfred/Lefaivre distribution system indicated that the free chlorine residual was above the minimum required concentration of 0.05 mg/L as specified in Schedule 6 of Regulation 170/03.

On the date the water works was inspected, water quality requirements were dictated by the current Certificate of Approval No. 9014-5JASMT and by O. Regulation 459/00. Please note that upon its promulgation on June 1, 2003, the Drinking Water Systems Regulation (O. Reg. 170/03) superceded O. Reg. 459/00.

Future inspections of the Alfred/Lefaivre Water Treatment Plant will focus on assessments of compliance with O. Reg 170/03.

Condition No. 2 of the CofA outlines the monitoring program for the waterworks. Samples from the raw water, treated water and distribution system must be collected and sampled for the parameters described in the Certificate of Approval and in O. Reg. 459/00.

In addition to the routine sampling, on-site testing is performed once a day for color, pH, turbidity, temperature and alkalinity of the raw water; and for free and total chlorine residual, pH, temperature, color, turbidity and fluoride residual of the treated water. Aluminum residual and alkalinity for the treated water is checked on a weekly basis.

The Certificate of Approval dictates that quarterly samples for raw water must be collected and analyzed for Organic Nitrogen, Dissolved Organic Carbon and Color. Samples for the above mentioned parameters were collected on March 27, May 26, July 13 and November 3, 2003.

The Certificate of Approval also stipulates that samples of treated process wastewater effluent must be analyzed for the following parameter at the indicated frequency:

Parameter	Type of Sampling	Frequency
Suspended solids	Composite*	Monthly

* Composite sampling means a sample made of at least three (3) individual samples collected at equal time intervals over a discharge event, the first sample being taken near the beginning and the last sample being taken near the end of the discharge event.

Our review of the water quality analyses generated from samples collected by the owner from January 28, 2003 to February 10, 2004 revealed that the microbiological water quality in the treated water and the distribution system has consistently conformed with the Ontario Drinking Water Standards. Two (2) adverse water samples were detected in 2003.

From March 3, 2003 to February 23, 2004 the operator collected weekly raw water samples as required by Ontario Regulation 459/00 and Ontario Regulation 170/03. The samples were submitted to Caduceon Environmental Laboratories of Ottawa, Ontario for microbiological analyses. All samples were analyzed for *E.Coli* and Total Coliforms.

The water sampling and analysis requirements for treated water entering the distribution system, as specified in Ontario Regulation 170/03 are as follows:

- one sample per week for microbiological analyses;
- one sample per annum for lead
- one sample per quarter for THM's
- one sample per quarter for nitrates/nitrites;
- one sample per annum for pesticides, organics and PCBs; (Schedule 24)
- one sample per annum for inorganics; (Schedule 23)

From March 3, 2003 to February 23, 2004 the operator collected weekly treated water samples and submitted the samples to Caduceon Environmental Laboratories of Ottawa, Ontario for analysis. All samples were analyzed for *E.Coli,* Total Coliforms and heterotrophic plate count. Quarterly treated water samples for nitrates/nitrites were collected on March 27, May 26, July 13 and October 21, 2003 and January 12, 2004. Treated water samples were also collected and submitted for analyses of volatile organics, pesticides, PCB's and inorganic parameters, including fluoride, on May 26, 2003.

The sampling and analysis requirements for the Alfred/Lefaivre Distribution System as per Ontario Regulation 170/03 are as follows:

- Twelve samples per month (at least one per week) for microbiological analyses, including 25% of each batch for a heterotrophic plate count;
- One sample for trihalomethanes per quarter, collected at a point that is likely to have an elevated potential for THM formation
- One sample for lead per annum, collected at a point that is likely to have an elevated concentration of lead

Please note that if a test result for a Schedule 13 parameter were to exceed half the Ontario Drinking Water Quality Standards, then the required sampling frequency is increased to quarterly.

The operator collected a minimum of twelve samples per month from the distribution system and submitted them to Caduceon Environmental Laboratories of Ottawa, Ontario for microbiological analyses. All samples were analyzed for *E.Coli*, Total Coliforms and heterotrophic plate count.

The Alfred/Lefaivre Water Treatment Plant has the following in-line continuous water quality monitoring devices: two (2) chlorine residual analyzers, one (1) pH analyzer, one (1) fluoride analyzer

and four (4) turbidity analyzers. On the day of the inspection, the following chlorine residuals were recorded:

Free: 0.86 mg/L Total: 0.96 mg/L

The following turbidity readings were observed on the date of the inspection:

Raw water: 3.33 NTU Treated water: 0.18 NTU

The treatment plant houses on-site laboratory equipment used to monitor chlorine residuals, fluoride residual, aluminum residual, turbidity and pH readings. Bench-top instruments include a Hach DR 2000 Spectrophotometer, a Hach 2100 A turbidimeter and a Hanna, model H198127 pH meter. Continuous analyzers are checked daily and their readings compared to those obtained using the desk-top instruments.

All analytical results are reportedly retained for five (5) years , as is required by O. Reg. 459/00.

4.2 WATER QUALITY ASSESSMENT

4.2.1 Bacteriological

Our review of analytical data amassed by the owner between March 3, 2003 and February 23, 2004 revealed that fifty-two (52) treated water samples, fifty-two (52) raw water samples and one hundred and sixty-six (166) distribution system samples were collected and submitted to an accredited laboratory for bacteriological analyses. Two (2) adverse samples were reported during this time frame.

The distribution system sample collected from 69 Pitre St. on July 14, 2003 was reported to have a concentration of 62 Total Coliform per 100 ml. The distribution sample collected from 2070 Rue Lajoie on November 24, 2003 was reported to have a concentration of 3 Total Coliforms per 100 ml. In both instances, resampling confirmed that the drinking-water was safe.

Our audit samples of water collected from the Alfred/Lefaivre water treatment plant and the distribution system indicated that no E Coli or Total Coliforms were detected and all HPC counts were less than 10 c/ml. No adverse microbiological samples were encountered. Audit sample results are enclosed in "**Appendix "F"**.

4.2.2 Physical/Chemical

A review of the laboratory analytical reports indicates that, for the period covered by this inspection, the operator conducted all of the required sampling in accordance with Regulation 459/00, Regulation 170/03 and the waterworks amended CofA.

The laboratory analytical results indicated that all of the samples were below the Maximum Acceptable Concentrations (MAC) and Interim Maximum Acceptable Concentrations (IMAC) specified in the Ontario Drinking Water Standards.

The running annual average for total trihalomethanes in the Alfred/Lefaivre distribution system did not exceed the MAC (0.100 mg/L) during the period covered by this inspection. A summary of the THM results from December 3, 2002 to October 21, 2003 is provided in the following table.

Total Trihalomethanes - Alfred/Lefaivre Distribution System December 2002 to November 2003

Sample Date	Concentration (mg/L)	Running Annual Average
December 3, 2002	0.061	0.081
March 27, 2003	0.075	0.076
May 26, 2003	0.091	0.085
July 13, 2003	0.071	0.075
October 21, 2003	0.082	0.080

The required quarterly treated samples for for nitrates & nitrites were collected on March 27, May 26, July 13 and October 21, 2003 as per Reg. 170/03, Schedule 13.

The required yearly treated samples for Organics (PCB, VOC and Pesticides) and Inorganics were collected on May 26, 2003 as per Reg. 170/03, Schedule 13.

The required quarterly distribution samples for trihalomethanes, were collected on March 27, May 26, July 13 and October 21, 2003 as per O. Reg. 170/03, Schedule 13. The required annual

distribution sample for lead was collected on May 27, 2003 as per O. Reg. 170/03, Schedule 13.

In addition, raw water samples were collected on March 27, March 26, July 13 and November 3, 2003 for the analysis of Organic Nitrogen, Dissolved Organic Carbon and Colour as specified in Certificate of Approval No. 9014-5JASMT, Condition 2.1,(g),(I). Results are included in "**Appendix G**".

There were no instances of free chlorine residuals of less than 0.05 mg/L in the distribution system between March 3, 2003 and February 23, 2004. Two samples taken on August 12, 2003 just met the minimum allowable concentration of 0.05 mg/L of free chlorine residual. Similarly, no instances of a free chlorine residual exceeded 4.0 mg/L were observed in the Owner's record.

On October 10, 2003, the fluoride concentration entering the distribution system exceeded the MAC of 1.5 mg/L. The treated water had a concentration of 8.0 mg/L. When the water at the plant was shut off due to maintenance repairs, it created a vacuum, thus draining the fluoride tank in the distribution system. The Health Unit and S.A.C. were notified. The distribution system was flushed with water from the elevated tank until the adverse condition no longer existed. The problem was corrected by installing an anti-syphon valve on the water line.

A review of the sampling schedule and laboratory analytical reports indicated that from March 3, 2003 until February 23, 2004, the Alfred/Lefaivre Water Treatment Plant operated in compliance with the water quality sampling requirements of Condition 2.1(f) of the amended Cof A. All water samples submitted for analyses during the aforementioned period were analyzed by Caduceon Enterprises Inc., which is accredited through the Standards Council of Canada for the analysis of parameters for which tests are performed.

4.2.3 Reporting, Notification & Corrective Action

As required under Reg 459/00 Section 12, the operator produces quarterly reports for the waterworks. The quarterly reports prepared for the first quarter of 2003 contain all the required elements as specified under Reg 459/00 Section 12. Quarterly reports are no longer required in Regulation 170/03 that came in effect on June 1, 2003. All of the laboratory analytical reports and quarterly reports since the commissioning of the plant are kept on file at the OCWA office in Lefaivre, Ontario.

The Annual Compliance Report was completed on March 25, 2003. The report contains a summary of treatment chemicals used, including average dosage rates with special reference to abnormal usages. The compliance report also includes peak flow rates, maximum daily flow rates and monthly average daily flows. It was also confirmed by Resolution of Council No. 2003-122

that the Ontario Clean Water Agency (OCWA) presented the Township of Alfred and Plantagenet with a copy of their annual Compliance Report at their regular meeting of Council, on April 22, 2003. The report has been duly approved and adopted by Council.

Please note that Annual Compliance Reports required by Certificates of Approval need no longer be prepared as long as the owner prepares Annual Reports and Summary Reports for Municipalities required by O. Reg. 170/03.

An Engineer's Report for the Waterworks was prepared by Stantec Consulting Ltd. of Ottawa, Ontario in November 2000 as required by Regulation 459/00 Section 13. A Second Engineer's Report was due to be submitted no later than March 31, 2003 as specified in Condition 6.1 of the amended Certificate of Approval. The due dates for the Second Engineer's Reports as specified in Cof A and Regulation 459/00 are no longer applicable and that these reports are now due within five years of the original Engineer's Report. The Second Engineer's Report for the Alfred/Lefaivre waterworks is now due in November 2005.

As required by Regulation 459 Section 7 a completed "Notification of Laboratory Services Provided to Waterworks" form was submitted to the Laboratory Services Branch by Jacques Breen (OCWA) on November 5, 2002.

For the two (2) adverse water quality conditions encountered since the last inspection, immediate notice was provided by the operator to both the MOE and MOH and this notice was confirmed in writing to both agencies within 24 hours. Additionally, the site was immediately resampled; samples were also collected from two adjacent sampling points. The resampling event indicated that the adverse water quality condition was no longer present. A copy of the "Notice of Drinking Water Analysis and Remedial Actions for Waterworks" form submitted by the operator is provided in "**Appendix G**", along with the laboratory analytical results for the resampling event and the operators fax cover sheet. With regard to this incident, the operator provided all of the required notices and undertook all the appropriate corrective actions as specified in Regulation 459/00 Sections 8 and 9 and Reg 170/03, Schedule 16 and 17.

SECTION 5 REVIEW OF PREVIOUS INSPECTION ISSUES

A review of findings recorded in the preceding compliance inspection report are listed below in a chronological fashion. The preceding compliance inspection report was prepared subsequent to an inspection performed on March 3, 2003. OCWA's response to these findings and subsequent action taken is included in "**Appendix L**". Please note that Certificate of Approval No. 5025-

5D2HRV has been replaced by Certificate of Approval No. 9014-5JASMT. All outstanding issues have been resolved and the work was completed by December 31, 2003.

5.1 NON COMPLIANCE WITH REGULATORY REQUIREMENTS

The 25 non-compliance items cited in the preceeding inspection report are itemized, complete with the status of their resolution in Section 8.1.1, **Appendix "L".**

5.2 BEST MANAGEMENT PRACTICES RECOMMENDATIONS

The 9 Best Management Practices Recommendations cited in the preceeding inspection report are itemized, complete with their status of resolution in Section 8.1.2 **Appendix "L".**

SECTION 6 SUMMARY OF NON COMPLIANCE & ACTIONS REQUIRED

No non compliance issues were identified during the inspection of this water treatment plant. No action was taken or orders were issued.

SECTION 7 SUMMARY OF BEST PRACTICE RECOMMENDATIONS

In the interest of continuous improvement, the ministry provides the following suggestions:

1) On at least 11 occasions, the free chlorine residual on the Alfred distribution line was below the Ministry goal of 0.20 mg/L. The Operating Authority should review the chlorine booster system for the Alfred distribution system . The Operating Authority is to ensure that a minimum free chlorine residual of 0.20 mg/L is maintained at all times in the Alfred distribution system.

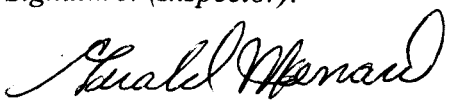
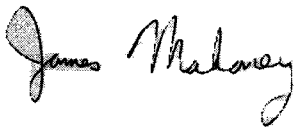
2) The Township of Alfred/Plantagenet should adopt a by-law that restricts access to the fire hydrants exclusively to the fire department unless special permission is granted by the Township. At present, it is only a policy.

3) The Township of Alfred/Plantagenet should adopt a cross-connection by-law to ensure that residents cannot connect other sources such as wells or cisterns.

4) The Owner should install an in-line chlorine analyzer to measure chlorine residuals at the pre-chlorination stage. Chlorine is injected at the intake during summer months for zebra mussel control and at the low-lift pumping station during winter months. At present, the free pre-chlorination residual is measured once a week.

By no later than May 31, 2004, provide the MOE inspector with an Action Plan committing to address each of the above cited four recommendations, complete with implementation dates.

SIGNATURES

Inspected By: *Gerald Menard*	*Signature: (Inspector):* 
Reviewed & Approved By: *James Mahoney*	*Signature (Supervisor):* 
Review & Approval Date: (yyyy/mm/dd) *2004/04/23*	*REPORT STATUS:* *Final*

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

c: *Ms. Elise Campbell, Township of Alfred & Plantagenet*
Mr. J.P. Gelinas, Compliance Technician, Alfred/Lefaivre Water Treatment Plant
Mr. Jacques Breen, Operations Manager, Ontario Clean Water Agency
Dr. Robert Bourdeau, Medical Officer of Health, Eastern Ontario Health Unit
Mr. Mirek Tybinkowski, Water & Wastewater Specialist, Ministry of the Environment, Safe Drinking Water Branch, Approvals & Licensing
Mr. Richard Pilon, Director of Planning & Engineering, South Nation Conservation Authority
District Office File

APPENDIX A

CERTIFICATES OF APPROVAL

(AS ATTACHED)

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE WATER WORKS
NUMBER 9014-5JASMT

The Corporation of the Township of Alfred and Plantagenet
PO Box 350
Plantagenet, Ontario
K0B 1L0

Site Location: Lefaivre Water Treatment Plant
2017 Main Street
Alfred and Plantagenet Township, United Counties of Prescott and Russell

You have applied in accordance with Section 52 of the Ontario Water Resources Act for approval of:

a surface water treatment plant, serving the hamlet of Lefaivre and the village of Alfred, located on the south side of the Ottawa River in the hamlet of Lefaivre, approximately 300 m east of the intersections of County Roads 24 and 15, rated at a maximum daily flow of 2,900 m^3/day, consisting of the following:

PROPOSED WATER WORK UPGRADES
(as per application for approval dated December 3, 2002)

Clearwell

- extend inlet piping at both treated water cells and install two sections of 3 m long perforated PVC diffuer pipe located at the cell corner opposite to the suction outlet;

- 300 mm diameter flap gate check valve at clearwell overflow pipe outlet inside storm manhole no. 1;

Residue Management System

- abandon the backwash water recirculation pipe to low lift pump station by removing a shear gate and plugging the pipe with a 300 diameter blank flange;

High Rate Filters

- 150 mm diameter filter-to-waste piping, at each of the 4 filter compartments, complete with air release valves and sampling taps;

- two (2) turbidity analyzers, one at each of filter effluent line; ONE EXISTING ADDED 3 more

Sodium Hypochlorite Feed System

- two (2) chemical feed pumps (duty and standby), each rated at 4.4 L/hr, for pre-chlorination dosing

sodium hypochlorite solution to one or a combination of: the raw water line at the low lift pumping station, the splitter box ahead of the filters, or the zebra mussel control injection point;

- two (2) chemical feed pumps (duty and standby), each rated at 4.4 L/hr, for post-chlorination dosing sodium hypochlorite solution before the static mixer ahead of the clearwells;

- two (2) chemical feed pumps (duty and standby), each rated at 1.4 L/hr, for post-chlorination dosing sodium hypochlorite solution to the Alfred transmittion main;

- three (3) 100 L day tanks, at each of the chlorination systems;

- 260 mm high concrete containment curb, at chlorine solution tanks area;

Soda Ash and Polyelectrolyte Feed Systems

- 240 mm high concrete containment curb, at polyelectrolyte and soda ash mixing tanks area;

- 230 mm high concrete containment curb, at polyelectrolyte and soda ash day tanks area;

including appurtenances, electrical, mechanical and instrumentation, all in accordance with the application for approval dated December 3, 2002, plans and supporting information submitted by Stantec Consulting Limited, consulting engineers.

EXISTING WATER WORKS

(as approved under Certificate of Approval No. 5025-5D2HRV issued August 16, 2002)

Raw Water Intake

- a 120 m long, 500 mm diameter polyethylene with an intake crib surrounding a 900 mm diameter up-turned flared elbow intake extending 100 m into the Ottawa River, located adjacent to the water treatment plant approximately 300 m east of County Road 15; including a 50 mm diameter polyethylene pipe to feed sodium hypochlorite solution to the intake for zebra mussel control;

Low Lift Pumping Station

- a concrete block and steel clad building having dimensions 6.0 m x 6.0 m located immediately north of the main treatment plant building at the shore of the Ottawa River (NAD 27; UTM Zone 18; 508195.00 E; 5053850.00 N) housing the following:

    - wet well approximately 5.5 m long x 5.5 m wide x 4 m deep at average river level,

    - two (2) removable inlet screens,

    - four (4) vertical turbine low lift pumps each rated at approximately 12 m total dynamic head (TDH) as follows:

- two (2) low lift pumps each rated at 33.3 L/s (one duty, one standby)
- one (1) low lift pump rated at 14.7 L/s
- one (1) low lift pump rated at 8.8 L/s

Raw Water Transmission Main

- approximately 10 m of 200 mm diameter pipe to transmit raw water from the low lift pumping station to the WTP, complete with chemical injection points for pH adjustment, coagulants and sodium hypochlorite, and in-line static mixer.

Water Treatment Plant

- a metal clad building approximately 40 m x 15 m together with an adjoined brick and block building approximately 20.6 m x 8 m housing the laboratory, workshop, garage, office and washroom facilities located approximately 300 m east of the intersection of County Road No. 15 and Main Street on the north side of Main Street, on the south shore of the Ottawa River (NAD27; UTM Zone 18; 508190.00 E; 5053800.00 N).

Clarifier/Flocculator

- one (1) solids recirculation – reactivator type clarifier/flocculator unit approximately 10.4 m diameter x 5 m deep with a by-pass, including flash chemical mixing, coagulation and sedimentation chambers with automatic sludge withdrawal and a clarifier upflow rate of 1.75 m/h.

High Rate Filters

- two (2) 3.65 m diameter x 3 m high double compartments (total 4 compartments) dual media (anthracite/sand) filters, each with a common integral backwash storage tank for automatic backwashing, backwash troughs, air surface wash and underdrain system each capable of operating at a filtration rate of 11.6 m/h or 5.8 m/h with both filters in operation.

Clearwell

- one (1) clearwell with two (2) treated water cells each approximately 11 m long x 10 m wide x 3 m deep with a total volume of 660 m^3.

High Lift Pumps

- two (2) district high lift pumping installations for Lefaivre and Alfred area water distribution systems with a valved off connection between the two systems as follows:
  - Lefaivre System High Lift Pumps

- two (2) end suction centrifugal pumps rated at 12.5 L/s at 31.7 TDH (one (1) standby);
- one (1) end suction centrifugal (fire) pump rated at 50 L/s at 79.2 TDH.

- Alfred System High Lift Pumps
  - three (3) double suction centrifugal pumps rated at 15 L/s at 79.2 m TDH. (one (1) standby).

Chemical Feed Systems

- chemical feed system consisting of chemical pumps, storage tanks, piping and associated appurtenances to dose alum, polyelectrolyte, soda ash, fluoride and sodium hypochlorite solutions as follows:

Alum Feed System
- two (2) chemical feed pumps (one duty, one standby) each rated at 37.8 Lph at 345 kPa dosing alum solution from day tank to raw water piping before the static mixer, one (1) 9,100 L liquid alum storage tank, and one (1) 450 L day tank.

Polyelectrolyte Feed System
- two (2) chemical feed pumps (one duty, one spare) each rated at 37.8 Lph at 345 kPa dosing polyelectrolyte solution to either before the static mixer or to the flocculator zone inlet, and one (1) make-up system with a mixer and a 1,090 L tank and two (2) 1,090 L day tanks all complete with piping and controls.

Soda Ash Feed System
- one (1) chemical feed pump rated at 37.8 Lph at 345 kPa dosing soda ash solution to the raw water line at the low lift pumping station and/or before the static mixer ahead of the clearwell and one (1) make-up system with a mixer and a 1,090 L tank, one (1) 1,090 L aging tank and one (1) 1,090 L day tank all complete with piping and controls.

Fluoride Feed System
- one (1) chemical feed pump rated at 3.78 Lph at 1,100 kPa drawing hydrofluosilicic acid from a shipping container on a weigh scale in a separate ventilated room, dosing solution to the raw water main before the static mixer ahead of the clearwell.

Sodium Hypochlorite Feed System
- three (3) chemical feed pumps:

- one (1) for pre-chlorination dosing to one or a combination of: the raw water line at the low lift pumping station, the splitter box ahead of the filters, or the zebra mussel control injection point; rated at 7.56 Lph at 670 kPa,

- one (1) rated at 6.94 Lph at 670 kPa for post-chlorination before the static mixer ahead of the

clearwells, and

- one (1) rated at 3.78 Lph at 1000 kPa for post-chlorination of the Alfred transmission main

- and a zebra mussel infestation control facilities complete with pre-chlorination line extending to the intake, and including all associated valves, piping and monitory and control systems; three (3) sodium hypochlorite day storage tanks complete with piping and controls, two (2) 450 L capacity and one (1) of 150 L capacity

Water Quality Monitoring

- two (2) chlorine residual analyzers, one (1) pH analyzer, one (1) fluoride analyzer and one (1) turbidity analyzer complete with continuous sampling system and associated piping

Flow Metering

- three (3) water meters located as follows:

  - two (2) water meters at water treatment plant [one (1) each for Lefaivre and Alfred treated water systems]

  - one (1) water meter at an on-line valve chamber at the westerly limit of village of Alfred.

Residue Management System

- one (1) tank, 48 m^3 volume, for equalization of backwash flow;

- one (1) tank, 16m^2 with variable depth, for settling of backwash and clarifier solids;

- one (1) tank, 77 m^3 volume for decanting of supernatant from clarifier sludge and filter backwash water including recirculating piping to the low lift pumping station and discharge piping to the Ottawa River.

Sanitary Sewage System

- one (1) septic tank and tile bed system for W.T.P. sanitary sewage disposal.

Standby Power Facility

- a 125 kW Diesel engine standby power generator set and associated equipment located in a separate room of the building enclosure.

and including all piping, electrical and mechanical works, plumbing and ventilation, yard piping. instrumentation and control and metering equipment;

all in accordance with the Engineer's Report entitled "Township of Alfred-Plantagenet - Lefaivre Water

Treatment Plant - Engineer's Report", prepared by Stantec Consulting Limited and dated November, 2000, and any additional information and documentation that may have been provided in support of the Report.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

(1) "certificate" means this entire certificate of approval document, issued in accordance with Section 52 of the *Ontario Water Resources Act*, and includes the schedules to it, if any, and any applications for approval for which certificates of approval have previously been issued, and supporting information to the applications;

(2) "Director" means any Ministry employee appointed as Director pursuant to Section 5 of the *Ontario Water Resources Act*;

(3) "Ministry" means the Ontario Ministry of the Environment;

(4) "Owner" means the Corporation of the Township of Alfred and Plantagenet, and includes its successors and assignees;

(5) "works" means the water works described in this certificate and in the supporting documentation included in the Engineer's Report for Water Works, to the extent approved by this certificate;

(6) "water treatment plant" means the entire water treatment system, including the water intake facilities, and any water storage facilities associated with the water treatment plant;

(7) "water treatment or distribution system" means a system for collecting, producing, treating, storing, supplying or distributing water that includes one or more water works;

(8) "quarter" means the three-month period beginning on January 1, April 1, July 1 and October 1 in each year;

(9) "maximum flow rate" means the maximum rate of water flow for which the plant or process unit was designed;

(10) "contact time" means the detention time T_{10} which is the time for 10% of the water (tracer) to pass through the process unit, storage reservoir or pipe;

(11) "operating authority" means the **Ontario Clean Water Agency**, hired by the Owner to operate the works, and includes any subsequent operating authority hired by the Owner in the future to operate the works.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. PERFORMANCE

1.1 The Owner shall ensure that, subject to Conditions 3.1 through 3.14, the water treatment or distribution system is operated and maintained in such a manner, and with such facilities that water supplied to the consumers serviced by the system satisfies the requirements of the "Ontario Drinking Water Standards", dated January 2001, as amended from time to time.

1.2 The Owner shall ensure that, subject to Conditions 3.1 through 3.14, the water treatment plant is operated to treat water at a rate not exceeding the maximum flow rate of 2,900 m^3/d (total).

(a) The Owner shall have and maintain a valid Permit To Take Water;

(b) The Owner shall submit an application for an amendment to this certificate when the approved maximum flow rates exceed the flow rates specified in the valid Permit To Take Water.

1.3 The Owner shall ensure that the flows into the water treatment plant do not exceed the maximum flow rate(s) set out in Condition 1.2, except:

(a) where necessary to meet an unusual water demand for fighting a large fire, or

(b) where necessary for the purpose of maintenance of the works and essential to its efficient operation,

and provided that the treated water quality satisfies the requirements set out in the Ministry Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", dated January 2001, as amended from time to time.

1.4 The Owner shall ensure that the disinfection facilities in the water treatment plant are operated and maintained in such a manner and with such facilities as is necessary to be in accordance with the Ministry Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", dated January 2001, as amended from time to time.

1.5 The Owner shall ensure that the backwash/wastewater treatment facilities are operated and maintained in such a manner that the annual average concentration of suspended solids in the backwash/wastewater treatment facilities' effluent discharged to the Ottawa River does not exceed 25 mg/L, where "annual average concentration" means the arithmetic mean of all individual concentrations of a contaminant in the effluent sampled or measured, or both, during a calendar year.

2. MONITORING AND RECORDING

2.1 The Owner shall ensure that the following monitoring program is established and carried out:

(a) Install, maintain and operate a sufficient number of flow measuring devices to measure:

(i) the flow rate and daily quantity of water being taken from each source (well or intake and conveyed to and through the water treatment plant, and

(ii) the flow rate of treated water supplied to the distribution system.

(b) Calibrate the flow measuring devices required by clause (a) above at regular intervals not exceeding one year to ensure their accuracy to within plus or minus 5% of actual rate of flow within the range of 10% to 100% of the full scale reading of the measuring devices, or as specified by the instrument manufacturer's instructions.

(c) Record the results of the flow measurements made in accordance with clause (a) above as total daily flow and as daily peak flows.

(d) Record the date, time, duration and cause of each occasion that the flow rate exceeds that specified in Condition 1.2.

(e) Install, maintain and operate continuous water quality analyzers and indicators with alarm systems, calibrated as specified by the instrument manufacturer's instructions or as in "Standard Methods for the Examination of Water and Wastewater" 20th Edition, 1998, or a more recently published edition, to monitor the following parameters at the indicated locations:

(i) free chlorine residual in treated water at the point(s) of entrance to the distribution system (quality control band: $\pm$ 0.05 mg/L at a chlorine concentration of 1.0 mg/L chlorine or a proportionately wider band where the plant stream being monitored routinely contains a higher concentration of chlorine),

(ii) turbidity of filtered water at the point(s) of discharge from each filter (quality control band: $\pm$ 0.1 NTU),

(iii) fluoride concentration in treated water at the point(s) of entrance to the distribution system (quality control band: $\pm$ 0.1 mg/L).

(f) Samples of raw water and treated water shall be collected and analyzed for parameters at the locations and frequencies in accordance with Regulation 459/00, Drinking Water Protection, Schedule 2, Sampling and Analysis Requirements, as amended from time to time.

NOTE: Works which do continuous monitoring of chlorine residual or turbidity may do so instead of taking and analyzing grab samples as may be required by O. Reg. 459/00.

NOTE: Samples of raw water do not need to be analyzed for heterotrophic plate count or

background colonies.

(g) In addition to the sampling and analysis requirements of O. Reg. 459/00, collect and analyze:

(i) samples of raw water quarterly for the following parameter(s):

Organic Nitrogen
Dissolved Organic Carbon
Colour

(ii) samples of the backwash/wastewater treatment facilities' effluent at the point of discharge to the Ottawa River for at least the following parameters at the indicated frequencies:

Parameter	Type of Sample	Frequency
Suspended Solids	Composite*	Monthly

* Composite sample means a sample made up of at least three (3) individual samples collected at equal time intervals over a discharge event, the first sample being taken near the beginning and the last sample being taken near the end of the discharge event.

(h) The sampling required by clauses (f) and (g) above shall be performed in a manner that ensures samples have a composition which is representative of the water stream from which they are taken and also in accordance with the instructions provided by the accredited laboratory engaged to perform the analyses.

2.2 The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring, sampling and analyzing activities required by this certificate.

3. OPERATIONS AND MAINTENANCE

3.1 The Owner, when making decisions within its authority, shall consider the impact of these decisions on the drinking water supply source for water works approved by this Certificate.

3.2 The Owner shall ensure that, subsequent to repairs to the water supply or distribution system, or interruptions in the operation of the water supply resulting in negative pressure conditions in the distribution system, and prior to utilization of the affected parts of the works for the supply of potable water, the affected parts of the water supply or distribution system have been adequately disinfected in accordance with the Ministry Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", dated January 2001, as amended from time to time.

3.3 The Owner shall ensure that there is an operator who holds a valid licence that is applicable to this type of water treatment plant and that is of the same class as or higher class than the class determined for the water treatment plant in accordance with O. Reg. 435/93, as amended from time to time, and who is

responsible for the operation of the water treatment plant.

3.4 The Owner shall exercise due diligence in ensuring that, at all times, the works and the relat equipment and appurtenances used to achieve compliance with this certificate are properly operated a maintained. Proper operation and maintenance shall include effective performance, adequate fundin adequate operator staffing and training, including training in all procedures and other requirements this certificate and the Act and regulations, adequate laboratory facilities, process controls and alarm and the use of process chemicals and other substances that come in contact with water being treated, th are suitable for the process, compatible with each other and appropriate for drinking water.

3.5 In addition to the requirements of Condition 3.4, the Owner shall ensure that all chemicals used in t treatment process and all materials contacting the water meet both the American Water Wor Association (AWWA) quality criteria as set out in AWWA standards and the American National Standards Institute (ANSI) safety criteria as set out in ANSI standard NSF/60 or NSF/61. For a chemicals used in the water treatment process and all materials contacting the water being treated, t Owner shall have evidence of current chemical and material product registration by a testing institution accredited under the Standards Council of Canada Act or by the ANSI or, documents showing t Ministry is satisfied that the information provided by the product manufacturer indicates the chemical material product will meet the criteria of the ANSI standards.

3.6 The Owner shall immediately discontinue use of any chemical upon written notice by the Director.

3.7 The Owner shall establish written procedures for the notification of the Medical Officer of Health an the Ministry required by O. Reg. 459/00, and shall ensure that these procedures are followed.

3.8 The Owner shall ensure that contingency plans and procedures are established and adequate equipme and material are available for dealing with emergencies, upset conditions and equipment breakdowns in the works, and that such plans and procedures are implemented.

3.9 The Owner shall ensure that an operations manual that incorporates, at a minimum, the requirements of this certificate related to the works existing at the time of the issuance of the certificate, and any adopte operation and maintenance recommendations of the Engineer's Report based on which this certificat has been issued, is prepared, and ensure that the operations manual is kept up to date such that an relevant updates to the manual are completed prior to commissioning of any new works c implementation of any operational changes. Upon request, the Owner shall make the manual available for inspection by the Ministry personnel.

3.10 The Owner shall ensure that based on the raw water source characterization and the treatment process, the operations manual includes monitoring and reporting of the necessary raw water and in-proces parameters that are essential for control of the treatment process and for the assessment of th performance of the works. The manual shall also contain procedures that are required for adequate operation and maintenance of the monitoring equipment.

3.11 For all works constructed after December 2001, including all physical changes to any at that time existing works, within one (1) year of substantial completion of the construction of the works/change

the Owner shall ensure that drawings accurately showing the new works/changes as constructed (record drawings) are prepared and kept up-to-date, including timely incorporation of all modifications made to the works throughout its operational life.

3.12 The Owner shall ensure that a Process and Instrumentation Diagram (PID) for the entire water treatment plant is prepared and kept up-to-date, including timely incorporation of all modifications made to the works throughout its operational life.

3.13 The Owner shall keep a complete set of up-to-date record drawings and diagrams required to be prepared by Conditions 3.11 and 3.12, and all existing record drawings which are currently in retention throughout the operational life of the water works, and upon request, shall make them readily available for inspection by Ministry staff.

3.14 The Owner shall ensure that procedures are established and followed for receiving, responding to, and recording complaints about any aspects of the works, including recording the steps that were taken, if any, to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.

4. COMPLIANCE REPORT

4.1 (a) The Owner shall ensure that a written report detailing compliance with all terms and conditions of this approval is completed annually ("Compliance Report").

(b) The first Compliance Report shall cover a period commencing not later than January 18, 2002 to the end of that calendar year and shall be completed and made available not later than March 31 of the following year. Each subsequent Compliance Report shall be completed and made available not later than March 31 following the end of the calendar year to which the Compliance Report applies.

(c) A Compliance Report shall include, at a minimum, the following information:

(i) Under a heading of 'Compliance with Terms and Conditions of the Certificate of Approval', a statement as to compliance with all of the terms and conditions of the certificate and a detailed description of the measures taken to ensure compliance with the certificate, including any supporting data or other information;

(ii) In the event of any non-compliance during the reporting period, and under a heading of 'Non-Compliance with Terms and Conditions of the Certificate of Approval', details of the non-compliance as well as details of how and when any non-compliance was corrected;

(iii) A summary and discussion of the quantity of water supplied during the reporting period compared to the rated capacity specified in this certificate of approval, including monthly average and maximum daily flows;

(iv) A summary of records made under Condition 2.1 related to flow rate exceedances, and a summary of analytical results of sampling required by the certificate, including raw wate and in-process parameters as specified in the operations manual in accordance witl Condition 3.10; and

(v) A summary listing treatment chemicals used, including average dosage rates with specia. reference to any abnormal usages.

(d) The Compliance Report shall be signed by a person designated by the Council of the municipality that owns the works.

(e) Within three months of completion of the Compliance Report, the Owner shall confirm by a resolution of council that the Compliance Report has been presented to council.

(f) The Owner shall ensure that copies of the Compliance Report are available for inspection by any member of the public during normal business hours without charge and at the same location as that required by s.11 of O.Reg. 459/00 for reports under that regulation. Each 4th quarter report required under section 12 of that regulation shall include information about when the Compliance Report is required to be completed, an outline of the requirements for its contents, and the location where the completed report can be inspected.

5. UPGRADING REQUIREMENTS

5.1 Subject to Condition 5.2 below, the Owner shall implement the following physical improvements to the works, in keeping with recommendations of the Engineers' Report and related correspondence:

The following work shall be completed before **July 1, 2003**:

(a) All works and measures necessary to ensure that appropriate free chlorine residual and associated contact time calculated at the plant rated capacity with the unit processes providing contact time at a minimum operating level and under limiting temperature and pH conditions meet requirements of the "Procedure B13-3 Chlorination of Potable Water Supplies in Ontario", including but not limited to:

(i) All works necessary to ensure that the effective chlorine contact time downstream of the filters is sufficient to provide 0.5 log inactivation of giardia cysts and 2 log inactivation of viruses.

(ii) eliminate the discharge of settled backwash water to the low lift pump station or provide adequate treatment to ensure the removal or inactivation of giardia and giardia cysts.

The following work shall be completed before **December 31, 2003**:

(b) All works and measures necessary to ensure the effective treatment and integrity of the works, including but not limited to:

(i) install backflow prevention on the reservoir overflow piping

(ii) provide sampling taps on each filter discharge line

(ii) provide spill containment for all chemical storage systems

(iv) install turbidity meters on each filter effluent line

(v) install filter-to-waste capability for each filter

(vi) install duplicate chlorination chemical feed pumps complete with alarms, controls and automatic switchover

5.2 The Owner shall not construct or allow the construction of any portion of the works necessary to comply with the requirements of Condition 5.1 above for which an approval under the *Ontario Water Resources Act* or the *Environmental Protection Act* is required unless a complete application for approval of such portion of the works, including detailed design drawings, specifications and a design brief containing detailed design calculations, has been submitted to and approved by the Director.

5.3 The Owner shall ensure that a complete application for approval under Section 52 of the *Ontario Water Resources Act*, and if necessary, under Section 9 of the *Environmental Protection Act*, is submitted to the Director for each item listed in Condition 5.1 above for which an approval is required at a date which will allow the Owner to obtain approval for the required physical upgrades to the works, and implement the upgrades on or before the compliance date stipulated in Condition 5.1 above.

6. SUBSEQUENT ENGINEERS' REPORTS

6.1 The Owner shall ensure that not later than **March 31, 2003** a Second Engineer's Report, prepared in accordance with the Ministry publication "Terms of Reference for Second and Subsequent Engineers' Reports for Water Works" current at the time of the preparation of the Report, is submitted to the Director.

6.2 The Owner shall ensure that each subsequent Engineer's Report, required by O. Reg. 459/00 to be submitted to the Director not later than the third anniversary of the submission of the previous report, is prepared in accordance with the Ministry publication "Terms of Reference for Second and Subsequent Engineers' Reports for Water Works" current at the time of the preparation of the Report.

7. REVOCATION OF EXISTING APPROVALS

7.1 The descriptions of the approved works and conditions of approval in this certificate apply in place of all

existing descriptions and conditions in the certificates of approval under the *Ontario Water Resource Act* for water works which are part of the works approved by this certificate.

7.2 Notwithstanding Condition 7.1 above, the original applications for approval, including desig.. calculations, engineering drawings and reports prepared in support of the existing certificate(s) of approval whose descriptions of the approved works and conditions are now replaced pursuant t Condition 7.1 above, shall form part of this certificate.

7.3 Where an existing certificate of approval referred to in Condition 7.1 above applies to works in additio to the works approved by this certificate, it shall continue to apply to those additional works.

8. INFORMATION

8.1 The requirements in this certificate shall not be construed as limiting in any way the ability of th Ministry to request or require the Owner to furnish any information related to compliance with this certificate, as limiting in any way the authority of the Ministry to require certain steps be taken, or a evidence of the fulfillment of the obligation to report or notify of non-compliance where reporting o. notification is required by a statute, regulation, order or other approval.

8.2 In the event the Owner provides the Ministry with information, records, documentation or notification in accordance with this certificate ("Information"),

(a) the receipt of the Information by the Ministry;

(b) the acceptance by the Ministry of the Information's completeness or accuracy; or

(c) the failure of the Ministry to prosecute the Owner or to require the Owner to take any action under this certificate or any statute or regulation in relation to the Information;

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission o the Owner relating to the Information, amounting to non-compliance with the certificate.

9. CHANGE OF OWNERSHIP

9.1 The Owner shall notify the Manager of the local District office of the Ministry in writing of any of the following changes within 30 days of the change occurring:

(a) change of owner or operating authority, or both;

(b) change of address of owner or operating authority or address of new owner or operating authority;

(c) change of partners where the owner or operating authority is or at any time becomes a

partnership, and a copy of the most recent declaration filed under the *Partnerships Registration Act* shall be included in the notification to the Manager of the local District office of the Ministry;

(d) change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current "Initial Notice or Notice of Change" (Form 1, 2 or 3 of O.Reg. 189, R.R.O. 1980, as amended from time to time), filed under the *Corporations Information Act* shall be included in the notification to the Manager of the local District office of the Ministry;

9.2 In the event of any change in ownership of the works, other than change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this certificate, and a copy of such notice shall be forwarded to the Manager of the local District office of the Ministry.

9.3 The Owner shall ensure that all communications made pursuant to Conditions 9.1 and 9.2 will refer to this certificate's number.

10. INTERPRETATION (Severability and Conflicts)

10.1 The requirements of this certificate are severable. If any requirement of this certificate, or the application of any requirement of this certificate to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

10.2 In all matters requiring the interpretation and implementation of this certificate, the conditions of the certificate shall take precedence, followed by the documentation submitted in support of the applications associated with any previously issued certificates of approval for works which are part of the works approved by this certificate.

The reasons for the imposition of these terms and conditions are as follows:

1. Conditions 1.1, and 1.4 are included so that the water quality delivered by the water treatment plant satisfies the current Ontario Drinking Water Standards in order to protect public health and so that the water is aesthetically acceptable.

2. Conditions 1.2 and 1.3 are included so that the flow rate of water through the works is within the approved treatment capacity of the works.

3. Condition 1.5 is imposed to set out the maximum concentration of suspended solids which is allowed in any waste discharge to the receiving water body. This limit is established to minimize the environmental impact to the receiver.

4. Conditions 2.1 and 2.2 related to the flow metering, sampling and monitoring program are imposed so

that all pertinent data are available for the works performance evaluation and so that the works operated and maintained at the level consistent with the design objectives, and is effective in producing water of an acceptable quality at all times.

5. Conditions 3.1 through 3.9 and 3.11 through 3.14 are included so that the works will be operated, maintained, funded, staffed and equipped in a manner enabling compliance with the terms an conditions of this certificate and that the Owner can deal with contingency and/or emergency situations.

6. Condition 3.10 is included so that adequate information is available to allow proper control of th treatment process in order to achieve the desired water quality and efficiency of the treatment process.

7. Condition 4.1 is included so that the Owner will regularly review compliance with the terms an conditions of this certificate, be alerted to its obligations with respect to any non-compliance, and allow the public enhanced participation in monitoring compliance.

8. Condition 5.1 is included to require the Owner to implement improvements to the works necessary for the works to be capable of providing safe drinking water in accordance with Ontario Regulation 459/0 and Ontario Drinking Water Standards in a consistent and reliable manner.

Note: The requirement to implement the improvements to the works identified in Condition 5.1 is based on th minimum treatment requirements applicable to all water supplies using surface waters as a source of raw water, and should it at any time be determined that the waters used as a source of raw water by th works have an increased potential for the presence of parasite cysts, the Owner may be required t provide further improvements to the works.

9. Conditions 5.2 and 5.3 are included so that the Owner is aware that Condition 5.1, which identifies th requirements for improvements to the works, does not constitute an approval for the implementation of the improvements, and before undertaking any of the improvements, the Owner must apply for an obtain Director's approval under Section 52 of the *Ontario Water Resources Act.*

10. Conditions 6.1 and 6.2 are included to set specific dates for the submission of a second and subsequen engineers' reports, which are required by Ontario Regulation 459/00.

11. Conditions 7.1 through 7.3 are included to stipulate that this certificate replaces all previous approval for the works being the subject of this certificate, and that the existing approvals remain in force for th purpose of any works which are not subject to this certificate (e.g., a distribution system or its portions including any in-distribution storage facilities not associated with a water treatment process).

12. Conditions 8.1 and 8.2 are included to emphasize the distinction between the requirements of thi certificate and other legal requirements with which the Owner is required to comply.

13. Conditions 9.1 through 9.3 are included so that the Ministry records are kept accurate and current witl respect to approved works, and so that subsequent owners of the works are made aware of the certificat and continue to operate the works in compliance with it.

14. Conditions 10.1 and 10.2 are included to clarify how the certificate is to be judicially interpreted, and specifically, to clarify that the requirements of the certificate are severable and that they prevail over supporting documentation.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 5025-5D2HRV issued on August 16, 2002.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

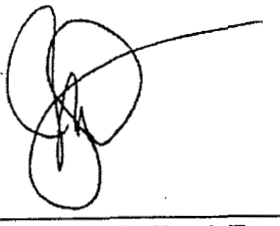
AND

The Director
Section 52, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* **Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted water works are approved under Section 52 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of February, 2003



Mohamed Dhalla, P.Eng.
Director
Section 52, *Ontario Water Resources Act*

EL/

c: District Manager, MOE Kingston
Area Supervisor, MOE Cornwall
Jean Hebert, P. Eng., Stantec Consulting Ltd.
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards Development Branch

APPENDIX B

PERMIT TO TAKE WATER
& ANNUAL RECORD OF WATER TAKING

(AS ATTACHED)

Notice of Terms and Conditions
Section 100, *Ontario Water Resources Act*, R.S.O. 1990, Chapter O.40

Pursuant to Section 34 of the *Ontario Water Resources Act*, R.S.O. 1990, Chapter O.40 permission is hereby granted

TO: Township of Alfred and Plantagenet
205 Old Highway 17
Plantagenet, ON
K0B 1L0

for the taking of water from the Ottawa River located on Lot 30, Concession 1 BF, Township of Alfred and Plantagenet (formerly Alfred Township), County of Prescott and Russell for municipal water supply for the Hamlet of Lefaivre and the Village of Alfred. The rate of taking shall not exceed 2,040 litres per minute, or 2,900,000 litres per day.

Except where modified by this Permit the water taking shall be in accordance with the application dated March 27, 1998, and signed by Mr. Jacques Breen, Ontario Clean Water Agency, as agent on behalf of the Permit Holder.

You are hereby notified that this Permit is issued to you subject to the following Definitions, General Conditions and Special Conditions.

DEFINITIONS

1. (a) "Director" means a Director, Section 34, *Ontario Water Resources Act*, R.S.O. 1990, Chapter O.40.

(b) "District Office" means Kingston District, Eastern Region, Ontario Ministry of the Environment.

(c) "District Manager" means District Manager, Kingston District, Eastern Region, Ontario Ministry of the Environment.

(d) "Ministry" means Ontario Ministry of the Environment.

(e) "Permit" means this entire Permit to Take Water including its schedules, if any, issued in accordance with Section 34 of the *Ontario Water Resources Act*, R.S.O. 1990, Chapter O.40.

(f) "Permit Holder" means Township of Alfred and Plantagenet.

GENERAL CONDITIONS

2. This Permit shall be kept available at the offices of Township of Alfred and Plantagenet, 205 Old Highway 17, Plantagenet, Ontario, with a copy to be kept on-site at the water treatment facility, 2015 Lajoie Street, Lefaivre, for inspection by Ministry staff at all times.

3. The Director may, from time to time, where a situation of interference or anticipated interference with water supplies exists, or in a situation requiring information on water takings for purposes of water resource inventory and planning, give written notice to the Permit Holder to undertake any of the following actions. The Permit Holder shall comply with any such notice:

   (a) To establish and maintain a system for the measurement of the quantities of water taken;
   (b) To operate such a system and to record measurements of the quantities of water taken on forms provided by the Director, with such frequency or for such time periods as the Director may specify;
   (c) To return to the Director records made pursuant to clause 3(b) at such times or with such frequency as the Director may specify; and
   (d) To keep records made pursuant to clause 3(b) available for inspection until such time as they are returned to the Director pursuant to clause 3(c).

4. The Permit Holder shall immediately notify the District Manager of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint.

5. For Surface-Water Takings, the taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that stream flow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. For Ground-Water Takings, if the taking of water is forecast to cause any negative impact, or is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent the forecast negative impact or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of so doing.

7. The Permit Holder shall report to the Director any changes of address or telephone number, or change of ownership of the property for which this Permit is issued and shall report to the Director any changes in the general conditions of water taking from those described in the Permit application within thirty days of any such change. The Permit Holder shall not assign his rights under this Permit to another person without the written consent of the Director.

8. No water may be taken under authority of this permit after the expiry date of this Permit, unless the Permit is renewed, or after the expiry date shown on any subsequent renewal of this permit, unless it is likewise renewed.

9. This Permit does not release the Permit Holder from any legal liability or obligation and remains in force subject to all limitations, requirements, and liabilities imposed by law. This Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

10. The Permit Holder must forthwith, upon presentation of credentials, permit Ministry personnel, or a Ministry authorized representative(s) to carry out any and all inspections authorized by Section 15, 16 or 17 of the *Ontario Water Resources Act*, R.S.O. 1990, Chapter O.40, Section 156, 157 or 158 of the *Environmental Protection Act*, R.S.O. 1990 of Section 19 or 20 of the *Pesticides Act*, R.S.O. 1990.

11. The Director may, at times of drought or water shortage in the locality of the taking, give notice to the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director. The suspension or reduction in the taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect the right to appeal the notice to the Environmental Review Tribunal under the *Ontario Water Resources Act*, R.S.O. 1990, Chapter O.40, Subsection 100(3).

12. The Permit does not abrogate the Permit Holder's responsibility to comply with all applicable legislation, including O.Reg. 285/99, which provides, among other things, that no person shall use water by transferring it out of a water basin (as defined in the Regulation) in a container having a volume greater than 20 litres. The Regulation divides Ontario into three water basins, being the Great Lakes-St. Lawrence, the Nelson and Hudson Bay Basins.

SPECIAL CONDITIONS

13. The Permit Holder shall measure and record the daily amount and duration of each water taking event and shall ensure copies of these records are kept at the offices of the Township of Alfred and Plantagenet, 205 Old Highway 17, Plantagenet, Ontario, with a copy to be kept on-site at the water treatment facility, 2015 Lajoie Street, Lefaivre, until this Ministry requests them to be submitted or states otherwise.

14. No water shall be taken under authority of this Permit after April 27, 2008.

The reason for the imposition of Special Condition 13 is to establish a record of water taking.

The reason for the imposition of Special Condition 14 is to ensure that this Ministry has an opportunity to review the continued availability of water to be taken under authorization by this Permit as it relates to interference with other established uses.

You may, by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the *Ontario Water Resources Act*, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each Term or Condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit number;
6. The date of the Permit;
7. The name of the Director;
8. The municipality within which the taking is located;

And the Notice should be signed and dated by the appellant.

This notice must be served upon:

The Secretary
Environmental Review Tribunal
P.O. Box 2382
2300 Yonge Street, 12th Floor
TORONTO, Ontario
M4P 1E4

AND The Director
Section 34, *Ontario Water Resources Act*
Ministry of the Environment
133 Dalton Avenue, Box 820
KINGSTON, Ontario
K7L 4X6

Dated at Kingston this 25th day of July, 2003.

Clyde Hammond

Director
Section 34, Ontario Water Resources Act
Ministry of the Environment.

NOTICE OF AMENDMENT OF TERMS AND CONDITIONS

In accordance with Section 100 of the *Ontario Water Resources Act*, R.S.O. 1990, notice is hereby given of the amendment of Permit to Take Water No. 90-P-4027 to include an expiry date of April 27, 2008 and to update the Terms and Conditions to the current standard for the following reasons:

> The reason for the amendment of the Permit is to impose an expiry date for the Permit that is in keeping with the Guidelines and Procedures Manual, 1999.

You may, by written notice served upon me and the Environmental Appeal Board and the Environmental Commissioner, *Environmental Bill of Rights* R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Board. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 101 of the *Ontario Water Resources Act*, R.S.O. 1990, as amended provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each Term or Condition in the permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to <u>each</u> portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the taking is located;

And the Notice should be signed and dated by the appellant.

This notice must be served upon both of the following:

The Secretary
Environmental Appeal Board
P.O. Box 2382
2300 Yonge Street, 12th Floor
Toronto, ON M4P 1E4

The Director
Section 34,
Ontario Water Resources Act
Ministry of the Environment
133 Dalton Avenue, Box 820
Kingston, ON K7L 4X6

Dated at Kingston this 25th day of July, 2003.

Lilyle Hammond
Director, Section 34
Ontario Water Resources Act

Ministry Of The Environment
Ministére de l'Environnement

Annual Record Of Water Taking
Relevé annuel des prises d'eau

Personal information contained on this form is collected under the authority of the Ontario Water Resources Act, Section 20. The Purpose of the form is to record details and information about the taking of water annually. Questions should be directed to the Ministry of the Environment's Regional office in your area.

Les renseignements personnes qui figurent dans le présent formulaire sont resueillis en vertu de l'article 20 de la Loi sur les ressources en eau de l'Ontario. La présente sert à consigner aux dossiers les détails et les renseignements concernant la prise d'eau annuelle. Priére d'adresser toute Question au bureau régional du ministére de l'Environnement le Plus proche.

Year(Année): 2003 Permit No.(N° de permis): 90-P-4027

Source: Ottawa River

Name of Permittee: Twp. of Alfred / Plantagenet
Nom du titulaire du permis

Mailing Address: Box 252, 2015 Lajoie St.
Adresse postale

Location Of Taking: *Lieu de la prise d'eau*	Twp. or Municipality: *Canton ou municipalité*	Concession:	Lot:
Alfred - Lefaivre Water Treatment	Alfred / Plantagenet	I	30

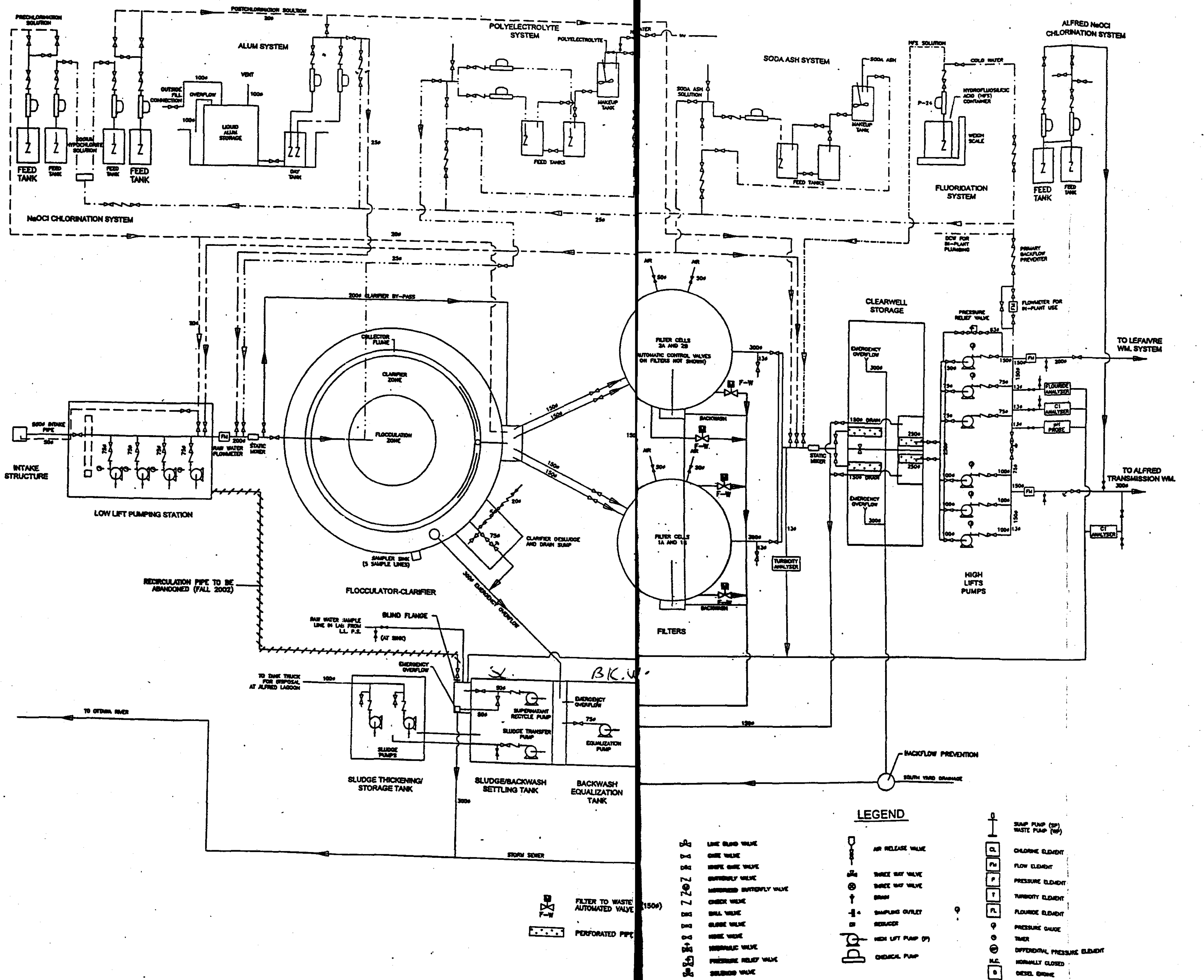
Date Of Taking *Date de la prise d'eau*	Total Hours Of Taking (Hour) *Heure*	Avg. Daily Rate Of Taking (L/sec) *Débit de prise d'eau*	Total Amount Of Taking (m^3) *Volume des prises*	Peak Daily Flow (m^3/day) *Prélèvement maximum journalier*	<—— Max. Daily Rate of Taking (L/sec) *Debit de pointe journalier*	——> (L/min)
JAN	744.00		37,255	1,420	28	1,696
FEB	672.00		36,184	1,854	30	1,804
MAR	744.00		41,701	1,750	30	1,792
APR	720.00		34,466	1,431	28	1,687
MAY	744.00		36,223	1,679	26	1,583
JUN	720.00		44,116	2,849	30	1,794
JUL	744.00		45,339	2,377	33	1,976
AUG	744.00		39,907	1,699	24	1,463
SEP	720.00		41,278	1,956	26	1,548
OCT	744.00		37,385	1,298	26	1,555
NOV	720.00		37,734	1,551	26	1,533
DEC	744.00		41,509	1,677	25	1,513
Total:			473,097			
Criteria:						

I certify that the above information is true, complete and accurate. Signature Date
J'atteste que les renseignements ci-dessus sont vrais, complets et exacts.

APPENDIX C

PROCESS DIAGRAM

(AS ATTACHED)



Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada
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Tel. 613.722.4420
Fax. 613.722.2799
www.stantec.com

Stantec

Consultants

Legend

Notes

		By	Appd.	YY.MM.DD
2	UPGRADING	J.R.		AUG.2002
1	O.REG.459/00	B.W.L.		NOV.2000
Revision		By	Appd.	YY.MM.DD

Issued — By — Appd. — YY.MM.DD

File Name: — Dwn. — Chkd. — Dsgn. — YY.MM.DD

Permit-Seal

Client/Project

TOWNSHIP OF ALFRED-PLANTAGENET

VILLAGE OF LEFAIVRE
WATER TREATMENT PLANT
LEFAIVRE ON Canada

Title

PROCESS DIAGRAM

Project No. 604-00329 — Scale N.T.S.

Drawing No. LEF-PD-1 — Sheet — Revision 0

APPENDIX D

GPS CO-ORDINATES

(AS ATTACHED)

APPENDIX D

GPS COORDINATES

GPS REFERENCING	
ITEM	GLOBAL POSITIONING SYSTEM (GPS) COORDINATES
MAP DATUM:	NAD 83
UTM ZONE:	*18*
WATER *TREATMENT PLANT*	*0508179 N, 5054057 E*
ELEVATED TOWER	*0508884 N, 5044358 E*

APPENDIX E

CALIBRATION RECORDS

(AS ATTACHED)

Project:	Lefaivre WTP					
Source:	raw treated					
Make:	Rosemount		size:	6 inch		
Model:	C1151DP4J22B1C6		Output:	4-20 ma		
Serial:	C00135158		Type:	differential pressure		
Hanson number:	0000167632					
Range:	0-39.685 inch h2O					
Flows Rate max L/s	40					
Before calibration						
inch h2O	0	7.57	18.93	37.87	56.82	75.73
Flow l/s	0	4	10	20	30	40
Output theo madc	4	5.6	8	12	16	20
Output madc	4	8.56	4	13.75	14.2	14.4
% Error f/s	0	18.5	25	10.9375	11.25	35
After calibration						
inch h2O	0	7.57	18.93	37.87	56.82	75.73
Flow l/s	0	4	10	20	30	40
Output theo madc	4	5.6	8	12	16	20
Output madc	4	8.56	4	13.75	14.2	14.4
% Error f/s	0	18.5	25	10.9375	11.25	35
The error factor is:	35 %					
max error fator is:	5 %					
Date:	08/09/2003					
Calibrated by:	Stephane Barbarie					

Ontario Clean Water Agency
1 Yonge Street, Suite 1700
Toronto, ON M5E-1E5
(416)314-5600 Fax (416)314-8300

Equipment Work Order

Report Date	27/10/2003 09:42 AM	**Submitted By**	STEPHANE BARBARIE		Page 1
Work Order #	551950	**Activity**	G7632A	METER FLOW	

Equipment ID	0000167632		**Description**	METER FLOW RAW WATER	
Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	FLOW	FLOWMETER(FLOW MEASURING & REC
Loc Qualifier	ALFRED WATER TREATMENT: TRANSMITTER FLOW RAW WATER BEHIND CLARIFIER				
Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ROSE	ROSEMOUNT ANALYTICAL
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25	
Avg Monthly Usage	720.00		**Total Usage**	0.00	
Model #	IDP4J22B1C6		**Warranty Expires**		**MTBF** 0
Serial #	C00135153		**Purchase Date**		**Purchase Cost** 0.00
Budget #					

Initiated By			**Initiated Date**	23/05/2003	**Scheduled** 01/08/2003 08:00
Assigned To			**Service #**		**Due**

Authorization				
Budget #				
Crew				
Maint Type				
Priority				
Problem				
Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	☐
Source			**Potential Service Request**	☐
Last Activity	G7632A	METER FLOW	**Last Activity Completed**	08/09/2003

Work Order Comments
ANNUAL INSPECTION & CALIBRATION COMPLETED
METER FAILED THE CALIBRATION AND WILL BE REPLACE

Logs

Log Type	Description	Log Date	To	Entered By	Comments
There are no logs for this work order					

Task	G7632A	METER FLOW			
Job Class	**Crew Type**	**Description**	**Std Hrs**	**Pay Type**	**Hrs Worked**
1042		ELECT & INST.MTCE.TECHNICIAN	1.50		

Safety Message	Description
SHOCK	ELECTRICAL HAZARD

Tool	Description	Qty Reqd	Qty Used
DIGMUL	DIGITAL MULTIMETER	1.00	
PREDRU	PRESSURE DRUCK	1.00	
PREGAU	PRESSURE GAUGE	1.00	
SIMULA	PROCESS SIMULATOR	1.00	

Ontario Clean Water Agency
1 Yonge Street, Suite 1700
Toronto, ON M5E-1E5
(416)314-5600 Fax (416)314-8300

Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
ANNUAL	ANNUAL MAINTENANCE	G7632A	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Perform an actual physical high level condition if operationally possible and record the results.(Gauge Pressure) 2) Record all alarm level set points and ensure they are functional.
ANNUAL	ANNUAL MAINTENANCE	G7632A	MAINTENANCE PROCEDURE: 1) Check all electrical connections for corrosion and tightness. 2) Inspect all piping and associated components for leakage and corrosion. 3) Perform a 4 point calibration test at 0- 25-50-100% levels. Calculate and enter theoretical values versus actual output check. Note: Verify and calculate proper suppression where applicable for proper calibration of zero level. 4) Record the as found and as left reading in percent of error on the work order. 5) Calibration records must be kept for a period of five years. 6) Calibration test equipment shall be certified annually and certification dates recorded on the calibration record if applicable. Some test equipment may not require calibration. 7) Record any adjustments, modifications or replacements made to the equipment during the calibration. 8) Verify accuracy of electronic outputs to the end device as required based on theoretical versus actual values .{Chart recorders, SCADA, Outpost 5} 9) Ensure all nameplate data is recorded and entered in WMS.
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments

Started				Completed							
Date	08/09/2003	**Time**	08:00	**By**	00060	**Date**	08/09/2003	**Time**	10:00	**Hours**	2.00

Result	COMPLET	**Condition**	FAIL	**Quantity**		**Unit of Meas**	

Total Usage

Data Group **Sign-off** Stephane Barbarie

Project:	Lefaivre WTP		
Source:	alfred treated		
Make:	Rosemount	size:	6 inch
Model:	C1151DP4J22B1C6	Output:	4-20 ma
Serial:	C00135158	Type:	differential pressure
Hanson number:	0000167564		
Range:	0-39.685 inch h2O		
Flows Rate max L/s	30		

Before calibration

inch h2O	0	0.42	2.48	9.92	22.32	39.69
Flow l/s	0	3	7.5	15	22.5	30
Output theo madc	4	5.6	8	12	16	20
Output madc	4.3	5.67	8.11	12.08	16.12	20.15
% Error f/s	1.875	0.4375	0.6875	0.5	0.75	0.9375

After calibration

inch h2O	0	0.42	2.48	9.92	22.32	39.69
Flow l/s	0	3	7.5	15	22.5	30
Output theo madc	4	5.6	8	12	16	20
Output madc	3.99	5.67	8.11	12.08	16.12	20.05
% Error f/s	0.0625	0.4375	0.6875	0.5	0.75	0.3125

The error factor is: 0.75 %

max error fator is: 5 %

Date: 08/09/2003

Calibrated by: Stephane Barbarie

Ontario Clean Water Agency
1 Yonge Street, Suite 1700
Toronto, ON M5E-1E5
(416)314-5600 Fax (416)314-8300

Equipment Work Order

Report Date 27/10/2003 09:39 AM **Submitted By** STEPHANE BARBARIE

Work Order # 551939 **Activity** G7564A METER FLOW

Equipment ID 0000167564 **Description** METER FLOW TREATED ALFRED

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	FLOW	FLOWMETER(FLOW MEASURING & REC
Loc Qualifier	ALFRED WATER TREATMENT: SOUTH WALL BY THE ALFRED DISTRIBUTION HEADER				

Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ROSE	ROSEMOUNT ANALYTICAL	
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1	
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25		
Avg Monthly Usage	720.00		**Total Usage**	0.00		
Model #	C1151DP4J121M1B3C6		**Warranty Expires**		**MTBF**	0
Serial #	C110673		**Purchase Date**	01/01/1993	**Purchase Cost**	0.00
Budget #						

Initiated By		**Initiated Date**	23/05/2003	**Scheduled**	01/07/2003 08:00
Assigned To		**Service #**		**Due**	

Authorization				
Budget #				
Crew				
Maint Type				
Priority				
Problem				
Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	☐
Source			**Potential Service Request**	☐
Last Activity	G7564A	METER FLOW	**Last Activity Completed**	08/09/2003

Work Order Comments
ANNNUAL INSPECTION & CALIBRATION COMPLETED

Logs

Log Type	Description	Log Date	To	Entered By	Comments

There are no logs for this work order

Task G7564A METER FLOW

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
1042		ELECT & INST.MTCE.TECHNICIAN	1.50		

Safety Message	Description
SHOCK	ELECTRICAL HAZARD

Tool	Description	Qty Reqd	Qty Used
DIGMUL	DIGITAL MULTIMETER	1.00	
PREDRU	PRESSURE DRUCK	1.00	
PREGAU	PRESSURE GAUGE	1.00	
SIMULA	PROCESS SIMULATOR	1.00	

Ontario Clean Water Agency
1 Yonge Street, Suite 1700
Toronto, ON M5E-1E5
(416)314-5600 Fax (416)314-8300

Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
ANNUAL	ANNUAL MAINTENANCE	G7564A	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Perform an actual physical high level condition if operationally possible and record the results.(Gauge Pressure) 2) Record all alarm level set points and ensure they are functional
ANNUAL	ANNUAL MAINTENANCE	G7564A	MAINTENANCE PROCEDURE: 1) Check all electrical connections for corrosion and tightness. 2) Inspect all piping and associated components for leakage and corrosion. 3) Perform a 4 point calibration test at 0- 25-50-100% levels. Calculate and enter theoretical values versus actual output check. Note: Verify and calculate proper suppression where applicable for proper calibration of zero level. 4) Record the as found and as left reading in percent of error on the work order. 5) Calibration records must be kept for a period of five years. 6) Calibration test equipment shall be certified annually and certification dates recorded on the calibration record if applicable. Some test equipment may not require calibration. 7) Record any adjustments, modifications or replacements made to the equipment during the calibration. 8) Verify accuracy of electronic outputs to the end device as required based on theoretical versus actual values .{Chart recorders, SCADA, Outpost 5} 9) Ensure all nameplate data is recorded and entered in WMS.
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments

Started				Completed							
Date	08/09/2003	**Time**	10:00	**By**	00060	**Date**	08/09/2003	**Time**	12:00	**Hours**	2.00

Result	COMPLET	**Condition**	A	**Quantity**		**Unit of Meas**	

Total Usage

Data Group **Sign-off** Stephane Barbarie

Ontario Clean Water Agency
1 Yonge Street, Suite 1700
Toronto, ON M5E-1E5
(416)314-5600 Fax (416)314-8300

Equipment Work Order

Report Date	27/10/2003 09:35 AM	**Submitted By**	STEPHANE BARBARIE		Page 1
Work Order #	551942	**Activity**	G7567A	METER FLOW	

Equipment ID	0000167567		**Description**	METER FLOW TREATED LEFAIVRE	
Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	FLOW	FLOWMETER(FLOW MEASURING & REC
Loc Qualifier	ALFRED WATER TREATMENT: ON THE LEFAIVE DISTRIBUTION LINE BY THE CO2 TANKS				
Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ABB	ABB KENT INC.
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25	
Avg Monthly Usage	720.00		**Total Usage**	0.00	
Model #	1S1341101001EH130121		**Warranty Expires**		**MTBF** 0
Serial #	V/82704/1/1		**Purchase Date**		**Purchase Cost** 0.00
Budget #					

Initiated By			**Initiated Date**	23/05/2003	**Scheduled** 01/07/2003 08:00
Assigned To			**Service #**		**Due**

Authorization				
Budget #				
Crew				
Maint Type				
Priority				
Problem				
Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	☑
Source			**Potential Service Request**	☐
Last Activity	G7567A	METER FLOW	**Last Activity Completed**	08/09/2003

Work Order Comments
GONE TO METCON FOR REPAIR AND CALIBRATION

Logs

Log Type	Description	Log Date	To	Entered By	Comments

There are no logs for this work order

Task G7567A METER FLOW

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
1042		ELECT & INST.MTCE.TECHNICIAN	2.00		

Safety Message	Description
SHOCK	ELECTRICAL HAZARD

Tool	Description	Qty Reqd	Qty Used
DIGMUL	DIGITAL MULTIMETER	1.00	
SIMULA	PROCESS SIMULATOR	1.00	

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Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
ANNUAL	ANNUAL MAINTENANCE	G7567A	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Verify calibration parameters and programming parameters where applicable. 2) Ensure proper connections and grounding. 3) Check display for any alarm or error codes.
ANNUAL	ANNUAL MAINTENANCE	G7567A	MAINTENANCE PROCEDURE: 1) Have a qualified technician calibrate the unit, using actual flow method or flow simulator. 2) Calibration records must be kept for a period of five years. 3) Records shall include the level of accuracy of the equipment as found and as left. 4) Calibration test equipment shall be certified annually and certification dates recorded on the calibration record. Some test equipment may not require calibration 5) Record any adjustments, modifications or replacements made to the equipment during the calibration. 6) Verify accuracy of electronic outputs to the end device as required based on theoretical versus actual values .(Chart recorders, SCADA, Outpost 5) 7) Ensure all nameplate data is recorded and entered in WMS.
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments

Started				Completed					
Date	08/09/2003	**Time**	08:00	**By**	00060	**Date**	08/09/2003	**Time**	08:00	**Hours**

Result	INCOMPL	**Condition**	D	**Quantity**	**Unit of Meas**

Total Usage

Data Group **Sign-off** Stephane Barbarie

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Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Work Order # 698096 **Activity** H8050M ANALYZER TURBIDITY

Equipment ID 0000178050 **Description** ANALYZER TURBIDITY 01

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	LABO	LABORATORY
Loc Qualifier	LEFAIVRE WATER TREATMENT: ANALYZER TURBIDITY				
Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ABB	ABB KENT INC.
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25	
Avg Monthly Usage	720.00		**Total Usage**	0.00	
Model #	4600		**Warranty Expires**		**MTBF** 0
Serial #	P/14509/1/16		**Purchase Date**		**Purchase Cost** 0.00
Budget #					

Initiated By **Initiated Date** 15/01/2004 **Scheduled** 01/01/2004 08:00
Assigned To **Service #** **Due**

Authorization
Budget #
Crew
Maint Type
Priority
Problem
Project 6057 ALFRED LEFAIVRE WTPDS **Out of Service** ☐
Source **Potential Service Request** ☐
Last Activity H8050M ANALYZER TURBIDITY **Last Activity Completed** 01/12/2003

Logs

Log Type	Description	Log Date	To	Entered By	Comments

There are no logs for this work order

Task H8050M ANALYZER TURBIDITY

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
1109		OPERATOR/MECHANIC	1.00	Reg	0.5

Tool	Description	Qty Req'd	Qty Used
DRYSTD	DRY STANDARD MODULE	1.00	

Safety Procedures

Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	H8050M	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and

Safety Procedures Message	Description	Activity	Comments
			correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Check for leaks from the sample piping and drain lines. 2) Check display for alarm conditions or fault messages. 3) Ensure adequate sample flow rate (0.5 to 6.0 l/min) 4) Perform verification check and document. a) Record ID# (TMID) and last calibration data (TMCD) on the work order for the Dry Standard unit used to perform the verification check.Verify standard has been calibrated within the last 12 months. Note: Factory re-certification of the Dry Standard is recommended every 12 months. Note: The storage container includes a silica gel dryer. Replace this dryer annually. MAINTENANCE PROCEDURE: Verification Check Note: Always store the Dry Calibration Standard in the container provided, and keep in a dry place. Note: Avoid touching the light reflecting parts of the standard.
MONTH	MONTHLY PREVENTATIVE MTCE	H8050M	9) Ensure all remote display, chart recorders, or SCADA systems display the correct and accurate data. ****Follow calibration procedure if verification check is out of spec. (±2% FSD)**** a)Press advance to next page button once screen will read Sensor Cal b) Press advance to next parameter button once - screen will read Cal User Code. If a calibration code has been required enter it here using the up or down arrow buttons. and then continue onto step (c). If a code has not been required continue on to step (c). c)Press advance to next parameter button twice screen will read either Dry Cal. Std. or Formazine Std. d)User requires Dry Cal. Std. chosen - to do this press the down arrow key once until Dry Cal. Std. Appears. e)Press advance to next parameter button once screen will read Zero Calibration. User must now take black cube (dry standard) and with zero on the label facing user , place cube into column where the wiper unit was. f)Press advance to next parameter button once screen will read Calibrating Zero. User must now wait 1-3 minutes until screen reads Use Dry Standard - and a number will be above it. This number must now be changed by the user to read the same as what it says on the cube directly across from zero. g)Press the up or down arrow buttons until the desired number is reached. The user must now spin the cube 180 degrees so that the NTU value is facing the user. Now place the cube back into the column where the wiper unit was.
MONTH	MONTHLY PREVENTATIVE MTCE	H8050M	Note. If the sample was cold, condensation could form on the windows. It may be necessary, therefore, to leave the sensor open for a short while to allow the windows to reach ambient temperature before attempting calibration. 1)Shut off sample water using the isolating valve installed upstream of the sensing unit. 2) Drain the unit by closing the inlet and opening the drain valve. Carefully remove the wiper unit to aid complete drainage of the system. When the system is empty, close the outlet valve. 3) Thoroughly dry the inner chamber using clean tissue and wipe clean the emitter and receiver lenses. Ensure that no greasy marks are left on the lenses and that the lenses are dry. 4) Insert the Dry Calibration Standard with the zero on the label facing the receiver. 5) Rotate the Dry Calibration Standard so that the turbidity value on the label is facing the receiver. Note:. If readings are out of spec. (±2% FSD), then repeat procedure from (3) If reading is still out of spec., calibrate the sensor.

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Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
			6) Take out the Dry Calibration Standard; dry/clean off any moisture before storing the Standard in the supplied storage container. 7) Fit the Sensor Unit top cap (7997 202) and screw it down firmly, or fit the wiper unit (7997 200 and 201). 8) Open the inlet valve. Ensure flow through the sensor.
MONTH	MONTHLY PREVENTATIVE MTCE	H8050M	h)Press advance to next parameter button once screen will read Calibrating Span. User must now wait 1-3 minutes until screen reads either Cal Complete or Cal Fail. i)If screen reads Cal Complete press advance to next page button 6 times until screen reads Turbidity on the bottom and then a value above it. User must now take cube out of wiper chamber and replace with wiper. User may now turn flow to unit back on and meter will be back on line . j) If screen reads Cal Fail press advance to next page button 7 times until Sensor Cal reappears and go through steps (a-f) again.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments	Calibration with cal. cube 0.91 NTU Reading before calibration → 0,99 NTU After calibration → 0.91 NTU

Started				Completed							
Date	29-01-04	Time	0800	By	00106	Date	29-01-04	Time	0830	Hours	0.5

Result	Complete	Condition		Quantity		Unit of Meas	

Total Usage	

Data Group		Sign-off	

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Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Work Order # 698099 **Activity** H8052M ANALYZER TURBIDITY

Equipment ID 0000178052 **Description** ANALYZER TURBIDITY 01

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	LABO	LABORATORY
Loc Qualifier	LEFAIVRE WATER TREATMENT: ANALYZER TURBIDITY				
Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ABB	ABB KENT INC.
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25	
Avg Monthly Usage	720.00		**Total Usage**	0.00	
Model #	4600		**Warranty Expires**		**MTBF** 0
Serial #	P/14509/1/4		**Purchase Date**		**Purchase Cost** 0.00
Budget #					

Initiated By **Initiated Date** 15/01/2004 **Scheduled** 01/01/2004 08:00
Assigned To **Service #** **Due**

Authorization
Budget #
Crew
Maint Type
Priority
Problem
Project 6057 ALFRED LEFAIVRE WTPDS **Out of Service** ☐
Source **Potential Service Request** ☐
Last Activity H8052M ANALYZER TURBIDITY **Last Activity Completed** 23/12/2003

Logs

Log Type	Description	Log Date	To	Entered By	Comments
There are no logs for this work order					

Task H8052M ANALYZER TURBIDITY

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
1109		OPERATOR/MECHANIC	1.00	Reg.	0.5

Tool	Description	Qty Reqd	Qty Used
DRYSTD	DRY STANDARD MODULE	1.00	

Safety Procedures

Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	H8052M	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and

Safety Procedures Message	Description	Activity	Comments
			correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Check for leaks from the sample piping and drain lines. 2) Check display for alarm conditions or fault messages. 3) Ensure adequate sample flow rate (0.5 to 6.0 l/min) 4) Perform verification check and document. a) Record ID# (TMID) and last calibration data (TMCD) on the work order for the Dry Standard unit used to perform the verification check.Verify standard has been calibrated within the last 12 months. Note: Factory re-certification of the Dry Standard is recommended every 12 months. Note: The storage container includes a silica gel dryer. Replace this dryer annually. MAINTENANCE PROCEDURE: Verification Check Note: Always store the Dry Calibration Standard in the container provided, and keep in a dry place. Note: Avoid touching the light reflecting parts of the standard.
MONTH	MONTHLY PREVENTATIVE MTCE	H8052M	9) Ensure all remote display, chart recorders, or SCADA systems display the correct and accurate data. ****Follow calibration procedure if verification check is out of spec. (±2% FSD)**** a)Press advance to next page button once screen will read Sensor Cal b) Press advance to next parameter button once - screen will read Cal User Code. If a calibration code has been required enter it here using the up or down arrow buttons. and then continue onto step (c). If a code has not been required continue on to step (c). c)Press advance to next parameter button twice screen will read either Dry Cal. Std. or Formazine Std. d)User requires Dry Cal. Std. chosen - to do this press the down arrow key once until Dry Cal. Std. Appears. e)Press advance to next parameter button once screen will read Zero Calibration. User must now take black cube (dry standard) and with zero on the label facing user , place cube into column where the wiper unit was. f)Press advance to next parameter button once screen will read Calibrating Zero. User must now wait 1-3 minutes until screen reads Use Dry Standard - and a number will be above it. This number must now be changed by the user to read the same as what it says on the cube directly across from zero. g)Press the up or down arrow buttons until the desired number is reached. The user must now spin the cube 180 degrees so that the NTU value is facing the user. Now place the cube back into the column where the wiper unit was.
MONTH	MONTHLY PREVENTATIVE MTCE	H8052M	Note. If the sample was cold, condensation could form on the windows. It may be necessary, therefore, to leave the sensor open for a short while to allow the windows to reach ambient temperature before attempting calibration. 1)Shut off sample water using the isolating valve installed upstream of the sensing unit. 2) Drain the unit by closing the inlet and opening the drain valve. Carefully remove the wiper unit to aid complete drainage of the system. When the system is empty, close the outlet valve. 3) Thoroughly dry the inner chamber using clean tissue and wipe clean the emitter and receiver lenses. Ensure that no greasy marks are left on the lenses and that the lenses are dry. 4) Insert the Dry Calibration Standard with the zero on the label facing the receiver. 5) Rotate the Dry Calibration Standard so that the turbidity value on the label is facing the receiver. Note:. If readings are out of spec. (±2% FSD), then repeat procedure from (3) If reading is still out of spec., calibrate the sensor.

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Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
			6) Take out the Dry Calibration Standard; dry/clean off any moisture before storing the Standard in the supplied storage container. 7) Fit the Sensor Unit top cap (7997 202) and screw it down firmly, or fit the wiper unit (7997 200 and 201). 8) Open the inlet valve. Ensure flow through the sensor.
MONTH	MONTHLY PREVENTATIVE MTCE	H8052M	h)Press advance to next parameter button once screen will read Calibrating Span. User must now wait 1-3 minutes until screen reads either Cal Complete or Cal Fail. i)If screen reads Cal Complete press advance to next page button 6 times until screen reads Turbidity on the bottom and then a value above it. User must now take cube out of wiper chamber and replace with wiper. User may now turn flow to unit back on and meter will be back on line . j) If screen reads Cal Fail press advance to next page button 7 times until Sensor Cal reappears and go through steps (a-f) again.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments Calibration with cal. cube 0.91 NTU STANDARD
Reading before cal. 0.46 NTU
After cal. 0.91 NTU

Started				Completed					
Date	29-01-04	Time	0830	By	00106	Date	29-01-04	Time	0900	Hours	0.5

Result	Condition	Quantity	Unit of Meas
Complete			

Total Usage

Data Group **Sign-off**

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Toronto, ON M5E-1E5
(416)314-5600 Fax (416)314-8300

Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Work Order # 698088 **Activity** H8022M ANALYZER TURBIDITY

Equipment ID 0000178022 **Description** ANALYZER TURBIDITY 02

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	LABO	LABORATORY
Loc Qualifier	ALFRED WATER TREATMENT: ANALYZER TURBIDITY FILTER#1				

Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ABB	ABB KENT INC.	
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1	
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25		
Avg Monthly Usage	720.00		**Total Usage**	0.00		
Model #	4670/500AM		**Warranty Expires**		**MTBF**	0
Serial #	L/51450/6/2		**Purchase Date**		**Purchase Cost**	0.00
Budget #						

Initiated By		**Initiated Date**	15/01/2004	**Scheduled**	01/01/2004 08:00
Assigned To		**Service #**		**Due**	

Authorization					
Budget #					
Crew					
Maint Type					
Priority					
Problem					
Project	6057	ALFRED LEFAIVRE WTPDS		**Out of Service**	☐
Source				**Potential Service Request**	☐
Last Activity	H8022M	ANALYZER TURBIDITY		**Last Activity Completed**	15/12/2003

Logs

Log Type	Description	Log Date	To	Entered By	Comments
There are no logs for this work order					

Task H8022M ANALYZER TURBIDITY

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
1109		OPERATOR/MECHANIC	1.00	Reg	0.5

Tool	Description	Qty Reqd	Qty Used
DRYSTD	DRY STANDARD MODULE	1.00	

Safety Procedures

Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	H8022M	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and

Safety Procedures Message	Description	Activity	Comments
			maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Check for leaks from the sample piping and drain lines. 2) Check display for alarm conditions or fault messages. 3) Ensure adequate sample flow rate (0.5 to 6.0 l/min) 4) Perform verification check and document. a) Record ID# (TMID) and last calibration data (TMCD) on the work order for the Dry Standard unit used to perform the verification check.Verify standard has been calibrated within the last 12 months. Note: Factory re-certification of the Dry Standard is recommended every 12 months. Note: The storage container includes a silica gel dryer. Replace this dryer annually. MAINTENANCE PROCEDURE: Verification Check Note: Always store the Dry Calibration Standard in the container provided, and keep in a dry place. Note: Avoid touching the light reflecting parts of the standard.
MONTH	MONTHLY PREVENTATIVE MTCE	H8022M	9) Ensure all remote display, chart recorders, or SCADA systems display the correct and accurate data. ****Follow calibration procedure if verification check is out of spec. (±2% FSD)**** a)Press advance to next page button once screen will read Sensor Cal b) Press advance to next parameter button once - screen will read Cal User Code. If a calibration code has been required enter it here using the up or down arrow buttons. and then continue onto step (c). If a code has not been required continue on to step (c). c)Press advance to next parameter button twice screen will read either Dry Cal. Std. or Formazine Std. d)User requires Dry Cal. Std. chosen - to do this press the down arrow key once until Dry Cal. Std. Appears. e)Press advance to next parameter button once screen will read Zero Calibration. User must now take black cube (dry standard) and with zero on the label facing user , place cube into column where the wiper unit was. f)Press advance to next parameter button once screen will read Calibrating Zero. User must now wait 1-3 minutes until screen reads Use Dry Standard - and a number will be above it. This number must now be changed by the user to read the same as what it says on the cube directly across from zero. g)Press the up or down arrow buttons until the desired number is reached. The user must now spin the cube 180 degrees so that the NTU value is facing the user. Now place the cube back into the column where the wiper unit was.
MONTH	MONTHLY PREVENTATIVE MTCE	H8022M	Note. If the sample was cold, condensation could form on the windows. It may be necessary, therefore, to leave the sensor open for a short while to allow the windows to reach ambient temperature before attempting calibration. 1)Shut off sample water using the isolating valve installed upstream of the sensing unit. 2) Drain the unit by closing the inlet and opening the drain valve. Carefully remove the wiper unit to aid complete drainage of the system. When the system is empty. close the outlet valve. 3) Thoroughly dry the inner chamber using clean tissue and wipe clean the emitter and receiver lenses. Ensure that no greasy marks are left on the lenses and that the lenses are dry. 4) Insert the Dry Calibration Standard with the zero on the label facing the receiver. 5) Rotate the Dry Calibration Standard so that the turbidity value on the label is facing the receiver. Note:. If readings are out of spec. (±2% FSD), then repeat procedure from (3) If reading is still out of spec., calibrate the sensor.

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Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
			6) Take out the Dry Calibration Standard; dry/clean off any moisture before storing the Standard in the supplied storage container. 7) Fit the Sensor Unit top cap (7997 202) and screw it down firmly, or fit the wiper unit (7997 200 and 201). 8) Open the inlet valve. Ensure flow through the sensor.
MONTH	MONTHLY PREVENTATIVE MTCE	H8022M	h)Press advance to next parameter button once screen will read Calibrating Span. User must now wait 1-3 minutes until screen reads either Cal Complete or Cal Fail. i)If screen reads Cal Complete press advance to next page button 6 times until screen reads Turbidity on the bottom and then a value above it. User must now take cube out of wiper chamber and replace with wiper. User may now turn flow to unit back on and meter will be back on line . j) If screen reads Cal Fail press advance to next page button 7 times until Sensor Cal reappears and go through steps (a-f) again.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments	Calibration with cal. cube 0.91 NTU Standard. Readings before cal. 0,99 NTU After cal. 0.91 NTU

Started				Completed							
Date	29-01-04	Time	0900	By	00106	Date	29-01-04	Time	0930	Hours	0.5

Result	Complete	Condition		Quantity		Unit of Meas	

Total Usage	

Data Group		Sign-off	

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H

Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Work Order # 698091 **Activity** H8023M ANALYZER TURBIDITY

Equipment ID 0000178023 **Description** ANALYZER TURBIDITY 02

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	LABO	LABORATORY
Loc Qualifier	ALFRED WATER TREATMENT: ANALYZER TURBIDITY FILTER#2				

Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	ABB	ABB KENT INC.	
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1	
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25		
Avg Monthly Usage	720.00		**Total Usage**	0.00		
Model #	4670/500AM		**Warranty Expires**		**MTBF**	0
Serial #	L/51450/6/1		**Purchase Date**		**Purchase Cost**	0.00
Budget #						

Initiated By		**Initiated Date**	15/01/2004	**Scheduled**	01/01/2004 08:00
Assigned To		**Service #**		**Due**	

Authorization				
Budget #				
Crew				
Maint Type				
Priority				
Problem				
Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	
Source			**Potential Service Request**	
Last Activity	H8023M	ANALYZER TURBIDITY	**Last Activity Completed**	15/12/2003

Logs

Log Type	Description	Log Date	To	Entered By	Comments

There are no logs for this work order

Task H8023M ANALYZER TURBIDITY

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
1109		OPERATOR/MECHANIC	1.00	Reg	0.5

Tool	Description	Qty Reqd	Qty Used
DRYSTD	DRY STANDARD MODULE	1.00	

Safety Procedures

Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	H8023M	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and

Safety Procedures Message	Description	Activity	Comments
			maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Check for leaks from the sample piping and drain lines. 2) Check display for alarm conditions or fault messages. 3) Ensure adequate sample flow rate (0.5 to 6.0 l/min) 4) Perform verification check and document. a) Record ID# (TMID) and last calibration data (TMCD) on the work order for the Dry Standard unit used to perform the verification check.Verify standard has been calibrated within the last 12 months. Note: Factory re-certification of the Dry Standard is recommended every 12 months. Note: The storage container includes a silica gel dryer. Replace this dryer annually. MAINTENANCE PROCEDURE: Verification Check Note: Always store the Dry Calibration Standard in the container provided, and keep in a dry place. Note: Avoid touching the light reflecting parts of the standard.
MONTH	MONTHLY PREVENTATIVE MTCE	H8023M	9) Ensure all remote display, chart recorders, or SCADA systems display the correct and accurate data. ****Follow calibration procedure if verification check is out of spec. (±2% FSD)**** a)Press advance to next page button once screen will read Sensor Cal b) Press advance to next parameter button once - screen will read Cal User Code. If a calibration code has been required enter it here using the up or down arrow buttons. and then continue onto step (c). If a code has not been required continue on to step (c). c)Press advance to next parameter button twice screen will read either Dry Cal. Std. or Formazine Std. d)User requires Dry Cal. Std. chosen - to do this press the down arrow key once until Dry Cal. Std. Appears. e)Press advance to next parameter button once screen will read Zero Calibration. User must now take black cube (dry standard) and with zero on the label facing user , place cube into column where the wiper unit was. f)Press advance to next parameter button once screen will read Calibrating Zero. User must now wait 1-3 minutes until screen reads Use Dry Standard - and a number will be above it. This number must now be changed by the user to read the same as what it says on the cube directly across from zero. g)Press the up or down arrow buttons until the desired number is reached. The user must now spin the cube 180 degrees so that the NTU value is facing the user. Now place the cube back into the column where the wiper unit was.
MONTH	MONTHLY PREVENTATIVE MTCE	H8023M	Note. If the sample was cold, condensation could form on the windows. It may be necessary, therefore, to leave the sensor open for a short while to allow the windows to reach ambient temperature before attempting calibration. 1)Shut off sample water using the isolating valve installed upstream of the sensing unit. 2) Drain the unit by closing the inlet and opening the drain valve. Carefully remove the wiper unit to aid complete drainage of the system. When the system is empty, close the outlet valve. 3) Thoroughly dry the inner chamber using clean tissue and wipe clean the emitter and receiver lenses. Ensure that no greasy marks are left on the lenses and that the lenses are dry. 4) Insert the Dry Calibration Standard with the zero on the label facing the receiver. 5) Rotate the Dry Calibration Standard so that the turbidity value on the label is facing the receiver. Note:. If readings are out of spec. (±2% FSD), then repeat procedure from (3) If reading is still out of spec., calibrate the sensor.

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Safety Procedures Message	Description	Activity	Comments
			6) Take out the Dry Calibration Standard; dry/clean off any moisture before storing the Standard in the supplied storage container. 7) Fit the Sensor Unit top cap (7997 202) and screw it down firmly, or fit the wiper unit (7997 200 and 201). 8) Open the inlet valve. Ensure flow through the sensor.
MONTH	MONTHLY PREVENTATIVE MTCE	H8023M	h)Press advance to next parameter button once screen will read Calibrating Span. User must now wait 1-3 minutes until screen reads either Cal Complete or Cal Fail. i)If screen reads Cal Complete press advance to next page button 6 times until screen reads Turbidity on the bottom and then a value above it. User must now take cube out of wiper chamber and replace with wiper. User may now turn flow to unit back on and meter will be back on line . j) If screen reads Cal Fail press advance to next page button 7 times until Sensor Cal reappears and go through steps (a-f) again.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments	Calibration with cal. cube 0.91 NTU STANDARD Reading before cal. 0.95 NTU After cal. 0.91 NTU

Started				**Completed**					
Date	29-01-04	**Time**	0930	**By**	00106	**Date**	29-01-04	**Time**	1000	**Hours**	0.5

Result	Complete	**Condition**		**Quantity**		**Unit of Meas**	

Total Usage	

Data Group		**Sign-off**	

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H

Equipment Work Order

Report Date	15/01/2004 02:32 PM	**Submitted By**	Page 1

Work Order #	698074	**Activity**	G7562M ANALYZER CHLORINE

Equipment ID	0000167562	**Description**	ANALYZER CHLORINE 02 ALFRED

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	CHEM	CHEMICAL PROCESS
Loc Qualifier	ALFRED WATER TREATMENT: SOUTH WALL BESIDE CO2 TANKS				

Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	CAPITC	CAPITAL CONTROLS	
Building	CHEM	CHEMICAL BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1	
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25		
Avg Monthly Usage	720.00		**Total Usage**	0.00		
Model #	1870/1870E		**Warranty Expires**		**MTBF**	0
Serial #	934111-1		**Purchase Date**	01/08/1990	**Purchase Cost**	0.00

Budget #
Asset Comments
HAS A BODINE REACTOR MOTOR MODEL KCL-23A2

Initiated By		**Initiated Date**	15/01/2004	**Scheduled**	01/01/2004 08:00
Assigned To		**Service #**		**Due**	

Authorization
Budget #
Crew
Maint Type
Priority
Problem

Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	☐
Source			**Potential Service Request**	☐
Last Activity	WEEKPM	PERFORM WEEKLY CHECKLIST	**Last Activity Completed**	15/12/2003

ActDefn Comments
CAPITAL CONTROL MANUAL.

Logs

Log Type	Description	Log Date	To	Entered By	Comments
There are no logs for this work order					

Task	G7562M	ANALYZER CHLORINE			
Job Class	**Crew Type**	**Description**	**Std Hrs**	**Pay Type**	**Hrs Worked**
OP		OPERATOR	0.50	Reg	0.5
Part #	**Description**			**Qty Reqd**	**Qty Used**
CLEANING MATERIAL	CLEANING MATERIALS			1.00	
	Stock Area		**Stock Loc**		

Safety Message	Description
CHEMHA	CHEMICAL HAZARD

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Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Safety Procedures Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	G7562M	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Check calibration using DPD or a titration. MAINTENANCE PROCEDURE: 1) Clean overflow weir, screen, and body. 2) Remove flush plug and allow any sediment to clear. 3) Replenish buffer if used. 4) Perform a zero and span calibration. Zero: Run unchlorinated sample water through the analyzer until the reading stabilizes. Adjust the zero screen to read zero. Span: Adjust analyzer to the value of the sample using the span screw. Note: If the fine adjustment will not adjust to the proper values refer to page 31 and 32 of the instruction manual, coarse zero and coarse span.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments

Started			Completed					
Date 29-01-04	Time 1020	By 00106	Date 29-01-04	Time 1100	Hours 0.5			

Result	Condition	Quantity	Unit of Meas
Complete			

Total Usage

Data Group **Sign-off**

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Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Work Order # 698071 **Activity** G7561M ANALYZER CHLORINE

Equipment ID	0000167561		**Description**	ANALYZER CHLORINE 01 LEFAIVRE	
Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	CHEM	CHEMICAL PROCESS
Loc Qualifier	ALFRED WATER TREATMENT: SOUTH WALL BESIDE CO2 TANKS				
Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	CAPITC	CAPITAL CONTROLS
Building	CHEM	CHEMICAL BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25	
Avg Monthly Usage	720.00		**Total Usage**	0.00	
Model #	1870/1870E1		**Warranty Expires**		**MTBF** 0
Serial #	934111-2		**Purchase Date**	01/08/1990	**Purchase Cost** 0.00

Budget #
Asset Comments
HAS A BODINE REACTOR MOTOR MODEL KC1-23A2

Initiated By			**Initiated Date**	15/01/2004	**Scheduled** 01/01/2004 08:00
Assigned To			**Service #**		**Due**

Authorization
Budget #
Crew
Maint Type
Priority
Problem

Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	☐
Source			**Potential Service Request**	☐
Last Activity	WEEKPM	PERFORM WEEKLY CHECKLIST	**Last Activity Completed**	15/12/2003

Logs

Log Type	Description	Log Date	To	Entered By	Comments

There are no logs for this work order

Task G7561M ANALYZER CHLORINE

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
OP		OPERATOR	0.50	Reg	0.5

Safety Message	Description
CHEMHA	CHEMICAL HAZARD

Safety Procedures

Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	G7561M	INTRODUCTION:

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Equipment Work Order

Safety Procedures Message	Description	Activity	Comments
			This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Check calibration using DPD or a tritration. MAINTENANCE PROCEDURE: 1) Clean overflow weir, screen, and body. 2) Remove flush plug and allow any sediment to clear. 3) Replenish buffer if used. 4) Perform a zero and span calibration. Zero: Run unchlorinated sample water through the analyzer until the reading stabilizes. Adjust the zero screen to read zero. Span: Adjust analyzer to the value of the sample using the span screw. Note: If the fine adjustment will not adjust to the proper values refer to page 31 and 32 of the instruction manual, coarse zero and coarse span.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments	

Started				Completed							
Date	29-01-04	Time	1000	By	00106	Date	29-01-04	Time	1030	Hours	0.5

Result	Complete	Condition		Quantity		Unit of Meas	

Total Usage	

Data Group		Sign-off	

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Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Work Order # 698077 **Activity** G7588M ANALYZER FLUORIDE

Equipment ID 0000167588 **Description** ANALYZER FLUORIDE TREATED

Site	FAC	6057	**Description**	ALFRED-LEFAIVRE WTPDS	
Subunit Of					
Area	2	EASTERN REGION	**Sub-area**	ALFR	ALFRED LEFAIVRE HUB
District	ALPL	TOWNSHIP OF ALFRED/PLANTAGENET	**Loc**	LABO	LABORATORY
Loc Qualifier	ALFRED WATER TREATMENT: ANALYZER FLUORIDE				

Equipment Type	INSTRU	INSTRUMENTATION	**Manufacturer**	WALL	WALLANCE & TIERNAN	
Building	PLAN	PLANT BUILDING	**Building Level**	S01	UNDERGROUND LEVEL 1	
Service Status	IN	IN SERVICE (INCL. STANDBY)	**Expected Life**	25		
Avg Monthly Usage	720.00		**Total Usage**	0.00		
Model #	495213		**Warranty Expires**		**MTBF**	0
Serial #	AX90031		**Purchase Date**		**Purchase Cost**	0.00
Budget #						

Initiated By		**Initiated Date**	15/01/2004	**Scheduled**	01/01/2004 08:00
Assigned To		**Service #**		**Due**	

Authorization				
Budget #				
Crew				
Maint Type				
Priority				
Problem				
Project	6057	ALFRED LEFAIVRE WTPDS	**Out of Service**	☐
Source			**Potential Service Request**	☐
Last Activity	G7588M	ANALYZER FLUORIDE	**Last Activity Completed**	04/12/2003

ActDefn Comments
OEM TECHNICAL MANUALS

Logs

Log Type	Description	Log Date	To	Entered By	Comments
There are no logs for this work order					

Task G7588M ANALYZER FLUORIDE

Job Class	Crew Type	Description	Std Hrs	Pay Type	Hrs Worked
MECH		MAINTENANCE MECHANIC	0.50	Reg	0.5

Part #	Description	Stock Area	Stock Loc	Qty Reqd	Qty Used
CLEANING MATERIAL	CLEANING MATERIALS			1.00	
KITMTCE	ANALYZER MAINTENANCE KIT			1.00	

Safety Message	Description
CHEMHA	CHEMICAL HAZARD

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Equipment Work Order

Report Date 15/01/2004 02:32 PM **Submitted By**

Safety Procedures Message	Description	Activity	Comments
EEN	ENTRY AND EXIT NOTIFICATION		ENSURE DIRECT SUPERVISOR OR THEIR DESIGNATE HAVE BEEN NOTIFIED OF ENTRY INTO THE SITE. THE FOLLOWING INFORMATION SHOULD PROVIDE APPROXIMATE TIME AND DURATION. ON COMPLETION OF DUTIES NOTIFICATION TO BE GIVEN THAT SITE HAS BEEN VACATED AND SECURED.
JSP	JOB SAFETY PLANNING		TAKE TIME TO IDENTIFY HAZARDS AND PLAN HOW EACH HAZARD WILL BE ELIMINATED OR CONTROLLED. WORK PRACTICES MUST BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT AND THE ONTARIO CLEAN WATER AGENCY SAFETY MANUAL.
MONTH	MONTHLY PREVENTATIVE MTCE	G7588M	INTRODUCTION: This Preventative Maintenance Procedure has been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct defects which are not anticipated in this procedure. This document will not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details. The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded on the Hansen Feedback Sheet. RUNNING CHECKS: 1) Inspect and clean all sample and drain lines. 2) Check for proper sample flow rate. 3) Check for air in the flow cell and probes. 4) Clean the reagent and standard solution containers. Replace reagent solutions. (do not top up) 5) Check the indicator lights on the instrument panel for problems. 6) Check any sample water filters. Clean and replace as required. MAINTENANCE PROCEDURE: 1) Inspect all tubing for leaks, deterioration and blockage. Repair or replace as required. 2) Clean monitor piping if signs of algea visible. 3) Check salt bridge solution & top-up if necessary. 4) Enable auto calibrate. If this calibration fails refer to the manufacturer manual for other calibration method.
WPROT	WORK PROTECTION		ISOLATE AND DE-ENERGIZE THE EQUIPMENT IN ACCORDANCE WITH THE LOCK-OUT PROCEDURE.

Comments	Calibrated according to the daily lab results conducted.

Started			Completed						
Date	29-01-04	Time 1100	By	00106	Date	29-01-04	Time 1130	Hours	0.5

Result	Complete	Condition		Quantity		Unit of Meas	

Total Usage	

Data Group		Sign-off	Dagnan

APPENDIX F

WATER QUALITY RESULTS - INSPECTION AUDIT

(AS ATTACHED)

APPENDIX
Table 1
ALFRED (LEFAIVRE) WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 23-FEB-2004
CHEMICAL / PHYSICAL PARAMETERS - HEALTH RELATED

Sample # 1 - (REG S) TREATED WATER

Parameter	Units	MAC [1]	IMAC [2]	AO [3]	SAMPLE # 1
ANTIMONY, UNFILTERED TOTAL	UG/L		6		.68 +/-0.17
ARSENIC, UNFILTERED TOTAL	UG/L		25		.2 +/-0.10
BARIUM, UNFILTERED TOTAL	UG/L	1000			14.3 +/-1.30
BENZENE C6H6	UG/L	5			.05 <=W
BORON, UNFILTERED TOTAL	UG/L		5000		7 +/-2.00
BROMODICHLOROMETHANE	UG/L				1.4 <T
BROMOFORM	UG/L				.5 <=W
CADMIUM, UNFILTERED TOTAL	UG/L	5			.05 +/-0.05
CARBON TETRACHLORIDE	UG/L	5			.2 <=W
CHLOROBENZENE	UG/L	80			.05 <=W
CHLORODIBROMOMETHANE	UG/L				.2 <=W
CHLOROFORM CHCL3	UG/L				33.2
CHROMIUM, UNFILTERED TOTAL	UG/L	50			.9 +/-0.50
DICHLOROBENZENE 1,2	UG/L	200			.05 <=W
DICHLOROBENZENE 1,4	UG/L	5			.05 <=W
DICHLOROETHANE 1,2	UG/L		5		.05 <=W
DICHLOROETHYLENE 1,1	UG/L	14			.05 <=W
FLUORIDE, UNFILTERED REACTIVE	MG/L	1.5 b			.43
LEAD, UNFILTERED TOTAL	UG/L	10 c			.04 +/-0.05
MERCURY, UNFILTERED TOTAL	UG/L	1			.02 <=W
METHYLENE CHLORIDE	UG/L	50			.2 <=W
NITRATES TOTAL, UNFIL.REAC	MG/L	10 d			.203
NITRITE, UNFILTERED REACTIVE	MG/L	1 d			.001 <=W
SELENIUM, UNFILTERED TOTAL	UG/L	10			0 +/-1.00
TETRACHLOROETHYLENE	UG/L	30			.05 <=W
TRICHLOROETHYLENE C2HCL3	UG/L	50			.05 <=W
TRIHALOMETHANES, TOTAL	UG/L	100 e			34.5
URANIUM, UNFILTERED TOTAL	UG/L	20			0 +/-0.05
VINYL CHLORIDE C2H3CL	UG/L	2			.05 <=W

Shortforms:

<T - A measurable trace amount; interpret with caution

<W - No measurable response (zero) : < Reported value

<=W - No measurable response (zero) : < Reported value

< - Actual result is less than reported value

ND - Not detected

!NP - No appropriate procedure available

NA - Result not available

NS - Not sampled

NG/L - Nanograms per litre

UG/L - Micrograms per litre

MG/L - Milligrams per litre

Footnotes:

1 Maximum Acceptable Concentration

2 Interim Maximum Acceptable Concentration

3 Aesthetic Objective

4 Includes *alpha*-chlordane, *gamma*-Chlordane and Oxychlordane

5 Includes *p,p'*-DDE, o,p'-DDT, *p,p'*-DDD and *p,p'*DDT

a) Total toxic equivalents when compared with 2,3,7,8,-TCDD (tetrachlorodibenzo-p-dioxin)

b) Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5 - 0.8 mg/L, the optimum level for control of tooth decay. Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources. Levels above the MAC must be reported to the local Medical Officer of Health.

c) This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

d) Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).

e) The standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system.

APPENDIX
Table 2
ALFRED (LEFAIVRE) WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 23-FEB-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - RAW WATER
Sample # 2 - (REG S) TREATED WATER
Sample # 3 - (REG S) DEPANNEUR LALONDE 561 RUE ST-PHILIPPE DISTRIBUTION
Sample # 4 - (REG S) FIRE STATION 261 RUE ST-PHILIPPE DISTRIBUTION
Sample # 5 - (REG S) G.E.M. STORE 2070 LAJOIE ST. DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 1	SAMPLE # 2
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200		200 >	
COLIFORM, TOTAL MF	C/100ML	0		150 >	
ESCHERICHIA COLI MF	C/100ML	0		14	
HETEROTROPH MF 35 C	C/ML	500			10 <
NT: DETERIORATION INDICATORS	C/100ML		0		NOT DETECTED
NT: ESCHERICHIA COLI	C/100ML	0			ABSENT
NT: TOTAL COLIFORMS	C/100ML	0			ABSENT

APPENDIX
Table 2
ALFRED (LEFAIVRE) WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 23-FEB-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - RAW WATER
Sample # 2 - (REG S) TREATED WATER
Sample # 3 - (REG S) DEPANNEUR LALONDE 561 RUE ST-PHILIPPE DISTRIBUTION
Sample # 4 - (REG S) FIRE STATION 261 RUE ST-PHILIPPE DISTRIBUTION
Sample # 5 - (REG S) G.E.M. STORE 2070 LAJOIE ST. DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 3	SAMPLE # 4
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			
COLIFORM, TOTAL MF	C/100ML	0			
ESCHERICHIA COLI MF	C/100ML	0			
HETEROTROPH MF 35 C	C/ML	500		10 <	10 <
NT: DETERIORATION INDICATORS	C/100ML		0	NOT DETECTED	NOT DETECTED
NT: ESCHERICHIA COLI	C/100ML	0		ABSENT	ABSENT
NT: TOTAL COLIFORMS	C/100ML	0		ABSENT	ABSENT

APPENDIX
Table 2
ALFRED (LEFAIVRE) WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 23-FEB-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - RAW WATER
Sample # 2 - (REG S) TREATED WATER
Sample # 3 - (REG S) DEPANNEUR LALONDE 561 RUE ST-PHILIPPE DISTRIBUTION
Sample # 4 - (REG S) FIRE STATION 261 RUE ST-PHILIPPE DISTRIBUTION
Sample # 5 - (REG S) G.E.M. STORE 2070 LAJOIE ST. DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 5
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200		
COLIFORM, TOTAL MF	C/100ML	0		
ESCHERICHIA COLI MF	C/100ML	0		
HETEROTROPH MF 35 C	C/ML	500		10 <
NT: DETERIORATION INDICATORS	C/100ML		0	NOT DETECTED
NT: ESCHERICHIA COLI	C/100ML	0		ABSENT
NT: TOTAL COLIFORMS	C/100ML	0		ABSENT

Notes:

- Escherichia coli is a more definitive indicator of fecal contamination than fecal coliforms or total coliforms.
- At elevated levels, the general bacterial population may interfere with the detection of coliforms. This general population can be estimated from either background colony counts on the total coliform membrane filters or heterotrophic plate counts (HPC).

Shortforms:

C/100mL - Count per 100 millilitre

C/mL - Count per millilitre

Footnotes:

1. Maximum Acceptable Concentration
2. Aesthetic Objective

According to section 16-3 of O.Reg. 170/03,the following are prescribed as adverse results of a drinking-water test for the purpose of section 18 of the Safe Drinking Water Act 2002:

1. A result that exceeds any of the standards prescribed by Schedule 1, 2 or 3 to the Ontario Drinking-Water Quality Standards, other than the standard for fluoride, if the result is from a sample of drinking water.

2. A result indicating the presence of Aeromonas spp., Pseudomonas aeruginosa, Staphylococcus aureus, Clostridium spp. or fecal streptococci (Group D streptococci) in a sample of drinking water.

3. A result indicating the presence of a pesticide not listed in Schedule 2 to the Ontario Drinking-Water Quality Standards in a sample of drinking water, at any concentration.

4. A result indicating that the concentration of free chlorine residual is less than 0.05 milligrams per litre in a distribution sample, if the drinking-water system provides chlorination and does not provide chloramination.

5. A result indicating that the concentration of combined chlorine residual is less than 0.25 milligrams per litre in a distribution sample, if the drinking-water system provides chloramination.

6. If the drinking-water system is required to provide filtration and a report under subsection 18 (1) of the Act has not been made in respect of turbidity in the preceding 24 hours, a result indicating that turbidity exceeds 1.0 Nephelometric Turbidity Units (NTU) in,

i. a grab sample of water taken from a filter effluent line, or

ii. two samples of water from a filter effluent line that are tested by continuous monitoring equipment, if the two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample.

7. If an approval or order, including an OWRA order, identifies a parameter as a health-related parameter and establishes a maximum concentration for the parameter, a result indicating that the parameter exceeds the maximum concentration in a sample of drinking water.

8. A result indicating that the concentration of sodium exceeds 20 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of sodium in the preceding 60 months.

9. A result indicating that the concentration of fluoride exceeds 1.5 milligrams per litre in a sample of drinking water, if,

i. the drinking-water system provides fluoridation and a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 24 hours, or

ii. the drinking-water system does not provide fluoridation and a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 60 months.

APPENDIX
Table 3
ALFRED (LEFAIVRE) WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 23-FEB-2004
CHEMICAL / PHYSICAL PARAMETERS - NOT HEALTH RELATED

Sample # 1 - (REG S) TREATED WATER

Parameter	Units	OBJECTIVE	TYPE OF OBJECTIVE	SAMPLE # 1
ALUMINIUM, UNFILTERED TOTAL	UG/L	100	OG	115 +/-10.00
AMMONIUM, TOTAL UNFIL.REAC	MG/L	a	a	.002 <=W
COPPER, UNFILTERED TOTAL	UG/L	1000	AO	10.8 +/-0.90
ETHYLBENZENE C8H10	UG/L	2.4	AO	.05 <=W
IRON, UNFILTERED TOTAL	UG/L	300	AO	2 +/-6.00
MANGANESE,UNFILTERED TOTAL	UG/L	50	AO	4.4 +/-0.70
TOLUENE C7H8	UG/L	24	AO	.05 <=W
TURBIDITY	FTU	5 e	AO	.27
XYLENE-M AND P	UG/L	300	AO	.05 <=W
XYLENE-O C8H10	UG/L	300	AO	.05 <=W
ZINC, UNFILTERED TOTAL	UG/L	5000	AO	3.3 +/-0.90

Shortforms:

<T - A measurable trace amount; interpret with caution
<W - No measurable response (zero) : < Reported value
<=W - No measurable response (zero) : < Reported value
< - Actual result is less than reported value
ND - Not detected
NA - Result not available
NS - Not sampled
DEG - Degree celsius

AO - Aesthetic Objective
OG - Operational Guideline
FTU = NTU - Nephelometric Turbidity Unit
TCU - True Colour Units
NG/L - Nanograms per litre
UG/L - Micrograms per litre
MG/L - Milligrams per litre

Footnotes:

a) No limit has been established for this parameter.

b) Organic Nitrogen = (Total Kjeldahl Nitrogen - Ammonia)

c) The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

d) When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

e) Applicable for all water at the point of consumption.

APPENDIX G

WATER QUALITY RESULTS - OWNER'S

(AS ATTACHED)

CADUCEON **Environmental Laboratories**
(Division of Caduceon Enterprises Inc.)

C.O.C.: ---

CERTIFICATE OF ANALYSIS
Final Report

REPORT No. B04-728

Report To:
Ontario Clean Water Agency - Lefaivre
P.O. Box 252 2015 Lajoie St.
Lefaivre ON K0B 1J0
Attention: Stephane Barbarie

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 526-0123
Fax 526-1244

DATE SUBMITTED: 13-Jan-04
DATE REPORTED: 22-Jan-04
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.: 6057
P.O. NUMBER: Alfred / Lefaivre WTP
WATERWORKS NO. 220002841

	Client I.D.:	Raw Water			
	Sample I.D.:	B04-728-1			
	Date Collected:	12-Jan-2004			

Parameter	Units	M.D.L.	Reference Method	Date Analyzed				
Colour	TCU	1	SM 2120	13-Jan-04	22			
Total Ammonia (N)	mg/L	0.05	EPA 350.2	15-Jan-04	< 0.05			
Total Kjeldahl Nitrogen	mg/L	0.05	EPA 351.2	16-Jan-04	0.32			
Organic Nitrogen	mg/L	0.05	EPA 351.2	21-Jan-04	0.28			
DOC	mg/L	1.0	EPA 415.1	15-Jan-04	8.0			
Dissolved Inorganic Carbon	mg/L	1.0	EPA 415.1	15-Jan-04	7.0			

PDL 22/01/04
16

K. Pipin
Krystyna Pipin
Lab Supervisor

M.D.L. = Method Detection Limit

CADUCEON **Environmental Laboratories**
(Division of Caduceon Enterprises Inc.)

C.O.C.: — **CERTIFICATE OF ANALYSIS** **REPORT No. B04-726**

Final Report

Report To:
Ontario Clean Water Agency - LeFaivre
P.O. Box 252 2015 Lajoie St.
Lefaivre ON K0B 1J0
Attention: Stephane Barbarie

Caduceon Environmental Laboratories
40 Camelot Drive
Ottawa Ontario K2G 5X8
Tel: 228-1145
Fax 228-1148

DATE SUBMITTED: 13-Jan-04
DATE REPORTED: 19-Jan-04
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.: 6057
P.O. NUMBER: Alfred / Lefaivre WTP
WATERWORKS NO. 220002841

			Client I.D.:		Treated Water	Distribution 69 PiTre		
			Sample I.D.:		B04-726-1	B04-726-2		
			Date Collected:		12-Jan-2004	12-Jan-2004		
Parameter	Units	M.D.L.	Reference Method	Date Analyzed				
Nitrite (N)	mg/L	0.1	EPA 300.0	14-Jan-04	< 0.1 [1]	--		
Nitrate (N)	mg/L	0.1	EPA 300.0	14-Jan-04	< 0.1 [1]	--		
Chloroform	µg/L	0.3	EPA 8260	14-Jan-04	--	52.7		
Bromodichloromethane	µg/L	0.1	EPA 8260	14-Jan-04	--	2.4		
Dibromochloromethane	µg/L	0.1	EPA 8260	14-Jan-04	--	< 0.1		
Bromoform	µg/L	0.1	EPA 8260	14-Jan-04	--	< 0.1		
Total Trihalomethanes	µg/L	1.0	EPA 8260	14-Jan-04	--	55.1		
Dichloroethane-d4,1,2-	%		EPA 8260	14-Jan-04	--	94		
Toluene-d8	%		EPA 8260	14-Jan-04	--	94		
Bromofluorobenzene,4-	%		EPA 8260	14-Jan-04	--	97		

1 Note: Sample preserved with Sulfuric Acid

PPL 27/02/04
CB

FAX → J.P. Gelinas / Stephane Barbarie
673 1955
Gord Murray
228 1148
3 DATE: Jan 19/04

Greg Clarkin
Lab Manager - Ottawa District

M.D.L. = Method Detection Limit

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(Division of Caduceon Enterprises Inc.)

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CERTIFICATE OF ANALYSIS
Final Report

REPORT No. B03-11615

Report To:
Ontario Clean Water Agency - LeFaivre
P.O. Box 252 2015 Lajoie St.
Lefaivre ON K0B 1J0
Attention: Stephane Barbarie

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 526-0123
Fax 526-1244

DATE SUBMITTED: 04-Nov-03
DATE REPORTED: 12-Nov-03
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.:
P.O. NUMBER: Alfred / Lefaivre WTP
WATERWORKS NO. 220002841

			Client I.D.:		Raw Water			
			Sample I.D.:		B03-11615-1			
			Date Collected:		03-Nov-2003			
Parameter	Units	M.D.L.	Reference Method	Date Analyzed				
Colour	TCU	1	SM 2120	05-Nov-03	21			
Organic Nitrogen	mg/L	0.05	EPA 351.2	10-Nov-03	0.32			
DOC	mg/L	0.5	EPA 415.1	11-Nov-03	5.9			

K. Pipin

Krystyna Pipin, M. Sc.
Lab Supervisor

MDL = Method Detection Limit

PDC

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Environmental Laboratories
(Division of Caduceon Enterprises Inc.)

C.O.C.: ---

CERTIFICATE OF ANALYSIS
Final Report

REPORT No. B03-10846

Report To:
Ontario Clean Water Agency - LeFaivre
P.O. Box 252 2015 Lajoie St.
Lefaivre ON K0B 1J0
Attention: Stephane Barbarie

Caduceon Environmental Laboratories
40 Camelot Drive
Ottawa Ontario K2G 5X8
Tel: 228-1145
Fax 228-1148

DATE SUBMITTED: 22-Oct-03
DATE REPORTED: 24-Oct-03
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.:
P.O. NUMBER: Alfred / Lefaivre WTP
WATERWORKS NO. 220002841

	Client I.D.:				Treated water	Dist. 69 Pitre		
	Sample I.D.:				B03-10846-1	B03-10846-2		
	Date Collected:				21-Oct-2003	21-Oct-2003		
Parameter	Units	M.D.L.	Reference Method	Date Analyzed				
Nitrite (N)	mg/L	0.1	EPA 300.0	24-Oct-03	< 0.1	--		
Nitrate (N)	mg/L	0.1	EPA 300.0	24-Oct-03	0.3	--		
Chloroform	µg/L	0.3	EPA 8260	23-Oct-03	--	76.7		
Bromodichloromethane	µg/L	0.1	EPA 8260	23-Oct-03	--	5.2		
Dibromochloromethane	µg/L	0.1	EPA 8260	23-Oct-03	--	< 0.1		
Bromoform	µg/L	0.1	EPA 8260	23-Oct-03	--	< 0.1		
Total Trihalomethanes	µg/L	0.3	EPA 8260	23-Oct-03	--	82.0		
Dichloroethane-d4,1,2-	%		EPA 8260	23-Oct-03	--	100		
Toluene-d8	%		EPA 8260	23-Oct-03	--	101		
Bromofluorobenzene,4-	%		EPA 8260	23-Oct-03	--	102		

FAX → P Gelinas
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Gord Murphy
228 1148
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DATE: Oct 23/03

Gord Murphy
Lab Supervisor

MDL = Method Detection Limit

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Environmental Laboratories
(Division of Caduceon Enterprises Inc.)

C.O.C.: —

CERTIFICATE OF ANALYSIS
Final Report

REPORT No. B03-5504

Report To:
Ontario Clean Water Agency - LaFaivre
P.O. Box 252 2015 Lajoie St.
Lefaivre ON K0B 1J0
Attention: Jacques Breen

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 526-0123
Fax 526-1244

DATE SUBMITTED: 15-Jul-03
DATE REPORTED: 25-Jul-03
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.:
P.O. NUMBER: Alfred / Lefaivre WTP
WATERWORKS NO. 220002841

			Client I.D.:		Raw Water			
			Sample I.D.:		B03-5504-1			
			Date Collected:		13-Jul-2003			
Parameter	Units	M.D.L.	Reference Method	Date Analyzed				
Diss. Organic Carbon	mg/L		EPA 415.1	17-Jul-03	8.0			
Color	TCU	1	SM 2120	16-Jul-03	16			
Total Kjeldahl Nitrogen	mg/L	0.05	EPA 351.2	24-Jul-03	0.35			
Total Ammonia (N)	mg/L	0.01	EPA 350.2	24-Jul-03	0.05			

Krystyna Pipin, M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit

Accredited by the Standards Council of Canada and CAEAL for specific tests.

AOC J

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Environmental Laboratories
(Division of Caduceon Enterprises Inc.)

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CERTIFICATE OF ANALYSIS
Final Report

REPORT No. B03-5498
Rev. 1

Report To:
Ontario Clean Water Agency - LeFaivre
P.O. Box 252 2015 Lajoie St.
Lefaivre ON K0B 1J0
Attention: Stephane Barbaria

Caduceon Environmental Laboratories
40 Camelot Drive
Ottawa Ontario K2G 5X8
Tel: 228-1145
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DATE SUBMITTED: 15-Jul-03
DATE REPORTED: 26-Aug-03
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.:
P.O. NUMBER: Alfred / Lefaivre WTP
WATERWORKS NO. 220002841

	Client I.D.:		Treated Water	Distribution		
	Sample I.D.:		B03-5498-1	B03-5498-2		
	Date Collected:		13-Jul-2003	13-Jul-2003		
Parameter	Units	M.D.L.	Reference Method	Date Analyzed		
Nitrate (N)	mg/L	0.1	EPA 300.0	16-Jul-03	0.2	--
Nitrite (N)	mg/L	0.1	EPA 300.0	16-Jul-03	< 0.1	--
Chloroform	µg/L	0.3	EPA 8260	25-Jul-03	--	66.6
Bromodichloromethane	µg/L	0.1	EPA 8260	25-Jul-03	--	4.2
Dibromochloromethane	µg/L	0.1	EPA 8260	25-Jul-03	--	0.2
Bromoform	µg/L	0.1	EPA 8260	25-Jul-03	--	< 0.1
Total Trihalomethanes	µg/L	1.0	EPA 8260	25-Jul-03	--	71.0
Dichloroethane-d4,1,2-	%		EPA 8260	25-Jul-03	--	103
Toluene-d8	%		EPA 8260	25-Jul-03	--	99
Bromofluorobenzene,4-	%		EPA 8260	25-Jul-03	--	103

FAX
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Gord Murphy
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2
DATE: Aug. 26/03

Gord Murphy
Lab Supervisor

MDL = Method Detection Limit

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Breen

Report: 230006694
Project: Alfred/Lefaivre WTP
Date Sampled: May 27, 2003
Date Received: May 28, 2003
Date Printed: June 23, 2003
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Treated	Distribution
Fluoride	mg/L	0.1	0.6	
Nitrite- Nitrogen	mg/L	0.1	<0.1	
Nitrate- Nitrogen	mg/L	0.1	0.3	
Mercury	mg/L	0.0001	<0.0001	
Cadmium	mg/L	0.0001	<0.0001	
Lead	mg/L	0.0002	0.0009	0.0008
Arsenic	mg/L	0.001	<0.001	
Selenium	mg/L	0.001	<0.001	
Total Uranium	mg/L	0.001	0.003	
Boron	mg/L	0.01	<0.01	
Barium	mg/L	0.005	0.018	
Chromium	mg/L	0.01	<0.01	
Copper	mg/L	0.01	0.02	
Iron	mg/L	0.02	0.02	
Manganese	mg/L	0.01	<0.01	
Sodium	mg/L	0.2	23.6	
Total Trihalomethanes	mg/L	0.001		0.091
1,1-Dichloroethylene	mg/L	0.0001	<0.0001	
1,2-Dichlorobenzene	mg/L	0.0001	<0.0001	
1,2-Dichloroethane	mg/L	0.0001	<0.0001	
1,4-Dichlorobenzene	mg/L	0.0002	<0.0002	
Benzene	mg/L	0.0005	<0.0005	
Bromodichloromethane	mg/L	0.0001	0.0048	

Caduceon Environmental Laboratories
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Christyne Pipin, Laboratory Supervisor

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Breen

Report: 230006594
Project: Alfred/Lefaivre WTP
Date Sampled: May 27, 2003
Date Received: May 28, 2003
Date Printed: June 24, 2003
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification: Treated	Distribution
Bromoform	mg/L	0.0001	<0.0001	
Carbon Tetrachloride	mg/L	0.0002	<0.0002	
Chlorobenzene	mg/L	0.0002	<0.0002	
Chloroform	mg/L	0.0003	0.0599	
Dibromochloromethane	mg/L	0.0001	0.0003	
Ethylbenzene	mg/L	0.0005	<0.0005	
m/p-Xylene	mg/L	0.001	<0.001	
Methylene Chloride	mg/L	0.003	<0.003	
o-Xylene	mg/L	0.0005	<0.0005	
Tetrachloroethylene	mg/L	0.0002	<0.0002	
Toluene	mg/L	0.0005	<0.0005	
Total Trihalomethanes	mg/L	0.001	0.065	
Trichloroethylene	mg/L	0.0001	<0.0001	
Vinyl Chloride	mg/L	0.0003	<0.0003	
2,3,4,6-Tetrachlorophenol	µg/L	0.1	<0.1	
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	µg/L	22	<22	
2,4,6-Trichlorophenol	µg/L	0.2	<0.2	
2,4-Dichorophenoxy acetic acid (2,4-D)	µg/L	10	<10	
2,4-Dichlorophenol	µg/L	0.2	<0.2	
Alachlor	µg/L	0.5	<0.5	
Aldicarb	µg/L	6	<6	
Aldrin & Dieldrin	µg/L	0.05	<0.05	
Atrazine + metabolites	µg/L	1	<1	
Azinphos-methyl	µg/L	2	<2	

Caduceon Environmental Laboratories
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Krysiyna Pipin, Laboratory Supervisor

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Breen

Report: 230006594
Project: Alfred/Lefaivre WTP
Date Sampled: May 27, 2003
Date Received: May 28, 2003
Date Printed: June 23, 2003
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Treated	Distribution
Polychlorinated Biphenyls (PCB's)	µg/L	0.05	<0.05	
Pentachlorophenol	µg/L	0.2	<0.2	
Phorate	µg/L	0.5	<0.5	
Picloram	µg/L	10	<10	
Prometryne	µg/L	0.2	<0.2	
Simazine	µg/L	1	<1	
Temephos	µg/L	25	<25	
Terbufos	µg/L	0.7	<0.7	
Triallate	µg/L	20	<20	
Trifluralin	µg/L	1	<1	

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Krystyna Pipin, Laboratory Supervisor

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Breen

Report: 230006594
Project: Alfred/Lefaivre WTP
Date Sampled: May 27, 2003
Date Received: May 28, 2003
Date Printed: June 23, 2003
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Treated	Distribution
Bendiocarb	µg/L	5	<5	
Bromoxynil	µg/L	0.5	<0.5	
Carbaryl	µg/L	5	<5	
Carbofuran	µg/L	2	<2	
Chlordane (total)	µg/L	0.6	<0.6	
Chlorpyrifos	µg/L	1	<1	
Cyanazine	µg/L	1	<1	
DDT + metabolites	µg/L	1	<1	
Diazinon	µg/L	2	<2	
Dicamba	µg/L	10	<10	
Diclofop-methyl	µg/L	0.9	<0.9	
Dimethoate	µg/L	2	<2	
Dinoseb	µg/L	1	<1	
Diquat	µg/L	5	<5	
Diuron	µg/L	10	<10	
Glyphosate	µg/L	25	<25	
Heptachlor+ Heptachlor epoxide	µg/L	0.1	<0.1	
Lindane	µg/L	0.1	<0.1	
Malathion	µg/L	10	<10	
Methoxychlor	µg/L	10	<10	
Metolachlor	µg/L	5	<5	
Metribuzin	µg/L	5	<5	
Paraquat	µg/L	1	<1	
Parathion	µg/L	5	<5	

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Krystyna Blpin, Laboratory Supervisor

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
ntario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Brosn

Report: 230006576
Project: Lefaivre WTP
Date Sampled: May 26, 2003
Date Received: May 27, 2003
Date Printed: June 14, 2003
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			Raw Water
Organic Nitrogen	mg/L	0.05	0.26
Dissolved Organic Carbon	mg/L	1.0	5.9
Colour	TCU	1	16

Caduceon Environmental Laboratories
2378 Holly Lane, Ottawa, Ontario. K1V 7P1. Canada
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Krystyna Pipin, Laboratory Supervisor

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Breen

Report: 230003908
Project: Alfred/Lefaivre WTP
Date Sampled: March 27, 2003
Date Received: March 28, 2003
Date Printed: April 04, 2003
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			Raw Water
Organic Nitrogen	mg/L	0.05	0.43
Dissolved Organic Carbon	mg/L	1.0	7.8
Colour	TCU	1	17

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Krystyna Pipin, Laboratory Supervisor

Ontario Clean Water Agency
Performance Assessment Report - Surface Water Treatment Plant

Municipality: Village of Alfred, Hamlet of Lefaivre, portion of the Township of Alfred
Facility: [6057] - Alfred Water Treatment Plant & Distribution System
Works: [220002841] - Alfred - Lefaivre Water Treatment Plant & Distribution System
Classification: Class 2 Water Distribution, Class 4 Water Treatment
Water Source: Ottawa River

Year: 2003
Population Served: 2,500
Design Avg Day Flow(m³): 1,090
Effluent Group Selected:

	<<< --- Flows Treated --- >>>			<<< --- Effluent Physical/Chemical Parameters --- >>>				<<< --- Disinfection --- >>>				<<< --- Bact. (# of Samples) --- >>>			
												<--------- Collected ------->		<-------- Adverse -------->	
Month	Total Flow (m³)	Avg Day (m³)	Max Day (m³)	Mean Turb. (NTU)	Avg Colour (TCU)	Alum. Resid (mg/L)	Avg THM (ug/L)	Mean Free CL2 Resid. Treat (mg/L)	Mean Total CL2 Resid. Treat (mg/L)	Min Free CL2 Resid. Dist. (mg/L)	Min Total CL2 Resid. Dist. (mg/L)	Treat	Dist	Treat	Dist
JAN	34,245	1,105	1,327	0.11	1.00	0.013		1.02	1.19	0.25	0.33	4	12	0	0
FEB	32,967	1,177	1,700	0.11	1.00	0.010		0.95	1.11	0.30	0.35	4	12	0	0
MAR	32,189	1,238	1,641	0.15	1.12	0.013		1.15	1.37	0.16	0.36	4	12	0	0
APR	31,800	1,060	1,370	0.15	1.00	0.013		1.13	1.30	0.21	0.29	5	15	0	0
MAY	32,838	1,059	1,578	0.19	1.72	0.010		0.97	1.15	0.19	0.20	4	13	0	0
JUN	40,918	1,364	2,721	0.14	1.00	0.013		1.02	1.31	0.20	0.20	5	16	0	0
JUL	42,675	1,377	2,256	0.22	1.53	0.015		1.28	1.37	0.17		4	17	0	2
AUG	37,309	1,204	1,616	0.23	1.00	0.035		1.29	1.36	0.05		4	12	0	0
SEP	38,935	1,298	1,860	0.12	1.00	0.015		1.11	1.29	0.08		5	15	0	0
OCT	28,952	934	1,227	0.16	1.00	0.008		1.23	1.41	0.15	0.25	4	12	0	0
NOV	27,178	906	1,301	0.17	1.00	0.020		1.33	1.55	0.51	0.64	4	15	0	1
DEC	30,113	971	1,244	0.19	1.00	0.013		1.36	1.56	0.37		5	15	0	0
Total:	410,119											52	166	0	3
AVG:		1,139		0.16	1.12	0.016		1.16	1.33	0.22	0.33	4	14	0	1
MAX:			2,721	0.23	1.72	0.035		1.36	1.56	0.51	0.64	5	17	0	6
Criteria:		2,900		1.00	5.00		100.0								

Legend:

Effluent Group Selected: -

Note: ? Calculation not verifiable. Results reported as < and >.
-1 Analysis result less than detectable limit

NO good
Stéphane Barbeau
25/02/04

Fourth Quarter 2003

Trihalomethane (THM)
Running Four Quarter Average
in Distribution System
Periode ending December 31, 2003

Quarter	VKH	L'Orignal	Alfred	Plantagen	Wendover	Rockland	St. Pascal	Cheney	Hammond	Bourget	C. Creek	Limoges	Forest Park	St. Isidore	Casselman	ORG
Data ok =	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
1Q 2003	0.103	0.039	0.075	0.092	0.056	0.049	0.013	0.009	0.008	0.22	0.007	0.084	0.097	0.174	0.064	
2Q 2003	0.076	0.1	0.091	0.112	0.087	0.076	0.02	0.038	0.007	0.453	0.008	0.107	0.135	0.092	0.069	
3Q 2003	0.136	0.077	0.071	0.143	0.081	0.057	0.003	0.278	0.003	0.281	0.005	0.117	0.118	0.106	0.129	
4Q 2003	**0.116**	**0.055**	**0.082**	**0.102**	**0.044**	**0.037**	**0.002**	**N/A**	**N/A**	**0.225**	**0.046**	**0.09**	**0.109**	**0.14**	**0.083**	
Run Avg	**0.108**	0.068	0.080	**0.112**	0.067	0.055	0.010	0.081	0.005	**0.295**	0.017	0.100	**0.115**	**0.128**	0.086	0.000
Criteria	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Exceeded	**YES**	NO	NO	**YES**	NO	NO	NO	NO	NO	**YES**	NO	NO	**YES**	**YES**	NO	NO

Completed Vankleek Hill AWQN on October 27, 2003
Completed Plantagenet AWQN on October 27, 2003
Completed St-Isidore AWQN on October 27, 2003
Completed Limoges/F. Park AWQN on October 28, 2003
Completed Bourget AWQN on November 13, 2004

Completed the Vankleek Hill resampling notification October 30, 2003
Completed the Plantagenet resampling notification on Nov 03, 2003
Completed the St- Isidore resampling notification on Nov 03, 2003
Completed the Forest Park resampling notification on Nov 03, 2003
Completed the Rockland resampling notification on Nov 18, 2003

No 4 th Quarter samples were collected for Hammond & Cheney as they are now on the Rockland water distribution system!

APPENDIX H

CONTINGENCY PLAN INDEX & OPERATIONS MANUAL TABLE OF CONTENTS

(AS ATTACHED)

Revised :17/07/03

LEFAIVRE WTP
And
DISTRIBUTION SYSTEM

CONTINGENCY PLANS

Plantagenet Contingency Plan
By Stephane Barbarie

Index

ONTARIO CLEAN WATER AGENCY EMS	ENVIRONMENTAL CONTINGENCY PLAN
Updated by: Cindy Spencer	Approved by: Jean-Pierre Gélinas

ADVERSE WATER QUALITY AND OTHER PROBLEMS
CORRECTIVE ACTION
LARGE MUNICIPAL RESIDENTIAL

Classification: Compliance - Regulatory (O. Reg. 170/03)

Solution: Under Section 18 of the Safe Drinking Water Act, and Schedule 16 of O.Reg 170/03, there is a Duty to Report the following prescribed adverse results:

Duty to report under s. 18 of the Act

16-3. The following are prescribed as adverse results of a drinking-water test for the purpose of section 18 of the Act:

1. A result that exceeds any of the standards prescribed by Schedule 1, 2 or 3 to the Ontario Drinking-Water Quality Standards, other than the standard for fluoride, if the result is from a sample of drinking water.
2. A result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) in a sample of drinking water.
3. A result indicating the presence of a pesticide not listed in Schedule 2 to the Ontario Drinking-Water Quality Standards in a sample of drinking water, at any concentration.
4. A result indicating that the concentration of free chlorine residual is less than 0.05 milligrams per litre in a distribution sample, if the drinking-water system provides chlorination and does not provide chloramination.
5. A result indicating that the concentration of combined chlorine residual is less than 0.25 milligrams per litre in a distribution sample, if the drinking-water system provides chloramination.
6. If the drinking-water system is required to provide filtration, a result indicating that turbidity exceeds 1.0 Nephelometric Turbidity Units (NTU) in,
   i. a grab sample of water taken from a filter effluent line, or
   ii. two samples of water from a filter effluent line that are tested by continuous monitoring equipment, if the two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample.
7. If an approval or order, including an OWRA order, identifies a parameter as a health-related parameter and establishes a maximum concentration for the parameter, a result indicating that the parameter exceeds the maximum concentration in a sample of drinking water.
8. A result indicating that the concentration of sodium exceeds 20 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of sodium in the preceding 60 months.
9. A result indicating that the concentration of fluoride exceeds 1.5 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 60 months.

Duty to report other observations

16-4. If an observation other than an adverse test result prescribed by section 16-3 indicates that a drinking-water system that provides or is required to provide disinfection is directing water that has not been properly disinfected to users of water from the system, the owner of the system shall report to the Ministry and the medical officer of health immediately after the observation is made.

The following describes the steps that must be taken to report and provide corrective action:

1. Laboratory will notify MOH, SAC and the operating authority of a prescribed adverse test result, first verbally by telephone and then secondly by faxing the notification form "Notice of Adverse Test Results and Other Problems, Notice of Issue Resolution at Drinking Water Systems".

2. The operating authority will **immediately** notify the area Medical Officer of Health at 1-613-933-1375 and the Ministry of the Environment, Spills Action Center at 1-800-268-6060 or 1-416-325-3000 and the waterworks owner. The operating authority must record the **names** of each person the notification was reported to, the **time** and **date** of the incident, and record the information in the water works daily plant log at the water works plant for OCWA verification.

3. Within 24 hours of oral notification, and after receiving notification form faxed by Laboratory, the operating authority must fill in all fields in Section 2(a) - Written Notice By Drinking-Water System (DWS) Owner. Do not fill in Section 2(b) - Notice of Issue Resolution unless the issue has been resolved.

4. The completed form Section 1 and Section 2(a) is to be faxed to to the local MOH (insert fax #) and SAC MOE (1-800-268-6061 or 1-416-325-3011) and the waterworks owner.

Definition of Resample:

Please note that resample and test with respect to corrective action that arises from the test of a water sample for a microbiological parameter is defined in O.Reg 170/03 as follows:

take a set of water samples, at approximately the same time, with,

(A) at least one sample from the same location as the sample that gave rise to the corrective action,

(B) at least one sample from a location that is a significant distance upstream from the location, if that is reasonably possible, and

(C) at least one sample from a location that is a significant distance downstream from the location, if that is reasonably possible,

For all other parameter, resample is defined as collecting one sample from the same location that gave rise to the corrective action.

The following Corrective Actions must be taken in the event of an Adverse Water Quality Incident. Each type of Adverse Water Quality Incident is identified.

Improper disinfection

17-2. If a report is required to be made under section 16-4 of Schedule 16 in respect of water that has not been properly disinfected, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately restore the proper disinfection.
2. Take such other steps as are directed by the medical officer of health.

Turbidity

17-3. If a report is required to be made in respect of turbidity, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately check all the drinking-water system's filters and turbidity monitoring equipment.
2. Review upstream operational processes and correct any faulty processes that are identified.
3. Take such other steps as are directed by the medical officer of health.

Chlorine residual

17-4. If a report is required to be made in respect of free chlorine residual or combined chlorine residual, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
2. Take such other steps as are directed by the medical officer of health.

***Escherichia coli* (E. coli) or fecal coliforms**

17-5. If a report is required to be made in respect of *Escherichia coli* (E. coli) or fecal coliforms, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. Immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (E. coli) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Total coliforms

17-6. If a report is required to be made in respect of total coliforms, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.

2. If total coliforms are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Background colony counts on the total coliform membrane filter

17-7. If a report is required to be made under section 18 of the Act in respect of general bacteria population expressed as background colony counts on the total coliform membrane filter, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If more than 200 colony forming units (CFU) per 100 millilitres are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until less than 200 colony forming units (CFU) per 100 millilitres are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Colony counts on a heterotrophic plate count

17-8. If a report is required to be made under section 18 of the Act in respect of general bacteria population expressed as colony counts on a heterotrophic plate count, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If more than 500 colony forming units (CFU) per millilitre are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

***Aeromonas* spp., etc.**

17-9. If a report is required to be made under section 18 of the Act in respect of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*), the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Chemical and radiological parameters in O. Reg. 169/03

17-10. If a report is required to be made under section 18 of the Act in respect of a chemical or radiological parameter set out in Schedule 2 or 3 to the Ontario Drinking-Water Quality Standards, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If a concentration that exceeds the standard prescribed for the parameter by Schedule 2 or 3 to the Ontario Drinking-Water Quality Standards is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Pesticide not listed in Schedule 2 to O. Reg. 169/03

17-11. If a report is required to be made under section 18 of the Act in respect of a pesticide not listed in Schedule 2 to the Ontario Drinking-Water Quality Standards, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If the pesticide is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Health-related parameters in an approval or order

17-12. If an approval or order identifies a parameter as a health-related parameter and a report is required to be made under section 18 of the Act in respect of the parameter, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If a concentration that exceeds the maximum concentration established for the parameter by the approval or order is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Sodium

17-13. If a report is required to be made under section 18 of the Act in respect of sodium, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If a concentration of sodium that exceeds 20 milligrams per litre is detected under paragraph 1, take such steps as are directed by the medical officer of health.

Notice of Issue of Resolution:

When the Adverse Water Quality Incident has been resolved, the operating authority has 7 days from the date of resolution to notify the MOH, MOE SAC and Owner as defined in Schedule 16-9. Using the original notification form, complete Section 2(b) - Notice of Issue Resolution once the issue has been resolved and re-fax to the MOH, MOE SAC and Owner.

16-9. (1) If an immediate report or a written notice is given under this Schedule and the issue that gave rise to the notice is resolved, the owner of the drinking-water system shall, within seven days after the issue is resolved, give a written notice summarizing the action taken and the results achieved to,

(a) the medical officer of health, by delivering the written notice to the office of the medical officer of health; and

(b) the Ministry, by delivering the written notice to the Ministry's Spills Action Centre.

(2) If an immediate report or a written notice is given under this Schedule to the interested authority for a designated facility and the issue that gave rise to the notice is resolved, the owner of the drinking-water system shall, within 30 days after the issue is resolved, give a written notice summarizing the action taken and the results achieved to the interested authority.

Posting Warning Notice - does not apply to Large Municipal Systems.

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Watermain Flushing and Disinfection

All new sections of water mains must be thoroughly flushed, disinfected and tested for bacteriological quality before water can be used by customers. All water mains taken out of service for inspection, repair or other activities that might lead to contamination of water should be flushed or disinfected before they are returned to service.

Flushing:
Water main flushing is done initially to remove any debris or dirt left in the pipe after installation. After installation is completed, the distribution should be maintained by flushing at a minimum frequency of once per year. Swabbing may be required if the integrity of the distribution system can not be maintained by flushing.

Procedures

One or more fire hydrants should be used for flushing so that a velocity of at least 2.5 ft/s (0.8 m/s) to an ideal of 3.5 ft/s (1.1 m/s) is obtained in the pipe.
This flow rate should be maintained so that there has been two to three complete changes of water in the pipe and the water leaving the hydrant is visibly clean. Please see the chart below for pipe diameter and number of hydrants required to flush effectively.
Record the free chlorine residuals at the end of flushing to ensure they are at the .2 mg/L range with the minimum being 0.05 mg/L and record this information on your hydrant log if applicable or in WMS.
A record of the hydrant performance should be kept on an individual basis and records maintained in WMS.

Pipe Diameter		Minimum Required Flow Rate*		
Inches	Millimeters	GPM	L/S	No. of Hydrants Required Open**
4	100	100	6	1
6	150	200	13	1
8	200	400	25	1
10	250	600	25	1
12	300	900	57	2
16	400	1600	100	2

*Based on 2.5 ft/s (0.76 m/s) at 40 psi (280 kpa) pressure
**Based on hydrant with one 2 1/2 in. (63 mm) outlet.

WATER DISINFECTION

All new water mains and parts must be disinfected with some form of chlorine before put in use. The common forms of chlorine that are used in the disinfection operations are liquid chlorine, sodium hypochlorite solution, and calcium hypochlorite granules or tablets. Most common forms are sodium hypoclorite and calcium hypochlorite.

Calcium Hypochlorite Tablet Method (HTH)

This method is mostly used for new installation. Workers must take care to keep the pipe clean during installation because the main cannot be flushed before it is disinfected. If it becomes difficult to keep the pipes clean during installation then this method should not be used so that the line can be flushed prior to disinfection.
Please note that this procedure should not be used on solvent-welded plastic or on screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

The HTH tablets should be placed in each section of pipe and fire hydrant as the work progresses. The tablets are usually glued to the top of the pipe with an epoxy resin, in sufficient quantities to produce a chlorine residual of 25 mg/L after they have completely dissolved. These tablets will easily dissolve once the pipe has been filled with water.
The tablets are placed at each end of each section of pipe. You must bleed a small amount of water to ensure that the chlorinated water has contacted all sections of the pipe.
Filling the pipeline should be done at a velocity below 1 ft/s (0.3 m/s) or the tablets will be dislodged.
Once the water main has been filled and the chlorine residual recorded at or above 25 mg/L, then the main should be left for 24 hours and the level of chlorine residual should remain the same.
If the level of chlorine drops below 25 mg/L before the 24 hours are up, then this section will require flushing and re-chlorination to ensure that adequate disinfection has occurred. You will have to choose one of the other methods at this point. Remember that you will need to dechlorinate the flushing water.

PIPE SIZE IN INCHES	PIPE SIZE IN MILLIMETERS	NO. OF TABLETS PER PIPE LENGTH
4	100	1
6	150	1
8	200	2
10	250	3
12	300	4
16	400	7

This table indicates the number of 5 gram calcium hypochlorite tablets required to produce a chlorine residual of 25 mg/L in 20 ft. (6 m) pipe lengths.

Granules of HTH may also be used instead of tablets. Granules can be placed at the start of the first section of pipe and at each branch main and at 500 ft. intervals. The volume of granules are in the table below.

PIPE DIAMETER		CALCIUM HYPOCHLORITE GRANULES	
INCHES	MM	OZ	GM
4	100	1.7	57
6	150	3.8	113
8	200	6.7	200
10	250	10.5	300
12	300	15.1	430
14 and larger	350 and larger	D2 x 15.1	D2 x 427.9

D is the inside pipe diameter in feet D=D/12

For further information please refer AWWA C651-99 Disinfection of Water Mains for more information.

Hypochlorite Disinfection

Calcium hypochlorite and sodium hypochlorite are generally used for disinfecting water mains. Before disinfection. it is advisable to flush the system if possible to ensure all contaminants and debris have been removed. Ensure adequate drainage has been provided during flushing and disinfection. A concentrated chlorine solution is usually injected through a corporation stop that has been installed close to the valve that connects to the existing water system. At this time the chlorine can be added two different ways; as a continuous feed system or a slug method.

Using the **continuous feed method,** water is slowly added to the pipeline at the same time the chlorine solution is added by using a chemical feed pump. You will need to capture the flow of water volume by measuring the water exiting from the fire hydrant at the end of the line or by metering the flow entering the system. The chemical feed rate should be set so it will produce a concentration of about 50 mg/L when mixed with the incoming water. Continue to feed both water and chlorine solution till you can measure at least a residual 25 mg/L in the flow at the end of the line. (remember to dechlorinate highly chlorinated water before it enters the surrounding environment) Please see table below for hypochlorite addition.
Once you have reached the minimum 25 mg/L, stop pumping and allow the pipe to stand 24 hours. Before you stop pumping, it is a good idea to exercise all hydrants on the system to ensure they are all adequately disinfected. Once pumping has stopped you should operate all line valves to ensure adequate disinfection.
If you are unable to maintain the minimum residual of 10 mg/L after 24 hours, you will need to flush and repeat this procedure until you have ensured system is free from contamination.

Using the **slug method,** water with a high concentration of chlorine is created, then added slowly to the pipeline. The concentration of the slug must be a minimum of 100 mg/L and the slug must be moved through the pipe slowly to achieve contact of at least 3 hours as it moves through the system.
As the slug moves through the system, fire hydrants should be operated to ensure they are disinfected.
Monitoring at various points ensures that you maintain a high residual and indicates if disinfection has been successful.
Once the slug has reached the end of the line and is being dechlorinated, the line and all hydrants must be flushed to ensure all traces of the highly chlorinated water is disposed of.
Note: The high chlorine residual used in this method can prove to be a hazard to the environment if not dechlorinated properly. Great care should be taken in your dechlorination procedures. This method is generally used for larger water lines where a continuous feed method is not practical.

		AMOUNT OF HYPOCHLORITE PER 100 FT (30.5 M) OF PIPE	
PIPE DIAMETER IN INCHES	**PIPE DIAMETER IN MM**	**LBS.**	**Kg**
4	100	.04	.018
6	150	.09	.04
8	200	.17	.08
10	250	.26	.12
12	300	.38	.17
14	350	.51	.23
16	400	.67	.30
18	450	.85	.39
20	500	1.05	.47

Quantity of HTH required to produce 50 mg/L chlorine residual.

CHLORINE DOSAGES FOR DISINFECTING WATER MAINS

The following table represents the amounts of chemicals required to produce various chlorine concentrations in 100,00 gal. (378.5 m3) of water.

Desired Chlorine Hypochlorite Concentration n Water Available	Sodium Hypochlorite Required Liquid Chlorine Required		5% Available Chlorine		10% Available Chloirne		15% Availab Chloirne		Calcium 65%	
mg/L (kg)	lb.	Kg	gal	(L)	gal	(L)	gal	(L)	lb	
2	1.7	.77	3.9	14.7	2	7.6	1.3	4.9	2.6	1.18
10	8.3	3.76	19.4	73.4	9.9	37.5	6.7	25.4	12.8	5.81
50	42	19.05	97	367.2	49.6	187.8	33.4	126.4	64	29.03

Note: Amounts of sodium hypochlorite are based on concentration of available chlorine by volume. For either sodium hypochlorite or calcium hypochlorite, if you have poor storage practices or have old amounts of chemicals, this may mpact your available chlorine for use.

The following table shows the amounts of chemicals required to produce chlorine concentration of 200 mg/L in various mounts of water.

Volume of Water		Liquid Chlorine Required		5% Available Chlorine		10 % Available Chlorine		15% Available Chlorine		Calcium Hypochlorite 65% Available	
gal (kg)	(L)	lb	(g)	gal	(L)	gal	(L)	gal	(L)	lb	
10	(37.90	.02	(9.1)	.04	(.15)	.02	(.08)	.02	(.08)	.03	(13.6)
50	(189.3)	.1	(45.4)	.2	(.76)	.1	(.38)	.07	(.26)	.15	(68)
100	(378.5)	.2	(90.7)	.4	(.1.51)	.2	(.76)	.15	(.57)	.3	(136.1)
200	(757.1)	.4	(181.4)	.8	(3.03)	.4	(1.51)	.3	(1.14)	.6	(272.2)

WATER MAIN BREAKS

Ensure that your emergency procedures in your contingency binder have been initiated. i.e. all contacts made and notices to affected households provided.

After the appropriate repair procedures have been completed, the existing main may be returned to service prior to the completion of bacteriological testing in order to minimize the time customers are without water. Leaks or

breaks that are repaired with clamping devices while the mains remain full of pressurized water may present little danger of contamination and therefore may not require disinfection.

When completing a repair to a watermain, the following procedures shall be undertaken to ensure all exposed parts of the repair has been disinfected. The interior of all pipe and fittings including couplings and sleeves used in making the repair shall be swabbed or sprayed with a 1% hypochlorite solution before they are installed.

Flushing is the most practical means of removing contamination introduced during repairs. If the valve and hydrants permit, flushing towards the work location from both directions is recommended. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.

Where practical, in addition to the procedures previously described, the section of the main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in section 4.4.4 of the AWWA standard for Water Mains Disinfection. The dose may be increased to as much as 300 mg/L and the CT (contact time) reduced to as little as 15 minutes. After chlorination, flushing shall be resumed and continued until discoloured water is eliminated and the chlorine concentration in the water exiting the main is no higher that the levels in the distribution system.

DECHLORINATION PROCEDURES

Highly chlorinated water that is present during flushing and disinfection can be toxic to aquatic organisms. It is imperative that the disposal of this water not adversely affect the local receiving waters or environment.

Chlorinated water can be discharged to:

Sanitary Sewers - This is a safe practice as long as the volume is not too great and there is a good distance between the point of application and the treatment plant. The Plant must be contacted to ensure the operation is not hampered by the addition of this loading and the chlorine residual.
Receiving Waters - (including storm sewers) - Water with a free chlorine residual should not be discharged directly to a lake or stream. If measuring residuals, the combined residuals at the edge of the mixing zone (where allowed) should be below .002 mg/L of combined residual.
Drainage Ditch - Discharge to an open ditch is a good alternative especially if the point of addition is a considerable distance to the receiving water and the ditch in unlined and is full of organic material. Sunlight and high temperatures will help to dissipate the chlorine quickly.
If the above conditions cannot not be met, a slow discharge of the chlorinated water can be used to a sanitary sewer of ditch.
If dechlorination is required, the amounts can be calculated using the information below.

EXCESS CHLORINE RESIDUAL X FACTOR = DECHLORINATION CHEMICAL REQUIRED

This can be worked out in mg/L, lb. or whatever units are appropriate.

There are five chemicals that can be used to dechlorinate the water.

Hydrogen Peroxide - Factor = 0.479 - This is probably the best chemical when discharging to an environmentally sensitive watercourse. It is cheap and an overdose will only add more oxygen to the stream.
Sulphur Dioxide - Factor = 0.901 - This chemical is cheap but will slightly lower the pH in the receiving water.
Sodium Thiosulphate - Factor = 2.225 - This is usually in a crystal format and is easy to use. This will cause some sulphur turbidity but an excess is harmless.
Sodium Suphite - Factor = 1.775 - Excess will lover the dissolved oxygen in the stream.
Sodium Pyrosulphite (sodium metabisulphite) - Factor = 1.3 - Excess will lower the dissolved oxygen in the stream.

Note: All chemicals listed above have a requirement for personal protective equipment. Please ensure all staff that are handling these products read the MSDS and review safety procedures.

To accurately figure this out please review this example given in the MOE Bulletin 65-W-4, Chlorination of potable water supplies.

You have a watermain that contains a chlorine residual of 21 mg/L and the volume in the pipe that has been disinfected is 11,000 L (2400 gal). You are able to discharge to a dry drainage ditch that travels some length till it reaches a water course. You figure that by reducing the residual to 1 mg/L, you will have effectively eliminated all residual by the time this water travels through the ditch. The chemical you choose is hydrogen peroxide at a factor of 0.479.

Dosage required to neutralize 20 mg/L residual would be:

20 mg/L x 0.479 = 9.6 mg/L

To figure out how much chemical you need you have to times this number by the volume of water:

9,6 mg/L x 11000 L = 105600 mg or 105.6 gm of Hydrogen Peroxide (H2O2)

In order to figure out the liquid volume of the chemical required, you need to know what % the chemical strength is and what the specific gravity is:
For Commercial grade hydrogen peroxide - normally 35% strength and a specific gravity of 1.12 g/ml

$$105.7\ \text{gm} \times \frac{100}{35} \times \frac{1}{1.13} = 267\ \text{ml of concentrate.}$$

BACTERIOLOGICAL TESTING

Once a new pipeline or repaired pipeline has been disinfected and flushed, it should then be refilled with the water from your distribution system and bacti testing done to ensure adequate disinfection has occurred. Several samples should be taken depending on the length of pipe that has been installed or repaired. On new water mains, sampling should be taken 24 hours apart to ensure no growth in the pipe and one set of samples shall be taken for every 1,200 ft. (366 m) of water main plus one set from the end of the line.

If results come back negative, then you have an indication that you system is in fact safe and has been properly disinfected.

If results come back positive, you should immediately resample to ensure first samples are accurate. If these samples are again positive then the pipeline will require to be re-flushed and sampled. If this fails to produce negative samples then the water main will require to be disinfected again using one of the above methods.

Turbidity samples should also be taken to ensure water quality meets the regulation of 5 NTU in the distribution.

NOTE: The preceding procedures were developed based on The AWWA SPEC C651-99. Please refer to this Spec. for any clarifications.

Also used MOE Bulletin 65 - W 4, Chlroination of Potable Water Supplies

CT Value Calculation (Primary Disinfection)

The Lefaivre WTP is a chemically assisted conventional filtration and disinfection facility obtaining its water from surface water. As such the treatment process has to provide the following removal or inactivation levels: 2-log (99%) for Crypstosporidium oocysts, 3-log (99.9%) for Giardia Cysts and 4-log (99.99%) for viruses. At least 0.5-log removal or inactivation of Giardia has to be provided through this disinfection process reefered to as "Primary Disinfection".

The CT disinfection concept uses the combination of a disinfectant residual concentration and the effective disinfectant contact time (in minutes), to quantify the capability of a chemical disinfection system to provide effective pathogen inactivation to the required level (i.e 0.5-log removal of Giardia). The use of this concept involves determining the CT values required at the actual, often variable, operating conditions (flow, temperature and pH) and ensuring that the employed disinfection process achieves these values at all time.

Chemical disinfection CT values are calculated by multiplying the disinfectant residual concentration (in mg/L) by the disinfectant contact time in minutes.

CT = Concentration (mg/L) x Time (minutes)

The chemical disinfectant residual measured at the end of each treatment step and the contact time used is T_{10} - the length of time during which not more than 10 % of the influent water would pass through the process. The use of T_{10} ensures that 90 % of the water will therefore have a longer contact time.

CT calculations at any given facility shall be based on the disinfection residual concentration as continuously measured where the treated water enters the distribution system. The Actual CT (calculated) value is then compared to the Required CT value, which is determined from the CT tables appended to this procedure. The tables identify the **free chlorine** and other chemical disinfectants CT values required for specific values of log inactivation of *Giardia Cyst* and target viruses (hepatitis A) at specific temperatures and pH levels.

The Actual CT should, at all times during plant operation, be equal to or greater than the Required CT value obtained from the tables.

Example of Facility CT value calculation

Operating conditions necessary to determine the CT value;

Total volume of Clearwell	= 660 (100%)
Minimum Clearwell level	= 330 (50 %)
Maximum Daily Flow rate (High Lift Pumps)	= 2750 m^3 /day (1.91 m^3/min)
Baffling factor	= 0.20 (Unbaffled Perforated Pipe at inlet)
pH (Treated water)	= 7.5
Temp (Treated water)	= 20 degrees Centrigrade
Free chlorine residual	= 1.8 mg/L

a) T_{10} Calculation (min) = Min CW level (m^3) / MDF (m^3/min) **X** baffle ratio

$$= \frac{330\ m^3}{1.91\ m^3/min} \quad X \quad 0.2$$

= 34.55 minutes

b) CT Actual calculation (mg/L/min) = Free chlorine residual **X** Sum of T_{10}

= 1.8 mg/L X 34.55 min

= 62.19 mg/L-min

c) CT Required

Using Table 5 with a temperature of 20 Celcius, a pH of 7.5 and a Free Chlorine of 1.8 mg/L, the CT Required to meet 0.5 log inactivation is = 12 mg/l-min.

d) Comparision of CT Actual vs CT Required for 0.5 log Giardia Inactivation

The CT Actual should always be greater than the CT required. In this example the comparision is as follows:.

CT Actual = 62 mg/L-min

CT Required = 12 mg/L-min

Therefore the 1.8 mg/L chlorine residual with the available contact time under the present conditions is sufficient to provide a CT Actual greater than the CT Required even under Maximum Day Flows.

Theoretically, the chlorine residual could be reduced somewhat as long as the CT Actual remains above the CT Required. For example using Table 5 and assuming a residual of 0.4 mg/L the CT Actual compares to the CT Required as follows:

CT Actual = 0.4 mg/L X 34.6 min. = 13.8mg/L-min.

CT Required = 11 mg/L-min.

APPENDIX I

NOTIFICATION OF LABORATORY SERVICES

(AS ATTACHED)

Ontario

Ministry of the Environment / Ministère de l'Environnement

Drinking-Water Systems Regulation O. Reg 170/03

Part III Form 6

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SECTION 1 – SUBMISSION INFORMATION

Date of Submission: *(dd/mm/yy)*	**For Ministry Use Only** **Date Received:** *(dd/mm/yy)*
☐ **New Submission** ☐ **Updated Submission**	

SECTION 2 – CONTRACTED LABORATORY(S) HIRED TO ANALYZE DRINKING-WATER SAMPLES AND THE SPECIFIC PARAMETERS TESTED

Contracted Laboratory

Name of Contracted Laboratory: Caduceon Environmental Laboratories - Ottawa East

Laboratory Address:	2378 Holly Lane *Street No. and Name*	Ottawa *Town/City*	K1V 7P1 *Postal Code*
Phone: (613) 526-0123	**Fax:** (613) 526-1244	**Email:** gclarkin@caduceonlabs.com	

Check all tests that Contracted Laboratory has been contracted to perform:

MICROBIOLOGICAL:

Membrane Filtration	**Presence/Absence**	**HPC**	**MPN**
☑ *E. coli*	☐ *E. coli*	☐ HPC – Membrane Filtration	☐ *E. coli*
☑ Fecal coliforms	☐ Fecal coliforms	☑ HPC – Spread Plate	☐ Total coliforms
☑ Total coliforms	☐ Total coliforms	☐ HPC – Pour Plate	
☑ Total coliform (Background)			

☐ **Other Microbiological Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.**

SPECIFY: _____

CHEMICAL PARAMETERS:

Volatile Organic Parameters:

- ☐ 1,2-dichlorobenzene
- ☐ 1,4-dichlorobenzene
- ☐ 1,2-dichloroethane
- ☐ 1,1-dichloroethylene
- ☐ Benzene
- ☐ Carbon tetrachloride
- ☐ Dichloromethane
- ☐ Monochlorobenzene
- ☐ Tetrachloroethylene
- ☐ Trichloroethylene
- ☐ Trihalomethanes (Total)
- ☐ Vinyl chloride

Inorganic Parameters:

- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Boron
- ☐ Cadmium
- ☐ Chromium
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury
- ☐ Nitrate + Nitrite (as nitrogen)
- ☐ Selenium
- ☐ Sodium
- ☐ Uranium

☐ All of the Above Volatile Organic Compounds

☐ Other Volatile Organic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

☑ All of the Above Inorganic Parameters

☐ Other Inorganic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

Pesticide and General Organic Parameters:

- ☐ 2,3,4,6-tetrachlorophenol
- ☐ 2,4-dichlorophenol
- ☐ 2,4,6-trichlorophenol
- ☐ 2,4-D
- ☐ 2,4,5-T
- ☐ Alachlor
- ☐ Aldicarb
- ☐ Aldrin + Dieldrin
- ☐ Atrazine + Metabolites
- ☐ Azinphos-methyl
- ☐ Bendiocarb
- ☐ Benzo(a)pyrene
- ☐ Bromoxynil
- ☐ Carbaryl
- ☐ Carbofuran
- ☐ Chlordane (Total)
- ☐ Chlorpyrifos
- ☐ Cyanazine
- ☐ DDT + Metabolites
- ☐ Diazinon
- ☐ Dicamba
- ☐ Diclofop-methyl
- ☐ Dimethoate
- ☐ Dinoseb
- ☐ Diquat
- ☐ Diuron
- ☐ Glyphosate
- ☐ Heptachlor +Heptachlor Epoxide
- ☐ Lindane (Total)
- ☐ Malathion
- ☐ Methoxychlor
- ☐ Metolachlor
- ☐ Metribuzin
- ☐ Paraquat
- ☐ Parathion
- ☐ PCBs (Total)
- ☐ Pentachlorophenol
- ☐ Phorate
- ☐ Picloram
- ☐ Prometryne
- ☐ Simazine
- ☐ Temephos
- ☐ Terbufos
- ☐ Triallate
- ☐ Trifluralin

☐ All of the Above Pesticide and General Organic Parameters

☐ Other Pesticide and/or General Organic Parameters(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

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SECTION 2 – CONTRACTED LABORATORY(S) HIRED TO ANALYZE DRINKING -WATER SAMPLES AND THE SPECIFIC PARAMETERS TESTED

Contracted Laboratory

Name of Contracted Laboratory: Caduceon Environmental Laboratories - Ottawa West

Laboratory Address:	40 Camelot Drive *Street No. and Name*	Ottawa *Town/City*	K2G 5X8 *Postal Code*
Phone: (613) 228-1145	**Fax:** (613) 228-1148	**Email:** gclarkin@caduceonlabs.com	

Check all tests that Contracted Laboratory has been contracted to perform:

MICROBIOLOGICAL:

Membrane Filtration	**Presence/Absence**	**HPC**	**MPN**
☐ *E. coli*	☐ *E. coli*	☐ HPC – Membrane Filtration	☐ *E. coli*
☐ Fecal coliforms	☐ Fecal coliforms	☐ HPC – Spread Plate	☐ Total coliforms
☐ Total coliforms	☐ Total coliforms	☐ HPC – Pour Plate	
☐ Total coliform (Background)			

☐ **Other Microbiological Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.**

SPECIFY: _____

CHEMICAL PARAMETERS:

Volatile Organic Parameters:

- ☐ 1,2-dichlorobenzene
- ☐ 1,4-dichlorobenzene
- ☐ 1,2-dichloroethane
- ☐ 1,1-dichloroethylene
- ☐ Benzene
- ☐ Carbon tetrachloride
- ☐ Dichloromethane
- ☐ Monochlorobenzene
- ☐ Tetrachloroethylene
- ☐ Trichloroethylene
- ☐ Trihalomethanes (Total)
- ☐ Vinyl chloride

Inorganic Parameters:

- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Boron
- ☐ Cadmium
- ☐ Chromium
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury
- ☐ Nitrate + Nitrite (as nitrogen)
- ☐ Selenium
- ☐ Sodium
- ☐ Uranium

- ☑ All of the Above Volatile Organic Compounds
- ☐ Other Volatile Organic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

- ☐ All of the Above Inorganic Parameters
- ☐ Other Inorganic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

Pesticide and General Organic Parameters:

- ☐ 2,3,4,6-tetrachlorophenol
- ☐ 2,4-dichlorophenol
- ☐ 2,4,6-trichlorophenol
- ☐ 2,4-D
- ☐ 2,4,5-T
- ☐ Alachlor
- ☐ Aldicarb
- ☐ Aldrin + Dieldrin
- ☐ Atrazine + Metabolites
- ☐ Azinphos-methyl
- ☐ Bendiocarb
- ☐ Benzo(a)pyrene
- ☐ Bromoxynil
- ☐ Carbaryl
- ☐ Carbofuran
- ☐ Chlordane (Total)
- ☐ Chlorpyrifos
- ☐ Cyanazine
- ☐ DDT + Metabolites
- ☐ Diazinon
- ☐ Dicamba
- ☐ Diclofop-methyl
- ☐ Dimethoate
- ☐ Dinoseb
- ☐ Diquat
- ☐ Diuron
- ☐ Glyphosate
- ☐ Heptachlor +Heptachlor Epoxide
- ☐ Lindane (Total)
- ☐ Malathion
- ☐ Methoxychlor
- ☐ Metolachlor
- ☐ Metribuzin
- ☐ Paraquat
- ☐ Parathion
- ☐ PCBs (Total)
- ☐ Pentachlorophenol
- ☐ Phorate
- ☐ Picloram
- ☐ Prometryne
- ☐ Simazine
- ☐ Temephos
- ☐ Terbufos
- ☐ Triallate
- ☐ Trifluralin

- ☐ All of the Above Pesticide and General Organic Parameters
- ☐ Other Pesticide and/or General Organic Parameters(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

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Contracted Laboratory

Name of Contracted Laboratory: SGS Lakefield Research Limited

Laboratory Address:	185 Concession Street *Street No. and Name*	Lakefield *Town/City*	K0L 2H0 *Postal Code*
Phone: (705) 652-2000	**Fax:** (705) 652-6441	**Email:** bgraham@lakefield.com	

Check all tests that Contracted Laboratory has been contracted to perform:

MICROBIOLOGICAL:

Membrane Filtration	**Presence/Absence**	**HPC**	**MPN**
☐ *E. coli*	☐ *E. coli*	☐ **HPC – Membrane Filtration**	☐ *E. coli*
☐ **Fecal coliforms**	☐ **Fecal coliforms**	☐ **HPC – Spread Plate**	☐ **Total coliforms**
☐ **Total coliforms**	☐ **Total coliforms**	☐ **HPC – Pour Plate**	
☐ **Total coliform (Background)**			

☐ **Other Microbiological Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.**

SPECIFY: _____

CHEMICAL PARAMETERS:

Volatile Organic Parameters:

- ☐ 1,2-dichlorobenzene
- ☐ 1,4-dichlorobenzene
- ☐ 1,2-dichloroethane
- ☐ 1,1-dichloroethylene
- ☐ Benzene
- ☐ Carbon tetrachloride
- ☐ Dichloromethane
- ☐ Monochlorobenzene
- ☐ Tetrachloroethylene
- ☐ Trichloroethylene
- ☐ Trihalomethanes (Total)
- ☐ Vinyl chloride

Inorganic Parameters:

- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Boron
- ☐ Cadmium
- ☐ Chromium
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury
- ☐ Nitrate + Nitrite (as nitrogen)
- ☐ Selenium
- ☐ Sodium
- ☐ Uranium

- ☐ All of the Above Volatile Organic Compounds
- ☐ Other Volatile Organic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

- ☐ All of the Above Inorganic Parameters
- ☐ Other Inorganic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

Pesticide and General Organic Parameters:

- ☑ 2,3,4,6-tetrachlorophenol
- ☐ 2,4-dichlorophenol
- ☐ 2,4,6-trichlorophenol
- ☐ 2,4-D
- ☐ 2,4,5-T
- ☐ Alachlor
- ☐ Aldicarb
- ☐ Aldrin + Dieldrin
- ☐ Atrazine + Metabolites
- ☐ Azinphos-methyl
- ☐ Bendiocarb
- ☐ Benzo(a)pyrene
- ☑ Bromoxynil
- ☐ Carbaryl
- ☐ Carbofuran
- ☑ Chlordane (Total)
- ☐ Chlorpyrifos
- ☐ Cyanazine
- ☐ DDT + Metabolites
- ☐ Diazinon
- ☐ Dicamba
- ☐ Diclofop-methyl
- ☐ Dimethoate
- ☐ Dinoseb
- ☐ Diquat
- ☐ Diuron
- ☐ Glyphosate
- ☑ Heptachlor +Heptachlor Epoxide
- ☐ Lindane (Total)
- ☐ Malathion
- ☐ Methoxychlor
- ☐ Metolachlor
- ☑ Metribuzin
- ☐ Paraquat
- ☐ Parathion
- ☐ PCBs (Total)
- ☐ Pentachlorophenol
- ☐ Phorate
- ☐ Picloram
- ☐ Prometryne
- ☑ Simazine
- ☐ Temephos
- ☐ Terbufos
- ☐ Triallate
- ☐ Trifluralin

- ☐ All of the Above Pesticide and General Organic Parameters
- ☐ Other Pesticide and/or General Organic Parameters(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: Aldrin

Ontario

Ministry of the Environment / Ministère de l'Environnement

Drinking-Water Systems Regulation O. Reg 170/03

Part III Form 6

Schedule 6 (Subsection 6-9. (4))

IDENTIFYING THE LABORATORY THAT WILL CARRY OUT LABORATORY TESTING

As specified in Ontario's new Drinking-water Systems Regulation, this form must be completed and delivered to the Ministry prior to the laboratory analyzing your water samples for required parameters for the first time. Once you have completed this form, you do not need to re-submit it unless there are any changes in a laboratory being contracted to analyze any required parameter (i.e. Section 2 of this form). Please note that this Form is to be used for the identification of Regulation testing and not for the purpose of the Engineer's Report testing. *Failure to notify the parties in accordance with the Regulation and/or submission of false information constitutes an offence.* **All testing for Ontario Drinking-Water Quality Standards and health-related parameters required in a MOE Certificate of Approval, Order or Direction must be performed by an accredited laboratory.**

SECTION 1 – SUBMISSION INFORMATION

Date of Submission: *(dd/mm/yy)*	**For Ministry Use Only** **Date Received:** *(dd/mm/yy)*
☐ **New Submission** ☐ **Updated Submission**	

SECTION 2 – CONTRACTED LABORATORY(S) HIRED TO ANALYZE DRINKING -WATER SAMPLES AND THE SPECIFIC PARAMETERS TESTED

Contracted Laboratory

Name of Contracted Laboratory: Caduceon Environmental Laboratories (Kingston)

Laboratory Address: 285 Dalton Ave *Street No. and Name* | Kingston *Town/City* | K7M 6Z1 *Postal Code*

Phone: (613) 544-2001 | **Fax:** (613) 544-2770 | **Email:** sburrows@caduceonlabs.com

Check all tests that Contracted Laboratory has been contracted to perform:

MICROBIOLOGICAL:

Membrane Filtration	Presence/Absence	HPC	MPN
☑ *E. coli*	☑ *E. coli*	☑ HPC – Membrane Filtration	☐ *E. coli*
☑ Fecal coliforms	☐ Fecal coliforms	☐ HPC – Spread Plate	☐ Total coliforms
☑ Total coliforms	☑ Total coliforms	☐ HPC – Pour Plate	
☑ Total coliform (Background)			

☐ **Other Microbiological Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.**

SPECIFY: _____

CHEMICAL PARAMETERS:

Volatile Organic Parameters:

- ☐ 1,2-dichlorobenzene
- ☐ 1,4-dichlorobenzene
- ☐ 1,2-dichloroethane
- ☐ 1,1-dichloroethylene
- ☐ Benzene
- ☐ Carbon tetrachloride
- ☐ Dichloromethane
- ☐ Monochlorobenzene
- ☐ Tetrachloroethylene
- ☐ Trichloroethylene
- ☐ Trihalomethanes (Total)
- ☐ Vinyl chloride

Inorganic Parameters:

- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Boron
- ☐ Cadmium
- ☐ Chromium
- ☑ Fluoride
- ☐ Lead
- ☐ Mercury
- ☑ Nitrate + Nitrite (as nitrogen)
- ☐ Selenium
- ☐ Sodium
- ☐ Uranium

- ☐ All of the Above Volatile Organic Compounds
- ☐ Other Volatile Organic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

- ☐ All of the Above Inorganic Parameters
- ☑ Other Inorganic Parameter(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: pH,Alkalinity,Chloride,Colour,Conductivity,Cyanide

Pesticide and General Organic Parameters:

- ☐ 2,3,4,6-tetrachlorophenol
- ☑ 2,4-dichlorophenol
- ☑ 2,4,6-trichlorophenol
- ☑ 2,4-D
- ☑ 2,4,5-T
- ☑ Alachlor
- ☑ Aldicarb
- ☑ Aldrin + Dieldrin
- ☑ Atrazine + Metabolites
- ☑ Azinphos-methyl
- ☑ Bendiocarb
- ☑ Benzo(a)pyrene
- ☐ Bromoxynil
- ☑ Carbaryl
- ☑ Carbofuran
- ☑ Chlordane (Total)
- ☑ Chlorpyrifos
- ☑ Cyanazine
- ☑ DDT + Metabolites
- ☑ Diazinon
- ☑ Dicamba
- ☑ Diclofop-methyl
- ☑ Dimethoate
- ☑ Dinoseb
- ☑ Diquat
- ☑ Diuron
- ☑ Glyphosate
- ☐ Heptachlor +Heptachlor Epoxide
- ☑ Lindane (Total)
- ☑ Malathion
- ☑ Methoxychlor
- ☑ Metolachlor
- ☑ Metribuzin
- ☑ Paraquat
- ☑ Parathion
- ☑ PCBs (Total)
- ☑ Pentachlorophenol
- ☑ Phorate
- ☑ Picloram
- ☑ Prometryne
- ☑ Simazine
- ☑ Temephos
- ☑ Terbufos
- ☑ Triallate
- ☑ Trifluralin

- ☐ All of the Above Pesticide and General Organic Parameters
- ☐ Other Pesticide and/or General Organic Parameters(s) Identified in a MOE Certificate of Approval, Order or Direction.

SPECIFY: _____

APPENDIX J

LAB ACCREDITATION

(AS ATTACHED)

Standards Council of Canada
Conseil canadien des normes

200-270, rue Albert St.
Ottawa, ON (Canada)
K1P 6N7

Canada

Tel.: +1 613 238 3222
Fax.: +1 613 569 7808
E-mail/Courriel : info@scc.ca
Internet: http://www.scc.ca

SCOPE OF ACCREDITATION

Caduceon Enterprises Inc.
ENVIRONMENTAL LABORATORY
2378 Holly Lane
Ottawa, Ontario K1V 7P1

Accredited Laboratory No. 194
(Conforms with requirements of ISO/IEC 17025)

CONTACT: Mr. Dave Peeler
TEL.: (613) 526-0123
FAX: (613) 526-1244
EMAIL: dpeeler@caduceonlabs.com

CLIENTS SERVED: All interested parties.

FIELD(S) OF TESTING: Biological, Chemical/Physical

PROGRAM SPECIALTY AREA: Environmental

ISSUED ON: 2003-09-04 VALID TO: 2006-03-06

ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY

Environmental

Air Filter

(Major Ions - Air [013])

A-IC-01; based on APHA 4100	IC - EXTRACTION Chloride Fluoride Nitrate Sulfate

Accredited Laboratory No. 194

(Metals - Air [012])

D-ICP-01; based on APHA 3120	ICP - DIGESTION Cadmium Chromium Cobalt Copper Iron Lead Manganese Molybdenum Nickel Zinc

(Total Suspended Particulate - Air [018])

A-TSP-01; based on MOEE E3288A	GRAVIMETRIC Total Suspended Particulate

Dustfall

(Total/Insoluble Dustfall - Dustfall [020])

A-DF-01; based on MOEE DF-E3043A	FILTRATION - GRAVIMETRIC Insoluble Dustfall Total Dustfall

Fluoride Candles

(Fluoride - Fluoride Candles [019])

A-FISE-01; based on MOEE FSIE-1983D	DIGESTION - ISE Fluoride

Oil

(PCB in Oil (Camelot) [040])

C-PCB-01; based on EPA 8081	GC/ECD - EXTRACTION Total PCB

Soil/Sediment

(Arsenic - Soil [016])

D-AS-01; based on MOE HYDSWGE 3091A-94	HYDRIDE AA - DIGESTION Arsenic

(Mercury - Soil [017])

D-HG-01; based on EPA 7471A	COLD VAPOUR AA - DIGESTION Mercury

(Metals - Soil [015])

D-ICP-01; based on EPA 6010	ICP - DIGESTION Cadmium Copper Lead Zinc

(PCB - Soil (Camelot) [053])

C-PCB-02; based on EPA 8000/8081	GC/ECD - EXTRACTION Arochlor 1242 Arochlor 1248 Arochlor 1254 Arochlor 1260

Water (Inorganic)

(Alkalinity (pH 4.5) - Water [001])

A-ALK-01; based on APHA 2320	TITRIMETRIC Alkalinity (pH 4.5)

(Alkalinity (pH 4.5) - Water [030])

A-ALK-02; based on based on EPA 310.2	AUTO COLOR Alkalinity (pH 4.5)

(Ammonia - Water (Camelot) [055])

A-NH3-01; based on EPA 350.2	AUTO COLOR Ammonia

(BOD (5 Day) - Water [008])

C-BOD-01; based on APHA 5210	D.O. METER BOD (5 day)

(Colour - Water [027])

A-COL-01; based on APHA 2120	PT/CO Colour

(Conductivity (25°C) - Water [003])

A-COND-01; based on APHA 2510	CONDUCTIVITY METER Conductivity (25°C)

(Low Level Metals - Water/Graphite Furnace [022])

A-GF-01; based on APHA 3113	AA GRAPHITE Cadmium Lead Silver Thallium

(Major Ions - Water (NO2 MDL = .1 mg/L) [002])

A-IC-01; based on APHA 4110	ION CHROMATOGRAPHY Chloride Fluoride Nitrate Nitrate plus Nitrite Nitrite Sulfate

(Mercury - Water [025])

D-HG-02; based on APHA 3112	COLD VAPOUR AA - DIGESTION Mercury

(Metals - Water (Holly Lane) [049])

D-ICPMS-01; based on EPA 200.8	ICP/MS Dissolved Aluminum Dissolved Barium Dissolved Beryllium Dissolved Cadmium Dissolved Chromium Dissolved Cobalt Dissolved Copper Dissolved Lead Dissolved Manganese Dissolved Molybdenum Dissolved Nickel Dissolved Silver Dissolved Thallium Dissolved Uranium Dissolved Vanadium Total Antimony Total Arsenic Total Selenium

(Metals - Water/ICP [004])

D-ICP-01; based on APHA 3120	ICP Dissolved Aluminum Dissolved Barium Dissolved Boron Dissolved Cadmium Dissolved Calcium Dissolved Chromium Dissolved Cobalt Dissolved Copper Dissolved Iron Dissolved Lead Dissolved Magnesium Dissolved Manganese Dissolved Molybdenum Dissolved Nickel Dissolved Vanadium Dissolved Zinc Hardness

	Potassium Reactive Silica Sodium

(Organic Carbon - Water (Camelot) [054])

C-OC-01; based on APHA 5310C/EPA 415.1	IR-UV-PERSULFATE DOC Total Organic Carbon

(Orthophosphate - Water(as P) (Camelot) [058])

A-PO4-01; based on EPA 365.1	AUTO COLOR Orthophosphate

(PH - Water [005])

A-pH-01; based on APHA 4500 H	pH METER pH

(PH - Water (Camelot) [036])

A-pH-02; based on EPA 150.1	pH METER pH

(Phenols - Water (Camelot) [056])

C-PHEN-01; based on EPA 420.2	AUTO, 4-AAP Phenolics

(TKN - Water (Camelot) [033])

A-TKN-01; based on STKNP-E3199A-1	AUTO COLOR - DIGESTION Organic Nitrogen Total Kjeldahl Nitrogen

(Total Metals - Water [024])

D-AS-01, D-SB-01, D-SE-01; based on APHA 3114B	HYDRIDE AA - DIGESTION Total Antimony Total Arsenic Total Selenium

(Total Phosphorus - Water (Camelot) [057])

A-TP-01; based on MOEE STKNP-E3200A	AUTO COLOR - DIGESTION Total Phosphorus

(Total Suspended Solids - Water [009])

A-TSS-01; based on APHA 2540	GRAVIMETRIC Total Suspended Solids

(Turbidity - Water [026])

A-TURB-01; based on APHA 2130	NEPHELOMETRIC Turbidity

(Uranium - Water [023])

D-U-01; based on MOE URANIUM E3216A	FLUORIMETRY Dissolved Uranium

Water (Microbiology)

(Coliforms - Water [010])

B-MFEC-01, B-MFFC-01, B-MFTC-01; based on APHA 9222D; APHA 9222B	MEMBRANE FILTRATION Background Counts Escherichia Coli (E. coli) Fecal Coliforms Total Coliforms

(Coliforms - Water [050])

B-ECTC-01; based on MICROMFDC-E3407	MEMBRANE FILTRATION Background Bacteria Escherichia Coli (E. coli) Total Coliforms

(Heterotrophic Plate Count - Water [021])

B-HPC-01; based on APHA 9215C	SPREAD PLATE Heterotrophic Plate Count (HPC)

Accredited Laboratory No. 194

Water (Organic)

(Volatiles - Water (Camelot) [041])

C-VOC-01; based on EPA 8260

GC/MS - PURGE AND TRAP
1,1-Dichloroethane
1,1-Dichloroethene
1,1-Dichloropropene
1,1,1-Trichloroethane
1,1,1,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1,2,2,-Tetrachloroethane
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
1,2-dichlorobenzene
1,2-dichloroethane
1,2-Dichloropropane
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,3-Dichlorobezene
1,3-Dichloropropane
1,3,5-Trimethylbenzene
1,4-dichlorobenzene
2-Chlorotoluene
2,2-Dichloropropane
4-Chlorotoluene
4-Isopropyl Toluene
Benzene
Bromobenzene
Bromodichloromethane
Bromoform
Carbon Tetrachloride
Chlorobenzene
Chloroform
Chloromethane
cis-1,2-Dichlorethene
cis-1,3-Dichloropropene
Dibromochloromethane
Dibromomethane
Dichlorodifluoromethane
Dichloromethane

Ethylbenzene
Hexachlorobutadiene
Isopropyl Benzene
m/p-xylene
n-Butylbenzene
n-Propylbenzene
Naphthalene
o-xylene
Sec-Butylbenzene
Styrene
tert-Butylbenzene
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
trans-1,3,-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl Chloride

P. Paladino, P. Eng., Director Conformity Assessment

Date: 2003-09-04

CAEAL 2644, SCC 1003-15/264
Partner: CAEAL

Standards Council of Canada
Conseil canadien des normes

200-270, rue Albert St.
Ottawa, ON (Canada)
K1P 6N7

Canada

Tel.: +1 613 238 3222
Fax.: +1 613 569 7808
E-mail/Courriel : info@scc.ca
Internet: http://www.scc.ca

SCOPE OF ACCREDITATION

Caduceon Enterprises Inc.
CADUCEON ENVIRONMENTAL LABORATORIES (KINGSTON)
133 Dalton Ave.
Kingston, Ontario K7K 6C2

Accredited Laboratory No. 365
(Conforms with requirements of ISO/IEC 17025)

CONTACT: Mr. Steve Garrett

TEL.: (613) 544-2001
FAX.: (613) 544-2770
EMAIL: etrl@kingston.net

CLIENTS SERVED: All Interested Parties

FIELDS OF TESTING: Biological, Chemical/Physical

PROGRAM SPECIALTY AREA: Environmental

ISSUED ON: 2003-05-16

VALID TO: 2005-01-22

ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY

Environmental:

Soil/Sediment

(TPH - Soil)

TPH 001; based on MOEE TPH-E3397A	SONICATION GC/FID - EXTRACTION Diesel Range Oils Heavy Oils TPH C10-C50

Water (Inorganic)

(Alkalinity - Water)

ALK 001; based on SM 2320	TITRIMETRIC Alkalinity (pH 4.5)

(Ammonia + Ammonium - Water)

NH3-001; based on SM 4500-NH3-H	AUTO COLOR Ammonia+Ammonium

(Colour - Water)

COL 001; based on SM 2120 A	COLORIMETRIC Colour

(Conductivity - Water)

COND 001; based on SM 2510	CONDUCTIVITY METER Conductivity (25°C)

(Cyanide - Water)

CN 001; based on SM 4500 CN	AUTO COLOR - DISTILLATION Cyanide (SAD)

(Fluoride - Water)

F 001; based on SM 4500 FD	SPADNS Fluoride

(Major Ions - Water)

ANIONS 001; based on SM 4110	ION CHROMATOGRAPHY Chloride Fluoride Nitrate Nitrate plus Nitrite Nitrite Sulfate

(Orthophosphate - Water)

DRP-001; based on SM 4500-P-E	COLOR Orthophosphate

(TP/TKN - Water)

TPTKN 001; based on MOEE STKNP-E3199A.1	AUTO COLOR - DIGESTION Total Kjeldahl Nitrogen Total Phosphorus

(Total Suspended Solids - Water)

TSS-001; based on SM 2540D	GRAVIMETRIC Total Suspended Solids

(Turbidity - Water)

TURB 001; based on SM 2130 B	TURBIDIMETRIC Turbidity

(pH - Water)

PH 001; based on SM 4300 H+	pH - METER pH

Water (Microbiology)

(Coliforms - Water)

EC 001/TC 001/FC 001; based on SM 9222	MEMBRANE FILTRATION Escherichia Coli (E. coli) Fecal Coliforms Total Coliforms

(Coliforms - Water/PA)

PA 001; based on SM 9221	PRESENCE/ABSENCE E. Coli Total Coliforms

(Fecal Streptococci - Water)

FS 001; based on SM 9230	MEMBRANE FILTRATION Fecal Streptococci

(Heterotrophic Plate Count - Water)

HPC 001; based on SM 9215	MEMBRANE FILTRATION Heterotrophic Plate Count (HPC)

(Pseudomonas - Water)

PS-001; based on SM 9213 E	MEMBRANE FILTRATION Pseudomonas Aeruginosa

Water (Organic)

(Diquat and Paraquat - Water)

DIQPAR-001; based on EPA 549.2	HPLC Diquat Paraquat

(Extractable Semivolatiles - Water)

PESTGCMS-001; based on EPA 8270	GC/MS 2,3,4,6-tetrachlorophenol 2,4,5-trichlorophenoxyacetic acid 2,4,6-trichlorophenol 2,4-dichlorophenol 2,4-dichlorophenoxyacetic acid Alachlor Aldicarb Atrazine Atrazine des-etrhyl Azinpos-Methyl Bendiocarb Benzo (a) pyrene Bromoxynil Carbaryl Carbofuran Chlorpyrifos Cyanazine Diazinon Dicamba

	Diclofop-methyl
	Dimethoate
	Dinoseb
	Diuron
	Malathion
	Metolachlor
	Metribuzin
	Parathion
	Pentachlorophenol
	Phorate
	Picloram
	Prometryne
	Simazine
	Temaphos
	Terbufos
	Triallate
	Trifluralin

(Glyphosate - Water)

GLYPH-001; based on EPA547	DIRECT INJECTION HPLC
	Glyphosate

(Pesticides and PCBs - Water)

PESTCL-001; based on EPA 8081, 8082	GC/ECD - EXTRACTION
	A -BHC
	Aldrin
	Alpha Chlordane
	beta-BHC
	delta-BHC
	Dieldrin
	Endosulfan I
	Endosulfan II
	Endosulphan Sulphate
	Endrin
	Endrin Aldehyde
	Endrin Ketone
	Gamma-chlordane
	Heptachlor
	Heptachlor Epoxide
	Hexachlorobenzene
	Lindane
	Methoxychlor
	Mirex

o,p' - DDT
oxy-chlordane
p,p' - DDT
p,p-DDD
p,p-DDE
Total Chlordane
Total PCB

(TPH - Water)

TPH 001; based on MOEE E3397A

GC/FID - LIQUID EXTRACTION
TPH C10-C50

P. Paladino, P. Eng., Director Conformity Assessment

Date: 2003-05-16

SCC 1003-15/512; CAEAL 2728
Partner: CAEAL

Contact: Mr. Steve Garrett

Signature

Title

Date

CADUCEON **Environmental Laboratories**
(Division of Caduceon Enterprises Inc)

Subcontracting Authorization Form Date: OCTOBER 8, 2003.

As part of our accreditation requirements Caduceon requires written permission from clients for external subcontracting of samples to other laboratories. Caduceon will only subcontract when samples are requested for parameters not performed internally (Kingston, Camelot, Holly Lane) or when holding times are in jeopardy due to overload of samples.

Caduceon will only subcontract to laboratories that have CAEAL accreditation status or equivalent and in the case of Ontario Drinking Water analyses MOE Licensing.

Please fill out below authorizing Caduceon to (a) subcontract samples at its discretion or (b) only samples for specific parameters. See page 2 of 4 for specific subcontract labs.

Company: ONTARIO CLEAN WATER AGENCY (OCWA)

Contact name: JACQUES BREEN.

Phone #: 1-613-679-4019

Fax #: 1-613-679-4735

a) I authorize Caduceon to subcontract samples at their discretion for what ever reason it maybe:

Authorizing Signature: Jacques Breen Date: Oct 09, 2003

b) I authorize Caduceon to subcontract samples at their discretion only for the parameters listed below:

Authorizing Signature: N/A Date: N/A

List of Parameters: N/A.

Note: Samples submitted to Caduceon for analysis not performed internally will be subcontracted whether permission is granted in writing or not.

Branch Offices:

Kingston Lab, 285 Dalton Ave. Kingston, ON K7M 6Z1 Tel: (613) 544-2001 Fax: (613) 544-2770
Nepean Lab, 40 Camelot Dr. Nepean, ON K2G 5X8 Tel: (613) 228-1145 Fax: (613) 228-1148
Ottawa Lab, 2378 Holly Lane Ottawa, ON K1V 7P1 Tel: (613) 526-0123 Fax: (613) 526-1244
Moncton Lab, 150 Lutz St. Moncton, NB E1C 5E9 Tel: (506) 855-6472 Fax: (506) 855-8294

APPENDIX K

CERTIFICATION AND TRAINING RECORDS

(AS ATTACHED)

Ontario

CERTIFICATE OF COMPETENCY / CERTIFICAT DE COMPÉTENCE

MARIE-JOSEE S DION

has complied with the requirements under Regulation 435/93 for the Utility Operator Licensing Program in
satisfait aux exigences du Programme de certification des operateurs d'installations, aux termes du Reglement 435/93

WATER TREATMENT SYSTEM
TRAITEMENT DE L'EAU

OPERATOR-IN-TRAINING/APPRENTI(E)-OPÉRATEUR(TRICE)

October 31, 2006 **OT21978**

Janet O'Grady

Ontario

CERTIFICATE OF COMPETENCY / CERTIFICAT DE COMPÉTENCE

MARIE-JOSEE S DION

has complied with the requirements under Regulation 435/93 for the Utility Operator Licensing Program in
satisfait aux exigences du Programme de certification des operateurs d'installations, aux termes du Reglement 435/93

WATER DISTRIBUTION SYSTEM
RÉSEAUX D'APPROVISIONNEMENT EN EAU
OPERATOR-IN-TRAINING/APPRENTI(E)-OPÉRATEUR(TRICE)

OT21979

October 31, 2006

Janet O'Grady

Ontario

CERTIFICATE OF COMPETENCY / CERTIFICAT DE COMPÉTENCE

KRISTINE ST-PIERRE

has complied with the requirements under Regulation 435/93 for the Utility Operator Licensing Program in
satisfait aux exigences du Programme de certification des operateurs d'installations, aux termes du Reglement 435/93

WATER DISTRIBUTION SYSTEM
RÉSEAUX D'APPROVISIONNEMENT EN EAU
OPERATOR-IN-TRAINING/APPRENTI(E)-OPÉRATEUR(TRICE)

OT20678

June 30, 2006

Janet O'Grady

Ontario

CERTIFICATE OF COMPETENCY / CERTIFICAT DE COMPÉTENCE

KRISTINE ST-PIERRE

has complied with the requirements under Regulation 435/93 for the Utility Operator Licensing Program in
satisfait aux exigences du Programme de certification des operateurs d'installations, aux termes du Reglement 435/93

WATER TREATMENT SYSTEM
TRAITEMENT DE L'EAU

OPERATOR-IN-TRAINING/APPRENTI(E)-OPÉRATEUR(TRICE)

June 30, 2006

OT20677

Janet O'Grady

Alfred
Operator In Charge (OIC) Hours - 2003
Plantagenet Grouping

Month	Stephane Barbarie	Mario Ethier	Charles Gagnon	Jacques Breen OIOR	Maurice Benoit OIOR
January	264	0	216	744	
February	196	0	324	672	
March	340	0	236	744	
April	208	0	336	720	
May	296	0	272	744	
June	72	112	336	720	
July	376	128	64	408	336
August	192	128	264	576	168
September	208	216	128	720	
October	136	176	256	744	
November	128	240	184	720	
December	128	264	192	576	168
Total hrs	2544	1264	2808	8088	672

Project Grouping: Alfred Water, Alfred Sewage, Plantagenet Water, Plantagenet Sewage, Wendove Water, Wendover Sewage

ONTARIO CLEAN WATER AGENCY EMS	ENVIRONMENTAL CONTINGENCY PLAN
Updated by: J.P.Gelinas	Approved by: Harold Wilkinson

Alfred/Lefaivre Water Treatment Facility

OPERATOR -IN-OVERALL-RESPONSIBILITY(OIOR)

Classification: Compliance - Regulatory (O. Reg. 435/93 Section 13(4))

Problem: The facility does not have operational staff assuming Operator-in-Overall Responsiblity for more than 60 days (as per O.Reg 435/93, Section 13(4))

Solution:

In order to ensure that responsibility for the overall operation of the facility is placed with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility, a pool of operators with appropriate levels of licences is available to operate this facility, and be given Operator - in - Overall - Responsiblity. The Alfred/LefaivreWTP is classified as a Class 4 Water Treatment Facility.

At present, the following is a list of operators and their relative certification levels:

Jacques Breen (OIOR)	WT 4
Maurice Benoit	WT 4
JP Gelinas	WT 3

In the event that none of these staff are available for a period of 60 days or more to assume OOIR, the Director will be notified immediately.

Documentation:

1. Log Book (personal)
2. Incident Report
3. Plant Log Book

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Detailed Training Report

Date from Jan 01, 2003 to Dec 31, 2003

Region/Hub - Name / Date	Course	Offered By	Req. Req. Met	Status	Total Hours	Days *
Eastern Region						
<Alfred Hub>						
Non-Legislated						
Benoit, Maurice - Assistant Operations Manager (11/27/2000 - Full-time)				**76.75**		
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
2-Jun-03	Ontario Reg. 170/03 - Review	Self Study		Completed	10.00	1.48
2-Jun-03	WD3 Exam Preparation	Self Study		Completed	20.00	2.96
8-Sep-03	ROCKLAND NEW WATER PLANT TECHNOLOGY	BASE, MEUNIER, MAPLE CO.		Completed	20.00	2.96
1-Oct-03	SEWAGE COLLECTION LEVEL III - SELF STUDY FOR EXAM	SELF		Completed	10.00	1.48
6-Nov-03	Regulatory Update & Duties of Supervisors	Robin Kind & Larry Moore		Completed	5.00	0.74
6-Nov-03	Operational Compliance	OCWA		Completed	6.75	1.00
19-Dec-03	COMPLIANCE REVIEW & O. REG 170/03	CINDY SPENCER & J.-P. GELINAS		Completed	2.00	0.30
Breen, Jacques - Operations Manager (07/15/1997 - Full-time)				**77.25**		
3-Feb-03	WT4 Exam Preparation Course	BEC Technologies - Brian Clark		Completed	22.00	3.26
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
8-Mar-03	WT4 Exam Preparation & Exam	BEC Technologies - Brian Clark		Completed	8.00	1.19
1-Apr-03	Equipment Calibration Review	Tom Krakowsky		Completed	4.00	0.59
24-Apr-03	New O & M Product Review	Self Study		Completed	2.00	0.30
27-May-03	Ontario Disabilities Act Training	Anne Thornton		Completed	1.00	0.15
27-May-03	Ontario Reg 170/03 - overview	Jim Mahoney		Completed	1.50	0.22
28-May-03	Ontario Reg. 170/03 - Teleconference	OCWA Compliance		Completed	2.00	0.30
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer		Completed	2.00	0.30
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA		Completed	5.00	0.74
3-Oct-03	Financial/Budgeting Training	OCWA - Finance		Completed	4.00	0.59
5-Nov-03	Workplace Discrimination & Harasment Policy	SSB		Completed	6.00	0.89
6-Nov-03	Operational Compliance	OCWA		Completed	6.75	1.00
2-Dec-03	Leadership Workshop	Corporate OCWA & MOE		Completed	8.00	1.19
19-Dec-03	COMPLIANCE REVIEW & O. REG. 170/03	CINDY SPENCER & J.-P. GELINAS		Completed	2.00	0.30

Note: The training information contained in this report is current as at January 18, 2004

* 1 training day is equal to 6.75 hours

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Detailed Training Report

Date from Jan 01, 2003 to Dec 31, 2003

Region/Hub / Name / Date	Course	Offered By	Leg. Reg. Met	Status	Total Hours	Days *
Eastern Region						
<Alfred Hub>						
Non-Legislated						
Gelinas, Jean Pierre - Process & Compliance Technician (12/09/2002 - Full-time)					**78.25**	
21-Jan-03	PCT Training Part 2	OCWA		Completed	14.00	2.07
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
8-Mar-03	Certification Upgrades	Self		Completed	10.00	1.48
5-Jun-03	Ontario Reg 170/3	Cindy Spencer		Completed	2.00	0.30
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA		Completed	5.00	0.74
14-Jun-03	Certification Upgrades	Self study		Completed	10.00	1.48
4-Sep-03	PCT Training - Facility Assessment & General Overv	Cindy Spencer		Completed	6.00	0.89
23-Sep-03	PCT Training - Updates	ORDG - OCWA		Completed	12.00	1.78
10-Oct-03	First Aid & CPR "A" Course	Gilles Lacroix		Completed	7.50	1.11
5-Nov-03	PDC Version 2.4 Training for Intermediate/Advance	OCWA		Completed	6.75	1.00
19-Dec-03	Compliance Review & O. Reg. 170/03	Cindy Spencer		Completed	2.00	0.30
Lafleche, Daniel - Mechanic/Operator (01/23/1993 - Full-time)					**47.00**	
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
4-Mar-03	Study & Write Exam Water Distribution II	Self Study		Completed	9.00	1.33
27-Mar-03	Heating System	Ladouceur Heating		Completed	2.00	0.30
10-Apr-03	Confined Space Entry Recovery System & Scott Air P	Self		Completed	2.00	0.30
16-Apr-03	Revised Contengency Plan & Operation - Limoges WTP	Self		Completed	8.00	1.19
7-May-03	Power Measurement Devices	Self		Completed	2.00	0.30
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer		Completed	2.00	0.30
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA		Completed	5.00	0.74
2-Oct-03	CT Value Calculation	Jean-Pierre Gelinas		Completed	2.50	0.37
10-Oct-03	First Aid & CPR "A" Course	Gilles Lacroix		Completed	7.50	1.11
17-Oct-03	Chlorimination	Maurice Benoit		Completed	2.00	0.30
19-Dec-03	Compliance Review & O. Reg. 170/03	Cindy Spencer & J.-P. Gelinas		Completed	2.00	0.30

Note: The training information contained in this report is current as at January 18, 2004
* 1 training day is equal to 6.75 hours

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Detailed Training Report

Date from Jan 01, 2003 to Dec 31, 2003

Region/Hub / Name / Date	Course	Delivered By	Leg. Req. Met	Status	Total Hours	Days*
Eastern Region						
<Alfred Hub>						
Legislated						
Roy, Denis - Senior Operator/Mechanic (04/13/1993 - Full-time)			Y		40.00	
3-Feb-03	WT4 Exam Preparation Course	BEC Technologies - Brian Clark		Completed	22.00	3.26
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
5-Mar-03	Learning Course Material for WT4 & write exam	Self Study		Completed	15.00	2.22
St Jean, Guy - Operator/Mechanic (12/01/1981 - Full-time) - 8. LTIP			N		0.00	
Viau, Luc - Operator Trainee (04/28/2003 - Full-time)			Y		56.50	
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer		Completed	2.00	0.30
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA		Completed	5.00	0.74
11-Jun-03	Operation at low lift pump sss.	Maurice Marchand		Completed	8.00	1.19
2-Jul-03	Operation of dry well pump SPS	Maurice Marchand		Completed	8.00	1.19
12-Aug-03	Inspection of gen set at stations	Maurice Marchand		Completed	8.00	1.19
8-Sep-03	Study for O.I.T. exam	Self study		Completed	8.00	1.19
9-Sep-03	Inspection and cleaning of electrical panels	Maurice Marchand		Completed	8.00	1.19
24-Oct-03	First Aid & CPR "A" Course	Gilles Lacroix		Completed	7.50	1.11
19-Dec-03	Compliance Review & O. Reg. 170/03	Cindy Spencer & J.-P. Gelinas		Completed	2.00	0.30
Non-Legislated						
Barbarie, Stephane - Instrumentation & Scada Support/Operator (05/28/2001 - Full-time)					100.50	
27-Jan-03	Water Treatment Plant Operation - Vol. II	California State University - Self		Completed	40.00	5.93
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
7-May-03	Environmental Compliance	OCWA		Passed	13.50	2.00
5-Jun-03	Traffic Contro Training	Gary Shewan - EUSA		Completed	5.00	0.74
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer		Completed	2.00	0.30
9-Jun-03	IT & Networking	Sofie Leger & Kimmo		Completed	32.00	4.74
23-Oct-03	Flow Meters - Seminar	Metcon Sales & Engineering Ltd		Completed	3.00	0.44
19-Dec-03	COMPLIANCE REVIEW & O. REG 170/03	CINDY SPENCER & J.-P. GELINAS		Completed	2.00	0.30

Note: The training information contained in this report is current as at January 18, 2004

* 1 training day is equal to 6.75 hours

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Detailed Training Report

Date from Jan 01, 2003 to Dec 31, 2003

Region/Hub / Name / Date	Course	Offered By	Leg. Req. Met	Status	Total Hours	Total Days *
Eastern Region						
<Alfred Hub>						
Legislated						
Gagnon, Charles - Operator/Mechanic (01/01/2003 - Full-time)			**Y**		**57.50**	
12-Feb-03	Compliance Training	Cindy Spencer		Completed	3.00	0.44
4-May-03	CPR Level C & First Aid Refresher	St-John Ambulance		Completed	4.00	0.59
4-May-03	Defibrillation Course	Prescott-Russell Emergency Service		Completed	8.00	1.19
5-May-03	Hydrant Repair & Maintenance	Mario Ethier		Completed	2.00	0.30
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA		Completed	5.00	0.74
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer		Completed	2.00	0.30
13-Jun-03	Wastewater Treatment - Level 1 - Self Study	Self		Completed	4.00	0.59
10-Jul-03	PDC Template Modification	Stephane Barbarie		Completed	2.00	0.30
26-Aug-03	LADDER SAFETY, ROPES & HARNESS	DOMINIC COTE - TRAINING OFFICER		Completed	3.00	0.44
18-Nov-03	Basic Wastewater Collection	OCWA		Passed	13.50	2.00
27-Nov-03	Hydro digging & water main valve maintenance	Gord - Embrun Sanitation		Completed	4.00	0.59
17-Dec-03	WHIMS	NORCAT INTERNET		Completed	3.00	0.44
18-Dec-03	PLANTAGENET WPCP - CONTINGENCY PLAN REVIEW	SELF		Completed	2.00	0.30
19-Dec-03	Compliance review & O. Reg. 170/03	Cindy Spencer & J.-P. Gelinas		Completed	2.00	0.30

Note: The training information contained in this report is current as at January 18, 2004

* 1 training day is equal to 6.75 hours

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Detailed Training Report

Date from Jan 01, 2003 to Dec 31, 2003

Region/Hub / Name / Date	Course	Offered By	Leg Req	Mel	Status	Total Hours	Total Days*
Eastern Region							
<Alfred Hub>							
Non-Legislated							
Carriere, Richard - Mechanic/Operator (10/26/1992 - Full-time)						**75.50**	
12-May-03	STUDY FOR WATER QUALITY ANALYST EXAMINATION	SELF			Completed	13.00	1.93
16-May-03	STUDY FOR WATER DISTRIBUTION III	SELF			Completed	13.00	1.93
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA			Completed	5.00	0.74
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer			Completed	2.00	0.30
1-Oct-03	Self study & exams - WWT IV & WWC III	Self			Completed	32.00	4.74
10-Oct-03	First Aid & CPR "A" Course	Gilles Lacroix			Completed	7.50	1.11
23-Oct-03	Flow Meters - Seminar	Metcon Sales & Engineering Ltd			Completed	3.00	0.44
Couture, Suzanne - Administrative Assistant (12/06/2003 - Full-time)						**21.50**	
24-Jun-03	Administrative Assistant Training, June 2003	OCWA			Completed	14.00	2.07
24-Oct-03	First Aid & CPR "A" Course	Gilles Lacroix			Completed	7.50	1.11
Ethier, Mario - Mechanic/Operator (04/01/2003 - Full-time)						**65.75**	
12-Feb-03	Compliance Training	Cindy Spencer			Completed	3.00	0.44
1-Apr-03	Water Distribution & Hydrant Repair	OCWA			Passed	20.25	3.00
7-Apr-03	Water Quality Analyst	BEC Technologies - Brian Clark			Completed	14.00	2.07
5-Jun-03	Traffic Control Training	Gary Shewan - EUSA			Completed	5.00	0.74
5-Jun-03	Ontario Reg. 170/3 - Review	Cindy Spencer			Completed	2.00	0.30
13-Jun-03	Water Treatment & Distribution - Level 1- Self stu	Self			Completed	8.00	1.19
10-Jul-03	New recommendation - Sampling & Lab Operations	Self			Completed	4.00	0.59
24-Oct-03	First Aid & CPR "A" Course	Gilles Lacroix			Completed	7.50	1.11
19-Dec-03	COMPLIANCE REVIEW & O. REG. 170/03	CINDY SPENCER & J.-P. GELINAS			Completed	2.00	0.30

Note: The training information contained in this report is current as at January 18, 2004

* 1 training day is equal to 6.75 hours

APPENDIX L

COPY OF OCWA'S RESPONSE TO REGULATORY REQUIREMENTS & FINDINGS DURING THE LAST COMPLIANCE INSPECTION

(AS ATTACHED)

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Alfred Hub
2015 Lajoie Street, Box 252
Lefaivre, Ontario K0B 1J0
Tel: (613)679-4631 / Fax: (613) 679-4735

July 18, 2003

Mr. Daniel White, C.E.T.
Provincial Officer/Inspector
Drinking Water Inspection Program
Kingston District Office
Eastern Region
Ministry of Environment
P.O. Box 820
Kingston, Ontario
K7L-4X6

Re: **Alfred Water Treatment System**
Compliance Inspection Report - March 2003

Dear Mr. White

Following review of the Alfred Water Treatment System Compliance Inspection Report dated May 2003 and issued June19, 2003, OCWA has the following comments to offer concerning the findings of the inspection contained in the report under Section 8.0 "Summary of Inspection Findings - Regulatory Requirements and Best Practices Recommendations Requiring Action ".

It should be noted that C of A # 5025-5D2HRV dated August 16, 2002 referenced in the report, was amended on February 24, 2003 as indicated in the attached letter (Appendix I), and replaced with C of A 9014-5JASMT. The new C of A provides an extension to December 31, 2003 for the upgrading requirements contained in Section 5.1 (b). Consequently all findings in the report that are captured and contained in Section 5.1 (b) of the C of A will be addressed by December 31, 2003 and not July 1, 2003 as previously required. Items requiring municipal approval will be presented at the next Municipal Council meeting scheduled sometime in September.

Section 8.1.1 Regulatory Requirements Requiring Action

1. A physical break in the piping has been provided by blanking off the pipe which allowed the recirculation of supernatant to the low lift raw water well. Completion of this requirement was performed within the time frame outlined under Section 5.1 (a) of the amended C of A.

2. The Township of Alfred and Plantagenet has completed in due time the upgrade requirement contained in Section 5.1 (a) (i) of the amended C of A thereby ensuring that Disinfection at

the waterworks is completed in accordance with "Procedure B 13-3 Chlorination of Potable Water Supplies in Ontario.

3. Effective July 1, 2003 operational staff are no longer averaging flow rates over a period of several days as previously performed. Readings are now being recorded and reported for both the Flow Rate and daily quantity of water being taken from the source and conveyed through the water treatment plant and for the flow rate of treated water supplied to the distribution system. Results for the above mentioned flow measurements are recorded as Total Daily Flow (m3/d) and Daily Peak Flows (l/sec) as required by condition 2.1 (c).

4. The Ontario Clean water Agency is currently in the process of revising the PDC data base. The next version will contain a revised Annual Record of Water Taking which will capture the Hours of Taking/Month, the Rate of Taking (L/sec), the Total amount of Taking (m3/Month), the Maximum Rate of Taking (m3/Day) and the Peak Daily Flow in (L/sec) or (L/min). Release of the new version is anticipated for August 2003.

5. The Ministry of Natural Resources was contacted concerning the status of zebra mussels in the Ottawa River in the vicinity of the Alfred intake but no confirmation was possible. The raw water screens were also lifted and inspected on July 17, 2003 and could not conclude that zebra mussels were present. However a pressure test on the zebra mussel chlorine line was performed which revealed that the feed line was broken about mid way between the shore and the intake. Qualified divers will have to be retained to inspect the intake and attempt to repair the chlorine feed line. Approval from the Township of Alfred & Plantagenet will be required prior to completing this work.

6. Please refer to Section 8.1.1.9 below.

7. In accordance with Schedule 7 Section 7-2 Subsection (3) of O. Reg. 170/03 the operating authority monitors the Alfred/Lefaivre distribution system secondary disinfection for free chlorine residuals on a daily basis to ensure that a minimum of 0.20 mg/l of chlorine is always maintained in the distribution system. In addition to the above mentioned, weekly bacteriological samples collected throughout the distribution system are sampled and tested for free chlorine residuals and residuals are recorded on the lab submission sheets as required by Schedule 6 Subsection 6-3 (a) and 6-10 of O.Reg. 170/03.

8. The installation of duplicate chlorination chemical feed pumps complete with alarms, controls and automatic switch over should be completed by December 31, 2003 as required under Condition 5.1 (b) of the amended C of A.
9. Turbidity meters should be installed on each filter effluent line by December 31, 2003 as required under Condition 5.1 (b) of the amended C of A. Approval from the Township of Alfred & Plantagenet will be required prior to completing this work.

10. Spill containment for all chemical storage will be completed by December 31, 2003 as required under Condition 5.1 (b) of the amended C of A

11. A Contingency procedure to ensure that the required CT for the Alfred WTP will be maintained to provide adequate disinfection while the solids recirculation-reactivator clarifier is bypassed for maintenance purposes will be developed with Stantec Consulting Ltd. the engineering consultant on the WTP Upgrade.

    Following the Engineer's Report prepared by Stantec Consulting Ltd. and the subsequent Consolidated C of A issued by MOE Approvals, it was determined that twinning of the solids contact recirculation-reactivator clarifier was not required at the Alfred WTP. Implementing this (twinning) would require a substantial financial investment by the Township of Alfred & Plantagenet. Such an upgrade will be considered when an expansion of the WTP is required.

12. Please find in Appendix II copies of the chemicals certificates for PHASS and Magnafloc indicating that these chemicals used in the production of potable water meet both the AWWA standards and ANSI safety criteria's as set out in ANSI standard NSF/60 or NSF/61.

13. The operating authority continues to make every effort to comply with the sampling requirements of Condition 2.2 (g) of the C of A including Condition 2.1 (g) (ii). In effort to ensure this sampling calendars have been set up, unfortunately no matter what system is in place to perform any given task or function, human error will always play a role in our day to day actions as was the case for the omitted collection of the March, 2003 monthly backwash/wastewater Effluent sample.

14. OCWA's Alfred Hub will be scheduling and conducting in-house training on developing Contingency Plan's and executing mock contingency plans by the end of 2003.

15. The Operational Manual prepared by J.L.Richards and Associates Ltd. will be revised and updated as required under Section 16 (2) O. Reg. 435-/93, by December 31, 2003.

16. The Ontario Clean Water Agency has recently updated the calibration reports to identify and allow the determination of error associated with each calibration within the range of 10% to 100 % of the full scale reading of the measuring devices. This change will be reflected on all calibration reports generated for the 2003 fiscal year.

17. The Raw Water Flow Metering device is scheduled for replacement in the spring of 2004 following approval from the Township of Alfred & Plantagenet.
18. Attached as Appendix III is a copy of the July 16, 2003 facsimile submitted by US Filter Wallace & Tiernan confirming an accuracy of ± 10 % at the point of calibration for the Depolox Fluoride Analyzer installed at the Alfred WTP.

19. A review of the circumstances surrounding the Raw and Treated water sample collection for the week of May 26, 2002 to June 1, 2002 revealed that the samples were indeed collected by the operator but unfortunately not analyzed by Caduceon Laboratories because the samples in question were broken in transit . This incident was reported to MOE/MOH Cornwall on June 5, 2002 (Appendix IV) and outlined in the Quarterly report for the period of April-June 2002. OCWA continues to make every effort to comply with the requirements of Schedule 10 of O. Reg. 170/03.

20. Although very few complaints are ever received for the Alfred Water Works, OCWA Operations does receive, respond and record all consumer complaints. However, in order to assist staff to comply with Condition 3.14 of the C of A, a formal procedure will be established to ensure this is done including steps taken , if any, to determine the cause of complaint and the corrective measures taken to elleviate the cause and prevent its reoccurrence. This procedure will be incorporated in the Standard Operating Procedures Manual by the end of 2003.

21. The Township of Alfred Plantagenet has advised the public and the users of the Alfred Water Treatment System of the availability of quarterly and annual reports prepared by the operating authority by inserting a leaflet (Appendix V) with the water bills and also with the yearly municipal bulletin sent to every home.

22. Operational staff have been instructed to ensure that entries into the operational log book are entered chronologically by including the time of the entry next to each entry. Staff have also been instructed to initial any additional entries made into the log book.

23. As mentioned in the Compliance Inspection Report Jacques Breen is the Operator In Overall Responsibility (OIOR). This responsibility shifts to either Maurice Benoit or J. P. Gelinas in the event Jacques Breen is unable to fulfill his responsibility. In the event that none of these staff are available for a period of 60 days or more to assume OIOR, the Director will be notified as per the Environmental Contingency Plan contained in Appendix VI. The time spent as OIOR for the Alfred Water Treatment System will be recorded from now on.

24. The operating authority will prepare future annual reports for the Township of Alfred and Plantagenet in accordance with section 11 (6) and 11 (9.1) of O. Reg. 170/03.

25. The defective weight scale used for measuring the quantity of hydrofluosilicic acid added to the treated water for fluoridation at the Alfred WTP will be replaced by August 31, 2003.

Section 8.1.2 Best Management Practices

1. OCWA's compliance group is presently working on developing generic source protection plans. Once the plans completed the operating authority in conjunction with the municipality will establish an inventory of potential sources of contamination of the raw water supply.

2. The Alfred Contingency Plans binder will be revised and updated by December 31, 2003 . The revision will incorporate a contingency procedure for conditions of high-lift pump failure and a procedure for training staff in the Contingency Plan.

3. The schedule for testing and updating the Contingency Plan has been updated.

4. Please find attached in Appendix VII a Contingency Plan for Adverse Water Quality and Other Problems Corrective Action for Large Municipal Residential Systems. This contingency plan provides a written procedure for the notification of the Medical Officer of Health and the MOE including required corrective actions to be taken. This procedure meets the requirements O. Reg. 170/03 as well as Condition 3.7 of the C of A.

5. Future calibration records for on-line chlorine residual and fluoride analyzers and turbidimeters will include a description of the work done and the findings including the accuracy of the equipment at the time of calibration. A binder to keep records of on-line monitoring equipment calibrations has also been set up.

6. The operating authority is actively seeking dechlorination equipment in order to properly dechlorinate prior to disposing or discharging chlorinated water.

7. OCWA will be developing a procedure to receive, respond and record consumer complaints as identified in Section 8.1.1.20 above. In light of the minimal amount of consumer complaints received from the Alfred Water Treatment System, it is in our opinion unnecessary to summarize the complaints any further.

8. The Current C of A and relevant regulations will be included during the Operational Manual upgrade identified in Section 8.1.1.15 above.

9. Development of Standard Operating Procedures concerning "CT" values at various waterworks, which could assist operator's in determining the minimum disinfection target values and other relevant calculations at their facility are presently being evaluated.

Should you have any questions concerning the content of this inspection reply please feel free to contact me at (613) 673-1161.

Yours truly,

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Jean-Pierre Gélinas
Process & Compliance Technician (PCT)
Alfred Hub

Attachements:
Appendix I Alfred/Lefaivre C of A # 9014-5JASMT
Appendix II AWWA and ANSI Product Certification
Appendix III Fluoride Residual Analyzer accuracy statement
Appendix IV Water Quality Notification (weekly samples missed)
Appendix V Township of Alfred and Plantagenet Flyer
Appendix VI Operator-in-Overall-Responsability Contingency Plan
Appendix VII Adverse Water Quality Contingency Plan

cc: Élise Campbell, Deputy Treasurer, Township of Altred and Plantagenet
Dr. Bourdeau, Medical Officer of Health, EOHU
Jean Hebert, Stantec Consulting Ltd.
Jacques Breen, Manager OCWA
Cindy Spencer, Compliance Advisor OCWA Eastern Area

Ciba Specialty Chemicals
Canada Inc.

Ciba

To		Company	
Roger Luu		Ontario Clean Water Agency	
Fax No.	Tel. No.	Location	Province
416-314-5455	416-314-4305	Toronto	ON

From		Location	File reference
Marlene Dorcas		Mississauga, ON.	
Fax No.	Tel. No.	Date	No. of pages
905-812-6177	905-812-6062	01 May 2003	3

SUBJECT: **AWWA and NSF Status for Ciba®**
MAGNAFLOC™ LT Series Products

Dear Roger:

As requested, please find attached the AWWA and NSF information for the MAGNAFLOC™ LT series of products which are purchased from Ciba Specialty Chemicals Canada Inc.

As suggested by NSF International, product certifications can be confirmed using the following website address:

http://www.nsf.org

If you require further information, please do not hesitate to call me at the above number.

Regards,

Marlene Dorcas
Safety, Health, Environmental
and Regulatory Affairs Associate

Enc

Post-it™ Fax Note 7671E	Date 05-20-03	# of pages ▸ 03
To Jacques Breen	From Roger Luu	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

2626 Argentia Road
Mississauga, Ontario
L5N 5N2

Ciba Specialty Chemicals
USA
Water & Paper Treatments

Ciba

24-April-2003

OCWA

Dear Sir or Madam:

Ciba Specialty Chemicals products intended for use in potable water treatment are certified to ANSI/NSF 60 by NSF. A current listing of certified products may be found on the NSF Web site.

Attached please find a copy of the "Official Listing" as of March 17, 2003 and a copy of the Plant Certification for Plant # 6 USA. The Magnafloc LT series polyacrylamides (LT20. LT22, LT22S, LT24, LT25, LT25S, LT26, LT27, LT27A, and LT27AG) supplied from Plant # 6 USA are certified to ANSI/NSF 60 for a Maximum use rate of 1 mg/L .

AWWA standard B453-01 "describes polyacrylamide (PAM) for use in water supply service. The purpose of this standard is to provide the minimum general requirements for PAM products, including physical, chemical, packaging, shipping, and testing requirements and to provide the means of developing requirements for PAM products." This standard should be used by the end user to set the specifications for each specific PAM product individually. If this standard is applied by the end user and end user specifications are within the product specifications agreed to with Ciba, Ciba certifies that the Magnafloc LT series products comply with all applicable supplier requirements of this standard.

Please do not hesitate to give me a call at 757-538-5122 if you need additional information.

Sincerely,

Leon Knight
Sr. Product Safety Specialist

Ciba Specialty Chemicals Corporation
P. O. Box 030
2301 Wilroy Road
Suffolk, VA 23439-0030

Tel. 757-538-3700
Fax 757-538-3989

Value beyond chemistry

EAGLEBROOK, INC. OF CANADA
2810 Sheffield Road, Ottawa, Ontario K1B 3V9 • Tel : (613) 746-1574 • Fax : (613) 746-5858

Ottawa, July 10, 2003

Ontario Clean Water Agency
Mr. Jean- Pierre Gélinas, Process Technician
7200 County Road #17
Wendover, Ontario
Tel.: (613) 673-1161 Fax: (613) 673-1955

Object: AWWA Standard

Dear Mr. Gélinas,

As per our conversation in regards to the AWWA accreditation of PHAS. According to our Canadian Sales Manager, Manuel Moreau, when a product is NSF/ANSI certified it also meets the AWWA standard requirements. If you are ever challenge on this matter, you may refer any inquiries to Manuel Moreau at Eaglebrook.

In conclusion, Mr. Gélinas, I hope that this letter is satisfactory to your needs. If you need additional information on this matter or any other, please communicate with Manuel Moreau at 1-800-465-6171 Ext. 232, he will gladly assist you.

Best regards,

André Provost
Plant Manager

cc: Mr. Manuel Moreau, Sales Manager, Eaglebrook

This publication shows the Certified Listings as of May 7, 2003.
For the most current and complete information, please access NSF's website (www.nsf.org).

[132] NSF/ANSI Standard 60 - Drinking Water Treatment Chemicals - Health Effects

EAGLEBROOK INC.
4801 SOUTHWICK DRIVE
2ND FLOOR
MATTESON, IL 60443
800-654-8373
905-761-6361
Plant At: # 3 USA

Chemical/ Trade Designation	Function		Max Use
Polyaluminum Chloride [AL]			
SternPAC 2300	Coagulation & Flocculation	200	mg/L

[AL] Based on an evaluation of health effects data, the level of aluminum in the finished drinking water should not exceed 2 mg/L.

EAGLEBROOK INC.
4801 SOUTHWICK DRIVE
2ND FLOOR
MATTESON, IL 60443
800-654-8373
905-761-6361
Plant At: # 1 USA

Chemical/ Trade Designation	Function		Max Use
Poly (Diallyldimethylammonium Chloride)(pDADMAC) [PD]			
ArcticFloc AF 12104	Coagulation & Flocculation	57	mg/L

[PD] Certification is based on a maximum carryover of 50 ug/L DADMAC polymer.

Plant At: # 2 USA

Chemical/ Trade Designation	Function		Max Use
Polyamines [PY]			
ArcticFloc AF 12100	Coagulation & Flocculation	20	mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Plant At: BRANTFORD, ONTARIO, CANADA

Chemical/ Trade Designation	Function		Max Use
Polyaluminum Chloride [AL]			
Polyaluminum Chloride	Coagulation & Flocculation	250	mg/L
SternPAC	Coagulation & Flocculation	250	mg/L
SternPAC 2300	Coagulation & Flocculation	250	mg/L
SternPAC 70	Coagulation & Flocculation	250	mg/L

[AL] Based on an evaluation of health effects data, the level of aluminum in the finished drinking water should not exceed 2 mg/L.

Plant At: OTTAWA, ONTARIO, CANADA

Chemical/ Trade Designation	Function		Max Use
Aluminum Sulfate [1] [AL]			
Aluminum Sulphate Solution	Coagulation & Flocculation	150	mg/L
Pre-Hydroxylated Aluminum Sulphate (PHAS)	Coagulation & Flocculation	150	mg/L
Acidic Aluminum Sulphates	Coagulation & Flocculation	150	mg/L

[1] All Alum product at this production location is NSF Certified, whether or not it bears
[AL] Based on an evaluation of health effects data, the level of aluminum in the finished drinking water should not exceed 2 mg/L.

Plant At: VARENNES, QUEBEC, CANADA

Chemical/ Trade Designation	Function		Max Use
Aluminum Sulfate [AL]			
Acidic Aluminum Sulphate	Coagulation & Flocculation	150	mg/L
Aluminum Sulphate	Coagulation & Flocculation	150	mg/L
Re-Hydroxylated Aluminum Sulphate	Coagulation & Flocculation	150	mg/L
Blended Coagulation Chemicals [AL]			
Alufer C	Coagulation & Flocculation	188	mg/L
Alufer S	Coagulation & Flocculation	188	mg/L

USFilter

FAX

WALLACE & TIERNAN PRODUCTS
250 ROYAL CREST COURT
MARKHAM, ON L3R 3S1

TELEPHONE (905) 944-2800
FACSIMILE (905) 474-1660
Email harrisonw@usfilter.com

TO: **Ontario Clean Water Agency** **ATTN:** **Jean Pierre Gelinas**

FAX: **613 673 1161** **TEL:** **613 673 1955**

FROM: **Wayne A Harrison C.E.T.** **DATE:** **July 16, 2003** **PAGE 1 OF 1**

SUBJECT: **Flouride Residual Analyzer accuracy statement**

MESSAGE:

Dear Mr. Jean Pierre Gelinas,

This letter is in response to your request for an accuracy statement for the USFilter / Wallace & Tiernan Flouride residual analyzer.

The Depolox Flouride Residual Analyzer has an accuracy of ±10% at point of calibration.

What this means is, if your analyzer is calibrated at a level of 1 ppm then the unit will have an accuracy of ± 0.1

If you have any further questions or concerns, please feel free to contact our office at your convenience.

Yours truly,

USFilter / Wallace & Tiernan

Wayne A Harrison

Wayne A Harrison
District Sales Manager

VEOLIA Environment

Appendix IV

cc: - ELISE CAMPBELL AIP.
- OCWA COMPLIANCE ADVISOR.

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

FAX TRANSMISSION

cc: Cathy McPhail. MOE-Cornwall

DATE: JUNE 5, 2002

TO/A: MOE-SAC / MOE-CORNWALL

LOCATION/LIEU: AKIKO / JULIE RUDZ

FAX NUMBER: (800) 268-6061 / 525-2603 VOICE/TEL: (800) 268-6060 / 933-1375

FROM/DE: HAROLD WILKINSON

RE/SUJET: WATER QUALITY NOTIFICATION - WEEKLY SAMPLES MISSED

If you do not receive all pages, please contact:
Si vous ne recevez pas le nombre de pages indiquées, veuillez contacter :

ONTARIO CLEAN WATER AGENCY
L'AGENCE ONTARIENNE DES EAUX
Alfred Hub
2015 Lajoie St./rue Lajoie, Box/C.P. 252
Lefaivre, Ontario K0B 1J0
Voice/Tél: (613) 679-4631 / Fax/Téléc: (613) 679-4735

Number of pages including this one: 4
Nombre de pages incluant la page couverture:

Original to follow by mail/Copie originale à suivre par courrier: Yes/Oui ____
No/Non ✓

Special Instructions Spéciales:

THIS IS TO INFORM YOU THAT THE WEEKLY SAMPLES FOR RAW + TREATED WATER WERE MISSED DURING THE WEEK OF MAY 27, 2002. THE LABORATORY (CARUCEON) INFORMED US OF THE INCORRECT FACILITY WHICH RAW AND TREATED WERE MISSED PLACED AND THEREFORE 2 SETS OF RAW + TREATED WERE COLLECTED + ANALYZED FOR PLANT NO 7 AND NONE FOR ATHOL DEFAULT.

Ontario Ministry of the Environment / Ministère de l'Environnement

Notice of Drinking Water Analysis and Remedial Actions for Waterworks as Required under Drinking Water Protection Regulation

In accordance with the Drinking Water Protection Regulation, Laboratories and Water Works Owners must immediately provide oral notification to the MOE Spills Action Centre (SAC) at 1-800-268-6060 or 1-416-325-3000 and the local Medical Officer of Health (MOH) of indicators of adverse drinking water quality and exceedances of standards as outlined in the Regulation and remedial actions taken. Further, within 24 hours of the oral notification, the party shall provide written notification on this completed form by Fax to the Spills Action Centre at 1-800-268-6061 or 1-416-325-3011 and the local Medical Officer of Health . Failure to notify these parties in accordance with the Regulation constitutes an offence under the Act. A copy of this form may be acquired through the Ministry of the Environment (MOE) public web site (www.ene.gov.on.ca) or by contacting any MOE office.

PART 1 – NOTIFICATION BY LABORATORY

Indicators of Adverse Water Quality ☐	Phys/Chem ☐ Exceeds MAC ☐ Exceeds IMAC	Radiological ☐ Exceeds IMAC CofA/Order ☐ Exceeds Limit

ORAL NOTIFICATION to SPILLS ACTION CENTRE by LABORATORY

Date: Time: By:

Laboratory Name:	Laboratory Emergency Contact Name
Address	Position
Email address	Phone # Fax #
Waterworks Name	Waterworks Emergency Contact
Works #	Name
Location	Position
Email Address	Phone # Fax #
NOTIFICATION OF WATER WORKS OWNER	NOTIFICATION OF LOCAL MEDICAL OFFICER OF HEALTH
Person Contacted	Person Contacted
Position	Position
Date Time	Date Time

Laboratory Written Notification Prepared by: Name (please print)
(Lab Results must be attached using Part 3 of form)

Signature	Date

PART 2 - NOTIFICATION BY WATER WORKS OWNER

Indicators of Adverse Water Quality ☐	Phys/Chem ☐ Exceeds MAC ☐ Exceeds IMAC	Radiological ☐ Exceeds IMAC CofA/Order ☐ Exceeds Limit

☑ *This notification is for operational problems identified at the waterworks; there is no Laboratory notification associated with this report*

SPILLS ACTION CENTRE ORAL NOTIFICATION BY OWNER	WATERWORKS EMERGENCY CONTACT
Date JUNE 5, 2002 Time 14:15	Name HAROLD WILKINSON
Waterworks Name ALFRED DEFAWE WTP	Position ASST OPERATIONS MANAGER
Works # 220002841	Phone # (613) 679-4631 Fax # (613) 679-4735
Works Person Providing Oral Notification HAROLD WILKINSON	PAGER: (613) 364-4673
MEDICAL OFFICER OF HEALTH ORAL NOTIFICATION BY OWNER	REMEDIAL ACTIONS TAKEN BY OWNER:
Date JUNE 5, 2002 Time 14:20	Resampling Initiated ☐ Yes ☐ No
Person Contacted JULIE BUDZ	Increase Chlorine Dose ☐ Yes ☐ No
Position REGISTERED NURSE	Flushing Mains ☐ Yes ☐ No
Phone # 933-1325 Fax # 525-2603	Other Actions Taken ☐ Yes ☐ No
Works Person Providing Oral Notification HAROLD WILKINSON	Describe: NOTIFICATIONS MADE
Water Works Written Notification Prepared by: Name (please print)	Other information attached ☐
Signature Harold Wilkinson	HAROLD WILKINSON
	Date JUNE 5 02

For Ministry Use Only: Occurrence Report #:

1402-047 (07/00)

Ontario Ministry of the Environment / Ministère de l'Environnement

PART 3:

ADVERSE ANALYTICAL RESULTS - For Indicators Listed in SCHEDULE 6 - Drinking Water Protection Regulation

Microbiological Testing

Laboratory Sample ID No.	Sample Field ID No.	Date/Time Collected (M/D/Y) (a.m. / p.m.)	Sample Type / Location	Membrane Filtration Count/100ml			P-A/100ml Presumptive/ Confirmed (if applicable)	HPC/ 1ml	Date of Analysis (M/D/Y)
				Total Coliforms	Back-ground	E.coli/ Fecal C.			

ADVERSE ANALYTICAL RESULTS - For Parameters Listed in SCHEDULE 4 and 5 or in a C of A or Order Drinking Water Protection Regulation

Physical/Chemical/Radiological Testing

Laboratory Sample ID No.	Sample Field ID No.	Date/Time Collected (M/D/Y) (a.m. / p.m.)	Sample Type/ Location	Parameter	Result	Unit	MAC/ IMAC	Date of Analysis (M/D/Y)
	NONE	05/29/02	RAW + TREATED	LOST SAMPLES	NONE	N/A	N/A	05/29/02

Laboratory Results Authorized by: Authorization Date:

For Ministry Use Only: Occurrence Report #:

1402-047 (07/00)

Page _____ of _____

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 252, 2015 Lajoie St.
Lefaivre, ON
K0B 1J0

Attention: Jacques Breen

Report: 220005258
Project: Alfred/Lefaivre WTP
Date Sampled: May 28, 2002
Date Received: May 29, 2002
Date Printed: May 30, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification		
			Depanneur Gem	Depanneur Lalonde	Miss Alfred Restaurant
Total Chlorine	mg/L	0.05	1.82	1.20	1.10
Free Chlorine	mg/L	0.05	1.60	1.00	0.90
E. coli	/100mL	1	absent	absent	absent
Background bacteria	/100mL	1	absent		
Total Coliforms	/100mL	1	absent	absent	absent

Caduceon Environmental Laboratories
2378 Holly Lane, Ottawa, Ontario, K1V 7P1, Canada
Tel: (613)526-0123, Fax: (613)526-1244

Michael Ziobell, General Manager

CANTON D'ALFRED ET PLANTAGENET
TOWNSHIP OF ALFRED AND PLANTAGENET

PURGE DES BORNES FONTAINES

Durant les semaines du 19 au 30 mai 2003, l'Agence Ontarienne des Eaux exécutera un programme de purge des bornes fontaines sur le système d'aqueduc pour les résidents d'Alfred. Pour les résidents de Lefaivre, la purge aura lieu la semaine du 2 au 6 juin 2003. Ce rinçage peut provoquer une baisse temporaire de la pression et/ou une coloration de l'eau. Donc, avant d'utiliser l'eau, nous vous recommandons de vérifier si elle est colorée. Si oui, ouvrez vos robinets d'eau froide ou chaude, selon le cas, afin de vidanger le système. Pour de plus amples informations, n'hésitez pas à communiquer avec l'agence au 679-4631.

FLUSHING OF HYDRANTS

For the weeks starting May 19th to May 30th, 2003, the Ontario Clean Water Agency will proceed with its program of hydrant flushing, for the residents of Alfred and the week of June 2nd to June 6th, 2003 for the residents of Lefaivre. This may cause a temporary drop of pressure and/or a slight coloring of the water. Therefore, before using water, we recommend that you verify the color of the water. If colored, leave the hot/cold water running for a while in order to clean the system. For more information, do not hesitate to call OCWA at 679-4631.

ADMINISTRATION
TAXES
TRAVAUX PUBLICS/
PUBLIC WORKS
205, Vieille Route 17
205 Old Highway 17
C.P. 350/ P.O. Box 350
Plantagenet ON K0B 1L0
Telephone: (613) 673-4797
Fax: (613) 673-1812

ARROSAGE DURANT L'ÉTÉ

Le règlement 86-97 régit la consommation d'eau durant les mois d'été prévoit que nul ne peut utiliser l'eau de l'aqueduc entre le 1er juin et le 30 septembre de chaque année pour arroser la pelouse, le jardin, les fleurs, la haie, ou toute autre végétation à l'extérieur d'un établissement à l'exception de ce qui suit :

a) Les résidents d'immeubles à chiffres impairs sont autorisés à arroser la pelouse et le jardin entre 19 h et 22 h les jours impairs;

b) Les résidents d'immeubles à chiffres pairs sont autorisés à arroser la pelouse et le jardin entre 19 h et 22 h les jours pairs.

Votre coopération à cet effet serait grandement appréciée et si vous nécessitez de plus amples renseignements, veuillez communiquer au 673-4797.

SUMMER WATERING

By-law 86-97 regulates water consumption during the summer months stipulates that no person shall use or allow to be used water at any time between June 1st and September 30th in any year for the purpose of watering lawns, gardens, flowers, hedges or any other vegetation outside any building except as hereinafter provided :

a) Residents odd numbered buildings shall be permitted to water lawns and gardens on odd numbered days between the hours of 7:00 p.m. and 10:00 p.m.

b) Residents even numbered buildings shall be permitted to water lawns and gardens on even days between the hours of 7:00 p.m. and 10:00 p.m.

Your cooperation is greatly appreciated and should you require further information, please call at 673-4797.

CONSTRUCTION/BUILDING
URBANISME/PLANNING
APPLICATION DES
RÈGLEMENTS/
BY-LAW ENFORCEMENT
265, rue St-Philippe Street
Alfred, ON K0B 1A0
Telephone: (613) 679-2292
Fax: (613) 679-4939

RAPPORT ANNUEL

Des rapports trimestriels et annuels sur la qualité de l'eau potable à l'usine de traitement d'eau d'Alfred et de Lefaivre sont préparés par l'Agence Ontarienne des Eaux. Ces rapports sont disponibles pour consultation durant les heures d'ouverture du bureau municipal de Plantagenet. Vous pouvez obtenir gratuitement des copies des rapports en faisant la demande par écrit au Canton d'Alfred et Plantagenet, 205 vieille route 17, Plantagenet, Ontario K0B 1L0 ou en communiquant avec Mme Élise Campbell au 673-4797 (poste 228).

ANNUAL REPORT

Annual and quarterly reports on drinking water quality of the Alfred and Lefaivre water treatment plant are prepared by the Ontario Clean Water Agency (OCWA). These reports can be consulted, during regular office hours, at the municipal office in Plantagenet. Copies of the reports can also be obtained, free of charge, by sending a written request to the Township of Alfred and Plantagenet, 205 Old Highway 17, Plantagenet, Ontario K0B 1L0 or by calling Mrs Élise Campbell at 673-4797 (ext. 228).

Appendix VI

ONTARIO CLEAN WATER AGENCY EMS	ENVIRONMENTAL CONTINGENCY PLAN
Updated by: J.P.Gelinas	Approved by: Harold Wilkinson

Alfred/Lefaivre Water Treatment Facility

OPERATOR -IN-OVERALL-RESPONSIBILITY(OIOR)

Classification: Compliance - Regulatory (O. Reg. 435/93 Section 13(4))

Problem: The facility does not have operational staff assuming Operator-in-Overall Responsiblity for more than 60 days (as per O.Reg 435/93, Section 13(4))

Solution:

In order to ensure that responsibility for the overall operation of the facility is placed with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility, a pool of operators with appropriate levels of licences is available to operate this facility, and be given Operator - in - Overall - Responsiblity. The Alfred/LefaivreWTP is classified as a Class 4 Water Treatment Facility.

At present, the following is a list of operators and their relative certification levels:

Jacques Breen (OIOR)	WT 4
Maurice Benoit	WT 4
JP Gelinas	WT 3

In the event that none of these staff are available for a period of 60 days or more to assume OOIR, the Director will be notified immediately.

Documentation:
1. Log Book (personal)
2. Incident Report
3. Plant Log Book

Appendix VII

ONTARIO CLEAN WATER AGENCY EMS	ENVIRONMENTAL CONTINGENCY PLAN
Updated by: Cindy Spencer	Approved by:

ADVERSE WATER QUALITY AND OTHER PROBLEMS
CORRECTIVE ACTION
LARGE MUNICIPAL RESIDENTIAL

Classification: Compliance - Regulatory (O. Reg. 170/03)

Solution: Under Section 18 of the Safe Drinking Water Act, and Schedule 16 of O.Reg 170/03, there is a Duty to Report the following prescribed adverse results:

Duty to report under s. 18 of the Act

16-3. The following are prescribed as adverse results of a drinking-water test for the purpose of section 18 of the Act:

1. A result that exceeds any of the standards prescribed by Schedule 1, 2 or 3 to the Ontario Drinking-Water Quality Standards, other than the standard for fluoride, if the result is from a sample of drinking water.
2. A result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) in a sample of drinking water.
3. A result indicating the presence of a pesticide not listed in Schedule 2 to the Ontario Drinking-Water Quality Standards in a sample of drinking water, at any concentration.
4. A result indicating that the concentration of free chlorine residual is less than 0.05 milligrams per litre in a distribution sample, if the drinking-water system provides chlorination and does not provide chloramination.
5. A result indicating that the concentration of combined chlorine residual is less than 0.25 milligrams per litre in a distribution sample, if the drinking-water system provides chloramination.
6. If the drinking-water system is required to provide filtration, a result indicating that turbidity exceeds 1.0 Nephelometric Turbidity Units (NTU) in,
   i. a grab sample of water taken from a filter effluent line, or
   ii. two samples of water from a filter effluent line that are tested by continuous monitoring equipment, if the two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample.
7. If an approval or order, including an OWRA order, identifies a parameter as a health-related parameter and establishes a maximum concentration for the parameter, a result indicating that the parameter exceeds the maximum concentration in a sample of drinking water.
8. A result indicating that the concentration of sodium exceeds 20 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of sodium in the preceding 60 months.
9. A result indicating that the concentration of fluoride exceeds 1.5 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 60 months.

Duty to report other observations

16-4. If an observation other than an adverse test result prescribed by section 16-3 indicates that a drinking-water system that provides or is required to provide disinfection is directing water that has not been properly disinfected to users of water from the system, the owner of the system shall report to the Ministry and the medical officer of health immediately after the observation is made.

The following describes the steps that must be taken to report and provide corrective action:

1. Laboratory will notify MOH, SAC and the operating authority of a prescribed adverse test result, first verbally by telephone and then secondly by faxing the notification form "Notice of Adverse Test Results and Other Problems, Notice of Issue Resolution at Drinking Water Systems".

2. The operating authority will **immediately** notify the area Medical Officer of Health at (XXXX insert telephone number) and the Ministry of the Environment, Spills Action Center at 1-800-268-6060 or 1-416-325-3000 and the waterworks owner. The operating authority must record the **names** of each person the notification was reported to, the **time** and **date** of the incident, and record the information in the water works daily plant log at the water works plant for OCWA verification.

3. Within 24 hours of oral notification, and after receiving notification form faxed by Laboratory, the operating authority must fill in all fields in Section 2(a) - Written Notice By Drinking-Water System (DWS) Owner. Do not fill in Section 2(b) - Notice of Issue Resolution unless the issue has been resolved.

4. The completed form Section 1 and Section 2(a) is to be faxed to to the local MOH (insert fax #) and SAC MOE (1-800-268-6061 or 1-416-325-3011) and the waterworks owner.

Definition of Resample:

Please note that resample and test with respect to corrective action that arises from the test of a water sample for a microbiological parameter is defined in O.Reg 170/03 as follows:

take a set of water samples, at approximately the same time, with,

(A) at least one sample from the same location as the sample that gave rise to the corrective action,

(B) at least one sample from a location that is a significant distance upstream from the location, if that is reasonably possible, and

(C) at least one sample from a location that is a significant distance downstream from the location, if that is reasonably possible,

For all other parameter, resample is defined as collecting one sample from the same location that gave rise to the corrective action.

The following Corrective Actions must be taken in the event of an Adverse Water Quality Incident. Each type of Adverse Water Quality Incident is identified.

Improper disinfection

17-2. If a report is required to be made under section 16-4 of Schedule 16 in respect of water that has not been properly disinfected, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately restore the proper disinfection.
2. Take such other steps as are directed by the medical officer of health.

Turbidity

17-3. If a report is required to be made in respect of turbidity, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately check all the drinking-water system's filters and turbidity monitoring equipment.
2. Review upstream operational processes and correct any faulty processes that are identified.
3. Take such other steps as are directed by the medical officer of health.

Chlorine residual

17-4. If a report is required to be made in respect of free chlorine residual or combined chlorine residual, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
2. Take such other steps as are directed by the medical officer of health.

***Escherichia coli* (E. coli) or fecal coliforms**

17-5. If a report is required to be made in respect of *Escherichia coli* (E. coli) or fecal coliforms, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. Immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (E. coli) or fecal coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Total coliforms

17-6. If a report is required to be made in respect of total coliforms, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If total coliforms are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Background colony counts on the total coliform membrane filter

17-7. If a report is required to be made under section 18 of the Act in respect of general bacteria population expressed as background colony counts on the total coliform membrane filter, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If more than 200 colony forming units (CFU) per 100 millilitres are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until less than 200 colony forming units (CFU) per 100 millilitres are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Colony counts on a heterotrophic plate count

17-8. If a report is required to be made under section 18 of the Act in respect of general bacteria population expressed as colony counts on a heterotrophic plate count, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If more than 500 colony forming units (CFU) per millilitre are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until less than 500 colony forming units (CFU) per millilitre are detected in all of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

***Aeromonas* spp., etc.**

17-9. If a report is required to be made under section 18 of the Act in respect of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*), the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
   i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chlorination and does not provide chloramination, or
   ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking-water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Chemical and radiological parameters in O. Reg. 169/03

17-10. If a report is required to be made under section 18 of the Act in respect of a chemical or radiological parameter set out in Schedule 2 or 3 to the Ontario Drinking-Water Quality Standards, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If a concentration that exceeds the standard prescribed for the parameter by Schedule 2 or 3 to the Ontario Drinking-Water Quality Standards is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Pesticide not listed in Schedule 2 to O. Reg. 169/03

17-11. If a report is required to be made under section 18 of the Act in respect of a pesticide not listed in Schedule 2 to the Ontario Drinking-Water Quality Standards, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If the pesticide is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Health-related parameters in an approval or order

17-12. If an approval or order identifies a parameter as a health-related parameter and a report is required to be made under section 18 of the Act in respect of the parameter, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If a concentration that exceeds the maximum concentration established for the parameter by the approval or order is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Sodium

17-13. If a report is required to be made under section 18 of the Act in respect of sodium, the owner of the drinking-water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. If a concentration of sodium that exceeds 20 milligrams per litre is detected under paragraph 1, take such steps as are directed by the medical officer of health.

Notice of Issue of Resolution:

When the Adverse Water Quality Incident has been resolved, the operating authority has 7 days from the date of resolution to notify the MOH, MOE SAC and Owner as defined in Schedule 16-9. Using the original notification form, complete Section 2(b) - Notice of Issue Resolution once the issue has been resolved and re-fax to the MOH, MOE SAC and Owner.

16-9. (1) If an immediate report or a written notice is given under this Schedule and the issue that gave rise to the notice is resolved, the owner of the drinking-water system shall, within seven days after the issue is resolved, give a written notice summarizing the action taken and the results achieved to,

(a) the medical officer of health, by delivering the written notice to the office of the medical officer of health; and

(b) the Ministry, by delivering the written notice to the Ministry's Spills Action Centre.

(2) If an immediate report or a written notice is given under this Schedule to the interested authority for a designated facility and the issue that gave rise to the notice is resolved, the owner of the drinking-water system shall, within 30 days after the issue is resolved, give a written notice summarizing the action taken and the results achieved to the interested authority.

Posting Warning Notice - does not apply to Large Municipal Systems.