Ontario

Ministry of the Environment

WINCHESTER WELL SUPPLY

Drinking Water System Inspection Report

DWS Number:	210000586
Inspection Number:	1-RAMP
Date of Inspection:	Nov 23, 2004
Inspected By:	Jan Franssen

120

Ministry of the Environment

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Ontario

RECEIVED MAY 3 - 2005

DATE:	TO	INTO	COPY		TO	INTO	COPY
Dennis							
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April 18, 2005

Mr. Howard Smith, Administrator/Clerk
Township of North Dundas
PO Box 489
547 St. Lawrence Street
Winchester, Ontario
K0C 2K0

Dear Sir:

Re: Compliance Inspection - 2004/2005
Winchester Waterworks

The Winchester waterworks were inspected on November 23, 2004, by Jan Franssen, Inspector, Drinking Water Inspection Program, Eastern Region. Enclosed is a copy of the inspection report.

A copy of the Compliance Inspection Report will be sent to Mr. Blair Henderson, who is designated as the Operations Manager for the waterworks. Copies will also be sent to Dr. Robert Bourdeau, Medical Officer of Health for the Eastern Ontario Health Unit, Mr. Mirek Tybinkowski, MOE Environmental and Approvals Branch, and Mr. Richard Pilon of the South Nation Conservation Authority.

Should you have any questions pertaining to the Compliance Inspection Report please do not hesitate to contact me at (613) 933-7402 extension 234.

Yours truly,

Jan Franssen
Inspector
Drinking Water Inspection Program
Eastern Region

cc:dhm
enclosure

cc: Blair Henderson, Operations Manager - OCWA Chesterville Hub
Dr. Robert Bourdeau, Medical Officer of Health - Eastern Ontario Health Unit
Mirek Tybinkowski, Specialist: Water and Wastewater - MOE EAAB
Richard Pilon, Director of Planning & Engineering - South Nation Conservation Authority
District Office File - SI DU CH 540

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Table of Contents:

OWNER INFORMATION:

Company Name:	North Dundas Twp		
Street Number:	636	**Unit Identifier:**	
Street Name:	St. Lawrence St		
County/District:			
District/Area Office:			
City:	Winchester		
Province:	ON	**Postal Code:**	K0C2K0

INSPECTION DETAILS:

DWS Name:	Winchester Well Supply
DWS Category:	Large Municipal Residential
DWS Number:	210000586
Inspection Type:	Announced
Inspection Number:	1-RAMP
Date of Inspection:	Nov 23, 2004
Date of Previous Inspection:	Feb 25, 2004

DWS COMPONENT LOCATIONS

Site (Name): WELL 5
Type: Source **Sub Type:** Ground
Comments:
The well is situated within a pump house located at 2137 Highway 31 North, Winchester. A review of the Water Well Record indicates that Well 5 was drilled in May 1972 to a depth of 92 feet below ground surface (bgs) into a limestone aquifer. The well record indicates that casing was installed to a depth of 15 feet bgs. A submersible pump is installed in the well. The pump house is equipped with a flow meter, a sodium hypochlorite disinfection system, and associated mechanical and electrical equipment. A standby diesel powered generator is located within the pumphouse as an emergency power source.

GPS coordinates: NAD 83, Zone 18, 0477867 / 4994078

Site (Name): WELL 4
Type: Source **Sub Type:** Ground
Comments:
This well was taken off-line in August 2000 due to low water yield, and has not been used since; it has not yet decommissioned.

Site (Name): WELL 6
Type: Source **Sub Type:** Ground

Comments:

The well is situated within a pump house located at 11610 Spruit Road, Winchester. A review of the Water Well Record indicates that Well 6 was drilled on October 23, 1982 to a depth of 52 feet below ground surface (bgs) into a limestone aquifer. The well record indicates that a steel casing was installed to a depth of 24.5 feet bgs. A submersible pump is installed in the well. The pump house is equipped with a flow meter, a sodium hypochlorite disinfection system, and associated mechanical and electrical equipment. A standby diesel powered generator is located within the pumphouse to provide emergency power.

GPS coordinates: NAD 83, Zone 18, 0467214 / 4992434

Site (Name): WELL 7
Type: Source **Sub Type:** Ground
Comments:

Wells 7a, 7b, and 7c feed water into a pump house located at 113224 Thompson Road, Winchester. All three wells are located on land adjacent to the pumphouse.

A review of the Well 7a well record indicates that the well was drilled in December 1994 to a depth of approximately 8.5m below ground surface (bgs) into an overburden aquifer. Steel casing was installed to a depth of 4.5m bgs, and the well was grouted to a depth of 4m bgs. A review of the Well 7b Water Well Record indicates that Well 7b was drilled on May 16, 1996 to a depth of 14.5 m below ground surface (bgs) into an overburden aquifer. A review of the Well 7c Water Well Record indicates that Well 7c was drilled on August 13, 1996 to a depth of 15m bgs into an overburden aquifer. Both the Well 7b and 7c well records indicate that steel casing was installed to a depth of 4.8 m bgs. A submersible pump is installed in each of the wells. The pump house is equipped with a flow meter, a sodium hypochlorite disinfection system, and associated mechanical and electrical equipment.

Well No. 7c occasionally has concentrations of manganese in excess of the ODWS aesthetic objective. Mr. Henderson indicated that this well is not operated except when performing maintenance or collecting raw water samples and, when required, is operated simultaneously with either Well No. 7a or 7b to bring the concentration of manganese below the ODWS.

GPS coordinates: NAD 83, Zone 18, 0476580 / 5000485

Site (Name): WELL 1
Type: Source **Sub Type:** Ground
Comments:

The well is situated within a pump house located at 663 St.Lawrence Street, Winchester. A review of the Water Well Record indicates that Well 1 was drilled in June 1958 to a depth of 310 feet below ground surface (bgs) into a bedrock aquifer. A submersible pump is installed in the well.

The pump house is equipped with a flow meter, a sodium hypochlorite disinfection system, and associated mechanical and electrical equipment. A standby diesel powered generator is located in an auxiliary structure.

The operating authority confirmed that the Well 1 contact pipe has been installed as specified in Part 1 of the CofA.

Instrumentation at each of the facilities include: turbidimeter, chlorine analyzer, and a magnetic flow meter.

GPS coordinates: NAD 83, Zone 18, 0472834 / 4992119

Site (Name): WATER TOWER
Type: Treated Water POE **Sub Type:** Reservoir

Comments:

A 2273 cubic meter steel storage tank was constructed in 1996 and is located at the intersection of North Street and Gordon Street. A chart recorder located at the Ottawa Street sewage pumping station records the level of water in the tank. When the water level in the tank drops to a preset limit, all the well pumps are activated. There are no chlorination facilities at the elevated tank. Overflow from the top of the tank is directed to a drainage ditch adjacent to the tank. A sufficient air gap exists between the end of the overflow pipe and the ground surface.

GPS coordinates: NAD 83, Zone 18, 0472054 / 4993661

Site (Name): DISTRIBUTION SYSTEM

Type: Treated Water POE **Sub Type:** Other

Comments:

The distribution system consists of approximately 30 km of watermains constructed of concrete and PVC. The distribution system services most of the properties in the Village of Winchester. There are approximately 1000 billed customers that serve a population of approximately 2275.

Site (Name): WELL 3

Type: Other **Sub Type:** Other

Comments:

This well is no longer connected to the distribution system. A review of the well abandonnment record indicated that the Well was sealed by Olympic Drilling Ltd. of Metcalfe, Ontario on February 10, 2005.

INSPECTION SUMMARY

INTRODUCTION

* **The primary focus of this inspection is to confirm compliance with Ministry of the Environment legislation and control documents, as well as conformance with Ministry drinking water-related policies for the inspection period (February 25 to November 24, 2004)**

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

LMR - GROUNDWATER/GUDI

* **The groundwater source is not considered groundwater under the direct influence of surface water (GUDI).**

  A review of the Winchester Well Supply GUDI Well Assessment Report (Golder Associates, 2002) indicates that Well No. 1, No. 4, No. 5, and No. 6 are drilled into a bedrock aquifer, and that Wells No. 7a, 7b, and 7c are drilled into overburden. The Ministry reviewed the above referenced report and subsequent particle studies and concluded that all of the wells are groundwater not under the direct influence of surface water.

* **The system does not obtain water from any well that is not a drilled well or does not have a watertight casing extending 6 metres below ground level.**

  All the wells suppling the Winchester Distribution System are drilled wells.

* **There is evidence that the system obtains water from an infiltration gallery.**

* **For systems capable of supplying water at a rate greater than 0.58 litres per second from a well or wells within overburden, there are no wells which are within 100 metres of surface water.**

  A review of the GUDI study report indicated that ponded water in the gravel pit adjacent to Well 7 was approximately 100m from Well 7a. The Ministry has concluded that the well in not under the direct influence of surface water.

* **For systems capable of supplying water at a rate greater than 0.58 litres per second from a well or wells within bedrock, there are no wells which are within 500 metres of surface water.**

  A review of the GUDI study report indicated that there is surface water within 500 m of Wells 1, 5, and 6. However, the Ministry has concluded that each of these wells are not under the direct influence of surface water.

* **There is no evidence of contamination by surface water.**

  A review of the weekly raw water sample results from each of the wells indicated that over the course of the inspection period E.Coli was not detected in any of the samples. Total Coliforms were detected on three occasions in Well 7a at concentrations ranging from 1 to 8 colony forming units (cfu) per 100mL, and on four occasions in Well 7c at concentrations ranging from 1 to 2 cfu/100mL. For details regarding raw water quality please refer to the Water Quality Monitoring Section of this report.

* **There are no reports by a professional engineer or professional hydrogeologist that conclude that the system's raw water supply is GUDI.**

* **A GUDI assessment has been performed.**

LMR - GROUNDWATER/GUDI

* **There is adequate separation distance, as defined in Ontario Regulation 903, between each well and sources of pollution.**

  The Inspector did not identify any direct sources of pollution within 30m of the source wells.

  A review of the 'Municipal Groundwater Study – Township of North Dundas' (Eastern Ontario Water Resources Committee, March 2004) revealed the following source protection issues:

  Well No.1

  Relatively thin layer of overburden at this location. Potential contaminant sources include: cattle farming, PCB Storage, road salting, diesel generators, former pump islands, light manufacturing, rail line, feed silos, residential septic and fuel systems.

  Well No. 5

  Thin layer of overburden material overlying the bedrock surface. Potential sources of contamination include: road salt from Highway 31, a retail fuel outlet with underground fuel storage tanks, and farming practices on adjacent agricultural land.

  Well No. 6

  Moderate confining layer overlying the bedrock surface. This well is reported to be potentially under the influence of surface water. Potential source of contamination are farming practices on the adjacent agricultural land.

  Well No. 7

  These wells are considered to be extremely vulnerable, the areas to the north and south of the well field fall within the Morewood Esker and are considered to be extremely vulnerable. Potential sources of contamination include: the nearby pit and quarry operation, heating fuel and septic system from an adjacent residence, sand and gravel pits to the north.

  As noted above, both Well 5 and 6 are situated directed adjacent to agricultural lands. The owner should note that Section 43 of the Nutrient Management Act (O.Reg 267/03) states that no person shall apply nutrients to land closer than 100 metres to a municipal well.

* **Trends in source water quality are being monitored by the owner/operating authority.**

  Weekly raw water samples are being collected from the production wells and submitted for microbiological testing. These results are monitored and tabulated by the operating authority.

* **The owner is maintaining the well in a manner sufficient to prevent entry of surface water and foreign materials.**

* **The well has a securely affixed well cap.**

* **The well casing extends to the minimum height required by Ontario Regulation 903.**

  The inspection revealed that Well No. 6 and the three wells that comprise the Well No. 7 well field are located adjacent to their respective well houses. The casing for each of these wells extended a minimum of 30 cm above the surrounding ground surface and that the drainage around each of the wells was such that the ponding of water around the well heads would be unlikely. Each well was equipped with a locking well cap and vents that were properly screened.

* **The surface drainage around the wellhead is such that water will not collect or pond in the vicinity of the well.**

LMR - GROUNDWATER/GUDI

* **There is evidence that the annular space around the casing of each well was adequately filled with sealing material when the well was constructed.**

  A review of the water well records indicated that Well 1 was sealed with grout to a depth of 4m below ground surface (bgs); Well 5 was sealed to a depth of 10 feet (3.3 m); and Well 7b and 7c were sealed with cementious grout to a depth of 1.8 m bgs. There was no plugging and sealing details on the Well 6 well record. A review of the Well 6 schematic (Golder Associates, December 1994) indicates that Well 6 was sealed with cement grout to a depth of approximately 4m bgs.

* **The below ground connection to the well has been made with a well seal or pitless adaptor.**

LMR - PERMIT TO TAKE WATER

* **A PTTW is required and exists for the system.**

  The Winchester Well Supply operates under the following PTTWs:

  Well 1 - PTTW 88-P-4090 (817,920 L/day; expires Feb. 1, 2014)

  Well 5 - PTTW 86-P-4015 (555,840 L/day; no expiry date)

  Well 6 - PTTW 04-P-4011 (982,000 L/day; Feb. 1, 2014)

  Well 7 - PTTW 96-P-4068 (combined rate of taking 1,950,000 L/day; no expiry date)

* **All of the production sources are identified on the PTTW.**

* **There are no PTTWs which are beyond their expiry date.**

* **The maximum water takings are in accordance with those allowed under the PTTW during the inspection review period.**

  A review of the records provided by the operating authority indicated that over the course of the inspection period the maximum recorded takings were as follows:

  Well 1 – 461,000 L/day

  Well 5 – 521,000 L/day

  Well 6 – 745,000 L/day

  Well 7 – 1,778,000 L/day

* **Trends in water quantity/takings are being monitored by the owner/operating authority.**

* **No complaints of interference due to the water taking have been received by the owner/operating authority.**

* **The owner complied with the special conditions in the PTTW during the inspection review period.**

  Special Condition 13 in PTTW 96-P-4068 (Well No. 7) requires that the owner follow the contingency plan set forth in the letter dated February 7, 1996 from Golder Associates Limited should a water quality or quantity complaint arise from surrounding wells in the area. The operating authority provided a copy of the contingency plan titled "Water Level / Quality Interference affecting the Groves or Lafleur Wells".

LMR - PERMIT TO TAKE WATER

* **Water conservation is being practiced by the owner or operating authority.**

  A Water Conservation By-Law was passed in December 1977 to restrict water use for watering lawns, watering gardens and for car washing between May 1 to December 1 except with a hand-held hose between the hours of 6:00 pm through midnight.

LMR - CAPACITY ASSESSMENT

* **Flow rates were maintained below the maximum flow rates or the rated capacity identified in the CofA.**

  A review of Part 4 of the CofA indicated that the maximum flow rates specified in the CofA are as follows: Well 1 – 568 L/min; Well 4 – 159 L/min; Well 5 – 386 L/min; Well 6 – 682 L/min; and Well 7 – 1350 L/min. The maximum daily flow provided for Well No. 7 is a combined rate of taking from all three wells located at that site.

  Data provided by the operating authority indicated that the 2004 maximum flow rates were as follows: Well 1 = 540 L/min; Well 4 = no flow; Well 5 = 384 L/min; Well 6 = 570 L/min; Well 7 = 1344 L/min.

* **Only certified operators make adjustments to the treatment equipment.**

* **The annual average daily flow was less than 80% of the capacity of the plant.**

  The 2004 average daily flow was 1,867,000 L/day, or approximately 41% of the overall capacity of the drinking water system.

* **The owner is monitoring demand and population trends in order to determine whether the facilities are capable of meeting maximum daily demands, or whether there is a need to upgrade or expand the system.**

* **The number of installed flow measuring devices is sufficient to meet the requirements of the PTTW or CofA.**

  Condition 2.1 of the CofA requires that flow measuring devices are installed to permit the measurement of the flow rate and daily volume of water taken from each well, and the flow rate of treated water supplied to the distribution system. An electromagnetic flow meter is installed at each pumphouse.

* **The flow measuring devices are calibrated to the specifications of the manufacturer or at regular intervals not exceeding one year.**

  The operating authority indicated that the flow meters are calibrated on an annual basis. A review of the Calibration Certificates provided by the Operating Authority indicated that the flow meters installed at the Well 5 and 6 pumphouses were calibrated on June 22, 2004. The flow meters installed at Well 1 and Well 7 were calibrated on July 22, 2004 and June 18, 2004 respectively.

LMR - TREATMENT PROCESSES

* **Records reviewed during the inspection indicate that the drinking-water system provides the required minimum level of treatment at all times.**

  A review of the data provided by the operating authority indicated that the required minimum level of treatment was provided. The operating authority indicated that the Well 1 chlorine contact pipe specified in Part 1 of the CofA has been installed.

LMR - TREATMENT PROCESSES

* **The drinking-water system provides adequate primary disinfection.**

  Disinfection systems are located in each of the pump houses. Each system consists of two chlorine solution tanks (1 duty, 1 standby), two chemical metering pumps (1 duty, 1 standby) and a chlorine analyzer. At each pump house a 12% solution of sodium hypochlorite is injected into the raw water supply line.

* **A valid Certificate of Approval exists for the facility.**

  The waterworks operates under CofA 1959-5PSJP8 issued August 25, 2003.

* **The owner has ensured that water treatment equipment is installed in accordance with regulatory requirements and the CofA.**

* **The owner has up-to-date plans for the drinking water system.**

* **The chlorine residual in water entering the distribution system is maintained at the level identified in the Operations Manual as the level required to achieve adequate disinfection.**

  A review of the CT calculation sheets included in the operations manual for each of the pumphouses indicated that at maximum flow rates and free chlorine concentrations of 0.2 mg/L the required contact times are exceeded.

  The Operating Authority confirmed that the low chlorine alarm on all the treated water chlorine analyzers is set at 0.5 mg/L of free chlorine. Each disinfection system is also equipped with an automatic pump shut-off mechanism when the low chlorine alarm is triggered. A records review indicated that the the operating authority is maintaining sufficient chlorine residuals in the distribution system.

* **The facility and equipment appear to be maintained and in a fit state of repair.**

* **There are no reports that raise concerns with respect to the reliability of the transmission line from the plant to the distribution system, in terms of its being able to provide a continuous supply of water from the treatment plant.**

* **It is not possible for raw water or partially treated water to bypass key treatment units.**

* **The owner has evidence indicating that all chemicals used in the treatment process and all materials contacting the water have met the AWWA and ANSI standards in accordance with the CofA.**

  The operating authority provided documentation indicating that the sodium hypochlorite supplied by Brenntag Canada Inc. conforms to ANSI / NSF standard 60. There are no other process chemicals utilized at this facility.

* **Spill containment provided for process chemicals and for the standby power generator fuel is adequate.**

  Spill containment is provided for process chemicals and fuel storage at each well house.

* **The floor drains are placed in such a manner that contaminants cannot come in contact with or impact upon the source water, the treated water, or the natural environment.**

  Water entering the floor drains at each of the pump houses is discharged to soak-a-way pit.

* **The operator is aware of the required CT value and the CT value is used in process calculations and process control.**

LMR - TREATMENT PROCESSES

* **The owner has initiated measures to address potential cross-connections at the treatment plant.**

  A backflow prevention device has been installed at each pump house for sample and service taps.

* **Pesticides are not applied, stored, or mixed in the immediate vicinity of water intakes, treatment facilities or storage structures.**

  The operating authority confirmed that they do not use, store, or mix pesticides near any component of the drinking water system.

  Pesticides and herbicides are likely used on surrounding agricultural lands near Wells No. 5, 6 and 7. The most recent sampling of Schedule 24 parameters (incl. pesticides) indicated that pesticides were not detected in treated water samples from any of the pump houses.

LMR - PROCESS WASTEWATER

* **The facility generates process wastewater.**

  Waste water from the sinks and treated water fed to the online analyzers is discharged to a soak-a-way pit at each of the pump houses. There are no reagents added to the water by either of the analyzers. No other process wastewater is generated at the wellheads or at the reservoir.

* **Process wastewater is not recycled.**

* **Process wastewater was discharged in such a manner that an environmental impact did not occur.**

LMR - DISTRIBUTION SYSTEM

* **The owner has been able to maintain proper pressures in the distribution system.**

* **Consumer water use is fully metered.**

  Service connections in the Village of Winchester are metered and customers are billed based on water usage.

* **No cross connections with other water sources such as wells, cisterns or surface water are known to exist.**

  The Operating Authority indicated that there is ongoing inspection of homes in Winchester for cross connection. To date one cross connection has been identified. The Township confirmed that the water supply to the residence was shut-off.

  Water haulers and local contractors who wish to obtain water must first be granted permission by the owner and must be supervised by the operating authority. The hydrant adjacent to Well No. 5 is used, and the operating authority ensures that an air gap or backflow prevention device is in place.

LMR - DISTRIBUTION SYSTEM

* **There is a by-law in place to prohibit the creation of cross connections.**

The Township of North Dundas By-Law 19-2004 Section 23 states: "Connection of any customer's installation served by the Township to any other source of water supply is prohibited. Failure to comply with this regulation shall entitle the Township to suspend the service."

On July 14, 2003 the Township of the North Dundas implemented a "Fire Hydrant Use Policy". The policy states that no person other than a person authorized by the Chief Administrative Officer shall be permitted to open a fire hydrant.

* **The owner does not have a proactive leak detection program in place.**

The Operating Authority indicated that there is no formal leak detection program, but that Enpar Corrosion Control Ltd. was hired in 2004 to install sacrificial anodes in the center section of Winchester. Electrical potential was measured before and after installation to ensure they were providing protection and provide a reference for future effectivness. The Operating Authority has requested capital money to continue the program in other parts of town.

* **More than 90% of the total amount of water distributed by the system is accounted for.**

A review of the metering data provided by the owner and the total system flow provided by the operating authority indicated that approximately 90% of the distribution system water is accounted for.

* **The owner has maintained the integrity of the system by using standards or procedures for design and material selection and by using plumbing code requirements.**

The Township retains the services of a Professional Engineer for distribution system design. Material selection is as per AWWA Standards - C900, C907, C800, C502, C510.

* **The disinfection of new or repaired water mains or facilities is conducted in accordance with procedures equivalent to the applicable AWWA standards.**

* **There is a maintenance and repair recording system which documents repairs, leak detection surveys and scheduled inspection/clean-out of water storage structures.**

The operating authority is responsible for repairs and they confirmed that repairs are performed by certified operators as required by O.Reg 435/93 Section 19. The Inspector noted that the repairs are documented in the logbook.

The elevated storage tank was cleaned and inspected the week of June 1, 2003.

* **Repairs to the distribution system are performed by authorized personnel.**

When maintenance and repairs are completed on the distribution system, the American Water Works Association (AWWA) Standard for Disinfecting Water Mains is followed. The operating authority indicated that a contractor is retained to operate the necessary machinery and perform the labour, while operators complete the disinfection procedures. When the water tower is disinfected, the AWWA Standard for Disinfection of Water-Storage Facilities is followed. Hard copies and electronic copies of the AWWA procedures are provided at the OCWA office. The repairs are logged in the Operations Log book that is kept at the OCWA office.

LMR - DISTRIBUTION SYSTEM

* **Backflow preventers are installed at each lateral connection to major industries.**

  The following industries are connected to Winchester distribution system:

  i) Winchester Hospital - indicated that check valves are on most of their systems and that backflow prevention will be installed during forthcoming redevelopment

  ii) Parmalat - indicated that dual backflow preventers are installed on both water supply lines for the plant.

* **There is a program for the flushing and/or swabbing of watermains per AWWA standards.**

  The operating authority confirmed that the fire hydrants connected to the distribution system are inspected and exercised on a routine basis in accordance with AWWA standards. Hydrants are inspected during the routine spring and fall flushing activities. Hydrants are pumped dry each Fall to avoid damage caused by freezing.

  A review of the logbook indicated that the operating authority flushes distribution system dead ends on a routine bases during the summer months. In the summer months, the free chlorine residual is sampled at the top of the water tower to determine the extent of chlorine stratification in the tank. If the chlorine residual is low, the operating authority adds sodium hypochlorite directly into the tank

* **Pesticides are applied and stored away from the immediate vicinity of the storage works in the distribution system.**

LMR - OPERATIONS MANUALS

* **Operators and maintenance personnel have ready access to comprehensive operations and maintenance manuals.**

  An up to date operations manual is kept at each of the pump houses.

* **The Operations Manual meets the requirements of the Certificate of Approval or Engineering Evaluation Report.**

  An Operations and maintenance manual is located in the Operations Binder located at the water treatment plant. The Operations Binder provides all the required elements specified in Section 6.5 of the CofA and contains the following sections: Certificates of Approvals, Engineer's Report, Schedules and Procedures for Monitoring and Reporting, Monitoring Equipment, Contingency Plan, Complaints, Well Inspection and Maintenance, Facility Operations Manual, and the American Water Works Association (AWWA) Standards for Disinfection of Watermains, Disinfection of Water Storage Facilities, and Disinfection of Wells.

* **The operations and maintenance manuals contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

* **The Operations Manual contains a sampling plan.**

* **The Operations Manual contains instructions that pertain to the identification of adverse drinking-water conditions and to the prescribed notification and corrective actions.**

* **A procedure is in place that is followed to ensure that all equipment used in the processes is monitored, inspected, tested and evaluated.**

  The Operating Authority has an internal database that is used to schedule and track the maintenance of all equipment.

LMR - LOGBOOKS

LMR - LOGBOOKS

* **Logs or other record keeping mechanisms are provided to record information concerning the subsystems which comprise the system.**

  The Operations Log is a bound notebook that is located at each pump house. There is also a distribution system logbook that is kept at the Winchester Sewage Pumping Station and an additional logbook at the offices of the operating authority which is used to record operational checks that are conducted remotely. A review of the logbooks indicated that the operating authority generally performs operational checks at each pump station several times a week and performs site visits when system alarms are triggered.

* **Log books confirm that only certified operators, trained persons or water quality analysts are performing operational testing not performed by continuous monitoring equipment.**

* **For every required operational test and for every required sample, a record is made of the date, time location and name of the person who performed the test and the result of the analysis.**

* **Logbooks identify who is serving as Operator-in-Charge.**

* **Logbook entries are made in chronological order.**

* **Entries in the logbook are made only by the overall responsible operator or an operator in charge or by a person authorized to make an entry by the owner, the operating authority, the overall responsible operator or an operator in charge.**

* **For each operating shift, the log records the date, time of day the shift began and ended and the number or designation of the shift.**

* **The record system allows the reader to unambiguously identify the person making the logbook entry.**

* **Departures from normal operating procedures are documented along with the time they occurred.**

* **Unusual or abnormal conditions observed at the facility are recorded in the logbook along with action taken.**

* **If equipment was taken out of service or equipment ceased to operate during the shift, that removal from service or cessation was recorded in the logbook along with action taken to maintain or repair the equipment.**

* **Logs and other record keeping methods are available for at least 5 years.**

* **There is consistency between the information contained in the adverse reports and the records maintained in logs or information provided in reports.**

* **Records are maintained of the amount of time each operator works as Operator-in-Charge.**

  The Operating Authority keeps a record of the Operator-in-Charge time on each Operator's timesheet.

* **Where required, logbooks identify special instructions given to depart from normal operating conditions.**

* **Logbooks maintain monitoring and measurement records to verify that they meet procedures in Operations and Maintenance Manuals.**

LMR - CONTINGENCY AND EMERGENCY PLANNING

LMR - CONTINGENCY AND EMERGENCY PLANNING

* **The owner has developed a written contingency/emergency plan.**

  The Operating Authority has prepared specific contingency plans for a wide variety of potential emergencies including: chemical spills, hydro failure, vandalism, watermain break, contaminated raw water, and fire. These plans are included in Section 5 of the Operations Manual.

* **A system contingency procedure is in place for periods of time when the plant operator is absent or unable to act.**

* **The contingency/emergency plan includes a provision for the notification of the Director when the operator who has overall responsibility for treatment facility operations is absent for sixty days or more within any consecutive twelve month period.**

* **The contingency/emergency plan provides for key equipment needed in the event of an emergency or upset condition to be made available.**

* **Standby equipment is available for critical treatment processes where required.**

  Standby chemical metering pumps are available at each pumphouse.

* **The treatment facility can achieve the required capacity with its largest unit out of service.**

* **Standby power generators are available, or not required.**

  The Well 1, 5, and 6 pumphouse are equipped with standby power generators. Emergency power would be provided at the Well 7 pumphouse by a mobile generator.

* **Standby power generators are tested under normal load conditions.**

  A review of the operations logbooks indicated that the emergency generators are tested monthly.

* **Procedures exist for the periodic training and testing of the contingency/emergency plan.**

* **The contingency/emergency plan addresses spill scenarios.**

  Section 4 of the Environmental Contingency Plan provides guidance on MOE Spill Reporting Requirements. Section 5 of the Plan provides a detailed contingency for Chemical Spills.

* **Clean-up equipment and materials are in place for the clean up of spills.**

  The Operating Authority indicated that clean-up equipment and materials for spills are stored at OCWA's Chesterville Office.

* **The contingency/emergency plan is posted in a prominent location in the facility.**

LMR - SECURITY

* **All storage facilities are completely covered and secure.**

* **Air vents associated with reservoirs and elevated storage structures are equipped with screens.**

LMR - SECURITY

* **The owner has provided adequate security measures to protect wells, intakes, treatment facilities and components of the distribution system.**

Access to each of the pump stations is gained through a steel door that is kept locked at all times. In addition, each of these pump stations is equipped with an intrusion alarm that will remotely notify the Operator in Charge in the event of unauthorized entry.

The elevated tower is surrounded by a chain-link fence with barbed wiring. The fence has a gate that is equipped with a "No Trespassing" sign and is locked with a pad lock. The water tower has a steel door that is equipped with a dead bolt lock and an intrusion alarm.

The Winchester Well Supply is equipped with a security and alarm system capable of remote notification of the Operator in Charge in the event of an alarm condition. If an alarm is triggered the Operator in Charge will receive notification via the on-call pager and/or the operator's cell phone. If the Operator in Charge does not respond to the on-call pager within a specified period of time then backup operators will be notified until one is contacted. Alarms at each of the operational pump stations include: power failure; intrusion, chlorine high and low alarms, chlorine lockout, communications failure, and fire alarm. Additional alarms at the elevated tower include: power failure, high and low tower level, intrusion, communications failure, airplane signal light failure, and fire alarm.

LMR - COMMUNICATION WITH CONSUMERS

* **A documented system exists that records consumer complaints, steps taken to determine the cause of the issue, and corrective measures taken to alleviate the cause and prevent its reoccurrence.**

The operating authority manages and responds to customer complaints using the OPEX Incident Reporting System; a database that OCWA uses to record and report a wide range of incidents including community complaints. There were a total of four user complaints filed with the operating authority over the course of the inspection period. On March 18, 2004 a resident complained of dirty water. The Operating Authority investigated the complaint and found that dirty water was a result of Well 1 being brought back into service. On May 4, 2004 a resident complained of low pressure. The Operating Authority investigated the problem and concluded that incident was caused by a plumbing problem within the residence. On July 22, 2004 a resident complained of the smell and taste of chlorine in the water; a similar complaint was made on October 26, 2004 by a different resident. On both occasions the Operating Authority investigated the compliant and found that the free chlorine residuals were with the prescribed regulatory limits.

* **Required documents are available free-of-charge, made available during normal business hours, and are at a location accessible to the public.**

The owner confirmed that the following documents are available to the public during normal business hours at the Township's Offices in Winchester:

- All of the lab reports on the analysis of water samples required to be taken under O.Reg 170/03;
- Copies of Annual Reports and Summary Reports for Municipalities required by O.Reg 170/03;
- All of the approvals, orders, and directions related to system;
- A Copy of the most recent Engineer's Report;
- Annual Compliance Report;
- A copy of the Drinking Water Systems Regulation (Regulation 170/03; and
- The Ontario Drinking Water Quality Standards (Regulation 169/03).

LMR - COMMUNICATION WITH CONSUMERS

* **The owner takes effective steps to advise consumers of the availability of Annual Reports.**

The Township of North Dundas maintains a website (www.northdundas.com) where policy guidelines (eg: By-laws), service application forms, and the annual reports are posted.

LMR - OPERATOR CERTIFICATION AND TRAINING

* **The overall responsible operator has been designated and he/she possesses a certificate that is of the same class or higher than the class of the subsystem.**

The operator in overall responsibility for the Winchester Drinking Water System is Mr. Blair Henderson. Mr. Henderson possesses a Class 2 Water Treatment License and a Class 3 Water Distribution License. The Winchester Drinking Water System is classified as a Class 3 Water Distribution System.

* **The operator designated as the overall responsible operator is not a grand-parented operator who has failed to obtain a satisfactory mark in an examination by May 14, 2005**
* **Personnel at the drinking water system are under the supervision of persons having the prescribed qualifications.**
* **All operators possess the required certification.**

All operators working at the treatment facility and the distribution system possess the required certification.

The following is a list of operators, certification details, and license expiry dates:

Dave Markell - Water Treatment Class 3 (Nov. 30, 2007) Water Distribution Class 3 (Sept. 30, 2005)

William Michels - Water Treatment Class 2 (Sept. 30, 2006) Water Distribution Class 2 (Sept. 30, 2006)

Jean Veilleux - Water Treatment Class 3 (May 31, 2006) Water Distribution Class 3 (May 31, 2006)

Andrew Barrie - Water Treatment Class 2 (Jan. 31, 2005) Water Distribution Class 2 (Oct. 31, 2005)

Tony Kelly - Water Treatment Class 3(Nov. 30, 2007) Water Distribution Class 3 (Nov. 30, 2006)

Mark Lauzon - Water Treatment Class 1 (Oct. 31, 2006) Water Distribution OIT (Sept. 30, 2005)

Brian Huskinson - Water Treatment Class 2 (Oct. 31, 2005) Water Distribution Class 2 (Aug. 31, 2005)

David Lee - Water Treatment OIT (June 30, 2006) Water Distribution OIT (June 30, 2006)

Dennis Sullivan - Water Treatment OIT (April 30, 2007) Water Distribution OIT (April 30, 2007)

Jonathan Hartle - Water Treatment OIT (April 30, 2007) Water Distribution OIT (April 30, 2007)

Note: OIT = Operator in Training

* **Operators in charge have been designated for all subsystems which comprise the drinking water system.**
* **Operator and water quality analyst certificates are displayed in a conspicuous location at the workplace or at the premises from which the subsystem is managed.**

The operator licenses were conspicuously displayed at OCWA's office in Chesterville.

LMR - OPERATOR CERTIFICATION AND TRAINING

* **The owner has filed an application for the determination of the type and class of each type of subsystem in the drinking water system.**

* **The classification certificates of the subsystems which comprise the system are conspicuously displayed at the workplace or at premises from which the subsystem is managed.**

  The plant classification plaque was conspicuously displayed at the Winchester Sewage Pumping Station.

* **The owner has maintained every record or report related to a test required under an approval or order, the corresponding documents and records required under Reg. 170, and records or reports related to tests required under schedules 6, 7, 10, 11 and 22 and under sections 17-5 to 17-9 and 18-5 to 18-9 of Reg. 170 for at least 5 years.**

* **The owner has maintained for a period of at least 15 years those records and reports related to tests required under an approval or an order, every report prepared by a professional engineer or hydrogeologist pertaining to a determination whether a ground water supply is GUDI or groundwater, and records or reports required under schedule 13 and sections 17-10 to 17-13 and 18-10 to 18-13 of Reg. 170.**

* **Up-to-date, as-built plans of the water system are available and subsequent modifications, if any, have been noted on the drawings.**

* **The owner did comply with the requirement to seek change to the C of A where required, when changes were made.**

  On May 2, 2003 Stantec Consulting Ltd. of Ottawa, Ontario submitted an application on behalf of the owner for upgrades to the drinking water system.

* **It can be confirmed that there were no instances where the overall responsible operator was unable to act for more than 150 consecutive days.**

* **A review of the contingency plan verifies that it provides for delegation of an overall responsible operator's duties for periods of up to 150 days in any one year when the overall responsible operator is absent or unable to act.**

* **Every operator and water quality analyst employed in the subsystem has received the annual number of hours of training relative to that subsystem.**

  A review of the training records indicated that all operators have received the required amount of training.

* **For that portion of the training consisting of on the job practical training, records have been retained for 5 years.**

* **For that portion of the training consisting of on the job practical training, the records include the names of the operators and water quality analysts who attended training sessions, the dates of training sessions, the method used for the training, the name of the instructor, the duration of each training session and the subjects covered.**

* **Operators are regularly trained with respect to the contents of the Operations Manual and Contingency/Emergency Plan.**

  The operating authority indicated that operators are required to review the Operations Manual for their assigned facilities annually, and that periodically manuals are discussed at regularly scheduled staff meetings.

LMR - WATER QUALITY MONITORING

LMR - WATER QUALITY MONITORING

* **All microbiological water quality monitoring required by the legislation is being conducted.**

  A review of the weekly raw water data from each of the production wells indicated that over the course of the inspection period E.Coli was not detected in any of the wells. Total Coliforms were detected at the following locations: Well 7a on four occasions with concentrations ranging from 1 colony forming unit (cfu) per 100mL to 8 cfu/100mL; Well 7b on four occasions with concentrations ranging from 1 colony forming unit (cfu) per 100mL to 2 cfu/100mL.

  A review of the weekly treated water data from each of the production wells indicated that over the course of the inspection period both E.Coli and Total Coliforms were not detected in any of the samples.

  The operating authority collected a minimum of ten samples per month from the distribution system and submitted them for microbiological analyses. All samples were analyzed for E.Coli, Total Coliforms. The required percentage of distribution samples were also analyzed for a heterotrophic plate count.

* **All physical/chemical water quality monitoring required by the legislation is being conducted.**

  On January 20, 2003 the operating authority collected treated water samples from each operational well for analysis of all the required inorganic parameters (O.Reg. 170/03 Schedule 23) with the exception of Antimony which was not included as an inorganic parameter in the legislation that was applicable (Regulation 459/00) at the time of sampling. On December 8, 2003 the operating authority collected a sample that was submitted for the analysis of Antimony. The results indicated that the parameters were either not detected or detected at concentrations less then half the Maximum Acceptable Concentration.

  On January 20, 2003 the operating authority collected a treated water sample for analysis of all of the required organic parameters (O.Reg. 170/03 Schedule 24). The results indicated that the parameters were either not detected or detected at concentrations less then half the Maximum Acceptable Concentration.

  Quarterly samples for Nitrate and Nitrite were collected from each of the operational wells on January 28, May 13, July 20, October 13, 2004. The results indicated that both nitrite was not detected in any of the samples. Nitrate was detected in the treated water from Well 6 and Well 7 at maximum concentrations of 0.43 mg/L and 0.40 mg/L respectively. The Maximum Acceptable Concentration (MAC) for Nitrate is 10mg/L (O.Reg 169/03).

  The operating authority collected treated water samples for the analysis of sodium on January 29, 2002. The results indicated the following concentrations: Well 1 = 116 mg/L, Well 5 = 114 mg/L, Well 6 = 21 mg/L, Well 7 = 9 mg/L. Notification was made to the MOE and the MOH on February 7, 2002.

  The operating authority collected a water sample for the analysis of fluoride from each of the operational wells for the analysis of fluoride on January 29, 2002. The results indicated the following concentrations: Well 1 = 0.32 mg/L, Well 5 = 0.27 mg/L, Well 6 = 0.32 mg/L, Well 7 = 0.15 mg/L. The MAC for Fluoride is 1.5 mg/L.

* **All the water quality monitoring required by authorizing or control documents is being conducted.**

* **No relief from water quality monitoring requirements has been granted.**

* **Samples of raw water can be collected prior to treatment from an acceptable tap with a smooth nozzle.**

  A smooth nozzle raw water sample tap is located at each pumphouse for the collection of a sample prior to injection of disinfectant.

LMR - WATER QUALITY MONITORING

* **Raw water samples are being collected and analyzed from the appropriate locations at the appropriate frequency.**

  A review of the laboratory analytical reports provided by the operating authority indicated that the required weekly raw water samples are being collected.

* **Testing for parameters required by legislation, CofA or order is being conducted by laboratories accredited to test for that parameter.**

* **The drinking water system owner has submitted all written notices to the Director providing the names of laboratories that are conducting tests for parameters required by legislation, CofA or Order.**

  On November 17, 2003 Dave Markell submitted Part I and Part II and Form 6 to the Ministry for the following laboratories: Accutest, Caduceon, and Lakefield Research.

* **Samples are being taken and handled in accordance to instructions provided by the drinking water system's laboratories.**

* **Continuous water quality analyzers and indicators with alarm systems are installed at the prescribed locations.**

  At each of the pump houses, water from the treated water discharge line is directed to a Wallace and Tiernan Depolox 3 Plus continuous chlorine analyzer via a contact time simulation tank, with the exception of Well No. 1 which will be configured to collect a sample at the end of the newly installed chlorine contact pipe. The purpose of the simulation tank is to provide a sample of water to the analyzer after the required contact time has been completed as per the requirements of Schedule 7-2 of O.Reg 170/03.

  The analyzer is connected to a SCADA system that provides a continuous record of the chlorine residuals in the treated water as it is discharged from the plant. The operating authority confirmed that the results are checked at least once every 72 hours.

  The chlorine analyzers are equipped with an alarm system that provides electronic notification to the operating authority if the test result indicates that the free chlorine residual is above the maximum alarm setting of 3.0 mg/L free chlorine (3.5 mg/L at Well No. 1) or below the minimum alarm setting of 0.5 mg/L free chlorine. The disinfection system is equipped with a pump lockout that is activated when the low level alarm is triggered.

* **Continuous disinfectant residual analyzers are equipped with alarms to ensure continuous disinfection.**

  The chlorine alarm and low water level alarms at the wells are designed to automatically trigger a lock out of the well pumps.

* **Samples for chlorine residual analysis are tested using continuous monitoring equipment, an electronic direct read-out colourimetric or amperometric chlorine analyzer, or an equivalent device.**

* **The required minimum levels of residual disinfectant are maintained throughout the distribution system.**

  A review of the data provided by the operating authority indicated that the minimum concentrations of free chlorine residual were being maintained within the distribution system. Free chlorine concentrations taken during weekly distribution system sampling ranged from 0.63 mg/L to 2.00 mg/L.

* **Records confirm that the maximum free chlorine residual in the distribution system was less than 4.0 mg/L or that the combined chlorine residual was less than 3.0 mg/L.**

LMR - WATER QUALITY MONITORING

* **Monitoring equipment is capable of measuring chlorine residuals with the required accuracy.**

  The manufacture's instructions do not provide a recommended calibration schedule, therefore Schedule 6-5 Section 10 of O.Reg 170/03 applies and the analyzer is required to be operated at an accuracy that is within the specified margins of error. The margins of error for a free chlorine analyzer is 0.05 mg/L if the concentrations measured are less than or equal to 1.0 mg/L and proportionally higher if the concentrations usually measured are greater than 1.0 mg/L. The accuracy range for the Depolox 3 analyzer is +/- 5% (ie: +/- 0.05 mg/L at 1.0 mg/L). A review of the calibration summary reports revealed that the chlorine analyzer is calibrated monthly.

  The operating authority indicated that the analyzer is compared with the results from a Hach pocket colorimeter during each site visit. The Operating Authority provided documentation that showed that the manufacturer calibrated the pocket colorimeter in May 2003. A review of the calibration summary reports provided by the Operating Authority indicated that each of the online chlorine analyzers was calibrated on a monthly basis.

* **Turbidity testing is carried out using a meter that measures turbidity in Nephelometric Turbidity Units (NTUs).**

  Hach model 1720D turbidimeters are installed on the raw water supply lines at each of the pump stations and provide a continuous measure of turbidity. The quality control band for this specific model of turbidimeter is +/- 2% (ie: +/- 0.02 at 1 NTU). The high alarm setting on the turbidimeter is 0.99 NTU. O. Reg. 170/03 does not require the monitoring of turbidity of treated water originating from a groundwater source, therefore the operation and reporting requirements for the subject turbidimeter do not apply.

* **The drinking water system is not practicing chemically-assisted filtration and monthly turbidity testing is being conducted on the raw water prior to it entering the treatment system.**

  Monthly raw water turbidity measurements are being collected and the results are being recorded in the logbook.

* **Turbidity testing is being carried out in accordance with the regulation.**

* **The owner of the drinking-water system has not been required to increase the frequency of monitoring for any chemical parameter as a result of having exceeded half the value of an applicable O. Reg. 169/03 standard.**

* **Primary disinfection chlorine monitoring is being conducted at or near a location where the intended CT has just been achieved or at a point representing that location.**

  Chlorine contact simulation tanks have been installed at each of the pump houses with the exception of Well 1 where the chlorine sampling point is situated at the end of the newly installed chlorine contact pipe.

* **Secondary disinfection chlorine residual monitoring is being conducted on a daily basis.**

* **Daily records of the measured disinfectant are maintained.**

* **The drinking water system is providing chlorination.**

LMR - WATER QUALITY MONITORING

* **Trihalomethane samples are being collected as required.**

  On January 28, May 27, July 20 and October 13, 2004 distribution system samples were collected and submitted for analysis of THMs and the concentrations reported were 5.8, 23.2, 14.7, and 14.4 ug/L respectively. The four quarter average at the time of the inspection was 15 ug/L. The Ontario Drinking Water Quality Standard for THMs in drinking water is 100 ug/L based on a four quarter moving annual average of test results.

* **The trihalomethane samples are being collected from a point in the distribution system or in the connected plumbing system that is likely to have an elevated potential for the formation of trihalomethanes.**

* **Samples for lead analysis are being collected from a point in the distribution system, or the connected plumbing system that is likely to have an elevated concentration of lead.**

  Samples are collected from the distribution system on an annual basis. The sample collected on January 28, 2004 indicated that the concentration of lead was <0.001 mg/L. The Ontario Drinking Water Standard for Lead is 0.010 mg/L (O.Reg 169/03).

* **The owner is conducting sampling in addition to that required.**

  The Operating Authority reports that a minimum of twelve distribution system samples are collected for analysis of microbiological parameters. The minimum required by O.Reg. 170/03 is nine.

  Camera inspections of each of the wells were completed by International Water Supply or Barrie, Ontario from August 19 through August 23, 2003. During the camera inspections, an unexplained fluid was observed in Well 1 and Well 5. Golder Associates of Ottawa, Ontario initiated a sampling program to determine the origin of the unexplained fluid. A letter report submitted to the owner on October 2, 2003 indicated that it was the opinion of the consultants that what was observed in both wells was a change in the appearance of the water due to a mixing of two waters with varying water chemistry. The report recommended that the owner sample for hydrocarbons as part of the quarterly monitoring program for a minimum of one year.

  On May 27, July 20, October 13, 2004 the operating authority collect samples for the analysis of hydrocarbon compounds: Gasoline Range Organics, Diesel Range Organics, and Oil and Grease. The results indicated that hydrocarbons were not detected in any of the samples.

* **Additional sampling is being conducted and the information pertaining to these samples is being included in the reports required by legislation or authorizing documents.**

* **Records of water quality analyses are retained for the period of time prescribed by regulation.**

* **Operators are examining continuous monitoring test results and they are examining the results within 72 hours of the test.**

* **Audit samples were collected during the inspection.**

  The Inspector collected raw, treated and distribution system samples. Each of the samples was analyzed for microbiological parameters. The treated water sample was also analyzed for metals (incl. mercury), volatile organics (incl. THMs), inorganics, general chemistry, and for analysis of a selection of non-health related physical and chemical parameters.

  On November 23, 2004 the Inspector collected samples at the following locations within the distribution system: Winchester Grain (69 St.Lawrence Street); Winchester Community Center (577 Main Street); and the Water Tower. The free chlorine residual measurements taken at the time of sampling ranged from 0.89 to 1.19 mg/L.

LMR - WATER QUALITY ASSESSMENT

* **The results of Ministry audit sampling shows compliance with Ontario Drinking Water Quality Standards (Regulation 169/03).**

  A review of the analytical results indicates that there were no adverse samples with respect to microbiological parameters and that health related chemical/physical parameters were either not detected or detected at concentrations less then half of the acceptable concentration. A review of the results from the non-health related chemical/physical parameters indicated that there were no exceedances of aesthetic or operational objectives. A copy of the laboratory analytical report is provided in Appendix A.

* **The owner's monitoring results are comparable to the results of the Ministry's audit samples.**

  A review of the owner's laboratory analytical reports indicated that there were no anomalies between the owner's monitoring results and the results attained through the inspector's audit samples.

LMR - REPORTING, NOTIFICATION & CORRECTIVE ACTION

* **A review of monitoring data provided by the operating authority confirms that the water provided by the system meets the requirements of the prescribed drinking water quality standards.**

  A review of the laboratory analytical reports provided by the operating authority indicated that the water supplied by the system met the requirements of the drinking water quality standards with the following exceptions: i) two reports of >500cfu/1mL on a Heterotrophic Plant Count in a sample collected from Well 6 (AWQIs: 25923, 29672); ii) two reports of >500cfu/1mL on a Heterotrophic Plant Count in a sample collected from Well 7 (AWQIs:29779, 33172).

  On each occasion the operating authority collected resamples which indicated that the adverse conditions were no longer present.

* **All required notifications of adverse water quality incidents were provided to the Spills Action Centre and Medical Officer of Health.**

* **There were instances where a written notice of issue resolution was required by regulation.**

* **Notice of issue resolution was provided within 7 days of the issue being resolved.**

* **The notice contained a summary of the actions taken and the results achieved.**

* **Corrective actions have been taken to address exceedances and resampling provisions have been met including any other steps as directed by the Medical Officer of Health.**

* **The drinking water system was not required to provide warning notices.**

* **When alarms for continuous monitoring equipment sounded, appropriate actions were taken in a timely manner by a qualified person.**

  A review of the logbook indicated that operators are responding to alarm conditions.

* **When no one was at the location where/when the alarm sounded, a qualified person was promptly dispatched.**

LMR - REPORTING, NOTIFICATION & CORRECTIVE ACTION

* **The Engineer's Report/Engineering Evaluation Report was prepared and submitted within required time frames.**

  The most recent Engineer's Report was submitted in March 2001.

* **Annual Reports have been completed, have been made available to the public on time, and contain the required information.**

  The 2003 Annual Report was submitted to the Township Council and was received and reviewed on April 26, 2004. The annual report included a summary listing of treatment chemicals used and a discussion of the quantity of water supplied during the reporting period compared to the design values for the population serviced.

* **Summary Reports have been completed on time and distributed in accordance with the regulatory requirements.**

* **All written notices, warning notices and reports were issued by the owner in a form provided by or approved by the Director.**

* **The owner has complied with all requirements necessary for compliance since the date of the last inspection and relative to non compliance issues identified from that time to the present.**

  The following non-compliance issues were identified in the previous inspection: i) monitoring wells in the vicinity of Well 7 were not locked; ii) the owner must ensure that Wells 3 and 4 are abandoned as per the requirements of O.Reg 903.; iii) There was no documentation to substantiate that the owner had assessed the susceptibility of wells to flooding under 1:100 year storm conditions as required by Condition 8.1 of the CofA.

  With regard to these non-compliance issues the inspection revealed that the owner has: i) installed locks on the monitoring wells; ii) Well 3 has been abandonned and the owner indicates that Well 4 will be abandonned following amendments to the CofA; iii) Stantec Consulting Ltd. submitted a letter (July 13, 2004) indicating that the wells are not susceptible to a 1:100 year storm condition.

  The following recommendations were provided in the previous compliance inspection report: i) the owner should ensure that the Well 6 is adequately protected; ii) the owner should investigate the benefits of installing isokinetic monitoring stations; iii) the owner should ensure that a protocol is developed and followed with regard to the installation and testing of new and/or replacement components of the drinking water system; iv) the owner should evaluate the potential that this Well 6 may be under the influence of surface water at elevated pumping rates.

  With regard to the recommendations list above the inspection revealed that: i) protective posts have been installed at Well 6; ii) the Township discussed installing isokinetic montoring stations and has decided not to proceed with the installations at this time; iii) the operating authority prepared a standard operating procedure for the installation of new equipment; iv) the owner indicated the their hydrogeological consultants would investigate the issue.

ACTIONS REQUIRED

The Inspector did not identify any non-compliance issues. The Inspection revealed that the Township of North Dundas and the Ontario Clean Water Agency continue to ensure a safe source of potable water for the residents of Winchester.

SUMMARY OF BEST PRACTICE ISSUES

* The owner does not have a proactive leak detection program in place.

RECOMMENDED ACTIONS

While the Township does not have a proactive leak detection program a review of the metering data provided by the owner and the total system flow provided by the operating authority indicated that approximately 90% of the distribution system water is accounted for.

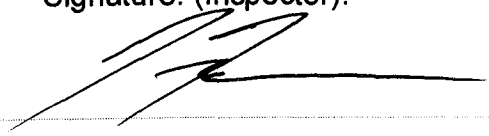
There are no Recommended Actions at this time.

SIGNATURES

Inspected By:

Jan Franssen

Signature: (Inspector):



Reviewed & Approved By:

James Mahoney

Signature: (Supervisor):

Review & Approval Date:

APRIL 15, 2005

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.

APPENDIX A

Laboratory Analytical Report (Ministry Audit Samples)

APPENDIX
Table 1
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
CHEMICAL / PHYSICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WELL #5 PUMPHOUSE TREATED
Sample # 2 - WELL #6 PUMPHOUSE TREATED
Sample # 3 - WELL #7 PUMPHOUSE TREATED
Sample # 4 - WELL 1 TREATED

Parameter	Units	MAC [1]	IMAC [2]	AO [3]	SAMPLE # 1	SAMPLE # 2	SAMPLE # 3
ANTIMONY, UNFILTERED TOTAL	UG/L		6		.4 +/-0.13	.45 +/-0.14	.44 +/-0.13
ARSENIC, UNFILTERED TOTAL	UG/L		25		.8 +/-0.20	.4 +/-0.10	.2 +/-0.10
BARIUM, UNFILTERED TOTAL	UG/L	1000			125 +/-10.00	69.6 +/-5.90	156 +/-12.00
BENZENE C6H6	UG/L	5			.05 <=W	.05 <=W	.05 <=W
BORON, UNFILTERED TOTAL	UG/L		5000		723 +/-63.00	135 +/-13.00	32 +/-4.00
BROMODICHLOROMETHANE	UG/L				.4 <T	.2 <=W	.2 <=W
BROMOFORM	UG/L				.5 <=W	.5 <=W	.5 <=W
CADMIUM, UNFILTERED TOTAL	UG/L	5			-.02 +/-0.05	0 +/-0.05	-.01 +/-0.05
CARBON TETRACHLORIDE	UG/L	5			.2 <=W	.2 <=W	.2 <=W
CHLOROBENZENE	UG/L	80			.05 <=W	.05 <=W	.05 <=W
CHLORODIBROMOMETHANE	UG/L				.4 <T	.2 <=W	.2 <=W
CHLOROFORM CHCL3	UG/L				.8 <T	.1 <T	.4 <T
CHROMIUM, UNFILTERED TOTAL	UG/L	50			6.6 +/-0.70	2.8 +/-0.50	2.4 +/-0.50
DICHLOROBENZENE 1,2	UG/L	200			.05 <=W	.05 <=W	.05 <=W
DICHLOROBENZENE 1,4	UG/L	5			.05 <=W	.05 <=W	.05 <=W
DICHLOROETHANE 1,2	UG/L		5		.05 <=W	.05 <=W	.05 <=W
DICHLOROETHYLENE 1,1	UG/L	14			.05 <=W	.05 <=W	.05 <=W
FLUORIDE, UNFILTERED REACTIVE	MG/L	1.5 b			.14	.19	.04 <T
LEAD, UNFILTERED TOTAL	UG/L	10 c			.74 +/-0.36	.47 +/-0.36	.13 +/-0.13
MERCURY, UNFILTERED TOTAL	UG/L	1			.02 <=W	.02 <=W	.02 <=W
METHYLENE CHLORIDE	UG/L	50			.2 <=W	.2 <=W	.2 <=W
NITRATES TOTAL, UNFIL.REAC	MG/L	10 d			.015 <T	.007 <T	.203
NITRITE, UNFILTERED REACTIVE	MG/L	1 d			.001 <=W	.001 <=W	.001 <=W
SELENIUM, UNFILTERED TOTAL	UG/L	10			0 +/-1.00	1 +/-1.00	1 +/-1.00
TETRACHLOROETHYLENE	UG/L	30			.05 <=W	.05 <=W	.05 <=W
TRICHLOROETHYLENE C2HCL3	UG/L	50			.05 <=W	.05 <=W	.05 <=W
TRIHALOMETHANES, TOTAL	UG/L	100 e			1.5 <T	.5 <=W	.5 <=W
URANIUM, UNFILTERED TOTAL	UG/L	20			.04 +/-0.05	.95 +/-0.08	.9 +/-0.07
VINYL CHLORIDE C2H3CL	UG/L	2			.05 <=W	.05 <=W	.05 <=W

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CHEMICAL / PHYSICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WELL #5 PUMPHOUSE TREATED
Sample # 2 - WELL #6 PUMPHOUSE TREATED
Sample # 3 - WELL #7 PUMPHOUSE TREATED
Sample # 4 - WELL 1 TREATED

Parameter	Units	MAC [1]	IMAC [2]	AO [3]	SAMPLE # 4
ANTIMONY, UNFILTERED TOTAL	UG/L		6		.4 +/-0.13
ARSENIC, UNFILTERED TOTAL	UG/L		25		.5 +/-0.10
BARIUM, UNFILTERED TOTAL	UG/L	1000			32.9 +/-2.80
BENZENE C6H6	UG/L	5			.05 <=W
BORON, UNFILTERED TOTAL	UG/L		5000		953 +/-82.00
BROMODICHLOROMETHANE	UG/L				.8 <T
BROMOFORM	UG/L				1 <T
CADMIUM, UNFILTERED TOTAL	UG/L	5			-.01 +/-0.05
CARBON TETRACHLORIDE	UG/L	5			.2 <=W
CHLOROBENZENE	UG/L	80			.05 <=W
CHLORODIBROMOMETHANE	UG/L				1.2 <T
CHLOROFORM CHCL3	UG/L				.8 <T
CHROMIUM, UNFILTERED TOTAL	UG/L	50			5.3 +/-0.60
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			.21
LEAD, UNFILTERED TOTAL	UG/L	10 c			.42 +/-0.36
MERCURY, UNFILTERED TOTAL	UG/L	1			.02 <=W
METHYLENE CHLORIDE	UG/L	50			.2 <=W
NITRATES TOTAL, UNFIL.REAC	MG/L	10 d			.028
NITRITE, UNFILTERED REACTIVE	MG/L	1 d			.001 <=W
SELENIUM, UNFILTERED TOTAL	UG/L	10			1 +/-1.00
TETRACHLOROETHYLENE	UG/L	30			.05 <=W
TRICHLOROETHYLENE C2HCL3	UG/L	50			.05 <=W
TRIHALOMETHANES, TOTAL	UG/L	100 e			4 <T
URANIUM, UNFILTERED TOTAL	UG/L	20			.13 +/-0.05
VINYL CHLORIDE C2H3CL	UG/L	2			.05 <=W

Shortforms:

<T	-	A measurable trace amount; interpret with caution	NA	-	Result not available
<W	-	No measurable response (zero) : < Reported value	NS	-	Not sampled
<=W	-	No measurable response (zero) : < Reported value	NG/L	-	Nanograms per litre
<	-	Actual result is less than reported value	UG/L	-	Micrograms per litre
ND	-	Not detected	MG/L	-	Milligrams per litre
!NP	-	No appropriate procedure available			

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
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WINCHESTER ARENA DISTRIBUTION
Sample # 2 - WELL #5 PUMPHOUSE RAW
Sample # 3 - WELL #5 PUMPHOUSE TREATED
Sample # 4 - WELL #6 PUMPHOUSE RAW
Sample # 5 - WELL #6 PUMPHOUSE TREATED
Sample # 6 - WELL #7 PUMPHOUSE RAW
Sample # 7 - WELL #7 PUMPHOUSE RAW
Sample # 8 - WELL #7 PUMPHOUSE TREATED
Sample # 9 - WINCHESTER ELEVATED TOWER DISTRIBUTION
Sample # 10 - WELL 1 PUMPHOUSE RAW
Sample # 11 - WELL 1 TREATED
Sample # 12 - WINCHESTER GRAIN DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 1	SAMPLE # 2
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			0
COLIFORM, TOTAL MF	C/100ML	0			0
ESCHERICHIA COLI MF	C/100ML	0			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	

APPENDIX
Table 2
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WINCHESTER ARENA DISTRIBUTION
Sample # 2 - WELL #5 PUMPHOUSE RAW
Sample # 3 - WELL #5 PUMPHOUSE TREATED
Sample # 4 - WELL #6 PUMPHOUSE RAW
Sample # 5 - WELL #6 PUMPHOUSE TREATED
Sample # 6 - WELL #7 PUMPHOUSE RAW
Sample # 7 - WELL #7 PUMPHOUSE RAW
Sample # 8 - WELL #7 PUMPHOUSE TREATED
Sample # 9 - WINCHESTER ELEVATED TOWER DISTRIBUTION
Sample # 10 - WELL 1 PUMPHOUSE RAW
Sample # 11 - WELL 1 TREATED
Sample # 12 - WINCHESTER GRAIN DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 3	SAMPLE # 4
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			0
COLIFORM, TOTAL MF	C/100ML	0			0
ESCHERICHIA COLI MF	C/100ML	0			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	

APPENDIX
Table 2
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WINCHESTER ARENA DISTRIBUTION
Sample # 2 - WELL #5 PUMPHOUSE RAW
Sample # 3 - WELL #5 PUMPHOUSE TREATED
Sample # 4 - WELL #6 PUMPHOUSE RAW
Sample # 5 - WELL #6 PUMPHOUSE TREATED
Sample # 6 - WELL #7 PUMPHOUSE RAW
Sample # 7 - WELL #7 PUMPHOUSE RAW
Sample # 8 - WELL #7 PUMPHOUSE TREATED
Sample # 9 - WINCHESTER ELEVATED TOWER DISTRIBUTION
Sample # 10 - WELL 1 PUMPHOUSE RAW
Sample # 11 - WELL 1 TREATED
Sample # 12 - WINCHESTER GRAIN DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 5	SAMPLE # 6
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			0
COLIFORM, TOTAL MF	C/100ML	0			0
ESCHERICHIA COLI MF	C/100ML	0			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	

APPENDIX
Table 2
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WINCHESTER ARENA DISTRIBUTION
Sample # 2 - WELL #5 PUMPHOUSE RAW
Sample # 3 - WELL #5 PUMPHOUSE TREATED
Sample # 4 - WELL #6 PUMPHOUSE RAW
Sample # 5 - WELL #6 PUMPHOUSE TREATED
Sample # 6 - WELL #7 PUMPHOUSE RAW
Sample # 7 - WELL #7 PUMPHOUSE RAW
Sample # 8 - WELL #7 PUMPHOUSE TREATED
Sample # 9 - WINCHESTER ELEVATED TOWER DISTRIBUTION
Sample # 10 - WELL 1 PUMPHOUSE RAW
Sample # 11 - WELL 1 TREATED
Sample # 12 - WINCHESTER GRAIN DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 7	SAMPLE # 8
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200		0	
COLIFORM, TOTAL MF	C/100ML	0		0	
ESCHERICHIA COLI MF	C/100ML	0		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

APPENDIX
Table 2
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WINCHESTER ARENA DISTRIBUTION
Sample # 2 - WELL #5 PUMPHOUSE RAW
Sample # 3 - WELL #5 PUMPHOUSE TREATED
Sample # 4 - WELL #6 PUMPHOUSE RAW
Sample # 5 - WELL #6 PUMPHOUSE TREATED
Sample # 6 - WELL #7 PUMPHOUSE RAW
Sample # 7 - WELL #7 PUMPHOUSE RAW
Sample # 8 - WELL #7 PUMPHOUSE TREATED
Sample # 9 - WINCHESTER ELEVATED TOWER DISTRIBUTION
Sample # 10 - WELL 1 PUMPHOUSE RAW
Sample # 11 - WELL 1 TREATED
Sample # 12 - WINCHESTER GRAIN DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 9	SAMPLE # 10
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			0
COLIFORM, TOTAL MF	C/100ML	0			0
ESCHERICHIA COLI MF	C/100ML	0			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	

APPENDIX
Table 2
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WINCHESTER ARENA DISTRIBUTION
Sample # 2 - WELL #5 PUMPHOUSE RAW
Sample # 3 - WELL #5 PUMPHOUSE TREATED
Sample # 4 - WELL #6 PUMPHOUSE RAW
Sample # 5 - WELL #6 PUMPHOUSE TREATED
Sample # 6 - WELL #7 PUMPHOUSE RAW
Sample # 7 - WELL #7 PUMPHOUSE RAW
Sample # 8 - WELL #7 PUMPHOUSE TREATED
Sample # 9 - WINCHESTER ELEVATED TOWER DISTRIBUTION
Sample # 10 - WELL 1 PUMPHOUSE RAW
Sample # 11 - WELL 1 TREATED
Sample # 12 - WINCHESTER GRAIN DISTRIBUTION

Parameter	Units	MAC[1]	AO[2]	SAMPLE # 11	SAMPLE # 12
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

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
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
CHEMICAL / PHYSICAL PARAMETERS - NOT HEALTH RELATED

Sample # 1 - WELL #5 PUMPHOUSE TREATED
Sample # 2 - WELL #6 PUMPHOUSE TREATED
Sample # 3 - WELL #7 PUMPHOUSE TREATED
Sample # 4 - WELL 1 TREATED

Parameter	Units	OBJECTIVE	TYPE OF OBJECTIVE	SAMPLE # 1		SAMPLE # 2		SAMPLE # 3	
ALUMINIUM, UNFILTERED TOTAL	UG/L	100	OG	1	+/-0.60	1	+/-0.60	1.3	+/-0.60
AMMONIUM, TOTAL UNFIL.REAC	MG/L	a	a	.002	<=W	.002	<=W	.002	<=W
COPPER, UNFILTERED TOTAL	UG/L	1000	AO	51.5	+/-5.20	38	+/-3.30	2.1	+/-0.50
ETHYLBENZENE C8H10	UG/L	2.4	AO	.05	<=W	.05	<=W	.05	<=W
IRON, UNFILTERED TOTAL	UG/L	300	AO	5	+/-6.00	77	+/-14.00	1	+/-6.00
MANGANESE,UNFILTERED TOTAL	UG/L	50	AO	23.1	+/-2.50	16	+/-1.40	40.2	+/-3.50
TOLUENE C7H8	UG/L	24	AO	.05	<=W	.05	<=W	.05	<=W
XYLENE-M AND P	UG/L	300	AO	.05	<=W	.05	<=W	.05	<=W
XYLENE-O C8H10	UG/L	300	AO	.05	<=W	.05	<=W	.05	<=W
ZINC, UNFILTERED TOTAL	UG/L	5000	AO	10.9	+/-1.20	17.1	+/-1.60	2.5	+/-0.80

APPENDIX
Table 3
WINCHESTER WELL SUPPLY
AUDIT SAMPLE RESULTS - 23-NOV-2004
CHEMICAL / PHYSICAL PARAMETERS - NOT HEALTH RELATED

Sample # 1 - WELL #5 PUMPHOUSE TREATED
Sample # 2 - WELL #6 PUMPHOUSE TREATED
Sample # 3 - WELL #7 PUMPHOUSE TREATED
Sample # 4 - WELL 1 TREATED

Parameter	Units	OBJECTIVE	TYPE OF OBJECTIVE	SAMPLE # 4
ALUMINIUM, UNFILTERED TOTAL	UG/L	100	OG	2.5 +/-0.60
AMMONIUM, TOTAL UNFIL.REAC	MG/L	a	a	.004 <T
COPPER, UNFILTERED TOTAL	UG/L	1000	AO	17.3 +/-1.40
ETHYLBENZENE C8H10	UG/L	2.4	AO	.05 <=W
IRON, UNFILTERED TOTAL	UG/L	300	AO	27 +/-7.00
MANGANESE,UNFILTERED TOTAL	UG/L	50	AO	12.5 +/-1.10
TOLUENE C7H8	UG/L	24	AO	.05 <=W
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	6.1 +/-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.