

**2005 ANNUAL COMPLIANCE REPORT
OPERATION AND MAINTENANCE AND
2005 SUMMARY REPORT**

of

**TOWN OF
SOUTH BRUCE PENINSULA
WATER SYSTEMS**

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1.0 INTRODUCTION AND BACKGROUND

The Town of South Bruce Peninsula has twelve (12) municipal water systems under its authority. Eleven of the water systems are located throughout the limits of the former Township of Amabel (Figure No. 1 and Figure No. 2 - enclosed).

Henderson Paddon & Associates Limited (HPA) and subsequently Oweson Water Services, a division of Oweson Ltd. (OWS) began managing the eleven (11) water systems located throughout the former Township of Amabel in May of 1996. The water systems were operated by Mr. Randy Carriere, who holds a Class I Water Treatment Licence, Mr. Mike Doucette, who holds a Class II Water Treatment Licence, Mr. Harry Wright, who holds an Operator In Training Water Treatment Subsystem Licence, Mr. Ted Carmichael, who holds a Class I Water Treatment and Water Distribution licences and Mr. Jamie Learn who holds a Class I Water Treatment Licence. The water systems were operated under the supervision of Mr. Kyle Snell, who holds a Class IV - Water Treatment License, Class III - Water Distribution & Supply.

Generally speaking, up to 1994, the majority of the water systems were not up to the standard requirements as outlined by the Ministry of Environment (MOE) Guidelines. Generally, the operation and collection of data up to May 1996 was also not in accordance with the Ontario Drinking Water Objectives. In 1995, the former Township of Amabel, following discussions with the MOE's Owen Sound Area Office staff, committed itself to a five year program to update all the water systems in compliance with MOE Guidelines. Subsequently, in 1996 the Forbes and Trask Pumphouses were provided with minimum 15 minute chlorine contact time storage and the pumphouse buildings and piping were upgraded. In the fall of 1996, the Township obtained a Certificate of Approval to combine the Winburk Water System with the Fedy Water System. The water supply since then, has been supplied solely from the Winburk pumphouse. This has improved water quality to the Fedy Subdivision. The Fedy Pumphouse was decommissioned and is no longer available as a backup unit.

Following the restructuring of the municipalities in 1999, the Corporation of the Township of Amabel is now a part of the Town of South Bruce Peninsula. In 1999, both the Foreman Water System at Chesley Lake and the Cammidge & Collins Water System in Oliphant were upgraded to provide 15 minute chlorine contact time storage. In addition, the Cammidge & Collins Water System was provided with new water softening units to maintain barium levels below the Maximum Allowable Concentration (MAC) of 1.0 milligrams per liter (mg/L). In 2001, the Robins water system was upgraded to include the minimum 15 minute chlorine contact time. In December 2003, the Thomson, Winburk and Gremik pumphouses were provided with chlorine contact storage.

The Certificate of Approval for each respective pumphouse required the installation of continuous free chlorine and turbidity analyzers with an associated recorder and alarm system. This work was completed in late 2002 and the alarms were put on-line on May 31, 2003.

On June 1, 2003, Regulation 459/00 was replaced with Ontario Regulation 170/03 and has since been amended to O. Reg. 253/05. As a result, it has become more difficult to maintain the free chlorine residual and turbidity levels within acceptable limits as per the new more stringent regulation. As a result, many of the systems were placed under Precautionary Notices to Boil Water off and on throughout the 2004 & 2005 calendar years.

To date, the Fiddlehead Water System is the only operational facility with no chlorine contact chamber. In December 2005, a cartridge filter was installed at the Fiddlehead Water Treatment Plant.

For any scheduled water system interruption, the operator distributes a notice to each homeowner stating when the water system will be out of operation. The notice was provided at least twenty - four (24) hours prior to the service interruption.

HPA and OWS subsequently continued to utilize a pager system administered by Hawthorne's Communications by which the operator could be contacted directly in case of an emergency or an adverse water result. Although pager malfunction problems were experienced in some incidences, on the whole the system has worked quite effectively. Commencing in 2001, HPA extended communications by providing the operator with a cell phone which has minimized call response time to consumers.

2.0 DESCRIPTION OF WATER SYSTEMS

2.1 Fiddlehead Water System - Pumphouse No. 1

(Figure 2-1-1: Pumphouse Schematic)

(Figure 2-1-2: Distribution System)

The Fiddlehead Water System, constructed in 1971, is located near Oliphant in the former Township of Amabel. It is situated at Park Lot G and on part of Lots 3 and 12 and comprises watermains along Fiddlehead Lane, Phillips Street, Telford Street and Boulton Avenue. The pumphouse is constructed on Lot 13, located at 7 Fiddlehead Lane. The pumphouse has approximate interior dimensions of 3.15 meters (m) x 2.15 m and a ceiling height of 2.00 m.

The water works comprises of a 2.65 Litres per second (L/s) (35 Imperial gallons per minute (IGPM) 3 hp capacity raw water submersible well pump equipped with a flow restrictor to reduce the flow to 2.27 L/s (30 IGPM) which feeds a 50 millimeter (mm) PVC pipe. The pumping system operates within a pressure range of 40 to 60 psi and floats on two (2) Well Rite (WR360S) hydro pneumatic pressure tanks which provide a combined drawdown of approximately 242 Litres (L). The pumphouse is provided with two sampling points, one for raw water and the other for treated water. It is also equipped with a 25 mm water meter to measure the amount of water entering the distribution system. The pumphouse is equipped with a pressure relief valve to avoid over-pressurization of the distribution system (pre-set at 70 psi).

Water treatment is comprised of NSF 60/ANSI and AWWA approved sodium hypochlorite and sodium silicate injection into the raw water pipe. Following the pressure tanks, treated water passes through a cartridge filter prior to leaving the pumphouse via the 50 mm piping and joins a 75 mm PVC distribution watermain. The Fiddlehead Water System does not have minimum fifteen (15) minute chlorine contact storage available prior to the first user.

The system includes chlorine and turbidity analyzers with a paperless chart recorder including alarms. This was fully functional by May 30, 2003.

The Fiddlehead Water System is approved for forty-five (45) service connections and there are thirteen (13) existing connections. The serviced population is approximately 32.5 persons (based on 2.5 persons/household). The water system is classified as WT1, WD1 by the MOE.

2.2 Cammidge and Collins Water System - Pumphouse No. 2 (Figure 2-2-1: Pumphouse Schematic)
(Figure 2-2-2: Distribution System)

The Cammidge and Collins Water System was originally constructed in 1971 with upgrades in 1984 and 1999. It is located near Oliphant in the Town of South Bruce Peninsula (formerly Township of Amabel). It is situated on part of Park Lot 7, South Range and has watermains along Laurdo Crescent and Pierce Street. The pumphouse is constructed on part of Lots 3/4, located at 24 Laurdo Crescent. The building has interior dimensions of 2.75 m x 2.35 m and a ceiling height of 2.20 m.

There are two wells on the Cammidge and Collins Water System. The original well (PW1-71) is sealed and abandoned. The existing well (PW2-84) supplies raw water to the pumphouse via 50 mm watermain and is located approximately 266.7 m or 875 ft. from the pumphouse structure.

The water works is comprised of a 1.21 L/S (16 IGPM) raw water submersible well pump which feeds a 50 mm PVC pipe. The system operates within a pressure range of 40 to 60 psi and floats on two (WR-260) hydro pneumatic pressure tanks with an approximate drawdown of 170 L. The pumphouse is provided with two sampling points, one for raw and one for treated water. There is also a 25 mm water meter to record the amount of water supplied to the distribution system. In order to prevent the over-pressurization of the distribution system, a pressure relief valve has been provided in the pumphouse to release pressure to the building exterior (pre-set at 70 psi).

In October 1999, the treatment of the raw water was upgraded to provide two (2) water softeners which are required to remove barium from the water. NSF 60/ANSI and AWWA approved Sodium hypochlorite is then added following the softeners. Treated water leaves the pumphouse via the 50 mm galvanized iron piping and connects to a 600 mm (6.1 m) PVC contact storage pipe which provides minimum 15 minute chlorine contact time and then enters the 50 mm PVC watermain. The pumphouse is provided with a chlorine analyzer, turbidity analyzer and paperless chart recorder and alarms.

The Cammidge & Collins Water System is approved for fifteen (15) service connections and the number of existing connections is eleven (11). The serviced population is approximately 27.5 persons (based upon 2.5 persons/household). The water system is classified as WT1 and WD1.

2.3 Robins Water System - Pumphouse No. 3 (Figure 2-3-1: Pumphouse Schematic)
(Figure 2-3-2: Distribution System)

The Robins Water System was constructed in 1971 and is located in Sauble Beach in the former Township of Amabel. It is situated on Lot 32, Conc. C and has watermains encompassing Dorena Crescent and Douglas Drive. The pumphouse is constructed on Lot 26, located at 50 Dorena Crescent. The pumphouse has interior dimensions of 3.10 m x 2.00 m and is 2.05 m in height.

The water works comprises a 1.9 L/s (25 IGPM) capacity raw water submersible well pump which feeds a 50 mm PVC pipe. The pumping system operates within a pressure range of 55 psi to 70 psi and floats on two (2) Well-Rite (WR260-03) hydro pneumatic pressure tanks which provide a combined drawdown of approximately 175 L. The pumphouse is provided with two sampling points, one for raw and the other for treated water; as well as a 25 mm water meter for recording the amount of water supplied to the distribution system. The pumphouse has been provided with a pressure relief valve to avoid over-pressurization of the distribution system.

Water treatment involves injection of NSF 60/ANSI and AWWA approved sodium hypochlorite followed by sodium silicate into the raw water pipe. Treated water leaves the pump house via the 50 mm piping and joins a 75 mm PVC distribution water main. Recent upgrades in July 2001 provided minimum 15 minute chlorine contact time by means of a 600 mm dia. PVC contact storage in-ground pipe outside the pumphouse.

The pumphouse is provided with a chlorine analyzer, turbidity analyzer and paperless chart recorder and alarms.

The Robins Water System is approved for forty (40) service connections and there are thirty-one (31) existing connections. The serviced population is approximately 77.5 persons (based upon 2.5 persons/household). The water system is classified as WT1, WD1 by the MOE.

2.4 Fedy Water System - Pumphouse No. 4 (Figure 2-4)

Following an MOE approval by way of Certificate of Approval No. 7-1036-96-006, the Fedy Water Distribution System was connected to the Winburk Water System in December of 1996. The treated water is now supplied from the Winburk Pumphouse. The Fedy Pumphouse was decommissioned and is no longer available as a back-up for emergency back-up pumping station. The system was approved for 21 service connection and had 10 existing connections which are now on the Winburk System.

Following the 2001 Annual Inspection, conducted by the local MOE, some renovations were made to this pumphouse. This included such things as upgraded insulation, new drywall and proper sealing of the building against rodents. The Ministry of Environment requested that the pumphouse be properly decommissioned at that time. This was completed in early 2002. This included the cutting and the capping of the watermain inside the pumphouse.

2.5 Forbes Water System - Pumphouse No. 5 (Figure 2-5-1: Pumphouse Schematic)
(Figure 2-5-2: Distribution System)

The Forbes Water System was constructed in 1969, with upgrades in 1996/97, is located in Sauble Beach in the former Township of Amabel. It is situated on part of Lot 30, Concession D, and comprises watermains along Manley Cr. and portions of 5th Street and D-line. The pumphouse building is constructed on lot 30, located at 423 Manley Cr. and is 15.17 m² in size with a ceiling height of 3.00 m.

The water works comprises of a 2 hp, 1.6 L/s (21 IGPM) capacity raw water submersible well pump which feeds a 32 mm PVC pipe. The pumping system operates within a pressure range of 40 psi to 60 psi and floats on two (2) Well-Rite (WR360S) hydro pneumatic pressure tanks which provide a combined drawdown of approximately 242 Litres. The pumphouse is provided with two (2) sampling points, one for raw water sampling, and the other for treated water. There is both a raw and a treated 25 mm water meter to record flows entering the distribution system. To prevent over-pressurization of the system, a pressure relief valve has been provided in the pumphouse to relieve water pressure to the building exterior (pre-set at 70 psi).

A Certificate of Approval No. 7-0841-95-006 was obtained for the construction of an iron removal system comprising of a greensand filter plant for the removal of iron from the raw water. Water treatment consist of iron oxidation by injecting NSF 60/ANSI and AWWA approved Potassium Permanganate (KMnO₄) into the raw water piping upstream of the greensand filter. The iron floc that is formed is removed from the media in the greensand filter, which comprises of anthracite and greensand. A filter backwash system consists of two tanks, a filter backwash water supply storage tank and a filter backwash waste treatment tank located outside the pumphouse.

Water treatment is comprised of disinfection by injecting NSF 60/ANSI and AWWA approved sodium hypochlorite into the filter effluent water. The 19.9 minutes chlorine contact storage is provided by two (2) in-ground 6.1 m long, 450 mm diameter PVC pipes (1810 L combined capacity). Treated water then enters the distribution system and is carried by a 75 mm watermain to consumers.

The system includes a turbidity and chlorine analyzer with a paperless chart recorder and alarms.

The Forbes Water System is approved for thirty-four (34) service connections and there are twenty-five (25) existing connections. The serviced population is approximately 62.5 persons (based upon 2.5 persons/household). The water system is classified as WT1 and WD1.

2.6 Trask Water System - Pumphouse No. 6 (Figure 2-6-1: Pumphouse Schematic)
(Figure 2-6-2: Distribution System)

The Trask Water System was constructed in 1969 and was upgraded in 1995. The pumphouse is located in Sauble Beach in the former Township of Amabel. It is situated on Lot 26, Concession D and the distribution system comprises of watermains on Woodland Crescent, Davidson and Lakeland Drives. The pumphouse building is constructed on part of Block G, located at 56 Davidson Dr. The pumphouse has interior dimensions of 3.05 m x 1.83 m, and the ceiling height is 2.44 m.

The water works comprises a 1.9 L/s (25 IGPM) capacity raw water submersible well pump which feeds a 50 mm PVC pipe. The pumping system operates within a pressure range of 40 psi to 65 psi, and floats on three (3) Well-Rite (WR360S) hydro pneumatic pressure tanks with a combined draw down of approximately 364 L. The pumphouse is provided with two (2) sampling points, one for raw water and the other for treated water as well as a 25 mm water meter to measure flow into the distribution system.

Water treatment comprises of NSF 60/ANSI and AWWA approved sodium hypochlorite injection into the raw water pipe. To provide minimum fifteen (15) minute chlorine contact time the system is designed with a subsurface pipe 6.1 m long, 450 mm diameter pipe (905 L capacity). There are also two (2) 454 litre capacity waterlogged tanks (908 L capacity). Total storage of 1813 L provides a minimum of 15.9 minutes contact time. Following the hydro pneumatic tanks the treated water enters the distribution system and is carried to consumers via 75 mm watermain. As part of the design the chlorine storage tank is provided with a flush line to expel any flocculated material following the addition of chlorine.

The pumphouse is provided with a chlorine analyzer, turbidity analyzer and paperless chart recorder and alarms.

The Trask Water System is approved for thirty-one (31) service connections and has twenty-nine (29) existing connections. The serviced population is approximately 72.5 persons (based upon 2.5 persons/household). The water system is classified as WT1, WD1.

2.7 Huron Woods Water System - Pumphouse No. 7

(Figure 2-7-1: Pumphouse Schematic)

(Figure 2-7-2: Distribution System)

The Huron Woods Water System was originally constructed in 1969, and was upgraded in 1974, 1977 and 1992. It is located in Sauble Beach in the former Township of Amabel and situated on Lots 20/21 Concession D. The water distribution system comprises watermains along Birch Street, and Frederick Lane, Mapleport and Graham Crescents. The original pumphouse, located at 15 Birch St., was decommissioned in 1994 and is utilized for general storage. The existing pumphouse, constructed on Block 49, located at 86 Birch Street, has dimensions of 12.55 m x 6.75 m and the ceiling height is 2.25 m.

The existing pumphouse can receive raw water from two (2) wells W3 and W6 on a regular basis. However, generally only W6 is used. W1 and W2 are not utilized because they are susceptible to going dry (August 1999). The four (4) submersible well pumps have a combined rated capacity of 8.6 L/s (114 IGPM). The pumphouse comprises of four (4) high-lift pumps one rated at 3.78 L/s (50 IGPM) at a T.D.H. of 56 m and three (two duty and one standby) each rated at 7.57 L/s at T.D.H. of 56 m. The pumping system operates within a pressure range of 40 to 65 psi and floats on eight (8) Well-Rite (WR360-03) hydro pneumatic pressure tanks with a combined draw down of approximately 970 L. The pumphouse is provided with four (4) 75 mm water meters, one measuring the raw water from Well 3, one measuring the raw water from Well 6, one measuring raw water entering the clear well (reservoir) and one measuring water supplied to the distribution system. To prevent over-pressurization of the system, a pressure relief valve has been provided in the pumphouse to relieve water pressure to the building exterior (pre-set at 85 psi). The pumphouse is provided with a chlorine and turbidity analyzer and a paperless chart recorder and alarms.

Water treatment involves the injection of NSF 60/ANSI and AWWA approved sodium hypochlorite into the raw water pipe just prior to the water entering underground storage. The underground storage consists of two compartments known as Cell's #1 and #2, which are of equal size and have a combined capacity of 232,000 litres. The two cells are linked by a 250 mm gate valve. Immediately after chlorination, water is directed to Cell #2. From Cell #2, the water overflows into Cell #1 where the four (4) high-lift pumps are located. The high lift pumps supply the potable water to the distribution system.

In 1999, the expanded distribution system now includes two wells in the Walker Estates Subdivision. These wells however, may only be used if the combination of both the existing Huron Woods Subdivision and Walker Estates exceeds the rated capacity of the original Huron Woods Subdivision.

The Huron Woods water system is approved for one hundred and forty-one (141) service connections and there are seventy-six (76) existing connections. The serviced population is approximately 190 persons (based upon 2.5 persons/household). The Huron Woods Water System is classified as WT2, WD1.

2.8 Foreman Water System - Pumphouse No. 8 (Figure 2-8-1: Pumphouse Schematic)
(Figure 2-8-2: Distribution System)

The Foreman Water System was constructed in 1973 and is located along the north-east side of Chesley Lake in the Town of South Bruce Peninsula (formerly Township of Amabel). It is situated on part of Lot 19, Conc. 2 and is comprised of watermains along Kimberly Lane and Foreman Drive. The pumphouse is located along Foreman Drive. The pumphouse building has interior dimensions of 2.75 m x 2.35 m and the ceiling height is 2.44 m.

The water works comprises a 1.9 L/s (25 IGPM) capacity raw water submersible well pump which feeds a 50 mm PVC pipe. The pumping system operates within a pressure range of 40 to 60 psi and floats on two (2) Well-Rite (WR360S) hydro pneumatic pressure tanks with an approximate combined drawdown of 242 L. The pumphouse is provided with two (2) sampling points, one for raw water and the other for treated water, as well as a 25 mm water meter to measure the amount of water supplied to the distribution system. The pumphouse is provided with a pressure relief valve to reduce over-pressurization of the distribution system (pre-set at 70 psi).

In August 1999, the pumphouse and distribution system were upgraded to provide minimum 15 minute chlorine contact time and necessary flush lines on the distribution system dead ends. Water treatment comprises injection of NSF 60/ANSI and AWWA approved sodium hypochlorite followed by sodium silicate into the raw water supply. The pumphouse is also provided with a chlorine and turbidity analyzer and a paperless chart recorder including alarms.

During 2003, the Foreman distribution system was equipped with sample stations. The sample stations are located at the east and west ends of Kimberley Lane.

The Foreman water system is approved for twenty (20) service connections and the number of existing connections is seventeen (17). The serviced population is approximately 42.5 persons (based upon 2.5 persons/household). The water system is classified as WT1, WD1.

2.9 Thomson Water System - Pumphouse No. 9 (Figure 2-9-1: Pumphouse Schematic)
(Figure 2-9-2: Distribution System)

The Thomson Water System is located in Sauble Beach in the former Township of Amabel. It is situated at Lot 31, Conc. D. and the distribution system comprises watermains on 7th Avenue as well as portions of Bruce and York Streets. The pumphouse is constructed on part of Lot 6 and is located at 312 7th Street N., with interior dimensions of 3.45 m x 3.60 m and has a ceiling height of 2.45 m.

The water works comprises of a raw water 2.27 L/s (30 IGPM) capacity submersible well pump which feeds a 50 mm PVC pipe. The pumping system operates within a pressure range of 40 to 60 psi and floats on two (2) Well-Rite (WR360S) hydro pneumatic pressure tanks with an approximate combined draw down of 242 L. The pumphouse is provided with two (2) sampling points, one for raw water and the other for treated water. It is also equipped with a 25 mm water meter which measures the amount of water supplied to the distribution system. To prevent over-pressurization of the system, a pressure relief valve has been provided in the pumphouse to relieve water pressure to the building exterior (pre-set at 70 psi).

Water treatment comprises of NSF 60/ANSI and AWWA approved sodium hypochlorite injection into the raw water. Treated water leaves the pumphouse via the 50 mm PVC piping and joins a 75 mm PVC distribution watermain. The Thomson Water System is now provided with a chlorine contact storage available prior to the first user as of December 2003. As a result of the 2001 Annual Inspection, the MOE requested that a water softener be reinstalled in the pumphouse. This installation was completed in early 2002.

The pumphouse is provided with a chlorine analyzer, turbidity analyzer and paperless chart recorder and alarms.

The Thomson Water System is approved for thirty (30) service connections and the number of existing connections is twenty-two (22). The serviced population is approximately 55 persons (based upon 2.5 persons/household). The water system is classified as WT1, WD1.

2.10 Winburk Water System - Pumphouse No. 10 (Figure 2-10-1: Pumphouse Schematic)
(Figure 2-10-2: Distribution System)

The Winburk Water System which was constructed in 1978, is located in Sauble Beach in the former Township of Amabel. It is situated at Lots 29 and 30, Conc. C. and comprises watermains along Bunnyview, Martin, Fedy Drives, Beaver Crescent and a small portion of 6th Street N. The pumphouse building is constructed on Block A, located at 125 Bunnyview Drive, with interior dimensions of 3.20 m x 4.40 m and 2.45 m ceiling height.

In December 1996, the Winburk and Fedy Water Distribution systems were connected as per MOE Certificate of Approval No. 7-1036-96-006, allowing treated water to be supplied from the Winburk Pumphouse to both subdivisions. A flow meter and flow recorder to record the peak water demand was also installed. (Please Refer to Section 4.0). The Fedy Pumphouse was available as back-up for emergency situations as described in section 2.4. However, this is no longer the case. A Provincial Officers Order required the physical removal of the piping inside the existing Fedy pumphouse.

The water works is comprised of a 6.05 L/s (80 IGPM) capacity 10Hp submersible well pump which supplies a 75 mm galvanized iron pipe. The pumping system operates within a pressure range of 40 to 65 psi and floats on six (6) John Wood galvanized hydro pneumatic pressure tanks providing a combined drawdown of approximately 800 L. The pumphouse is provided with two (2) sampling points, one for raw water and the other for treated water. The pumphouse is also equipped with a 50 mm water meter to measure the amount of water supplied to the distribution system. In order to prevent the over-pressurization of the distribution system, a pressure relief valve has been provided in the pumphouse to relieve pressure to the building exterior (pre-set at 75 psi).

The treatment comprises of sodium hypochlorite injection into the raw water. Treated water leaves the pumphouse via the 75 mm cast iron piping and joins a 75 mm PVC distribution watermain. The Winburk Water System is now provided with a minimum fifteen (15) minute chlorine storage prior to the first user, as of December 2003.

The pumphouse is provided with a chlorine analyzer, turbidity analyzer and paperless chart recorder and alarms.

The Winburk Water System is approved for seventy-seven (77) service connections and the number of existing connections is fifty-six (56) which includes eleven (11) service connections from the Fedy Subdivision.

The serviced population is approximately 140 persons (based upon 2.5 persons/household). The water system is classified as WT1 and WD1.

2.11 Gremik Water System - Pumphouse No. 11 (Figure 2-11-1: Pumphouse Schematic)
(Figure 2-11-2: Distribution System)

The Gremik Water System which was constructed in 1979, is located in Sauble Beach in the former Township of Amabel. It is situated on Lot 33, Conc. C and comprises watermains along Gremik Crescent and a portion of 2nd Avenue N. The pumphouse building is constructed on part Lots 2 and 3 located at 130 Gremik Cr. The pumphouse has approximate interior dimensions of 3.05 m x 4.25 m and the ceiling height is 2.45 m in height.

The water works comprises a raw water 4.69 L/s (62 IGPM) capacity 5 HP submersible well pump which supplies a 75 mm galvanized iron pipe. The pumping system operates within a pressure range of 40 to 65 psi and floats on six (6) Well Rite galvanized hydro pneumatic pressure tanks. The pump house is provided with two (2) sampling points, one for raw water and the other for the treated water. The pumphouse is also equipped with a 50 mm water meter to measure the amount of water supplied to the distribution system. The pumphouse has been provided with a pressure relief valve to reduce over-pressurization of the distribution system (pre-set at 75 psi).

The treatment includes sodium hypochlorite injection into the raw water piping. The treated water enters the distribution via the 75 mm piping and is carried to consumers by a 75 mm PVC distribution main. The Gremik Water System was upgraded during 2003 to allow for chlorine contact storage available to the first user.

The pumphouse is provided with a chlorine analyzer, turbidity analyzer and paperless chart recorder and alarms.

The Gremik Water System is approved for fifty-nine (59) service connections and the number of existing connections is forty-five (45). The serviced population is approximately 112.5 persons (based upon 2.5 persons/ household). The water system is classified as WT1 and WD1.

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 Bacteriological Sampling

The bacteriological water samples for ten (10) of the water systems, in the Town of South Bruce Peninsula, were analyzed by SGS Lakefield Research Limited. Samples were analyzed for E.Coli count, Total Coliform count, and all Point of Entry (POE) and distribution samples were analyzed for Hetrotrophic Plate Count (HPC).

A summary of the bacteriological sampling and analysis for all ten (10) water systems is provided in **Table 1**, enclosed. In **Table 1**, information has been provided to indicate the number of safe, and unsafe water samples out of the total number of samples taken for raw water, treated water (now referred to as Point of Entry (POE))and the distribution system. A monthly breakdown of bacteriological sampling and analysis of all the ten (10) water systems is provided in **Appendix B**.

3.2 Treated Water (POE) Turbidity and Chlorine Residual Monitoring

A summary of the POE water turbidity and chlorine residual monitoring for ten (10) water systems is provided in the enclosed **Appendix A**. Turbidity and chlorine monitoring was performed by continuous analyzers in 2005. The free chlorine in the distribution system was analyzed daily. This is achieved by taking daily grab samples from remote locations within the distribution system.

The free chlorine residual was kept high in most of the water systems to mask high sulphur and oxidize high iron content in the raw water. The Certificates of Approval require that the treated water have a minimum free chlorine residual of 0.2 mg/L throughout the distribution system at all times. At the POE, a low free chlorine residual does not need to be reported to the Spills Action Centre (SAC), the MOH, or the Owner until the residual is less than 0.05 mg/L for five (5) consecutive minutes or any grab sample within the distribution system that is <0.2 mg/L.

3.3 Monthly, Quarterly and Annual Analysis

Monthly water samples for Barium (Ba) and Iron (Fe) were taken from the Cammidge and Collins Water System and the Thomson Water System. All POE water samples were found to be below the Maximum Allowable Concentration (MAC) of 1.0 mg/L for Barium. Iron samples were also collected and the results demonstrate the fluctuation of iron in the well water and the impact of iron on the softening units. Please refer to **Table 2** for Cammidge & Collins analysis results and to **Table 3** for the Thomson analysis results.

Monthly backwash samples for Total Suspended Solids (TSS) were collected from the Forbes Water System. The samples were collected from the underground backwash storage container. The Certificate of Approval for the Forbes Water System requires that the annual average not be greater than 25 mg/L. As can be seen in **Table 4**, the annual average of TSS in the Forbes Water System was 5.25 mg/L.

Monthly water samples for Radium 226 (Ra 226) were collected from the Thomson Water System. Ra 226 was analyzed from treated (POE) samples collected at the pumphouse. All POE treated water samples were found to be below the Maximum Allowable Concentration (MAC) of 0.6 Bq/L. The installation of a Myers Twin Unit Water Softener is capable of reducing the concentration of Ra 226 before the water leaves the pumphouse and enters the distribution system. Please refer to **Table 5** for a Summary of Ra 226.

Quarterly samples for Barium (Ba) were collected and analyzed from the Robins pumphouse. None of the samples exceeded the MAC of 1.0 mg/L. There was a house fire on Dorena Crescent that resulted in 1500 L of fuel oil being unaccounted for. The MOE asked the Operating Authority to collect TPH samples quarterly for 2005. All analysis results were found to be safe.

Quarterly sampling for Sodium (Na) and Fluoride (F) were collected and analyzed at the Trask Pumphouse during 2005. All sample results exceeded their respective MAC's. Refer to **Table 6**.

Quarterly raw water samples were collected and analyzed at the Huron Woods Pumphouse for the following parameters: colour, pH, conductivity, turbidity, hardness, magnesium, manganese, chloride, sodium, nitrates, nitrites, and fluoride. Turbidity, iron and hardness are historically above the ODWQS.

Quarterly samples were taken for Trihalomethanes (THM's) from all ten (10) water systems. With the exception of the Fiddlehead system the 2005 annual averages for THM samples were found to be below the MAC of 100 micrograms per Liter. Please refer to **Appendix C**. For a summary of data results refer to **Table 6**.

Quarterly sampling and analysis of Nitrite (NO₂-N) and Nitrate (NO₃-N) were performed on the ten (10) water systems. All nitrate and nitrite results were below the MAC. Please refer to **Appendix D** and **Table 6**.

A compliance summary of monthly, quarterly and annual treated water quality monitoring is illustrated in **TABLE 6**. The table demonstrates if a particular parameter was found to be in compliance with the ODWQS criteria. C stands for Compliance, N stands for Non-Compliance, and -- means No Sample Required.

3.4 Schedule 23 – Inorganic Parameters

O.Reg. 170/03 amended to O. Reg. 253/05 requires Schedule 23 – Inorganic Parameters to be sampled annually on all ground water sources that are GUDI. The samples for Schedule 23 were collected and analyzed in September 2005 and were found to be within compliance. Refer to **Appendix C**.

3.5 Schedule 24 – Organic Parameters

O.Reg 170/03 amended to O. Reg. 253/05 requires Schedule 24 – Organic Parameters to be sampled annually on all ground water sources that are GUDI. This was completed in September 2005 and were found to be within compliance. Refer to **Appendix C**.

3.6 MOE Audit Sample Results

During 2005 all Municipal systems in the former Amabel Township were inspected by the local MOE. As a part of the inspection process the Inspector collected Audit Samples from each of the 10 pumphouses and their respective distribution systems.

4.0 WATER USAGE AND WELL LEVEL MONITORING

Water Usage

A summary of water usage for the ten (10) Amabel water systems is provided in **Appendix A**. The tables also provides information on the average daily water use and maximum daily water usage. Note that the water usage also includes the amount of water used for flushing the water mains by operating the blow offs.

As required by the Certificate of Approvals the water meters were calibrated between October 31 and November 2, 2005. Refer to **Appendix H** for the Calibration Letter Report. The Calibration Letter Report identified that the Gremik water meter was inaccurate. In December 2005 the meter was replaced. Following the 2004 volumetric test of the Winburk water meter, independent calibration by R&R Instrumentation confirmed the inaccuracy of the Winburk water meter in January 2005. Subsequently a new water meter and transmitter were ordered and installed. All new meters come factory calibrated.

The overall water usage in 2005 was higher compared to the water usage in 2004. With the exception of Forbes, the 2005 static water levels were approximately the same as 2004. During July, the Forbes well pump had to be lowered due to below average water levels in the well.

Table 7 provides an annual summary of the monthly peak flows from the Winburk Pumphouse. The annual peak flow was 108.1 L/min on July 3, 2005 as compared to a rated capacity of 363 L/min of the existing well pump. This is an increase over 2004.

5.0 COMPLIANCE WITH TERMS AND CONDITIONS OF THE CERTIFICATE OF APPROVALS AND O.REG 170/03

General

This section provides assessment of compliance of each water system with the Certificate of Approval and the Ontario Drinking Water Quality Standards (ODWQS).

SGS Lakefield Research Limited was the analytical laboratory for all bacterial analyses. All chemical/physical analyses were performed by Caduceon Environmental Laboratories. Both of these laboratories are accredited labs.

1. Water samples for bacteriological water quality were always collected in accordance with MOE O.Reg 170/03 amended to O. Reg. 253/05.
2. The sampling for treated water chlorine residual was always carried out in compliance with O.Reg 170/03 amended to O. Reg. 253/05 sampling guideline. Please refer to **Appendix A**.
3. The sampling of all of the distribution water samples for chlorine residuals were as per O.Reg 170/03 amended to O. Reg. 253/05 and all samples were found to have detectable chlorine residuals which is within compliance. Please refer to **Appendix A**.
4. Treated water samples for turbidity analyses, were generally within the turbidity level of 1 NTU.

Complete monthly data for chlorine residual and turbidity analyses can be found in **Appendix A**.

5. THM, NO₂ and NO₃ were taken at the required frequency and all analysis results were within the ODWQS. Please refer to **Appendix D**.
6. Fluoride sampling was carried out at the required frequency as per ODWQS and Certificates of Approval's. Please refer to **Section 3.3**.

7. A site specific operation and maintenance manual was developed and a copy can be found at each waterworks location.
8. A contingency plan, an Emergency Response Plan and a Well Maintenance Plan were updated and placed at each waterworks location.

5.1 Fiddlehead Water System

From January 1, 2005 to December 31, 2005 there were 41 Adverse Water Quality Incidence (AWQI) numbers issued for the Fiddlehead Water System. Most were related to free chlorine and turbidity. Two (2) were related to Trihalomethanes (THM).

From January 1, 2005 to December 31, 2005 the Fiddlehead Water System used 6,639.6 m³ of water with a maximum day demand of 52.9 m³/day and averaged 18.2 m³/day. The latest Certificate of Approval allows for the supply of 199 m³/day of water. The total water usage, including maximum day and average day demand, are increased compared to historic values but do not violate either the Certificate of Approval or the Permit to Take Water (PTTW). This was the result of a more thorough flushing at the distribution system.

During the calendar year of 2005, the Fiddlehead Water System required 856 L of Sodium Hypochlorite (NaOCl) with an average dosage of 16.36 mg/L. Following the injection of NaOCl, Sodium Silicate is added to the water to sequester such naturally occurring elements as Iron or Manganese. The Fiddlehead Water System required 294 L of Sodium Silicate with an average dosage of 16.97 mg/L. The volume and dosage of both NaOCl and Silicate are high considering the volume of water that was treated and sequestered but are comparable to historical data.

The Certificate of Approval for the Fiddlehead Water system does not require any additional analytical results or sampling of the raw water, in process water or the water in the distribution system.

5.2 Cammidge & Collins Water System

From January 1, 2005 to December 31, 2005 a total of 9 AWQI number were issued for the Cammidge & Collins Water System. Most were related to free chlorine and turbidity while one (1) was related to a total coliform count and one (1) to an HPC.

From January 1, 2005 to December 31, 2005 the Cammidge & Collins Water System used 3,247.3 m³ water with a maximum day demand of 28.4 m³/day and averaged 8.9 m³/day. The latest Certificate of Approval allows for the supply of 105 m³/day of water. The total water usage, including maximum day and average day demand, are consistent with historic values and do not violate either the Certificate of Approval or the Permit to Take Water (PTTW).

During the calendar year of 2005, the Cammidge & Collins Water System required 202.46 L of Sodium Hypochlorite (NaOCl) with an average dosage of 7.92 mg/L which is slightly high.

The Certificate of Approval for the Cammidge & Collins Water System utilizes a water softener for the removal of Iron and Barium from the water source. It can be seen from **Table 2** that the water softener was successful in doing this, however, the Cammidge & Collins system experienced elevated Sodium levels as a result. There are no other requirements of the Certificate of Approval for sampling or analysis of the raw water and processed water or the water in the distribution system.

5.3 Robins Water System

From January 1, 2005 to December 31, 2005 a total of 8 AWQI numbers were issued. A total of five (5) related to free chlorine and turbidity, one (1) related to a total coliform count and two (2) related to HPC.

From January 1, 2005 to December 31, 2005 the Robins Water System used 10,581.7 m³ of water with a maximum day demand of 94.4 m³/day and averaged 28.9 m³/day. The latest Certificate of Approval allows for the supply of 164 m³/day of water. The total water usage, including maximum day and average day demand, are consistent with historic values and do not violate either the Certificate of Approval or the Permit to Take Water (PTTW). It is suspected that the higher water usage in 2005 is the result of semi annual flushing of the distribution system and an Operational Strategy to try and control the fluctuation of the chlorine demand and chlorine use. This was accomplished by leaving a blowoff, at a remote location in the distribution system, open all the time.

During the calendar year of 2005, the Robins Water System required 3,149 L of Sodium Hypochlorite (NaOCl) and had an average dosage of 20.98 mg/L. Following the injection of NaOCl, Sodium Silicate is added to the water to sequester such naturally occurring elements as Iron or Manganese. The Robins Water System required 369 L of Sodium Silicate with an average dosage of 13.90 mg/L. The volume and dosage of both

NaOCl and Silicate are high considering the volume of water that was treated and sequestered but comparable to historical data..

The Certificate of Approval for the Robins Water system requires additional sampling of treated water for Barium on a quarterly basis. No exceedences were found.

5.4 Fedy Water System

During the 2005 calendar year, the Fedy pumphouse was not utilized as it has been decommissioned. Therefore, there were no adverse results reported from the Fedy Water System nor was there any water provided to the distribution systems.

5.5 Forbes Water System

From January 1, 2005 to December 31, 2005 a total of three (3) AWQI numbers were issued. One (1) was related to turbidity, one (1) to a background count and one (1) for a total coliform count

From January 1, 2005 to December 31, 2005 the Forbes Water System used 5,229.6 m³ of water with a maximum day demand of 53.8 m³/day and averaged 14.3 m³/day. The latest Certificate of Approval allows for the supply of 138 m³/day of water. The total water usage, including maximum day and average day demand, are consistent with historic values and do not violate either the Certificate of Approval or the Permit to Take Water (PTTW).

During the calendar year of 2005, the Forbes Water System required 185 L of 12% and 71.9 L of 6% Sodium Hypochlorite (NaOCl) with an average dosage of 5.28 mg/L and 6.46 mg/L respectively. Potassium Permanganate (KMnO₄) is added to the water to oxidize such naturally occurring elements as Iron or Manganese. The Forbes Water System required 6.1 L of Potassium Permanganate with an average dosage of 3.07 mg/L. The volume and dosage of both NaOCl and Potassium Permanganate are reasonable considering the volume of water that was treated. By switching from 12% to 6% NaOCl the Operator has better control of the chlorine residual.

The Certificate of Approval for the Forbes Water system does not require any additional analytical results or sampling of the raw water, in process water or the water in the distribution system. However, it does require

the Total Suspended Solids to be sampled monthly from the backwash. The 2005 Annual Average was found to be 5.3 mg/L which is within compliance.

5.6 Trask Water System

From January 1, 2005 to December 31, 2005 a total of five (5) AWQI numbers were issued. One (1) was related to a total coliform count, one (1) related to a background count and three (3) related to turbidity and free chlorine.

From January 1, 2005 to December 31, 2005 the Trask Water System used 6,871.1 m³ of water with a maximum day demand of 66.9 m³/day and averaged 19.8 m³/day. The latest Certificate of Approval allows for the supply of 164 m³/day of water. The total water usage, including maximum day and average day demand, are consistent with historic values and do not violate either the Certificate of Approval or the Permit to Take Water (PTTW).

During the calendar year of 2005, the Trask Water System required 205 L of 12% and 506 L of 6% Sodium Hypochlorite (NaOCl) with an average dosage of 8.67 mg/L and 8.31 mg/L respectively. By changing from 12% to 6% NaOCl, the Operator had better control over the free chlorine residual.

The Certificate of Approval for the Trask Water System requires that every quarter Sodium and Fluoride be collected from the Point of Entry (POE) and analyzed for their concentrations. They are both consistently over their respective MAC.

5.7 Huron Woods Water System

From January 1, 2005 to December 31, 2005 a total of seven (7) AWQI numbers were issued. One (1) was related to HPC and six (6) related to free chlorine and turbidity.

From January 1, 2005 to December 31, 2005 the Huron Woods Water System used 21,532.2 m³ of water with a maximum day demand of 222.4 m³/day and averaged 58.8 m³/day. The latest Certificate of Approval allows for the supply of 743m³/day of water. The total water usage, including maximum day and average day demand, are higher than historic values but do not violate either the Certificate of Approval or the Permit to Take Water (PTTW). The higher flows are probably the results of many factors such as cleaning the clearwells and filling the sweeper and fire trucks.

During 2005, Well 3 recorded a total of 70.1 m³. The maximum day demand for Well 3 was 5.8 m³ and an average day demand of 0.2 m³. Well 6 provided a total of 23,463.4 m³ of water with a maximum day demand of 234.8 m³ and an average day demand of 64.1 m³. The difference between the raw water flow and the treated water flow is the result of cleaning the clearwells. The water used to clean the clearwells would have been sent to waste and not the distribution system.

During the calendar year of 2005, the Huron Woods Water System required 795.3 L of Sodium Hypochlorite (NaOCl) with an average dosage of 2.95 mg/L. The volume and dosage of NaOCl is reasonable considering the volume of water that was treated.

5.8 Foreman Water System

From January 1, 2005 to December 31, 2005 a total of four (4) AWQI numbers were issued related to free chlorine and turbidity.

From January 1, 2005 to December 31, 2005 the Foreman Water System used 3,095.6 m³ of water with a maximum day demand of 65.1 m³/day and averaged 8.46 m³/day. The latest Certificate of Approval allows for the supply of 164 m³/day of water. The total water usage, including maximum day and average day is slightly higher than historic values but does not violate either the Certificate of Approval or the Permit to Take Water (PTTW).

During the calendar year of 2005, the Foreman Water System required 89.48 L of Sodium Hypochlorite (NaOCl) with an average dosage of 3.82 mg/L. Following the injection of NaOCl, Sodium Silicate is added to the water to sequester such naturally occurring elements as Iron or Manganese. The Foreman Water System required 51.52 L of Sodium Silicate with an average dosage of 6.45 mg/L. The volume and dosage of NaOCl is reasonable considering the volume of water that was treated and sequestered.

The Certificate of Approval for the Foreman Water System does not require any additional analytical results or sampling of the raw water, in process water or the water in the distribution system.

5.9 Thomson Water System

From January 1, 2005 to December 31, 2005 a total of nine (9) AWQI numbers were issued, all related to free chlorine and turbidity.

From January 1, 2005 to December 31, 2005 the Thomson Water System used 6,209.7 m³ of water with a maximum day demand of 83.2 m³/day and averaged 16.9 m³/day. The latest Certificate of Approval allows for the supply of 199 m³/day of water. The total water usage, including maximum day and average day demand, are slightly higher than historic values but do not violate either the Certificate of Approval or the Permit to Take Water (PTTW). It is suspected that the weekly flushing of the chlorine contact chamber and more frequent regeneration cycles of the water softener have contributed to the higher water use.

During the calendar year of 2005, the Thomson Water System required 383.36 L of Sodium Hypochlorite (NaOCl) with an average dosage of 7.85 mg/L. The volume and dosage are reasonable considering the volume of water treated.

The Certificate of Approval for the Thomson Water System requires a treated water sample be collected and analyzed monthly for Ra 226 and Barium. The operating Authority also collects Iron as a Best Management Practice. All POE samples for Ra 226 and Barium were within compliance. All Iron samples collected in the treated water at the POE were less than the Aesthetic Objective of 0.3 mg/L.

5.10 Winburk Water System

From January 1, 2005 to December 31, 2005 a total of twenty-seven (27) AWQI numbers were issued. Twenty-five (25) were related to free chlorine and turbidity, one (1) was related to sodium and one (1) was related to lead.

From January 1, 2005 to December 31, 2005 the Winburk Water System used 15,612.7 m³ of water with a maximum day demand of 151 m³/day and averaged 42.7 m³/day. The latest Certificate of Approval allows for the supply of 527m³/day of water. The total water usage, including maximum day and average day demand, are slightly higher than historic values but do not violate either the Certificate of Approval or the Permit to Take Water (PTTW). The higher flows are probably the result of flushing two (2) chlorine contact chamber that were installed in 2003.

During the calendar year of 2005, the Winburk Water System required 1,454 L of Sodium Hypochlorite (NaOCl) with an average dosage of 11.82 mg/L. The volume and dosage of NaOCl is a little high considering the volume of water chlorinated but comparable to historical values.

The Certificate of Approval for the Winburk Water system does not require any additional analytical results or sampling of the raw water, in process water or the water in the distribution system.

5.11 Gremik Water System

From January 1, 2005 to December 31, 2005 a total of thirty-five (35) AWQI numbers were issued, one was related to lead and the remainder were related to turbidity and free chlorine.

From January 1, 2005 to December 31, 2005 the Gremik Water System used 11,677.6 m³ of water with a maximum day demand of 145.1 m³/day and averaged 31.9 m³/day. The latest Certificate of Approval allows for the supply of 328 m³/day of water. The total water usage, including maximum day and average day demand, are slightly higher than historical values but do not violate either the Certificate of Approval or the Permit to Take Water (PTTW).

During the calendar year of 2005, the Gremik Water System required 1,451.1 L of Sodium Hypochlorite (NaOCl) with an average dosage of 15.77 mg/L. Both the volume and dosage of NaOCl are higher than generally accepted industry standards but is comparable to historical values.

The Certificate of Approval for the Gremik Water system does not require any additional analytical results or sampling of the raw water, in process water or the water in the distribution system.

All Certificates of Approvals are attached in **Appendix E** and all Permits To Take Water are attached in **Appendix F**.

5.12 Regulation 170/03, Section 11 – Annual Reports

Part III-Form 2 was submitted electronically, see **Appendix I**.

Section 11 (6) (a) of O.Reg 170/03

Refer to **Section 2** of this report, titled "Description of Water System".

Section 11 (6) (b) of O.Reg 170/03

Refer to **Section 5.0** of this report, titled "Compliance with Terms and Conditions of the Certificate of Approval.

Section 11 (6) (c) of O.Reg 170/03

Refer to **Tables 1-7** of this report.

Section 11 (6) (d) of O.Reg 170/03

Refer to **Section 5.1** through **Section 5.11** of this report.

Section 11 (6) (e) of O.Reg 170/03

During 2005 the repairs were as follows:

Fiddlehead - sample station and blowoff installed October 26, 2005
- cartridge filter installed December 21, 2005

Cambridge & Collins - CI 17 Hach chlorine analyzer was installed February 17, 2005
- flow switch rebuilt February 28, 2005
- Well PW 1-71 was decommissioned

Robins - renewed PTTW

Forbes - well pump lowered 5 feet July 22, 2005
- brass check valve installed prior to raw water flow meter November 15, 2005
- renewed PTTW

Trask - renewed PTTW
- watermain repair January 21 and 25, 2005
- CI 17 Hach free chlorine analyzer installed February 16, 2005

- a sample station and blowoff were installed at the dead end of Lakeland Drive

Huron Woods - 5 pressure tanks were replaced March 22, 2005

- UPS installed August 6, 2005
- both clearwells 1 and 2 were cleaned, super chlorinated, drained and refilled on August 24, 2005
- RACO dialer installed December 7, 2005

Foreman - one pressure tank replaced May 18, 2005

- curb stop repaired December 1, 2005
- chlorine contact chamber changed and low chlorine alarm set point raised to 0.7 mg/L

Thomson - June 2, 2005 a flow switch was installed

- new water softener head installed

Winburk - 3 pressure tanks replaced April 14, 2005

- new well pump 10 hp motor in April 2005 mounted on existing pump
- phase converter rebuilt in April 2005
- RACO dialer installed July 6, 2005
- 3 pressure tanks replaced November 23, 2005
- watermain repair December 23, 2005

Gremik - February 15, 2005, 7 pressure tanks replace

- raw watermain repaired April 19, 2005
- installed RACO dialter May 2, 2005
- PTTW amended June 10, 2005
- PRV installed July 27, 2005
- water meter replaced December 22, 2005

In General: - all systems were equipped with UPS units that protect against power serge

- all treatment and distribution systems were reclassified
- all raw and POE sample taps were changed to smooth nozzle

Section 11 (6) (f) of O.Reg 170/03

This report was prepared as per Section 11 and Schedule 22 of Regulation 170/03. A copy of the report can be viewed at either the offices of Oweson Ltd., at 945 Third Avenue East, Suite 230, Owen Sound, Ontario N4K 2K8, at the Town of South Bruce Peninsula Municipal offices in Wiarton, Ontario and at the Sauble Library in Sauble Beach.

Section 11 (9) (1) of O.Reg 170/03

Once this report has been presented to the Owner (Town of South Bruce Peninsula), the Owner will take all reasonable steps to inform all users of the system that the report is complete and where it may be viewed.

Section 11 (11) of O.Reg 170/03

1. There are no known private or designated facilities served by the facility.
2. There are no known children's camps served by this facility.
3. There are no known senior's residences served by this facility.

5.13 Water Meter Calibration

All water meters were calibrated between October 31 and November 3, 2005.

6.0 CONSTRUCTION IMPROVEMENTS

An OSTAR application for major changes has been submitted and at the time of this report no approval has been received.

In January 2002, the Thomson Water System was renovated to include a Myers Twin Water Softener to treat approximately 20% of the flow. All existing blowoffs are operational. Any that were not, have been repaired

All systems in 2003 were equipped with continuous on-line chlorine and turbidity analyzers complete with paperless chart recorders and alarm system. The Trask pumphouse received a new well pump and discharge piping, pressure and air release valves for the pressure tanks. Sample stations were installed at Foreman, Gremik and Fiddlehead systems during 2003.

In 2003, Thomson, Winburk and Gremik were equipped with chlorine contact chambers.

In 2004, Thomson, Winburk and Gremik were provided with automatic transfer panels between duty and stand by chlorine pumps. The Operation and Maintenance, Contingency Plan, Emergency Response Plan, Well Inspection and flushing programs were updated for all systems.

Presently the Huron Woods and Foreman Water Treatment Plants are under construction. The upgrades will include: filtration, UV, standby power and a PLC.

7.0 PUBLIC RELATIONS

In 2005, the Municipality continued issuing Newsletters to the water consumers to keep them informed of any water service shut downs for repairs and maintenance, etc., in order to have good public relations with the consumers.

In 2005, water quality complaints from the consumers have increased compared to 2002, 2003 and 2004. All complaints were promptly attended to. Generally, the complaints were related to "Javex" (high chlorine) odour in Robins, Trask, Winburk and Gremik Water Systems; and coloured water (due to iron) in the Robins, Winburk and Fiddlehead Water Systems.

The reported water quality problems, likely resulted from the system shutdown as they coincided with the shutdown events. It is likely that the system shutdown for repair, etc., caused the water to be stirred up creating complaints. Although a thorough flushing of the mains was preformed after each "shutdown" event, the ability to flush all dead end waters out of the system is not possible due to poorly located blowoffs.

During a water service interruptions for repairs, the public was notified by OWS staff of the service interruption at least 24 hours in advance when possible.

8.0 RESPONSE TO MOE INSPECTION REPORT

The MOE provided the Town of South Bruce Peninsula with a Water Works Inspection Report for seven (7) of the Water Systems. The Report of Compliance for these seven (7) systems are attached to this report as **Appendix D**. Any deficiency identified during inspections were addressed and all issues, where possible, have been resolved.

Fiddlehead, Cammidge & Collins, Forbes, Trask, Huron Woods, Foreman and Winburk water systems have had their 2005 Annual Inspection. The Inspections for Robins, Thomson and Gremik have been completed, however, the Inspection Reports have not been issued yet.

9.0 RECOMMENDATIONS

Based on our experience with the operation and maintenance of the ten (10) water systems, we suggest the following recommendations:

1. All water meters should be calibrated between October 31 and November 2, 2006.
2. Blow-offs to flush the watermains should be considered at suitable locations in water systems. Also blowoffs should be considered for installation at all dead end locations. The dead end blowoffs have been invaluable in improving water quality and reducing complaints.
3. Consideration should be given to install a pressure relief valve (PRV), in the Trask pumphouse to relieve excessive pressure in the distribution system.
4. Those water systems which have a high level of iron (> 0.3 mg/L) a provision for iron treatment should be considered; such as iron-removal treatment which would reduce complaints regarding "brown water" and reduce the amount of chlorine addition into those water systems. The Winburk water system currently does not have iron treatment but have iron levels greater than 0.3 mg/L.
5. All waterworks should be upgraded to meet the provincial standard for disinfection and treatment.
6. All metering pumps should be flow paced

Prepared by

OWESON WATER SERVICES
(a Division of OWESON LTD.)

TOWN OF SOUTH BRUCE PENINSULA

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Manager

APPENDIX A

Treated Water Flows, Turbidity and Disinfectant Residual

APPENDIX B

Bacteriological Sampling and Analysis

APPENDIX C

Quarterly and Annual Sampling and Analysis

APPENDIX D

Correspondence - Report of Compliance

APPENDIX E

Certificate of Approval

APPENDIX F

Permit to Take Water

APPENDIX G

Annual Record of Water Taking

APPENDIX H

2005 Water Meter Calibration Records

APPENDIX I

Part III - Form 2 (to be submitted electronically)