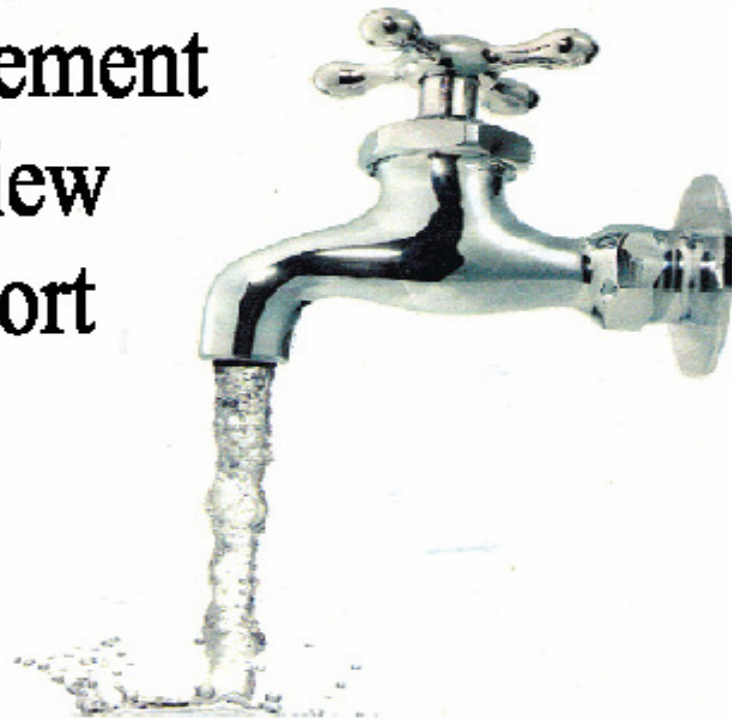


Inaugural DWQMS Management Review Report



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1.0 INTRODUCTION TO DWQMS MANAGEMENT REVIEW

The requirements of management review are dictated by Element 20 “Management Review” of the Ministry of the Environment’s (MOE) Drinking Water Quality Management Standard (DWQMS). This standard requires that a management review is conducted at least once every 12 months to evaluate the continuing suitability, adequacy and effectiveness of the Quality Management System (QMS).

Through the management review process, Top Management shall identify deficiencies and action items (including personnel responsible and proposed timelines for implementation) to address the deficiencies. Results of the management review are reported to the Owner through Council Reports.

The following is a summary of information that Top Management must review annually in accordance with the Ontario DWQMS. The current review considers the entire 2010 calendar year (the “review period”) and where appropriate, touches on activities continuing in 2011. The following 16 aspects must be considered in the annual review:

The standard requires that input into management review include:

- 1) incidents of regulatory non-compliance
- 2) incidents of adverse drinking-water tests
- 3) deviations from critical control point (CCP) limits and response actions
- 4) the risk assessment process
- 5) internal and third-party audits
- 6) emergency response testing
- 7) operational performance
- 8) raw water supply and drinking water quality trends
- 9) action items from previous management reviews
- 10) status of other management action items
- 11) changes that could affect the quality management system
- 12) consumer feedback
- 13) resources to maintain the DWQMS
- 14) infrastructure review
- 15) operational plan: currency, content, updates
- 16) staff suggestions, recommendations for improvement

This report provides an overview of the operational performance of our drinking-water systems, as well as functional performance of our management system.

2.0 EXECUTIVE SUMMARY

A requirement of the Ontario Drinking Water Quality Management Standard (DWQMS) Operational Plan is for the Quality Management System (QMS) Representative to ensure annual management review results are conveyed to Top Management and the Owner (Council). This report fulfills that requirement.

This report contains a summary of information that Top Management must review annually in accordance with the Management Standard.

The DWQMS is the key tool that supports and ensures that Council, as the Owner of the drinking water systems, is meeting its duties and responsibilities under the *Safe Drinking Water Act* and Standard of Care.

The DWQMS has been designed for continual improvement, which is the foundation of the DWQMS Policy endorsed by Top Management and Council. The current review considers the entire 2010 calendar year (the "review period") and where appropriate, touches on activities continuing in 2011.

The DWQMS sets out a mandatory list of 16 issues to be examined during annual reviews and reports.

The detailed results have been reviewed by Top Management in accordance with the DWQMS management review system procedure.

Highlights of the review findings are:

- The City's Drinking Water System scored 100 per cent across the board after a detailed Ministry of the Environment inspection;
- The water quality testing program meets or is better than regulations;
- Maintenance procedures are appropriate;
- Shortcomings are being addressed.
- The operator certification program is working; and
- Staff are following procedures and showing a commitment to continual improvement.

In short, the 2010 Management Review shows the DWQMS is being implemented successfully and reinforces the fact that the City of Pembroke produces and supplies high quality, safe drinking water.

3.0 BACKGROUND

On November 18, 2009, City Council endorsed the City's QMS also known as the (Operational Plan), which is in conformance with Ministry of Environment standards. On October 6, 2009, The City of Pembroke was advised that it had been successful in meeting the requirements of Ontario's Drinking Water Quality Management Standard to the satisfaction of the CGSB Accreditation Program for Operating Authorities and would be awarded a Limited Scope – Entire accreditation.

A requirement of the Operational Plan is for the QMS Representative to ensure the management review results are conveyed to Top Management and to the Owner (Council). The main purpose of this report is to provide the Owner with an update on the implementation and the performance of the QMS.

As the Owner of the municipal drinking water systems, Council has a number of duties and responsibilities under the *Safe Drinking Water Act*, which are described in sections 11, 13, 16 and 17 of the Act. The duties of the Owner related to the Standard of Care are under section 19.

This section of the *Act* (Standard of Care) is expected to come into force on January 1, 2013. On November 17, 2009, staff delivered a presentation to members of Council outlining these duties and responsibilities during a meeting of the Operations Committee.

As the Owner, Council can be assured that the City of Pembroke is striving to meet the Standard of Care under the *Safe Drinking Water Act* by having a Municipal Drinking Water Licence in place for its drinking water system. The elements of the Licence include:

1. A permit to take water;
2. A drinking water works permit;
3. An operational plan;
4. A financial plan; and,
5. An accredited operating authority.

On, October 19, 2009, the Operations Department circulated a Report to Mayor and Members of Council providing them with a status update on the City's Municipal Drinking Water Licence. In summary, the Owner had met items 1 through 3 listed above, and the City will be obtaining a licence for its drinking water systems.

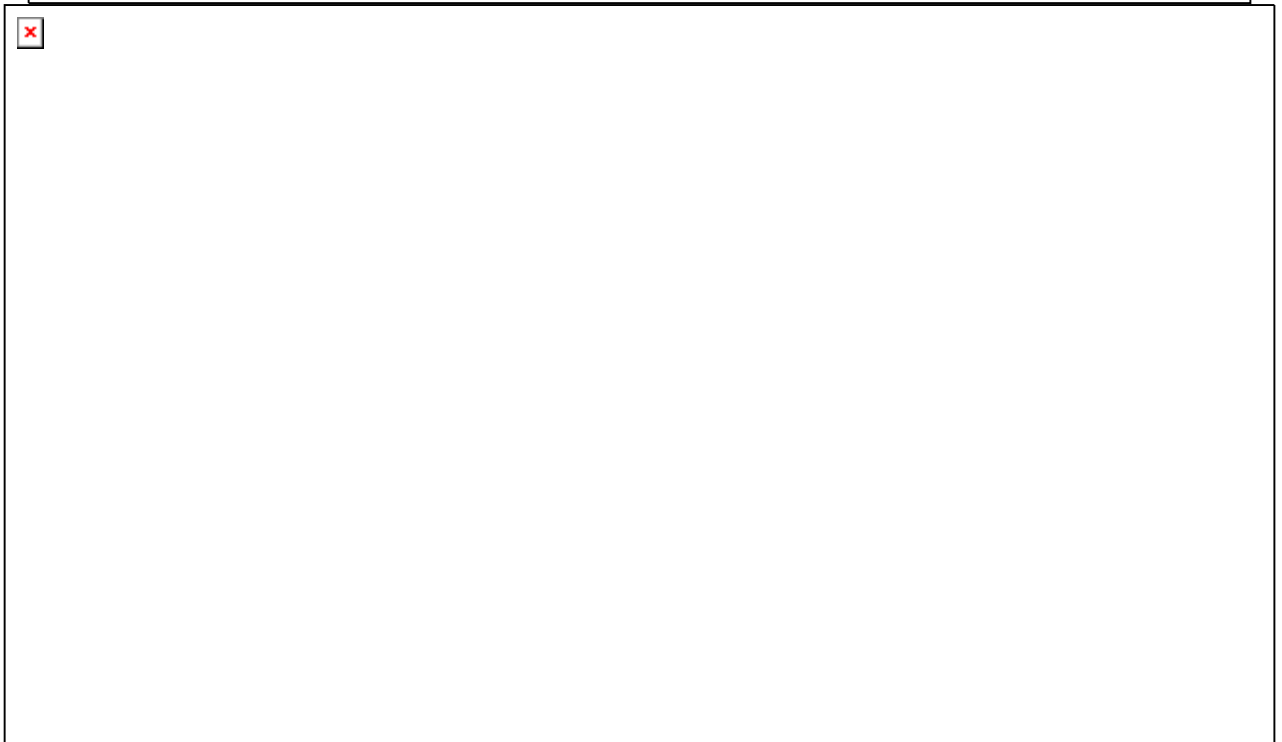
July 1, 2010 or six months after the first licence for the system is issued, a financial plan for the DWS that satisfies the requirements prescribed under O. Reg 453/07 will be prepared for approval.

The final requirement is for the Operating Authority to receive its Full Scope Accreditation, and in order to receive it, the Operating Authority must have a successful on-site external audit of its Operational Plan conducted by the Canadian General Standards Board.

4.0 ***Roles & Responsibilities***

Element 9 of the DWQMS requires the Operational Plan to document the organizational structure, roles, responsibilities and authorities of the Operating Authority (City of Pembroke). The table below outlines each group that has a role in the delivery of safe drinking water and their respective responsibilities.

Chart 1: DWQMS Organizational Structure



5.0 Drinking-Water System Performance

5.1 Incidents of Regulatory Non-Compliance

All regulatory non-compliances, identified during the MOE inspection process, will be reported during the management review. The results help Operational Management identify regulatory deficiencies in our drinking-water system.

i. Ministry of Environment (MOE): inspection reports: All waterworks were inspected during 2010-11 by the MOE. There were no items of regulatory non-compliance and 3 Best Practice recommendations made. For the 2010–11, inspection year, the water system received an inspection rating of 100 per cent. This represents a considerable achievement for the Drinking Water System.

ii. Operator Certification Records: The Pembroke Water Treatment and Distribution Systems were operated at all times by certified operators. Considerable management effort and documentation is required to provide training and maintain valid certificates for the 21 (twenty one) certified operators and staff are continuing to streamline and document the certification and renewal process.

iii. Water Flow Rate Trends: There were no cases of daily “raw” water taking exceeding the permitted values stipulated in the Permit to Take Water.

Table 1: Raw Water Taking Pembroke Drinking Water System 2010

Raw Water for 2010

Month	Total (m ³)	Average (m ³ /day)	Max (m ³ /day)	Rated Capacity (m ³ /day)	% of Capacity	Max Instantaneous Peak Flow (L/s)	Rated Flows (L/s)	Exceedence
January	237,409	7658.4	9,005	36500	24.67	283.0	421	no
February	219,622	7843.6	9,310	36500	25.51	108.0	421	no
March	234,335	7559.2	8,982	36500	24.61	327.0	421	no
April	233,777	7792.6	9,697	36500	26.57	288.0	421	no
May	330,570	10663.5	17,465	36500	47.85	351.0	421	no
June	292,116	9737.2	13,705	36500	37.55	318.0	421	no
July	335423	10820.1	15,232	36500	41.73	355.0	421	no
August	320224	10329.8	15269	36500	41.83	329.0	421	no
September	270694	9023.1	12460	36500	34.14	144.0	421	no
October	287202	9264.6	11900	36500	32.60	328.00	421	no
November	247946	8264.9	9683	36500	26.53	316.0	421	no
December	253203	8167.8	9261	36500	25.37	321.0	421	no
Total	3,262,521							
Min						108.0		
Max			17465			355.0		
Average		8927.1				289.0		

iv. Water Quality Testing Records: The City of Pembroke water quality testing program has been intentionally designed to provide more than the required amount of sampling and testing to meet regulations. All Ontario requirements for microbiological, inorganic and organic testing were met.

v. Community Lead Testing Regulation: As required by the lead testing regulation, community lead testing was carried out during the first quarter of 2010 and again in the summer.

The City of Pembroke filed application for Regulatory Relief from Lead Sampling Requirements on November 29, 2010. On January 20th, 2011 the City of Pembroke received Exemption from plumbing sampling under Schedule 15.1 of O. Reg. 170/03. As a condition of Exemption from collection of plumbing samples the City of Pembroke is still required to sample from our distribution system as follows:

- Sample for pH and Alkalinity every “winter” and “summer” period each year.
- Sample for lead once every three years, both “winter” and “summer” periods.

vi. MOE Orders: There were no MOE Orders in effect in 2010.

viii. Annual and Summary Reports: O.Reg.170/03 requires the Owner and the Operating Authority to prepare Annual Reports and Summary Reports for each of the waterworks. The Annual Reports for 2010 were completed within the required timeframe (by February 28, 2011) and are posted on the City of Pembroke’s website. Furthermore, the Summary Report for 2010 was completed by February 28, 2011 and endorsed by City Council February 15, 2011, as required by the regulation.

5.2 Incidents of Adverse Drinking Water Tests

To assist in the detection of real-time issues in the drinking-water system, programs exist such as online monitoring through SCADA, and a rigorous sampling program. These testing and monitoring methods verify the quality of the drinking water. All adverse drinking-water test results will be reported during management reviews.

The drinking water regulations identify several Indicators of Adverse Water Quality Incidents (AWQI) for which the waterworks must immediately notify health officials and the MOE, and carry out specific corrective actions. Adverse Drinking Water Quality Incidents for the calendar year 2010 are listed in **Table: 2**, on the following page.

During January to December 2010, there were a total of 7 AWQI. Of these AWQI, all 7, were related to our Lead Sampling Program. This improvement can be attributed primarily to operational changes and in part to the implementation of the DWQMS.

For each event, DWS staff immediately notified the Renfrew County & District Health Unit and the MOE as required by the regulation. In all cases, written reports were prepared and sent to the MOE and the Health Unit within 24 hours of the verbal notification, and corrective actions and re-sampling were carried out to resolve the incident. It should be noted that none of the adverse water quality events resulted in any indication of adverse health impacts or illness to the public.

Table 2: Adverse Water Quality Occurrences in the Pembroke Drinking Water System 2010

Incident Date	AWQI #	Location	Adverse Indicator	Maximum Allowable Parameter	Corrective Action	Corrective Action Date
10 Mar 10	AWQI # 93911	Hyd. #726E	0.042 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	16 Mar 2010
11 Mar 10	AWQI # 93911	Hyd. #492W	0.024 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	16 Mar 2010
11 Mar 10	AWQI # 93911	Hyd. #1051E	0.011 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	16 Mar 2010
23 Mar 10	AWQI #94013	Hyd. #496W	0.013 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	31 Mar 2010
29 Mar 10	AWQI #94088	Hyd. #496W	0.022 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	01 Apr 2010
12 Jul 10	AWQI #96041	Hyd. #436E	0.012 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	15 Jul 2010
16 Sept 10	AWQI #98074	Hyd. #232E	0.035 mg/L Lead	0.010 mg/L Lead	Flushed/Re-sampled	23 Sept 2010

5.3 Deviations from Critical Control Point Limits and Response Actions

Through the DWQMS risk assessment process, completed late 2009, five Critical Control Points (CCPs) were identified within Water Production and seven CCPs were identified for Water Distribution. Critical Control Limits (CCLs) were subsequently identified for each of these CCPs. The CCLs are self-imposed limits and are typically more stringent than MOE Drinking Water Standards or Municipal Drinking Water licence requirements. The identification of CCPs and associated CCLs results in a more rigorous screening of potential risks to water quality and is one benefit of the implementation of the DWQMS.

Deviations from CCLs do occur from time to time and do not necessarily mean that unsafe drinking water was delivered to the consumer. However, CCL deviations do require prompt action from water system operators to remediate the problem and prevent the passage of potentially unsafe water. A total of zero CCL deviations were identified in 2010.



5.4 Operational Performance

Table 3: Per Capita Water Consumption for the City of Pembroke 2010

Customer Services: Per capita residential water consumption remained steady in 2010.

Per Capita Water Consumption for the City of Pembroke

*** All Values are in cubic meters***

Treated Water Flows for 2009 & 2010			Water Use Per Capita/Month		
Month	2009	2010	Month	2009	2010
Jan	242,475	229,565	Jan	17.8	16.9
Feb	217,014	209,172	Feb	16.0	15.4
Mar	233,806	223,030	Mar	17.2	16.4
Apr	231,627	226,341	Apr	17.0	16.6
May	255,876	307,984	May	18.8	22.6
Jun	280,019	262,913	Jun	20.6	19.3
Jul	258,057	300,094	Jul	19.0	22.1
Aug	285,158	288,663	Aug	21.0	21.2
Sep	265,162	244,114	Sep	19.5	17.9
Oct	235,333	254,376	Oct	17.3	18.7
Nov	218,805	218,750	Nov	16.1	16.1
Dec	223,004	229,175	Dec	16.4	16.9
Total	2,946,336	2,994,177	Average	18.1	18.3
Population #	13,600	13,600	Minimum	16.0	15.4
Per Capita =	216.6	220.2	Maximum	21.0	22.6

There was a increase of 3.5 cubic meters from 2009 to 2010 per person assuming no population growth

Water Distribution Key Performance Indicators (KPI): The KPI's for Water Distribution give an indication of the effectiveness and the efficiency of the corrective and preventative maintenance programs. During the calendar year 2010 there were a total of 17 Watermain Breaks in the Distribution System. Distribution personnel were able to complete the required repairs while maintaining pressure in the system, thus no customers were affected by a loss of service. The impact on customers related to the number of incidents and the length of time the customers are impacted per event will be assessed commencing 2011.

5.5 Raw Water Supply and Drinking Water Quality Trends

As part of the Municipal Drinking Water License (MDWL), the City of Pembroke is required to provide information pertaining to raw water supply and drinking water quality trends. This information should identify key water quality issues that need to be addressed by Operational Management.

The Ottawa River provides a steady and abundant supply of source water for the treatment plants. Raw water quality monitoring for 2010 covered in excess of 400 test parameters utilizing in house testing and external laboratory testing. Our source water monitoring program exceeds the MOE requirements. In general, raw water trends were found to show typical levels of variation during 2010. There were no indications of raw water quality that would cause difficulties for the treatment process.

Table 4: Raw Water Supply Quality Trends City of Pembroke 2010

Month	Alkalinity	Temperature	Turbidity	pH	Hardness
Jan-10	21.42	1.64	3.262	6.94	27.8
Feb-10	21.89	1.60	3.563	6.89	28.1
Mar-10	20.97	2.41	4.185	6.98	27.8
Apr-10	19.73	7.96	3.004	7.01	24.1
May-10	19.74	13.09	2.092	7.07	23.4
Jun-10	18.43	18.69	1.458	6.92	20.8
Jul-10	19.19	22.55	1.333	6.95	20.1
Aug-10	20.74	22.56	1.331	6.88	21.5
Sep-10	22.53	19.21	1.399	6.88	22.1
Oct-10	24.26	13.80	1.404	6.98	25.9
Nov-10	21.87	8.24	1.688	7.06	25.4
Dec-10	22.03	3.03	2.096	7.07	27.1

pH – measurement of hydrogen ion activity; indication of acidity; effects efficiency of all chemical reactions in water treatment

Alkalinity – buffering capacity of water; the capacity of water to neutralize itself. Alkalinity stabilizes water at pH levels around 7.

Hardness - The hardness is determined by the number of calcium and magnesium atoms present

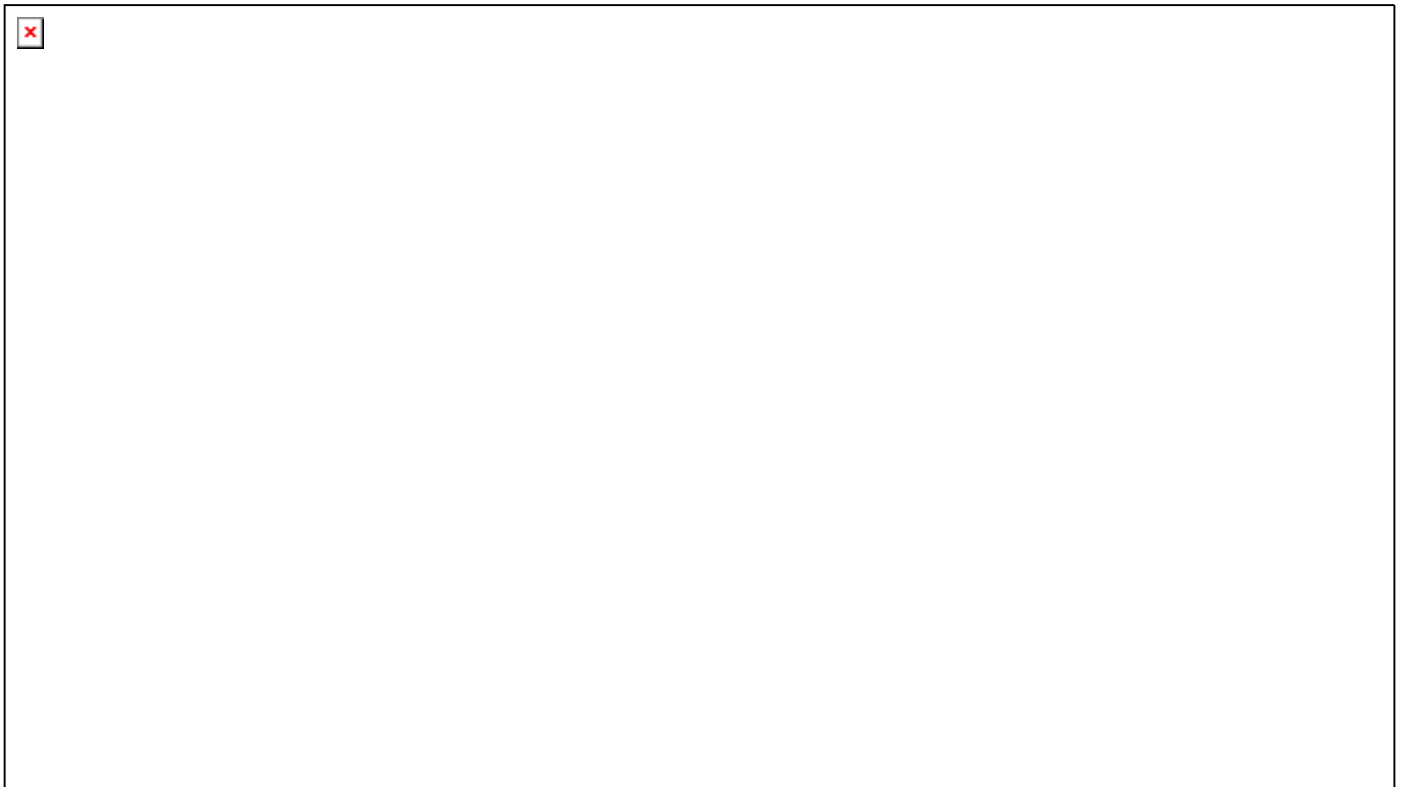
Turbidity - measure of non-transparency of water due to the presence of suspended matter



Chart 2: 2010 Raw Water Characteristics



Chart 3: 2010 Raw Water Use Monthly Comparison



5.6 Treated Water Quality:

The 2010 performance measures for Water Quality indicate ongoing high quality drinking water. A 100 per cent rating for microbiological quality indicates that the treatment process effectively removed pathogens at all times. Similarly, a 100 per cent rating for chemical water quality indicates that all water quality tests were within the provincial and federal standards for safe drinking water.

Table 5: Summary of Bacteriological Sampling 2010

Summary of Monthly Bacteriological Sampling For 2010

	# of Samples	Average Cl₂	Min Cl₂	Max Cl₂
January	24	0.82	0.43	1.20
February	24	0.79	0.58	1.11
March	30	0.77	0.2	1.21
April	26	0.64	0.2	1.28
May	24	0.69	0.21	1.07
June	34	0.53	0.24	1.15
July	27	0.46	0.17	1.21
August	35	0.52	0.12	1.1
September	21	0.63	0.19	1.01
October	28	0.66	0.19	1.31
November	30	0.69	0.33	1.08
December	24	0.76	0.43	1.18



Table 6: Treated Water Produced Pembroke Water Purification Plant 2010

Treated Water for 2010

Month	Total (m ³)	Average (m ³ /day)	Max (m ³ /day)	Rated Capacity (m ³ /day)	% of Capacity	Max Instantaneous Peak Flow (L/s)	Rated Flows (L/s)	Exceedence	Min. Monthly Cl ₂ Residual	Max. Monthly Cl ₂ Residual
January	242,475	7821.8	9451	32352	29.21	385.0	421	no	1.05	1.36
February	217,014	7750.5	9153	32352	28.29	317.5	421	no	1.11	1.30
March	233,806	7542.1	8792	32352	27.18	303.8	421	no	1.10	1.30
April	231,627	7720.9	8959	32352	27.69	314.7	421	no	0.98	1.45
May	255,876	8254.1	9797	32352	30.28	308.9	421	no	1.10	1.51
June	280,019	9334.0	14106	32352	43.60	318.4	421	no	0.60	1.36
July	258,057	8324.4	13764.0	32352	42.54	310.0	421	no	0.91	1.30
August	285,158	9198.6	12049	32352	37.24	307.4	421	no	1.08	1.57
September	265,162	8838.7	10754	32352	33.24	308.5	421	no	0.85	1.38
October	235,333	7844.4	9048	32352	27.97	315.1	421	no	1.05	1.34
November	218,805	7293.5	9405	32352	29.07	307.0	421	no	0.85	1.57
December	223,004	7433.5	8797	32352	27.19	307.0	421	no	1.02	1.27
Total	2,946,336									
Min									0.60	
Max			14106		43.60	385				1.57
Average		8113.0								

Average Daily Flow = 8072.15 m³/day



5.7 Summary of Consumer Feedback

Element #12 “Communications” requires the development of a procedure for communications with various levels of the organization and its’ stakeholders. This section of management review will provide a summary of communication received from our customers regarding water quality.

The number of water quality investigations for 2010 was 11 and has remained fairly consistent over the last three years (2009-14 investigations), (2008-14-investigations).

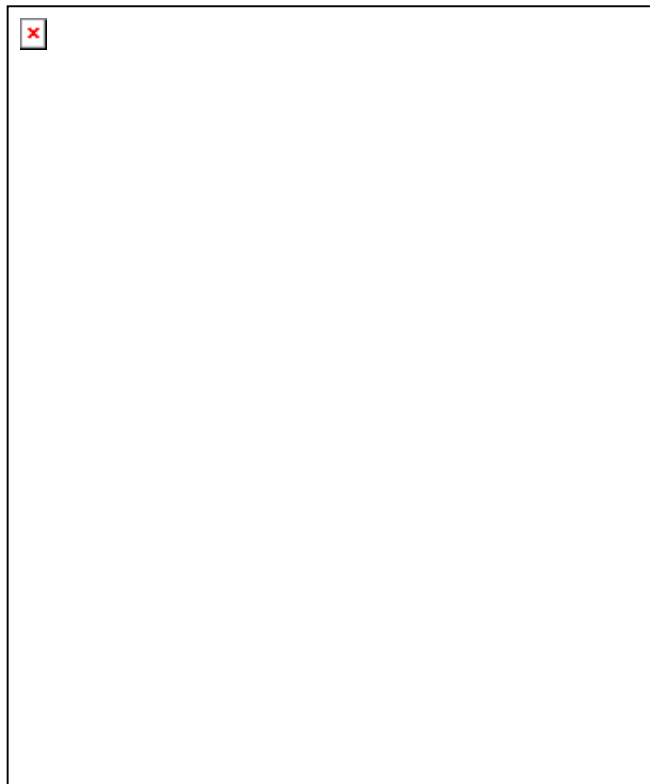
The average time taken to resolve customer complaints has been relatively steady for general water quality investigations. This represents the time between the initial telephone call received and the final reporting of results to the customer. The Operations Department receives water quality questions, interview customers and initiates “service requests”. If a customer service visit is required, results are communicated to the customer after the investigation has been completed.

6.0 Management System Performance

6.1 The Risk Assessment Process

Element 7 of the DWQMS requires a risk assessment process be documented that identifies potential hazardous events and associated hazards then assesses and ranks risks related to each hazardous event. Furthermore, control measures must be identified and critical control measures must be identified and critical control points must be realized. The currency of information and assumptions used in the risk assessment process must be verified annually and a re-assessment of the risks in the drinking-water system must occur every 36 months.

Chart 5: Risk Assessment Process Risk Assessment Process – Overview



The risk assessment matrix contains all drinking-water components and their associated risks. The matrix is maintained by the Compliance Supervisor.

The risk assessment outcomes from 2009 were critically reviewed during the 2010 risk assessment review in order to make the CCPs/CCLs more effective as an operational tool and capture additional risks deemed important for safe drinking water. No changes to CCPs were identified for Water Production and one additional CCPs for Water Distribution. Item #44 (Distribution) Watermain – Commissioning of New Watermains – Contractors.

6.2 Results of Audits (Internal and External)

The DWQMS requires each Operating Authority to implement a procedure that ensures internal audits are conducted at least once every 12 months to evaluate conformance to the Standard. The City of Pembroke's Operational Plan specifies that the Drinking Water System is audited internally once every 12 months. An external audit is conducted by an Accreditation body in response to an Operating Authority's application for accreditation.

A procedure has been developed that outlines aspects of the internal audit process (i.e. scheduling, audit preparation, conducting the audit and reporting results).

All Internal and Third-Party audit results will be communicated during Management Review.

Internal Audit: The first internal audit was conducted in October of 2010. The internal audit report noted progress in implementing the DWQMS. Major non-conformances in 2010 related to: the vacant position of Superintendent and how the associated duties of this position were being fulfilled, By-law enforcement, and Roles & Responsibilities of the Operating Staff, including general awareness of the DWQMS. The initial Internal Audit Report was completed in the fourth quarter of 2010 and the items identified are currently being reviewed by Upper Management. These non-conformances require a sustained, long-term effort in order to fully implement. Minor non-conformances were mainly administrative in nature and should be resolved by the first quarter of 2011.

External Audit: The City of Pembroke received 'Limited Scope – Entire DWQMS' accreditation on October 6, 2010 based on a desk-top audit of the DWQMS Operational Plan by the Canadian General Standards Board. DWQMS implementation continued during the remainder of 2010 and we are required to submit our application for 'Full Scope – Entire DWQMS' accreditation within one calendar year. (October 2011). The final phase of accreditation will involve a desktop review of the updated Operational Plan and an on-site audit of the Operating Authority by the CGSB.

6.3 Results of Relevant Emergency Response Testing

Element 18 of the DWQMS is Emergency Management. An emergency is considered a potential situation that may result in the loss of the ability to maintain a service to customers. The DWQMS requires the Operating Authority to maintain a state of emergency preparedness. There are approximately 19 procedures that have been developed to effectively handle emergency situations in our drinking water system.

Several methods have been identified to train staff and test emergency procedures including:

- mock emergency testing of procedures related to a specific event, that audits a specific procedure.
- requirement for Operational Staff to review all emergency procedures annually and “sign off”.

6.3.1 Emergency Test – Hydro Failures – Elevated Tower

On November 18, 2010 an emergency exercise was conducted involving Water Treatment Plant Operational Staff and Management. The exercise tested the Water Treatment Plant’s response to Hydro Failures – Elevated Tower (OPS-UTL-DWS-GEN-SOP-014-012). The exercise was successful as it demonstrated overall staff competency and ability to respond to an incident and it also demonstrated staff knowledge of the Emergency Response Plan. Staff demonstrated clear knowledge of the procedures contained in the Emergency Response Plan. As a result of the exercise the corresponding Response Plan was reviewed and procedural improvements were made.

Appendix A – Copy of Emergency Exercise Review Minutes.

6.4 Follow up items from Previous Management Review

Action items from management review meetings are initiated to address deficiencies in the Quality Management System. At each management review the status of action items from previous management reviews will be reported.

2011 is the City of Pembroke Initial Management Review. Some items must be addressed over the long term, but it is expected that all of the remaining items will be completed by the time of the next management review in the fourth quarter of 2011. Action items will be prioritized and tracked to completion.

6.5 Status of Management Action Items identified between Reviews

2011 is the City of Pembroke Initial Management Review.

6.6 Changes that could affect the QMS

Changes that could affect the QMS' allows for discussion of changes that have occurred within the organization or management system that cover the review period.

The City's Operations Department has undertaken a Strategic Alignment Initiative. This restructuring will affect the QMS documentation as name changes will need to be reflected, as well as organizational changes involving responsibility centres currently referenced in the DWQMS Operational Plan. Other specific elements within the QMS will be reviewed to ensure that any changes are correctly reflected. Changes outside the Department are not anticipated; however, staff will ensure that these changes are reflected in the QMS accordingly as they become evident.

6.7 Resources Needed to Maintain the QMS

Resources are broadly defined as those things needed to implement and maintain the management system – they include human, physical work environment and financial resources. As part of the maintenance and continual improvement of the DWQMS, resources required to run the system will be discussed at management review.

These resources support the implementation of the continual improvement process under the DWQMS and involve the dedication of staff to support the Drinking Water System.

Additional resource needs relate to implementation of operational improvements. In order to address the needs and priorities within the Drinking Water System the importance of Supervisors dedicating time and resources for development of required procedures and documents was reviewed and timelines were established and implemented on a carry forward basis.

6.8 Results of the Infrastructure Review

The annual review of the provision of drinking water infrastructure has two objectives: (i) to identify new drinking water infrastructure needs related to growth and system optimization and (ii) to identify upgrades or renewals of existing infrastructure to optimize operations and maintenance.

In February 2011, a Multi Year Capital Construction Plan (MYCCP) was approved in principle by Council. This MYCCP identified the intentions of the City for infrastructure renewal for the next several years. This is the first time that the City has undertaken this exercise and the MYCCP will evolve over time.

The Operations Department is also developing a "Financial Plan" (under Ont. Regulation 453) as it relates to the water system. This "Financial Plan" is required to be completed no later than 6 months after the date of the issuance of the updated Drinking Waterworks Permit and Drinking Water License (anticipated in April 2011).

Over the last several years, data has been collected relating to such items as watermain repairs, inoperable valves, etc.. The challenge remains to integrate this data into the MYCCP and either advance or defer major capital expenditures to address inferred infrastructure deficiencies.

It is the intention that the Operations Department will begin populating an infrastructure management database (Municipal Data Works – MDW) in 2011. This database will also be used to update the MYCCP and confirm priorities.



The Operations Department is aware of capital needs for water related infrastructure renewal. These capital needs must be balanced with the rate payers “ability to pay” and integrated with other priority infrastructure renewal initiatives (Roads for example).

6.9 Operational Plan Currency, Content and Updates

The DWQMS requires Operating Authorities to document QMS for our drinking water system in the form of an Operational Plan. The Operational Plan is required by the Director’s Direction; therefore it must be submitted to the MOE for acceptance. The Operational Plan is the document that describes how the City of Pembroke plans to meet the requirements of the DWQMS. It is then the responsibility of the Operating Authority to implement the plan.

The DWQMS Operational Plan has not gone through any significant revisions during the 2010 calendar year. Revisions and updates made to System Level Procedures & Supporting Documentation have been completed as per schedule or as required in a timely manner and updated controlled hard copies were distributed.

7.0 Summary of Staff Suggestions

Any staff suggestions regarding DWQMS are presented initially to Supervisors; once validated a *Change Request Form* OPS-UTL-DWS-GEN-FRM-002-003 is then filled out to accommodate the necessary change. Although progress is being made in other continual improvement areas, due to resource limitations and time commitments it has not yet been possible to fully address staff suggestions made to date. Others relate to operations and standard operating procedures. These are valid suggestions, but will take time to implement. These suggestions will be addressed through the DWQMS continual improvement process.

8.0 Next Management Review Meeting

Scheduled for the fourth quarter of 2011.

Appendix A

<i>Test of Emergency Response Plan – Debriefing Notes</i>	
Date of Training:	<i>November 18, 2010; 2 hours OJT</i>
Training of Document(s) #:	<i>OPS-UTL-DWS-GEN-SOP-014-012 - 9.3 Hydro Failures - Elevated Tower rev0</i>
Participants:	<i>Douglas Sitland, Manager of Operations; Douglas Burton, Compliance Supervisor; Blaine McEwen, Supervisor of Utilities; Brent Schimmens, Chief Operator; Kerry Casselman, Electrical Maintenance, Tim Thom, Operator; Tim Ward, Operator; Brenda Lowe, Utilities Secretary</i>
Absent:	<i>Michel Dubois, Operator</i>

In accordance with the DWQMS, the City of Pembroke is required to test the performance of the Emergency Response Plan as it specifically relates to the Utilities Section and as documented in the DWQMS.

For the purposes of this exercise, a test of the procedure for power failure at the Water Tower will be undertaken. The test of the procedure will involve actual response at the water tower (power will be disabled) and the response for this eventuality documented.

SCENARIO

At 0900 on Thursday, November 18, 2010, Kerry Casselman (Electrician) physically disabled power at the water plant. At this time, the Manager of Operations called the Water Treatment Plant and relayed the following scenario:

- It is actually 4 pm and the operator that answers the phone is assumed to be the operator on call that would normally receive a stand by call.
- Power in the east end of Pembroke has been lost due to a significant failure in the ORPC distribution network
- Preliminary estimates are that power in the east end may be out for 12 hours and possibly longer.
- As power will have been disabled at the water tower, the SCADA System at the Water Treatment Plant will report that there has been a loss of communication with the tower.

EXPECTED RESPONSE

The procedure for response under these circumstances is very detailed, including step by step instructions for hook up of a generator and the communications protocol. The exact sequence of events and communications protocol will be evaluated.

For the purposes of the exercise, only Operations Department staff will participate. There shall be no involvement of other City staff, but actions that would have involved them shall be documented.

All involved shall record what actions they take and note the time thereof. Those records shall form part of the evaluation of the response.

To physically mobilize the generator and perform the switching, it is expected that two operators can accomplish this task in approximately 30 minutes. As the operator will be taking notes and will be scrutinized, the actual response may be slightly more.

DEBRIEFING

In summary a mock scenario of loss of power at the water tower was implemented with the intent to test procedure: *OPS-UTL-DWS-GEN-SOP-014-012 - 9.3 Hydro Failures - Elevated Tower rev0*.

GENERAL OBSERVATIONS

- UPS had kicked in and would supply power for a maximum of 3 hours so when it was confirmed that the power outage at the tower would be for over 12 hours, the manuals were referenced.
- The written procedure for a power outage at tower was followed until arrival of the operators at the tower; at that point discrepancies were noticed that the actual breaker numbers did not correspond with the procedure.
- The procedure does not reflect weather dependent issues:
 - concerns with running a heater and chlorine pump consecutively on the generator
 - winter access
- The procedure was observed to be a 2-man procedure.
- There are no temperature or flood alarms; although the capability is there.
- The small portable heater (and required cords) from the WPP could be stored at the tower for emergency situations. Although this unit is used during WPP tests to load the generator.

- The back-up generator for SCADA is also the generator used for Tower Loss of Power if the generator does not work.
- Concerns with arc flash if an operator not authorized for electrical maintenance should throw the main disconnect. As per Electrical Maintenance Operator, there is no problem with this as long as the cover is not off.
- Concerns that there are not Notification Procedures within this procedure; i.e. Fire Dept in case of reduced fire flow. It was stated that these notification procedure are embedded in other procedures that are specific to those emergencies.
- Concerns with the new communication centre going at the tower and how it will affect the load on the generator during loss of power. As per Manager of Operations; any alternate power sources for the new communication centre will be supplied by the owners of the communication centre.

IMPROVEMENTS

- Tower pressure procedure has conflicting units of PSI vs kPa – units should be consistent and procedure needs to be updated
- Item 2: sequence to turn “main switch” back on is not included in procedure
- Need to verify and update Hydro Contact numbers (located in corporate ERP)
- Capital Projects; invest in a power unit (generator – 10kW) to run the tower and have it remain at the tower for emergencies

OUTCOMES

- During the debriefing it was observed that 2 different sets of instructions/procedures were used. When inquired why? It was stated that required PPE was missing on the new procedure. Ensure that all relevant PPE is listed on each procedure and delete any old procedures/manuals.
- The main confusion was the panel directory and breaker labels not being correct; Panel A and Panel B (chemical building) need to be re-identified and the procedure updated to accurately reflect the changes.
- Because of the new SCADA upgrade it is required to modify this procedure as well as any other emergency procedures that include SCADA information and referencing.



SUMMARY

The scenario was well organized, there was no panic and the operators communicated and worked well together.

The written procedure does not reflect reality; although operators were able to handle the situation even though their process did not correspond to the actual procedure. The existence of multiple manuals will be rectified with the ensurance that all relevant procedures are in existence, are correct and any obsolete/duplicate procedures will be destroyed.

Identification of short comings were noted and the Supervisor of Utilities is to assign the revision of the procedure *OPS-UTL-DWS-GEN-SOP-014-012 - 9.3 Hydro Failures - Elevated Tower rev0*, as well as any other procedures that deal with power outages. These are to be completed prior to the DWQMS Meeting on 29 November 2010.

The Operations department will continue with “hands-on” emergency response training for water operations and this training will expand to include the distribution operators. As requested, the need for a write-up for operators not directly involved in the procedure will be produced.

As per Doug Sitland, Manager of Operations a copy of this report will be forwarded to Colleen Sauriol.