

Drinking Water Quality Management System

Operational Plan



Township of Smith-Ennismore-Lakefield

**Village of Lakefield
&
Woodland Acres**

December 2011, Revision 2

TABLE OF REVISIONS

Rev Level	Date	Section	Change	Approved by
1	February 2010	3	Remove G. Stevenson's name	D. W. Stiver
		6.1.5	Remove temperature, chlorine dosage and chlorine residual and add chemical tank level and standpipe level	
		10.0	Remove Assistant Superintendent position	
		13.0	Remove caustic soda from essential supplier list	
		Appendix 1	Replace Assistant Superintendent with Supervisor	
2	December 2011	6.1.1	Add rated to filter and low lift capacity statement	
		13.1	Formatting change	

TABLE OF CONTENTS

1.0	QUALITY MANAGEMENT SYSTEM.....	1
2.0	QUALITY MANAGEMENT SYSTEM POLICY	1
3.0	COMMITMENT AND ENDORSEMENT OF OPERATIONAL PLAN.....	2
4.0	QUALITY MANAGEMENT SYSTEM REPRESENTATIVE.....	3
5.0	DOCUMENT AND RECORD CONTROL	3
6.0	DRINKING-WATER SYSTEM	4
	SCHEMATIC A LAKEFIELD WATER TREATMENT PLANT	6
	SCHEMATIC B WOODLAND ACRES	12
7.0	RISK ASSESSMENT PROCEDURE.....	13
8.0	RISK ASSESSMENT OUTCOMES PROCEDURE	13
9.0	ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES AND AUTHORITIES	14
10.0	COMPETENCIES.....	17
11.0	PERSONNEL COVERAGE	18
12.0	COMMUNICATION	19
13.0	ESSENTIAL SUPPLIES AND SERVICES.....	19
14.0	REVIEW AND PROVISION OF INFRASTRUCTURE	20
15.0	INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL.....	21
16.0	SAMPLING, TESTING AND MONITORING.....	21
17.0	MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION MAINTENANCE	22
18.0	EMERGENCY MANAGEMENT	22
19.0	INTERNAL AUDIT	23
20.0	MANAGEMENT REVIEW.....	24
21.0	CONTINUAL IMPROVEMENT	24
22.0	DEFINITIONS.....	26
	APPENDIX 1	27
	APPENDIX 2	32
	APPENDIX 3.....	33

1.0 Quality Management System

Purpose

The purpose of this Operational Plan is to describe in detail the Quality Management System developed and implemented by Peterborough Utilities Services Inc. (PUSI) for the operation of the drinking water systems owned by the Corporation of the Township of Smith-Ennismore-Lakefield. The policy and procedures outlined in this Operational Plan are in accordance with the requirements of the Drinking Water Quality Management Standard (DWQMS).

Scope

The Operational Plan covers all activities and employees associated with the operation and production of safe drinking water under contract for the Township of Smith-Ennismore-Lakefield. The system is limited to the Village of Lakefield water treatment and distribution system as well the subdivision of Woodland Acres located on the geographical border of the City of Peterborough and the Township. The Operational Plan also covers the associated storage, pumping and the distribution systems. The Operational Plan has been developed to meet the requirements of the DWQMS standard and as a requirement under the Ontario Water Licensing Program directed by The Safe Drinking Water Act. For the purpose of the DWQMS Peterborough Utilities Services Inc. is the Operating Authority and the Corporation of the Township of Smith-Ennismore-Lakefield is the Owner of the municipal drinking water systems.

Related Documents

Drinking Water Quality Management Standard – Element 1
The Safe Drinking Water Act - 2002

2.0 Quality Management System Policy

Peterborough Utilities Service Inc. is committed to managing the drinking water system on behalf of the Corporation of the Township of Smith-Ennismore-Lakefield for the Village of Lakefield and the Woodland Acres subdivision by effectively establishing, maintaining and continually improving its Drinking Water Quality Management System to help ensure its customers clean, safe drinking water at all times. Consumer confidence in the drinking water quality shall be achieved through a proactive approach to meet or exceed applicable drinking water legislation, regulations and standards. Drinking water quality is ensured by a comprehensive risk-based process control system that is staffed by competent employees who are dedicated to providing reliable, safe drinking water to the Village of Lakefield and Woodland Acres.

3.0 Commitment and Endorsement of Operational Plan

In accordance with section 3.0 of the Drinking Water Quality Management Standard, the Corporation of the Township of Smith-Ennismore-Lakefield, as the Owner of the drinking water system and Top Management of Peterborough Utilities Services Inc., support the implementation and maintenance of a Drinking Water Quality Management System (DWQMS), as documented in this Operational Plan. This commitment by the Owner and Top Management extends beyond agreement in principle to active participation in the development and/or review of policies that promote continual improvement. Endorsement by the Owner and Top Management acknowledges the need for and supports the provision of sufficient resources to maintain the DWQMS.

OWNER

Signature on Original

The Corporation of the Township of
Smith-Ennismore-Lakefield
Chief Administrative Officer
Janice Lavalley (Owner)

Date

TOP MANAGEMENT

Signature on Original

Peterborough Utilities Services Inc.
Vice President Water Utility Services
D. Wayne Stiver

Signature on Original

Peterborough Utilities Services Inc.
Superintendent Water Distribution
Hans Kamping

Signature on Original

Peterborough Utilities Services Inc.
Superintendent Water Treatment Plant
Kevan Light

4.0 Quality Management System Representative

The Vice President Water Utility Services, Peterborough Utilities Services Inc. was appointed to the role of the Quality Management System Representative. As the QMS Representative, the Vice President Water Utility Services has both the responsibility and authority to:

- Ensure that the processes required by the DWQMS are established, implemented and maintained;
- Ensure that the most current version of documents required by the DWQMS are in use at all times;
- Ensure that all personnel are aware of applicable current regulatory requirements within the operation of the drinking water system;
- Ensure the promotion of awareness and the effectiveness of the DWQMS throughout the operating authority;
- Report to Top Management on the performance of the QMS and any need for improvement;
- The Water Utility Quality Assurance Coordinator is designated as an alternate QMS Representative.

5.0 Document and Record Control

Purpose

The purpose of this procedure is to describe the method used for the control of document and records for the Lakefield Municipal Water System, including the Woodland Acres subdivision. Proper maintenance of documents and records is critical for conformance with the DWQMS and for compliance with drinking water legislation.

Scope

This procedure is applicable to the data and documentation described within this Operational Plan as being used or generated during the water treatment and distribution process.

Related Documents

Drinking Water Quality Management Standard - Element 5
SOP-02–104 Document and Record Control
Master List Form Distribution (form # 03064)

General

Effective control of the issue and changes to data and documentation is essential to DWQMS. Therefore the Water Utility Quality Assurance Coordinator will implement and maintain a system that exercises these controls throughout water treatment and distribution process.

Current issues of documents will be made available at all locations where operations affecting the drinking water system are performed.

Procedure

The Document and Records Control Procedure is outline in detail in the SOP-02-104.

6.0 Drinking-Water System

Purpose

The purpose of this procedure is to describe the drinking water systems owned by the Corporation of the Township of Smith-Ennismore-Lakefield and operated by Peterborough Utilities Services Inc. This outline documents a description of the drinking water system as prescribed by the DWQMS.

Scope

The Village of Lakefield and Woodland Acres Subdivision drinking water systems are fully owned by the Corporation of the Township of Smith-Ennismore-Lakefield who has designated full command and control of the drinking water systems by contract to the Peterborough Utilities Service Inc. (Operating Authority), including the treatment plant, storage and pumping facilities, trunk and distribution water mains and individual water services up to the private property line. Water meters within the buildings, used as consumption measurement devices for billing purposes, are also owned by the Corporation.

Responsibilities and Authorities

It is the responsibility of the QMS Representative to ensure that this procedure is kept up to date. Any changes to the drinking water system must be changed in accordance with the document control procedures shown in paragraph 5 of this Operational Plan.

Related Documents

Drinking Water Quality Management Standard – Element 6
Operational Plan paragraph 5 Document and Records Control

Procedure

6.1 *Village of Lakefield*

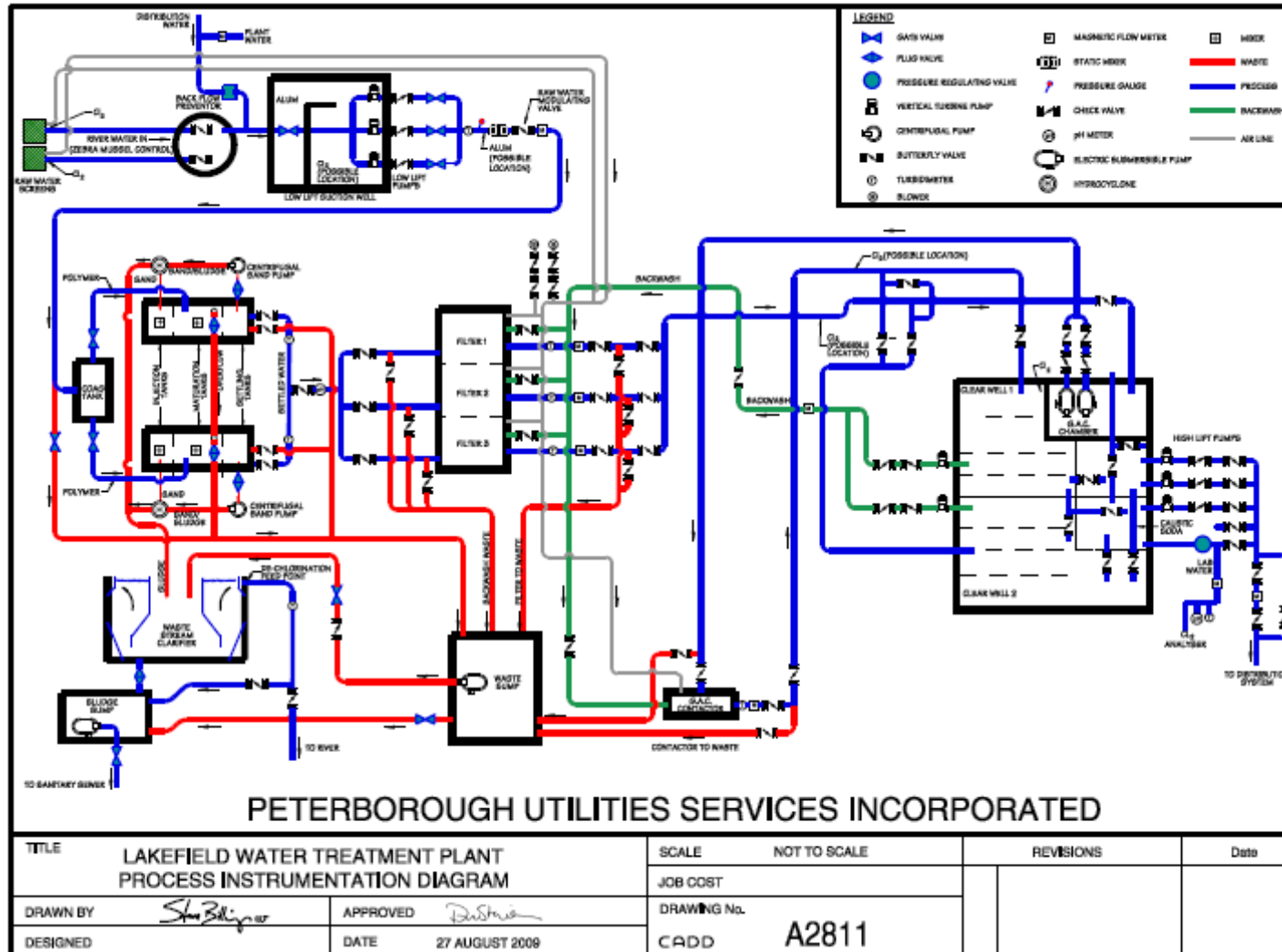
6.1.1 **Water Treatment Plant**

The Lakefield plant is located at 13 Water Street North and consists of an intake from the Otonabee River, a low lift pumping system located within the water treatment plant, a treatment plant employing the process of chemical coagulation, ballasted flocculation/sedimentation (Actiflo[®]), dual media filtration and disinfection. The filters and low lifts have a rated capacity of 3,700 m³/d. The Actiflo[®] units have a capacity of 4,500 m³/d. The plant has a two-celled baffled clearwell with a total capacity of 1,000 m³ and a high lift pumping facility discharging to the distribution system. ([See Schematic A](#)). The plant also utilizes a granular activated carbon (GAC) contactor for taste & odour control during warm summer months.

Aluminum sulphate is used as the primary coagulant. Chlorine (as sodium hypochlorite) is used for primary and secondary disinfection. Other chemicals used in the treatment of potable water are caustic soda and polymer (coagulant aid).

The current rated capacity of the plant is 3,594 m³/d. The Permit to Take Water currently authorizes water taking at 2,500 L/m (3,594 m³/d).

Schematic A Lakefield Water Treatment Plant



6.1.2 Water Storage Tanks and Reservoirs

Treated water is stored at the elevated storage tank located by 121 Strickland Street, east of Rolliston Street. Storage is used to supplement supply during times of high water demand and in emergency situations such as firefighting. The water storage capacity in the tank is 900 m³ (effective).

6.1.3 Water Pumping Stations

There are two individual pressure zones in Lakefield. Water supply is pumped directly from the high lift pumping facility at the plant to serve most of Lakefield. There is one water booster pumping station at Strickland Street and Rolliston Street which pumps water from the lower pressure zone to the higher pressure zone.

6.1.4 Water Distribution Piping System - Lakefield

The water distribution system consists of approximately 22,000 metres of underground pipes (water mains), 110 hydrants and 1,100 individual water services.

6.1.5 Monitoring - Lakefield

The following parameters are monitored on a continuous basis at the WTP:

- ◆ Flow
- ◆ pH
- ◆ Raw water flow
- ◆ Turbidity
- ◆ Pressure
- ◆ Tank water level
- ◆ Chemical tank level
- ◆ Stand pipe level

6.1.6 Raw Water Supply

The watershed area supplying the Otonabee River upstream of the Lakefield Water Treatment Plant is illustrated in [Appendix 2](#).

The watershed covers a portion of the Haliburton Highlands and extends as far north as Algonquin Park. This diverse watershed traverses the Oak Ridges Moraine, Peterborough Drumlin Field, Canadian Shield and the Kawartha and Haliburton Lakes.

The Otonabee River originates in Lakefield at the outlet of Lake Katchewanooka and flows south to Rice Lake. The river flows through the municipalities of Smith-Ennismore-Lakefield, the Village of Lakefield, Cavan-Millbrook-North Monaghan, and Otonabee-South Monaghan.

The Otonabee River is 45 kilometers in length and has 25 tributaries including Jackson Creek, Meade Creek, Bears Creek, and Squirrel Creek. The Otonabee River drains an area of approximately 945 square kilometers.

The source of raw (untreated) water for Lakefield's drinking water is the Otonabee River at the discharge of Lake Katchewanooka. The Otonabee River water is of good quality and can be described as a moderately coloured water of low turbidity. The river water temperature ranges from 0°C (winter) to approximately 29°C (summer). The raw river water is a surface water supply, which means that it is considered to be an unprotected source. Accordingly, we assume that raw water always requires full treatment at the Lakefield Water Treatment Plant to make it drinkable or potable.

Staff at the plant as well as the Otonabee Region Conservations Authority (ORCA) and the Peterborough County-City Health Unit (beaches only) monitors the river water quality. The watershed is protected by planning and approvals processes through the Township of Smith-Ennismore-Lakefield and ORCA. Since 1988, ORCA has monitored water quality in the Otonabee watershed under the Watershed 2000 program and the Provincial Water Quality Monitoring Network.

6.1.7 General Characteristics of Raw Water

The source of raw water is the Otonabee River. A brief description of the water characteristics as outlined below in the table as described in the First Engineers' Report for the Township of Smith-Ennismore-Lakefield, dated January 2001:

Parameter	Units	Common Low Value	Common High Value
Turbidity	NTU	0.42	2.74
Colour	TCU	<5	23
pH		7.7	8.5
Alkalinity	mg/L	66	93

6.1.8 Connections to Other Drinking Water Systems

The existing distribution system does extend to supply Lakefield College School, which is in the adjacent Township of Douro-Dummer. The water main is owned and operated by TSEL as an extension to the Lakefield System.

6.1.9 Historical, Seasonal or Common Event-Driven Fluctuations

Type of Fluctuation	Description	Operational Challenges/ Threats
Historical Variation	Introduction of zebra mussels into source water have decreased the level of turbidity. The penetration of sunlight further into the water column allows deep-water algae to proliferate.	Algae and zebra mussel decay can cause geosmin and 2MIB formation. These are known to cause taste and odour complaints.
Seasonal Variation	With warmer source water there is an increase in taste and odour complaints.	The Granular Activated Carbon (GAC) filter can be activated during the summer months to reduce taste and odour complaints.
Seasonal Fluctuation	During the summer months there can be an increase in demand for water.	Summer lawn water restrictions are in place to promote conservation. The situation is monitored seasonally to ensure that water supply requirements are met.
Event Driven Fluctuation	Frazil ice can occur on very cold and clear winter nights before the river freezes over.	The ice can clog the intake pipes during the night. To prevent the clogging of the intake pipes it may be necessary to perform the blow back process according to the O & M Manual.
Event Driven Fluctuation	Upstream spill.	A short term water treatment plant shut down can occur provided that the WTP is notified by outside sources in a timely manner and that the contamination is not drawn into the treatment system.

Type of Fluctuation	Description	Operational Challenges/ Threats
Event Driven Fluctuation	Flooding, heavy rainfall will all cause large increases in turbidity.	The treatment of the drinking water would need to be altered to adjust for the increased turbidity. Increases in coagulant and chlorine levels as well as reducing the treatment speed to allow for greater reaction time will reduce the turbidity to normal plant effluent levels.

6.1.10 Operational Challenges and Threats

From a water quality health perspective (not considering aesthetics), the key threats expected and contingencies for the Otonabee River are:

- E.coli
 - Proper operation of the treatment multi-barriers are expected to eliminate threat.
- Cryptosporidium
 - Proper operation of the treatment sedimentation and chemically assisted filtration barriers are expected to eliminate threat.
- Disinfection By-Products
 - Optimization of processes to minimize organic content of water prior to disinfection using free chlorine.

6.2 Woodland Acres Distribution System

6.2.1 Drinking Water Supply

The Peterborough Water Treatment Plant supplies potable water to the Township of Smith-Ennismore-Lakefield's (TSEL) subdivision of Woodland Acres. The subdivision is located off Water Street North on Woodland Drive and is connected directly to the Peterborough water distribution system. PUSI is responsible for all aspects of the supply of potable drinking water including distribution, maintenance, system pressure, treatment, monitoring and testing for regulations. The Township of Smith-Ennismore-Lakefield is the 'Owner' of this system as defined by the DWQMS and is responsible for capital infrastructure rehabilitation or replacement. The distribution system supplies water to approximately 221 homes.

6.2.2 **Water Pumping Stations**

There is a water booster pumping station at Woodland Drive and Woodward Avenue.

6.2.3 **Water Distribution Piping System**

The water distribution system consists of approximately 3,775 metres of pipe (water mains), 20 hydrants and 263 individual water services. See Schematic B.

6.2.4 **Monitoring**

The following parameters are monitored daily for the Woodland Acres subdivision:

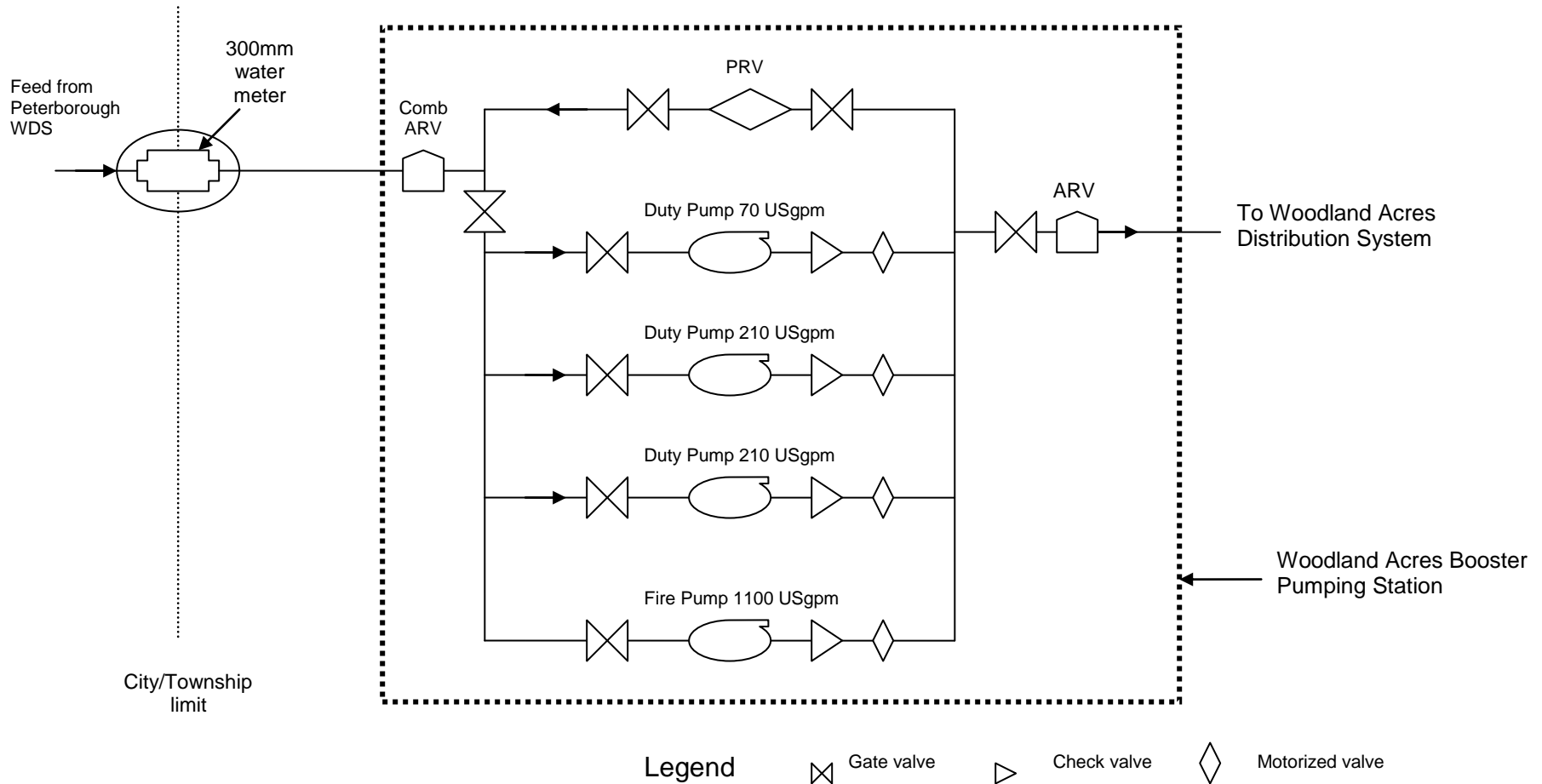
- ◆ Flow
- ◆ Pressure

6.2.5 **Operational Challenges and Threats**

Maintaining water quality and minimum chlorine residual are the most significant challenges in the Woodland Acres distribution system.

The single source of water supply is the most significant threat to the Woodland Acres distribution system. Peterborough Utilities Services Inc. has been named as a critical supplier under Element 13 of the DWQMS.

Schematic B Woodland Acres Distribution System Township of Smith-Ennismore-Lakefield



7.0 Risk Assessment Procedure

Purpose

The purpose of the risk assessment procedure is to describe the method used to analyze risks associated with the drinking water system. This includes a process-based system for risk identification and risk assessment, Critical Control Point (CCP) and CCP threshold limits.

Scope

This procedure is applicable to the risk identification, risk assessment and CCP's in the drinking water systems including treatment, storage, pumping and distribution.

Related Document

Drinking Water Quality Management Standard - Element 7
SOP-02-106 Risk Assessment

Procedure

The Risk Assessment Procedure is outlined in detail in SOP-02-106.

8.0 Risk Assessment Outcomes Procedure

Purpose

The purpose of this procedure is to detail the outcomes from the risk analysis procedure in Paragraph 8 of this Operational Plan. The results include a list of ranked hazards with appropriate control measures, CCP's, control limits for CCP's, monitoring methods and method used for recoding and reporting deviation from CCP limits.

Scope

This procedure is applicable to the risks identified by the risk analysis process as outlined in paragraph 7 of this Operational Plan, which covers the drinking water system including treatment, storage, pumping and distribution.

Related Documents

Drinking Water Quality Management Standard - Element 8
SOP-02-106 Risk Assessment

Procedure

Once a drinking water risk has been defined in paragraph 7 as a Critical Control Point it shall be monitored and controlled according to the individual Standard Operating Procedure (SOP). The SOP's shall include a description of the associated hazards and risk of the CCP, establish a critical control limit, define procedures to monitor the CCP, document the procedure for a deviation and the associated reports required for a deviation.

The following drinking water risks have been identified as Critical Control Points for the Village of Lakefield:

- Loss of Coagulant or Coagulant Aid SOP-02-150
- Generator Failure SOP-02-151
- High Filter Turbidity SOP-02-152
- Primary / Secondary Disinfection Failure SOP-02-153

The following drinking water risks have been identified as Critical Control Points for the subdivision of Woodland Acres

- Peterborough Water Supply SOP-02-400

If a hazardous event is not considered a CCP then the method to control the hazardous event must be documented on the Risk Analysis Matrix.

9.0 Organizational Structure, Roles, Responsibilities and Authorities

Purpose

The purpose of this procedure is to outline the organizational structure of the drinking water systems. It is also to define the roles, responsibilities and authorities used to ensure the drinking water system is adequate.

Scope

This procedure is applicable to the outlined roles and responsibilities within the Operational Plan governed by the DWQMS. This covers the entire water treatment and distribution process as well as the inter-relation with Quality Assurance.

Responsibilities and Authorities

The Water Utility Quality Assurance Coordinator is responsible to ensure that the roles and responsibilities outlined in this procedure are reviewed annually to ensure accuracy. This is usually completed as part of the Internal Audit

Procedure in paragraph 19.0 but may be updated as result of organizational or staff changes.

Related Documents

Drinking Water Quality Management Standard - Element 9
Peterborough Utilities Services Inc. Organizational Chart
SOP-02-008 Operator-In-Charge and Overall Responsible Operator Designation

9.1 Organizational Chart for the Township of Smith-Ennismore-Lakefield

The most current version of the Corporation of the Township of Smith-Ennismore-Lakefield is in [Appendix 3](#)

9.2 Organizational Chart for the Operating Authority

The most current version of the organizational chart for PUSI can be found on the corporate intranet site.

9.3 Responsibility and Authorities - Owner

9.3.1 The Corporation of the Township of Smith-Ennismore-Lakefield

The Corporation of the Township of Smith-Ennismore-Lakefield has ownership and full command and control of the Lakefield and Woodland Acres municipal drinking water systems, including the treatment plant, storage and pumping facilities, trunk and distribution water mains and individual water services up to the private property line. Water meters within the buildings, used as consumption measurement devices for billing purposes, are also owned by the Township.

The Township shall establish service levels and expectations by means of:

- ◆ Having a contract with Peterborough Utilities Services Inc. to manage operate, and maintain the water system facilities;
- ◆ Approving an annual budget;
- ◆ Endorsing the Operational Plan
- ◆ Approving annual water rates;
- ◆ Approving 5 and 10-year capital budget predictions;
- ◆ Establishing bylaws and policies.

9.4 Responsibility and Authorities - Operating Authority

Peterborough Utilities Services Inc. (PUSI) is an Ontario Business Corporation registered private company. PUSI has a written contract with the Township to

operate, maintain and improve the municipal drinking water system under the Township's ownership. All operating and management staff directly responsible for the water systems are employed by PUSI.

9.5 Responsibility and Authorities - Top Management

Top Management is described by the DWQMS as a person, persons or group of people at the highest level within an operating authority that makes decisions respecting the QMS and recommendations to the Owner respecting the drinking water system.

It is the responsibility of Top Management to demonstrate a commitment to the implementation of the DWQMS by:

- Ensuring that the QMS is in place and meets the DWQMS.
- Ensuring that the Operating Authority (PUSI) is aware of applicable legislations and regulations.
- Communication according to paragraph 12.0.
- Participation in the Management Review as per paragraph 20.0.
- Determine, obtain or provide the resources needed to maintain and continually improve the QMS.
- Encourage participation in industry associations and committees (AWWA, AWWARF, OMWA, OWWA).
- To provide annual budget for training, attendance at conferences, workshops and seminars.

Top Management consists of the following persons in Peterborough Utilities Services Inc.:

- Vice President Water Utility
- Superintendent Water Distribution
- Superintendent Water Treatment Plant

9.6 Responsibility and Authorities - Operational Management and Staff

[Chart 1](#) in the Appendix gives a detailed description of the Key Responsibilities and Authorities of the Operational and Management Staff.

10.0 Competencies

Purpose

The purpose of this procedure is to describe the competencies of personnel whose job activities directly affect the quality of the drinking water.

Scope

This procedure applies to the personnel identified by this procedure as personnel whose job can directly affect the quality of the drinking water of the Village of Lakefield or the Woodland Acres Subdivision.

Related Documents

Drinking Water Quality Management Standard - Element 10
SOP-02-008 Operator-In-Charge and Overall Responsible Operator Designation
SOP-02-114 Satisfying Competencies

Procedure

The following personnel perform duties that directly affect the quality of the drinking water for the Village of Lakefield.

- Senior Water & Wastewater Operator
- Water & Wastewater Operator
- Water Treatment Superintendent and Supervisor
- Water Distribution Superintendent and Supervisor

The following personnel perform duties that directly affect the quality of the drinking water for Woodland Acres distribution system.

- Water Treatment Operator
- Water Distribution Operator
- Water Treatment Superintendent, and Supervisor
- Water Distribution Superintendent and Supervisor

10.1 *Satisfying competencies*

- 10.1.1 The detailed procedure describing competencies for employees whose job directly affects the drinking water is outlined in SOP-02-114.

11.0 Personnel Coverage

Purpose

The purpose of this procedure is to document the procedure used at PUSI to ensure that sufficient personnel meeting the outline competencies in Paragraph 10 are available to perform duties that directly affect the drinking water quality system.

Scope

This procedure applies to water treatment and distribution systems for the Village of Lakefield and for the Woodland Acres Subdivision.

Related Documents

Drinking Water Quality Management Standard - Element 11
Operational Plan paragraph 10, Competencies
SOP-02-008 Operator-In-Charge and Overall Responsible Operator Designation
SOP-02-116 Personnel Coverage
SOP-02-117 Business Continuity

General

PUSI employs licensed operators, all of whom are required to have and maintain licenses (distribution or treatment) according to the Certification of Drinking Water System Operators and Water Quality Analysts (O. Reg. 128/04).

Call out for additional staff to cover emergency or sick time is done as per the "Standby Schedule". The schedule is prepared weekly by payroll. Each department submits information based on their department's annual standby schedule. This information is collated into a single document for the after hours call out through the answering service.

Procedure

The detailed procedure to ensure that sufficient competent personnel are available for duties that directly affect drinking water is contained in SOP-02-116.

Collective Agreement

Employment for the WTP and distribution system is according to the terms and conditions of a collective agreement between Peterborough Utilities Services Inc.

and IBEW Local 636. During a strike/lock-out the business continuity is maintained according to SOP-02-117 Business Continuity – Water Utility.

12.0 Communication

Purpose

The purpose of this procedure is to identify the method for communicating the Quality Management System to all stakeholders.

Scope

The procedure applies to the communication of relevant aspects of the Operational Plan between Top Management and the Owner, Operating Authority Personnel, suppliers and the public.

Related Documents

Drinking Water Quality Management Standard – Element 12
SOP-02-102 DWQMS Communication

Procedure

The Communication Procedure is outline in detail in the SOP-02-102.

13.0 Essential Supplies and Services

Purpose

The purpose of this procedure is to identify essential suppliers and services that may affect quality of drinking water and to ensure availability of those supplies and services.

Scope

This procedure applies to the following essential supplies and services for the Village of Lakefield.

- Chlorine
- Aluminum Sulphate
- Polymer (coagulant aid)Laboratory Services
- SCADA Services
- Operating Authority

This procedure applies to the following essential supplies and services for the Woodland Acres Subdivision.

- Laboratory Services
- SCADA Services
- Operating Authority

Related Documents

Drinking Water Quality Management Standard – Element 13
SOP-02-300 Chemical Deliveries to the WTP Lakefield
SOP-02-154 Essential Supplies and Services

Critical Supplies and Services List

The procedure by which PUSI ensures the quality and availability of essential supplies and services are outlined in SOP-02-154.

14.0 Review and Provision of Infrastructure

Purpose

The purpose of this procedure is to outline the method used at PUSI to annually review the infrastructure of the drinking water system. This review shall determine if the infrastructure is adequate to operate and maintain the drinking water system.

Scope

This procedure applies to the infrastructure relating to the provision of drinking water.

Related Documents

Drinking Water Quality Management Standard - Element 14
Paragraph 20 Management Review
SOP-02-155 DWQMS Infrastructure - TSEL

Procedure

The infrastructure is reviewed annually during the Management Review process outlined in Paragraph 20 of the Operational Plan, additional details on the review and provision of infrastructure are provided in SOP-02-155.

15.0 Infrastructure Maintenance, Rehabilitation and Renewal

Purpose

The purpose of this procedure is to summarize the Capital Planning Approach that the Corporation of Smith-Ennismore-Lakefield (TSEL) uses along with PUSI in order to maintain the Village of Lakefield's and Woodland Acres' drinking water systems' infrastructure maintenance, rehabilitation and renewal programs.

Scope

This procedure applies to the infrastructure relating to the provision of drinking water.

Related Documents

Drinking Water Quality Management Standard - Element 15
SOP-02-118 DWQMS Infrastructure
SOP-02-155 TSEL DWQMS Infrastructure
5-10 Year Capital Forecast (Woodland Acres)

Procedure

A summary of TSEL infrastructure maintenance program of rehabilitation and renewal for the Village of Lakefield is described in SOP-02-155.

A summary of the PUSI infrastructure maintenance program of rehabilitation and renewal for the Woodland Acres subdivision is described in SOP-02-118.

16.0 Sampling, Testing and Monitoring

Purpose

The purpose of the following procedure is to describe the sampling, monitoring and testing activities at the WTP and distribution system to ensure compliance to applicable drinking water legislation and for the provision of safe drinking water.

Scope

This procedure is applicable to the water treatment plant and water distribution operations.

Related Documents

Drinking Water Quality Management Standard – Element 16
Lakefield Water Treatment Plant Operator and Maintenance Manual

Lakefield Water Treatment Plant Laboratory Analysis Book
SOP-02-156 Sampling and Monitoring
SOP 02-009 Procedure to Respond to Adverse Water Quality Results

Procedure

The procedure was developed to meet the requirements of Element 16; Sampling, Testing and Monitoring are described in SOP-02-156.

17.0 Measurement and Recording Equipment Calibration Maintenance

Purpose

The purpose of this procedure is to describe the process used to calibrate and maintain measuring and recording devices used within the water treatment process.

Scope

This procedure is applicable to the measuring and recording devices used by the Water Treatment Plant for monitoring of raw, in-process and potable drinking water from intake, through treatment, storage, pumping and distribution.

Related Documents

Drinking Water Quality Management Standard – Element 17
SOP-02-156 Sampling and Monitoring Procedure
Instrumentation Manuals

Procedure

The procedure that describes PUSI activities for the calibration and maintenance of measurement and recording equipment is outlined in SOP-02-156.

18.0 Emergency Management

Purpose

This purpose of this procedure is to describe the process to maintain a state of emergency preparedness for the drinking water system.

Scope

This procedure shall include all potential emergency situations or service interruptions for the water treatment and water distribution system for the Village of Lakefield and the Woodland Acres Subdivision.

Related Documents

Drinking Water Quality Management Standard – Element 18
SOP-02-108 Emergency Preparedness and Response
Municipal Emergency Plan for Village of Lakefield
Municipal Emergency Plan for City of Peterborough

Procedure

The Emergency Management Procedure is outlined in SOP-02-108 for the Village of Lakefield and the Woodland Acres Subdivision.

19.0 Internal Audit

Purpose

The purpose of the Internal Audit Procedure is to describe the method used at PUSI to verify conformance to the Operational Plan and to the Drinking Water Quality Management System. Internal auditing is also a tool to be used to be proactive and continually improve the Water Quality Management System.

Scope

This procedure is applicable to the Village of Lakefield and the Woodland Acres Drinking Water System operations that are described within this Operational Plan.

Related Documents

Drinking Water Quality Management Standard – Element 19
Continual Improvement Paragraph 21 of Operational Plan
SOP-02-101 Internal Audit Procedure

Procedure

The Internal Audit Procedure is outline in detail in the SOP-02-101.

20.0 Management Review

Purpose

The purpose of this Management Review Procedure is to outline the method used at Peterborough Utilities Services Inc. to evaluate the continuing suitability, adequacy and effectiveness of the Drinking Water Quality Management System.

Scope

The scope of this procedure includes management activities, water treatment plant operations and water distribution activities identified in the Operational Plan.

Responsibilities and Authorities

The DWQMS Representative is responsible to the CAO Township of Smith-Ennismore-Lakefield for ensuring that detailed and comprehensive reviews are carried in accordance with this procedure.

The Water Utility Quality Assurance Coordinator is responsible to the Vice President Water Utility Services for ensuring that the necessary documentation and records are maintained and made available for review by Management.

The DWQMS Representative is responsible to communicate the results of the Management Review to Top Management and the Owner.

Related Documents

Drinking Water Quality Management Standard – Element 20
Operational Plan Paragraph 21 Continual Improvement
SOP-02-100 Management Review

Procedure

The Management Review procedure is outlined in detail in the SOP-02–100.

21.0 Continual Improvement

Purpose

The purpose of this procedure is to describe the system used by PUSI to continually improve the effectiveness of the DWQMS by initiating timely corrective action on deficiencies identified in the Drinking Water Quality Management System, and to take preventative action where potential problems are identified.

Scope

This procedure applies to the correction of actual or potential non-conformities in the drinking water QMS, or other systemic problems affecting the drinking water quality.

Related Documents

Drinking Water Quality Management Standard – Element 21
SOP-02-107 Continual Improvement
Corrective Action Request (form # 02040)

Procedure

The Corrective Action (Continual Improvement) Procedure is outlined in detail in SOP-02-107.

22.0 DEFINITIONS

ARV	Air Release Valve
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
°C	Degree Celcius
CAO	Chief Administrative Officer
CAR	Corrective Action Request
CCP	Critical Control Point
DWQMS	Drinking Water Quality Management Standard
GAC	Granular Activated Carbon
IBEW	International Brotherhood of Electrical Workers
L/m	Litres per minute
m ³	Cubic meter
m ³ /d	Cubic meters per day
mg/L	Miligram per Litre
ML/d	Megalitres per day
MOE	Ministry of Environment
NTU	Nephelometric Turbidity Unit
O & M	Operation and Maintenance Manual
OIC	Operator-in-Charge
OMWA	Ontario Municipal Water Association
ORO	Overall Responsibility Operator
OWWA	Ontario Water Works Association
PRV	Pressure Reducing Valve
PSI	Pound per Square Inch
PUSI	Peterborough Utilities Services Inc.
QMS	Quality Management System
µg/L	Micro grams per Litre
SCADA	Supervisor Control And Data Acquisition
SOP	Standard Operating Procedure
TCU	True Colour Unit
TSEL	Township of Smith-Ennismore-Lakefield
USgpm	US gallon per minute
WTP	Water Treatment Plant

Appendix 1

Chart 1 Responsibilities and Authorities Chart

Category 1	Staff who can have day-to-day direct affect on the water quality reaching the customer's premise	
Position	Key Responsibilities	Key Authorities
WTP Superintendent	<ul style="list-style-type: none"> • Regulatory compliance for treated water and operations at the WTP • Monitor water quality and demand • Supervision of operating staff and supervisors • Schedule work, allocate projects and resources, monitor progress • Develop procedures to optimize water quality and reliability • Assist in selecting staff and their training and development • Work safety program • Report issues to the VP Water Utility as necessary • ORO (when present during business hours) 	<ul style="list-style-type: none"> • Day-to-day operations of the WTP • Direct supervisors and staff • Overseeing adverse water quality incidences • Develop departmental practices • Administer union agreement • Arrange for training of supervisors and staff • Schedule construction activities as they affect the WTP operations • Expenditures up to \$5000 without supervisor approval
WTP Supervisor	<ul style="list-style-type: none"> • Assist with regulatory compliance particularly as it applies to water quality • Assist to monitor water quality and demand • Supervise WQA and other staff • Assume Superintendent duties and responsibilities when the Superintendent is absent • Assist in training and development of staff • Report issues to the Superintendent as necessary • ORO when Superintendent is absent (when present during business hours) • Purchasing Chemical Suppliers for WTP 	<ul style="list-style-type: none"> • Direct staff in day-to-day operations and maintenance activities • Recommend to the Superintendent ways to improve water quality and operational effectiveness • Act as Superintendent when the Superintendent is absent • Expenditures up to \$750 without supervisor approval

Category 1		Staff who can have day-to-day direct affect on the water quality reaching the customer's premise
Position	Key Responsibilities	Key Authorities
WTP Supervisor	<ul style="list-style-type: none"> • Supervise staff work, safety and progress • Report issues to the Superintendent as necessary • ORO when Superintendent and Assistant Superintendent are absent (when present during business hours) 	<ul style="list-style-type: none"> • Direct staff in day-to-day operations and maintenance activities • Recommend to the Superintendent ways to improve operational effectiveness • Expenditures up to \$750 without supervisor approval
Senior Water & Waste Water Operator (Lakefield)	<ul style="list-style-type: none"> • Perform specified duties as instructed within established parameters for operating the WTP • OIC as assigned • ORO as assigned • Daily operational water quality testing • Communication of water quality testing results to appropriate management and staff • Customer concern response 	<ul style="list-style-type: none"> • Operational discretion as delegated by the Superintendent
WTP Operator & Relief Operator (Lakefield & Woodland Acres only)	<ul style="list-style-type: none"> • Perform specified duties as instructed within established parameters for operating the WTP • OIC as assigned • ORO as assigned • Daily operational water quality testing • Communication of water quality testing results to appropriate management and staff • Customer concern response 	<ul style="list-style-type: none"> • Operational discretion as delegated by the Superintendent

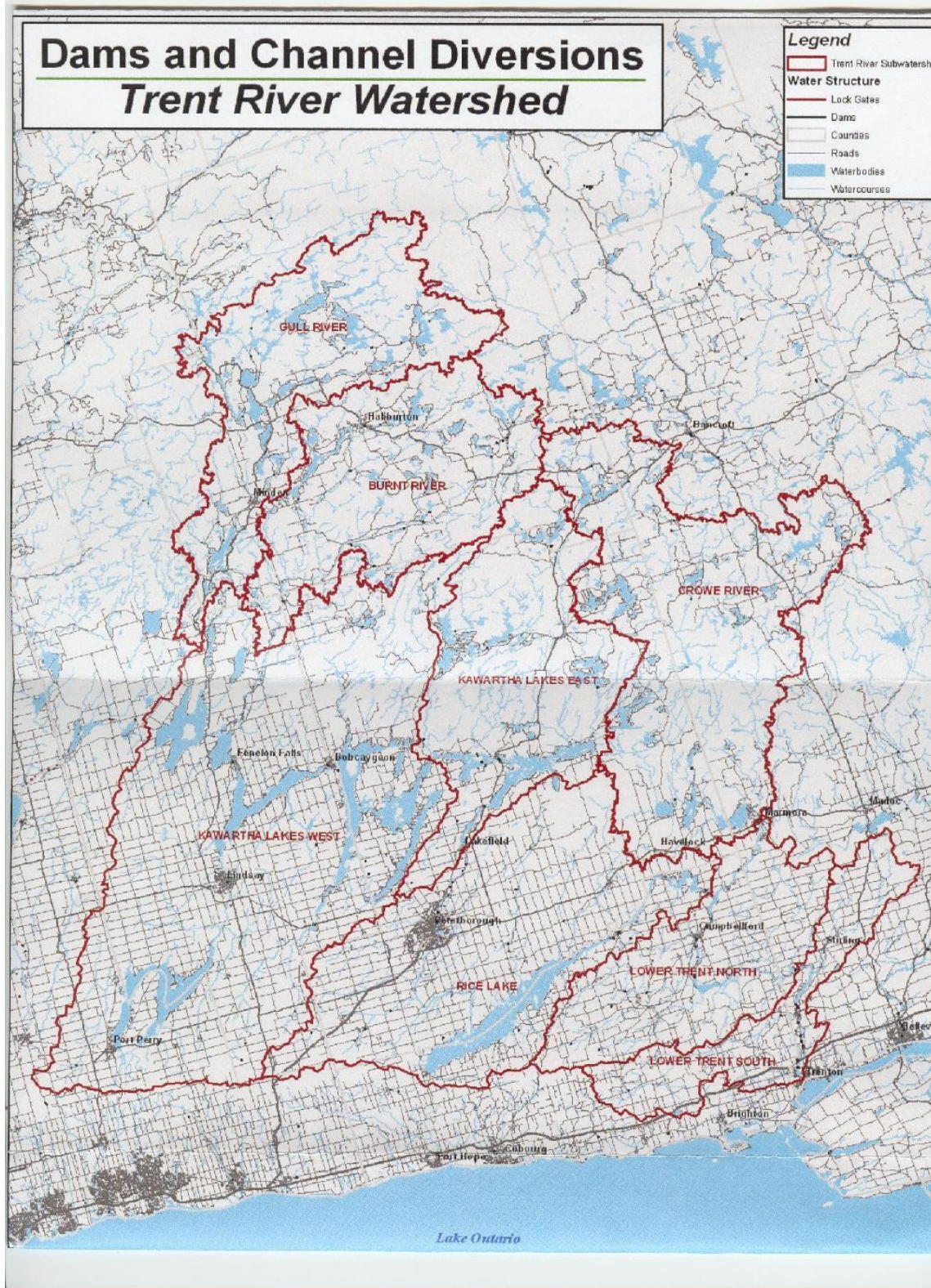
Category 1		
Staff who can have day-to-day direct affect on the water quality reaching the customer's premise		
Position	Key Responsibilities	Key Authorities
WD Superintendent	<ul style="list-style-type: none"> • Oversee the daily operations and maintenance of the water distribution system • Overall daily planning of work related to the operations and maintenance of the water distribution system • Coordinate work with capital program • Develop procedures to optimize effectiveness of department • Assist in selecting staff and their training and development • Work safety program • Report issues to the V.P. Water Utility as necessary • ORO (when present during business hours - Woodland Acres only) 	<ul style="list-style-type: none"> • Day-to-day operations of the Water Distribution Dept. • Direct supervisors and staff • Overseeing adverse water quality incidences for tests taken by WD staff • Develop departmental practices • Administer union agreement • Arrange for training of supervisors and staff • Schedule construction activities as they affect the water distribution operations • Expenditures up to \$5000 without supervisor approval
WD Supervisor	<ul style="list-style-type: none"> • Supervise staff work, safety and progress • Report issues to the Superintendent as necessary • ORO when Superintendent is absent (when present during business hours - Woodland Acres only) 	<ul style="list-style-type: none"> • Direct staff in day-to-day operations and maintenance activities • Recommend to the Superintendent ways to improve operational effectiveness • Expenditures up to \$750 without supervisor approval

Category 2		
Staff who can have day-to-day indirect affect on the water quality reaching the customer's premise		
Position	Key Responsibilities	Key Authorities
Water Quality Analyst	<ul style="list-style-type: none"> • Daily operational water quality testing • Communication of water quality testing results to appropriate management and staff • Customer concern response 	<ul style="list-style-type: none"> • Maintain and calibrate analytical equipment according to manufacturer or industry standards • Respond to customer water quality complaints
WTP Maintenance Mechanic	<ul style="list-style-type: none"> • Installation, maintenance and troubleshooting of mechanical equipment 	<ul style="list-style-type: none"> • Carry out work in an efficient manner that has minimal impact on operations
WTP Maintenance Electrician	<ul style="list-style-type: none"> • Installation, maintenance and troubleshooting of electric and electronic equipment 	<ul style="list-style-type: none"> • Carry out work in an efficient manner that has minimal impact on operations

VP Water Utility	<ul style="list-style-type: none">• Establish Water Utility Capital Budget and review/approve annual operating budgets• Monitor regulatory framework and advise managers of important issues• Report to Owner• Manage overall budget and expenditures	<ul style="list-style-type: none">• Provide day-to-day direction for the water utility• Approve expenditure up to \$50,000 in accordance with Purchasing Policy• Approve budget changes within the approved budget amount• Authority to declare a Water Utility emergency
------------------	--	--

Category 3		Staff who can have an occasional indirect effect on the water quality reaching the customer's premise	
Position	Key Responsibilities	Key Authorities	
Purchasing and Materials Manager	<ul style="list-style-type: none"> • Arrange for purchase of supplies, equipment and materials 	<ul style="list-style-type: none"> • Establish purchasing criteria and award contracts in consultation with operating departments 	
Water Utility Quality Assurance Coordinator	<ul style="list-style-type: none"> • Development of DW Operational Plans • Internal Audit • Operational plan update and Maintenance • Training on Operational Plan and DW QMS • Liaise with Registrar (CGSB) to schedule audits, respond to audit finding, provide documentation • Management Review 	<ul style="list-style-type: none"> • Issue Corrective Action • Update Operating Procedures 	

Appendix 2



APPENDIX 3

