

TOWN OF WADENA

POLICY TITLE WATERWORKS QUALITY ASSURANCE/CONTROL		ADOPTED BY TOWN COUNCIL	POLICY NO. <i>P2010-003</i>
EFFECTIVE DATE: December 21, 2010		Res. #423-10	PAGE # 1 of 1

423-10 WATERWORKS QUALITY ASSURANCE/QUALITY CONTROL POLICY
Morissette That Waterworks Quality Assurance/Quality Control Policy as appended
Chaykowski hereto and forming part of these minutes, be approved replacing
 Waterworks Quality Assurance/Quality Control Policy, being Resolution
 No. 68-04, dated February 16, 2004.

MOTION CARRIED

**Approved by Council
December 21, 2010**



Waterworks

Quality Assurance/ Quality Control Policy

December 2010

TOWN OF WADENA



**Saskatchewan
Environment**

Waterworks Quality Assurance/Quality Control Policy

For the Community of Wadena

Approved: December 21, 2010

Date: December 21, 2010

1. Policy Statement

We, the Town of Wadena, understand that supplying good quality drinking water is essential to the continued growth, prosperity, and well being of our citizens. We are committed to managing all aspects of our water system effectively to provide safe and aesthetically appealing water that tastes good and is free from objectionable colour or odour. It is our policy that the drinking water we provide will meet or exceed the quality provided by the quality standards required by *The Water Regulations, 2002*.

To achieve our goals we will:

- Co-operate with the provincial government to protect our water works and sources from contamination;
- Ensure the potential risks associated with water quality are identified and assessed;
- Ensure that our water supply, treatment, storage and distribution infrastructure is properly designed, constantly maintained and regularly evaluated and improved;
- Include the drinking water quality and quantity priorities, needs and expectations of our citizens, the provincial authorities and our water system employees into our planning;
- Develop a mechanism to ensure adequate funds are available for the water utility to maintain and improve the infrastructure, implement best practices and ensure our water treatment employees are educated about the responsibilities and adequately trained and certified;
- Establish regular verification of the quality of drinking water provided to our citizens and monitoring of the water treatment process that produce the water;
- Provide community awareness about the water supply and its management by establishing and maintaining effective reporting of the water quality and timely information about the water system to our citizens;
- Develop contingency plans and incident response capabilities in co-operation with provincial health authorities;
- Participate in appropriate research and development activities to ensure continued understanding of drinking water quality issues and performance;
- Participate in the drinking water guideline development and review process; and
- Regularly assess our performance and continually improve our practices to produce good quality water.

We will develop a Drinking Water Quality Management System, including an implementation Plan, to achieve these goals and adequately manage the risks to our drinking water quality.

All of our officials, managers, and employees involved with the supply of drinking water are responsible for understanding, implementing, maintaining, and continuously improving the Drinking Water Quality Management System.

2. Organizational Structure

The roles and responsibilities of each person identified in the organization structure shall be provided for. A member of Council shall be appointed as carrying the responsibility for reporting to the elected structure on the operation and condition of the works.

Waterworks Operations, Management and Administration

Mayor	Greg Linnen
Council member responsible for waterworks	
Municipal Administrator	Diana Lee
Waterworks Manager	Brian Hayes
Water Distribution Operator	Brian Hayes,
Water Treatment Operator	Derek Melsted
Wastewater Works Operator	James Dominey and
Wastewater Collection System Operator	Dale Elphinstone

Roles and Responsibilities

The following is a summary of the roles and responsibilities of various persons involved in production and management of drinking water for the community of Wadena.

The role of the **Mayor** with respect to waterworks operation includes:

- Overall responsibility for waterworks, quality of water provided to consumers and regulatory compliance in capacity of persons responsible for the municipality or waterworks;
- In conjunction with council, allocates financial resources through a budgeting process and establishes water and sewer rates and/or surcharges; and
- Chief official in the event of an emergency situation.

The role of the **Council Member** assigned responsibility for the Waterworks includes:

- Oversees and reports on operational, maintenance or infrastructure issues or needs to Council and the Mayor to ensure issues are addressed.

The role of the **Municipal Administrator** includes:

- Receives and prepares administrative, budget and waterworks record submissions for review of assigned Council member and to be tabled/considered at a Council meeting;

- In conjunction with the Waterworks Manager, reviews operational records and logs on a monthly basis in accordance with the requirements of section 43(2) of *The Water Regulations, 2002*;
- Arranges for and provides annual notification to consumers served by the waterworks on the quality of drinking water provided and on sample submission compliance. Prepares a report to Council on the state of drinking water on an annual basis.
- Receives and resolves or forwards all correspondence dealing with drinking water operations from and on behalf of mayor and council;
- Prepares financial reports regarding waterworks operational and maintenance issues;
- Prepares strategies for ensuring waterworks sustainability; and
- Invoices and receipts waterworks related expenses as well as consumer charges for water use.

The role of the **Waterworks Manager** includes:

- Overall responsibility for the day to day operation of the waterworks;
- Develops operational and maintenance protocols and plans;
- Develops safety plans and conducts safety inspections;
- Budgets for operation and maintenance of waterworks;
- Develops Waterworks Emergency Response Plan;
- Provides guidance to operators on operation of works;
- Staffing of waterworks operators and issues of supervision and scheduling.

The role of the **Water Treatment Operator(s)** includes:

- Start up, shut down and periodic operating checks of plant equipment, such as pumping systems, chemical feeders, auxiliary equipment (compressors) and measuring and controlling systems;
- Makes arithmetic calculations to determine chemical feed rates, flow quantities, detention and contact times and hydraulic loadings as required by plant operations;
- Monitors the status of plant operating guidelines, such as flow pressures, chemical feeds, levels and water quality indicators by referencing to measuring systems;
- Performs routine preventative maintenance, such as lubrication, operating adjustments, cleaning and painting equipment;
- Maintains plant records, including operating logs, daily diaries, chemical inventories and automated data logs;
- Collects representative water samples and performs laboratory tests on samples for turbidity, chlorine residual and other tests as required by the operating permit or operational protocol;
- Performs minor corrective maintenance on plant mechanical equipment, e.g.: chemical feed pumps;
- Conducts tours of the waterworks and communicates with the public on issues associated with water quality;
- Orders chemicals, repair parts and tools;
- Loads, unloads and stores water treatment chemicals; and
- Follows safety rules for plant operations.

The role of the **Water Distribution System Operator** includes:

- Periodically flushes or swabs the distribution system;
- Locates and repairs water leaks and operates, maintains and repairs valves and hydrants;
- Collects and transports routine water samples from the distribution system and ensures proper packaging and shipment to the laboratory;
- Performs repair work while ensuring safety procedures for the works site, traffic and public are maintained;
- Disinfects repaired or new sections of pipe and collects the necessary water samples;
- Maintains the distribution system plans and maps;
- Cleans, disinfects and maintains reservoirs or other storage systems;
- Operates and maintains any pumping equipment or facilities remote from the main water treatment plant as necessary; and
- Locates and eliminates cross connections or potential cross connections.

3. Operations and Maintenance Protocol

Operation of the community waterworks will be performed in accordance with design specifications and standard operating protocols of the waterworks industry. Further detail regarding standards, operating procedures, range of operation and chemical feed, maintenance practices and intervals are outlined below.

Waterworks Operation/Maintenance Protocol Template

System Design Capacity (m ³ /day or L/s):	<u>1636.3 m³</u>
Well(s):	
Number of wells:	<u>Well #4 – Operational</u>
	<u>Well #5 – Operational</u>
	<u>Well #6 – Operational</u>
Pump maintenance/change-out:	<u>2 years or as required</u>
	<u>eg: pump failure</u>
Wellhead protection inspection:	<u>Weekly</u>
Supply Pipeline:	
Quantity supply agreement:	<u>No</u>
Filtration – Method/Type(s):	<u>Rapid Sand</u>
Capacity:	<u>250 g.p.m.</u>
Filtration Rate:	<u>125 g.p.m./@1.95 g.p.m./sq ft</u>
Media type(s):	<u>.35 m.m. manganese greensand/</u>
	<u>1.10 m.m. anthrafilt</u>
Headloss measurement:	<u>continuous</u>
Backwash type (man/auto):	<u>manual</u>
Backwash frequency:	<u>daily</u>
Backwash rate:	<u>700 g.p.m.</u>
Air assisted backwash (Yes/No)	<u>Yes</u>

Media evaluation:	<u>yearly</u>
Media Replacement:	<u>every 20 years, replaced 2010</u>
Filter top waste (Yes/No/duration):	<u>Yes/8 – 10 minutes</u>
Filter Inspection:	<u>Daily</u>
Iron/Manganese Control – Method/Type:	<u>Retention</u>
Filtration Rate:	<u>250 g.p.m.</u>
Potassium Permanganate:	<u>24.5 GPD</u>
Pre-chlorination:	<u></u>
Aeration:	<u>375 g.p.m. @ 15 g.p.m./sq ft</u>
Other Treatment Method(s)/Type:	<u></u>
Maintenance Type:	<u></u>
Maintenance Schedule:	<u></u>
Process Waste Management:	<u>Sanitary sewer</u>
Inspection:	<u>Weekly</u>
Taste and Odour Control Method/Type:	<u></u>
Potassium Permanganate:	<u></u>
Activated Carbon:	<u></u>
Disinfection – Method/Type(s):	<u>Gas</u>
Disinfectant used:	<u>Chlorine</u>
Dosage rate/range:	<u>.27 kg/hour</u>
Feed type:	<u>injector (vacuum)</u>
Monitoring (location):	<u>Water Treatment Plant</u>
Fluoridation – Method/Type(s):	<u>Liquid</u>
Chemical used:	<u>fluosilicic acid (25%)</u>
Dosage rate/range:	<u>.534 GPD or 2.43 LPD</u>
Feed type:	<u>liquid</u>
Monitoring (location):	<u>Water Treatment Plant</u>
Water Storage – Type/size:	<u>above ground and below ground</u>
Volume of treated storage:	<u>300,000 gallons</u>
Fire water capacity:	<u>50,000 gallons</u>
Output metering (Yes/No):	<u>Yes</u>
Output meter recording:	<u>Daily</u>
Maintenance:	<u>As required</u>
Inspection and Cleaning	<u>Daily Inspection</u> <u>(cleaning approx. 10 years –</u> <u>next estimated cleaning is</u>
Water Distribution System:	<u></u>
Piping type(s):	<u>Mains P.V.C., A.C. and cast iron</u>
Flushing schedule:	<u>2 times per year</u>
Foam Swabbing schedule:	<u>No</u>

Pumping capacity:	20.15
Backflow prevention (Yes/No):	Yes
Hydrant maintenance schedule:	Yearly
Valve maintenance schedule:	Program began 2004
Repair safety procedures:	
Line/Main break disinfection (Yes/No):	Yes
Line/Main break sampling (Yes/No):	Yes
Customer metering (Yes/No):	Yes
Truck fill station (Yes/No):	Yes
Truck fill backflow (Yes/No):	Yes
Water hauler protocols:	Yes
Corrosion Control – Method:	Liquid
Chemical(s) used:	C-4 -- .67 GPD or 3.05 LPD
Cathodic protection (Yes/No):	Yes

4. **Water Quality Monitoring, Data Collection, Record Keeping, Record Review and Reporting Procedures**

The following monitoring and record keeping protocols apply to the operation of the waterworks and distribution system:

Water Quality Monitoring – Permit and Regulatory Requirements

The Town of Wadena will conduct all monitoring required by permit or Minister's Order issued by Saskatchewan Environment. The Environmental Project Officer responsible for regulation of the waterworks, Ries Mansuy, will be advised of any positive bacteriological sample result as well as any exceedance of other water quality standards as determined through sampling and analysis for other substances as required by permit or Ministers Order. As of March 31, 2004, all required drinking water quality monitoring samples, other than samples for chlorine residual, turbidity or pH have been and will be sent to and analyzed by an accredited laboratory.

Appendix "A", which contains a Treated Water Quality Monitoring Plan, can be used to record the community's monitoring activities and results.

The Town of Wadena will conduct daily free chlorine residual monitoring of drinking water entering the distribution system and turbidity monitoring at each filter as required by regulation, permit or Minister's Order issued by Saskatchewan Environment. The Environment Project Officer responsible for the regulation of the waterworks, Ries Mansuy, will be advised of any failure to meeting a free-chlorine residual of at least 0.1 mg/L of water entering the distribution system as well as any exceedance of turbidity levels as required by operational permit, Minister's Order or regulatory requirement. Additionally, the Town of Wadena will advise the Environment Project Officer responsible for the regulation of the waterworks, Ries Mansuy, of any failure of the disinfection system concern in accordance with good practice or the emergency response plan – technical action plans for the waterworks.

Operational Monitoring Plan

Observational and measurement related operational monitoring of water quality and associated reporting requirements are established for the community of Wadena waterworks. Waterworks operators will monitor operational process in accordance with Table 1.

Record Keeping:

Waterworks records and logs will be kept in accordance with the requirements of *The Water Regulations, 2002*. The following person is delegated responsibility for operational record and log keeping: Brian Hayes

The operational records and logs will include:

- Total water pumped into the distribution system on a daily basis or the total raw water used;
- The types, dosages and total amounts of chemicals applied to the water for treatment;
- Locations from which samples for any tests conducted by the permittee of the waterworks were taken in accordance with the permittee's permit and the name of the person who conducted the sampling or testing and the results of those tests;
- Any departure from normal operating procedures that may have occurred and the time and date that they occurred;
- Any instructions that were given during operation of the waterworks to depart from normal operating practices and the name of the person who gave the instructions;
- Any upset condition or bypass condition, the time and date of the upset condition or bypass condition and measures taken to notify others and resolve the upset condition or bypass condition;
- Any condition of low disinfectant levels, the time, date and location of occurrence and measure taken to restore disinfectant levels to required values;
- The dates and results of calibrating any metering equipment and testing instruments; and
- The dates and types of maintenance performed on equipment and any actions taken to ensure the normal operations of the waterworks.

The operational records or logs mentioned above will be recorded and maintained in the following manner:

- Operational records or logs must be made in chronological order with the dates, times and testing locations clearly indicated;
- Entries in an operational record or log will only be made by the permittee or person specifically appointed by the permittee;
- Persons making an entry in an operational record or log shall do so in a manner that allows the person to be unambiguously identified as the maker of the entry;
- Operational records or logs must be maintained for at least 5 years;
- Any anomalies or instances of missing entries in an operational record or log must be accompanied by explanatory notes;

- Operational records or logs must not contain default values generated manually or by automated means;
- Operational records or logs maintained in accordance with the above requirements must be made available promptly on request of the Minister of Environment or a representative of the Minister.

Record Review and Reporting:

The Town Administrator and the Waterworks Manager will review all monitoring results, records and operational logs on a monthly basis. If the review of the records or logs indicates that the quality of water from the waterworks has been adversely affected, the findings will be reported to Saskatchewan Environment as soon as reasonably practical after the report has been completed.

5. Emergency Response Planning

The document, Waterworks Emergency Plan, provides guidance on Emergency contact listings, establishing a waterworks emergency planning task force, crisis management, notification and communication as well as technical action plans for a number of incidents which commonly occur.

