



POLICY NAME: Waterworks Quality Assurance/Quality Control		LAST UPDATED: January 11, 2021	
		SUPERSEDES POLICY: P2010-003	
POLICY AREA: Water & Sewer Utility Services U	POLICY NUMBER: U-002	APPROVAL DATE: January 11, 2021	PAGE: 1 of 7

POLICY STATEMENT

The Town of Wadena understands that supplying good quality drinking water is essential to the continued growth, prosperity, and wellbeing 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 Waterworks and Sewage Works Regulations*.

To achieve our goals, we will:

- Co-operate with the provincial government to protect our waterworks 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 to maintain and improve the utility system's infrastructure, to implement best practices, and to ensure that our water treatment employees are educated, trained, and certified;
- Establish regular verification of the quality of drinking water provided to our citizens and monitoring of the water treatment process that produces 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 the 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.

SCOPE

All Town officials, managers, and employees involved with the supply of drinking water are responsible for understanding, implementing, maintaining, and continuously improving this policy.

RESPONSIBILITIES

The roles and responsibilities of each person identified in the organization structure are provided below.

Waterworks Operations, Management, and Administration

Mayor	Sara Sobchyshyn
Chief Administrative Officer	Jennifer Taylor
Waterworks System Manager (Works and Operations Manager)	Alyshia Neuman (Certified Class 2)
Works and Operations Foreman	Melvin Strand (Trainee)
Water Treatment Operators	Alyshia Neuman (Certified Class 2) Marshall Zubot (Trainee) Melvin Strand (Trainee) Michael Fritsch (Trainee)
Water Distribution System Operators	Alyshia Neuman (Certified Class 2) Marshall Zubot (Trainee) Melvin Strand (Trainee) Michael Fritsch (Trainee)

Roles and Responsibilities with Respect to Waterworks System Operations

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

The Mayor:

- Has the overall responsibility for waterworks, quality of water provided to consumers, and regulatory compliance in his/her capacity of person responsible for the municipality or waterworks.
- In conjunction with council, allocates financial resources through a budgeting process, and establishes water and sewer rates; and
- Is the chief official in the event of an emergency.

The Chief Administrative Officer:

- Receives and prepares administrative, budget, and waterworks record submissions for review of assigned Council member and to be considered at a Council meeting;
- In conjunction with the Waterworks System Manager, reviews operational records and logs monthly in accordance with the requirements of Section 43(2) of *The Water Regulations, 2002*.
- Arranges for the provision of 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 all correspondence dealing with drinking water operations, or forwards same to Mayor and Council;
- Prepares financial reports regarding waterworks operational and maintenance issues;
- Prepares strategies for ensuring waterworks sustainability;
- Oversees invoicing and issuing of receipts for consumer charges for water use; and
- Oversees payment of waterworks related expenses.

The Waterworks System Manager:

- Has the 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; and
- Oversees staffing of waterworks operators and issues of supervision and scheduling.

The Water Treatment Operator(s):

- Performs start-up, shut-down and periodic operating checks of plant equipment, such as pumping systems, chemical feeders, auxiliary equipment (compressors), and measuring and control 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 reference 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 Water Distribution System Operator(s):

- Periodically flushes or swabs the distribution system;
- Locates and repairs water leaks;
- 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 that safety procedures for the work 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.

POLICY

1. 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.

1.1. Waterworks Operation/Maintenance Protocol

System Design Capacity (m ³ /day or L/s):	1,636.3 m ³
Wells:	
Number of wells:	Well #4 – Operational Well #5 – Non-Operational Well #6 – Operational
Pump maintenance/change-out:	Two years or as required
Wellhead protection inspection:	Weekly
Supply Pipeline:	
Quantity supply agreement:	No
Filtration – Method/Type(s):	Rapid Sand
Capacity:	250 gpm
Filtration Rate:	125 gpm / 1.95 gpm/sq ft
Media type(s):	.35 mm manganese greensand / 1.10 mm anthrafil
Headloss measurement:	Continuous
Backwash type (man/auto):	Manual
Backwash frequency:	Daily
Backwash rate:	700 gpm
Air assisted backwash (Yes/No)	Yes
Media evaluation:	Yearly
Media Replacement:	2020, every 20 years
Filter top waste (Yes/No/duration):	Yes / 8 – 10 minutes
Filter Inspection:	Daily
Iron/Manganese Control – Method/Type:	Retention
Filtration Rate:	250 gpm
Potassium Permanganate:	24.5-26 GPD
Aeration:	375 gpm / 15 gpm/sq ft
Other Treatment Method(s)/Type:	
Process Waste Management:	Sanitary sewer
Inspection:	Weekly
Disinfection – Method/Type(s):	Gas
Disinfectant used:	Chlorine
Dosage rate/range:	.27 kg/hour
Feed type:	Injector (vacuum)
Monitoring (location):	Water Treatment Plant

Water Storage – Type/size:	Above- and below-ground
Volume of treated storage:	300,000 gallons
Fire water capacity:	50,000 gallons
Output metering (Yes / No):	Yes
Output meter recording:	Daily
Maintenance:	As required
Inspection and Cleaning	Daily Inspection (cleaning approx. 10 years – next cleaning – 2021)
Water Distribution System:	
Piping type(s):	PVC, AC, Cast Iron
Flushing schedule:	2 times per year
Foam Swabbing schedule:	No
Pumping capacity:	20.15
Backflow prevention (Yes/No):	Yes
Hydrant maintenance schedule:	Yearly
Valve maintenance schedule:	Yearly
Repair safety procedures:	Yes
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

2. Water Quality Monitoring, Data Collection, Record Keeping, Record Review & Reporting Procedures

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

2.1. Water Quality Monitoring – Permit and Regulatory Requirements

Town of Wadena will conduct all monitoring required by permit or Minister’s Order issued by Saskatchewan Environment. The Environmental Project Officer (EPO) responsible for regulation of the waterworks 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 Minister’s Order. Since 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.

Town of Wadena will conduct daily free-chlorine-residual, Total- Chlorine, Turbidity, Iron, and Manganese monitoring of drinking water entering the distribution system by regulation, permit, or Minister’s Order issued by Saskatchewan Environment. The EPO responsible for the regulation of the waterworks will be advised of any failure to meet 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, Town of Wadena will advise the EPO responsible for the regulation of the waterworks of any failure of the disinfection system in accordance with good practice or the emergency response plan for the waterworks system.

2.2. Operational Monitoring Plan

Observational and measurement related operational monitoring of water quality and associated reporting requirements are established for the Town of Wadena's waterworks. Waterworks operators will monitor operational process in accordance with the active waterworks permit for the Town of Wadena.

2.3. Record Keeping

Waterworks records and logs will be kept in accordance with the requirements of The Water Regulations, 2002. The Waterworks System Manager is delegated responsibility for operational record and log keeping.

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 the 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 operation of the waterworks system.

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.

2.4. Record Review and Reporting

The Chief Administrative Officer and the Waterworks System Manager will review all monitoring results, records, and operational logs monthly. 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.

The Manager of Works and Operations will review all monitoring results weekly and will be notified by staff of any operation changes or any adverse effects or concerns on the treated water system daily and will report to the Chief Administrative Officer and the EPO in accordance with the active permit for the Town of Wadena.

RELATED DOCUMENTS

U-001 Waterworks Emergency Response Plan provides guidance on emergency contact listings, crisis management, notification, and communication plan for a number of incidents which commonly occur in waterworks systems and is a separate document.

The Waterworks and Sewage Works Regulations requires the permittee of a waterworks supplying water to meet the *Quality Assurance and Quality Control for Water Treatment Utilities Standard - Drinking Water Quality Management*, EPB 542.