

# **Waterworks Quality Assurance/Quality Control Policy - APPENDIX A For The Resort Village of Kannata Valley Water Utility**

Adopted by Resolution of Council #R /12 at a regular meeting of council on the th day of February ,2012

## **POLICY STATEMENT**

The goal of the council of the Resort Village of Kannata Valley, the Local Authority (LA), is to supply consumptive water to consumers connected to the Kannata Valley Water Utility (Utility). Kannata Valley is committed to manage all aspects of the Utility's production and distribution systems delivering consumptive water to consumers that meets or exceeds the Saskatchewan Drinking Water Quality Standards (SDWQS). The Utility is classified by the Administrative Authorities (AA) as a "Small Water System" approved to supply consumptive water to the following consumers:

- Residents of the Resort Village of Kannata Valley
- Community Center & Truck Fill Station at the Resort Village of Saskatchewan Beach
- Private Residence of Jesuit Fathers
- Residents of Rock Ridge Developments
- Residents of Valley Ridge Acres

To achieve the Utility's goals, the Utility's management team we will:

- Cooperate with provincial authorities to protect the Utility's infrastructure and water sources from contamination.
- Ensure that risk conditions to water quality are properly identified, assessed and remedial action initiated.
- Ensure that the water supply, treatment, disinfection, storage, and distribution infrastructure is properly maintained.
- Ensure operators are adequately trained, certified and knowledgeable about their responsibilities.
- Provide consumer awareness about the water quality through effective & timely information and reporting.
- Develop contingency plans and incident response capabilities in cooperation with AA.
- Regularly assess management performance and improve operating practices.
- Adopt a Drinking Water Quality Management Protocol to manage the business and financial risks. i.e. supply risks, quality risks, economic risks, operating risks etc.

## **Organizational Structure**

Mayor	Ken MacDonald	Phone 779-1381	330-3936
Councillor with Portfolio	Don Sangster	Phone 729-7990	535-5589
Regional/Contract Operator	Al Yurkoski	Phone 729-4940	
Assistant Operator	Glen Hurst	Phone 729-4004	539-4339
Assistant Operator	Dennis Materi	Phone 729-4341	530-3773
Assistant Operator	Ken Forsyth	Phone 729-4895	
Assistant Operator	Barry Vanstone	Phone 729-4341	833-6175

### **1. The Role of the Council**

1. Overall responsibility for waterworks, quality of water, and regulatory compliance.
2. To establish water rates and allocate financial resources to operate the utility
3. The Mayor, or his designate, shall act as the Chief official in the event of an emergency.

### **2. The Role of the Councillor responsible for the Waterworks Portfolio.**

*Generally: Manage the water utility operation and maintenance program in accordance with the requirements of section 43(2) of The Water Regulations, 2002.* Including but not limited to the following:

1. Overall responsibility for day to day operations.
2. Review monthly log books and records and certify, by signature and date of review, that the records, supplied by the Operator, record accurately the operations during the month.
3. Develop operation and maintenance protocols, plans and procedures
4. Develop safety procedures and conduct safety inspections to ensure compliance.
5. Provide guidance to Operator on the operation of the water works system
6. Manage Operator contracts, scheduling and supervision ,
7. Report to council at regular meetings deviations from normal operating, maintenance conditions.
8. Develop and keep current Waterworks Emergency Response Plan
9. Prepare strategies for ensuring waterworks sustainability.
10. Archive Operation Logs and prepare reports as directed by the LA.

11. To provide annual notification to consumers as to the water quality and water quality monitoring in compliance with *The Water Regulations, 2002*.
12. Receive correspondence dealing with Water Works - forward to appropriate personnel.
13. Issue water levy invoices, receive payments, summarize records and report to LA.

### 3. The role of the Regional/Contract Operator

*Generally: Operate and maintain the water utility facilities and equipment in accordance with municipal bylaws and policy and supervise assistant operator(s) in performance of duties including but not limited to the following:*

1. Collect water samples, conduct the following on site tests and record test results in Operation Log:
  - a. Disinfection analysis: **daily** test to record chlorine residual levels
  - b. Turbidity test: **daily** to record suspended particle count.
2. Collect, package and transport/ship routine water samples to LA approved laboratories re:
  - a. Bacteriological Analysis: **Once each winter month (Nov-Mar) and twice each summer month (Apr-Oct)** analysis to record total coliforms
  - b. Health and Toxicity analysis a minimum of one sample **every two years**
  - c. General Chemical analysis a minimum of one sample **every two years**
3. Notify the LA of time, date, duration and cause when a disinfection upset condition has occurred
4. Notify the LA of time, date and duration and reason when an emergency shutdown has occurred,.
5. Start up, shut down pumping system, auxiliary equipment, measuring and control systems
6. Monitor plant operating indicators (flow pressures, reservoir water level, and disinfection readings) and make appropriate adjustments so as to operate within prescribed LA guidelines.
7. Perform routine preventative maintenance such as lubrication, operating standby pump and valves, equipment cleaning and painting.
8. Maintain on site plant records, Operating Logs, daily diaries, chemical inventories, repair parts etc.
9. Follow safety rules and notify LA of unsafe practices or conditions.
10. Meet with provincial Administrative Authorities (AA) and others on water utility issues.
11. Schedule and conduct **annual** distribution pipeline cleaning when directed by LA in accordance with Pipeline Flushing Procedures (copy attached)
12. Schedule and supervise **annual** reservoir cleaning when directed by LA in accordance with Reservoir Cleaning Procedures (copy attached).
13. Notify LA of date, time and duration of extended system scheduled shutdowns.
14. Manage all maintenance work to the two 4 inch main pipelines:
  - a. Contract LA approved contractor to repair failure - schedule time and date of work.
  - b. Notify LA of time and date of repairs to allow for affected customers notification.
  - c. Supervise contractor ensuring safety on works site, traffic and public.
  - d. Disinfect repaired or new parts.
15. Manage &/or supervise maintenance of curbstops and pipelines owned by others.
  - a. Contract LA approved contractor on behalf of the owner if requested to do so.
  - b. Schedule time and date of work.
  - c. Notify LA of time and date of repairs to allow for affected customers notification.
  - d. Supervise contractor ensuring safety on works site, traffic and public.
  - e. Disinfect repaired or new parts.
16. Operate and maintain equipment and facility remote from the main water pumping plant.

### **Operations and Maintenance Protocol**

Operation of the waterworks will be performed in accordance with design specifications and standard operating protocols of the waterworks industry.

#### **1. Well:**

- a. Well # BHL01-93PW installed in 1993
  - o 8 inch diameter steel cased well, 160 feet deep
  - o approval to use # 2535 dated July 14, 1994 for 40 dam3
  - o flow at head at 10 psi artesian pressure
- b. Wellhead protection building
  - o 8 ft by 8 ft insulated wood frame building c/w portable electric heater.
  - o Building locked at all times with padlock
- c. Well and building inspected bi-annually

#### **2. Supply pipeline: well to reservoir**

- a. 4 inch diameter thin wall PVC pipe approximately 4000 feet long
- b. Curb stop type air vent at one location
- c. Maintenance includes flushing/swabbing the line when flow rates drop significantly.

### 3. Booster Station Building

- d. Constructed in 1978
- a. 12 ft by 12 ft single story insulated wood frame construction on top of the reservoir
- b. Exterior upgraded in 2010
- c. Single phase electrical power supply: 200 amp capacity

### 4. Disinfection

- a. Disinfection occurs at the water treatment facility between water inflow to the building and the underground Fibreglas raw water storage tank (Tank#1) by injection of sodium hypochlorite on a continuous basis during reservoir fill cycles.
- b. Sodium Hypochlorite is also injected into the raw water stream entering the water treatment module for the purpose of oxidation and disinfection.
- c. Injection pumps are adjusted to maintain chlorine residuals within AA limits.

### 5. Treatment

The water treatment process includes::

- a. Water pre-treatment with sodium hypochlorite to oxidize the iron and manganese
- b. A polymer, A-503 is injected into the pipeline from the raw water reservoir to the treatment module to improve the filtration efficiency.
- c. Untreated water is pumped through filter vessels which contain a bed of anthracite, a bed of pyrolucite all supported on a bed of gravel.
- d. As the water passes thru the filter vessels, the contaminants (Arsenic, Iron & Manganese) are separated from the water and retained in the filter bed.
- e. Filtered water is delivered, via pipeline, to two large underground fibreglas storage tanks

### 6. Water Storage Reservoir

- a. Three compartment reinforced concrete construction storage tank constructed in 1973 is decommissioned.
- b. The new under ground storage tanks are manufactured in fibreglas meeting the Canadian drinking water standards.
  - T1: One 8000 gallon tank for raw water storage
  - T2 & T3: Two 26,000 gallon tanks for treated water storage
  - T4: One 8,000 gallon tank for backwash storage.
- c. Inflow to tanks are metered and recorded daily.
- d. sonic level transmitters record product level on operating panels
- e. Inspection, cleaning and maintenance completed annually. See Reservoir Cleaning Procedures.

### 7. Water Distribution System

Variable frequency drive distribution pumps are configured to supply treated water to the following:

- a. **One pipeline is owned and maintained by Kannata Valley:**
  - Approximate 6,600 feet in length installed in 1978 using 20 ft lengths of thin wall PVC pipe sections glued end to end and interconnected at Kannata Valley/Saskatchewan Beach border with the second 4" (Sask Beach) pipe to form one continuous loop.
  - Buried approx 6 to 8 feet below grade on south/east side of Lakeshore Dr right of way
  - Five flow control gate valves installed and located approximately every 1000 feet.
  - Five fire hydrants supply tees and hydrants installed and located approximately 1000 feet apart are flushed and tested annually.
  - 142 - 4 x 4 x 1 inch diameter saddle tees connected by 1 in poly pipe to each resident owned curb stop valve or yard hydrant.
  - The curb stop valves, yard hydrants and the 1 inch poly pipe from the curb stop to residence is owned and maintained by the resident.
  - One 4 x 4 x 1 inch diameter saddle tee is connected by 1 inch poly pipe to a curb stop valve to supply water to Jesuit Fathers property.
  - Main pipeline and fire hydrant flushing is conducted annually in accordance with Pipeline Flushing Procedures as outlined in the operating manual.

- b. **One pipeline & associated equipment is leased from the owner (Resort Village of Saskatchewan Beach) for distribution of treated water to a truck fill station located adjacent to their maintenance building and the Saskatchewan Beach Community Center.**
  - Maintenance of this pipeline, in compliance with Administrative Authority guidelines, is at the expense of the owner.
  - Approximate 6,600 feet of 4 inch diameter thin wall PVC was installed in 1978 in the same trench as the Kannata Valley line described above c/w flow control valves.
  - From the end of the loop described above, a 2 inch diameter poly pipe is buried and terminates at a valve and meter station located approximately 1,000 feet to the north of the borderline between the two resort villages.
  - From the valve and meter station, a two inch poly line is buried and is connected to the truck fill station.
- c. **One pipeline and associated equipment is leased from the owner, (Rock Ridge Developments) for the purpose of distributing treated water to residences within the community.**
  - This pipeline is connected to the main distribution manifold within the booster station and includes a water meter and shut off valve supplying water to Rock Ridge Development property owners in accordance with the Water Supply Agreement signed in 2003.
  - Maintenance of this pipeline, in compliance with Administrative Authority guidelines, is at the expense of the owner.
- d. **One pipeline and associated equipment is leased from the owner, (Valley Ridge Acres) for the purpose of distributing treated water to residences within the community.**
  - This pipeline is connected to a distribution pump within the water treatment facility to supply water to property owners within the community in accordance with the Water Supply Agreement.
  - Maintenance of this pipeline, in compliance with AA guidelines, shall be managed by the municipality at the expense of the owner.
- e. **One pipeline and associated equipment is owned by Resort Village of Saskatchewan Beach installed for the purpose of distributing treated water to residences within the community at some point in the future.**
  - This pipeline is connected to a distribution pump within the water treatment facility to supply water to property owners within the community of the Resort Village of Saskatchewan Beach at some point in the future.
  - Maintenance of this pipeline, in compliance with Administrative Authority guidelines, is at the expense of the owner
- f. **One pipeline and associated equipment installed between the water treatment facility to the intersection of Highway 322.1 and the access road to Valley Ridge Acres for the purpose a future use, yet to be determined.**
  - This pipeline, owned by Kannata Valley, is connected to a distribution pump within the water treatment facility to supply water to future property owners, yet to be determined.
  - Maintenance of this pipeline, in compliance with Administrative Authority guidelines, is at the expense of the Resort Village of Kannata Valley.
- g. One private service line is connected to the distribution manifold in the booster station to supply treated water to Lot # 1A through a surface supplied 1 inch diameter poly pipe. The shut off valve to this supply site is manually opened in spring and closed in fall.

### **Water Quality Monitoring**

The Resort Village of Kannata Valley conducts monitoring compliant with the 'PERMIT TO OPERATE' issued by the provincial Administrative Authorities (AA) represented by the Environmental Project Officer (EPO) responsible for *The Water Regulation, 2002* enforcement. The Resort Village of Kannata Valley will advise the EPO when the following reportable upset conditions have occurred:

- Positive bacteriological sample results
- Failure to meet a free-chlorine residual of at least 0.10 mg/L for water entering the distribution system.
- Failure of the disinfection system or any other upset to the water disinfection process
- Parameters where water quality exceeded provincial water quality objectives as determined through sampling and analysis for other substances as required by the AA.

## **Data Collection, Record Keeping**

Waterworks Records and Logs will be kept in accordance with the requirement of *The Water Regulations, 2002*. The following persons are delegated responsibility for Operational Record and Log:

- Al Yurkoski, Regional /Contract Operator
- Jim Percy, Regional/Contract Operator
- Dennis Materi, Assistant Operator
- Glen Hurst, Assistant Operator
- Ken Forsyth, Assistant Operator
- Barry Vanstone, Assistant Operator
- Arnold Flegel, Consultant

Operational records and logs will include:

- A daily water meter reading recording the quantity of raw water that entered into T1- Raw Water Reservoir
- Information regarding water analysis:
  - Location of sample taken
  - Testing conducted
  - Result of tests
  - Name (or initials) by person conducting the test
- Notes of the time, date and nature of any departures from normal operating procedures.
- Time, date and name of the person issuing instructions to deviate from normal operating practices.
- All upset conditions recording time, date, testing, causes and consequence of upset.
- Dates and results of calibrating of metering and testing equipment
- Dates and types of maintenance performed on equipment
- All records are to be certified by the Operator/Contractor's signature and date of review, that the records are a true and accurate description of actual conditions.
- The Operational Records or Logs will be recorded and maintained in the following manner:
  - Records to be in chronological order with dates, times and testing locations clearly indicated
  - Entries will only be made by utility operators and persons specifically authorized by the LA.
  - Persons making an entry shall do so in a manner that allows the person to be unambiguously identified as the maker of the entry
  - Records must be maintained for a least five years
  - Anomalies or missing entries must be accompanied by explanatory notes
  - Records must only contain data or information that is actually observed or produced
  - Records must be made available promptly on request of the AA.

## **Record Review Reporting.**

The Regional/Contract Operator and/or Councillor responsible for Waterworks Utility Portfolio will review the Operation Records and Logs on a monthly basis. If the review of the records indicates that the quality of water has been adversely affected, the findings will be reported to Council and the AA as soon as reasonably practical. Acknowledgement of the review process will be indicated by the chairperson's signature and date of review, that the records, supplied by the Operator, record accurately the operations during the month.

## **Waterworks Emergency Response Plan**

The purpose of an **Emergency Plan** is to provide a detailed guide for dealing with an unexpected event that may have an impact on the:

- Delivery of a continuous supply of safe, clean, uncontaminated water to consumers.
- Protection of life - efficient and effective notification and communications of unsafe conditions.
- Protection of property - fire protection, impacts of flooding.
- Protection of the environment - erosion, hazardous materials contamination of soil and air.

See Complete Plan entitled: **Waterworks Emergency Response Plan (to follow at a later date)**