

1. Incidents of Regulatory Non-Compliance: Drinking Water Systems

The following Incidents of Regulatory Non-Compliance with the terms and conditions of the Drinking Water Works Permit or the Municipal Drinking Water License, O.Reg 170/03 – Drinking Water Systems and O.Reg 169/03 – Ontario Drinking Water Quality Standards are noted:

Chatham Drinking Water System

Residual Management Discharge Exceedances

- 1 instance of total chlorine residual over the maximum single sample concentration limit
- 1 instance of total chlorine residual over the annual average concentration limit

Wheatley Drinking Water System

Residual Management Discharge Exceedances

- 1 instance of total chlorine residual over the maximum single sample concentration limit
- 1 instance of total chlorine residual over the annual average concentration limit
- 1 instance of residuals management total suspended solids over the annual average concentration limit

Adverse Water Quality Incidents:

Chatham Drinking Water System (including Dover, North Kent & Thamesville)

Bacteriological Sample Results

- 2 instances of total coliforms in a distribution sample

Pressure Loss in the Distribution System

- 2 instances of pressure less than 20 psi

Substances greater in concentration than the drinking water quality standards

- 1 instance of benzene in a distribution sample

Ridgetown Drinking Water System

Pressure Loss in the Distribution System

- 1 instance of pressure less than 20 psi

Wheatley Drinking Water System

Pressure Loss in the Distribution System

- 1 instance of pressure less than 20 psi

Bacteriological Sample Results

- 1 instance of total coliform in a distribution sample

2. Incidents of Regulatory Non-Compliance: Wastewater Systems

The following incidents of Regulatory Non-Compliance with the terms and conditions of the Environmental Certificates of Approval (ECA - Provincial), and the Wastewater Systems Effluent Regulation (WSER - Federal) are noted:

Blenheim & Charing Cross Wastewater System**Bypass Event**

- 1 planned bypass of the sand filtration process

Effluent Limit Exceedances

- 2 Escherichia coli average geomean concentration in the final effluent

Chatham Wastewater System**Bypass Events**

- 1 planned bypass of the disinfection process
- 1 emergency bypass of the secondary treatment process

Overflow Events

- 7 emergency overflow events at pump stations in the collection system

Spill Event

- 1 industrial facility spill into the collection system

Dresden Wastewater System**Effluent Limit Exceedances**

- 1 total phosphorus average concentration in the final effluent
- 2 total residual chlorine single sample concentrations in the final effluent
- 1 total phosphorus average waste loading in the final effluent

Mitchell's Bay Wastewater System**Effluent Limit Exceedances**

- 1 Biological Oxygen Demand (5-day) concentration in the final effluent

Ridgetown Wastewater System

Effluent Limit Monitoring

- 11 instances of pH monitoring not achieved
- 7 instances of Temperature monitoring not conducted

Spill Event

- 1 instance of sanitary sewage spilled through a faulty valve in the collection system

Tilbury Wastewater System

Effluent Limit Exceedance

- 1 Total Phosphorus concentration in the final effluent

Wallaceburg Wastewater System

Bypass Events

- 2 emergency bypasses of the secondary treatment process
- 2 emergency bypasses of the disinfection process

Wheatley Wastewater System

Effluent Limit Exceedances

- 3 Total Residual Chlorine concentrations in the final effluent
- 1 Total Phosphorus concentration in the final effluent

Effluent Limit Monitoring

- 8 instances of Dissolved Oxygen monitoring not conducted

Spill Events

- 4 instances of Chlorinated effluent discharge to Lake Erie

3. Deviations for Critical Control Points – Drinking Water Systems

A Critical Control Point is an essential step or point in the system where controls are applied to prevent or eliminate a hazard or to reduce it to an acceptable level. The following incidents of Deviation from Critical Control Points occurred:

Chatham Drinking Water System

Distribution System Pressure Loss

- 2 instances while the Mitchell's Bay Elevated Tower was out of commission

South Drinking Water System

Filtration, Inadequate Filtration to meet the regulatory requirements

- 1 instance of elevated pressure decay testing results

4. Deviations for Critical Control Points – Wastewater Systems

A Critical Control Point is an essential step or point in the system where controls are applied to prevent or eliminate a hazard or to reduce it to an acceptable level. The following incidents of Deviation from Critical Control Points occurred:

Chatham Wastewater System

Failure of Equipment or Process Associated with Aeration

- 10 instances of inadequate dissolved oxygen concentrations

Failure of Equipment or Process Associated with Phosphorus Removal

- 10 instances of prolonged, inadequate or low ferrous chloride dosing

Failure of Equipment or Process Associated with Disinfection

- 1 instance of chlorination dosing disruption (planned)

Failure of Equipment or Process Associated with De-Chlorination

- 1 instance of sulfur dioxide dosing disruption (planned)

Dresden Wastewater System

Failure of Equipment or Process Associated with Phosphorus Removal

- 1 instance of alum dosing disruption

Ridgetown Wastewater System

Failure of Equipment or Process Associated with Aeration

- 8 instances of inadequate dissolved oxygen concentrations

Wallaceburg Wastewater System

Failure of Equipment or Process Associated with Phosphorus Removal

- 1 instance of ferrous chloride dosing disruption

Failure of Equipment or Process Associated with Disinfection

- 2 instances of UV system disruption

Wheatley Wastewater System

Failure of Equipment or Process Associated with De-chlorination

- 5 instances of bisulfite dosing disruption

5. Effectiveness of the Risk Assessment Process

During the Risk Assessment process, hazardous events to the drinking water systems and wastewater systems are identified. Available Controls to address the Hazardous Events are determined. Based on the Available Controls, rankings for Consequence, Likelihood and detectability are established.

Based on the above rankings Critical Control Points are determined and Critical Control Limits are implemented.

Infrastructure Review / Infrastructure Maintenance, Rehabilitation and Renewal activities are also reviewed and updated for any relevant infrastructure and associated equipment with regards to Hazardous Events and Available Controls.

Risk Assessments are completed as a cycle. After creation and implementation, reviews are completed each year for 2 years, the 3rd year being a renewal of the risk assessments.

During 2025, reviews of the risk assessments were conducted. The controls were reviewed for accuracy and updated accordingly. There were no significant changes to the risk assessments.

6. Internal and External Audit Results

Internal Auditing

Internal Auditing is the Check process of the Drinking Water Quality Management System (DWQMS) cycle. Internal audits are a self-evaluation of the Quality Management System (QMS), to determine if the Chatham-Kent Public Utilities Commission (CK PUC) is conforming to the requirements of the standard.

Internal Audits are conducted on an on-going basis scheduled throughout the year. Internal auditing is conducted by trained representatives of the PUC's Compliance & Quality Standards department.

Audits are conducted with co-operation from PUC Operations, Engineering, Compliance and Management staff. Audits are also conducted with co-operation from PW staff.

Internal Auditing findings from 2025 demonstrated that our QMS's were meeting the requirements of the standard. The majority of Corrective Action Requests (CARs) were issued as a non-conformity to a procedure or requirement and/or documentation/record keeping. Corrective Action was undertaken, in an attempt to rectify the issues.

Opportunities for Improvement (OFIs) were recognized where conformance to the requirement is determined, but there is an opportunity for improvement.

Preventative Action Requests (PARs) were identified to prevent the occurrence of non-conformances.

External Audits

Surveillance Systems Audit

A desktop audit of the operational plans for the subject system to assess whether the documented QMS meets the PLAN requirements of the DWQMS V2.

- **Conformance:** The management system is effectively implemented and maintained and meets the requirements of the standard relative to the scope of the audit.
- **Opportunities for Improvement:** It was suggested to consider having summary documents for the Critical Control Points. These documents already exist but have not historically been provided to the external auditor. They will be provided moving forward.

7. Results of Emergency Response Testing

The annual 2025 CK PUC Mock Emergency was conducted in the form of response to a critical electrical failure resulting in a temporary full outage of incoming hydro power at the Chatham Water Treatment Plant.

The Mock Emergency captured the availability of emergency/standby power, activation of interconnects, actions taken for immediate response and recovery of the Chatham Drinking Water System, and long-term infrastructure upgrades that are recommended to improve resilience.

8. Operational Performance: Drinking Water Systems
Rated Capacity Data

DRINKING WATER SYSTEM	RATED CAPACITY m³	AVERAGE DAILY FLOW m³	% of RATED CAPACITY	MAXIMUM DAILY FLOW m³	% of RATED CAPACITY
Bothwell	--	236	--	1,322	--
Chatham	67,999	31,333	46	43,681	64
Ridgetown (Erie)	2,780	1,093	39	1,702	61
Ridgetown (Scane)	1,310	548	42	1,088	83
South CK	22,809	10,257	45	14,814	65
Wallaceburg	13,600	4,296	32	6,493	48
Wheatley Temporary Treatment Plant	8,640	4,764	55	6,832	79
Wheatley	23,846	5,126	21	8,365	35

Significant operational issues encountered during this reporting period:

Chatham Drinking Water System

On September 21, 2025, the Chatham Water Treatment Plant experienced a critical electrical failure resulting in a loss of incoming hydro power. The facility’s backup generator initially maintained operations but later failed during troubleshooting, causing a temporary full outage. Emergency measures—including generator repairs, activation of interconnects, and deployment of an additional 1,000-amp rental generator—enabled continued water treatment and distribution without triggering a boil-water advisory. Corrective actions and long-term infrastructure upgrades are recommended to reduce recurrence risk and improve resilience.

High level summaries of events that mitigate and/or correct system deficiencies:

Wheatley Drinking Water System

The Wheatley Water Distribution System received treated water through multiple interconnects from the South Chatham-Kent Drinking Water System and from the Leamington Distribution System, for the beginning of 2025, until the Wheatley Temporary Treatment Plant came online on May 10, 2025. The Wheatley Temporary Treatment Plant supplied the Wheatley Distribution System until November 21, 2025, when it was decommissioned. The Wheatley Water Treatment Plant was rehabilitated and resumed supplying the Wheatley Water Distribution System on December 15, 2025.

Ridgetown Drinking Water System

The Colby #2 well was commissioned and started supplying the Ridgetown Water Distribution System in June of 2025. Wells 3A and #2 Hitch ceased supplying the distribution system, but Well #2 Hitch will be maintained as a stand by well.

Watermain Breaks

DRINKING WATER SYSTEM	# of WATERMAIN BREAKS
Bothwell	0
Chatham	
Chatham	69
Dresden	10
Mitchell's Bay	1
Pain Court	0
Thamesville	1
Ridgetown	
Ridgetown	10
Highgate	0
South CK	
Blenheim	7
Cedar Springs	0
Charing Cross	0
Dealtown	0
Erieau	0
Merlin	2
Shrewsbury	4
Wallaceburg	15
Wheatley	
Wheatley	3
Tilbury	11
TOTAL	133

9. Operational Performance: Wastewater Systems

Rated Capacity Data

WASTEWATER SYSTEM	RATED CAPACITY m ³	AVERAGE DAILY FLOW m ³	% of RATED CAPACITY	MAXIMUM DAILY FLOW m ³
Blenheim	4,045	1,963	49	6,499
Chatham	36,000	19,550	54	51,570
Dresden	4,546	1,455	32	3,854
Merlin	464	145	31	996
Mitchell's Bay	509	120	23	598
Ridgetown	2,347	1,898	81	4,693
Tilbury	5,434	2,436	45	28,490
Wallaceburg	10,800	5,560	51	25,320
Wheatley	2,752	1,760	64	5,274

Significant operational issues encountered during this reporting period:

Blenheim Wastewater System

Waterfowl that nest on the tertiary sand filters defecate on the sand filters leading to increased concentrations of Escherichia coli discharged in the final effluent from the treatment system.

Algae growth in lagoon cells during the summer months is pumped onto the sand filters resulting in sand filter media plugging, restricting the filtration flow and potential removal of nutrients and bacteria. Due to the algal growth and fouling/plugging of the sand filters, a planned bypass of the sand filters was required.

Dresden Wastewater System

Operational adjustments to increase disinfection in response to increased E. coli concentrations inadvertently led to two single sample exceedances of the total residual chlorine (TRC) limit. De-chlorination pucks, which are effective but require constant maintenance, monitoring and upkeep, are being used until the de-chlorination system is installed and commissioned.

Mitchell's Bay Lagoons Wastewater System

Algae growth in lagoon cells are thought to be responsible for the elevated biological oxygen demand concentrations experienced during the lagoon's discharge. Sampling of the cell contents prior to discharge was performed and had biological oxygen demand concentrations below the limits.

Wheatley Wastewater System

Single sample elevated total residual chlorine concentrations are thought to have been caused by the use of a spectrophotometer that did not have a detection range that was low enough. A photometer that was able to detect ultra low total chlorine concentrations was purchased.

10. Raw Water Supply & Drinking Water Quality Trends

Raw Water Supply

Ground Water (Ridgetown Drinking Water System)

Well # 2 (Hitch) continues to exhibit a steady increasing trend in raw water turbidity and ceased supplying the treatment system in June of 2025 when the Colby #2 well was commissioned and started supplying the Ridgetown Water Distribution System. Well #2 (Hitch) will be maintained as a stand by well.

Naturally occurring Fluoride and Sodium remain consistently above the drinking water quality standards.

Lake Erie (Chatham, South Chatham-Kent & Wheatley Drinking Water Systems)

The monthly average colour of the incoming lake water at the Wheatley Water Treatment plant intakes has decreased significantly from the 2024 average of 13.5 TCU to the 2025 average of 3.0 TCU.

Chenal Ecarte (Wallaceburg Drinking Water System)

The trending of the monthly average turbidity of the incoming river water at the Wallaceburg Water Treatment Plant intake has continued to decrease from 2008 to 2025.

Treated Drinking Water

The total volume of treated drinking water produced has been trending upwards from 2008 to 2025.

Distribution Water

Chatham DWS, South CK DWS, and Wallaceburg DWS continue to exhibit sustained or reduced concentrations of disinfection by-products, THM's (Trihalomethanes).

Distribution water continues to see decreased concentrations of THM's in the drinking water due to the installation of hydrodynamic mixing systems in elevated tanks, when rehabilitation/improvements are completed.

Ridgetown DWS has exhibited increased THM's since expansion of the distribution system to Highgate, however decreases in concentration have been observed during 2022 to present.

Both disinfection by-products (THM and HAA) in the Wheatley DWS have decreased substantially since 2024.

Chatham DWS and Ridgetown DWS continue to exhibit sustained or reduced concentrations of disinfection by-products, HAA's (Haloacetic Acids).

11. Raw Wastewater Influent & Effluent Quality Trends

Raw Wastewater Influent

Raw wastewater influent collection decreased slightly in 2025 from the previous 3 years. Total collection was 12,733,304 m³, a decrease of approximately 14% from, 14,729,001 m³ in 2024. Precipitation received in Chatham-Kent in 2025 decreased by 24% from 2024.

Dresden Wastewater System

Trending of increased concentrations of Total Suspended Solids, Total Phosphorus and Biochemical Oxygen Demand (BOD) observed since 2021, potential due to a seasonal produce production run at a local industry.

Wastewater Effluent

Effluent quality discharged from the wastewater systems was typical of previous years with no significant elevations in parameter concentrations. Effluent quality complied with the Environmental Compliance Approval limits the majority of the reporting year, with some exceptions due to events.

12. Changes that could affect the Quality Management Systems

MECP Disinfection Procedures – Currently in final draft status (Not implemented at this time)

Technical Working Group developed procedures:

- Water Treatment Plant Disinfection Procedure to replace AWWA Standard C653
- Water Storage Facility Disinfection Procedure to replace AWWA Standard C652
- Well Disinfection Procedure to replace AWWA Standard C654

DWQMS 3.0

Announced in 2025 as a proposed draft and implemented in February of 2026. Operational Plan Elements will need to conform to DWQMS 3.0 before 2027.

13. Consumer Feedback

2024 Drinking Water System feedback received as complaints or inquiries.

DRINKING WATER SYSTEM	TASTE & ODOUR	COLOUR	LOW PRESSURE	OTHER
Bothwell				
Chatham				
Chatham	12	20	1	5
Dresden	2		1	
Mitchell's Bay			1	
Pain Court				
Thamesville				
Ridgetown				
Ridgetown	2	3	2	
Highgate				
South CK				
Blenheim		5	4	
Charing Cross		1		
Dealtown				
Erieau			1	
Merlin				
Shrewsbury		1		
Rondeau		1		1
Wallaceburg	2	4	1	2
Wheatley				
Wheatley		1		1
Tilbury		1		3
TOTALS	18	37	11	12

2025 Wastewater System feedback received as complaints or inquiries.

WASTEWATER SYSTEM	ODOUR	OTHER
Blenheim & Charing Cross		
Chatham		
Dresden		
Merlin		
Mitchell's Bay		
Ridgetown & Thamesville		
Tilbury		
Wallaceburg		
Wheatley	1	
TOTALS	1	

14. Resources Needed to Maintain the Quality Management Systems

1. Electronic Document Management System
 - a. Software
 - b. Annual Maintenance
 - c. On site backup of every document
2. Quality Management System Representative
 - a. Wages
 - b. Workstation
3. Administrative Costs
 - a. Travel for Conferences, Meetings
 - b. Stationery, photocopies
4. Internal Auditing Staff
 - a. Captured through Compliance Staff
5. External Audit Fee
 - a. Budgeted annually
6. Permit To Take Water Renewals
7. Municipal Drinking Water Renewals / Applications
8. Drinking Water Works Permit Amendments
9. Environmental Compliance Approval Applications / Amendments

15. Results of the Infrastructure Review

Infrastructure Addition, Renewal, Rehabilitation and Replacement projects and activities underway or completed in 2025:

Chatham Drinking Water System (including Dover, North Kent & Thamesville)

Renewal

- Backwash Pump: 815 L/s at 9.2m TDH backwash pump and motor and associated piping/supports/electrical will be replaced with new piping/supports/electrical and a new backwash pump rated at 1,033 L/s at 17.0 m TDH with 300 HP motor and VFD

Rehabilitation

- Hydrodynamic mixing system: Mitchell's Bay Elevated Tank

Replacement

- Pressure Booster Pump: Dover Rechlorination and Booster Pumping Station
- Faircourt Ave. and Cox Ave. watermain replacement (Faircourt Avenue and Cox Avenue to Delaware Avenue, Chatham)
- King Street West watermain replacement (Second Street to Lacroix Street, Chatham)
- First Street watermain replacement (King Street West to Wellington Street West, Chatham)

Ridgetown Drinking Water System

Addition

- Colby Well #2: Drilled groundwater production well

Rehabilitation

- Harold St watermain relining (Harold St from Jane St to Lovers Lane, Ridgetown)
- Lovers Lane watermain relining (Lovers Lane from Harold St to Cecil St South, Ridgetown)
- Cecil St South watermain relining (Cecil St South from Lovers Lane to Myrtle St, Ridgetown)
- Myrtle St watermain relining (Myrtle St from Church St to Cecil St South, Ridgetown)

South Chatham-Kent Drinking Water System

Addition

- Backflow Control Equipment: of the raw water 900 mm diameter concrete pressure header pipe to the South Chatham-Kent Water Treatment Plant for backwashing filters

Wheatley Drinking Water System

Rehabilitation

- Wheatley Water Treatment Plant

Renewal

- Standby / Emergency Generator: Wheatley Water Treatment Plant

Blenheim & Charing Cross Wastewater System

Rehabilitation

- Lagoon Banks: erosion control and prevention along Lagoon Cell #2

Chatham Wastewater System

Renewal

- Cox Ave. and Faircourt Ave., Chatham Sewer Separation (Faircourt Avenue and Cox Avenue to Delaware Avenue)
- King Street West, Chatham Sewer Separation (Second Street to Lacroix Street, Chatham)

16. Operational Plan Currency, Content and Updates

Annual review of all 21 Water & Wastewater Operational Plan Elements were reviewed by the Management Team. Revisions were completed as necessary.

Numerous System Level Procedures, Standard Operating Procedures and associated documents were reviewed by the applicable staff. Revisions were completed as necessary.

New System Level Procedures and site-specific Procedures and documents were created and implemented.

Document and procedure revisions or creations required by the Wastewater Collection Consolidated Linear Infrastructure (CLI) ECA's have been completed and continue to be undertaken.

The 2021 regulated Water and Wastewater Records were archived at the McGeorge warehouse after remaining on site at the facilities for 3 years. After a period of 12 additional years these records will be released for retrieval or destruction.

The 2009 regulated Water Records were released for destruction, following a retrieval period issued.

17. Staff Suggestions

Plant Rounds Log Sheets (Various)

Personnel have been suggesting revisions to various monthly log sheets to improve efficiencies and minimize paper submissions.

18. Continual Improvement

Best Management Practices published by the Ministry:

- Filter Monitoring and Inspection
Develop and implement a plan for monitoring and inspecting filters to maintain optimal performance and include or reference the plan in the operations and maintenance manuals for the system.
- Source Water Quality
Develop and implement a program to monitor source water quality to identify at an early stage, any deterioration in water quality that may lead to challenges with drinking water treatment processes.
- Water Storage - Cleanout, inspection and maintenance
Develop and implement a program for the inspection of water storage facilities to minimize the potential for water quality issues and maximize the service life of the facility.
- Water Storage – Covered and Secure
Develop and implement a program for the inspection of access points associated with water storage facilities to ensure they are covered to:
 - reduce the risk of airborne contamination from insects, birds and mammals
 - prevent algal contamination
- Watermain Flushing
Develop and implement a program to flush watermains at regular set intervals.
- Valve Exercise and Inspection
Develop and implement a valve inspection and exercise program
- Hydrant Operation and Inspection
Develop and implement a hydrant maintenance and fire flow testing program that includes

regular checks and inspection of hydrants, blow-offs, sampling stations and other similar equipment.

- Hydrant Access
Develop a policy or by-law that restricts access to fire hydrants.
- Pressure Monitoring
Develop a program to monitor distribution system pressure.
- Disinfection Residuals – Maximums
Develop and implement a program to monitor and respond to high chlorine residuals in the distribution system.
- Disinfection Residuals – Extremities
Develop procedures to verify at regular intervals that chlorine residual monitoring in the distribution system includes an optimal dispersion of sample locations that are representative of the entire system, including extremities and dead-ends.
- Backflow Prevention Program
Develop and implement a backflow prevention program that addresses cross connections and connections to high hazard facilities.
- Spill Containment – Chemicals and Fuels
Develop a program to review spill containment within the drinking water system.
- Spill Clean-up
Develop and implement procedures for spill clean-up.
- Standby Power - Testing
Develop and implement standby power testing procedures.
- Security - General
Develop a program to assess site security and determine the potential for intruder access.
- Cyber Security
Develop a program to assess cyber security and protect systems such as a supervisory control and data acquisition (SCADA) from unauthorized access and cyber-attacks.
- Water Metering
Develop a program to implement water metering for the drinking water system.
- Water Loss
Develop and implement a program to control and limit water losses within the system.
- Water Conservation
Develop and implement a water conservation program.
- All Log Entries
Develop and implement procedures for all logbook entries. Undertake the review of logs on a routine basis to verify that internal practices are being followed and desired outcomes are being achieved.
- Digital Log Entries
Develop and implement strong IT security measures to limit access to e-logs and keep information secure.
- Process Safeguards
Develop and implement procedures to ensure digital records are secured and protected.
- Verifying Accuracy of Records
Develop and implement procedures to verify accuracy of documented information to help prevent mistakes and record falsification, and to take measures to rectify issues.

The PUC has previously undertaken some of the Best Management Practices and will consider and undertake additional Best Management Practices of the water and wastewater systems where applicable.

Best Management Practices from Ministry Inspection Reports:

None issued by the MECP in 2025.

Procedure Revisions & Development:

Numerous procedure revisions and developments were completed in 2025 to include new, update/revise or to obsolete content and information, as well as, inclusion of any Quality Management Standard requirements or regulatory requirements from the Municipal Drinking Water Licence, Drinking Water Works Permit, Environment Compliance Approvals, or regulations, bulletins, etc.

Examples:

- Chemical Offloading – Tanker Loads – Procedure revised and implemented.
- Renewed Municipal Drinking Water Licences
- Updated Drinking Water Works Permits
- Overflow – Combined Sewer (CSO) – Response, Reporting & Corrective Actions – Procedure revised and implemented
- Coagulation Dosing Interruption Corrective Actions & Reporting – Procedure - DWQMS implemented
- Disinfection and De-Chlorination Interruption Corrective Actions & Reporting – Procedure – WWQMS implemented