

## 1. Incidents of Regulatory Non-Compliance: Water

The following Incident of Regulatory Non Compliance with the terms and conditions of the Drinking Water Works Permit or the Municipal Drinking Water License occurred:

### *Ridgetown Drinking Water System*

Ridgetown DWS PTTW 8631-AQ5PFV  
Monitoring requirements 4.2

*'The Permit Holder shall operate ground water monitoring program that is consistent with the Monitoring Strategy as outlined in Item 1 of Schedule A. All reasonable efforts shall be taken to ensure that monitoring is conducted in at least one observation well at the Colby Well Field and at least one observation well at the Scane Well Field. Water level measurements shall be obtained at least once per hour.'*

Equipment issue with the monitoring equipment at the Scane Well Field is at the Golfcourse Monitoring Well. External Technician will not be dispatched due to COVID-19 pandemic. Unsure if equipment will retain all data until repaired and downloaded.

MECP Provincial Officer identified 'it is the Ministry's position that all reasonable efforts have been taken given the current circumstances.'

*This issue was resolved later in 2020. There was a delay in receiving new monitoring equipment, which resulted in some data loss. New monitoring equipment has been installed at multiple monitoring wells.*

## 2. Incidents of Regulatory Non-Compliance: Wastewater

The following incidents of regulatory non compliance with the terms and conditions of the Environmental Certificates of Approval are noted:

### *Chatham WW*

- Final Effluent Total Chlorine Residual
  - Jun: 0.02 mg/L, Monthly Average (Limit 0.01 mg/L)

*Tilbury WW*

- Final Effluent Total Phosphorus Concentration
  - Jan: 0.71 mg/L, Monthly Average (Limit 0.50 mg/L)
  - Feb: 1.55 mg/L, Monthly Average (Limit 0.50 mg/L)
  - Mar: 0.98 mg/L, Monthly Average (Limit 0.50 mg/L)
  - Jun: 0.74 mg/L, Monthly Average (Limit 0.50 mg/L)
  - Jul: 0.78 mg/L, Monthly Average (Limit 0.50 mg/L)
  - Sep: 0.75 mg/L, Monthly Average (Limit 0.50 mg/L)
  - Oct: 0.69 mg/L, Monthly Average (Limit 0.50 mg/L)

The PUC has determined that the root cause is discharge of non-reactive phosphorus from a local industry and is working closely with the industry to address the issue.

- Final Effluent Ammonia Concentration
  - Oct: 5.8 mg/L, Monthly Average (Limit 2.0 mg/L, May 01 to Oct 31)
- Final Effluent Ammonia Loading
  - Oct: 10.8 kg/day, Monthly Average (Limit 10.8 kd/day, May 01 to Oct 31)

### 3. Deviations from Critical Control Points: Water

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:

*South C-K DWS*

- Filtration - Membrane Breakdown/Failure
  - Sep 05, 06, 11, 14, 15, > 1.50 psi/min to < 2.00 psi/min Pressure Decay Test Results for CMF Unit 101
  - Sonic testing, locking out of modules based on sonic testing results

*Tilbury DS*

- Secondary Disinfection - Excessive Chlorine Residual
  - Jul 31: > 4.0 mg/L @ discharge of Tilbury Rechlorination Facility
  - Following maintenance, the chlorine pump wasn't turned back to auto which cause a chlorine spike > 4.0 mg/L, during this time the rotork valve was in close position.

*Wallaceburg DWS*

- Coagulation Dosing Interruption
  - June 7: Coagulant pump failure
  - Alarm generated, plant shut down by alarm. Pump was replaced and SCADA/PLC programming changes made. New back-up pump purchased and inventoried.

#### 4. Deviations from Critical Control Points: Wastewater

Similar to Drinking Water, a Critical Control Point in wastewater 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 WW*

- Aeration Dissolved Oxygen Concentrations < 2.0 mg/L
  - Dec 28, 2019 – Jan 07, 2020
  - Increased MLSS caused lower DO
  - Increased wasting to reduce MLSS and increase DO
- Final Effluent Bacteriological Sampling > 200 organisms / 100 mL E. Coli in Final Effluent (single sample)
  - Jun 29, NDOGT (No Data Overgrown with Target Organisms)
  - Nov 02, NDOGT (No Data Overgrown with Target Organisms)
  - Adjusted chlorine dosing
- Final Effluent Total Phosphorus Concentrations > 0.75 mg/L
  - Aug 03, 1.01 mg/L (in-house result)
  - Increased ferrous dosing, decrease in final effluent results in days following
- Aeration Dissolved Oxygen Concentrations < 2.0 mg/L
  - Jul – Sep (various dates)
  - Turbo blower reached maximum capacity
  - Lamson blowers utilized to restore DO concentrations

*Dresden WW*

- Aeration Low DO Concentrations < 1.0 mg/L
  - Mar – Dec (various dates)
  - Grab readings, not online monitoring
  - Increased raw flows after staff working hours
  - Manual speed adjustment of mechanical aerators, two speeds - low and high

*Mitchell's Bay WW*

- Lagoon Storage – High Level > 45" below top of discharge chamber
  - Apr 30 – May 03, Lagoon depth readings above 45" below the top of the Cell 3 discharge chamber
  - Treated Cells 2 & 3 for Discharging
  - Discharge commenced on May 01

*Ridgetown WW*

- Final Effluent Bacteriological Sampling > 100 organisms / 100 mL E. Coli in Final Effluent (single sample)
  - Aug 04, 450 100 organisms / 100 mL
  - Aug 17, 410 100 organisms / 100 mL
  - UV channel cleaned & flushed

## 5. Effectiveness of the Risk Assessment Process

During the Risk Assessment process, hazards to the drinking water systems and wastewater systems are identified. Control limits are set and Procedures are identified or developed to address the hazards. Each water and wastewater system underwent the Risk Assessment process in 2020 during the period from April to August.

During the Risk Assessment reviews in 2020, the controls were reviewed for accuracy and updated accordingly. Infrastructure Maintenance, Rehabilitation and Renewals identified were also updated for the relevant infrastructure and associated equipment.

## 6. Internal and External Audit Results

*The Internal Audit* process is a self evaluation of the Quality Management System. It ensures that the System has been implemented and provides proof of the effectiveness of the System on an ongoing basis. Internal Audits are conducted on scheduled Wednesdays throughout the year. A total of 40 Internal Audits were conducted in 2020 including:

Drinking Water Systems:	10
Public Works:	13
Wastewater Systems:	9
Non-Operations	7
Management:	1

No Open Corrective Action remained to be carried forward into 2021.

*The External Audit* conducted by a third party contractor resulted in the issuance of 1 Non-Conformance and 4 Opportunities for Improvement.

### *Non-Conformance:*

Documentation of watermain break repair records were not always completed in full and lacked the documentation of mandatory information.

Documentation of watermain break repair records were not provided in a timely manner.

- Immediate Corrective Action:
  - Public Works Supervisors to review Main Repair Logbooks weekly and sign and date each record of a watermain repair as reviewed and entries complete as required.
- Root Cause Analysis findings:
  - Corrective Action is to simplify the recorded information and eliminating redundancies while ensuring Ministry required information is documented.
  - Main Repair Logbook template has been reviewed and under revision. New Main Repair Logs have been prepared and distributed to the Public Works Supervisors.
  - Internal audits will be conducted to review the immediate corrective action and root cause analysis corrective actions, when implemented.

### *Opportunities for Improvement:*

#### Process Flow Diagram for the Chatham DWS

- Update the process flow diagram to include the addition of the recently installed air scour blower as part of the filter system.
  - Completed

#### Risk Assessment Outcomes

- Clarify identification of all Critical Control Points, both regulatory and by risk ranking.
  - Completed and implemented

#### Communications

- Re-establish a renewal date for the Critical Supplier Acknowledgement to ensure currency of awareness of critical suppliers.
  - Established and implemented

#### Continual Improvement

- Critical Control Point deviations involving high risk to safe drinking water are addressed through a formal corrective action process
  - Established and implemented

## 7. Results of Emergency Response Testing

The Annual PUC Mock Emergency was conducted in the form of an update of the Business Continuity Plan. This exercise was driven by the developing COVID-19 Pandemic.

Chief Operators from each Area of the PUC, the Manager of Compliance & Quality Standards and the Director of Engineering and Compliance, participated in the 2020 Pandemic Plan Update Exercise by email.

The PUC Chief Operators were assigned to their facility or group of facilities to review and update the previous Business Continuity Plan version 2017. This data was originally prepared during the 2009 PUC Mock Emergency, and subsequently updated in 2011 and again in 2014. The activities and tasks performed at each facility or group of facilities were categorised into 'Must Do', 'High Priority,' 'Medium Priority,' and 'Low Priority' levels. The activities and tasks were further distilled into critical activities that included only 'Must Do,' and 'High Priority' levels.

Once these critical activities were identified, an FTE component was applied to the activities in the two highest priority categories. The FTE component reflects the number of staff required to maintain the essential operations of the PUC Water and Wastewater facilities and associated systems during an extended emergency such as the COVID-19 Pandemic.

## 8. Operational Performance: Water

There were no significant operating problems encountered during this reporting period.

### *Ridgetown DWS*

- Scane Well 7 was taken out of production due to raw water quality concerns.

## 9. Operational Performance: Wastewater

No significant operating problems were encountered during this reporting period, with the following exceptions:

### *Tilbury WW*

Historically, this facility has experienced fluctuating elevated Total Phosphorus concentrations in the final effluent leading to exceedances. The PUC has determined that the root cause of the issue is discharge of non-reactive phosphorus from a local industry. The PUC continues to work closely with the industry to address this issue.

## 10. Raw Water Supply & Drinking Water Quality Trends

Raw Water Supply:

### *Ridgetown DWS*

- Hitch Well, and Scane Wells 4 & 5 show a steady increasing trend in raw water turbidity.

Treated Drinking Water Trends:

- With respect to treated drinking water trends, demand increased in 2020, with the highest treated water flows since 2008
- 2020 production totalled 17,644,190 m<sup>3</sup> up approximately 13% from 15,579,532 m<sup>3</sup> the previous year.
- No exceedances of the Running Annual Average Limit for Trihalomethanes or Haloacetic Acids, disinfection byproducts, occurred during this reporting period.



## 11. Raw Wastewater Influent & Effluent Quality Trends

### Raw Wastewater Influent:

- With respect to raw wastewater influent trends, flows were down marginally in 2020.
- 2020 collection totalled 14,270,739 m<sup>3</sup>, from 14,683,404 m<sup>3</sup> the previous year.

### *Mitchell's Bay WW:*

- Raw wastewater influent flows continues to be above typical values due to increased lake levels and the water table. Collection System infrastructure projects are underway.

### *Wallaceburg WW*

- Raw wastewater influent flows continues to be above typical values due to increased river levels and the water table.

### Effluent Quality Trends:

### *Tilbury WW*

- Exceedances of Total Phosphorus concentrations in the final effluent due to the discharge of non-reactive phosphorus from a local industry, as previously mentioned.

## 12. Follow Up Action Items from Previous Management Reviews and Status of Management Action Items Identified between Reviews

### *Alarm Testing Procedures:*

- Developed/revised and implemented for all drinking water systems.

### *SCADA PLC Maintenance & Programming – Procedure & SCADA PLC Maintenance Checklist:*

- Deemed necessary and required.
- Developed and implemented.



*QMS Awareness Session:*

- Typically delivered at PUC Townhall Meetings, no Townhall Meeting due to pandemic.
- MDWL & DWWP: New Requirements – Staff Education sessions will be considered as the QMS Awareness Session.

### 13. Changes that could affect the Quality Management System

As a result of the re-organization, revisions will be required to the Operational Plan and associated procedures and documents:

- Revisions necessary are being captured through Element and document reviews
- Revisions underway and continue to be on-going as identified

*Watermain Disinfection Procedure:*

- New version released from the Ministry 2020-Aug-01
- Required to be complied to by 2021-Feb-01
  - New watermains and watermain repair procedures updated accordingly
  - Relay of information to Directors, Managers, including Public Works

*Municipal Drinking Water Licence renewals and re-issues of Drinking Water Works Permits:*

Calibration requirements of CT Monitoring Equipment

- Calibration procedure updated accordingly
- Staff information sessions of new requirements

Harmful Algal Blooms (HABs)

- Requirement for Harmful Algal Blooms Plan
- CK PUC has a plan from directives from the Ministry since 2017
- Prepared revised plan with the requirements of from the MDWL
- Staff information sessions of new requirements

#### 14. Consumer Feedback

SYSTEM	TASTE & ODOR	COLOUR	LOW PRESSURE	OTHER
Bothwell	0	0	0	1
Chatham	1	25	12	3
North Kent	0	2	0	1
Ridgetown	1	4	0	0
South	1	5	2	1
Tilbury	2	0	1	5
Wallaceburg	1	7	2	1
Wheatley	1	2	1	3
<b>TOTALS</b>	<b>7</b>	<b>45</b>	<b>18</b>	<b>15</b>

#### 15. Resources Needed to Maintain the Quality Management System

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

## 16. Results of the Infrastructure Review

### *Chatham DWS:*

Infrastructure Rehabilitation: Pain Court Elevated Tank Rehabilitation & Improvements

### *South C-K DWS:*

Infrastructure Renewal: Ellen Street Watermain Replacement, Blenheim

### *Wallaceburg DWS:*

Infrastructure Renewal: Chlorination System

Infrastructure Renewal: Low Lift Pump: Replacement of Diesel Pump with Electric Pump

Infrastructure Renewal: High Lift Pump: Replacement of Diesel Pump with Electric Pump

Infrastructure Renewal: Dufferin Avenue Watermain Replacement, Wallaceburg

### *Chatham WW:*

Infrastructure Rehabilitation: Chlorine Contact Chamber & Secondary Clarifier Structures

Infrastructure Rehabilitation: Bloomfield Rd from Richmond St to Riverview Dr Collection System Relining, Chatham

### *Mitchell's Bay WW:*

Infrastructure Rehabilitation: Main Street Collection System Relining & Repair, Mitchell's Bay

### *Tilbury WW:*

Infrastructure Renewal: Standby Generator at the Tilbury WW Plant

### *Wallaceburg WW:*

Infrastructure Renewal: Standby Generator at the Napier Street Sewage Pump Station, Wallaceburg

Infrastructure Renewal: Collection System Replacement on Queen St, Herbert St and Gillard St, Wallaceburg

*Wheatley WW:*

Infrastructure Renewal: Standby Generator at the Wheatley WW Plant

## 17. Operational Plan Currency, Content and Updates

Annual Review of prescribed Procedures was conducted and all 21 Operational Plan Elements were reviewed by Management. Revisions were completed as necessary.

Document and procedure revisions or creations required by, new Municipal Drinking Water Licences, re-issued of the Drinking Water Works Permits and Watermain Disinfection Procedure were completed and implemented.

The 2016 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 2004 regulated Water and Records were released for destruction, following a retrieval period issued.

## 18. Staff Suggestions

*Critical Control Point and Limit Deviations & Response Actions:*

- Suggestion by Chief Operator to utilize SCADA, Historian and e.RIS, where available, to review for CCP & CCL deviations
  - Implementation underway

*PUC Emergency Contact List:*

- Suggestion by staff member to include the addresses of all facilities, wells and pump stations
- All addresses available for reference on one document
  - Completed and implemented

*SCADA PLC Maintenance Checklist:*

- Suggestion by Maintenance Mechanic to have the SCADA PLC Checklist in an editable, fillable pdf format
  - Completed and implemented