Tri-County Water Board of Management Agenda

September 24, 2024, 7:00 p.m.
Council Chambers
160 Main Street
West Lorne

Pages

1. Call to Order

2. Adoption of Agenda

   Recommendation:
   That Tri-County Water Board hereby adopts the Agenda for September 24, 2024, as presented.

3. Disclosure of Pecuniary Interest

4. Adoption of Previous Minutes 1

   Recommendation:
   That the Tri-County Water Board hereby adopts the minutes of June 25, 2024, as presented.

5. Business Arising from Minutes

6. Reports

   6.1 Financials, as of August 31, 2024 4

   Recommendation:
   That Tri-County Water Board hereby accept the Financials, as of August 31, 2024, as presented.

6.2 Operational Plan, Tri County Drinking Water System, Sam Smith, OCWA 6

Recommendation:
That Tri-County Water Board hereby accept the Operational Plan, Tri-County Water System, as presented by Sam Smith, Senior Operations Manager, Ontario Clean Water Agency.

6.3 Tri-County Drinking Water System, Operations Report, Second Quarter 2024, Sam Smith, OCWA 110

Recommendation:
That Tri-County Water Board hereby acknowledge receipt of the Operations Report, Second Quarter, 2024.

6.4 Municipal Drinking Water License and Drinking Water Works Permit review, Meagan Garber, OCWA 120

Recommendation:
That Tri-County Water Board hereby acknowledge receipt of the Municipal Drinking Water License and Drinking Water Works Permit, as presented.

6.5 Nick Larson, OCWA Re: Asset Management Plan, 2024 167

Recommendation:
That Tri-County Water Board hereby accept the Asset Management Plan 2024, as presented by Nick Larson, Ontario Clean Water Agency.

7. Correspondence

Recommendation:
That West Elgin Council receive and file all correspondence not otherwise dealt with.

8. Adjournment

Recommendation:
That the Tri-County Water Board hereby adjourn at _____ pm, to meet again at 7:00pm, on November 19, 2024, or at the Call of the Chair.

Tri-County Water Board of Management

Minutes

Date: June 25, 2024, 7:00 p.m.
Location: Electronic Participation Meeting via Zoom

Present:	**Allan Mayhew, Southwest Middlesex** **Mike Hentz, Dutton Dunwich** **Bill Denning, West Elgin** **Corey Pemberton, Dutton Dunwich** **Don McCallum, Southwest Middlesex** **Kevin Derbyshire, Newbury** **Mike Sholdice, Southwest Middlesex** **Ryan Statham, West Elgin** **Darren Galbraith, Chatham-Kent** **Michelle Navackas, West Elgin** **Richard Leatham, West Elgin**
Regrets:	**Taraesa Tellier, West Elgin** **Amarilis Drouillard, Dutton Dunwich**
Staff Present:	**Magda Badura, CAO/Treasurer, West Elgin** **Cathy Case, Clerk/Treasurer, Newbury** **Dale Le Britton, OCWA** **Robin Trepanier, OCWA** **Sam Smith, OCWA**
Regrets:	**Maegan Garber, OCWA** **Tracey Johnson, CAO/Treasurer, Dutton Dunwich** **Terri Towstiuc, Recording Secretary/Clerk, West Elgin**
Also Present:	**Christine Scrimgeour, Scrimgeour & Company,** **Vladamir Marenich, Energy Efficiency Specialist, OCWA**

1. Call to Order

Chair Corey Pemberton called the meeting to order at 7:02 pm.

2. Adoption of Agenda

TCWB 15

Moved: Allan Mayhew, Southwest Middlesex
Seconded: Bill Denning, West Elgin

That Tri-County Water Board hereby adopts the agenda for June 11, 2024, as presented.

Disposition: Carried

3. Disclosure of Pecuniary Interest

No disclosures

4. Minutes

TCWB 16

Moved: Bill Denning, West Elgin
Seconded: Mike Sholdice, Southwest Middlesex

That the Tri-County Water Board hereby adopts the minutes of May 21, 2024, as presented.

Disposition: Carried

5. Business Arising from Minutes

None

6. Presentation of 2023 Financial Statement, Presented by Christine Scrimgeour

TCWB 17

Moved: Bill Denning, West Elgin
Seconded: Mike Sholdice, Southwest Middlesex

That the Tri-County Water Board hereby accept and approved the Draft Financial Statements for the year ended December 31, 2023.

Disposition: Carried

7. Vladimir Marenich, CDM Plan Update Tri County Water Supply

TCWB 18

Moved: Mike Hentz, Dutton Dunwich
Seconded: Ryan Statham, West Elgin

2

That Tri-County Water Board hereby receives the Energy Conservation and Demand Management Plan 2025-2029, and approves the adoption of the plan, as presented.

Disposition: Carried

8. Dale Le Britton to give Introduction of Sam Sianas

Dale Le Britton gave a quick introduction to the new Southwestern Region Manager, Sam Sianas, who will be assuming the role upon Mr. Le Britton's retirement.

9. Adjournment

TCWB 19

Moved: Mike Hentz, Dutton Dunwich
Seconded: Michelle Navackas, West Elgin

That the Tri-County Water Board hereby adjourn at 8:09 pm, to meet again at 7:00pm, on August 20, 2024, or at the Call of the Chair.

Disposition: Carried

Corey Pemberton, Chair

Magda Badura, Recording Secretary

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Tri-County Water Board

Statement of Financial Position
As of August 31, 2024

		2024 Actuals
02-7315-6110	BANK INTEREST	-
02-7315-6190	REBATES	(11,400.00)
02-7315-6590	WATER REV - MUNICIPAL - Note 1	(1,036,174.16)
02-7315-6591	Municipal Contribution - Capital Replacement	-
02-7315-7500	HYDRO	159,346.68
02-7315-7501	GAS	18,247.49
02-7315-7502	WATER	-
02-7315-7510	INSURANCE	29,500.20
02-7315-7511	TAXES	34,931.00
02-7315-7520	Grounds Maintenance - Phragmites Control	-
02-7315-7529	ADMINISTRATION EXPENSE	-
02-7315-7531	FINANCIAL PLAN	-
02-7315-7532	LICENSES & PERMITS	1,410.40
02-7315-7601	TELEPHONE & INTERNET	-
02-7315-7675	LEGAL	-
02-7315-7676	AUDIT	-
02-7315-7679	Chemicals	41,470.81
02-7315-7680	CONTRACTED SERVICES	245,992.50
02-7315-7681	Asset Management	-
02-7315-7900	TRANSFER TO RESERVE	-
02-7315-7901	TRANSFER FROM RESERVES	-
02-7315-8000	CAPITAL OVER $10,0000	715,994.44
		$ 199,319.36

Notes:

Note 1

Water Revenue

	2024 Actual Annual Consumption (m^3)
Chatham-Kent	64,122
Dutton/Dunwich	156,010
Southwest Middlesex	248,615
SWM - Newbury	30,197
West Elgin	364,866
	863,810

2024 Budget
(26,504.20)
-
(1,540,262.20)
(150,000.00)
283,000.00
31,000.00
-
28,000.00
71,961.00
5,000.00
8,026.20
10,000.00
1,000.00
-
1,000.00
5,000.00
65,000.00
491,985.00
5,000.00
150,000.00
(559,330.80)
1,120,125.00
$ -

2024 Budget Annual Consumption (m^3)
96,139
244,189
381,735
58,299
482,148
1,262,510

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

OPERATIONAL PLAN

For the Tri-County Drinking Water System

This Operational Plan is designed for the exclusive use of the system(s) specified in this Operational Plan.

This Operational Plan has been developed with OCWA's operating practices in mind and utilizing OCWA personnel to implement it.

Any use which a third party makes of this Operational Plan, or any part thereof, or any reliance on or decisions made based on information within it, is the responsibility of such third parties. OCWA accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Operational Plan or any part thereof.

QEMS

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Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	ToC issued
2019-08-16	1	Change MOECC to MECP

1. Purpose

To document OCWA's Quality & Environmental Management System (QEMS). This Operational Plan defines and documents the QEMS for the Tri-County Drinking Water System operated by the Ontario Clean Water Agency (OCWA). It sets out OCWA's policies and procedures with respect to quality and environmental management in accordance with the requirements of the Province of Ontario's Drinking Water Quality Management Standard (DWQMS).

2. Definitions

Drinking Water Quality Management Standard (DWQMS) – has the same meaning as Quality Management Standard for Drinking Water Systems approved under section 21 of the Safe Drinking Water Act (SDWA).

Operational Plan – means the operational plan required by the Director's Direction.

Quality & Environmental Management System (QEMS) – a system to:
a) Establish policy and objectives, and to achieve those objectives; and
b) Direct and control an organization with regard to quality.

Ministry - means the Ontario government ministry responsible for the administration of the SDWA.

3. Procedure

3.1 The Tri-County Drinking Water System is owned by the Tri-County Water Board. OCWA is the contracted Operating Authority for the Tri-County Drinking Water System.

3.2 OCWA's Quality & Environmental Management System (QEMS) is structured and documented with the purpose of:
1. Establishing policy and objectives with respect to the effective management and operation of water/wastewater facilities;
2. Understanding and controlling the risks associated with the facility's activities and processes;
3. Achieving continual improvement of the QEMS and the facility's performance.

3.3 The Operational Plan for the facility listed above fulfils the requirements of the MECP's DWQMS. The 21 QEMS Procedures within this Operational Plan align with the 21 elements of the DWQMS.

4. Related Documents

Ontario's Drinking Water Quality Management Standard, as amended from time to time
All QEMS Procedures and Documents referenced in this Operational Plan

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-01 was originally set out in the Main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). Revised as per corporate template

2019-08-16	1	Change MOECC to MECP
2024-08-12	2	Procedure updated definition of DWQMS, added definition of Ministry as the Ontario government ministry responsible for drinking water and environmental legislation to alleviate need for future revisions if/when the Ministry experiences name changes, added “as amended from time to time directly following reference to Ontario’s DWQMS to point to the most current version of the document, removed watermark. As per IA OFI 2024-07-24

1. Purpose

To document a QEMS Policy that provides the foundation for OCWA's Quality & Environmental Management System.

2. Definitions

Quality Management System Policy – means the policy described in Element 2 developed for the Subject System or Subject Systems

3. Procedure

3.1 The Ontario Clean Water Agency, its Board of Directors, Officers and entire staff are committed to the principles and objectives set out in our QEMS Policy.

OCWA's Policy is to:

- Deliver safe water and wastewater services that protect public health, the environment, and the sustainability of communities.
- Comply with applicable legislation and regulations.
- Promote client, consumer and stakeholder confidence through service excellence, effective communications and reporting.
- Train staff on their QEMS responsibilities.
- Maintain and continually improve the QEMS.

Originally issued as Environmental Policy on June 8, 1995
Last revised, approved by OCWA's Board of Directors on April 4, 2024
(This policy is annually reviewed)

3.2 Our Board of Directors, Officers and entire staff will act to ensure the implementation of this Policy and will monitor progress of the Quality & Environmental Management System (QEMS).

3.3 OCWA's QEMS Policy is readily communicated and available to all OCWA personnel, through OCWA's intranet. The Owner and members of the public can access the policy through OCWA's public website (www.ocwa.com). A hardcopy of the QEMS Policy is posted as specified in the OP-05 Document and Records Control procedure.

3.4 Essential suppliers and service providers are advised of OCWA's QEMS Policy as per the OP-13 Essential Supplies and Services procedure.

3.5 Corporate Compliance coordinates the annual review and approval of the QEMS Policy by the Board of Directors and communicates the approval to all OCWA employees via an electronic communication.

3.6 The current version of the policy indicates the date of the last revision and that the policy is annually reviewed. Electronic and hard-copy documents that include the QEMS Policy will only be required to be updated in years when the Policy has been revised. A complete review/revision history of the QEMS Policy (documenting the annual policy review and/or revision approval date) is accessible to all staff on OCWA's intranet and is available upon request for external stakeholders.

4. Related Documents

Current QEMS Policy (Posted on OCWA's intranet and internet)
QEMS Policy Revision History (Posted on OCWA's intranet)
OP-05 Document and Records Control
OP-13 Essential Supplies and Services

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Section 3.4, 3.5 and 3.6 were added to the information originally set out in the main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). Revised as per corporate template. The full revision history for the QEMS policy is available on OCWA's intranet.
2024-08-12	1	The first bullet of the QEMS Policy (approved in 2016) was revised to align with OCWA's updated Mission statement. s. 3.3 and 3.6 were modified to add information/clarify how to access the QEMS Policy and the Policy revision history document. OP updated as per IA OFI 2024-07-24

COMMITMENT AND ENDORSEMENT

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To document the endorsement of the Operational Plan for the Tri-County Drinking Water System by OCWA Top Management and the Tri-County Water Board (Owner) and to set out when re-endorsement would be required.

2. Definitions

Top Management – a person, persons or a group of people at the highest management level within an Operating Authority that makes decisions respecting the QMS and recommendations to the Owner respecting the Subject System or Subject Systems.

3. Procedure

3.1 The Operational Plan is provided to OCWA's Top Management and to the Owner for endorsement. The signed written endorsement is presented in Appendix OP-03A. At a minimum, two members of Top Management must endorse the Operational Plan; however, the Operational Plan is made available to all members of Top Management in the specified document control location (refer to OP-05 Document and Records Control). Endorsement by OCWA's Top Management is represented by Operations Management and the Safety, Process and Compliance Manager.

3.2 Any major revision of the operational plan will be re-endorsed by OCWA's Top Management and the Owner. Major revisions include:

1. A revision to OCWA's QEMS Policy;
2. A change to both representatives of the facility's Top Management and/or both of the Owner's representatives that endorsed the Operational Plan;
3. A modification to the drinking water system processes/components that would require a significant change to the description in OP-06 Drinking Water System;
4. The addition of a drinking water subsystem owned by the same Owner to this operational plan.
5. Changes to the Drinking Water Quality Management Standard.

Any other changes would be considered minor and would not require the Operational Plan to be re-endorsed.

4. Related Documents

OP-03A Signed Commitment and Endorsement
OP-05 Document and Records Control
OP-06 Drinking Water System

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-03 was originally set out in the main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). Revised as per corporate template.
2019-08-16	1	Remove Senior Operations Manager from 3.1 and include Operations Management as per OFI from IA 2019-06-25
2020-10-30	2	Revise document in include significant changes s3.2.3 as per IA-OFI 2020-10-26
2021-11-09	3	Add changes to the DWQMS.
2024-08-12	4	Remove watermark.

SIGNED COMMITMENT AND ENDORSEMENT

This Operational Plan sets out the framework for OCWA's Quality & Environmental Management System (QEMS) that is specific and relevant to your drinking water system(s) and supports the overall goal of OCWA and the Tri County Water Board (Owner) to provide safe, cost-effective drinking water through sustained cooperation. OCWA will be responsible for developing, implementing, maintaining and continually improving its QEMS with respect to the operation and maintenance of the Tri-County Drinking Water System and will do so in a manner that ensures compliance with applicable legislative and regulatory requirements.

Through the endorsement of this Operational Plan, the Owner commits to work with OCWA to facilitate this goal.

OCWA Top Management Endorsement

Sam Smith
Senior Operations Manager, Tri-County Drinking Water System

Date

Maegan Garber
Safety, Process and Compliance Manger, Southwest Region

Date

Owner Endorsement

Corey Pemberton
Chairperson

Date

Magda Badura
Administrative Authority

Date

The endorsement above is based on the Operational Plan that was current as of the revision date of this document (OP-03A).

Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-03A was originally set out in the main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). Revised as per corporate template.
2018-04-17	1	Revise to change name of Administrative Authority
2020-11-16	2	Revised Chairperson and Administrative Authority
2023-10-25	3	Revised OCWA Top Management and Owner Endorsement

QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM (QEMS) REPRESENTATIVE

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To identify and describe the specific roles and responsibilities of the QEMS Representative(s) for the Tri-County Drinking Water System.

2. Definitions

None

3. Procedure

3.1 The role of QEMS Representative for the Tri-County Drinking Water System is the Process and Compliance Technician (PCT). The Safety, Process and Compliance Manager will act as an alternate QEMS Representative when required.

3.2 The QEMS Representative is responsible for:

- Administering the QEMS for the Tri-County Drinking Water System by ensuring that processes and procedures needed for the facility's QEMS are established and maintained;
- Reporting to Top Management on the facility's QEMS performance and identifying opportunities for improvement;
- Ensuring that current versions of documents related to the QEMS are in use;
- Promoting awareness of the QEMS to all operations personnel; and
- In conjunction with Top Management, ensuring that operations personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the system.

4. Related Documents

None

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-04 was originally set out in the main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). Revised as per corporate template.
2024-08-12	1	Removed watermark

DOCUMENT AND RECORDS CONTROL

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To describe how OCWA's QEMS documents are kept current and how QEMS documents and records are kept legible, readily identifiable, retrievable, stored, protected, retained and disposed of. Applies to QEMS Documents and QEMS records pertaining to the Tri-County Drinking Water System, as identified in this procedure.

2. Definitions

Document – includes a sound recording, video tape, film, photograph, chart, graph, map, plan, survey, book of account, and information recorded or stored by means of any device

Record – a document stating results achieved or providing proof of activities performed

QEMS Document – any document required by OCWA's QEMS as identified in this procedure

QEMS Record – any record required by OCWA's QEMS as identified in this procedure

Controlled – managed as per the conditions of this procedure

Retention Period – length of time that a document or record must be kept; starts from the date of issue for QEMS records or from the point of time when a QEMS document is replaced by a new or amended document

3. Procedure

3.1 Documents and records required by OCWA's QEMS and their locations are listed in Appendix OP-05A Document and Records Control Locations.

3.2 Internally developed QEMS documents and QEMS records (whenever possible) are generated electronically to ensure legibility and are identified through a header/title and issue date. Handwritten records must be legible and permanently rendered in ink or non-erasable marker.

3.3 Controls for the Operational Plan include the use of an authorized approval and a header on every page that includes a title, alpha-numeric procedure code, revision date, revision number and page numbers. A revision history is also included at the end of each procedure.

The authorized personnel responsible for the review and approval of this Operational Plan are:

Review	QEMS Representative
Approval	Operations Management

Authorized personnel authenticate their review/approval of this Operational Plan via email.

3.4 The QEMS Representative is responsible for ensuring that current versions of QEMS documents are being used at all times. Current QEMS documents and records are readily accessible to operations personnel and to internal and external auditors/inspectors at established document control locations. The currency of internal documents is ensured by comparing the date on the document to that of the master hardcopy and/or electronic copy residing in the designated document control location(s) specified in Appendix OP-05A.

Document control locations are established in areas that provide adequate protection to prevent unauthorized use/access, damage, deterioration or loss of QEMS documents and records. Copies of QEMS documents and records located outside of designated control locations are considered uncontrolled.

3.5 Access to OCWA's computer network infrastructure is restricted through use of individually-assigned usernames and passwords and local area servers. Network security is maintained by OCWA's Information Technology department through a number of established mechanisms and practices such as daily back-up of files stored on servers, password expiry, limitations on login attempts, multi-factor authentication and policies outlining specific conditions of use.

Access to facility QEMS records contained within internal electronic databases and applications (e.g., OPEX, PDM, WMS) is administered by designated application managers/trustees, requires the permission of Operations Management and is restricted through use of usernames and passwords. Records are protected by means of regular network back-ups of electronic files stored on servers and/or within databases.

SCADA records are maintained as per Appendix OP-05A and are accessible to all staff when required.

3.6 Any employee of the drinking water system may request, in writing to the QEMS Representative, a revision be made to improve an existing internal QEMS document or the preparation of a new document. Written requests should indicate the reason for the requested change. The need for new or updated documents may also be identified through the Management Review or system audits.

The QEMS Representative communicates any changes made to QEMS documents to relevant operations personnel and coordinates related training (as required). Changes to corporately controlled QEMS documents are communicated and distributed to facility QEMS Representatives by OCWA's Corporate Compliance Group through e-mails, memos and/or provincial, regional hub/cluster or facility-level training sessions.

3.7 When a QEMS document is superseded, the hardcopy and the electronic copy of the document (as applicable) are promptly removed from the applicable designated document control locations specified in OP-05A. The QEMS Representative ensures that the hardcopy and electronic copy are disposed of or retained (as appropriate).

3.8 The authorized method for disposal of hardcopy documents and records after the specified retention requirements have been met is shredding. Electronic records are retained as per the specified retention requirements. The authorized method for disposal of electronic documents and records after the specified retention requirements have been met is determined by the QEMS Representative. The QEMS Representative will maintain obsolete files accordingly.

3.9 QEMS documents and records are retained in accordance with applicable regulations and legal instruments. Relevant regulatory and corporate minimum retention periods are as follows:

Type of Document/Record	Minimum Retention Time	Requirement Reference
Documents/records required to demonstrate conformance with the DWQMS (specifically documents/records listed in OP-05A)	3 years*if no specified legislative requirement identified in this table or	OCWA Requirement

Type of Document/Record	Minimum Retention Time	Requirement Reference
	in the facility's legal instruments *	
Log Books or other record-keeping mechanisms	5 years	O. Reg. 128/04
Training Records for water operators and water quality analysts	5 years	O. Reg. 128/04
Operational checks, sampling and testing (e.g., chlorine residuals, turbidity, fluoride, sampling records), microbiological sampling and testing and chain of custodies	2 years	O. Reg. 170/03
Schedule 23 & 24 sampling, chain of custodies and test results	6 years LMR 15 years SMR	O. Reg. 170.03
THM, HAA, nitrates, nitrites and lead program (including pH and alkalinity) sampling, chain of custodies, and test results, Section 11 Annual Reports and Schedule 22 Summary Reports	6 years	O. Reg. 170/03
Sodium sampling, chain of custody and test results and related corrective action records/reports, 60 month fluoride sampling, chain of custody and test results (if the system doesn't fluoridate), Engineering Reports, GUDI/Non-GUDI Reports	15 years	O. Reg. 170/03
Corrective action records/reports for E. Coli, Total Coliforms and bacterial species	2 years	O. Reg. 170/03
Corrective action records/reports for chemical and radiological parameters under SDWA O. Reg. 169/03, pesticides not listed under O. Reg. 169/03 and health-related parameters in an order or approval	6 years LMR 15 years SMR	O. Reg. 170/03
Flow Meter Calibration Records, Analyzer Calibration Reports Maintenance Records/Work Orders	2 years	O. Reg. 170/03
Records required by or created in accordance with the Municipal Drinking Water Licence (MDWL) or Drinking Water Works Permit (DWWP). Except records specifically referenced in O. Reg. 170/03 or otherwise specified in the MDWL or DWWP.	5 years	MDWL
Ministry forms referenced in the DWWP, including Form 1, Form 2, Form 3 and Director Notifications (applies to forms that have been	10 years	DWWP

Type of Document/Record	Minimum Retention Time	Requirement Reference
completed by OCWA as the authorized by the owner)		

3.10 The Operational Plan is reviewed for currency by the QEMS Representative during internal/external audit and Management Review processes. Other QEMS-related documents are reviewed as per the frequencies set out in this Operational Plan or as significant changes (e.g., changes in regulatory requirements, corporate policies or operational processes and/or equipment, etc.) occur. QEMS documents and records are reviewed for evidence of control during each internal system audit as per OP-19 Internal QEMS Audits.

4. Related Documents

OP-05A Document and Records Control Locations
OP-19 Internal QEMS Audits
OP-20 Management Review Minutes

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2010-04-07	1	Revise Wording in Section 5.4 and Tables 1 and 2
2010-10-21	2	Modify Locations of Documents in Table 1; Table 2 change DWQMS Docs and Records from 2 yrs to 3 yrs;
2010-12-02	3	Modify Table 1; Change 5.9 to London Server from Flash Drive
2011-05-13	4	Revise wording in 5.6 to eliminate requests in writing
2011-07-22	5	Corporate Revision: Revise 5.4 to identify PCT role and 5.5 to add security IT has; Modify wording in Table 2; add Appendix Title page; Modify date formatting
2011-12-06	6	Change header to read Senior Operations Manager (instead of Dale LeBritton); 5.4 capitalize personnel; Table 1: add Equipment Breakdown, remove Request for Staff Development; add client connection to records
2012-04-12	7	Revise Operations Manager to Senior Operations Manager
2012-05-11	8	Revise Table 1 as per OFI in Internal Audit Report dated May 7, 2012
2013-06-28	9	revise issue date; Change London Server to shared drive in table
2014-05-02	10	Revise to state in 5.9 that the server has changed to Toronto; change Table 1 Client Connection to Operations Report
2014-07-23	11	Change of Ownership from Municipality of West Elgin to Tri-County Water Board, Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	12	Add admin to 3.0; in 5.4 change the word master to controlled; 5.6 add that changes are communicated through email or staff meetings; revise Table 2 as per OFI EA 2014-05-06 and OFI IA 2015-02-02; change name to Tri-County DWS from Tri-County WTP.
2016-04-22	13	Add Community compliant form and ORO schedule to Table 1; change PCT to OCTL and Senior Operations Manager to RHM

2017-06-09	14	Revise to new org structure; revise as per OFI IA 2017-01-12 to add watermain repair form as a document and record.
2018-01-22	15	New Procedure Issued. Revised procedure using corporate template.
2019-08-16	16	Clarify section 3.8 to identify the disposal method of electronic files as per Management Review 2019-08-12
2022-03-16	17	Procedure updated as per Corporate revisions: clarity to version control requirements to align with the Director's Directions dated May 2021, detail to the approval process for Operational Plan, clarity on how electronic documents are handled, Updated: the table in section 3.9 (clarified minimum retention time requirements for documents/records required to demonstrate conformance with the DWQMS, added forms required by the MDWL and DWWP, including their minimum retention times and requirement reference).
2024-08-12	18	Procedure updated [update revision history based on your current procedure] as follows: added multi factor authentication to 3.5, section 3.9 table revised to include Schedule 23 & 24 records retention times for Large Municipal Residential (LMR) and Small Municipal Resident (SMR) systems, added chain of custody as record for retention for various sampling requirements, lead program clarified to include pH and alkalinity; added GUDI/Non-GUDI Reports, minor wording and type-o's, removed watermark. As per IA OFI 2024-07-24.

DOCUMENT AND RECORDS CONTROL LOCATIONS

Reviewed by: QEMS Representative	Approved by: Operations Management

Designated locations for documents and records required by OCWA's QEMS

DRCC-Document and Records Control Centre (specified in the Table)

Type of Document/Record	Designated Document Control Location (HC = Hardcopy, E = Electronic)
Internal QEMS Documents	
Chain of Custody Forms	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Hub Files\Chain of Custody
Community Complaint Form	E- \\OCWFILEREG\Public\Southwest\Regional\Forms
Contingency Plan Review/Test Summary Form (FEP-01)	E-\\OCWFILEREG\Public\Southwest\Regional\Forms
Essential/Emergency Service and Supply Contact List	HC-FEP Binder E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Hub Files\Contact List
Corporate Emergency Response Plan (CERP)	E - OCWA's Sharepoint
Facility Emergency Plans (FEP)	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\9 Facility Emergency Plan Binder
Internal Audit Protocol and Report	E- P:\Everyone\PCT\DWQMS, MDWL and DWWP\DWQMS\Internal Audit Guidance Materials and Templates
On-call Schedule	HC-DRCC- Tri-County WTP Admin Office E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Hub Files\Schedules--On call, rotations
Operational Plan (OP-01 to OP-21 and appendices, including Schedule "C" – Subject System Description Form)	E – \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\7 Operational Plan
Operations Manual	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\8 Operations Manual HC-DRCC- Tri-County WTP Control Room
Operations Reports	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\4 Correspondence\Client E- Aylmer Cluster Operations Reports - OneDrive (sharepoint.com)
QEMS Policy	E - OCWA's Sharepoint and public website HC-posted at Tri-County WTP
Round Sheets	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Hub Files\Rounds Sheets
Request for Staff Development	E- \\OCWFILEREG\Public\Southwest\Regional\Forms\Administrative
Sampling Schedule	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Hub Files\Sample Schedules
Standard Operating Procedures (referenced in Operational Plan)	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\8 Operations Manual

DOCUMENT AND RECORDS CONTROL LOCATIONS

Reviewed by: QEMS Representative	Approved by: Operations Management

Type of Document/Record	Designated Document Control Location (HC = Hardcopy, E = Electronic)
Summary Table of Action Items	E- \\OCWFILEREG\Public\Southwest\Regional\Forms
Training Record Form	E- \\OCWFILEREG\Public\Southwest\Regional\Forms
Vacation Request Form	E- \\OCWFILEREG\Public\Southwest\Regional\Forms
Vacation Schedule	E – Outlook Calendar (Admin)
Disinfection Forms	E- \\OCWFILEREG\Public\Southwest\Regional\Forms
WMS Work Orders	E-Maximo
External QEMS Documents	
ANSI/NSF product registration documentation for Chemicals/Materials Used	E – \\OCWFILEREG\Public\Southwest\Regional\Contractor Safety Program and Qualifications
Applicable federal and provincial legislation and municipal by-laws	Provincial Online at www.e-laws.gov.on.ca Federal online at www.laws.justice.gc.ca
AWWA Standards	E - P:\Everyone\PCT\AWWA Standards
Drinking Water Works Permit	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\2 ECA-MDWL-DWWP
DWQMS	E - https://www.ontario.ca
Engineering schematics/plans/drawings	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\10 Drawings-Watermains HC – DRCC- Tri- County WTP
Maintenance/equipment manuals	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\8 Operations Manual HC – DRCC- Tri- County WTP
Ministry forms referenced in the Drinking Water Works Permit, including Form 1, Form 2, Form 3 and Director Notifications (applies to forms that have been completed by OCWA as the authorized by the owner)	E- \\OCWFILEREG\Public\Southwest\Regional\Forms\Operations
Municipal Drinking Water Licence	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\2 ECA-MDWL-DWWP
Ontario's Watermain Disinfection Procedure	E - https://www.ontario.ca
Operator certificates	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Hub Files\Operator Certificates and Licences\Area 4-Aylmer
Permit to Take Water	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\2 ECA-MDWL-DWWP
Source Water Protection Plan	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\Infrastructure Review and Capital Reports\Infrastructure Reports\Source Protection Plan
QEMS Records	
Action & Analysis Plan Form	\\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\MECP Inspection Reports

DOCUMENT AND RECORDS CONTROL LOCATIONS

Reviewed by: QEMS Representative	Approved by: Operations Management

Type of Document/Record	Designated Document Control Location (HC = Hardcopy, E = Electronic)
Annual Reports (Section 11 and Schedule 22)	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\Annual Reports
AWQI Reports	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\AWQI-Non Compliance
Back Flow Reports	E-\\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\Calibration Reports
Call In/Call Out/Call Back Reports	E-Maximo
Chain of Custodies	E - \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\6 Yellow Folder
Community complaint records	E – OPEX database
Contingency Plan Review/Test Summary Form (FEP-01)	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Miscellaneous
External audit reports	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\DWQMS Audit Reports\External Audits
External Calibration records	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\Calibration Reports
Facility Operations Logbook(s)	HC- (historical) Old WTP E - https://ocwa.eriscloud.com
Infrastructure review (recommended capital/major maintenance)	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\Infrastructure Review and Capital Reports
In-house lab results	E - maintained through PDM E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\6 Yellow Folder
Internal QEMS audit reports	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\DWQMS Audit Reports\Internal Audits
Internal and External QEMS Communications	E-PCT Folder on Corporate Server and Email E-\\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\4 Correspondence\DWQMS
Internal Calibration records	E - maintained through WMS E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\6 Yellow Folder
Laboratory analyses	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\6 Yellow Folder E-PDM
Maintenance records	E - maintained in WMS
Management Review documentation	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\DWQMS Management Review

DOCUMENT AND RECORDS CONTROL LOCATIONS

Reviewed by: QEMS Representative	Approved by: Operations Management

Type of Document/Record	Designated Document Control Location (HC = Hardcopy, E = Electronic)
MECP inspection reports	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\MECP Inspection Reports
Ministry forms referenced in the Drinking Water Works Permit, including Form 1, Form 2, Form 3 and Director Notifications (applies to forms that have been completed by OCWA as the authorized by the owner)	E-\\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\2 ECA-MDWL-DWWP
Plant Tour Records	HC – Logbooks on-site
Results of emergency test exercises/emergency response debriefs	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\Miscellaneous\FEP Review and Tests
Request For Staff Development	HC – Tri-County WTP Admin Office
Rounds sheets	HC – DRCC- Tri- County WTP E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\6 Yellow Folder
SCADA Records (Plant SCADA, Client Owned)	E – SCADA System
Sampling Schedule	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\6 Yellow Folder
Summary Table of Action Items	E – \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\DWQMS Management Review
Training records	HC- DRCC- Tri- County WTP Admin Office E - maintained in OCWA's Training Summary dB
Vacation Request Forms	HC- DRCC- Tri- County WTP Admin Office
Vacation Schedule	HC- DRCC- Tri- County WTP Admin Office E-Outlook calendar
Visitor's Logbook	HC – DRCC- Tri- County WTP
Disinfection Forms	E- \\OCWFILEREG\Public\Southwest\Aylmer Cluster\6634 Tri-County WTP\6634\5 Reports-Audits\Infrastructure Review and Capital Reports\Infrastructure Reports

Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2010-04-07	1	Revise Wording in Section 5.4 and Tables 1 and 2
2010-10-21	2	Modify Locations of Documents in Table 1; Table 2 change DWQMS Docs and Records from 2 yrs to 3 yrs;
2010-12-02	3	Modify Table 1; Change 5.9 to London Server from Flash Drive
2011-05-13	4	Revise wording in 5.6 to eliminate requests in writing

2011-07-22	5	Corporate Revision: Revise 5.4 to identify PCT role and 5.5 to add security IT has; Modify wording in Table 2; add Appendix Title page; Modify date formatting
2011-12-06	6	Change header to read Senior Operations Manager (instead of Dale LeBritton); 5.4 capitalize personnel; Table 1: add Equipment Breakdown, remove Request for Staff Development; add client connection to records
2012-04-12	7	Revise Operations Manager to Senior Operations Manager
2012-05-11	8	Revise Table 1 as per OFI in Internal Audit Report dated May 7, 2012
2013-06-28	9	revise issue date; Change London Server to shared drive in table
2014-05-02	10	Revise to state in 5.9 that the server has changed to Toronto; change Table 1 Client Connection to Operations Report
2014-07-23	11	Change of Ownership from Municipality of West Elgin to Tri-County Water Board, Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	12	Add admin to 3.0; in 5.4 change the word master to controlled; 5.6 add that changes are communicated through email or staff meetings; revise Table 2 as per OFI EA 2014-05-06 and OFI IA 2015-02-02; change name to Tri-County DWS from Tri-County WTP.
2016-04-22	13	Add Community compliant form and ORO schedule to Table 1; change PCT to OCTL and Senior Operations Manager to RHM
2017-06-09	14	Revise to new org structure; revise as per OFI IA 2017-01-12 to add watermain repair form as a document and record.
2018-01-22	15	Appendix issued; Table was originally included within the Document and Records Control Procedure (QP-01) (last revision # 14 dated 2017-06-09). Revised procedure using corporate template.
2018-04-17	16	Revise table as per IA 2018-03-29 OFI
2019-08-16	17	Revise table as per IA 2019-06-25 OFI, add Operations Report, change MOECC to MECP
2020-10-30	18	Revise table to change Call In Report to Call Back Report as recommended in IA-OFI 2020-10-26
2021-11-09	19	Revise electronic locations as per IA-OFI 2021-08-25, add request for staff development form
2022-03-16	20	Revisions as per Corporate Compliance, added: document review and approve title, instructions (specify exact location of documents/records and list maintenance records not in WMS), clarity on which documents are included under the Operational Plan, new documents/records (Watermain Disinfection Procedure, results of emergency test exercises/emergency response debriefs and Ministry forms referenced in the Drinking Water Works Permit) and clarity to external communications and inspection reports; Removed: reference to OCWA's intranet (replaced with OCWA's Sharepoint site). Clarify DRCC locations
2022-11-28	21	Revise location of documents located in the PCT folder as per IA OFI 2022-10-27
2024-08-12	22	Appendix updated with MECP revised to Ministry, updated Corporate Emergency Plan (CERP) name, minor wording, removed watermark. Added Disinfection Forms, added Sharepoint link for Operations Reports and added hard copies of manuals as per IA OFI 2024-07-24.

1. Purpose

To document the following for the Tri-County Drinking Water System:

- The name of the Owner and Operating Authority; and
- Provide a description of the system, including all applicable water sources, treatment system processes and distribution system components.

2. Definitions

Distribution System - means the part of a drinking water system that is used in the distribution, storage or supply of water and that is not part of a treatment system.

Primary Disinfection - means a process or series of processes intended to remove or inactivate human pathogens such as viruses, bacteria and protozoa in water.

Secondary Disinfection - means a process or series of processes intended to provide and maintain a disinfectant residual in a drinking water system's distribution system, and in plumbing connected to the distribution system, for the purposes of:

(a) protecting water from microbiological re-contamination;
(b) reducing bacterial regrowth;
(c) controlling biofilm formation;
(d) serving as an indicator of distribution system integrity; and includes the use of disinfectant residuals from primary disinfection to provide and maintain a disinfectant residual in a drinking water system's distribution system for the purposes described in clauses (a) to (d).

Treatment System - means any part of a drinking water system that is used in relation to the treatment of water and includes,

(a) any thing that conveys or stores water and is part of a treatment process, including any treatment equipment installed in plumbing,
(b) any thing related to the management of residue from the treatment process or the management of the discharge of a substance into the natural environment from the system, and
(c) a well or intake that serves as the source or entry point of raw water supply for the system;

3. Procedure

3.1 Drinking Water System Overview

The Tri-County Drinking Water System (DWS#260091117) is owned by the Tri-County Water Board and is operated by Ontario Clean Water Agency.

The water plant provides water to several municipalities spread amongst three counties. The members of the Tri-County Water Board include:

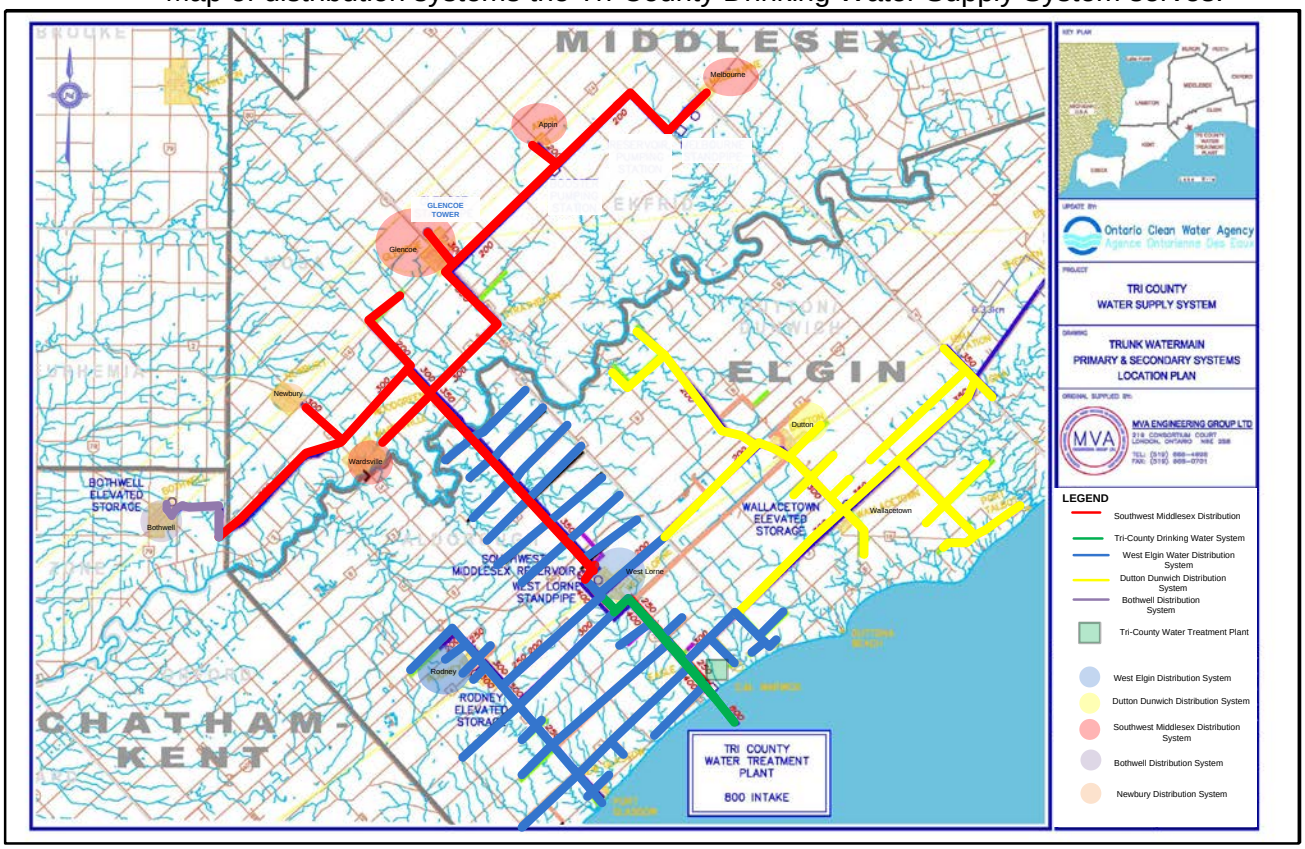
- the Corporation of the Municipality of West Elgin,

- the Corporation of the Municipality of Dutton Dunwich,
- the Corporation of the Municipality of Southwest Middlesex,
- the Corporation of the Municipality of Chatham Kent and
- the Corporation of the Village of Newbury.

The following table is a list of systems to which the Tri-County Drinking Water System supplies water to:

Distribution System	Waterworks #	Owner	Operating Authority	Water Supply
West Elgin	260094627	The Corporation of the Municipality of West Elgin	Ontario Clean Water Agency	Continuous from Tri-County Distribution System
Dutton-Dunwich	220002967	The Corporation of the Municipality of Dutton-Dunwich	Ontario Clean Water Agency	Continuous from Tri-County Distribution System
Southwest Middlesex	260005202	The Corporation of the Municipality of Southwest Middlesex	Ontario Clean Water Agency	Continuous from West Elgin Distribution System
Newbury	260005463	The Corporation of the Village of Newbury	Newbury Water Services	Continuous from Southwest Middlesex Distribution System
Bothwell	260002551	The Corporation of the Municipality of Chatham Kent	Chatham Kent PUC	Continuous from Southwest Middlesex Distribution System
Southwold	210001362	The Corporation of the Township of Southwold	Ontario Clean Water Agency	Emergency from Dutton Dunwich Distribution System

- Map of distribution systems the Tri-County Drinking Water Supply System serves.



3.2 Source Water

General Characteristics

The raw water source for the treatment plant is Lake Erie. The water from Lake Erie is typically low in turbidity, slightly basic and low in conductivity. Temperature fluctuates significantly through the seasons ranging from approximately 1 ºC in the winter to as high as 24 ºC during the summer. Bacteriological analysis of the raw water indicates a source of relatively good quality. The results of chemical analyses of treated water consistently meet the Ontario Drinking Water Quality Standards.

Raw Water Characteristics at Intake (based on 2021 data)

Characteristic	Minimum	Maximum	Annual Average
Temperature (ºC)	4.5	25.1	14.3
Turbidity (NTU)	5.32	655.16	46.9
pH	6.32	8.75	7.93
E. coli (CFU/100 mL)	0	100	35.3

Total Coliforms	1	13400	620.4

**Raw data will be reviewed annually however, updates will only be made if there are significant changes*

Common Fluctuations

Raw water quality changes seasonally and during significant storm conditions. The pre-membrane filter strainers will reduce turbidity and algae entering the membrane filtration system.

Water temperature also changes seasonally. Warm summer temperatures may result in an increase of taste and odour concerns. An Advanced Oxidation Process (AOP) using UV and hydrogen peroxide is available if taste and odour problems occur.

Threats

The main potential source of raw water contamination from upstream and downstream is agricultural runoff and the growth of algae.

Zebra mussels pose a clogging threat on mechanical equipment and the intake. Zebra mussels are controlled by pre-chlorination to the intake.

The Thames-Sydenham and Region Source Protection Plan identifies the intake area as low to moderate policy area. Refer to Source Protection Plan for more details.

Operational Challenges

Under abnormal operating conditions, an alternate intake is available for use.

During those occasions that frazil ice restricts the intake the plant can be operated at a decreased capacity and/or the intake can be back-flushed. The alternate intake can also be used.

If an algae bloom binds to the membranes or the plant experiences a high raw water turbidity event for an extended period of time, the membrane run times become reduced and reverse filtration frequency increases, as well as chemical cleaning procedures. This reduces membrane filter efficiencies causing an increased use of process water and therefore, a decrease in water production capacity if the situation is prolonged. Since algae can also be toxic, sampling for microcystin of the raw and treated water is conducted during possible contamination periods. Detection of algae blooms in the area are closely monitored though communication with the MECP and monitoring satellite images.

In 2012, manganese had been identified in the raw water that is soluble and therefore passes through the membrane filtration system. When oxidized by the chlorine the treated water becomes discoloured. The WTP has experience short term episodes where the discoloured water is released to the distribution system causing aesthetic issues. The WTP now continuously monitors for dissolved oxygen as an early detection that a problem may be experienced. As well, increased sampling of manganese is conducted during possible episodes. Operations can switch to the standby intake if the dissolved oxygen levels are greater there. A sodium permanganate dosing system is now available to covert dissolved manganese in the

raw water to particulate form, which can then be removed by the membrane filtration system.

3.3 Treatment System Description

Intake
The intake consists of one 700mm diameter polyethylene pipe extending approximately 610 m into Lake Erie at a depth of 5.7m. A chlorine gas zebra mussel control system is used seasonally. The raw water is screened by two coarse screens. A sodium permanganate injection system is used seasonally to oxidize manganese.

Low Lift Pumping Station
Raw water is pumped from the low lift wet wells by four low lift pumps to the Water Treatment Plant.

Filtration
At the Water Treatment Plant the water is pre-filtered by four automated strainers to protect the filter membranes from coarser particles and algae in the raw water.

After the water has been strained it enters the membrane filtration system which removes fine particles, sediment, algae, protozoa and bacteria. Filtered water can be directed through the UV Advanced Oxidation Process (AOP) unit to the treated water storage tanks.

pH Adjustment
Combined filtered water is injected with carbon dioxide downstream of the membrane filters and upstream of the UV disinfection to adjust pH levels to optimize the primary disinfection process.

Disinfection
Disinfection is achieved by the use of sodium hypochlorite for primary and secondary disinfection. Note that UV is intended for use with hydrogen peroxide (AOP) for taste and odour control, but can be used as back up for primary disinfection. The treated water is stored in treated water storage tanks where it is pumped into the distribution network by the High Lift pumps. Post chlorination of the treated water is done at two points. Secondary disinfection is monitored after the treated water storage tanks. If required, secondary disinfection can be increased at the sodium hypochlorite dosing point downstream of the high lift pumps.

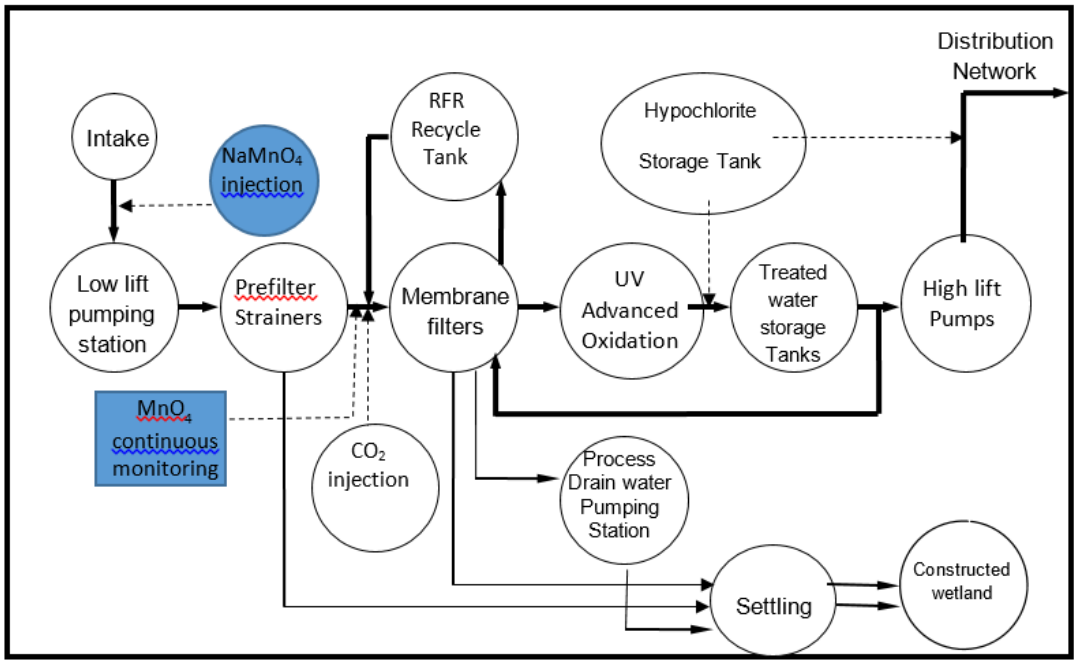
Process Drain Water
Waste water from the floor drains and on line analyzers are directed to the process water handling facilities that include a settling basin and constructed wetlands. Flush water that cleans the pre-strainers and the membranes is also sent to the process water handling facilities.

Monitoring and Control

The water treatment process and distribution components are controlled by a dedicated Supervisory Control and Data Acquisition (SCADA) computer system and monitored by certified operators.

Standby Power
Two diesel generators are available to permit the treatment plant to remain in operation should a power failure occur.

3.4 Treatment System Process Flow Chart



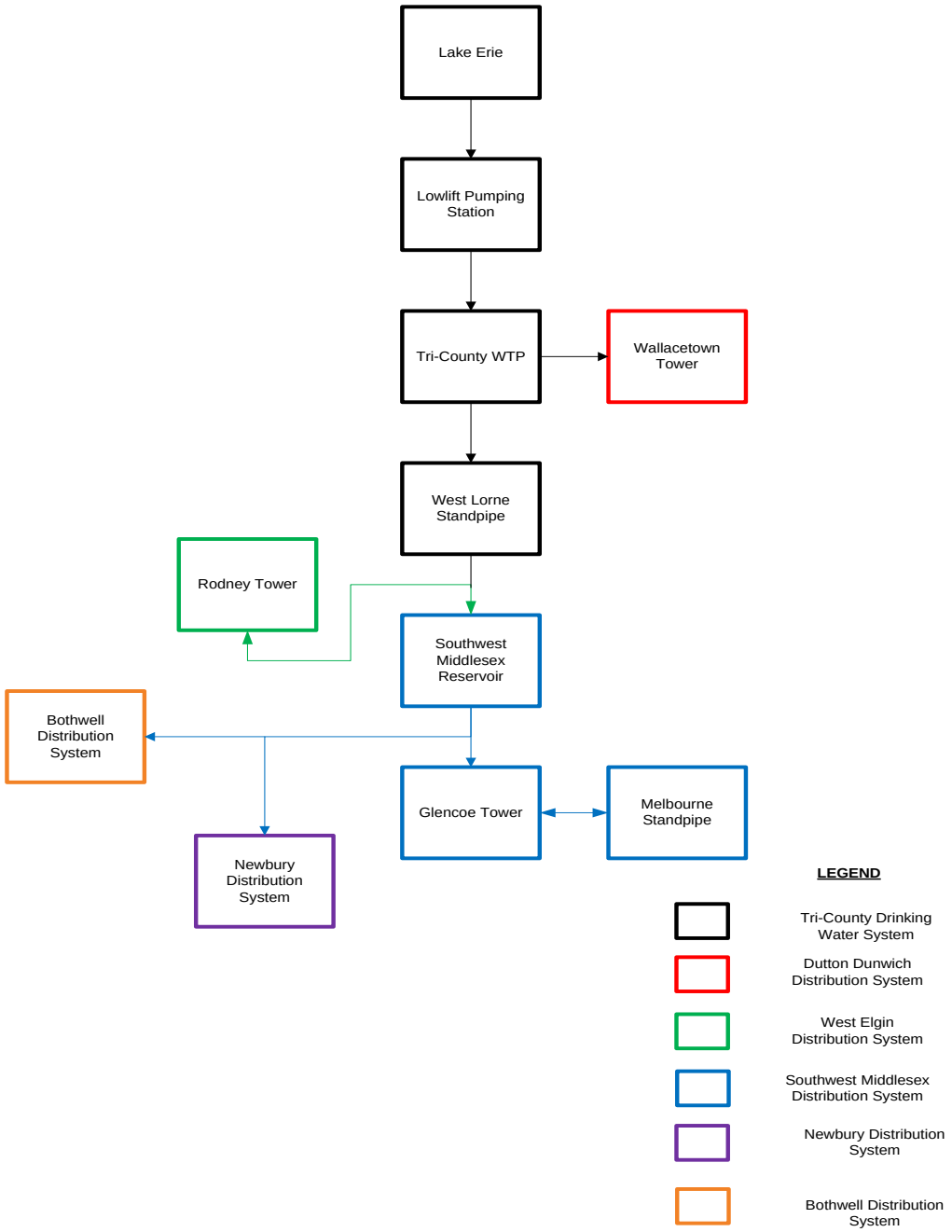
3.5 Description of the Distribution System Components

The Tri-County Drinking Water System serves several communities. The primary transmission line from the WTP ends at the West Lorne Standpipe. The West Lorne Standpipe is 38.6m high and has a capacity of 2889m^3. The West Lorne Standpipe is controlled and monitored from the water treatment plant via SCADA. In emergency situations the Tri-County Drinking Water System can feed the Southwold Distribution System through the Iona interconnection which is part of the Dutton-Dunwich Distribution System.

Conditions upstream of the treatment plant, in Lake Erie (the raw water source) are monitored through MECP reports, advisories and other operating authorities to ensure the operating effectiveness of the treatment plant to provide safe drinking water.

The treatment plant relies on information from the downstream distribution systems in order to enhance or modify the treatment process.

3.6 Distribution System Components Flow Chart



4. Related Documents

SOP# WTP-23: Frazil Ice
SOP# WTP-28: Harmful Algal Bloom Monitoring, Reporting and Sampling Plan
SOP# WTP-32: Raw water Low Dissolved Oxygen and Manganese Issue
SOP# WTP-33: Raw Water Intake Obstruction
SOP# WTP-47: Provision of Alternative Water Supply
SOP# WTP-49: Spill and other Discharges
SOP# WTP-56: Low Range Mn Testing
SOP# WTP-57: Flushing Raw Watermain
SOP# WTP-58: Dosing Sodium Permanganate and Gas Chlorine
Thames-Sydenham and Region Source Protection Plan

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-06 was originally set out in the Main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). New revision as per corporate template.
2018-04-17	1	Revised to include DWS# as per OFI IA 2018-03-29.
2019-08-16	2	Update table with 2018 data, change MOECC to MECP as per OFIs IA 2019-06-25
2020-10-30	3	Revised s3.2 to update raw water source data to 2019 & Updated title of SOP#28 s.4 as recommended by IA-OFI 2020-10-26
2021-11-09	4	Add CO2 addition to s.3.3 and clarify Disinfection as per IA-OFI 2021-08-25, updated raw water characteristics with 2020 data
2022-12-02	5	Updated raw data table as per IA OFI 2022-10-27
2024-08-12	6	Add sodium perm system, revise schematic, change OA for Dutton-Dunwich, add statement below raw water table, add SOPs as per IA OFI 2024-07-24

1. Purpose

To document the process for conducting a risk assessment to identify and assess potential hazardous events and associated hazards that could affect drinking water safety.

2. Definitions

Consequence – the potential impact to public health and/or operation of the drinking water system if a hazard/hazardous event is not controlled

Control Measure – includes any processes, physical steps or other practices that have been put in place at a drinking water system to prevent or reduce a hazard before it occurs

Critical Control Point (CCP) – An essential step or point in the subject system at which control can be applied by the Operating Authority to prevent or eliminate a drinking water health hazard or reduce it to an acceptable level

Drinking Water Health Hazard – means, in respect of a drinking water system,

a) a condition of the system or a condition associated with the system's waters, including any thing found in the waters,
    i. that adversely affects, or is likely to adversely affect, the health of the users of the system,
    ii. that deters or hinders, or is likely to deter or hinder, the prevention or suppression of disease, or
    iii. that endangers or is likely to endanger public health,
b) a prescribed condition of the drinking water system, or
c) a prescribed condition associated with the system's waters or the presence of a prescribed thing in the waters

Hazardous Event – an incident or situation that can lead to the presence of a hazard

Hazard – a biological, chemical, physical or radiological agent that has the potential to cause harm

Likelihood – the probability of a hazard or hazardous event occurring

3. Procedure

3.1 Operations Management ensures that operations personnel are assigned to conduct a risk assessment at least once every thirty-six months. At a minimum, the Risk Assessment Team must include the QEMS Representative and at least one member of Operations Management.

3.2 The QEMS Representative is responsible for coordinating the risk assessment and ensuring that documents and records related to the risk assessment activities are maintained.

3.3 The Risk Assessment Team performs the risk assessment as follows:

3.3.1 OP-07 Risk Assessment and OP-08 Risk Assessment Outcomes are reviewed.

3.3.2 For each of the system's activities/process steps, potential hazardous events and associated hazards (possible outcomes) that could impact the system's ability to deliver safe drinking water are identified. At a minimum, potential hazardous events and associated hazard as identified in the most current version of the Ministry document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as applicable to the system type) must be considered.

3.3.3 For each of the hazardous events, control measures currently in place at the system to eliminate the hazard or prevent it from becoming a threat to public health are specified. Control measures may include alarms, monitoring procedures, SOPs/contingency plans, preventive maintenance activities, backup equipment, engineering controls, etc.

3.3.4 To ensure that potential drinking water health hazards are addressed and minimum treatment requirements as regulated by SDWA O. Reg. 170/03 and the Ministry's "Procedure for Disinfection of Drinking Water in Ontario" (as amended) are met, OCWA has established mandatory Critical Control Points (CCPs).

<u>As a minimum, the following must be included as CCPs (as applicable):</u>

- Equipment or processes required to achieve primary disinfection (e.g., chemical and/or UV disinfection system, coagulant dosing system, filters, etc.)
- Equipment or processes necessary for maintaining secondary disinfection in the distribution system
- Fluoridation system

3.3.5 Additional CCPs for the system are determined by evaluating and ranking the hazardous events along with their associated outcome (hazards/risk) for the remaining activities/process steps (i.e., those <u>not</u> included as OCWA's minimum CCPs).

3.3.6 Taking into consideration existing control measures (including the reliability and redundancy of equipment), each hazardous event is assigned a value for the likelihood and a value for the consequence of that event occurring based on the following criteria:

Value	Likelihood of Hazardous Event Occurring
1	**Rare** – Estimated to occur every 50 years or more (usually no documented occurrence at site)
2	**Unlikely** – Estimated to occur in the range of 10 – 49 years
3	**Possible** – Estimated to occur in the range of 1 – 9 years
4	**Likely** – Occurs monthly to annually
5	**Certain** – Occurs monthly or more frequently

Value	Consequence of Hazardous Event Occurring
1	**Insignificant** – Little or no disruption to normal operations, no impact on public health
2	**Minor** – Significant modification to normal operations but manageable, no impact on public health
3	**Moderate** – Potentially reportable, corrective action required, potential public health impact, disruption to operations is manageable
4	**Major** – Reportable, system significantly compromised and abnormal operations if at all, high level of monitoring and corrective action required, threat to public health
5	**Catastrophic** – Complete failure of system, water unsuitable for consumption

The likelihood and consequence values are multiplied to determine the risk value (ranking) of each hazardous event. Hazardous events with a ranking of 12 or greater are considered high risk.

3.3.7 Hazardous events and rankings are reviewed and any activity/process step is identified as an additional CCP if <u>all</u> of the following criteria are met:

3.3.7.1 The associated hazardous event has a ranking of 12 or greater;

3.3.7.2 The associated hazardous event can be controlled through control measure(s);

3.3.7.3 Operation of the control measures can be monitored and corrective actions can be applied in a timely fashion;

3.3.7.4 Specific control limits can be established for the control measure(s); and

3.3.7.5 Failure of the control measures would lead to immediate notification of Medical Officer of Health (MOH) or Ministry or both.

3.4 The outcomes of the risk assessment are documented as per OP-08 Risk Assessment Outcomes.

3.5 At least once every calendar year, the QEMS Representative facilitates the verification of the currency of the information and the validity of the assumptions used in the risk assessment in preparation for the Management Review (OP-20). When performing this review, the following may be considered:

- Process/equipment changes
- Reliability and redundancy of equipment
- Emergency situations/service interruptions
- CCP deviations
- Audit/inspection results
- Changes to the Ministry document "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as amended)

4. Related Documents

OP-08 Risk Assessment Outcomes
OP-20 Management Review
Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as amended)
Ministry's "Procedure for Disinfection of Drinking Water in Ontario" (as amended)

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-07 was originally set out in the QEMS Procedure QP-02 Risk Assessment and Risk Assessment Outcomes (last revision #11, 2017-06-09). Revision as per new corporate template.
2019-08-16	1	Change MOECC to MECP, revise 3.3.5 as per OFI EA 2018-07-09, revise numbering in 3.7 to be consistent with OP-08A
2022-05-18	2	Procedure updated - Replaced MOECC with Ministry (Ministry refers to the Ontario government ministry responsible for drinking water and environmental legislation); Added "(as amended)" directly following any references to Ministry documents to point to the most current version of the document and added the Ministry document "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as amended) to the list of items that may be considered when performing the annual verification of the currency of the information in the risk assessment)].
2024-08-12	3	Remove watermark

1. Purpose

To document the outcomes of the risk assessment conducted as per OP-07 Risk Assessment.

2. Definitions

Critical Control Point (CCP) – An essential step or point in the subject system at which control can be applied by the Operating Authority to prevent or eliminate a drinking water health hazard or reduce it to an acceptable level

Critical Control Limit (CCL) – The point at which a Critical Control Point response procedure is initiated

3. Procedure

3.1 The QEMS Representative is responsible for updating the information in OP-08A Summary of Risk Assessment Outcomes as required.

3.2 The results of the risk assessment conducted as per OP-07 are documented in Table 1 of OP-08A. This includes:

- Identified potential hazardous events and associated hazards (possible outcomes) for each of the system's activities/process steps;
  Note: Hazards listed in the Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as amended) are indicated in the appropriate column using the reference numbers in Table 4 of OP-08A.
- Identified control measures to address the potential hazards and hazardous events; and
- Assigned rankings for the hazardous events (likelihood x consequence = risk value) and whether the hazardous event is a Critical Control Point (CCP) (mandatory or additional).
  Note: If the hazardous event is ranked as 12 or higher and it is <u>not</u> being identified as a CCP, provide rationale as to why it does not meet the criteria set out in section 3.3.7 of OP-07).

3.3 Operations Management is responsible for ensuring that for each CCP:

- Critical Control Limits (CCLs) are set;
- Procedures and processes to monitor the CCLs are established; and
- Procedures to respond to, report and record deviations from the CCLs are implemented.

The identified CCPs, their respective CCLs and associated procedures are documented in Table 2 of OP-08A.

3.4 A summary of the results of the once every calendar year review/36-month risk assessment is recorded in Table 3 of OP-08A.

3.5 Operations Management considers the risk assessment outcomes during the review of the adequacy of the infrastructure (Refer to OP-14 Review and Provision of Infrastructure).

4. Related Documents

OP-07 Risk Assessment
OP-08A Summary of Risk Assessment Outcomes
OP-14 Review and Provision of Infrastructure
Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" (as amended)

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-07 was originally set out in the QEMS Procedure QP-02 Risk Assessment and Risk Assessment Outcomes (last revision #11, 2017-06-09). Revision as per new corporate template.
2018-04-17	1	Revise 3.4 as per IA 2018-03-29
2019-08-16	2	Change MOECC to MECP as per OFIs IA 2019-06-25
2022-05-18	3	Procedure updated - Replaced MOECC with Ministry (Ministry refers to the Ontario government ministry responsible for drinking water and environmental legislation); Added "(as amended)" directly following references to the Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" to point to the most current version of the document)].
2024-08-12	4	Remove watermark.

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Table 1: Risk Assessment Table

Note: Processes referred to in section 3.3.4 of OP-07 Risk Assessment must be identified as mandatory Critical Control Points (CCPs) as applicable. Mandatory CCPs are not required to be ranked.

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
Source/Intake	Raw Water Quality Issue	-AWQI -Inability to treat water -Aesthetic issues -Taste and odour issues - Drinking Water Advisory	-Raw water pH, DO, temperature, free chlorine and turbidity analyzers -Increased monitoring of source problem (Mn, Fe, Microcystin etc.) -Back up shoreline intake -AOP System Operation -SCADA Trending -Storage of treated water in Treated Water Storage Tanks and Distribution - Sodium permanganate addition -SOP #: WTP-02, WTP-28, WTP-56,WTP-57, WTP-58 ALRM-18, ALRM-19	*1,3,4,12*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				9	4	3	12	
	Frazil Ice	-Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution - Backflush intake -Back up shoreline intake	*1*	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1)

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
			-SOP #: WTP-23, ALRM-12 -VFD pump control	*3, 4*	3	3	9	
	Plugged Intake or Failure of Intake	-Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Intake Inspections -back up shoreline intake -SOP #: WTP-23, WTP-33, ALRM-12 -Backflush intake	*2*	1	3	3	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				4,6	2	3	6	
	Zebra Mussel Control System Failure	-Plugged or partially plugged intake -Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Maintenance to the chlorine gas system -Intake Inspections -Back up shoreline intake -Backflush intake -SOP #: WTP-23, WTP-33, ALRM-12	*1, 4*	2	3	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				9, 12	3	3	9	

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
	Manganese Control System Failure	-AWQI -Aesthetic issues -Taste and odour issues - Drinking Water Advisory - Overdose of chemical	- Redundancy: 2 raw watermains - Continuous monitoring - Raw well isolation - Raw watermain flushing - SOP# WTP-02, WTP- 56, WTP-57, WTP-58	*1,4*	4	3	12	☒ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☐ No
				9, 12	3	3	9	
Low Lift Pumping Station	Low Lift Pump Failure	-Inability to supply water	-Redundancy: 4 pumps -Pump rentals -Storage of treated water in Treated Water Storage Tanks and Distribution -SOP #: ALRM-16	*3, 4*	2	2	4	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6,13	2	3	6	
	Raw Watermains to WTP Failure	-Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Redundancy: 2 Raw Watermains	*3, 4*	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
			-SOP #: WTP-22, WTP-40	*6*	2	3	6	
	Biofilm Formation in Raw Watermains	-Water quality issue -High chlorine demand	-Storage of treated water in Treated Water Storage Tanks and Distribution -Rotation of Raw Watermains -Flushing of raw watermains, use of chlorine -SOP #: WTP-27, WTP-22	*1*	2	2	4	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				9	3	3	9	
	Power Failure	-Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Generator onsite, or rental -SOP #: ALRM-08, ALRM-09	*3, 4*	4	2	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	2	3	6	
Filtration Process	Strainer Failure	-Inability to supply water to the treatment process	-Redundancy: 4 Strainers -SCADA Monitoring -SOP #: ALRM-20	*2*	3	2	6	Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6,13	1	3	3	
				12	2	3	6	
	High Turbidity on discharge of Racks	-AWQI for >1NTU for 15 minutes	-Rack Shutdown (out of service) and Alarms -Redundancy: 4 Racks	10	3	4	12	☒ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
		-Drinking Water Advisory	-SCADA Monitoring -SOP #: WTP-02, WTP-15, WTP-37, WTP-50, ALRM-22					☐ No
	Failure on Rack Integrity Test	-Rack out of service -Possible high turbidity -Failure to meet Procedure for Disinfection requirements -AWQI -Drinking Water Advisory	-Redundancy: 4 Racks -Spare parts -Pall Operations Manual -SCADA Monitoring -SOP #: WTP-02, WTP-41	10	3	3	9	☒ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☐ No
				13	2	3	6	
	Leak/Breaks on Racks	-Rack out of service	-Redundancy: 4 Racks -Spare parts -Pall Operations Manual -SCADA Monitoring - SOP#: WTP-41	10	2	2	4	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
	Mechanical Failure on Racks	-Rack out of service	-Redundancy: 4 Racks -Spare Parts -Pall Operations Manual -SCADA Monitoring	10	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
	Air Compressor Failure	-Inability to treat water	-Redundancy: 2 Air Compressors - Air compressor rental	10	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
			-SCADA Monitoring -Maintenance program -Storage of treated water in Treated Water Storage Tanks and Distribution -SOP #: ALRM-22	13	2	3	6	☒ No, OP-07 3.3.7 (1) doesn't apply
	EFM/CIP System Failure	-Inability to chemically clean membranes -Decreased efficiency and possible failure	-Redundancy: 4 Racks -Routine maintenance -SCADA Monitoring	3, 4	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				13	2	2	4	
	Power Failure	-Inability to treat water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Generator onsite or rental -SOP #: ALRM-02, ALRM-03	3, 4	4	2	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
Primary Disinfection	Sodium Hypochlorite Pump Failure	-AWQI: Failure to meet CT -Low chlorine - Drinking Water Advisory	-Redundancy: 2 Chemical Feed Pumps -UV System as back for Primary Disinfection by sodium hypochlorite -Shutdown of Low Lift Pumps -Storage of treated water in Treated Water Storage Tanks and Distribution	*3, 4*	4	3	12	☒ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☐ No

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
			-SCADA monitoring -SOP #: WTP-02, WTP-04, WTP-15, WTP-27, WTP-35, WTP-50, ALRM-02, ALRM-03, ALRM-26, ALRM-28	*10*	3	3	9	
Storage Tanks	Milltronics Failure	-Low level treated water storage tanks -Loss of pump control -AWQI: Failure of meeting CT requirements -Drinking Water Advisory	-Redundancy: 2 Treated Water Storage Tanks -Routine maintenance/calibration -Pressure transmitter reading -Manual Operation -SOP #: WTP-04, ALRM-29, ALRM-30	*3, 4*	4	3	12	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (4) doesn't apply
	Freezing or ice build-up in Tanks	-Loss of level control and pump control -AWQI: Failure to meet CT requirements - Drinking Water Advisory	-Redundancy: 2 Treated Water Storage Tanks -Manual operation; summer/winter mode operation -Pressure transmitter readings -SOP #: WTP-04, ALRM-29, ALRM-30	*3,4*	4	3	12	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				10	3	3	9	
	Low Level			*2*	3	3	9	☒ Yes – Mandatory CCP

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
		-AWQI: Failure to meet CT -Inability to supply treated water - Drinking Water Advisory	-Storage of treated water in distribution system -SOP #: WTP-02, WTP-04, WTP-15, ALRM-29, ALRM-30 -SCADA monitoring and alarms	*6*	1	3	3	☐ Yes – Additional CCP identified for facility ☐ No
				10	3	3	9	
	Tank Failure	-Reduced storage capacity of treated water	-Redundancy: 2 Treated Water Storage Tanks - Routine inspections -Storage of treated water in distribution system -Isolation of failed tank -SOP #: WTP-04, ALRM-29, ALRM-30	*3,4*	4	2	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
				10	2	3	6	
	Power Failure	-Loss of pump control - Low pressure	-Storage of treated water in Treated Water Storage Tanks and Distribution -Generator onsite or rental -SOP #: ALRM-02, ALRM-03	*3, 4*	4	2	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	1	3	3	

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
Secondary Disinfection	Sodium Hypochlorite Failure	-AWQI <0.05ppm -Inability to provide 0.20ppm to all parts of the distribution system -Low chlorine - Drinking Water Advisory	-Redundancy: 2 Chemical Feed Pumps -Shutdown of High Lift Pumps -Storage of treated water in Treated Water Storage Tanks and Distribution -Generator onsite -SCADA monitoring -SOP #: WTP-02, WTP-15, WTP-27, WTP-35, WTP-50, ALRM-02, ALRM-03, ALRM-27, ALRM-33, ALRM-37, ALRM-38	*3, 4,11*	3	3	9	☒ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☐ No OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
	Treated Water Quality Issue	-AWQI -Taste and Odour - Coloured water -Low chlorine	-Shutdown of High Lift Pumps -Storage of treated water in Treated Water Storage Tanks and Distribution - Overflow storage tanks - Sodium permanganate addition - Visual monitoring - Increased monitoring of source problem (Mn, Fe, Microcystin etc.) - Routine sampling	*1,5,6,8,9*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				4,7,11	2	3	6	

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
High Lift Pumping Station	High Lift Pump Failure	-Inability to supply water to distribution systems - Low pressure	-Redundancy: 4 High Lift Pumps -Regular Maintenance -Storage of treated water in distribution systems -SOP #: ALRM-32, ALRM-34, ALRM-39, ALRM-40, WTP-46	*3, 4*	4	2	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	1	3	3	
	Flow Control Valve Failure	-Inability to supply water to distribution systems - Low pressure	-Storage of treated water in distribution systems -Split Mode/Combined Mode Operation -SOP #: WTP-36, ALRM-32, ALRM-34, ALRM-39, ALRM-40, ALRM-41	*3, 4*	4	3	12	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (4) doesn't apply
				6, 13	1	3	3	
	Power Failure	-Inability to supply water to distribution systems	-Storage of treated water in distribution systems -Generator onsite or rental -SOP #: ALRM-02, ALRM-03, ALRM-32, ALRM-34	*3, 4*	4	2	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	1	3	3	

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
Back Up Power Supply	Low Lift Generator Failure	-Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Regular maintenance on generator -Generator onsite, or rental -SOP #: ALRM-08, ALRM-09	*3, 4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
	WTP Generator Failure	-Inability to supply water	-Storage of treated water in distribution -Regular maintenance on generator -Generator onsite, or rental -SOP #: ALRM-02, ALRM-03	*3, 4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
	Single Phase	-Inability to supply water	-Storage of treated water in Treated Water Storage Tanks and Distribution -Generator onsite, or rental -SOP #: ALRM-02, ALRM-03, ALRM-08, ALRM-09	*3, 4*	2	3	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
Dialer	Failure of Alarm Dialer	-no monitoring of WTP -AWQI - Drinking Water Advisory	-Monthly testing -WIN 911 backup -SOP #: WTP-02	*3, 4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6,13	1	3	3	
SCADA System	SCADA Computer Failure	-Loss of continuous monitoring -Historian failure -Failure to meet regulatory requirements	-Retrieval of data from Eramosa -Backup datalogger on the historian for critical process monitoring -Computer replaced 2023 -SOP #: WTP-21, WTP-25, ALRM-01 -Back-up Claros data on turbidimeters - Manual readings	*3, 4,10*	3	4	12	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (2,4) doesn't apply
				6,13	1	3	3	
	Loss of Communication at Low Lift	-Loss of continuous monitoring system	-Retrieval of data from Eramosa -onsite PLC to store data temporarily - Manual operation - Fiber optic communication -SOP #: WTP-08, WTP-21, WTP-25, ALRM-01	*3, 4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	1	3	3	
	Loss of Communication at WTP	-Loss of continuous monitoring system	-Retrieval of data from Eramosa	*3, 4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
		-Failure to meet regulatory requirements	- Backup datalogger on the historian for critical process monitoring -Back-up Claros data - Fiber optic communication -SOP #: WTP-08, WTP-21, WTP-25, ALRM-01	*6, 13*	1	3	3	☒ No, OP-07 3.3.7 (1) doesn't apply
	Loss of Communication at Remote Sites	-Loss of continuous monitoring system	-Retrieval of data from Eramosa -onsite PLC to store data temporarily -SOP #: WTP-21, WTP-25, WTP-08, ALRM-01 -Storage of treated water in distribution - Pressure mode operation	*3, 4*	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	1	3	3	
	PLC Failure	-Historian failure -HMI/SCADA failure -No control of operations	-Retrieval of data from Eramosa - Backup datalogger on the historian for critical process monitoring -SOP #: WTP-08, WTP-21, WTP-25, ALRM-01 -Back-up Claros data	*3, 4*	2	4	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6, 13	1	3	3	
Transmission Main	Watermain Break	-Inability to supply water -AWQI - Drinking Water Advisory - Low pressure	-Storage of treated water in treated water storage tanks and distribution system -SOP #: WTP-40, ALRM-39, ALRM-40, WTP-46	*3, 4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
				8	2	3	6	

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
	Chamber Failure -Air Release	-AWQI - Drinking Water Advisory	-Regular Maintenance and Inspection -SOP #: WTP-02	*3,4*	2	4	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
				7,8	2	3	6	
	Valve Failure	-Inability to isolate -Inability to supply water during repair -Water leak -Low pressure -AWQI -Drinking Water Advisory	-Storage of treated water in distribution systems. - Routine maintenance -SOP#: WTP-40	*4*	3	3	9	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				6	1	3	3	
West Lorne Standpipe	Low Level	-Low pressure in system - AWQI - Drinking Water Advisory	-Storage of treated water in treated water storage tanks and distribution system -Operation of HLP in pressure mode -SOP #: ALRM-69, ALRM-70, WTP-46	*2*	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1) doesn't apply
				3,4,7,8	2	3	6	
				6	1	3	3	
	Low Chlorine	-AWQI: <0.05ppm -Low chlorine residuals - Drinking Water Advisory	-Regular monitoring from grab samples -Flushing -SOP #: WTP-02, WTP-15, WTP-27	*4*	2	4	8	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1,3) doesn't apply
	Power Failure	-loss of level control and communications	-Operate high lift pumps based on pressure at the plant - portable generator	*3, 4*	3	2	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative | Approved by: Operations Management

Activity/ Process Step	Description of Hazardous Event	Possible Outcome (Hazards/Risks)	Existing Control Measures	MECP Potential Hazardous Event/Hazard Reference # (see Table 4)	Likelihood	Consequence	Risk Value	CCP?
			-Altitude valve to control level -SOP #: ALRM-70, ALRM-71	*6*	1	3	3	☒ No, OP-07 3.3.7 (1,4) doesn't apply
	Aging Infrastructure	-loss of storage -AWQI	-routine inspections -capital improvements/rehabilitations -SOP#: ALRM-70, WTP-46	*2,7*	2	3	6	☐ Yes – Mandatory CCP ☐ Yes – Additional CCP identified for facility ☒ No, OP-07 3.3.7 (1,4) doesn't apply

Table 2: Identified Critical Control Points (CCPs)

CCP	Critical Control Limits	Monitoring Procedures	Response, Reporting and Recording Procedures
Low Lift -High Sodium Permanganate Residual (only operated seasonally, as required)	- 0.05 mg/L or more for 600 secs calls out alarm - 0.10 mg/L or more for 600 secs shuts down the low lift pumps and calls out alarm	- Alarm banner on SCADA -Continuous monitoring by analyzer - Visual inspection	- Redundancy: 2 raw watermains -Raw watermain flushing -Raw wet well isolation -Plant and Distribution System Storage -Automatic shut-down -Facility Emergency Pan -SOP #: WTP-02. WTP-56. WTP-57, WTP-58
Filtration -High Turbidity -Integrity of Membranes	-Individual Rack turbidity 0.3NTU or greater for 600sec shuts down individual rack and calls out alarm -Failed IT test disables rack waiting for operator response to rectify situation before allowing to go back to forward flow	-Alarm banner on SCADA -Continuous Monitoring by Turbidity Meter -SCADA Monitoring -Hand Held Turbidity Meter -Visual inspection	-Equipment Redundancy: 4 Racks -Alternate Source of Water from Southwold Distribution System -Plant and Distribution System Storage -Automatic Shut down of Rack -SOP #: WTP-02, WTP-15, WTP-37, WTP-50, ALRM-22 -Facility Emergency Plan

Primary Disinfection - Low Free Chlorine Residual	-0.5mg/L or less free chlorine for 600sec on AIT5006 call out alarm and shutdown of low lift -1.10mg/L or less free chlorine for 60sec on AIT7001 calls out alarm -1.00mg/L or less free chlorine for 60sec on AIT7001 calls out alarm and shuts down high pumps	-Continuous Chlorine Analyzer -SCADA Monitoring -Alarms to Dialer and banner on SCADA -Pocket Colorimeter	-Equipment Redundancy: 2 Chemical Feed Pumps -Alternate Source of Water from Southwold Distribution System -Plant and Distribution System Storage -Automatic Shut down of High Lift Pumps -SOP #: WTP-02, WTP-04, WTP-15, WTP-27, WTP-50, ALRM-26, ALRM-33 -Facility Emergency Plan
Secondary Disinfection – Low Free Chlorine Residual	-1.00mg/L or less free chlorine for 300sec on AIT7004 calls out alarm -0.90mg/L or less free chlorine for 300sec on AIT7004 calls out alarm and shuts down high lift pumps	-Continuous Chlorine Analyzer -SCADA Monitoring -Alarms to Dialer and banner on SCADA -Pocket Colorimeter	-Equipment Redundancy: 2 Chemical Feed Pumps -Alternate Source of Water from Southwold Distribution System -Plant and Distribution System Storage -Automatic Shut down of High Lift Pumps -SOP #: WTP-02, WTP-15, WTP-27, WTP-50, ALRM-37, ALRM-38 -Facility Emergency Plan
Storage Tanks -Low Level	<u>Two Tank Operation* (Winter or Summer Mode)</u> -6.40m or less on LIT6011 or 6.50m on LIT6021 for 300sec; call out alarm -6.00m or less on LIT6011 or 6.10m on LIT6021 for 300sec; call out alarm and shuts down high lift pumps <u>One Tank Operation* (Summer Mode Only)</u> -8.00m or less on LIT6011 or 8.10m on LIT6021 for 300sec; call out alarm -7.75m or less on LIT6011 or 7.85m on LIT6021for 300sec; call out alarm and shuts down the high lift pumps *alarm set points change based on current demand, refer to SOP#WTP-04	-SCADA Monitoring -Alarms to Dialer and banner on SCADA	-Equipment Redundancy: milltronics in each tank can be duty level indicator -Alternate Source of Water from Southwold Distribution System -Distribution System Storage -Automatic Shutdown of High Lift Pumps -SOP #: WTP-02, WTP-04, WTP-15, ALRM-29, ALRM-30 -Facility Emergency Plan

Note: Standard Operating Procedures (SOPs) referenced in Tables 1 and 2 are controlled as per OP-05 Document and Records Control.

<u>Standard Operating Procedures (SOPs)</u>

SOP# WTP-02: Reporting Adverse Water Quality
SOP# WTP-04: Primary Disinfection
SOP# WTP-08: 72 Hour Review of Continuous Monitoring Equipment
SOP# WTP-15: Critical Control Point Limit Reached
SOP# WTP-21: Excel Historian Data
SOP# WTP-22: Filling of the Raw Watermain
SOP# WTP-23: Frazil Ice
SOP# WTP-25: Historian Fault on SCADA Computer
SOP# WTP-27: Low Free Chlorine Residuals

SOP# WTP-28: Harmful Algal Bloom Monitoring, Reporting and Sampling Plan
SOP# WTP-32: Raw Water Low DO and Manganese Issue
SOP# WTP-33: Raw Water Intake Obstruction
SOP# WTP-35: Sodium Hypochlorite Feed Pumps
SOP# WTP-36: Split Mode Operation
SOP# WTP-37: Turbidity on Pall Racks
SOP# WTP-40: Watermain Repair
SOP# WTP-41: Integrity Test Failure
SOP# WTP-46: Low Distribution System Pressure
SOP# WTP-50: Calibration/verification of Continuous Monitoring Equipment
SOP# WTP- 56: Low Range Mn Testing
SOP# WTP- 57 Flushing Raw Watermain
SOP# WTP- 58 Dosing Sodium Permanganate and Gas Chlorine

Alarm Standard Operating Procedures (SOP):

SOP# ALRM-01: Communication Failure Alarms
SOP# ALRM-02: Power Failure Alarms at WTP
SOP# ALRM-03: Water Treatment Plant Generator Alarms
SOP# ALRM-08: Power Failure at Low Lift Building
SOP# ALRM-09: Low Lift Generator Fault Alarm
SOP# ALRM-12: Wet Well Low Level Alarms
SOP# ALRM-16: Low Lift Pump Faults
SOP# ALRM-18: Raw Water pH and Chlorine Alarms
SOP# ALRM-19: Raw Water Turbidity
SOP# ALRM-20: Strainer Inlet Valve Fault
SOP# ALRM-22: PALL System Critical Alarms
SOP# ALRM-26: Discharge UV Chlorine Analyzer Alarms
SOP# ALRM-27: Trim Chlorination Pump Faults
SOP# ALRM-28: Post Treatment Chlorination Pump Faults
SOP# ALRM-29: TW Storage Tank Level Alarms
SOP# ALRM-30: TW Storage tank High Lift Shutdown Alarms
SOP# ALRM-32: High Lift Pump Alarms
SOP# ALRM-33: Suction Header Free Chlorine and pH Analyzers
SOP# ALRM-34: High Lift Pressure Alarms
SOP# ALRM-37: Distribution Free Chlorine and pH Analyzer
SOP# ALRM-38: Distribution Free Chlorine High Lift Shutdown
SOP# ALRM-39: WL Train Distribution Flow Shutdown
SOP# ALRM-40: Wallacetown Train Dist. Flow Shutdown
SOP# ALRM-41: Discharge Surge Valve Fault Alarms
SOP# ALRM-69: West Lorne Standpipe Low Low Level
SOP# ALRM-70: West Lorne Standpipe Alarms
SOP# ALRM-71: West Lorne Standpipe Communications Failure Alarms

Table 3: Record of Annual Review/36-Month Risk Assessment

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative	Approved by: Operations Management

The Drinking Water Quality Management Standard (DWQMS) requires that the currency of the information and the validity of the assumptions used in the risk assessment be verified at least once every calendar year. In addition, the risk assessment must be conducted at least once every thirty-six months.

Date of Activity	Type of Activity	Participants	Summary of Results
2012-01-25	Risk Assessment Redo	Dale LeBritton, Cindy Sigurdson	Complete 36 months Risk Assessment Redo. No new CCPs identified, completely revised Risk Assessment.
2013-04-19	Risk Assessment Review	Cindy Sigurdson	Reviewed risk assessment and made some revisions
2014-07-23	Risk Assessment Review	Cindy Sigurdson, Maegan Garber	Annual risk assessment review.
2015-01-19	36 Month Risk Assessment Redo	Dale LeBritton, Cindy Sigurdson, Dan MacLeod, Maegan Garber	36 month redo of Risk Assessment, revised risk values and clarified hazardous events.
2016-02-26	Annual Review	Dale LeBritton and Cindy Sigurdson	Added in CCP? column the reason why the event is not considered a CCP indicated by the step in QP-02
2017-02-24	Annual Review	Dale LeBritton, Cindy Sigurdson	Remove 5.7.1 and add 5.7.4 to terrorism on the Risk Assessment Outcomes.
2018-01-19	36 Month Risk Assessment	Mike Taylor, Cindy Sigurdson, Uma Pancholy	Revise to include guidance document on hazardous events from the MOECC and to update to new corporate template.
2018-04-16	Once every calendar year review	Mike Taylor, Cindy Sigurdson, Uma Pancholy	Revise as per findings from IA 2018-03-29
2019-08-12	Once every calendar year review	Mike Taylor, Cindy Sigurdson, Maegan Garber	Annual Risk Assessment Review, revise as per findings from IA 2019-06-25
2020-11-16	Once every calendar year review	Mike Taylor, Cindy Sigurdson, Stephanie Baronette	Annual Risk Assessment Review, revised Zebra Mussel Control System Failure to include maintenance of chlorine system

2021-01-13	36 Month Risk Assessment	Maegan Garber, Cindy Sigurdson, Stephanie Baronette, Mike Taylor, Vitality Talashok	Revise to include additional control measures, add MECP hazards, revised likelihoods and risk values due to system upgrades, review SOPs and titles
2021-11-04	Annual Review	Vitaliy Talashok, Cindy Sigurdson, Mark Harris, Maegan Garber	Add aging infrastructure to West Lorne Standpipe, add SOP#WTP-46. Change MOECC to MECP.
2022-11-10	Annual Review	Vitaliy Talashok, Maegan Garber, Sam Smith, Matt Belding	Revise to include Cyber Security
2023-11-03	Annual Review	Meagan Garber, Matt Belding	Revise to add back-up Claros data, stored treated water, VFD pump control and backflushing the intake.
2024-01-12	36 Month Risk Assessment	Matt Belding, Sam Smith, Josh Manneke, Andrew Trask	Revised to add DWA where applicable, added sodium permanganate system, added control measures, added treated water quality issue, added SOPs where applicable.

Table 4: Potential Hazardous Event/Hazard Reference Numbers (based on the Ministry's "Potential Hazardous Events for Municipal Residential Drinking Water Systems" dated April 2022)

If the hazardous event/hazard is not applicable to this drinking water system (DWS), it will be noted in the first column of this table.

System Type (indicate all that apply to this DWS)		Reference Number	Description of Hazardous Event/Hazard
X	All Systems	1	Long Term Impacts of Climate Change
X	All Systems	2	Water supply shortfall
X	All Systems	3	Extreme weather events (e.g., tornado, ice storm)
X	All Systems	4	Sustained extreme temperatures (e.g., heat wave, deep freeze)
X	All Systems	5	Chemical spill impacting source water
X	All Systems	6	Terrorist and vandalism actions
X	Distribution Systems	7	Sustained pressure loss
X	Distribution Systems	8	Backflow
X	Treatment Systems	9	Sudden changes to raw water characteristics (e.g., turbidity, pH)
X	Treatment Systems	10	Failure of equipment or process associated with primary disinfection

			(e.g., coagulant dosing system, filters, UV system, chlorination system)
X	Treatment Systems and Distribution Systems providing secondary disinfection	11	Failure of equipment or process associated with secondary disinfection (e.g., chlorination equipment, chloramination equipment)
X	Treatment Systems using Surface Water	12	Algal blooms
X	All Systems	13	Cybersecurity threats

Revision History

SUMMARY OF RISK ASSESSMENT OUTCOMES

Reviewed by: QEMS Representative	Approved by: Operations Management

Date	Revision #	Reason for Revision
2009-02-09	0	Initial risk assessment conducted
2010-04-06	1	Initial assessment was conducted before the plant was in operation; plant has now been operating for one year
2011-04-12	2	Add risk values to the mandatory CCPs; Table 2: remove 0.90NTU alarm since it is not a compliance point and change alarm set points to reflect changes made on SCADA
2011-07-25	3	Add Table 3
2011-12-06	4	Add to Table 1 CCP? Check boxes for Frazil ice and spill
2012-01-25	5	Risk Assessment Re-do. See Table 3 for details
2012-05-11	6	Revise Table 1 and 2 and list of SOPs as per Minor Non Conformance and OFI's in the Internal Audit Report dated May 7, 2012
2013-04-19	7	Revise to include coloured water event due to Mn; shoreline intake now operational
2014-07-23	8	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant; remove Iona Rechlorination from risk assessment; rename SOP#'s;
2015-01-19	9	36 Month Risk Assessment Redo. Changed name to Tri-County Drinking Water System; added UV as a back up for primary disinfection with sodium hypochlorite; modified risk values to reflect operation of plant and issues that we have had in the last 3 years; revised SCADA system hazardous events to specify clearer events that can happen.
2015-03-27	10	As per OFI IA 2015-02-02 add high/low to Table 2.
2016-04-22	11	Update CCP? as per OFI 2015-04-08; annual review revisions
2017-06-09	12	Revise as per annual review.
2018-01-22	13	Revised as per corporate template and 36 Month Risk Assessment
2018-04-17	14	Revise as per once every calendar year review
2019-08-16	15	Revise as per once every calendar year review and as per OFIs from IA-2019-06-25 and EA- 2018-04-26 and EA- 2018-07-09
2020-11-16	16	Revise as per once every calendar year review and included maintenance to the chlorine gas system within Zebra Control System
2021-01-13	17	36 month risk assessment, see Table 3 for details.

2021-11-04	18	Revised as per annual risk assessment, see Table 3 for details.
2022-11-10	19	Revised as per annual review, see Table 3
2023-11-03	20	Revised as per annual review, see table 3
2024-01-12	21	Revised as per 36 month review. See Table 3 and track changes
2024-08-12	22	Added sodium permanganate system, added related SOPs, add CCP, revise date of MECPs Potential Hazards as per IA OFI 2024-07-24

ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES AND AUTHORITIES

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To document the following for the Tri-County Drinking Water System:

- Owner;
- Organizational structure of the Operating Authority;
- QEMS roles, responsibilities and authorities of staff, Top Management and individuals/groups that provide corporate oversight; and
- Responsibilities for conducting the Management Review

2. Definitions

Operations Management – refers to the General Manager, Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Senior Leadership Team (SLT) – members include President and CEO, Executive Vice President and General Counsel, Vice Presidents of OCWA's business units and Regional Hub Managers

Top Management – a person, persons or a group of people at the highest management level within an operating authority that makes decisions respecting the QMS and recommendations to the owner respecting the subject system or subject systems

Operations Personnel – Employees of the drinking water system who perform various activities related to the compliance, operations and maintenance of the drinking water system that may directly affect drinking water quality

3. Procedure

3.1 Organizational Structure

The Tri-County Drinking Water System is owned by Tri-County Water Board.

The organizational structure of OCWA, the Operating Authority, is outlined in appendix OP-09A: Organizational Structure.

3.2 Top Management

Top Management for the Tri-County Drinking Water System consists of:

- Operations Management – Aylmer Cluster
- Regional Hub Manager – Southwest Region
- Safety, Process & Compliance Manager – Southwest Region

Irrespective of other duties (see Table 9-2 below), Top Management's responsibilities and authorities include:

- Endorsing the Operational Plan as per the Commitment and Endorsement procedure (OP-03);

- Ensuring that the QEMS meets the requirements of the DWQMS;
- Ensuring staff are aware of the applicable legislative and regulatory requirements;
- Communicating the QEMS according to the Communications procedure (OP-12);
- Providing resources needed to maintain and continually improve the QEMS;
- Appointing and authorizing a QEMS Representative (OP-04); and
- Undertaking Management Reviews as per the Management Review procedure (OP-20).

Note: Specific responsibilities of the individual members of Top Management are identified in the referenced procedures.

3.3 Corporate Oversight

Roles, responsibilities and authorities for individuals/groups providing corporate oversight of OCWA's QEMS are summarized in Table 9-1 below.

Table 9-1: Corporate QEMS Roles, Responsibilities and Authorities

Role	Responsibilities and Authorities
Board of Directors	• Set the Agency's strategic direction, monitor overall performance and ensure appropriate systems and controls are in place in accordance with the Agency's governing documents • Review and approve the QEMS Policy
Senior Leadership Team (SLT)	• Establish the Agency's organizational structure and governing documents and ensure resources are in place to support strategic initiatives • Monitor and report on OCWA's operational and business performance to the Board of Directors • Review the QEMS Policy and recommend its approval to the Board • Approve corporate QEMS programs and procedures
Corporate Compliance	• Manage the QEMS Policy and corporate QEMS programs and procedures • Provide support for the local implementation of the QEMS • Monitor and report on QEMS performance and any need for improvement to SLT • Consult with the Ministry and other regulators and provide compliance support/guidance on applicable legislative, regulatory and policy requirements • Manage contract with OCWA's DWQMS accreditation body

3.4 Regional Hub Roles, Responsibilities and Authorities

QEMS roles, responsibilities and authorities of Regional Hub personnel are summarized in Table 9-2 below. This information is kept current as per the Document and Records Control procedure (OP-05) and is communicated to staff as per the Communications procedure (OP-12).

Additional duties of employees are detailed in their job specifications and in the various QEMS programs and procedures that form, or are referenced in, this Operational Plan.

Table 9-2: QEMS Roles, Responsibilities and Authorities for the Aylmer Cluster

Role/Position	Responsibilities and Authorities
All Operations Personnel	• Perform duties in compliance with applicable legislative and regulatory requirements • Be familiar with the QEMS Policy and work in accordance with QEMS programs and procedures • Maintain operator certification (as required) • Attend/participate in training relevant to their duties under the QEMS • Document all operational activities • Identify potential hazards at their facility that could affect the environmental and/or public health and report to Operations Management • Report and act on all operational incidents • Recommend changes to improve the QEMS
Regional Hub Manager (Top Management)	• Oversee the administration and delivery of contractual water/wastewater services on a Regional Hub level • Fulfill role of Top Management • Ensure corporate QEMS programs and procedures are implemented consistently throughout the Regional Hub • Manages the planning of training programs for Regional Hub • Report to VP of Operations/SLT on the regional performance of the QEMS and any need for Agency-wide improvement
Operations Management (Top Management)	• Manage the day-to-day operations and maintenance of their assigned facilities and supervise facility operational staff • Fulfill role of Top Management • Ensure corporate and site-specific QEMS programs and procedures are implemented at their assigned facilities

Role/Position	Responsibilities and Authorities
	• Determine necessary action and assign resources in response to operational issues • Report to the Regional Hub Manager on facility operational performance • Ensure operational training is provided for the cluster (in consultation with the SPC Manager as required) • Act as Overall Responsible Operator (ORO) when required (based on certification). Refer to SOP# WTP- 31.
Safety, Process & Compliance (SPC) Manager (Top Management)	• Supervise facility compliance staff and provide technical and program support to the Regional Hub related to process control and compliant operations • Fulfill role of Top Management • Ensure corporate/regional QEMS programs and procedures are implemented consistently throughout the Regional Hub • Assist in the development of site-specific operational procedures as required • Ensure training on applicable legislative and regulatory requirements and the QEMS is provided for the Regional Hub (in consultation with Operations Management as required) • Monitor and report to the Regional Hub Manager and Operations Management on the compliance status and QEMS performance within their Regional Hub and any need for improvement • Act as alternate QEMS Representative (when required) • May act as Operator-in-Charge (OIC) and/or ORO when required (based on certification). Refer to SOP# WTP-30 and WTP-31.
Process & Compliance Technician (PCT) (QEMS Representative)	• Implement, monitor and support corporate programs relating to environmental compliance and support management by evaluating and implementing process control systems at their assigned facilities • Fulfill role of QEMS Representative (OP-04) • Monitor, evaluate and report on compliance/quality status of their assigned facilities • Implement facility-specific QEMS programs and procedures consistently at their assigned facilities • Participate in audits and inspections and assist in developing, implementing and monitoring action items to respond to findings • Report to the SPC Manager on QEMS implementation and identify the need for additional/improved processes and

Role/Position	Responsibilities and Authorities
	procedures at the Regional Hub/cluster/facility level (in consultation with the Operations Management as required) • Communicates to Owners on facility compliance and DWQMS accreditation as directed • Deliver/participate in/coordinate training including applicable legislative and regulatory requirements and the QEMS • May act as Operator-in-Charge (OIC) and/or Overall Responsible Operator (ORO) when required. • May fulfil role of Certified Operator when required (based on certification)
Certified Operator May include the following positions: • Operations Supervisor Water & Wastewater • Water & Wastewater Lead • Water & Wastewater Operator • Water & Wastewater Operator-In-Training (OIT)	• Perform duties as assigned by Operations Management or designate • Monitor, maintain and operate facilities in accordance with applicable regulations, approvals and established operating procedures • Collect samples and perform laboratory tests and equipment calibrations as required • Regularly inspect operating equipment, perform routine preventive maintenance and repairs and prepare and complete work orders as assigned • Ensure records of adjustments made to the process under their responsibility, equipment operating status during their shifts and any departures from normal operations observed and actions taken are maintained within facility logs/record keeping mechanisms (as per O. Reg. 128) • Participate in facility inspections and audits • May act as OIC and/or ORO when required (based on certification). Refer to SOP# WTP-30 and WTP-31 • **NOTE:** OITs cannot act as OIC and/or ORO. OITs perform the above duties under the direction of the OIC/ORO and as assigned by Operations Management or designate.
Administrative Assistant	• Support the administrative functions of the regional hub/cluster/facility including coordinating delivery of training as directed • Assist with entering operational data (including operational training records and maintenance records) into the appropriate database as directed

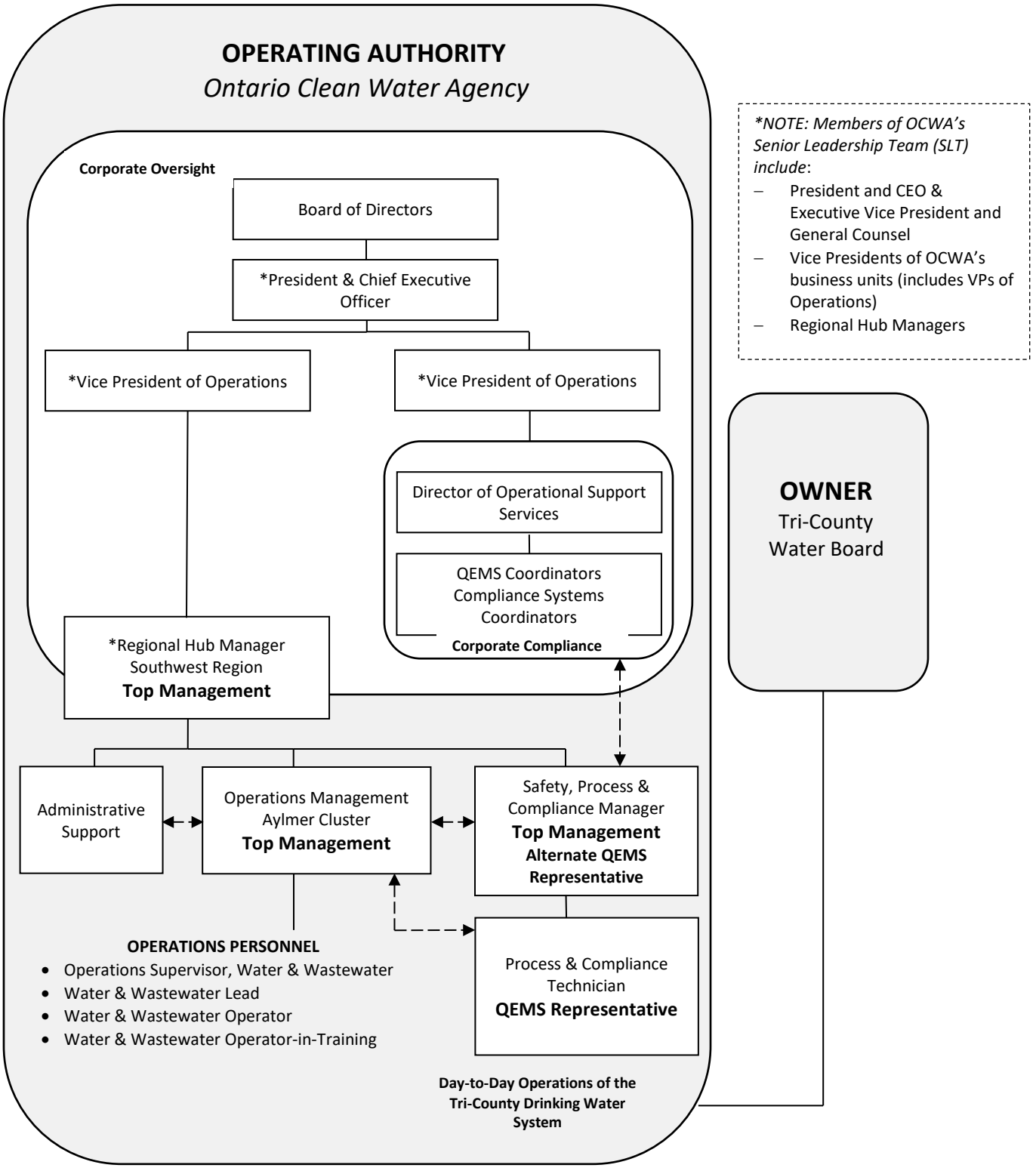
4. Related Documents

OP-03 Commitment and Endorsement

OP-04 QEMS Representative
OP-05 Document and Records Control
OP-09A Organizational Structure
OP-12 Communications
OP-20 Management Review
SOP# WTP-30 OIC Designation
SOP# WTP-31 ORO Designation
OCWA Position Descriptions/Job Specifications

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-09 was originally set out in the main body of OCWA's Operational Plan (Last revision # 12, dated 2017-06-09).
2020-10-30	1	Revised to change Tri-County Cluster to Aylmer Cluster as per IA-OFI 2020-10-26
2024-08-12	2	Procedure updated with revisions to Table 9-2 as follows: Role/Position updated to clarify roles are performed by multiple positions, position titles updated, note added regarding OITs operating limitations. Additional revisions include replaced MOECC with Ministry, minor rewording and type-o's, removed watermark. Add SOPs where required, all as per IA OFI 2024-08-12.


OPERATING AUTHORITY
Ontario Clean Water Agency
Corporate Oversight
Board of Directors
*President & Chief Executive Officer
*Vice President of Operations
*Vice President of Operations
Director of Operational Support Services
QEMS Coordinators
Compliance Systems Coordinators
Corporate Compliance
*Regional Hub Manager
Southwest Region
Top Management
Administrative Support
Operations Management
Aylmer Cluster
Top Management
Safety, Process & Compliance Manager
Top Management
Alternate QEMS Representative
OPERATIONS PERSONNEL
Operations Supervisor, Water & Wastewater
Water & Wastewater Lead
Water & Wastewater Operator
Water & Wastewater Operator-in-Training
Process & Compliance Technician
QEMS Representative
Day-to-Day Operations of the Tri-County Drinking Water System
*NOTE: Members of OCWA's Senior Leadership Team (SLT) include:
– President and CEO & Executive Vice President and General Counsel
– Vice Presidents of OCWA's business units (includes VPs of Operations)
– Regional Hub Managers
OWNER
Tri-County Water Board

Revision History

Date	Revision #	Reason for Revision
2018-01-22	9	Appendix issued - Organizational Chart previously contained as Appendix C of the Operational Plan. Moved to a new Appendix [Last revision # 8, dated 2017-06-09].
2020-08-05	10	Revision to reflect change to reporting structure - Corporate Compliance now reports to VP of Operations. [Last revision # 9, dated 2018-01-22].
2020-10-30	11	Revise to change Tri-County Cluster to Aylmer Cluster as per IA-OFI 2020-10-26
2024-08-12	12	Revised to include Senior Leadership Team (SLT) in reporting structure and identify members, added Compliance System Coordinators, updated Operations Personnel position titles, removed watermark as per IA OFI 2024-08-12.

1. Purpose

To document a procedure that describes:

- the competencies required for personnel performing duties directly affecting drinking water quality;
- the activities to develop and/or maintain those competencies; and
- the activities to ensure personnel are aware of the relevance of their duties and how they affect safe drinking water.

2. Definitions

Competence – the combination of observable and measurable knowledge, skills, and abilities which are required for a person to carry out assigned responsibilities

Operations Management – refers to the General Manager, Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Operations Personnel – employees of the drinking water system who perform various activities related to the compliance, operations and maintenance of the drinking water system that may directly affect drinking water quality

Top Management – a person, persons or a group of people at the highest management level within an operating authority that makes decisions respecting the QMS and recommendations to the Owner respecting the subject system or subject systems

3. Procedure

3.1 The following table presents the minimum competencies required by operations personnel.

Role/Position	Required Minimum Competencies
Operations Management	• Valid operator certification; if required to act as Overall Responsible Operator (ORO), certification must be at the level of the facility or higher • Experience and/or training in managing/supervising drinking water system operations, maintenance, financial planning and administration • Training and/or experience related to drinking water system processes, principles and technologies • Training on OCWA's QEMS and the DWQMS • Training and experience as an OCWA WMS Primary User • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers and operational computerized systems

Role/Position	Required Minimum Competencies
Safety, Process & Compliance (SPC) Manager (Top Management) (May also fulfill the role of Alternate QEMS Representative)	• Valid operator certification required to fulfil certified operator duties (if assigned). • Experience in providing technical support and leading/managing programs related to process control and compliant operations • Experience and/or training in conducting compliance audits, and management system audits • Experience and/or training in preparing and presenting informational and training material • Training on OCWA's QEMS and the DWQMS • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers and operational computerized systems
Process & Compliance Technician (QEMS Representative)	• Valid operator certification required to fulfil certified operator duties (if assigned) • Experience and/or training in resolving/addressing compliance issues for drinking water systems • Experience and/or training in monitoring, assessing and reporting on facility performance against legal requirements and corporate goals • Experience and/or training in preparing and presenting informational and training material • Experience in conducting management system audits or internal auditor education/training • Training on OCWA's QEMS and the DWQMS • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers and operational computerized systems
Certified Operator May include the following: • Operations Supervisor Water & Wastewater • Water & Wastewater Lead • Water & Wastewater Operator • Water & Wastewater Operator-in-Training	• Valid operator certification • If required to act as ORO, certification must be at the level of the facility or higher • If required to act as Operator-in-Charge (OIC), certification must be level 1 or higher • Training and/or experience in inspecting and monitoring drinking water system processes and performing/planning maintenance activities • Training on OCWA's QEMS and the DWQMS • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers and operational computerized systems

3.2 The following table presents the minimum competencies required by staff that provide administrative support to operations personnel.

Role and/or Position	Required Minimum Competencies
Administrative Assistant	• Experience and/or training related to procurement and business administration practices • Training on OCWA's QEMS and the DWQMS • Training on relevant legislation, regulations, codes, policies, guidelines and procedures • Experience using computers

3.3 OCWA's recruiting and hiring practices follow those of the Ontario Public Service (OPS). As part of the OPS, minimum competencies, which include education, skills, knowledge and experience requirements, are established when designing the job description for a particular position. As part of the recruitment process, competencies are then evaluated against the job description. Based on this evaluation, the hiring manager selects and assigns personnel for specific duties.

3.4 OCWA's Operational Training Program aims to:
- Develop the skills and increase the knowledge of staff and management;
- Provide staff with information and access to resources that can assist them in performing their duties; and
- Assist OCWA certified operators in meeting the legislative and regulatory requirements with respect to training.

3.5 The Program consists of Director Approved, continuing education and on-the-job training and is delivered using a combination of methods (e.g., traditional classroom courses, e-learning/webinars and custom/program-based courses/sessions). A formal evaluation process is in place for all sessions under the Operational Training Program and is a critical part of the Program's continual improvement.

3.6 Awareness of OCWA's QEMS is promoted during the orientation of new staff, at facility/cluster/regional hub level training sessions and meetings and through OCWA's Environmental Compliance 101 (EC 101) course. All new staff are required to complete the EC 101 course upon scheduling and availability, and a refresher course every 3 years. The purpose of the EC 101 course is to ensure staff are aware of applicable legislative and regulatory requirements, to promote awareness of OCWA's QEMS and to reinforce their roles and responsibilities under OCWA's QEMS.

3.7 Staff are also required to complete the training listed in OCWA's Mandatory Training Requirements procedure, based on their position and/or the duties they perform. This list includes mandatory environmental and health and safety compliance training, as

well as the training deemed mandatory by OCWA corporate and Ontario Public Service (OPS) policies and is available on OCWA's intranet (sharepoint site).

3.8 Operations personnel also receive site-specific training/instruction on relevant operational and emergency response procedures to ensure effective operational control of processes and equipment which may impact the safety and quality of drinking water.

3.9 As part of OCWA's annual Performance Planning and Review (PPR) process, employee performance is evaluated against their job expectations. Professional development opportunities and training needs (which could include formalized courses as well as site-specific on-the-job training or job shadowing/mentoring) are identified as part of this process (and on an ongoing basis). In addition to this process, OCWA employees may at any time request training from either internal or external providers by obtaining approval from their Manager.

3.10 Certified drinking water operators are responsible for completing the required number of training hours in order to renew their certificates based on the highest class of drinking water subsystem they operate. They are also responsible for completing mandatory courses required by *Safe Drinking Water Act* (SDWA) O. Reg. 128/04 Certification of Drinking Water System Operators and Water Quality Analysts. The Operations Management takes reasonable steps to ensure that every operator has the opportunity to attend training to meet the requirements.

3.11 It is the responsibility of operations personnel to ensure Operations Management are aware of any change to the status/classification of their drinking water operator certificate(s), the validity of their driver's licence (required to hold at a minimum a Class G license which is initially verified upon hire) and/or the validity of any other required certificates/qualifications.

3.12 Individual OCWA employee training records are maintained and tracked using a computerized system, the Training Summary database, which is administrated by OCWA's Learning and Development Department. Training records maintained at the facility are controlled as per OP-05 Document and Records Control.

4. Related Documents

OCWA's Learning and Development Resources (OCWA Intranet/sharepoint)
[Orientation checklists/documentation]
OCWA's Mandatory Training Requirements (OCWA intranet/sharepoint)
Performance Planning and Review Database
OP-5 Document and Records Control
OCWA Training Summary Database
Request for Staff Development

5. Revision History

COMPETENCIES

Reviewed by: QEMS Representative	Approved by: Operations Management

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-10 was originally set out in the main body of OCWA's Operational Plan (last revision # 12 dated 2017-06-09).
2018-04-17	1	Revise as per IA 2018-03-29
2019-08-16	2	Revise minimum competencies as per OFIs IA 2019-06-25 and Management Review 2019-08-13
2020-10-30	3	Revise to include EC101 refresher course as per IA-OFI 2020-10-26
2021-11-09	4	Revise numbering as per IA OFI 2021-08-25, add Request for Staff Development to 4.
2024-08-12	5	Procedure updated with revisions to table in 3.1 Role/Position updated to clarify roles are performed by multiple positions, position titles updated, removed watermark, updated Procedure to reflect changes to title and content of OCWA's Mandatory Training Requirements Document, added sharepoin as per IA OFI 2024-07-24.

PERSONNEL COVERAGE

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To describe the procedure for ensuring that sufficient and competent personnel are available for duties that directly affect drinking water quality at the Tri-County Drinking Water System.

2. Definitions

Competency – an integrated set of requisite skills and knowledge that enables an individual to effectively perform the activities of a given occupation *

Essential Services – services that are necessary to enable the employer to prevent,

(a) danger to life, health or safety,
(b) the destruction or serious deterioration of machinery, equipment or premises,
(c) serious environmental damage, or
(d) disruption of the administration of the courts or of legislative drafting.

(*Crown Employees Collective Bargaining Act*, 1993)

3. Procedure

3.1 Operations Management ensures that personnel meeting the competencies identified in OP-10 Competencies are available for duties that directly affect drinking water quality.

3.2 The Tri-County Drinking Water System is staffed by OCWA personnel as follows:

- 07:30 to 16:00 five days a week Monday to Friday.
- Staff on call after hours

3.3 Operations personnel are assigned to act as and fulfill the duties of Overall Responsible Operator (ORO) and Operator-in-Charge (OIC) in accordance with SDWA O. Reg. 128/04 outlined in SOP# WTP-30 and SOP# WTP-31. .

The overall responsible operator (ORO) is assigned for the facility and is recorded in the facility logbook. When the designated ORO is unavailable, a replacement ORO is assigned and designated as such in the facility logbook.

The designated OIC for each shift is recorded in the facility logbook.

3.4 Operations Management assigns an on-call operator for the time that the facility is not staffed (i.e., evenings, weekends and Statutory Holidays). The on-call shift change is the start of the business day on Monday and follows a weekly rotation of staff. The

* Based on the *2005 National Occupational Guidelines for Canadian Water and Wastewater Operators* and International Board of Standards for Training, Performance and Instruction

Operations Management prepares a schedule of on call operators which is posted in the Administrative Office.

3.5 The on-call operator is available to conduct a physical inspection of the facility and take appropriate readings after hours, if necessary. On Statutory Holidays the on-call operator performs normal operating tasks. Details of the physical inspection are recorded in the facility logbook and daily round sheets.

3.6 The SCADA system auto dialer is programmed to contact a contracted call-centre operator whenever there is an alarm condition. The call-centre operator contacts the on-call operator through a designated on-call pager. The on-call operator contacts the call-centre to acknowledge the alarm and responds to the alarm conditions. If the nature of the alarm requires additional staff, the on-call operator can request assistance from any of the other certified operators. The on-call operator records details of the call-in in the facility logbook along with call back reports generated through Maximo.

3.7 Each manager (e.g. Operations Management/SPC Manager) is responsible for approving time off for their staff in a manner which ensures sufficient personnel are available for the performance of normal operating duties as well as on-call coverage. The Operations Management is responsible for ensuring facilities are appropriately staffed and on-call coverage is maintained when an operator is away due to illness, training, emergency, vacation or resignation.

3.8 OCWA's operations personnel are represented by the Ontario Public Service Employees Union (OPSEU). In the event of a labour disruption, Operations Management, together with the union, identifies operations personnel to provide "essential services" required to operate the facility so that the quality of drinking water is not compromised in any way.

3.9 A contingency plan for Critical Shortage of Staff is included in the Facility Emergency Plan. This plan provides direction in the event that there is a severe shortage of operations personnel due to sickness (e.g., pandemic flu) or other unusual situations.

4. Related Documents

OP-10 Competencies
Facility Logbook
Daily Round Sheets
On-Call Schedule
Call-Back Reports
Vacation Schedule
Critical Shortage of Staff Contingency Plan (Facility Emergency Plan)
SOP# WTP-30: Operator In Charge
SOP# WTP-31: Overall Responsible Operator

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2010-04-22	1	Change duties on Weekend rounds, 5.2 and 5.5
2011-04-12	2	Remove Call In Overtime Sheets from 5.6 and 6.0
2011-07-25	3	Corporate Revision Add 5.9 and related doc.; Add Appendix Title Page; Change Date Formatting
2011-12-06	4	5.2 Remove italics on West Elgin Water Treatment Plant; 5.4 change "appropriate work locations" to Senior Operations Manager's Office;6.0 remove Daily from Rounds Sheets
2012-04-12	5	Change Operations Manager to Senior Operations Manager
2012-05-11	6	6.0 Remove "Elgin-Middlesex Hub" from Vacation/Training Schedule
2013-06-28	7	Revise issue date to current date
2014-05-02	8	Revise 5.2-hours and weekend checks and 5.3 OIC info
2014-07-23	9	Change of Ownership from Municipality of West Elgin to Tri-County Water Board, Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	10	Revise Tri-County WTP to DWS; Add to 5.3 and 6.0 SOP# WTP-30 and WTP-31 as per OFI IA 2015-02-02.
2016-04-22	11	Revise to reflect changes in positions PCT to OCTL and Senior Operations Manager to RHM where appropriate; add in 5.8 to deal with routine absence due to illness, emergency or training of a operator as per OFI IA 2016-01-24.
2017-06-09	12	Revise with new org structure.
2018-01-22	13	Procedure issued. Revise as per corporate template.
2019-08-16	14	Revise 3.6 to include Maximo call in reports as per Management Review 2019-08-13 and revise 3.7 to include coverage of on-call as per OFI IA 2019-06-25
2020-10-30	15	Revise to change Call-In Report to Call Back Report as per IA-OFI 2020-10-26
2024-08-12	16	Remove watermark

1. Purpose

To describe the procedure for facility level internal and external QEMS-related communications between Top Management and:

- OCWA staff;
- the Owner;
- essential suppliers and service providers (as identified in OP-13); and
- the public.

2. Definitions

Operations Management – refers to the General Manager, Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Operations Personnel – employees of the drinking water system who perform various activities related to the compliance, operations and maintenance of the drinking water system that may directly affect drinking water quality.

3. Procedure

3.1 Operations Management and the QEMS Representative are responsible for identifying and coordinating any site-specific communications in relation to the status/ development of the facility's QEMS.

3.2 Internal and external communication responsibilities and reporting requirements for emergency situations are set out under OCWA's Corporate Emergency Management Program (i.e., Facility Emergency Plan and OCWA's Emergency Response Plan). Refer to OP-18 Emergency Management for more information.

3.3 Communication with OCWA staff:

3.3.1 Within the first year of hire all staff are required to complete the Environmental Compliance 101 (EC101) course and complete a refresher course every 3 years, upon scheduling and availability. The objective of the EC 101 course is to ensure that staff are aware of applicable legislative and regulatory requirements and of OCWA's QEMS and to reinforce their roles and responsibilities under OCWA's QEMS.

3.3.2 Operations Management are responsible for ensuring operations personnel receive site-specific training on the Operational Plan, the organizational structure for the facility including the roles and responsibilities and authorities (outlined in OP-09 Organizational Structure, Roles, Responsibilities and Authorities), QEMS Procedures and other related operating instructions and procedures as part of the orientation process and on an on-going basis as required.

3.3.3 The SPC Manager is responsible for ensuring training is provided for the Regional Hub (in consultation with Operations Management as required) on applicable legislative and

regulatory requirements and the QEMS.

3.3.4 The QEMS Representative assists Operations Management and/or the SPC Manager in the coordination/delivery of training as required.

3.3.5 Revisions to the QEMS and associated documentation are communicated as per OP-05 Document and Records Control.

3.3.6 The QEMS Policy is available to all OCWA personnel through OCWA's intranet and as outlined in 3.6.2 of this procedure.

3.3.7 Operations personnel are responsible for identifying potential hazards at the facility that could affect the environmental and/or public health, and communicating these to Operations Management. They may also recommend changes be made to improve the facility's QEMS by making a request to the QEMS Representative (as per OP-05).

3.3.8 The QEMS Representative is responsible for ensuring that the Operations Management and the Safety, Process and Compliance Manager are informed regarding the compliance/quality status of the facility and QEMS implementation and any need for improved processes/procedures at the cluster/facility level.

3.3.9 The SPC Manager reports to the Regional Hub Manager on the compliance status, the QEMS performance and effectiveness, any need for improvement and on issues that may have Agency-wide significance. Operations Management reports to the Regional Hub Manager on facility operational performance.

3.4 Communication with the Owner:

3.4.1 The Operations Management ensures that the Owner is provided with QEMS updates and that they are kept informed of the status of the facility's operational and compliance performance during regularly scheduled meetings and/or through electronic and/or verbal communications. The QEMS Representative assists in the coordination of these meetings and with communicating the updates as directed.

3.4.2 The continuing suitability, adequacy and effectiveness of OCWA's QEMS are communicated to the Owner as part of the Management Review process (refer to OP-20 Management Review).

3.5 Communications with Essential Suppliers and Service Providers:

3.5.1 Communication requirements to ensure essential suppliers and service providers understand the relevant OCWA QEMS policies, procedures and expectations are described in OP-13 Essential Supplies and Services.

3.6 Communication with the Public:

3.6.1 Media enquiries must be directed to the facility's designated media spokesperson as identified in the Facility Emergency Plan. The media spokesperson coordinates with local and corporate personnel (as appropriate) and the Owner in responding to media

enquiries.

3.6.2 OCWA's QEMS and QEMS Policy are communicated to the public through OCWA's public website (www.ocwa.com). The QEMS Policy is also posted at the Water Treatment Plant.

3.6.3 Facility tours of interested parties must be approved in advance by the Operations Management.

3.6.4 All complaints, whether received from the consumer, the community or other interested parties, are documented in the OPEX database following SOP# WTP-42. As appropriate, the Operations Management ensures that the Owner is informed of the complaint and/or an action is developed to address the issue in a timely manner. The QEMS Representative ensures that consumer feedback is included for discussion at the Management Review.

4. Related Documents

OP-05 Document and Records Control
OP-09 Organizational Structure, Roles, Responsibilities and Authorities
OP-13 Essential Supplies and Services
OP-18 Emergency Management
OP-20 Management Review
SOP# WTP-42 Community Complaints
Facility Emergency Plan
Corporate Emergency Response Plan
OPEX Incident Reports

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2011-04-12	1	Modify 5.5 to state Senior Operations Manager and not Media Spokesperson
2011-07-25	2	Internal Audit Revisions: 3.0 Responsibility removed Client Service Rep.; 5.2 Removed "Upon hire", 5.5 Added "or Designate" Corporate Revision: Add wording to 5.2; Add QP-01 to Related Documents; Add Appendix Title Page; Modify date formatting
2011-12-06	3	5.6 Capitalize Water Treatment Plant
2012-04-12	4	Change Operations Manager to Senior Operations Manager
2013-06-28	5	Revise 5.2 to specify when the Env. Compliance course is taken as identified as an OFI in the external audit; update issue date
2014-07-23	6	Change of Ownership from Municipality of West Elgin to Tri-County Water Board, Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	7	Change Tri-County WTP to DWS; add Operations manager to 3.0 and 5.6
2016-04-22	8	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	9	Revise to new org structure
2018-01-22	10	Procedure issued. Revise as per template.

2020-10-30	11	Revised to include EC101 Refresher course every 3 years as per IA-OFI 2020-10-26
2022-12-02	12	Clarify 3.3.1 and add SOP reference to 3.6.4 and Related Documents
2024-08-12	13	Procedure revised to reference updated title of Corporate Emergency Response Plan, removed watermark as IA OFI 2024-07-24.

ESSENTIAL SUPPLIES AND SERVICES

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To describe OCWA's procedures for procurement and for ensuring the quality of essential supplies and services.

2. Definitions

Essential Supplies and Services – supplies and services deemed to be critical to the delivery of safe drinking water

3. Procedure

3.1 Essential supplies and services for the Tri County Drinking Water System are contained in the Facility Emergency Plan, Essential/Emergency Service and Supply Contact List. The list is reviewed and updated at least once every calendar year by the QEMS Representative.

3.2 Purchasing is conducted in accordance with OCWA's Corporate Procurement and Administration policies, procedures and guidelines, which are adopted from those of the Ontario Public Service.

Purchases of capital equipment are subject to formal approval by the facility's owner.

3.3 As part of the corporate procurement process, potential suppliers/service providers are informed of relevant aspects of OCWA's QEMS through the tendering process and through specific terms and conditions set out in our agreements and purchase orders. Essential suppliers and service providers (including those contracted locally) are sent a letter that provides an overview of the relevant aspects of the QEMS.

3.4 Contractors are selected based on their qualifications and ability to meet the facility's needs without compromising operational performance and compliance with applicable legislation and regulations.

Contracted personnel including suppliers may be requested or required to participate in additional relevant training/orientation activities to ensure conformance with facility procedures and to become familiar with OCWA workplaces.

If necessary, appropriate control measures are implemented while contracted work is being carried out and communicated to all relevant parties to minimize the risk to the integrity of the drinking water system and the environment.

3.5 All third-party drinking water testing services are provided by accredited and licensed laboratories. The Ministry of the Environment, Conservation and Parks (MECP) has agreement with The Canadian Association for Laboratory Accreditation (CALA) for accreditation of laboratories testing drinking water. The QEMS Representative is responsible for notifying the MOECC of any change to the drinking water testing services being utilized.

3.6 Internal verification and calibration activities (e.g. chlorine analyzer, turbidimeter, etc.) are conducted by operations personnel in accordance with equipment manuals and/or procedures (Refer to OP-17 Measurement Recording Equipment Calibration and Maintenance).

3.7 External calibration activities (e.g. flow meters) are conducted by qualified third-party providers. Qualifications of the service provider are verified during the procurement process. The service provider is responsible for providing a record/certificate of all calibrations conducted.

3.8 Chemicals purchased for use in the drinking water treatment process must meet AWWA Standards and be ANSI/NSF certified as per the Municipal Drinking Water Licence (MDWL).

3.9 The facility orders and receives ongoing deliveries of chemicals to satisfy current short-term needs based on processing volumes and storage capacities. Incoming chemical orders are verified by reviewing the manifest or invoice in order to confirm that the product received is the product ordered.

3.10 Process components/equipment provided by the supplier must meet applicable regulatory requirements and industry standards for use in drinking water systems prior to their installation.

4. Related Documents

Facility Emergency Plan Binder
Essential/Emergency Service and Supply Contact List
OP-17 Measurement Recording Equipment Calibration and Maintenance
ANSI/NSF Documentation
AWWA Standards
MDWL
Calibration Certificates/Records

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2010-09-21	1	Corporate issued revision (added 5.3)
2011-07-25	2	Corporate Revision: Add Appendix Title Page; Modify date formatting
2012-04-12	3	Change Operations Manager to Senior Operations Manager
2012-05-11	4	Add Emergency to title page, include name of contact list in 5.1 and 6.0
2013-06-28	5	Remove Emergency to title
2014-07-23	6	Change of Ownership from Municipality of West Elgin to Tri-County Water Board, Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	7	Change Tri-County WTP to DWS
2016-04-22	8	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	9	Revise to new org structure
2018-01-22	10	Procedure issued. Revised as per corporate template.
2018-04-17	11	Revised as per OFI IA 2018-03-29
2019-08-16	12	Change MOECC to MECP as per IA 2019-08-13
2024-08-12	13	Remove watermark

REVIEW AND PROVISION OF INFRASTRUCTURE

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To describe OCWA's procedure for reviewing the adequacy of infrastructure necessary to operate and maintain the Tri-County Drinking Water System.

2. Definitions

Infrastructure – the set of interconnected structural elements that provide the framework for supporting the operation of the drinking water system, including buildings, workspace, process equipment, hardware, software and supporting services, such as transport or communication

3. Procedure

3.1 At least once every calendar year, Operations Management conducts a review of the drinking water system's infrastructure to assess its adequacy for the operation and maintenance of the system. The Operations Management reviews infrastructure reports (hydrant, chamber, valve, intakes, storage inspection reports, etc.) that have been prepared through the year, previous infrastructure reviews and capital lists when conducting the current review. The specific areas reviewed are:

- Low Lift Buildings
- Water Treatment Plant
- West Lorne Standpipe
- Watermains, Hydrants and Valves
- Metering Chambers
- Water Quality

3.2 The outcomes of the risk assessment documented as per OP-08A are considered as part of this review.

3.3 The output of the review is a six year recommended capital/major maintenance summary to assist the Owner and OCWA with planning infrastructure needs for the short and long-term. This report is submitted, at least once every calendar year by Operations Management, to the Owner for review and approval. Together with the Owner, Operations Management determines and documents timelines and responsibilities for implementation of priority items.

3.4 The final approved recommended capital/major maintenance summary forms the long term forecast for any major infrastructure maintenance, rehabilitation and renewal activities as per OP-15.

3.5 Operations Management ensures that results of this review are considered during the Management Review process (OP-20).

4. Related Documents

6 Year Recommended Capital/Major Maintenance
OP-08 Risk Assessment Outcomes
OP-15 Infrastructure Maintenance, Rehabilitation and Renewal
OP-20 Management Review

Management Review Minutes

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2010-04-22	1	Modify 5.2 add 5.3
2011-07-25	2	Corporate Revision: Add Appendix Title Page, Modify date formatting
2012-04-12	3	Change Operations Manager to Senior Operations Manager
2012-05-11	4	5.3 revised to better describe the approval process
2013-06-28	5	Revise issue date to current issue
2014-07-23	6	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant; revise 5.3 to include Tri-County Water Board
2015-03-27	7	Change Tri-County WTP to DWS; 5.1 identify the specific areas reviewed during the infrastructure review.
2016-04-22	8	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	9	Revise to new org structure; revise as per OFI EA 2016-06-24 to include the types of reports reviewed.
2018-01-22	10	Procedure issued. Revise as per corporate template.
2019-08-16	11	Revise name of capital recommendations document as per OFI IA 2019-08-13
2024-08-12	12	Remove watermark

1. Purpose

To describe OCWA's infrastructure maintenance, rehabilitation and renewal program for the Tri-County Drinking Water System.

2. Definitions

Infrastructure – the set of interconnected structural elements that provide the framework for supporting the operation of the drinking water system, including buildings, workspace, process equipment, hardware, software and supporting services, such as transport or communication

Rehabilitation – the process of repairing or refurbishing an infrastructure element.

Renewal – the process of replacing the infrastructure elements with new elements.

3. Procedure

3.1 OCWA, under contract with the Owner, maintains a computerized Work Management System (WMS) to manage maintenance, rehabilitation and renewal of infrastructure for which it is operationally responsible. The major components of the WMS consist of planned maintenance, unplanned maintenance, rehabilitation, renewal and program monitoring and reporting.

3.1.1 Planned Maintenance

Routine planned maintenance activities are completed as per the preventative maintenance plan for all equipment at the Tri-County Drinking Water System.

Planned maintenance activities are scheduled in the WMS that allows the user to:

- Enter detailed asset information
- Generate and process work orders
- Access maintenance and inspection procedures
- Plan, schedule and document all asset related tasks and activities
- Access maintenance records and asset histories

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of WMS work orders. Work orders are automatically generated on a schedule (daily, weekly, monthly, quarterly and annually) that is set by WMS Primary user in accordance with the manufacturer's recommendations and/or regulatory requirements. These work order are then assigned directly to the appropriate operations personnel. Work orders are completed and electronically entered into WMS by the person responsible for completing the task. Records of these activities are maintained as per OP-05 Document and Records Control.

An inventory of equipment in WMS ensures that appropriate maintenance plans are in place. Maintenance plans are developed according to the manufacturer's instructions, regulatory requirements, industry standards, and/or client service requirements. It is Operations Management that ensures work orders are generated accordingly. Equipment Operation and Maintenance (O&M) manuals are accessible to operations personnel at the locations specified in OP-05 Document and Records Control.

3.1.2 Unplanned Maintenance

Unplanned maintenance is conducted as required. All unplanned maintenance activities are authorized by the Operations Management or designate. Unplanned maintenance activities are recorded into WMS by the person responsible for completing the unplanned maintenance activity filed as per QP-01.

3.1.3 Rehabilitation and Renewal

Rehabilitation and renewal activities including capital upgrades (major infrastructure maintenance) are determined at least once every calendar year in consultation with Operations Management and the Owner. A list of required replacement or desired new equipment is compiled and prioritized by Operations Management and is presented to the Owner for review and comment. All major expenditures require the approval of the Owner.

All new equipment and repaired equipment must be documented in the WMS system. The operator is to complete the WMS Data Collection Sheet and assign a new WMS # for any new equipment. This form is submitted to the Operations Management to be entered and assigned appropriate maintenance procedures/schedules. Repaired equipment is to be documented into WMS by the person making repair.

3.1.4 Program Monitoring and Reporting

Maintenance needs for the facility are determined through review of manufacturer's instructions, regulatory requirements, industry standards, and/or client service requirements and are communicated by means of work orders. Work order back logs are reviewed by Operations Management to ensure completion. Additionally, Operations Management conducts a review of the drinking water system's infrastructure to assess its adequacy for the operation and maintenance of the system. (Refer to OP-14 Review and Provision of Infrastructure).

To assist in monitoring the effectiveness of the program, Operations Management review workorder summary reports for the facility.

On a quarterly basis the owner is provided an operations and maintenance report through the Operations Report.

3.2 OCWA's infrastructure maintenance, rehabilitation and renewal program is initially communicated to the Owner through the operating agreement. OCWA's program is communicated to the Owner once every calendar year through submission of the summary of capital and major maintenance recommendations report and through the results of the Management Review.

4. Related Documents

Minutes of Management Review
Capital and Major Maintenance Recommendations Report

OP-05 Document and Records Control
OP-14 Review and Provision of Infrastructure
Operations Report

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Information within OP-15 was originally set out in the Main body of OCWA's Operational Plan (last revision # 12, dated 2017-06-09). Revised as per corporate template.
2018-04-17	1	Revise procedure as per OFIs from IA 2018-03-29
2019-08-16	2	Revise as per OFIs from IA 2019-06-25 and Management Review 2019-08-13
2024-08-12	3	Remove watermark.

1. Purpose

To describe the procedure for sampling, testing and monitoring for process control and finished drinking water quality.

2. Definitions

Challenging Conditions – any existing characteristic of the water source or event-driven fluctuations that impact the operational process as identified and listed under OP-06 Drinking Water System

3. Procedure

3.1 All sampling, monitoring and testing is conducted at a minimum in accordance with SDWA O. Reg. 170/03 and as per the facility's Municipal Drinking Water License (MDWL).

3.2 Sampling requirements for the facility are defined in the facility's sampling schedule which is available to operations personnel, at the location(s) noted in OP-05 Document and Records Control. The sampling schedule is maintained by the QEMS Representative and is updated as required.

3.3 Samples that are required to be tested by an accredited and licensed laboratory, are collected, handled and submitted according to the directions provided by the licensed laboratory(ies) that conducts the analysis. The laboratory(ies) used for this facility is SGS and they are listed in the Essential/Emergency Service and Supply Contact List (within the Facility Emergency Plan (FEP)).

Electronic and/or hardcopy reports received from the laboratory are maintained as per OP-05 Document and Records Control. Analytical results from laboratory reports are uploaded into OCWA's Process Data Management system (PDM).

3.4 Continuous monitoring equipment is used to sample and test for turbidity (raw, strainers, membrane and treated), free chlorine (raw, strainers, before and after UV, treated), hydrogen peroxide (before and after quenching), pH (raw and treated) and temperature (raw).

3.5 Test results from continuous monitoring equipment are captured by the SCADA system and are reviewed by a certified operator in accordance with the requirements of SDWA O. Reg. 170/03.

The SCADA system also collects and records information on the following parameters related to process control and finished drinking water quality:

- Raw and treated water flow rates
- Raw well depth
- Membrane run times
- System pressures

3.6 Adverse water quality incidents are responded to and reported as per SOP #WTP-02.

3.7 In-house process control activities are conducted on a regular basis by the certified operator(s) on duty and at a minimum are conducted and analyzed following approved laboratory procedures. The results of these activities are recorded on the round sheet. The results are entered into PDM. Any adjustments made to process parameters are recorded in the facility logbook.

3.8 All sampling, testing and monitoring activities related to the facility's most challenging conditions are maintained. The facilities challenging conditions include algae blooms, iron/manganese and frazil ice. Monitoring/sampling for harmful algal blooms (HABs) is conducted during the HAB season (the warm seasonal period at a minimum starting on June 1st and continuing until October 31st each year) based on the drinking water systems HAB Monitoring, Reporting and Sampling Plan. When the algae bloom is approaching the intake the SOP #WTP-28 Harmful Algal Bloom Monitoring, Reporting and Sampling Plan is to be followed. Frazil ice can be monitored by the temperature of the lake and the level in the raw well. Follow the SOP #WTP-23 for Frazil Ice. In the event of low dissolved oxygen and elevated concentrations of iron and manganese in the raw water follow SOP# WTP-32 for Raw Water Low Dissolved Oxygen and Manganese Issues, SOP# WTP-56 Low Range Mn Testing and SOP# WTP-58 Dosing Sodium Permanganate and Chlorine Gas.

3.9 Upstream sampling, testing and monitoring activities are routinely completed for temperature, pH, dissolved oxygen and turbidity of the raw water. Non-routine sampling, testing and monitoring takes place in response to events/issues to determine effects to the raw water supply to the treatment plant.

3.10 Sampling, testing and monitoring results are readily accessible to the Owner by contacting Operations Management or QEMS Representative.

At a minimum, Owners are provided with an annual summary of sampling, testing and monitoring results through the SDWA O. Reg. 170/03 Section 11 Annual Report, the Schedule 22 Municipal Summary Report and through the Management Review process outlined in OP-20 Management Review.

In addition, updates regarding sampling, testing and monitoring activities are provided as per the operating agreement and during regular client meetings, through the Operations Report.

4. Related Documents

SOP #WTP-02: Reporting Adverse Water Quality
SOP #WTP-23: Frazil Ice
SOP #WTP-28: Harmful Algal Bloom Monitoring, Reporting and Sampling Plan
SOP# WTP-32: Raw Water Low Dissolved Oxygen and Manganese Issues
SOP# WTP-56: Low Range Mn Testing
SOP# WTP-58 Dosing Sodium Permanganate and Chlorine Gas.
Facility Logbook
MDWL
OP-05 Document and Records Control
OP-06 Drinking Water System
OP-20 Management Review
Laboratory Analysis Reports
Laboratory Chain of Custody Forms
Annual Report (O. Reg. 170 Section 11)

Municipal Summary Report (O. Reg. 170 Schedule 22)
Process Data Management System (PDM) records
Essential/ Emergency Service and Supply Contact List
Facility Emergency Plan (FEP) Binder
Rounds Sheets
Sampling Schedule
SCADA Records
Operations Report

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2010-04-22	1	Changes reflect MDWL; 5.3 item removed
2011-04-12	2	5.1 and 6.0 change to SOP AWQI; 6.0 change Municipal Summary Reports to Reports—Schedule 22, Section 11
2011-07-27	3	Add 5.6 Upstream sampling; Add Appendix Title Page; Modify Date Formatting
2012-04-11	4	Add Challenging conditions to 5.5, add SOPs for Related Documents
2012-05-11	5	Add in SOP # and spell out AWQI
2013-06-28	6	Revise 5.6 to provide more detail on raw water monitoring.
2014-05-02	7	Add mechanic to 3.0; add wording about analytical results to 5.2; modify 5.7 as per OFI from IA 2014.
2014-07-23	8	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	9	Change Tri-County WTP to DWS; add to 5.6 dissolved oxygen
2016-04-22	10	add to 5.5 re: low dissolved oxygen and manganese as per OFI EA 2015-04-08; Change PCT to OCTL and Senior Operations Manager to RHM where appropriate
2017-06-09	11	Revise to reflect new org structure.
2018-01-22	12	Procedure issued. Revised as per corporate template.
2018-04-17	13	Revised procedure as per OFIs from IA 2018-03-29
2019-08-16	14	Change MOECC to MECP as per OFI IA 2019-08-16
2021-11-09	15	Revised title of SOP#WTP-28 as per IA OFI 2021-08-25
2024-08-12	16	Removed OCWA watermark from document. Added reference to HAB Plan under s. 3.7 and s. 4. , add SOP to 3.7 and 4.0, add MDWL to 4.0 as per IA OFI 2024-07-24.

MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE

1. Purpose

To describe the procedure for the calibration and/or verification and maintenance of measurement and recording equipment at the Tri-County Drinking Water System.

2. Definitions

None

3. Procedure

3.1 All measurement and recording equipment calibration and maintenance activities must be performed by appropriately trained and qualified personnel or by a qualified third-party calibration service provider (refer to OP-13 Essential Supplies and Services).

3.2 The Operations Management or designate establishes and maintains a list of measurement and recording devices and associated calibration and/or verification schedules using the automated Work Management System (WMS). A new device is tagged with a unique identification number and the maintenance schedule is set up. Work orders are then automatically generated as per the schedule (refer to OP-15 Infrastructure Maintenance, Rehabilitation and Renewal).

3.3 Details regarding the results of the calibration and/or verification are recorded within each individual work order generated by the WMS.

3.4 Calibration and maintenance activities are carried out in accordance with procedures specified in the manufacturer's manual, instructions specified in WMS and SOP# WTP-50 Calibration/Verification of Continuous Monitoring Equipment. The calibration schedule is as follows:

Type of Instrumentation	Instrument ID	WMS ID	Frequency
Flow Meters	FIT 1017	0000164355	Annually
	FIT 1027	0000164361	Annually
	FIT 7052	0000164528	Annually
	FIT 7062	0000164536	Annually
Raw Temperature	TIT 1403	0000164333	Annually
Turbidity Meters	AIT 3119	0000164638	Quarterly
	AIT 3219	0000164646	Quarterly
	AIT 3319	0000164653	Quarterly
	AIT 3419	0000164660	Quarterly
Chlorine Analyzers	AIT 7001	0000164522	Quarterly
Pressure Transmitters	PIT 3121	0000164641	Annually
	PIT 3221	0000164649	Annually
	PIT 3321	0000164656	Annually
	PIT 3421	0000164663	Annually
Storage Tank Level Transmitters	LIT 6021	0000062985	Annually
	LIT 6011	0000062990	Annually
Portable Chlorine Analyzer	Tri-County DWS	000062980	Monthly
	Tri-County DWS	000062964	Monthly

3.5 Standards, reagents and/or chemicals that may be utilized during calibration and/or verification and/or maintenance activities are verified before use to ensure they are not expired. Any expired standards, reagents and/or chemicals are appropriately disposed of and are replaced with new standards, reagents and/or chemicals as applicable.

3.6 Any measurement device which does not meet its specified performance requirements during calibration and/or verification must be removed from service (if practical) until repaired, replaced or successfully calibrated. The failure must be reported to the Operations Management as soon as possible so that immediate measures can be taken to ensure that drinking water quality has not been compromised by the malfunctioning device. Any actions taken as a result of the failure are recorded in the facility logbook. The QEMS Representative ensures that any notifications required by applicable legislation are completed and documented within the specified time period.

3.7 Calibration and maintenance records and maintenance/equipment manuals are maintained as per OP-05 Document and Records Control.

4. Related Documents

Facility Logbook
WMS Records
Calibration/Maintenance Records
Maintenance/Equipment Manuals
OP-05 Document and Records Control
OP-13 Essential Supplies and Services
OP-15 Infrastructure Maintenance, Rehabilitation and Renewal
SOP# WTP-50: Calibration/Verification of Continuous Monitoring Equipment

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2011-07-27	1	Add Appendix Title Page; Modify Date format
2012-04-12	2	Add table to 5.3
2012-05-11	3	fix table in 5.3; 6.0 add “/Emergency”
2013-06-28	4	Revise issue date to current issue; add mechanics to 3.0
2014-05-02	5	Revise 5.4 from Sen. Ops Manager to PCT in last sentence from OFI in IA 2014
2014-07-23	6	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	7	Change Tri-County WTP to DWS; Add Operations Manager and Admin to 3.0
2016-04-22	8	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	9	Revise to reflect new org structure
2018-01-22	10	Procedure issued. Revised as per corporate template.
2018-04-17	11	Revised as per OFIs IA 2018-03-29

2019-08-16	12	Revise as per OFI IA 2019-08-16
2021-11-09	13	Update table to include storage tank and raw temp as per IA OFI 2021-08-25
2023-04-04	14	Updated the instrument ID for portable analyzers

1. Purpose

To describe the procedure for maintaining a state of emergency preparedness at the facility level under OCWA's Emergency Management Program.

2. Definitions

Corporate Emergency Response Plan (CERP) – a corporate-level emergency preparedness plan for responding to and supporting serious (Level 3) operations emergencies

Facility Emergency Plan (FEP) – a facility-level emergency preparedness plan for responding to and recovering from operations emergencies

Operations Management – refers to the General Manager, Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

3. Procedure

3.1 The Facility Emergency Plan (FEP) is the corporate standard for emergency management at OCWA-operated facilities. The FEP supports the facility-level response to and recovery from Level 1, 2 and 3 events related to water and wastewater operations and directly links to the corporate-level Corporate Emergency Response Plan (CERP) for management of Level 3 events that require corporate support. Operations Management is responsible for establishing a site-specific FEP that meets the corporate standard for this drinking water system.

3.2 OCWA recognizes three levels of events:

Level 1 is an event that can be handled entirely by plant staff and regular contractors. The event and the actions taken to resolve it (and to prevent a reoccurrence, if possible) are then included in regular reporting (both internally and externally). Examples may include response to an operational alarm, first aid incident, small on-site spill, or a process upset that can be easily brought under control.

Level 2 is an event that is more serious and requires immediate notification of others (regulator, owner). Examples may include minor basement flooding, injury to staff that requires medical attention, or a spill that causes or is likely to cause localized, off-site adverse effects. If the event reaches this level, the instructions indicate the need to contact the Operations Management.

Level 3 is an actual or potential situation that will likely require significant additional resources and/or threatens continued operations. It may require corporate-level support including activation of the OCWA Action Group and opening of an Emergency Operations Centre (EOC) as described in the corporate CERP. Level 3 events usually involve intervention from outside organizations (client, emergency responders, Ministry, media, etc.). Examples may include:

- Disruption of service/inability to meet demand;
- Critical injury including loss of life;
- Breach of security that is a threat to public health;
- Intense media attention;
- Community emergency affecting water supply/treatment;

- Declared pandemic; or
- Catastrophic failure that could impact public health or the environment or cause significant property damage.

3.3 Potential emergency situations or service interruptions identified for the Tri-County Drinking Water System include:

- Unsafe Water
- Spill Response
- Critical Injury
- Critical Shortage of Staff
- Loss of Service
- Security Breach

3.4 The processes for responding to and recovering from each potential emergency situation/service disruption are documented within a site-specific contingency plan (CP). The CPs and related standard operating procedures (SOPs) are contained within the FEP.

3.5 OCWA's training requirements related to the FEP are as follows:

Training Topic	Training Provider	Type of Training	Frequency	Required For
Establishing and maintaining a FEP that meets the corporate standard	Safety, Process and Compliance Manager and/or Corporate Compliance (as required)	On-the-Job Practical	Upon hire and when changes are made to the corporate standard*	PCTs (or others identified by the Operations Management)
Contents of the site-specific FEP	Facility Level (coordinated by QEMS Representative)	On-the-Job Practical	Upon hire and when changes to the FEP are made*	All operations personnel with responsibilities for responding to an emergency

*Note: Changes to the corporate standard or site-specific FEP may only require the change to be communicated to Operations for implementation. Therefore, not all changes will require training.

3.6 At least one CP must be tested each calendar year and each CP must be reviewed at least once in a five-calendar year period. The reviews and tests are recorded on the FEP-01 Contingency Plan Review/Test Summary Form. This record includes the outcomes of the review/test, and identifies any opportunities for improvement and actions taken. A scheduled test of a CP may be regarded as a review of that particular CP as long as the outcomes are evaluated using the FEP-01 form. A CP-related response to an actual event may also be considered a review or a test. A review of the incident including lessons learned should be recorded on FEP-01 following the resolution of the actual event, along with any opportunities for improvement/actions identified.

3.7 Revisions to the CPs, SOPs and other FEP documents are made (as necessary) following a review, test, actual event or other significant change (e.g., changes in regulatory requirements, corporate policy or operational processes and/or equipment, etc.). Results of the emergency response testing and any opportunities for improvement/actions identified are considered during the Management Review (OP-20).

3.8 Roles and responsibilities for emergency management at OCWA-operated facilities are set out in the FEP. Specific roles and responsibilities related to a particular emergency situation or service interruption (including those of the Owner where applicable) are set out in the relevant site-specific CP. A general description of the respective responsibilities of the Owner and the operating authority in the event an emergency occurs is included in the service agreement with the Owner (as required by the *Safe Drinking Water Act*).

3.9 Where they exist, any relevant sections of the Municipal Emergency Response Plan (MERP) are included or referenced in the appendices section of the FEP. Measures specified in the MERP are incorporated into CPs where appropriate.

3.10 An Essential/Emergency Service and Supply Contact List is contained within the FEP and is reviewed/updated at least once per calendar year. An emergency communications protocol is contained within the FEP. Specific notification requirements during emergency situations or service interruptions are set out in the individual CPs and in the CERP.

4. Related Documents

Facility Emergency Plan
Corporate Emergency Response Plan
FEP-01 Contingency Plan Review/Test Summary Form
Municipal Emergency Response Plan (as applicable)
Essential/Emergency Service and Supply Contact List (Contacts section of FEP)
OP-20 Management Review

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2011-07-27	1	Add Appendix Title Page; Modify Date Formatting
2011-12-06	2	5.2 remove italics from West Elgin Water Treatment Plant; 5.6 add title of contact list; 6.0 add Essential Emergency Service and Supply Contact List
2012-04-12	3	Change Operations Manager to Senior Operations Manager
2012-05-11	4	Add "/" to Essential/Emergency Service and Supply Contact List
2013-06-28	5	Revise Issue date; revise 5.3 to provide more info on training on FEP
2014-02-28	6	Update names of contingency plans as per AI2 of MR 2014-02-27
2014-05-02	7	Modify wording in 5.4 and 5.6 as per OFIs IA 2014
2014-07-23	8	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	9	Change Tri-County WTP to DWS; revise 5.3 to reflect corporate review and testing frequency also identified in IA 2015-02-02.
2016-04-22	10	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	11	Revise to current corporate template and revise as per new org structure.
2018-01-22	12	Procedure issued. Revised as per corporate template.

2018-04-17	13	Revised as per OFIs IA 2018-03-29
2024-08-12	14	Procedure updated as follows: Ministry of Environment and Climate Change revised to Ministry, removed watermark. Modified references to Emergency Response Plan to indicate it is now referred to as Corporate Emergency Response Plan (CERP), revise 3.10 to clarify contact list as per IA OFI 2024-08-12.

INTERNAL QEMS AUDITS

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To describe the procedure for conducting internal audits at the facility level that evaluate the conformance of OCWA's Quality & Environmental Management System (QEMS) to the requirements of the Drinking Water Quality Management Standard (DWQMS).

This procedure applies to Internal QEMS Audits conducted at the Tri-County Drinking Water System for the purpose of meeting the DWQMS requirements for internal audits.

Note**:** This procedure does not apply to internal compliance audits conducted in accordance with OCWA's Internal Audit Program.

2. Definitions

Audit Team – one or more Internal Auditors conducting an audit

Internal Auditor – an individual selected to conduct an Internal QEMS Audit

Internal QEMS Audit – a systematic and documented internal verification process that involves objectively obtaining and evaluating documents and processes to determine whether a quality management system conforms to the requirements of the DWQMS

Lead Auditor – Internal Auditor responsible for leading an Audit Team

Non-conformance – non-fulfillment of a DWQMS requirement

Objective Evidence – verifiable information, records or statements of facts. Audit evidence is typically based on interviews, examination of documents, observations of activities and conditions, reviewing results of measurements and tests or other means. Information gathered through interviews should be verified by acquiring supporting information from independent sources

Opportunity for Improvement (OFI) – an observation about the QEMS that may, in the opinion of the Internal Auditor, offer an opportunity to improve the effectiveness of the system or prevent future problems; implementation of an OFI is optional.

3. Procedure

3.1 Audit Objectives, Scope and Criteria

3.1.1 In general, the objectives of an internal QEMS audit are:

- To evaluate conformance of the implemented QEMS to the requirements of the DWQMS;
- To identify non-conformances with the documented QEMS; and
- To assess the effectiveness of the QEMS and assist in its continual improvement.

3.1.2 The scope of an internal QEMS audit includes activities and processes related to the QEMS as documented in the Operational Plan.

3.1.3 The criteria covered by an internal QEMS audit include:

- Drinking Water Quality Management Standard (DWQMS)
- Current Operational Plan
- QEMS-related documents and records

3.1.4 The audit scope and criteria may be customized as necessary to focus on a particular process/critical control point and/or any elements of the DWQMS which may warrant specific attention. The results of previous internal and external audits are also be considered.

3.2 Audit Frequency

3.2.1 Internal QEMS audits may be scheduled and conducted once every calendar year or may be separated into smaller audit sessions scheduled at various intervals throughout the calendar year. However, all elements of the DWQMS must be audited at least once every calendar year.

3.2.2 The QEMS Representative is responsible for maintaining the internal QEMS audit schedule. The audit schedule may be modified based on previous audit results.

3.2.3 Regardless of the approach, the QEMS Representative must ensure that an internal audit is conducted at least once every 12 months.

3.3 Internal Auditor Qualifications

3.3.1 Internal QEMS audits shall only be conducted by persons approved by the QEMS Representative and having the following minimum qualifications:

- Internal auditor training or experience in conducting management system audits; and
- Familiarity with the DWQMS requirements.

3.3.2 Internal Auditors that do not meet the qualifications in s.3.3.1 may form part of the Audit Team for training purposes, but cannot act as Lead Auditor.

3.3.3 Internal Auditors must remain objective and, where practical, be independent of the areas/activities being audited. It may not be possible for internal auditors to be fully independent of the activity being audited, but every effort should be made to remove bias and encourage objectivity. Auditors should maintain objectivity throughout the audit process to ensure that the audit findings and conclusions are based only on the audit evidence. Objectivity can be demonstrated by obtaining sufficient appropriate evidence to provide a reasonable basis for the audit findings.

3.4 Audit Preparation

3.4.1 Together, the QEMS Representative and the Lead Auditor:

- Establish the audit objectives, scope and criteria;
- Confirm the audit logistics (locations, dates, expected time and duration of audit activities, any health and safety considerations, availability of key personnel, audit

team assignments, etc.).

3.4.2 Each Internal Auditor is responsible for:

- Reviewing documentation to prepare for their audit assignments including:
  - the Operational Plan and related procedures;
  - results of previous internal and external QEMS audits;
  - the status and effectiveness of corrective and preventive actions implemented;
  - the results of the management review;
  - the status/consideration of OFIs identified in previous audits; and
  - other relevant documentation.
- Preparing work documents (e.g., checklists, forms, etc.) for reference purposes and for recording objective evidence collected during the audit

3.5 Conducting the Audit

3.5.1 Opening and closing meetings are not required, but may be conducted at the discretion of the QEMS Representative and the Lead Auditor taking into account expectations of Top Management.

3.5.2 The Audit Team gathers and records objective evidence by engaging in activities that may include conducting interviews with Operations Management and staff (in person, over the phone and/or through e-mail), observing operational activities and reviewing documents and records.

3.5.3 The Audit Team generates the audit findings by evaluating the objective evidence against the audit criteria (s. 3.1.3). In addition to indicating conformance or non-conformance, the audit findings may also lead to the identification of opportunities for improvement (OFIs). The Lead Auditor is responsible for resolving any differences of opinion among Audit Team members with respect to the audit findings and conclusions.

3.6 Reporting the Results

3.6.1 The Lead Auditor reviews the audit findings and conclusions with the QEMS Representative and Top Management. Other audit participants may also take part in this review as appropriate. This review may take place in person (e.g., during a closing meeting) or through other means (phone call, email, etc.). Any diverging opinions regarding the audit findings and conclusions should be discussed and, if possible, resolved. If not resolved, this should be noted by the Lead Auditor.

3.6.2 The Lead Auditor submits a written report and/or completed work documents to the QEMS Representative. The submitted documentation must identify (at a minimum):

- Audit objectives, scope and criteria;
- Audit Team member(s) and audit participants;
- Date(s) and location(s) where audit activities where conducted;
- Audit findings including:
  - Related objective evidence for each element;

- Any non-conformance identified referencing the requirement that was not met; and
- OFIs or other observations.

- Audit conclusions.

3.6.3 The QEMS Representative distributes the audit results to Top Management and others as appropriate.

3.6.4 The QEMS Representative ensures that results of internal QEMS audits are included as inputs to the Management Review as per OP-20 Management Review.

3.7 Corrective Actions and Opportunities for Improvement (OFIs)

3.7.1 Corrective actions are initiated when non-conformances are identified through internal QEMS audits and are documented and monitored as per OP-21 Continual Improvement.

3.7.2 OFIs are considered, and preventive actions initiated, documented and monitored as per OP-21 Continual Improvement.

3.7.3 The Operations Management (or designate) investigates the need for action to eliminate the root cause(s) so as to prevent the nonconformity from recurring. The investigation may include consultation with the SPC Manager, PCT, RHM, operators and others as appropriate.

3.7.4 The Operations Management (or designate) determines the corrective action needed and assigns responsibility and a target date for resolution.

3.7.5 Any necessary revisions to QEMS documents are completed as per OP-05 Document and Records Control.

3.7.6 The QEMS Representative ensures corrective actions are documented in the Summary of Action Items Table. The QEMS Representative monitors the progress of corrective action(s) and provides status updates to Facility Top Management.

3.7.7 The effectiveness of corrective actions is reviewed during subsequent internal QEMS audits. If there is evidence that the action taken was not effective, the Regional Hub Manager (or designate) initiates further corrective action and assigns resources as appropriate until the nonconformity is fully resolved.

3.8 Record-Keeping

3.8.1 Internal QEMS audit records are filed by the QEMS Representative and retained as per OP-05 Document and Records Control.

4. Related Documents

Internal Audit Work Documents
Audit Reports
OP-05 Document and Records Control
OP-20 Management Review
OP-21 Continual Improvement

Summary Table of Action Items
Management Review Minutes

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2011-07-27	1	5.1 changed “on an annual basis” to “once every 12 months”; Added Appendix Title Page; Modified Date Formatting
2011-12-06	2	5.1 correct spelling mistake: months (moths)
2012-04-12	3	Change Operations Manager to Senior Operations Manager
2013-06-28	4	Revise 5.7 to identify how OFIs are addressed
2014-07-23	5	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	6	Revise with corporate revisions; change WTP to Drinking Water System
2016-04-22	7	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	8	Revise to reflect new org structure.
2018-01-22	9	Procedure issued. Revised as per corporate template.
2019-08-16	10	Revise section 3.1.4 as per OFI IA 2019-06-25, remove Senior Ops Manager and replace with Operations Management, remove DWQMS CA report and include Summary Table
2024-08-12	11	Procedure updated to describe and document how objectivity is maintained when an internal auditor is not fully independent of the activity being audited with additions to 3.3.3, removed watermark, revise wording in 3.7 as per IA OFI 2024-07-24.

MANAGEMENT REVIEW

Reviewed by: QEMS Representative	Approved by: Operations Management

1. Purpose

To describe the procedure for conducting a Management Review of the Quality & Environmental Management System (QEMS) at the facility level.

2. Definitions

Management Review – a formal (documented) meeting conducted at least once every calendar year by Top Management to evaluate the continuing suitability, adequacy and effectiveness of OCWA's Quality & Environmental Management System (QEMS)

Operations Management – refers to the General Manager, Senior Operations Manager and/or Operations Manager that directly oversees a facility's operations

Top Management – a person, persons or group of people at the highest management level within an operating authority that makes decisions respecting the QMS and recommendations to the owner respecting the subject system or subject systems.
OCWA has defined Top Management for the Tri-County Drinking Water System as:

- Operations Management – Aylmer Cluster
- Regional Hub Manager – Southwest Region
- Safety, Process & Compliance (SPC) Manager – Southwest Region

3. Procedure

3.1 Top Management ensures that a Management Review is conducted at least once every calendar year.

Management Reviews for more than one drinking water system may be conducted at the same meeting provided the systems belong to the same owner and the considerations listed in section 3.4 below are taken into account for each individual system and documented in the Management Review meeting minutes.

3.2 At a minimum, the QEMS Representative and at least one member of Top Management must attend the Management Review meeting. Other members of Top Management may participate though their attendance is optional.

3.3 Other staff may be invited to attend the Management Review meeting or to assist with presenting information or in reviewing the information presented, where they offer additional expertise regarding the subject matter.

3.4 The standing agenda for Management Review meetings is as follows:

a) Incidents of regulatory non-compliance;
b) Incidents of adverse drinking water tests;
c) Deviations from critical control limits and response actions;
d) The effectiveness of the risk assessment process;
e) Internal and third-party audit results (including any preventive actions implemented to address Opportunities for Improvement (OFI) or rationale as to why OFIs were not implemented);
f) Results of emergency response testing (including any OFIs identified);

g) Operational performance;
h) Raw water supply and drinking water quality trends;
i) Follow-up on action items from previous Management Reviews;
j) The status of management action items identified between reviews;
k) Changes that could affect the QEMS;
l) Consumer feedback;
m) The resources needed to maintain the QEMS;
n) The results of the infrastructure review;
o) Operational Plan currency, content and updates;
p) Staff suggestions; and
q) Consideration of applicable Best Management Practices (BMPs).

3.5 In relation to standing agenda item q), applicable BMPs, if any, to address drinking water system risks discussed during other agenda items, are identified and documented in the Management Review minutes. Review and possible adoption of applicable BMPs are revisited during subsequent Management Reviews and are incorporated into preventive and/or corrective actions as per OP-21 as appropriate.

3.6 The QEMS Representative coordinates the Management Review and distributes the agenda with identified responsibilities to participants in advance of the Management Review meeting along with any related reference materials.

3.7 The Management Review participants review the data presented and make recommendations and/or initiate action to address identified deficiencies as appropriate as per OP-21.

3.8 The QEMS Representative ensures that minutes of and actions resulting from the Management Review meeting are prepared and distributed to the appropriate OCWA Top Management, personnel and the Administrative Authority for the Tri-County Water Board.

3.9 The Operations Management monitors the progress and documents the completion of actions resulting from the Management Review.

4. Related Documents

Management Review Reference Materials
Minutes and actions resulting from the Management Review
OP-21 Continual Improvement

5. Revision History

Date	Revision #	Reason for Revision
2009-02-09	0	Procedure issued
2011-04-12	1	5.2 Add f) MOE comments to agenda items and remove identified responsibilities and reference material to participants
2011-07-27	2	Added Appendix Title Page; Modified Date Formatting
2012-04-12	3	Change Operations Manager to Senior Operations Manager
2013-06-28	4	Revise to include re-endorsement discussion as an agenda item as identified in the external audit

2014-07-10	5	Revise 5.4 to read PCT instead of QEMS Representative in order to address NCR #2014-01 from external audit.
2014-07-23	6	Change of Ownership from Municipality of West Elgin to Tri-County Water Board; Change name of West Elgin Water Treatment Plant to Tri-County Water Treatment Plant
2015-03-27	7	Change Tri-County WTP to DWS; Add Operations Manage to 3.0; add Management Review Agenda to 6.0
2016-04-22	8	Change PCT to OCTL and Senior Operations Manager to RHM where Appropriate
2017-06-09	9	Revise to reflect new org structure
2018-01-22	10	Procedure issued. Revised as per corporate template.
2020-10-30	11	Revised to update Tri-County Cluster to Aylmer Cluster as per IA-OFI 2020-10-26
2024-08-12	12	Remove watermark.

1. Purpose

To describe the procedure for tracking and measuring continual improvement of the Quality & Environmental Management System (QEMS) for the Tri-County Drinking Water System.

2. Definitions

Continual Improvement - recurring activity to enhance performance *(ISO 14001:2014)*

Corrective Action – action to eliminate the cause of detected nonconformity of the QMS with the requirements of the DWQMS or other undesirable situation

Non-conformance – the non-fulfilment of a DWQMS requirement

Preventive Action – action to prevent the occurrence of nonconformity of the QMS with the requirements of the DWQMS or other undesirable situation

3. Procedure

3.1 OCWA strives to continually improve the effectiveness of its QEMS for this drinking water system(s) through the identification and implementation of corrective/preventive actions and, as appropriate, through review and consideration of applicable Best Management Practices (BMPs).

3.2 Corrective Actions

3.2.1 Non-conformances may be identified through an internal or external QEMS audit(s) conducted for this drinking water system. They may also be identified as a result of other events such as:

- an incident/emergency;
- community/Owner complaint;
- other reviews; and
- operational checks, inspections or audits.

3.2.2 The QEMS Representative (in consultation with Operations Management and/or the SPC Manager) investigates the need for a corrective action to eliminate the root cause(s) so as to prevent the non-conformance from recurring. The investigation may also include input from the operators and other stakeholders and the consideration of BMPs as appropriate.

3.2.3 The QEMS Representative determines the corrective action needed based on this consultation. The Operations Management (or designate) assigns responsibility and a target date for resolution.

3.2.4 The QEMS Representative ensures corrective actions are documented in the Summary of Action Items Table. The QEMS Representative monitors the progress of corrective action(s) and provides status updates to Top Management.

3.2.5 The implementation and effectiveness of corrective actions are verified during subsequent internal QEMS audits and are considered during the Management Review. If there is evidence that the action taken was not effective, the Operations Management (or designate) initiates further corrective action and assigns resources as appropriate until the non-conformance is fully resolved.

3.3 Preventive Actions

3.3.1 Potential preventive actions may be identified through an internal or external QEMS audit as Opportunities For Improvement (OFIs), during the Management Review or through other means such as:

- staff/Owner suggestions;
- regulator observations;
- evaluation of incidents/emergency response/tests;
- the analysis of facility/Regional Hub or OCWA-wide data/trends;
- non-conformances identified at other drinking water systems; or
- a result of considering a BMP.

3.3.2 The QEMS Representative (in consultation with Operations Management and/or the SPC Manager) considers whether a preventive action is necessary. The review may also include input from the operators and other stakeholders and the consideration of BMPs as appropriate.

3.3.3 If it is decided that a preventive action is necessary, the QEMS Representative determines the action to be taken based on this consultation and the Operations Management (or designate) assigns responsibility and a target date for implementation.

3.3.4 The implementation of preventive actions is tracked by the QEMS Representative using the Management Review Minutes and associated action items.

3.3.5 The implementation and effectiveness of preventive actions are verified during subsequent internal QEMS audits and are considered during the Management Review. If there is evidence that the action taken was not effective, the Operations Management (or designate) may consider further preventive actions and assigns resources as appropriate.

3.4 The QEMS Rep. and Operations Management monitor corrective/preventive actions on an ongoing basis and review the status and effectiveness of the actions during subsequent Management Review meetings.

3.5 Best Management Practices (BMPs)

3.5.1 The QEMS Representative and/or Operations Management in consultation with the SPC Manager will review and consider applicable internal and/or external BMPs identified by internal and/or external sources as part of the Management Review (OP-20) and in the corrective and preventive action processes described above.

3.5.2 BMPs may include, but are not limited to:

- Facility/Regional Hub practices developed and adopted as a result of changes to legislative or regulatory requirements, trends from audit findings or drinking water system performance trends;
- OCWA-wide BMPs/guidance or recommended actions;
- Drinking water industry based standards/BMPs or recommendations; or
- Those published by the Ministry of the Environment and Climate Change.

3.5.3 At a minimum, applicable BMPs must be reviewed and considered once every 36 months.

4. Related Documents

OP-05 Document and Records Control
Summary of Action Items Table
OP-20 Management Review
Internal Audit Records
Management Review Minutes
Ministry Inspection Reports
Analysis and Action Plan

5. Revision History

Date	Revision #	Reason for Revision
2018-01-22	0	Procedure issued – Some of the information within OP-21 was originally set out in the main body of OCWA's Operational Plan (last revision # 12 dated 2017-06-09) and in QP-10 Internal Audit procedure (last revision # 8, dated 2017-06-09). Revised as per corporate template.
2019-08-16	1	Remove DWQMS Action Report and replace with Summary Table as per OFI IA 2019-08-16
2024-08-12	2	Add Ministry Inspection Reports and A &A Plan to 4.0, remove watermark as per IA OFI 2024-07-24.

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Tri County Drinking Water System
Operations Report
Second Quarter 2024

Ontario Clean Water Agency, Southwest Region
Sam Smith, Sr. Operations Manager
Date: September 24, 2024

Facility Description

Facility Name:	Tri-County Drinking Water System
Regional Manager:	Sam Sianas (519) 319-2233
Sr. Operations Manager:	Sam Smith (226) 377-1540
Business Development Manager:	Robin Trepanier (519) 791-2922
Facility Type:	Municipal
Classification:	Class 2 Water Distribution, Class 2 Water Treatment
Title Holder:	Municipality

Service Information

Area(s) Serviced:	West Elgin, Dutton/Dunwich, Southwest Middlesex, Newbury and Bothwell
Population Serviced:	9,985
No. of Connections:	
Water Meters:	Commercial / Residential
In Service Date:	2009

Capacity Information

Total Design Capacity:	12.160 (1000 m^3/day)
Total Annual Flow:	1,381 (1000 m^3/year)
Average Day Flow:	3.770 (1000 m^3/day)
Maximum Day Flow:	5.380 (1000 m^3/day)

Operational Description

Water treatment with intake in Lake Erie, 4 low lift pumps, lifting up to the treatment plant. Membrane filtration followed by injection with Sodium Hypochlorite for primary disinfection and into the 2 Storage Tanks. Pumping to tower & distribution system with 4 high lift pumps.

SECTION 1: COMPLIANCE SUMMARY

FIRST QUARTER:

There were no compliance issues to report during the first quarter.

SECOND QUARTER:

There were no compliance issues to report during the second quarter.

SECTION 2: INSPECTIONS

FIRST QUARTER:

On January 24th, a routine inspection was conducted at the Tri-County Drinking Water System by the MECP. All follow-up questions have been answered. The report has not yet been received.

SECOND QUARTER:

There were no Ministry of Environment, Conservation and Parks (MECP) or MOL inspections conducted during the second quarter however, the MECP Inspection Report and Rating were received on May 6th, 2024 for the inspection that occurred on January 24th. There were no non-compliances identified and the system received a rating of 100%.

SECTION 3: QEMS UPDATE

FIRST QUARTER:

The Municipal Drinking Water License expires on July 15th, 2024. The application for the renewal was due January 15th, 2024. The application has been sent to the MECP however, the Financial Plan required updates to the meet the requirements of the regulation. Once the Tri-County Water Board has the Financial Plan updated it will be submitted to the MECP.

SECOND QUARTER:

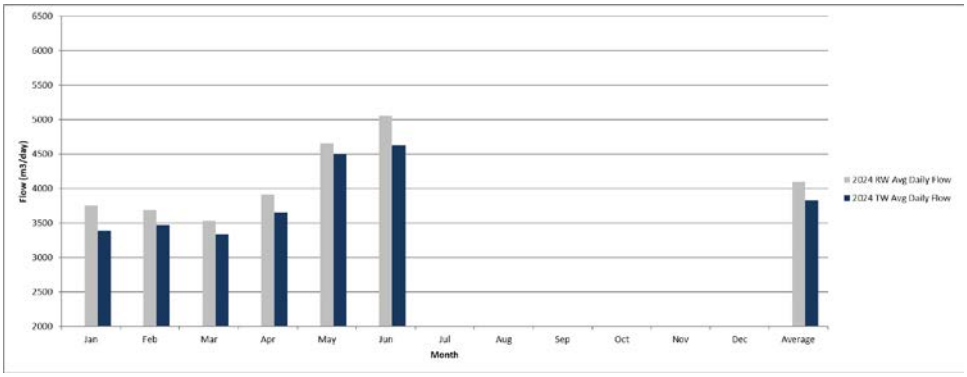
The Essential/Emergency Service and Supply Contact List was updated on April 29th, 2024. Changes were made to Client Contacts as well as OCWA Staff. The list is currently in its 36th revision.

On June 14th, 2024 the signed Municipal Drinking Water License and Drinking Water Works Permit were received from the MECP.

SECTION 4: PERFORMANCE ASSESSMENT REPORT

The Tri-County Drinking Water System is currently operating at 93.43% efficiency with the water taken from Lake Erie that is treated and sent to the distribution systems. Chart 1 below shows the raw water takings compared to the treated water distributed to the distribution system so far in 2024.

Chart 1: Average daily water takings compared to treated water distributed to the distribution system



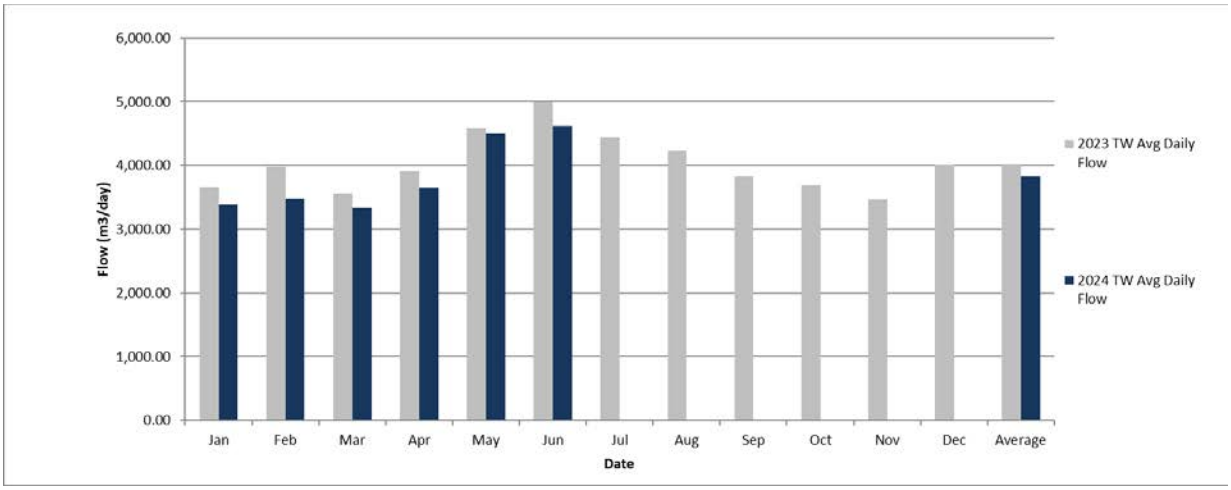
Raw water is sampled on a weekly basis and tested for E. coli and Total coliforms as per regulatory requirements. There are no limits identified in the regulations for E. coli and total coliform found in the raw water source. Table 1 below identifies the sample results for the first quarter.

Table 1: Raw water sample results 2024

	# Samples	E. Coli Range (cfu/100mL)	Total Coliform Range (cfu/100mL)
January	5	<4 - <100	280 – 12500
February	4	<2 – <10	260 – 5600
March	4	<2 - <100	12 – 800
April	5	<2 - <100	26 - 520
May	4	<10 - <100	120 - 13600
June	5	<10 - <100	280 - 2800

The raw water is treated through membrane filtration and chlorine disinfection. The treated water is distributed to the systems it serves through the high lift pumps. The average daily treated water sent to the distribution in 2024 so far is 3,831.6m^3/d. The average treated water flow in the second quarter of 2024 is down 11.5% when compared against the average daily flow in the second quarter of 2023. The Tri-County Drinking Water System is currently at 31.5% of its rated capacity. Chart 2 below depicts the treated water flow for 2024 compared to 2023 average daily flows.

Chart 2: Treated water average daily flow in 2024 compared to 2023



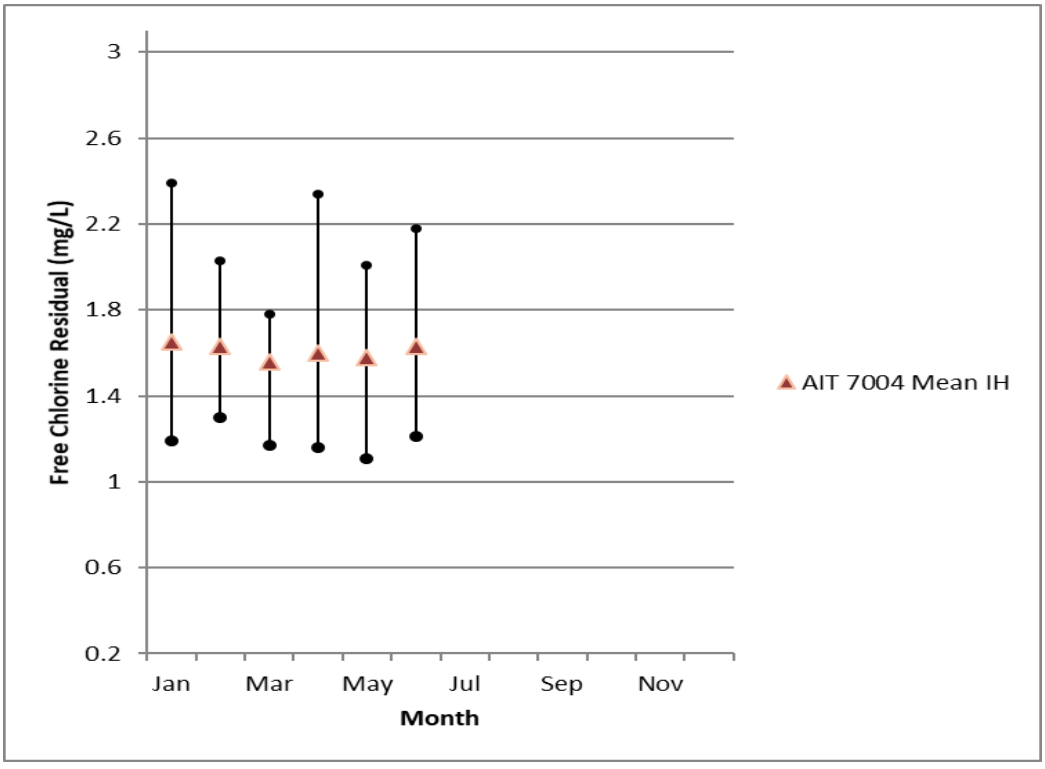
To ensure inactivation of viruses, bacteria and microorganisms the membrane filtration system is required to meet performance criteria for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month. The Tri-County Water Treatment Plant has met all regulatory requirements for inactivation in 2024. Table 2 below shows the performance of each filter rack and the overall filter rack performance.

Table 2: Filter Rack Performance in 2024

	Rack 1 % Readings <0.1ntu	Rack 2 % Readings <0.1ntu	Rack 3 % Readings <0.1ntu	Rack 4 % Readings <0.1ntu	Overall Filter Performance (% readings <0.1ntu)
January	100.00	100.00	100.00	100.00	100.00
February	100.00	100.00	100.00	100.00	100.00
March	100.00	100.00	100.00	99.90	99.98
April	100.00	100.00	100.00	99.90	99.98
May	100.00	100.00	100.00	99.90	99.98
June	100.00	100.00	100.00	100.00	100.00

Along with turbidity, chlorine residuals are monitored throughout the treatment process by continuous online free chlorine analyzers. Residuals are maintained in order to provide adequate primary disinfection to meet inactivation of viruses, bacteria and microorganisms. The chlorine also provides adequate residuals in the distribution systems the treatment plant serves (secondary disinfection). Chart 3 below provides the online minimum, maximum and average readings of free chlorine provided to the distribution systems. All results have met regulatory requirements.

Chart 3: Distribution System Free Chlorine Residuals



On a weekly basis the treated water is tested for E. coli, Total Coliforms and heterotrophic plate count (HPC). The limit for Total Coliform and E. coli is zero. There is no limit specified for heterotrophic plate count (HPC) as this is an operational guide to initiate an action plan if HPC results are continuously high. Table 3 below shows the number of samples taken each month along with the range of results. All samples have met regulatory requirements.

Table 3: Treated water sample results for 2024

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	5	0 - 0	0 - 0	<10 – <10
February	4	0 - 0	0 - 0	<10 – <10
March	4	0 - 0	0 - 0	<10 – <10
April	5	0 - 0	0 - 0	<10 – <10
May	4	0 - 0	0 - 0	<10 – <10
June	5	0 - 0	0 - 0	<10 – <10

The transmission main (distribution system) is sampled on a weekly basis at two locations for E. coli, Total Coliforms and heterotrophic plate count (HPC) to meet regulatory requirements. As with the treated water the limit for Total Coliform and E. coli is zero, heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 4 below shows the number of samples taken each month along with the range of results.

Table 4: Distribution system sample results for 2024

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	10	0 - 0	0 - 0	<10 – <10
February	8	0 - 0	0 - 0	<10 – <30
March	8	0 - 0	0 - 0	<10 – <30
April	10	0 - 0	0 - 0	<10 - <10
May	8	0 - 0	0 - 0	<10 - <10
June	8	0 - 0	0 - 0	<10 - <10

On a quarterly basis trihalomethanes are tested at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the THMs are forming in the system with retention time. There is an issue with elevated THMs in the distribution systems that the Tri-County Drinking Water System provides water to. Table 5 below provides the running average quarterly results; the running average limit for THMs is 100µg/L. All results are within regulatory requirements. However, THMs increase with increased retention time therefore THMs in the distribution system the WTP serves can be much higher, even reaching the regulatory limit.

Table 5: Trihalomethane sampling results

	Limit (µg/L)	Treated Water THM Result (µg/L)	West Lorne Standpipe THM Result (µg/L)
July 2023		33	54
October 2023		55	82
January 2024		19	32
April 2024		14	28
Running Average	**100**	**30.25**	**49.0**

On a quarterly basis Haloacetic Acids (HAAs) are tested as per regulatory requirements. They are sampled at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the HAAs are forming in the system with retention time. Table 6 below provides the current running average quarterly results; the running average limit for HAAs is 80µg/L. All results are within regulatory requirements.

Table 6: Haloacetic Acid sampling results

	Limit (µg/L)	Treated Water HAA Result (µg/L)	West Lorne Standpipe HAA Result (µg/L)
July 2023		16.6	24.2
October 2023		19.4	29.8
January 2024		12.4	18.6
April 2024		5.3	15.1
Running Average	80	**13.43**	**21.93**

SECTION 5: OCCUPATIONAL HEALTH & SAFETY

FIRST QUARTER:

There were no Health & Safety issues identified in the first quarter.

SECOND QUARTER:

On April 9th the annual occupational health and safety inspection was completed. There were no issues identified. There were no additional Health & Safety issues identified in the second quarter.

SECTION 6: GENERAL MAINTENANCE

FIRST QUARTER:

JANUARY

16: Gerber Electric on-site to train staff on new procedure for generator run tests.
18: Ontario Compressor on-site for routine compressor servicing/inspection.
25: Eramosa on-site to recertify our Microsoft office product key on SCADA computer for excel.
29: Gerber replaced heater in the low lift. Unit is working and on.
31: Nevtro replaced storage tank T-6010 6" drain valve.

FEBRUARY

19: Installed new actuator on flow control valve-3301 due to it failing multiple times over the weekend.
26: While investigating valve 3315 it appears that when the valve is open it takes a while for the system to recognize it's open and sending out an error signal. Replaced actuator position sensor with spare.
27: Gerber on-site to look at faulting drain pump and install new heater in low lift building and chlorine gas building.

MARCH

4: SCG Flowmetrix on-site for annual flow meter calibration and verifications.
5: SCG Flowmetrix on-site for annual flow meter calibration and verifications.
6: SCG Flowmetrix on-site for annual flow meter calibration and verifications.

11: Nevtro on-site to take Process drain pump 9010 out for inspection and possible replacement.
11: Martins Lift Truck on-site for annual forklift inspection and service.
12: Watech on-site at standpipe for graffiti removal.
21: Martins Lift Truck on-site to service forklift.
27: Southwest Mechanical on-site at standpipe to repair leaking copper line for pressure sensor.
28: Gerber on-site for quarterly HVAC inspection.

SECOND QUARTER:

APRIL

3: Courtney from Eramosa onsite, confirmed standpipe PLC Is no longer functioning.
3: Courtney from Eramosa onsite to fix programming issue with high lift pumps not running in pressure mode as we cannot see level due to PLC failure.
5: Brian from Gerber onsite for PLC upgrades at Standpipe.
5: Eramosa onsite for PLC upgrades at Standpipe.
8: Gerber onsite to investigate issue with Low Lift generator randomly turning on and not shutting down.
8: Alberts generator onsite, Alberts found chewed wire ribbons in the control box of the generator and thinks this is the possible issue. Alberts will get us a quote on new ribbons.
9: Courtney from Eramosa onsite to fix issue with Standpipe data trending not showing.
9: Courtney from Eramosa investigated Silver Clay comm loss and found controller had lost comms causing it to lose its code, Courtney reprogramed code.
11: Ontario Compressor onsite for routine compressor servicing/inspection.
16: Southwest mechanical onsite for barbed wire fence installation.
24: Southwest mechanical onsite to repair leaking line on altitude valve in Standpipe

MAY

8: Alberts generator onsite to fix wiring issue with low lift generator.
10: Southwest Mechanical onsite to look at blower exhaust fan for low lift chlorine building.
28: Nevtro on-site for pre work before high lift header replacement.
28: SCG Flowmetrix onsite to trouble shoot storage tank level transducer issue. Had to reprogram T-6010 milltronics.
29: Martins lift truck on-site to inspect issue with forklift.
30: Martins delivered rental forklift and took ours to their shop to inspect.

JUNE

3: Took SCBA tank and masks to Levitt Safety for inspection/certification.
6: Nevtro onsite to replace high lift header piping.
7: Miller dropped off large dumpster bin for next week's rack removal.
11: Aria Filter onsite to guide OCWA team with replacing rack 2 filter modules.
12: Aria Filter onsite to guide OCWA team with replacing rack 2 filter modules.
13: Aria Filter onsite to help finish with rack 2 filter module replacement.
19: Stephan from Gerber electric onsite to troubleshoot issue with UV MCP power issue. Gerber found no issue. Eramosa called in to troubleshoot issue. They made an edit to the programming to bypass issue of UV inlet and outlet motive valves not showing open and let the plant start running.
20: Gerber and Eramosa back onsite to troubleshoot UV MCP/UV inlet & outlet valves issue. Found a failed PLC card and Eramosa will order a new one.
21: Courtney from Eramosa onsite to replace faulty PLC card. Replaced card and reverted programming edits made on June 19.
26: SCG onsite for flow meter calibrations.
27: SCG onsite for flow meter calibrations.

SECTION 7: ALARM SUMMARY

FIRST QUARTER:

JANUARY

19: Alarm call for Rack 1 HIHI turbidity shut down. Operator arrived on-site and found unit reading okay. Likely due to debris coming loose following an air scrub on rack.
23: Alarm call for storage tank T-6020 LOLO. Due to suspected fog causing false low reading on milltronics.
30: Alarm call for Rodney Tower HIHI Cl. Operator reviewed remotely and saw Cl reading was coming down. Continued to monitor and Cl returned to normal readings.

FEBRUARY

2: Received call from spectrums for suction header chlorine fault, verified analyzer is reading correctly and increased cl dosage set point from 1.85 to 2.00.
4: Received alarm from spectrums for Rodney tower fault. Arrived on-site and found Rodney tower Cl holding a max value of 4.90 and had a signal error alarm active. The system suddenly got connection again and all alarms cleared had SWM operator go to site to verify.
17: Received alarm for PALL system critical failure. Alarm is for too few racks due to rack 2 disabling from high high pressure because of Rack 2 inlet flow control valve-3201 smart positioner failing. Replaced pilot system on smart positioner.
18: Received alarm for PALL system critical failure. Alarm is for too few racks due to rack 3 disabling from high high pressure because of Rack 3 inlet valve flow control valve-3301 smart positioner failing. Performed calibration on rack #3 flow control valve-3301 smart positioner.
26: Received alarm from spectrums for PALL system critical failure. Found that Clean in Place return valve 3315 had failed, placed rack into manual and exercised valve multiple times. Placed valve back into auto and appears to be running normally, will monitor throughout the day.

MARCH

1: Received alarm call for filtrate storage tank fault. Two low lift pumps now running and keeping up with demand.
2: Received alarm call for filtrate storage tank fault. Confirmed with SOP, changed tank 6010 LO set point from 7-6.4.
9: Received alarm call from Spectrum for All Systems Critical Failure. Observed a suspected PLC glitch that disabled the rack, placed back in duty and rack now on and running.
23: Received alarm for PALL critical failure rack 3 had disabled due to high pressure, put rack in manual and opened vent valve which brought pressure down, cleared alarms, placing rack back into forward flow.
30: Received alarm from spectrums for pall system critical failure. Adjusted actuator sensor and rack now running fine.

SECOND QUARTER:

APRIL

13: Received call from spectrums for pall critical process failure. Logged onto SCADA found PALL system disabled air compressor 1 and 2 faulted. Suspected power flicker due to strong winds in area, cleared alarms and reset air compressors and was able to put plant back online.

MAY

20: Received alarm call for power flicker. Arrived onsite for inspection and cleared faulted equipment.
24: Received alarm call due to CP-2000 UPS failure. Replaced with spare until new batteries can be ordered.

25: Received alarm call for duty storage tank T-6010 fault. Reading was incorrect due to programming issue. Placed T-6020 milltronics reading in duty and will discuss with programmers on Monday.
28: Received alarm call for power flicker. Arrived onsite and reset faulted out equipment.
29: Received alarm call for too few racks due to Rack 3 shut down caused by valve V-3302 failure. Changed air card with used spare and issue resolved.
31: Received alarm call for duty storage tank LO level. Found duty 2 low lift pump did not start when commanded likely due to PLC glitch. Reset commands and duty 2 started and plant is catching up.

JUNE

2: Received alarm call for too few racks due to Rack 3 shut down caused by HIHI feed and filtrate pressure. Decreased low lift pump VFD speeds down from 95 to 90%. Increased rack inlet valve % open during raw strainer backwash.
4: Received alarm call for power flicker. Arrived onsite and reset faulted out equipment.
16: Received alarm call for power flicker. Arrived onsite and reset faulted out equipment.
17: Received alarm call for power flicker. Arrived onsite and reset faulted out equipment. Power flickered several more times while onsite. Discussed with ORO and turned on generator for the night to prevent hard shutdowns on equipment.
18: Received alarm call for power flicker. Arrived onsite and reset faulted out equipment.
18: Received alarm call for power flicker. Arrived onsite and reset faulted out equipment. Discussed with ORO and switched to generator power for a few hours before switching back to utility power.
24: Received alarm call for too few racks. Arrived onsite and found racks 1 and 2 filtrate turbidimeters were faulted and in error mode. Reset comms connection to units and readings returned to normal.
25: Received alarm call for too few racks due to Rack 3 being in idle due to air scrub watchdog timer, caused by raw strainers constantly going through backwash. Removed basket from strainer STR-2010 for night. Daytime operators will have to clean all strainer baskets in morning.

SECTION 8: COMMUNITY COMPLAINTS & CONCERNS

FIRST QUARTER:

There were no complaints or concerns reported during the first quarter.

SECOND QUARTER:

There were no complaints or concerns reported during the second quarter.

Ontario

MUNICIPAL DRINKING WATER LICENCE

Licence Number: 043-101
Issue Number: 8

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this municipal drinking water licence under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

Tri-County Water Board

22413 Hoskins Line
Rodney, ON
N0L 2C0

For the following municipal residential drinking water system:

Tri-County Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements
Schedule E	Pathogen Log Removal/Inactivation Credits

Upon the effective date of this drinking water licence # 043-101, all previously issued versions of licence # 043-101are revoked and replaced by this licence.

DATED at TORONTO this 13th day of June, 2024

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Information

System Owner	**Tri-County Water Board**
Licence Number	**043-101**
Drinking Water System Name	**Tri-County Drinking Water System**
Licence Effective Date	**June 13th, 2024**

1.0 Licence Information

Licence Issue Date	June 13th, 2024
Licence Effective Date	June 13th, 2024
Licence Expiry Date	2029-06-12
Application for Licence Renewal Date	2028-12-11

2.0 Incorporated Documents

The following documents are applicable to the above drinking water system and form part of this licence:

2.1 Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Tri-County Drinking Water System	043-201	June 13th, 2024

2.2 Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Lake Erie	5062-C4UG4R	July 14, 2021

2.3 Other Documents

Document Title	Version Number	Version Date
Not Applicable	Not Applicable	Not Applicable

3.0 Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	043-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	043-301A

4.0 Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Tri-County Water Treatment Plant	Ontario Clean Water Agency	043-401B	043-OA2

Schedule B: General Conditions

System Owner	**Tri-County Water Board**
Licence Number	**043-101**
Drinking Water System Name	**Tri-County Drinking Water System**
Licence Effective Date	**June 13th, 2024**

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

"**adverse effect**", "**contaminant**" and "**natural environment**" shall have the same meanings as in the EPA;

"**alteration**" may include the following in respect of this drinking water system:

(a) An addition to the system,
(b) A modification of the system,
(c) A replacement of part of the system, and
(d) An extension of the system;

"Clean Water Act" means the *Clean Water Act*, 2005, S.O. 2006, c. 22.

"**compound of concern**" means a contaminant described in paragraph 4 subsection 26 (1) of O. Reg. 419/05, namely, a contaminant that is discharged to the air from a component of the drinking water system in an amount that is not negligible;

"CT" means the CT Disinfection Concept, as described in subsection 3.1.1 of the Ministry's Procedure for Disinfection of Drinking Water in Ontario, dated July 29 2016.

"**Director**" means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

"Duty" means the unit installed and used in regular operation of the drinking water system. The duty unit is included in determining the design capacity calculation.

"**drinking water works permit**" means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

"**financial plan**" means the financial plan required by O. Reg. 453/07;

“Harmful Algal Bloom (HAB)” means an overgrowth of aquatic algal bacteria that produce or have the potential to produce toxins in the surrounding water, when the algal cells are damaged or die. Such bacteria are harmful to people and animals and include microcystins produced by cyanobacterial blooms.

“**licence**” means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

"**licensed engineering practitioner**” means a person who holds a licence, limited licence, or temporary licence under the *Ontario Professional Engineers Act* R.S.O. 1990, c. P.28.

"Minister" means the Minister of the Ministry or such other member of the Executive Council as may be assigned the administration of the SDWA under the Executive Council Act, R.S.O. 1990, c. E.25.

"Ministry" means the Ministry of the Minister and includes all employees or other persons acting on its behalf.

“**operational plan**” means an operational plan developed in accordance with the Director’s Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

“**owner**” means the owner of the drinking water system as identified in Schedule A of this licence;

“OWRA” means the *Ontario Water Resources Act*, R.S.O. 1990, c. 0.40;

“**permit to take water**” means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"**point of impingement**" has the same meaning as in section 2 of O. Reg. 419/05 under the EPA;

"**point of impingement limit**" means the appropriate standard from Schedule 2 or 3 of O. Reg. 419/05 under the EPA and if a standard is not provided for a compound of concern, the concentration set out for the compound of concern in the document titled “Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants”, as amended from time to time and published by the Ministry and available on a government of Ontario website;

"**provincial officer**" means a provincial officer designated pursuant to section 8 of the SDWA;

“**publication NPC-300**” means the Ministry publication titled “Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning” dated August 2013, as amended;

"**SCADA system**" means a supervisory control and data acquisition system used for process monitoring, automation, recording and/or reporting within the drinking water system;

"**SDWA**" means the *Safe Drinking Water* Act, 2002, S.O. 2002, c. 32;
"**sensitive receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from a discharge to air from an emergency generator that is a component of the drinking water system, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.),
(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.),
(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.), and
(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings).

"**Spare**" means a separate unit that is not connected and can be installed and placed into operation when the Duty unit is out of service (not operational). The spare should be the same size or larger than the duty unit it may be replacing.

"**Standby**" means a separate unit that is connected for use and operation. The standby unit is available for operation when the duty unit is offline or out of service. The standby unit is not considered in determining the design capacity calculation, but should be the same size or larger than the duty unit it may be replacing.

"**sub-system**" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) under the SDWA;

"**surface water**" means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

"UV" means ultraviolet, as in ultraviolet light produced from an ultraviolet reactor.

2.0 Applicability

2.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Effective Date of this licence.

7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Effective Date of this licence.

8.0 Financial Plan

8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:

8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and

8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

9.1.1 The SDWA*;*

9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;

9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;

9.1.4 Any regulation made under the SDWA;

9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;

9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;

9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and

9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.

9.1.9 Any other technical bulletin or procedure issued by the Ministry from the most recent to the earliest.

9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.

9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:

9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and

9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:

10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or

10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

11.1 This licence is not transferable without the prior written consent of the Director.

11.2 The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.

11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request and in a timeframe outlined by the Director of provincial officer.

13.0 Records Retention

13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 or section 13 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

14.1 All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/14, NSF/60, NSF/61 and NSF/372.

14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.

14.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical

and material used in the operation of the drinking water system that comes into contact with water within the system.

14.3 Conditions 14.1 and 14.2 do not apply in the case of the following:

14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);

14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;

14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;

14.3.4 Gaskets that are made from NSF approved materials;

14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use that may come into contact with drinking water, but are not added directly to the drinking water; or

14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

15.1 All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.

15.2 Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within twelve (12) months of the alteration being completed or placed into service.

15.3 Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

16.1 An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference to all persons responsible for all or part of the operation or maintenance of the drinking water system.

16.1.1 For clarity, up-to-date in the context of condition 16.1 means an operations and maintenance manual or manuals that reflects the current procedures in use within the drinking water system.

16.2 The operations and maintenance manual or manuals, shall include at a minimum:

16.2.1 The requirements of this licence and associated procedures;

16.2.2 The requirements of the drinking water works permit for the drinking water system;

16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system including where applicable:

a) A copy of the CT calculations used to ensure that at all times, CT provided shall be greater than or equal to the CT required for the pathogen inactivation; and,

b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;

16.2.5 Procedures for the operation and maintenance of monitoring equipment;

16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;

16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

17.0 CT Calculations

Table B1: CT Calculations

Column 1 Document Title or File Name	Column 2 Version Number and Date
CT Calculation at pH 8.5	-
Chlorine Contact Time calculator	v1.00

17.1 Any changes to the CT calculations used as the basis for primary disinfection in the drinking water system, described in Table B1 must be:

17.1.1 structured to ensure that the provided CT is greater than or equal to the CT (or log inactivation) required for the pathogen inactivation as described in Schedule E of this licence;

17.1.2 included in the operations and maintenance manual described in condition 16 of Schedule B in this licence prior to being implemented;

17.1.3 reviewed by a Licensed Engineering Practitioner; and,

17.1.4 submitted to the Director no later than 30 days after the date that the changes have been implemented.

Schedule C: System-Specific Conditions

System Owner	**Tri-County Water Board**
Licence Number	**043-101**
Drinking Water System Name	**Tri-County Drinking Water System**
Licence Effective Date	**June 13th, 2024**

1.0 System Performance

Rated Capacity

1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

1.1.1 Despite condition 1.1, where maximum flow rates in Table 2 limit the volume of water that may be treated by the treatment subsystem, the maximum daily volume of treated water that flows from the treatment subsystem listed in column 1 of Table 1 to the distribution system shall not exceed the value identified as the operational capacity in column 3 of the same.

Table 1: Rated Capacity

Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m^3/day)	Column 3 Operational Capacity (m^3/day)
Tri-County Water Treatment Plant	12,160	

Maximum Flow Rates

1.2 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates

Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Not Applicable	Not Applicable	Not Applicable

1.3 Despite conditions 1.1 and 1.2, a treatment subsystem may be operated temporarily at a maximum daily volume and/or a maximum flow rate above the values set out in column 2 or column 3 of Table 1 and column 3 of Table 2 respectively for the purposes of fighting a large fire or for the maintenance of the drinking water system.

1.4 Condition 1.3 does not authorize the discharge into the distribution system of any water that does not meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Residuals Management

1.5 In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:

1.5.1 The annual average concentration of a test parameter identified in column 2 shall not exceed the value in column 3 of the same row; and

1.5.2 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row.

1.5.3 The test parameters listed in column 2 of Table 3 shall be sampled in accordance with conditions 5.2, 5.3 and 5.4 of this Licence.

Table 3: Residuals Management

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Tri-County Water Treatment Plant	Total Suspended Solids	25	Not Applicable

UV Disinfection Equipment Performance

1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, and while directing water to the distribution system and being used to meet pathogen log removal/inactivation credits specified in Schedule E:

1.6.1 The UV disinfection equipment shall be operated within the validated limits for the equipment at all times such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row

1.6.2 In addition to any other sampling, analysis and recording that may be required, the ultraviolet light disinfection equipment shall test for the test parameters set out in column 4 of the same row at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less;

1.6.3 If there is a UV disinfection equipment alarm signaling that the disinfection equipment is malfunctioning, has lost power, or is not providing the appropriate level of disinfection the test parameters set out in column 4 of the same row shall be recorded at a recording frequency of once every five minutes or less until the alarm condition has been corrected;

1.6.4 A monthly summary report shall be prepared at the end of each calendar month which sets out the time, date and duration of each UV equipment alarm described in condition 1.6.3, the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation;

Table 4: UV Disinfection Equipment

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm^2)	Column 3 Control Strategy	Column 4 Test Parameter
Tri-County Water Treatment Plant	40 mJ/cm^2 (when used for primary disinfection)	Calculated Dose	Calculated UV Dose (mJ/cm^2)
			Flow Rate (L/min)
			UV Transmittance (%)
			~~UV Lamp Status (on/off)~~

Filtration Performance

1.7 For each treatment subsystem in column 1 of Table 1 and while the filter effluent line is directing water to the next stage of the treatment process and being used to meet pathogen log removal/inactivation credits specified in Schedule E:

1.7.1 Filtrate turbidity shall be continuously monitored from each filter;
1.7.2 Continuous monitoring test result data shall be used for the filter performance for filter performance calculations;
1.7.3 Filter performance calculations shall be performed at a minimum of once every 72 hours;
1.7.4 If the filter performance calculation result for any individual filter does not meet the percent criterion specified in Schedule E, an adverse water quality report shall be made as per Schedule 16-4 of O. Reg. 170/03 immediately after the calculation and assessment is conducted.

1.8 The requirement for the Owner to comply with condition 1.7 shall come into force on June 1, 2025.

1.8.1 Prior to transitioning to the requirements set out in condition 1.7, the Owner shall ensure that performance criterion for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month shall be met for each filter.
1.8.2 For greater certainty the timeframe described in condition 1.8 is intended to provide a period for transition. Implementation may occur on or before the date indicated in this condition.

2.0 Flow Measurement and Recording Requirements

2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:

2.1.1 The flow rate (L/s) and daily volume (m^3/day) of treated water that flows from the treatment subsystem to the distribution system.

2.1.2 The flow rate (L/s) and daily volume (m^3/day) of water that flows into the treatment subsystem.

2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:

2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;

2.3.2 The time and date of the measurement;

2.3.3 The reason for the exceedance; and

2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

3.1 All flow measuring devices that are required by regulation, by a condition in the drinking water works permit 043-101, or by a condition otherwise imposed by the Ministry, shall be checked and where necessary calibrated in accordance with the manufacturer's instructions.

3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and where necessary calibrated at least once every 12 months during which the drinking water system is in operation.

3.2.1 For greater certainty, if condition 3.2 applies, the equipment shall be checked and where necessary calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

4.0 Calibration of CT Monitoring System

4.1 Any measuring instrumentation that forms part of the monitoring system for CT shall be checked and where necessary calibrated at least once every 12 months during which the

drinking water system is in operation, or more frequently in accordance with the manufacturer's instructions.

4.1.1 For greater certainty, if condition 4.1 applies, the instrumentation shall be checked and where necessary calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

5.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

5.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table 6: Drinking Water Non-Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

5.2 For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.

5.3 For the purposes of Table 7:

5.3.1 Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the commencement of the discharge event, one sample being taken approximately

at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and

5.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.

5.4 Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 23rd Edition, 2017, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Tri-County Water Treatment Plant	Total Suspended Solids	Composite Grab Sample (3 samples, each taken 2 hours apart)	Monthly	Point of discharge from settling lagoons (outlet weir)

5.5 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

5.5.1 The discharge of potable water from a watermain to a road or storm sewer;

5.5.2 The discharge of potable water from a water storage facility or pumping station:

5.5.2.1 To a road or storm sewer; or

5.5.2.2 To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.

5.5.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;

5.5.4 The discharge of raw water from a groundwater well to the environment where if necessary, sediment and erosion control measures have been implemented; and

5.5.5 The discharge of raw water, potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.

5.5.6 The discharge of any excess water to a road, storm sewer or the environment, associated with the management of materials excavated as part of watermain construction or repair, where necessary sediment, erosion and environmental control measures have been implemented.

6.0 Studies Required

Not Applicable

7.0 Harmful Algal Blooms

7.1 The owner shall develop and keep up to date a Harmful Algal Bloom Monitoring, Reporting and Sampling Plan (herein knowns as the “Plan”) that, at a minimum:

7.1.1 Meets the requirements set out in the Harmful Algal Bloom Guide Ministry document titled Harmful Algal Bloom Guide, dated January 29, 2024

7.1.2 Is updated within 12 months of any update to the guide described in condition 7.1.1;

7.1.3 Is maintained in a format that is available onsite at the drinking water system, for inspection upon request by Ministry staff; and,

7.1.4 Is implemented each year for the period identified within the Plan.

7.2 The owner must ensure that all relevant drinking water system staff are provided with training on the Plan each year, prior to the period described in the Plan.

7.3 When a Harmful Algal Bloom is suspected or occurring:

7.3.1 Water samples must be:

a) Collected at least once per week from locations identified in the Plan, or otherwise as directed by the Ministry or the medical officer of health;

b) Repeatedly collected until 3 consecutive samples have shown non-detection of microcystin and the algal bloom is no longer suspected or visually observed; and,

c) Submitted to a laboratory licensed to perform ELISA testing for total microcystin

7.3.2 The bloom must be reported to the local medical officer of health and the Ministry in accordance with procedures outlined in the Plan.

8.0 Source Protection

8.1 The Owner shall implement risk management measures, as appropriate, to manage any potential threat to drinking water that results from the operation of the drinking water system.

8.2 Where the drinking water system, or a portion thereof, is located in a source protection area as defined in the *Clean Water Act, 2006*, the owner shall prepare an "Assessment of Fuel Storage and Handling" (the "Assessment") on or before [DATE].

8.3 At a minimum, the Assessment shall:

8.3.1 Identify all locations that are part of drinking water system where fuel is stored or handled within a well head protection area (WHPA) or intake protection zone (IPZ), as identified in the ministry's Source Protection Information Atlas (SPIA) mapping tool.

8.3.2 For each location identified under 8.3.1, document an evaluation of the fuel storage or handling for the purposes of determining if the fuel storage or handling is a Significant Drinking Water Threat by using the SPIA, the latest Technical Rules under the *Clean Water Act, 2006* and in particular, the tables of drinking water quality threats, having regard to the circumstances set out in the table and the vulnerability score of each fuel storage or handling location in the WHPA or IPZ.

8.3.3 Having regard to conditions 8.8, 8.9 and 8.10, determine and document the risk management measures that shall be implemented in respect of each fuel storage or handling location mentioned in condition 8.3.2 that is determined to be a Significant Drinking Water Threat.

8.4 If the Owner proposes to make alterations to the drinking water system authorized in Schedule B of the drinking water works permit that would result in any new or modified fuel storage or handling that is part of the drinking water system, the Owner shall, before making the alteration, ensure that the new or modified fuel storage or handling is identified and evaluated in accordance with conditions 8.3.1, 8.3.2 and 8.3.3, and the Assessment is updated accordingly.

8.5 The owner shall review the Assessment at least once every twelve (12) months and:

8.5.1 If the Technical Rules under the *Clean Water Act, 2006*, the delineation of any WHPA or IPZ in the source protection area, or any applicable source protection plan policies have changed since the Assessment was last reviewed under this condition, identify and evaluate fuel storage or handling in accordance with conditions 8.3.1, 8.3.2 and 8.3.3 and update the Assessment accordingly.

8.5.2 Record the date that the review was completed and outcome(s) of the review.

8.6 The owner shall notify the Director in writing within thirty (30) days of preparing or updating an Assessment that identifies or changes one or more fuel storage or handling Significant Drinking Water Threats.

8.7 The notification required in condition 8.6 shall:

8.7.1 list new location(s) where fuel storage or handling has been identified as a Significant Drinking Water Threat;

8.7.2 list the locations where existing fuel storage or handling has become or is no longer a Significant Drinking Water Threat; and,

8.7.3 be submitted using the “Director Notification Form” published by the Ministry.

8.8 Where fuel storage or handling is identified as a Significant Drinking Water Threat, the owner shall implement risk management measures for the fuel oil storage systems that ensure fuel is appropriately stored and managed to protect the raw water source of supply for the drinking water system or subsystem.

The measures shall include the following:

8.8.1 The storage tank(s) associated with the fuel oil systems shall be inspected at least once every twelve months, or more frequently as recommended by the manufacturer or required by the Technical Standards and Safety Act (TSSA) 2000, and applicable regulations, codes and standards.

8.8.2 the inspection required by condition 8.8.1 shall be performed by a person certified for that purpose under the TSSA and shall include, at a minimum,

8.8.3 Visual inspection of the fuel oil tank, tubing, and piping for leaks;

8.8.4 Where the tank is below grade (underground), visible components of the tank should be inspected, including the fill pipe and vent;

8.8.5 Visual inspection of any grade-level secondary containment;

8.8.6 Inspection of any equipment installed to monitor or measure fuel levels;

8.8.7 Inspection of any cut-off or control valves and associated equipment;

8.8.8 Visual inspection of any fuel pumps and/or sumps and testing of such devices for proper operation;

8.8.9 Inspection of any installed corrosion protection systems;

8.8.10 Testing for water at the bottom of storage tanks that are not bottom outlet tanks; and,

8.8.11 Inspection of any installed electronic or mechanical leak-detection equipment.

8.9 A record of the inspections performed in accordance with condition 8.8.1 and a record of any associated repairs, maintenance or upgrades shall be kept on-site and available for review by ministry staff.

8.10 Spill or leak detection and spill response procedures shall be incorporated into the Operations and Maintenance Manual required under condition 16 of this licence.

8.11 Where the local source protection plan outlines risk management measures for fuel storage or handling in addition to those identified in 8.8, the measures identified in the source protection plan shall also be implemented.

8.12 The owner shall undertake alterations and develop operating procedures as appropriate to ensure that the storage and handling of fuel is adequately managed to protect the source of drinking water.

8.13 Conditions 8.8 to 8.10 have been included to ensure that the fuel storage facilities at the water treatment plant, which have been identified as a significant drinking water threat, conform to the applicable source protection policies. This statement may be relied upon by the owner for the purposes of subsection 61 (4) of O. Reg. 287/07 under the Clean Water Act in order to obtain an exemption from the requirement for a risk management plan under section 58 of that Act.

9.0 Additional System Specific Conditions

Not Applicable

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	**Tri-County Water Board**
Licence Number	**043-101**
Drinking Water System Name	**Tri-County Drinking Water System**
Licence Effective Date	**June 13th, 2024**

Effective {effective date}, no relief from regulatory requirements is authorized by the Director under section 46 of the SDWA in respect of the drinking water system.

1.0 Continuous Monitoring

1.1 Notwithstanding the requirements of O. Reg. 170/03 and the table to Schedule 6, the last column (Minimum Alarm Standard), items 1 and 2 shall be changed from:

> "0.1 milligrams per litre *less* than the concentration of free chlorine residual that is required to achieve primary disinfection", to:
>
> "at least 0.1 milligrams per litre *greater* than the concentration of free chlorine residual that is required to achieve primary disinfection"

2.0 Chlorine Residual in the Distribution System

2.1 Where a chlorine residual below the values set out in s.1-2(2)(4) of Schedule 1 of O. Reg. 170/03 is identified at a location within the distribution system and:

2.1.1 the drinking water system's water treatment equipment is confirmed to be operating effectively;
2.1.2 any adverse result is reported in accordance with s.16-3(1)(4) or s.16-3(1)(5) in Schedule 16 of O. Reg. 170/03;
2.1.3 the operator undertakes corrective action required by s.17-4 in Schedule 17 or s.18-4 in Schedule 18 of O. Reg. 170/03; and
2.1.4 actions are taken to prevent reoccurrence(s) of low chlorine residual results at the location,

the owner shall be deemed not to have contravened s.1-2(2)(4) in Schedule 1 of O. Reg. 170/03.

2.2 For clarity, actions taken under condition 2.1 d) may include but are not limited to implementation of a flushing program, enhancement of an existing flushing program, or infrastructure upgrades.

Schedule E: Pathogen Log Removal/Inactivation Credits

System Owner	**Tri-County Water Board**
Licence Number	**043-101**
Drinking Water System Name	**Tri-County Drinking Water System**
Licence Effective Date	**June 13th, 2024**

1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

Tri-County Water Treatment Plant

Lake Erie [SURFACE WATER]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts [a]	Viruses [b]
Tri-County Water Treatment Plant	2	3	4

[a] At least 0.5 log reduction of Giardia shall be achieved by the inactivation portion of the overall water treatment process.
[b] At least 2 log reduction of viruses shall be achieved by inactivation.

Log Removal/Inactivation Credits Assigned [c]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Membrane Filtration	2 [d]	3	0
Chlorination [CT: Contact Tank]	-	0.5	4+

[c] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.
[d] Applies only when the treatment process has been specifically tested and confirmed for the specified removal/inactivation of Cryptosporidium Oocysts or the removal of surrogate particles.

Or, if the backup UV disinfection system is in service

Log Removal/Inactivation Credits Assigned [c]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Membrane Filtration	2 [d]	3	0
UV Disinfection [40 mJ/cm2]	2	3	2
Chlorination [CT: Contact Tank]	-	0	2+

[c] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.
[d] Applies only when the treatment process has been specifically tested and confirmed for the specified removal/inactivation of Cryptosporidium Oocysts or the removal of surrogate particles.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
Membrane Filtration	1. Effective backwash procedures shall be maintained including filter-to-waste or an equivalent procedure to ensure that the effluent turbidity requirements are met at all times; 2. Membrane integrity shall be monitored by continuous particle counting or by an equivalently effective means such as intermittent pressure decay measurements; 3. Filtrate turbidity shall be continuously monitored; 4. Performance criterion for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements shall be met for each filter train; and 5. Membrane filtration process shall be specifically tested and confirmed by an independent testing agency or the approving Director for 2-log reduction of *Cryptosporidium* oocysts or removal of surrogate particles.
UV Disinfection	Duty UV Sensor Checks and Calibration 1. Duty UV sensors shall be checked on at least once every 720 hours of run time against a reference UV sensor or at a frequency as otherwise recommended by the UV equipment manufacturer; 2. When comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2; 3. If the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved; 4. Reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer; Operational Requirements 5. Ultraviolet light disinfection equipment shall have a feature that ensures that no water is directed to users of water treated by the equipment or that causes an alarm to sound in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection; 6. Water shall not flow through a UV reactor when the reactor's UV lights are off or not fully energized; 7. UV lamp status shall indicate whether each UV lamp is on or off; 8. All UV sensors shall operate within their calibration range or corrective measures shall be taken; and 9. Installed or replaced UV equipment components shall be equal or better than the components used during validation testing unless the UV equipment was revalidated.
Chlorination	1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*; 2. When the system is not operating based on the worst case scenario for CT, the parameters required to calculate free chlorine residual shall be monitored and recorded in conjunction with each required calculation of free chlorine residual; and 3. At all times, CT provided shall be greater than or equal to the CT required to achieve the log inactivation credits assigned.
Primary Disinfection Notes	

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 043-201
Issue Number: 10

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this drinking water works permit under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

Tri-County Water Board

22413 Hoskins Line
Rodney, Ontario
N0L 2C0

For the following municipal residential drinking water system:

Tri-County Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

Upon the effective date of this drinking water works permit # 043-201, all previously issued versions of permit # 043-201 are revoked and replaced by this permit.

DATED at TORONTO this 22nd day of August, 2024

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**Tri-County Water Board**
Permit Number	**043-201**
Drinking Water System Name	**Tri-County Drinking Water System**
Permit Effective Date	**August 22, 2024**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Tri-County Drinking Water System** consists of an intake from Lake Erie, low lift pumping station, 1.3 km long raw water transmission main to a surface water membrane filtration plant including storage reservoirs, high lift pump station and settling lagoons. The system also includes approximately 6.5 km transmission main and West Lorne Standpipe.

The **Tri-County Water Supply System** serves the municipalities of West Elgin, Dutton-Dunwich, Southwest Middlesex, Chatham-Kent and the Village of Newbury.

Tri-County Water Treatment Plant

Treatment Plant

Location	9210 Graham Road, RR #2, West Lorne, ON
UTM Coordinates	Zone 17, 454173.00 m E, 4712941.00 m N
System Type	Surface water treatment using Membrane Filtration System
Notes	Surface water filtration plant with major components identified below

Surface Water Supply

Intake Crib

Description	Concrete crib
Location	Located at a depth of 5.7 m into Lake Erie
Notes	Seasonal zebra mussel control system, utilizing gas chlorination solution added at crib

Intake Pipe (Primary)

Description	One (1) 610m long intake pipe into Lake Erie
Dimensions	700 mm diameter
Discharges to	Low Lift Pump Station via an inlet valve chamber
Notes	One (1) chlorine solution line extending the length of the intake, terminating in a diffuser at the intake structure. Includes Zebra Mussel control (as required)

Intake Pipe (Standby)

Description	One (1) standby intake pipe into Lake Erie
Dimensions	600 mm diameter
Discharges to	Low Lift Pump Station via an inlet valve chamber
Notes	

Low Lift Works

Low Lift Pump Station

Description	Pump station with intake valve chamber and wet wells
Location	Zone 17, 455081.00 m E, 4711635.00 m N.
Wet Wells	Four (4) wet wells, each equipped with sonic level sensor to monitor water levels
Notes	Intake chamber with two (2) intake pipes complete with two (2) raw water traveling screens, chlorinators, flow meter

Traveling Screens

Description	Two (2) coarse screens
Dimensions	10mm
Notes	Manually operated

Low Lift Pumps

Description	Four (4) vertical turbine pumps two (2) duty, two (2) standby
Capacity	Four (4) pumps, each rated at 85 L/s at a total dynamic head of 77.4 m
Discharge to	Membrane filtration plant via 2-1500m long 400mm diameter transmission main
Notes	Pre-chlorination/zebra mussel control when required

Chemical Addition

Pre-Chlorination/Zebra Mussel Control Feed System

Description	Chlorine gas solution addition for zebra mussel control and pre-chlorination (when required)
Feed Points	Intake pipe and wet wells (when required)
Equipment	Chlorine gas disinfection system consisting of two (2) electronic dual-platform cylinder weigh scales, (2) pre-chlorinator (one (1) duty, one (1) standby) with capacity of 45.0 Kg/d, together with solution feed lines, sample taps Associated valving and piping
Notes	When required, pre-chlorination added at the intake crib for zebra mussel control

Sodium permanganate

Description	Sodium permanganate storage and feed system consisting of: - Sodium Permanganate tote on a secondary containment base - One (1) metering pump.
Feed Points	Raw water wet wells (4).
Instrumentation and Controls	Residual sodium permanganate analyzer to monitor the residual upstream of the membrane filters.
Notes	All associated piping, valves, electrical, mechanical equipment, instrumentation and operation control. Any additional drums of sodium permanganate are to be stored within with secondary spill containment

Emergency Power

Backup Power Supply

Description	200 kW generator located automatic transfer switch at the low lift electrical building
Notes	Complete with fuel tank and exhaust system To provide power for critical equipment during an emergency

Tri-County Membrane Filtration Plant

Location and System Type

Street Address	9210 Graham Road, RR #2, West Lorne, ON
UTM Coordinates	Zone 17, 454173.00 m E, 4712941.00 m N
System Type	Membrane Filtration System
Notes	Membrane filtration plant with Advanced Oxidation, Ultraviolet (UV) and Sodium Hypochlorite addition

Filtration

Pre-filter Strainers

Description	Four (4) self-cleaning strainers
Notes	Motorized automatic strainers with two excess recirculation pumps
	On-line chlorine analyzer and turbidity meter and appropriate valving and piping

Membrane Filtration

Description	Four (4) membrane filter racks
Dimensions	Each rack rated at 75 L/s max capacity
	Complete with a flow meter and turbidity meter on each rack
Notes	Citric acid, caustic soda, sodium hypochlorite and calcium thiosulfate for CIP and neutralization Two (2) 147 CFM air compressors One (1) 22.7 cu.m neutralization tank with appropriate valving and piping

Reverse Filtrate (Backwash) Recovery System

Description	Membrane Wash Water Recovery Tank
Notes	One (1) 17 cu.m reverse filtrate recovery tank Two (2) reverse filtrate pump (backwash) Two (2) reverse filtrate recovery pumps (backwash recovery) Two (2) reverse filtrate recovery strainers (backwash recovery) One (1) turbidity meter, together with appropriate valving and piping

Ultra Violet (UV) Reactors for Advanced Oxidation Process (AOP) / Backup Disinfection

Description	Two (2) 300mm diameter UV reactors (one duty and one standby) (when required for taste and odour control or as a back-up to chlorination)
Capacity	Each reactor rated at 83 L/s in AOP mode
	Each reactor rated at 166 L/s in back up disinfection mode
Notes	High intensity medium pressure lamps providing a dose of 40 mJ/cm^2 UV intensity sensor, automatic on-line sleeve cleaning system. Capable of altering between AOP mode for taste and odour and primary disinfection (back up to chlorination) mode Online analyzers: 2 (inlet and outlet) hydrogen peroxide on line analyzers, 2 (inlet and outlet) chlorine analyzers, and 1 turbidity online meter
	Advanced Oxidation Process (AOP) using Ultra Violet (UV) and Hydrogen Peroxide and Sodium Hypochlorite for taste and odour control

Instrumentation and Control

SCADA System

Description	An integrated process control system
Instrumentation In the water treatment plant	• Two (2) Flowmeters on the raw water discharge pipes • One (1) Dissolved Oxygen and pH analyzer on the raw water intake • One (1) temperature probe on the raw water intake • Four (4) Filter permeate turbidity analyzers, one on each membrane train • Four (4) pressure transmitters on each membrane train • One (1) Chlorine Analyzer upstream of the treated water storage tanks, used for dosing • One (1) Chlorine and pH analyzer on the highlift suction header • Two (2) flowmeters on the highlift discharge header • Two (2) water level transmitter, one on each storage tank
Notes	Supervisory Control and Data Acquisition system to monitor the entire water treatment system and control the operations and the distribution system including alarm capabilities.

Residual Management

Description	One (1) settling tank (outside concrete)
	Gravity overflow from the settling tank to a two basin settling lagoon
Discharges to	Overflow to municipal drain
Notes	

On-Site Storage

Reservoir

Description	Two (2) above grade glass fused steel storage tanks each 2,276 cu.m capacity
Discharges to	High lift pumps
Notes	Receives treated water from the UV system after adding sodium hypochlorite solution for primary disinfection
	Includes on-line chlorine analyzer

High Lift Works

High Lift Pumps

Description	Four (4) horizontal split case pumps (three (3) duty, one (1) standby, supplying water from the storage tanks to the distribution system, along with 2 flow meters and online turbidity meter
Capacity	Four (4) pumps each rated at 74 L/s at 73.8m TDH
Notes	Before entering the distribution system, sodium hypochlorite solution is added for secondary disinfection, if required. Includes on-line chlorine analyzer

Emergency Power

Backup Power Supply

Description	750 kW generator set, with automatic transfer switch, located at the membrane filtration plant
Notes	Complete with fuel tank and exhaust system

Fuel Oil Systems

Fuel Storage Locations

Location	a- 9210 Graham Road, RR #2, West Lorne, ON UTM: Zone 17, 454173.00 m E, 4712941.00 m N b- 8662 Graham Road, RR #2, West Lorne, ON UTM: Zone 17, 455081.00 m E, 4711635.00 m N
Description	Two double walled diesel storage tanks a- Water treatment plant generator capacity – 4850 L b- Low-lift generator capacity – 2350 L
Fuel Type	Diesel

Source Protection Area	Lower Thames Valley Source Protection Area
Notes	

Chemical Addition

Carbon Dioxide for pH Adjustment

Description	A carbon dioxide pH adjustment system for optimizing the primary disinfection
Equipment	Two (2) 240 L CO_2 cylinders, complete with one CO_2 injection system
Feed Points	CO_2 injected to the water pipeline upstream of the membrane filters and the UV disinfection.
Notes	

Sodium Hypochlorite

Description	Sodium hypochlorite solution addition for primary disinfection and secondary disinfection
Feed Points	Upstream of treated water reservoir for primary disinfection
	High lift pump discharge for secondary disinfection
Equipment	Two (2) metering pumps, one (1) duty, one (1) standby, each rated approximately at 150 L/hr for primary disinfection
	Two (2) metering pumps, one (1) duty, one (1) standby, each rated approximately at 60 L/hr for secondary disinfection
Notes	Two (2) storage tanks One (1) 22.7 cu.m capacity sodium hypochlorite bulk storage tank One (1) 454 L capacity day tank Sodium Hypochlorite is also used in the AOP and for membrane cleaning.

Hydrogen Peroxide

Description	Hydrogen peroxide addition for Advanced Oxidation process for taste and odor control
Feed Point	Prior to UV reactors
Equipment	Two (2) metering pumps, one (1) duty, one (1) standby, each rated approximately at 11 L/hr.
	One 7.95 cu. m storage tank

Citric Acid and Caustic Soda

Description	Chemical in Place CIP process for membrane cleaning
Feed Point	CIP tank
Equipment	Two (2) 1-citric, 1-caustic chemical pump
	Two (2) 9.5 cu.m Clean in Place (CIP) chemical tanks,
	Two (2) 454 L day tank

Calcium Thiosulfate

Description	Calcium thiosulfate addition for neutralization of CIP cleaning waste
Feed Point	CIP tank
Equipment	One (1) chemical pump
	454 L day tank

Elevated Storage Reservoir

West Lorne Standpipe

Location	1173 Jane Street, County of Elgin
UTM Coordinates	NAD 83 Zone 17 449979 E, 4717056N
Description	2,889 cu.m capacity

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
West Elgin Trunk Waterlines	January 14, 2021

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**Tri-County Water Board**
Permit Number	**043-201**
Drinking Water System Name	**Tri-County Drinking Water System**
Permit Effective Date	**August 22, 2024**

1.0 Applicability

1.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence # 043-201.

1.2 The definitions and conditions of licence # 043-201 are incorporated into this permit and also apply to this drinking water system.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director to be incorporated into Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance with the applicable conditions of this drinking water works permit and licence # 043-201.

2.2 All documents issued by the Director as described in condition 2.1 shall form part of this drinking water works permit.

2.3 All parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

a) The ministry's Watermain Disinfection Procedure, dated August 1, 2020;
b) Subject to condition 2.3.2, any updated version of the ministry's Watermain Disinfection Procedure;
c) Subject to condition 2.3.3,
    i. AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
    ii. AWWA C653 – Standard for Disinfection of Water Treatment Plants; and,
    iii. AWWA C654 – Standard for Disinfection of Wells.

2.3.1 For greater certainty, where an activity has occurred that could introduce contamination, including but not limited to repair, maintenance, or physical / video inspection, all equipment that may come in contact with the drinking water system shall be disinfected in accordance with the requirements of condition 2.3. above.

2.3.2 Updated requirements described in condition 2.3 b) are effective six months from the date of publication of the updated Watermain Disinfection Procedure.

2.3.3 Requirements described in condition 2.3 c) are effective until:
- a) In the case of AWWA C652, six months after the issue date of the ministry's Water Storage Facility Disinfection Procedure;
- b) In the case of AWWA C653, six months after the issue date of the ministry's Water Treatment Plant Disinfection Procedure; and,
- c) In the case of AWWA C654, six months after the issue date of the ministry's Wells Disinfection Procedure.

2.3.4 The ministry documents described in condition 2.3.3 shall be implemented within the timeframe specified in condition 2.3.3 and once implemented all parts of the drinking water system in contact with drinking water that are added, modified, replaced or extended shall be disinfected in accordance with the applicable provisions of the document or a procedure approved by the Director.

2.3.5 After the initial issue date, any updated requirements are effective six months from the date of publication of the updated Water Storage Facility Disinfection Procedure, Water Treatment Plant Disinfection Procedure or Wells Disinfection Procedure.

2.3.6 For greater certainty the timeframes described in conditions 2.3.2, 2.3.3 and 2.3.5 are intended to provide a period for transition. Implementation may occur at any point within the identified timeframe in these conditions.

2.0 The owner shall notify the Director in writing within thirty (30) days of the placing into service or the completion of any addition, modification, replacement, removal or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

2.4.2 Any document to be incorporated in Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 The notification required in condition 2.4 shall be submitted using the "Director Notification Form" published by the Ministry.

2.6 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement, removal or extension in respect of the drinking water system which:

2.6.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.6.2 Constitutes maintenance or repair of the drinking water system; or

2.6.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.7 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.8 For greater certainty, the owner may only carry out alterations to the drinking water system in accordance with this drinking water works permit after having satisfied other applicable legal obligations, including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The owner may alter the drinking water system, or permit it to be altered by a person acting on the owner's behalf, by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a licensed engineering practitioner;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012", as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry publication "Design Guidelines for Drinking Water Systems, 2008", as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A licensed engineering practitioner has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

3.7 Despite clause (a) of condition 3.1.1 and condition 3.1.7, with respect to the replacement of an existing watermain or section of watermain that is 6.1 meters in length or less, if a licensed engineering practitioner has:

3.7.1 inspected the replacement prior to it being put into service;

3.7.2 prepared a reporting confirming that the replacement satisfies clauses (b), (c) and (d) of condition 3.1.1 (i.e. “Form 1 – Record of Watermains Authorized by a Future Alteration” (Form 1), Part 3, items No. 2, 3 and 4); and

3.7.3 appended the report referred to in condition 3.7.2 to the completed Form 1,

the replacement is exempt from the requirements that the design of the replacement be prepared by a licensed engineering practitioner and that a licensed engineering practitioner verify on Form 1, Part 3, item No. 1 that a licensed engineering practitioner prepared the design of the replacement.

3.8 For greater certainty, the exemption in condition 3.7 does not apply to the replacement of an existing watermain or section of watermain if two or more sections of pipe, each of which is 6.1 meters in length or less, are joined together, if the total length of replacement pipes joined together is greater than 6.1 meters.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Coagulant feed systems in the treatment system, including the location and number of dosing points:

a) Prior to making any alteration to the drinking water system under condition 4.1.1, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.1.1 and shall provide the Director with a copy of the review.

c) The notification required in condition 4.1.1 b) shall be submitted using the “Director Notification Form” published by the Ministry

4.1.2 Instrumentation and controls, including new SCADA systems and upgrades to SCADA system hardware;

4.1.3 SCADA system software or programming that:

a) Measures, monitors or reports on a regulated parameter;
b) Measures, monitor or reports on a parameter that is used to calculate CT; or,
c) Calculates CT for the system or is part of the process algorithm that calculates log removal, where the impacts of addition, modification or replacement have been reviewed by a licensed engineering practitioner;

4.1.4 Filter media, backwashing equipment, filter troughs, and under-drains and associated equipment in the treatment system;

4.1.5 Spill containment works; or,

4.1.6 Coarse screens and fine screens

3.0 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps, pressure tanks, and associated equipment;

4.2.2 Raw water pumps and process pumps in the treatment system;

4.2.3 Inline booster pumping stations that are not associated with distribution system storage facilities and are on a watermain with a nominal diameter not exceeding 200 mm;

4.2.4 Re-circulation devices within distribution system storage facilities;

4.2.5 In-line mixing equipment;

4.2.6 Chemical metering pumps and chemical handling pumps;

4.2.7 Chemical storage tanks and associated equipment;

4.2.8 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry.

4.2.9 Chemical injection points;

4.2.10 Valves;

4.2.11 Fuel storage tanks and spill containment works, and associated equipment or,

4.2.12 Any other component(s) where the Director has provided authorization in writing to proceed with the alteration.

4.2 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Measuring and monitoring devices that are required by regulation, by a condition in the Drinking Water Works Permit or by a condition otherwise imposed by the Ministry.

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

c) The notification required in condition 4.3.3 b) shall be submitted using the “Director Notification Form” published by the Ministry

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing or removal of any unit process within a treatment subsystem;

4.4.3 The addition of any new unit process other than coagulation within a treatment subsystem;

4.4.4 A deterioration in the quality of drinking water provided to consumers;

4.4.5 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.6 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.7 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on “Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System” published by the Ministry, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system, including software changes to a SCADA system that are not listed in condition 4.1.3

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the air:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not make an addition, modification, or replacement described in condition 5.1 in relation to an activity that is not related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall ensure that the criteria outlined for standby power sources in s.20.4 of O. Reg. 419/05 (Air Pollution – Local Air Quality) are met for all discharge that occurs from the use of emergency generators added, modified or replaced under condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive receptors shall not exceed the applicable point of impingement limit, and at non-sensitive receptors shall not exceed the Ministry half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable

8.0 Source Protection

8.1 Not Applicable

Schedule C: Authorization to Alter the Drinking Water System

System Owner	**Tri-County Water Board**
Permit Number	**043-201**
Drinking Water System Name	**Tri-County Drinking Water System**
Permit Effective Date	**August 22, 2024**

1.0 General

1.1 Table 2 provides a reference list of all documents to be incorporated into Schedule C that have been issued as of the date that this permit was issued.

1.1.1 Table 2 is not intended to be a comprehensive list of all documents that are part of Schedule C. For clarity, any document issued by the Director to be incorporated into Schedule C after this permit has been issued is considered part of this drinking water works permit.

Table 2: Schedule C Documents

Column 1 Issue #	Column 2 Issued Date	Column 3 Description	Column 4 Status	Column 5 DN#
Sch. C Issue 1	December 7, 2018	pH Adjustment System using CO_2	Archived	2
Sch. C Issue 2	October 18, 2023	Sodium Permanganate System	In Progress	

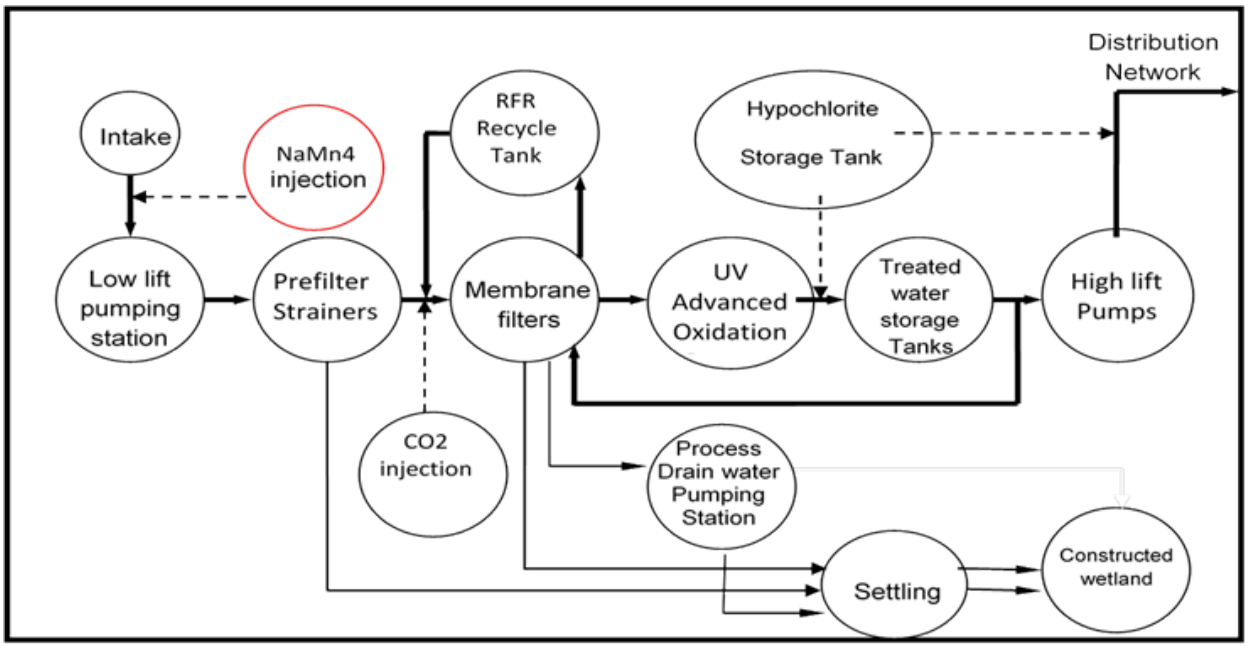
1.2 For each document described in columns 1, 2 and 3 of Table 2, the status of the document is indicated in column 4. Where this status is listed as 'Archived', the approved alterations have been completed and relevant portions of this permit have been updated to reflect the altered works. These 'Archived' Schedule C documents remain as a record of the alterations.

Schedule D: Process Flow Diagrams

System Owner	**Tri-County Water Board**
Permit Number	**043-201**
Drinking Water System Name	**Tri-County Drinking Water System**
Permit Effective Date	**August 22, 2024**

1.0 Process Flow Diagrams

Tri-County Water Treatment Plant



[Source: Received by email on August 8, 2024, in Operational Plan for the Tri-County Drinking Water System, revised August 2024]

Note: This process flow diagram is for reference only, and represents a high level overview of the system as of August 2024.

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Tri-County Drinking Water System

Asset Management Plan

SUBMITTED BY

Ontario Clean Water Agency
2085 Hurontario Street, 5th Floor
Mississauga, ON L5A 4G1

Date: February 7, 2024

Rev: 2

AMP Issue and Revision Record					
Rev. No.	Date	Prepared by:	Reviewed by:	Approved by:	Rev. Description
1	September 26, 2023	Jason Younker, OCWA	Nick Larson, OCWA	Nick Larson, OCWA	Draft
2	February 7, 2024	Jason Younker, OCWA	Nick Larson, OCWA	Nick Larson, OCWA	Final

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1 INTRODUCTION

1.1 Overview

This Asset Management Plan (AMP) builds a structured relationship between infrastructure spending and asset performance. Periodic (annual) updates ensure it reflects changing circumstances and actively supports infrastructure decision-making processes.

1.2 Defining Asset Performance

The definition of Asset Performance is "the ability of an asset to fulfill the organization's objectives or requirements".

The performance of an asset directly relates to the level of service it provides:

- An asset in the good performance category is meeting expectations (i.e. providing an appropriate level of service); and
- An asset in the poor performance category is not meeting expectations (i.e. not providing an appropriate level of service), and requires spending to have it meet expectations.

The unique circumstances of each asset establish its performance expectations (i.e., what it is, what it does, what happens if it fails, etc.).

1.3 AMP Development Approach

This AMP aligns with the international standard for infrastructure asset management (ISO 55000). The development of this AMP leverages the best available asset and financial information, staff input, subject matter expert professional judgement, and AM best practices, to complete the following steps:

1. Develop a complete listing of infrastructure assets to be included in the AMP.
2. Assess the current performance of the assets based on existing information.
3. Prepare an asset lifecycle management strategy (i.e. spending plan) to achieve desired asset current performance expectations.

1.4 Updating the Asset Management Plan

A periodic update to the AMP ensures it reflects the latest information and responds to evolving asset performance expectations. Ideally, this update occurs annually in conjunction with budget processes, or more frequently if required.

1.5 Asset Management Plan Scope

This AMP includes all water assets water treatment assets operated by the Ontario Clean Water Agency on behalf of the Tri-County Water Board of Management. Section 2 summarizes the infrastructure portfolio.

1.6 Growth Planning

The Tri-County Drinking Water System (DWS) services multiple municipalities as their water source, including West Elgin, Southwest Middlesex, Dutton-Dunwich (partially serviced), Newbury, and Bothwell. As seen in Table 1, the population of the serviced communities has been seeing a slow decline since 1996 with the exception of Dutton-Dunwich, which has seen a marginal increase. Given these trends, it is not expected that there will be a need to increase water supply capacity.

Table 1: Serviced Municipality Population History

YEAR	SOUTHWEST MIDDLESEX	WEST ELGIN	DUTTON-DUNWICH	NEWBURY	BOTHWELL
1996	6,204	5,573	3,603	419	990
2001	6,144	5,464	3,696	430	1002
2006	5,890	5,349	3,821	422	968
2011	5,860	5,157	3,876	439	912
2016	5,723	4,995	3,866	466	856
2021	5,893	5,060	4,152	440	908

Population data from Statistics Canada.

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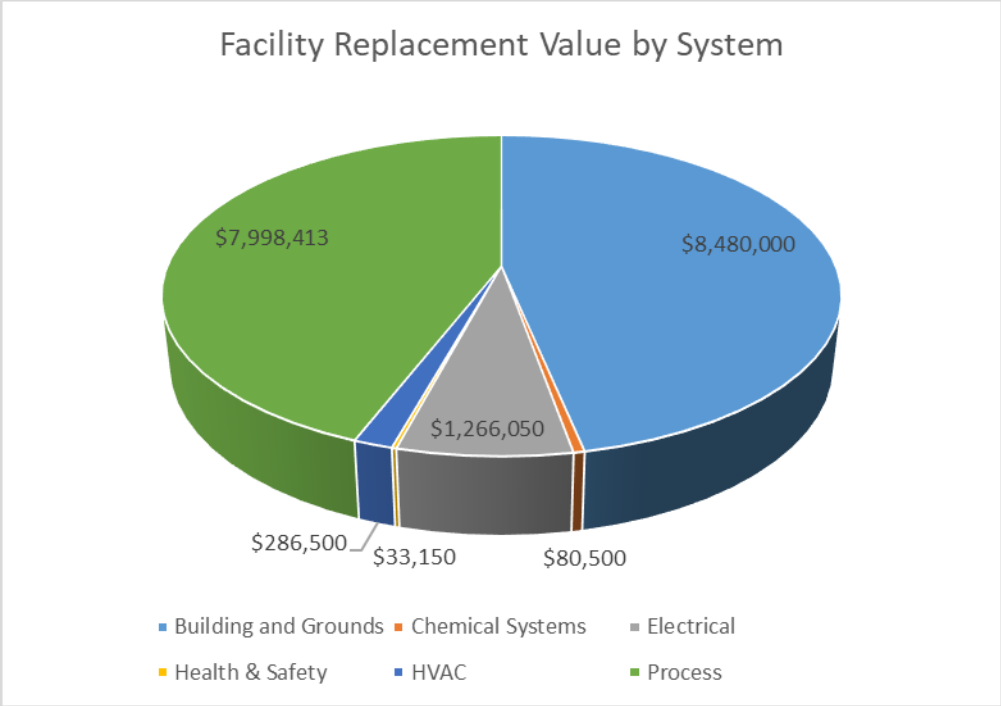
2 OVERVIEW OF ASSET PORTFOLIO

The infrastructure portfolio has an estimated replacement value of approximately $18 million (Figure 1). A detailed asset inventory is available in Appendix C.

Figure 1: Tricounty Water Infrastructure Portfolio



Note: Actual costing values are subject to market forces at the time of infrastructure construction/improvement activity, the above values are based on historical averages and industry standards.

3 ASSET PERFORMANCE ASSESSMENT

3.1 Measuring Asset Performance

Performance assessment information is available from a range of activities and sources. Examples of performance assessment activities include:

- Quarterly, semi-annual or annual visual inspections.
- Contracted technical experts to complete tests, take measurements, etc.
- Performance data from various process instrumentation equipment.

The performance information comes from a variety of sources, ranging from sophisticated technologies to investigate the assets to visual observations from qualified professionals. All asset performance data combines with the professional judgment of subject matter experts to establish the current performance of each asset as defined in Table 2 below.

Table 2: Asset Performance Rating Descriptions

PERFORMANCE CATEGORY	DESCRIPTION	STATE OF ASSET
Good	Asset performance meets or exceeds its objectives/requirements.	No Deficiencies
Fair	Asset performance is nearing the point where it will not meet its objectives/requirements.	Has Deficiencies
Poor	Asset performance is not meeting its objectives/requirements.	Requires Treatment (Spending)

3.2 Current Asset Performance

Figure 2 and Table 3 provide the current performance distribution of each asset group. The total replacement cost of the assets in the poor performance category is of approximately $0.7 million, which represents approximately 4% of the total asset portfolio. Note that the spending required to restore these assets to the good performance category is not equal to the replacement costs, since some assets only require rehabilitation while others require replacement with a more expensive asset.

The performance category of each asset updates on a continual basis to reflect actual spending on assets, new asset data, and changing asset performance objectives or requirements.

Detailed performance metrics are provided in Appendix A.

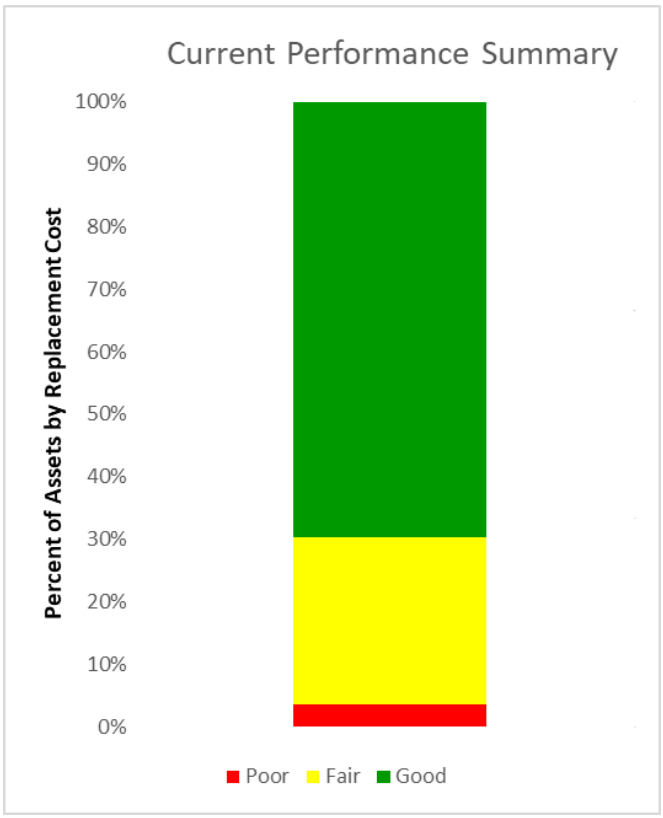


Figure 2: Current Performance Distribution

Table 3: Current Performance by Replacement Value

		Replacement Cost	Category Description
Performance Category	Good	$ 12,628,077	Asset performance meets or exceeds its objectives/requirements.
	Fair	$ 4,857,891	Asset performance is nearing the point where it will not meet its
	Poor	$ 658,645	Asset performance is not meeting its objectives/requirements.
	Total	$ 18,144,614	

4 ASSET LIFECYCLE MANAGEMENT

4.1 Asset Lifecycle Activities Overview

Table 4 provides an overview of typical asset lifecycle activities applied to infrastructure systems. The spending forecasts in this section represent a combination of major maintenance, rehabilitation and replacement treatments. Appendix C contains the detailed spending plan.

Table 4: Typical Asset Lifecycle Activities

LIFECYCLE ACTIVITY	DESCRIPTION
Operational	Operational activities, routine preventative maintenance, studies on asset performance
(Major) Maintenance	Repairs and component replacement to maintain asset performance, typically costing between 5-10% of asset replacement value.
Rehabilitation	Project to extend asset service life, typically costing between 15% - 40% of asset replacement value.
Replacement	A project resulting in a replacement of an asset with one asset that meets top industry and community expectations.
New Asset	Construction or purchase of new assets that results in net growth of the asset inventory and an enhancement in service levels provided to the community.

4.2 Spending Forecast

4.2.1 Approach

The analysis approach involves connecting real planned projects against specific assets where feasible and iteratively adjusting annual spending levels until the forecasted performance distribution will be relatively stable (i.e. the proportion of the asset network in the poor performance category is consistent).

For example, Figure 3 shows a scenario where there is not sufficient spending, resulting in the proportion of assets in the poor performance category increase from 5% in 2021 to 90% in 2040, and a declining trend in the Network Average performance index. This indicates that additional spending is required. Analysis updates continue to achieve a suitable performance forecast.

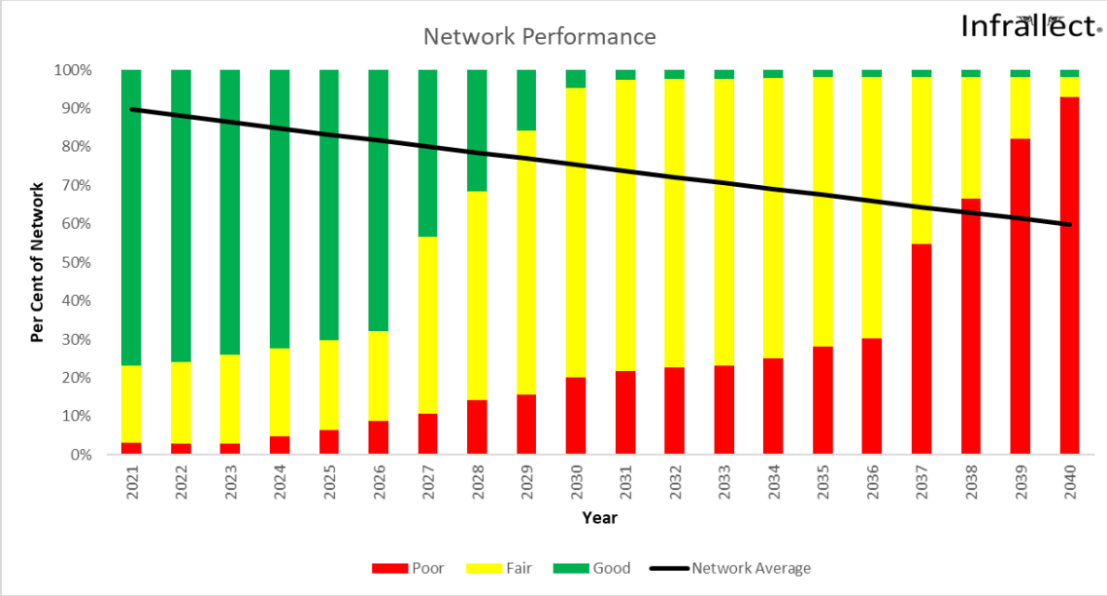
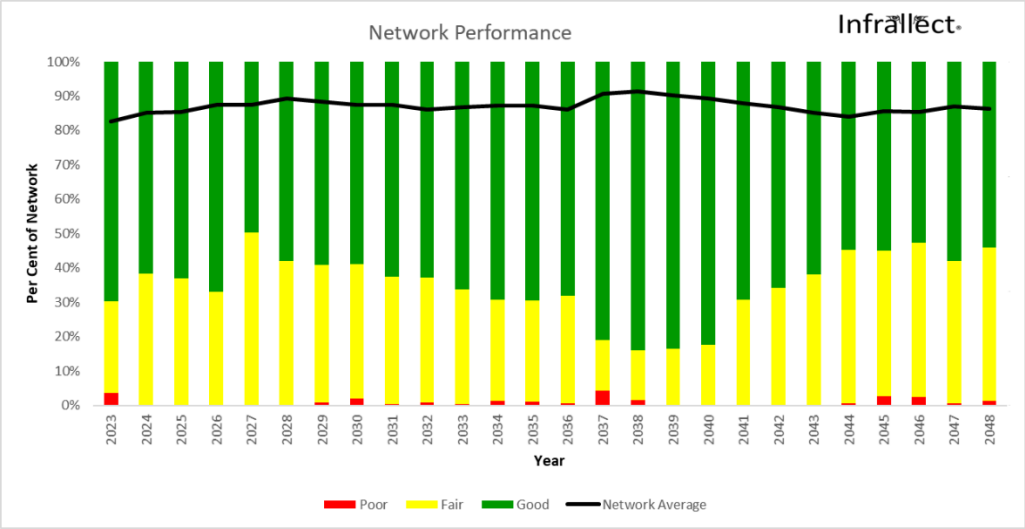
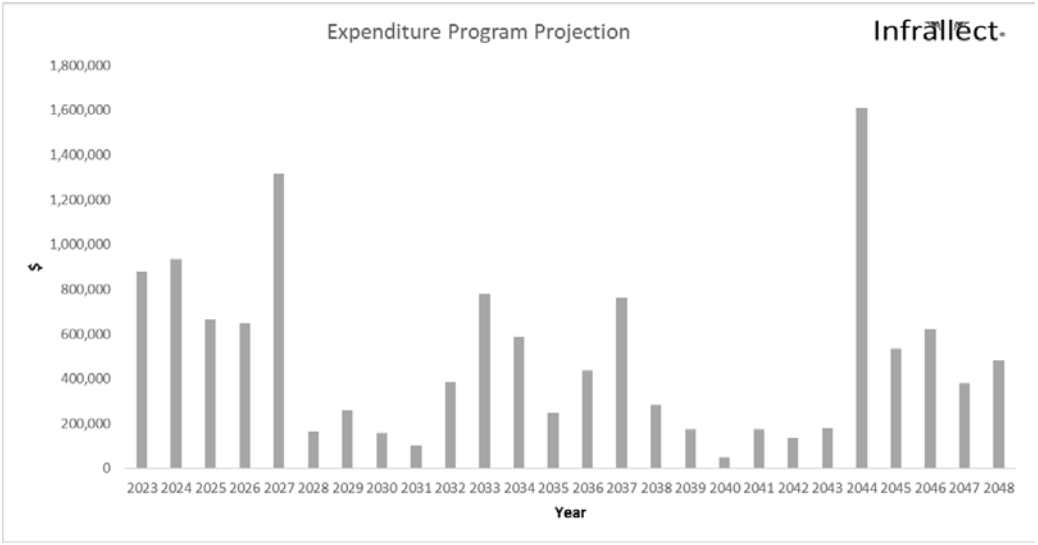


Figure 3: Sample Performance Forecast

4.2.2 Results

Figure 4 provides the performance and spending forecast. Appendix D provides the detailed planned program.

Figure 4: Water Treatment Facility Forecast

Desired Performance Forecast	
Spending Plan to Achieve Desired Performance Forecast	 • Large spending of $4.6M planned over next 6 years (2023-2028) • Average expenditures in 7 to 25 year horizon is approximately 400,000/year. • An additional $10,000 to $30,000 per year is required for non-capital related activities (inspections, planning, investigations, etc.) that are not included in OCWA's scope.

4.3 Risk Management

The approach to managing risk in this AMP is to consider the overall criticality of each asset related to the role it plays in providing services to the community (by understanding the required performance of each asset based on its location, function, size, etc.). This understanding establishes when an asset is not meeting its objectives or requirements based on the available technical performance indicators and subject matter expert judgement. Assets that are more critical have higher performance expectations, while less critical assets have lower performance expectations.

4.4 Managing Climate Change

The expected impacts of climate change have been considered and included throughout the analysis used to inform this AMP. This includes consideration of climate change when establishing the current performance category of an asset, forecasting the deterioration rate of an asset, or establishing the lifecycle activities completed on an asset.

The most prominent climate factor affecting the Boards water infrastructure are prolonged periods of heat or drought. This climate factor can lead to more days of high water demand and reductions to the quantity and/or quality of source water:

- *Climate Effect 1 – Increase Water Demand*

  An increase in temperatures will bring about more summer days, which on average have a greater water demand due to recreational and landscaping usage. It is expected in the area of the Tri-County drinking water system that the number of hot (>30 degrees Celsius) summer days will increase by 44% by 2051 (62 -> 89)[1]. The increased demand from the greater period of summer will increase the amount of water treated by the plant and therefore cause a greater amount of equipment wear and deterioration, which will reduce equipment service life and increase plant maintenance and operating costs.

- *Climate Effect 2 – Decrease in Water Quality*

  Increased temperatures can lead to higher water temperatures, which can promote the growth of harmful algae blooms and pathogens in freshwater sources. This can result in more contaminants entering water treatment systems, requiring additional treatment processes. Upgrading the water treatment plant would result in a significant one-time capital costs and potential increase in operational and maintenance costs with any new processes.

At this point, these climate factors are not causing any specific performance deficiencies. The Board should continue to monitor the impacts of periods of prolonged heat or drought on the water supply and system demand.

[1] Canada Climate Atlas, 2003, https://climateatlas.ca/

5 FINANCING STRATEGY

A number of financing strategies are available to fund the forecasted expenditures. The objective of the Board's financing strategy should be to maximize new assessment growth at the lowest real cost impact to ratepayers (i.e. maximize real revenue growth through expanded customer base and minimize rate increases). This would prioritize the following options:

1. Provincial/Federal Government Grants
2. Internal Financing using Reserves
3. Debt
4. Rate Increases

Future budgets will present the optimal balance of the available financing options to fund the Board's infrastructure program.

6 DISCUSSION AND NEXT STEPS

This AMP represents the tactical output of a corporate management system. The corporate management system is the series of interconnected processes that work together to realize value from assets. This AMP uses the best available asset and financial information. The AMP is a living document that requires periodic updates to reflect new information and changing community priorities.

6.1 Monitoring Asset Performance

Moving forward, the AMP will be updated on an annual basis. The practical steps to complete this are as follows:

1. Each year, update the asset inventory with the best available asset data. This adds/removes assets as appropriate.
2. Each year, update current asset performance based on the best available information.
3. Each year, update the spending analysis to record completed spending, and to connect planned spending to assets or asset networks.

These three steps enable updates the forecast performance versus spending analysis. Over time, the Board will be able to see connections between the changing performance distribution and annual spending levels. This will increase the confidence of future AMPs.

6.2 Roadmap for Enhancing Asset Management Processes

The following points provide a roadmap to enhance asset management planning processes in the Board:

1. Continue to maintain the inventory of all assets owned. Asset inventories should be comprehensive of all assets in an asset network.
2. Continue to strengthen the connection between actual or planned spending and specific assets (or asset networks). This will provide greater line of sight from the current or planned spending and the resulting performance improvement in an asset or asset network.
3. Continue to strengthen the quality of asset-centric performance indicator data that is available to measure the current performance of assets and asset networks.
4. Engage the community to understand their current perspective on the performance of assets and asset networks. This understanding calibrates the current performance of the asset networks and prioritizes the allocation of funding to improve the performance of asset networks relative to community expectations.

Appendix A - Performance Indicator Tracking

System	Indicator	2018	2019	2020	2021	2022
Water Treatment and Distribution	Boil Water Advisory	0	0	0	0	0
	Adverse Water Quality Incident (AWQI)	0	1	0	0	0
	Watermain Breaks	0	0	0	0	0

Appendix B – Short Term Capital (Major Maintenance) Plan

Tri-County Water Treatment

(XX-Year Recommended Capital/Major Maintenance Out of Scope from 20XX to 20XX)
The Ontario Clean Water Agency has identified the following Out of Scope capital projects/major maintenance for your review and approval.
The recommendations constitute the projects that Qualified Professionals deem necessary to ensure regulatory compliance or achieve client community objectives. The recommendations are informed by data from OCWA's Work Management

Project No.	Org ID	Facility/System Name	Project Type (drop down list)	Project Name	Relevant Asset ID(s) or Functional Location(s) from WMS	Cost Estimate* 2023	2024	2025	2026	2027	2028	Compliance Impact	DWQMS RA Outcome**	Health & Safety	Repair / Maintenance	Lifecycle Replacement	Improvement	Spare Parts/Materials Inventory/Energy/Optimization/Risk	Client to Develop into an Expenditure Request	WMS Workorder Number	Scope Summary Comment/Additional Rationale/Supporting Information
	Treatment Plant																				
1	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	Intake Structure Inspection	0000360539				$10,000	$0			X	X	X					If Year = 2023 or 2024	Last inspected in 2021. Recommended every 5 years
2	6634	Tri-County DWS	Out of Scope - Major Maintenance	pH Control System-Operating Costs	0000123769	$13,000						X			X			X			Annual Costs for O&M of system
3	6634	Tri-County DWS	Out of Scope - Capital	SCADA/PLC Upgrades-Based off of 2021 Report	0000315487, 0000360540	$221,000	$166,000	$47,338	$0	$0	$0	X			X		X				SCADA/PLC/Software Upgrades based on 2021 Study
4	6634	Tri-County DWS	Out of Scope - Capital	Chemical Transfer Pump Replacement	0000123769, 0000123771, 0000164573, 0000164579	$4,000		$4,000		$4,000						X					Transfer Pumps for CIP System. Life cycle replacement
5	6634	Tri-County DWS	Out of Scope - Capital	Chlorine/Peroxide Feed Pump Replacement	0000164567, 0000164568, 0000164560, 0000315312, 0000164588, 0000164589,	$8,000					$8,000	X				X					Life Cycle Replacement
6	6634	Tri-County DWS	Out of Scope - Capital	Chlorine Analyzer Replacement	0000123026, 0000164489, 0000164493, 0000164522, 0000164546, 0000164408	$6,500	$6,500	$6,500	$6,500	$6,500	$6,500	I	X			X	X				Life Cycle Replacement, Technology Improvements
7	6634	Tri-County DWS	Out of Scope - Major Maintenance	Chlorine Gas Dosing System	0000315496, 0000315317, 0000315316,	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500		X	X	X	X	X	X			Continous Improvement/Inspection/Replacement of old piping
8	6634	Tri-County DWS	Out of Scope - Major Maintenance	UV System	0000164696, 0000164697, 0000164507, 0000164502	$4,000	$4,000	$4,000	$4,000	$20,000	$20,000		X		X	X		X			Requires annual service and complete rebuild every 5 years
9	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	Storage Tank Inspections	0000164706, 0000164705,		$10,000						X		X						Inspection recommended every 5 years
10	6634	Tri-County DWS	Out of Scope - Major Maintenance	Storage Tanks Interior re-sealing	0000164706, 0000164705,			$40,000							X						Recommended in 2019 inspection for 2025
11	6634	Tri-County DWS	Out of Scope - Capital	Air Manifold Airline and Card replacement	0000315304, 0000315305	$11,000				$12,000	$12,000					X					4 year Life Cyle Replacement
12	6634	Tri-County DWS	Out of Scope - Major Maintenance	Naturlized Settling Ponds-Phragmites Control	0000360537	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000				X		X				Continued Control of invasive Phragmites
13	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	PALL Health Check	0000164643, 0000164644, 0000164651, 0000164658	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000				X		X				Annual Health Check on PALL Membrane System
14	6634	Tri-County DWS	Out of Scope - Capital	Replacement of PALL Membranes	0000164643, 0000164644, 0000164651, 0000164658	$380,000	$400,000	$420,000	$440,000	$0	$0		X			X					Life Cycle Replacement
15	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	Assets Management Plan		$15,000															
16	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	Recommendations from "Yellow Water Study"																	
17	6634	Tri-County DWS	Out of Scope - Capital	Replacing SCBA Equipment	0000278217	$8,000								X		X					Current equipment out of date
	Highlift and Lowlift Pumps & Motors																				
18	6634	Tri-County DWS	Out of Scope - Capital	Lowlift motors: Replacement of Soft Starters with VFD's	0000315326, 0000315319, 0000315327	$25,000										X	X		X		Continued upgrading to remaining Pump
19	6634	Tri-County DWS	Out of Scope - Capital	Highlift motors: Replacement of Soft Startsers with VFD's	0000315320, 0000315324, 0000315318	$40,000										X	X		X		Continued upgrading to remaining Pump
20	6634	Tri-County DWS	Out of Scope - Major Maintenance	Highlift motor/pump rebuild	0000164460, 0000164466, 0000164472, 0000164478, 0000164461, 0000164479, 0000164467, 0000164473					$15,000	$15,000		X		X						Rebuilds after regular wear and tear
21	6634	Tri-County DWS	Out of Scope - Major Maintenance	Lowlift motor/pump rebuild	0000164336, 0000164341, 0000164346, 0000164351, 0000164335, 0000164340, 0000164345, 0000164350					$20,000	$20,000		X		X						Rebuilds after regular wear and tear
	Structural (Includes piping/control, PRV's, Valves, Building envelope, HVAC, chambers)																				
22	6634	Tri-County DWS	Out of Scope - Major Maintenance	Raw wetwell maintenance/repairs	0000315499, 0000315500, 0000164409	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000		X		X		X				Annual contingency for clean out
23	6634	Tri-County DWS	Out of Scope - Major Maintenance	HVAC Repairs or Upgrades	0000164678, 0000164679, 0000164682, 0000315311, 0000164671, 0000062770, 0000062835, 0000164435, 0000062795, 0000062705, 0000062684, 0000062797, 0000062798, 0000062710, 0000062678, 0000062680, 0000062679, 0000062796, 0000062728, 0000164672, 0000315307, 0000164438, 0000164442, 0000164693, 0000164685	$5,000		$5,000		$75,000					X	X					Repairs and Maintenance to HVAC
24	6634	Tri-County DWS	Out of Scope - Major Maintenance	Settling Tank Clean Outs		$15,000			$15,000			X									Sediment Tanks need cleaning every 3 years
25	6634	Tri-County DWS	Out of Scope - Capital	Lowlift and Associated Building Repairs Fund (IRC BCA Recommendations)			$201,278	$15,489	$92,318	$71,426	$15,549			X	X	X	X		X		Based off of IRC BCA Report completed 2021
26	6634	Tri-County DWS	Out of Scope - Capital	WTP Building Fund (IRC BCA Recommendations)		$9,898	$26,593	$70,598	$44,481	$11,391	$2,520			X	X	X	X		X		Based off of IRC BCA Report completed 2021
27	6634	Tri-County DWS	Out of Scope - Capital	Discharge Header: Repair/Replace failing stainless steel piping	0000360535	$50,000	$50,000						X		X	X	X				Stainless steel throughout plant is failing.
	Standpipe, Transmission Main, Remote Chambers																				
28	6634	Tri-County DWS	Out of Scope - Capital	West Lorne Standpipe Refurbishment/Repainting	0000164711					$1,000,000						X	X				The 2020 Inspection identified that the interior and exterior surfaces require full removal and replacement within 3 to 6 years timeline. Proposes to create reserve for funding of this project. Estimated total project cost of $1,350,000
29	6634	Tri-County DWS	Out of Scope - Major Maintenance	Remote Chamber Refurbishment		$30,000	$30,000								X	X	X				Continued Upgrades to Remote Chambers
30	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	West Lorne Standpipe Inspection	0000164711			$12,000				X	X								Recommended to Inspect every 5 Years.
31	6634	Tri-County DWS	Out of Scope - Major Maintenance	UPS Replacement	0000062779, 0000062685, 0000315494	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500					X					Life cycle replacement to critical UPS
	Operations and Maintenance Contignecy																				
32	6634	Tri-County DWS	Out of Scope - Major Maintenance	Strainers:Purchase of Critical Spare Parts	0000164415, 0000123773, 0000164382, 0000164386, 0000164391, 0000164396	$5,000	$5,000	$5,000					X					X			
33	6634	Tri-County DWS	Out of Scope - Study/Inspection/Report	Smart Positioner Inventory		$5,000		$5,000		$5,000						X		X			Critical Component for filter operation
34	6634	Tri-County DWS	Out of Scope - Major Maintenance	Pheumatic Actuators		$3,000	$3,000	$3,000	$3,000	$3,000	$3,000		X			X		X			Critical Component for filter operation
35	6634	Tri-County DWS	Out of Scope - Major Maintenance	Rack Butterfly valves		$2,000		$2,000		$2,000						X		X			Critical Component for filter operation
36	6634	Tri-County DWS	Out of Scope - Major Maintenance	UPS Replacement	0000062779, 0000062685, 0000315494	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500					X		X			Important to replace before failure or have inventory
37	6634	Tri-County DWS	Out of Scope - Major Maintenance	In-plant Process Motors/Pumps		$5,000	$5,000	$5,000	$5,000	$5,000	$5,000		X			X					Placeholder for emergency repairs
38	6634	Tri-County DWS	Out of Scope - Major Maintenance	Emergency Misc.		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000				X						Placeholder for emergency repairs
					Total	**$913,898**	**$955,871**	**$693,425**	**$668,799**	**$1,298,817**	**$156,069**										

Beige Colouring reqpresents a non-capital work study

Notes
***The above noted Cost Estimates have been developed to aid the client to understand the order of magnitude cost and will be further refined based on Client acceptance in principle of the proposed work. OCWA uses the AACE cost**
*** A requirement of DWQMS v. 2.0 is to consider the outcomes of the risk assessment (RA) documented under Element 8 as part of the system's infrastructure review*

Appendix C – Detailed Asset Inventory

Tri-County Asset Inventory $ 18,144,614

Index	Asset Number	Asset Description	Asset Class	Installation Date	Replacement Cost	Performance Score
1	360537	SETTLING POND NEW PLANT	6634-WTTC-BG	1989-01-01T	$ 1,000,000	0.45
2	360533	BUILDING ROOF NEW PLANT	6634-WTTC-BG	2008-08-08T	$ 3,000,000	0.6
3	315478	BUILDING ROADS	6634-WTTC-BG	2008-08-08T	$ 600,000	0.5
4	315475	BUILDING FLOOR ALL BUILDINGS	6634-WTTC-BG	2008-08-08T	$ 2,000,000	0.5
5	315476	BUILDING LIGHTING ALL BUILDINGS	6634-WTTC-BG	2008-08-08T	$ 500,000	0.3
6	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	6634-WTTC-BG	2008-08-08T	$ 500,000	0.5
7	336381	BUILDING ROOF LOW LIFT	6634-WTTC-BG	2008-08-08T	$ 300,000	0.7
8	336383	BUILDING ROOF CHLORINE	6634-WTTC-BG	1991-07-01T	$ 200,000	0.7
9	336384	BUILDING ROOF OLD PLANT	6634-WTTC-BG	2008-08-08T	$ 200,000	0.4
10	315480	BUILDING FENCING	6634-WTTC-BG	1993-01-01T	$ 50,000	0.5
11	123764	VEHICLE WTP TRUCK F-250	6634-WTTC-BG	2008-08-08T	$ 50,000	0.25
12	315479	BUILDING DRAINAGE	6634-WTTC-BG	2016-01-22T	$ 50,000	0.5
13	123765	VEHICLE WTP TRUCK ARCTIC SNOW PLOW	6634-WTTC-BG	2001-01-09T	$ 8,000	0.3
14	123760	VEHICLE LIFT TRUCK CLAR	6634-WTTC-BG	2008-08-08T	$ 5,000	0.35
15	315489	LIFTING DEVICE A FRAME 2 TON HL PUMPS AREA	6634-WTTC-BG	1993-01-01T	$ 5,000	0.6
16	62682	LIFTING DEVICE 02 BRIDGE LL	6634-WTTC-BG	1993-01-01T	$ 3,000	0.7
17	123761	LIFTING DEVICE FORK LIFT MAN BASKET	6634-WTTC-BG	2008-08-08T	$ 2,000	0.5
18	164725	LIFTING DEVICE LIFT TRI-POD SYSTEM	6634-WTTC-BG	2003-06-13T	$ 2,000	0.6
19	164731	LIFTING DEVICE SALA TRI-POD	6634-WTTC-BG	2003-06-13T	$ 2,000	0.65
20	164732	LIFTING DEVICE SALA BLOCK	6634-WTTC-BG	1993-01-01T	$ 2,000	0.7
21	62681	LIFTING DEVICE CHAINFALL 01	6634-WTTC-BG	2008-08-08T	$ 500	0.2
22	164724	LIFTING DEVICE MAIN LIFT	6634-WTTC-BG	2008-08-08T	$ 500	0.55
23	164581	TANK PROCESS T4601 NEUTRALISATION CIP	6634-WTTC-CH	2008-08-08T	$ 6,000	0.6
24	315312	PUMP DIAPHRAGM CFP8030 HYPO POST UV	6634-WTTC-CH	2008-08-08T	$ 5,000	0.6
25	164567	PUMP DIAPHRAGM HPR5110 PEROXIDE	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
26	164568	PUMP DIAPHRAGM HPR5120 PEROXIDE	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
27	164573	PUMP DIAPHRAGM BSTP4502 CIP BISUL	6634-WTTC-CH	2008-08-08T	$ 5,000	0.4
28	164579	PUMP DIAPHRAGM ATP4115 CIP ACID	6634-WTTC-CH	2008-08-08T	$ 5,000	0.25
29	164582	TANK PROCESS CCT4001 CAUSTIC CIP/EFM	6634-WTTC-CH	2008-08-08T	$ 5,000	0.55
30	164583	TANK PROCESS ACT4101 ACID CIP	6634-WTTC-CH	2008-08-08T	$ 5,000	0.55
31	164588	PUMP DIAPHRAGM CFP8020 CL2 TRIM	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
32	164589	PUMP DIAPHRAGM CFP8010 CL2 TRIM	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
33	123769	PUMP DIAPHRAGM CTP4015 CIP CAUSTIC	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
34	123771	PUMP DIAPHRAGM CFP8040 HYPO POST	6634-WTTC-CH	2008-08-08T	$ 5,000	0.45
35	164558	TANK STORAGE CHLORINE	6634-WTTC-CH	2008-08-08T	$ 5,000	0.6
36	164560	PUMP DIAPHRAGM CLTP4402 HYPO CIP	6634-WTTC-CH	2008-08-08T	$ 5,000	0.4
37	164570	TANK PROCESS HPT5101 PEROXIDE	6634-WTTC-CH	2008-08-08T	$ 3,000	0.45
38	164499	MIXER FLASH PEROXIDE SM5025	6634-WTTC-CH	2008-08-08T	$ 2,500	0.6
39	164572	TANK T4510A BISFULFITE DAY	6634-WTTC-CH	2008-08-08T	$ 1,000	0.55
40	164575	TANK PROCESS T4010A CAUSTIC DAY	6634-WTTC-CH	2008-08-08T	$ 1,000	0.6
41	164578	TANK PROCESS T4110A CIP ACID DAY	6634-WTTC-CH	2008-08-08T	$ 1,000	0.55
42	164559	TANK PROCESS CHLORINE DAY	6634-WTTC-CH	1989-01-01T	$ 1,000	0.65
43	360540	SCADA SERVER NEW PLANT	6634-WTTC-EL	2008-08-08T	$ 160,000	-0.01
44	164622	GENERATOR ELECTRIC STAND-BY	6634-WTTC-EL	2008-08-08T	$ 40,000	0.5
45	164623	ENGINE DIESEL STANDBY NEW	6634-WTTC-EL	2011-01-19T	$ 500,000	0.55
46	315318	DRIVE VFD HL PUMP 04	6634-WTTC-EL	2022-06-15T	$ 40,000	1
47	315320	DRIVE VFD HL PUMP 01	6634-WTTC-EL	2022-06-22T	$ 34,557	1
48	315324	DRIVE VFD HL PUMP 03	6634-WTTC-EL	1993-01-01T	$ 34,557	0.85
49	123427	ENGINE DIESEL STANDBY OLD	6634-WTTC-EL	2002-01-05T	$ 30,000	0.4
50	123428	GENERATOR ELECTRIC	6634-WTTC-EL	1993-01-01T	$ 30,000	0.45
51	62687	MCC 02 LOW LIFT	6634-WTTC-EL	2008-08-08T	$ 25,000	0.4
52	164683	MCC MCC-0062 MECHANICAL ROOM	6634-WTTC-EL	2008-08-08T	$ 20,000	0.55
53	315319	DRIVE VFD LL PUMP 03	6634-WTTC-EL	2008-08-08T	$ 18,645	-0.01
54	315326	DRIVE VFD LL PUMP 01	6634-WTTC-EL	2008-08-08T	$ 18,645	0.2
55	315327	DRIVE VFD LL PUMP 04	6634-WTTC-EL	1993-01-01T	$ 18,645	0.2
56	62794	PANEL TRANSFER 01 ELECT HL	6634-WTTC-EL	1993-01-01T	$ 10,000	0.4
57	62778	PANEL PLC ICP-B HL	6634-WTTC-EL	2008-08-08	$ 10,000	0.55
58	62779	UPS 01 BATTERY BANK HL	6634-WTTC-EL	2019-05-20	$ 10,000	0.55
59	62836	MCC 03 TOWER	6634-WTTC-EL	2023-06-06	$ 10,000	0.65
60	164694	PANEL POWER FACTOR CORRECTION PFC-0052 ELEC	6634-WTTC-EL	2008-08-08	$ 10,000	0.45
61	164696	PANEL CONTROL UV1	6634-WTTC-EL	2008-08-08	$ 10,000	0.55
62	164697	PANEL CONTROL UV2	6634-WTTC-EL	2008-08-08	$ 10,000	0.6

63	164698	PANEL CONTROL CP-2000 HMI	6634-WTTC-EL	1991-07-01	$ 10,000	0.4
64	164699	PANEL CONTROL MAIN FILTRATION	6634-WTTC-EL	2008-08-08	$ 10,000	0.65
65	164689	MCC MCC-0061 ELECTRICAL ROOM	6634-WTTC-EL	2008-08-08	$ 10,000	0.5
66	164690	MCC MCC-0060 ELECTRICAL ROOM	6634-WTTC-EL	2008-08-08	$ 10,000	0.55
67	164692	PANEL TRANSFER GENERATOR	6634-WTTC-EL	2008-08-08	$ 10,000	0.55
68	315482	PANEL LIGHTING LP-0054 ELEC ROOM	6634-WTTC-EL	2008-08-08	$ 10,000	0.65
69	315487	PANEL PLC CP-5001 ELEC ROOM	6634-WTTC-EL	1989-01-01	$ 10,000	0.35
70	315488	PANEL DISTRIBUTION DP-0053 ELEC ROOM	6634-WTTC-EL	2008-08-08	$ 10,000	0.6
71	315493	PANEL PLC CP-1000 LL	6634-WTTC-EL	2008-08-08	$ 10,000	0.4
72	315495	PANEL POWER FACTOR CORRECTION PFC-0056 LL EI	6634-WTTC-EL	2008-08-08	$ 10,000	0.5
73	164369	PANEL STARTER 1 LL PUMP	6634-WTTC-EL	2008-08-08	$ 8,000	0.35
74	164370	PANEL STARTER 2 LL PUMP	6634-WTTC-EL	2009-09-19	$ 8,000	0.4
75	164371	PANEL STARTER 3 LL PUMP	6634-WTTC-EL	2011-01-19	$ 8,000	0.45
76	164372	PANEL STARTER 4 LL PUMP	6634-WTTC-EL	2008-08-08	$ 8,000	0.3
77	315490	PANEL LIGHTING LP-0055A HVAC ROOM	6634-WTTC-EL	2008-08-08	$ 8,000	0.55
78	315491	PANEL LIGHTING LP-0055 HVAC ROOM	6634-WTTC-EL	2008-08-08	$ 8,000	0.7
79	315483	PANEL BREAKER HLP-7010 HL PUMP 01	6634-WTTC-EL	2008-08-08	$ 8,000	0.6
80	315484	PANEL BREAKER HLP-7020 HL PUMP 02	6634-WTTC-EL	2008-08-08	$ 8,000	0.65
81	315485	PANEL BREAKER HLP-7030 HL PUMP 03	6634-WTTC-EL	2008-08-08	$ 8,000	0.7
82	315486	PANEL BREAKER HLP-7040 HL PUMP 04	6634-WTTC-EL	2008-08-08	$ 8,000	0.55
83	164707	PANEL ALARM/DIALER	6634-WTTC-EL	2022-06-15	$ 5,000	0.55
84	164691	PANEL SWB-0051 BREAKER	6634-WTTC-EL	2022-06-22	$ 5,000	0.6
85	62642	PANEL CONTROL 01 SAMPLE PUMPS	6634-WTTC-EL	1993-01-01	$ 4,000	0.3
86	164401	PANEL CONTROL STRAINER	6634-WTTC-EL	2008-08-08	$ 3,000	0.55
87	164684	TRANSFORMER AIR T-0055	6634-WTTC-EL	2008-08-08	$ 3,000	0.55
88	164448	BATTERY-CHARGER	6634-WTTC-EL	1993-01-01	$ 2,000	0.5
89	164365	SWITCH DISCONNECT 1 LL PUMP	6634-WTTC-EL	1993-01-01	$ 2,000	0.55
90	164366	SWITCH DISCONNECT 2 LL PUMP	6634-WTTC-EL	1993-01-01	$ 2,000	0.5
91	164367	SWITCH DISCONNECT 3 LL PUMP	6634-WTTC-EL	1993-01-01	$ 2,000	0.45
92	164368	SWITCH DISCONNECT 4 LL PUMP	6634-WTTC-EL	1993-01-01	$ 2,000	0.4
93	315309	TRANSFORMER AIR COMPRESSOR	6634-WTTC-EL	1993-01-01	$ 2,000	0.6
94	315310	TRANSFORMER AIR COMPRESSOR	6634-WTTC-EL	1993-01-01	$ 2,000	0.6
95	164695	TRANSFORMER AIR T-0053	6634-WTTC-EL	2008-08-08	$ 2,000	0.5
96	164700	TRANSFORMER AIR 0072	6634-WTTC-EL	2008-08-08	$ 2,000	0.6
97	164702	TRANSFORMER AIR 0054	6634-WTTC-EL	2008-08-08	$ 2,000	0.6
98	164395	DRIVE 2030 STR MOTOR	6634-WTTC-EL	2008-08-08	$ 1,000	0.4
99	164400	DRIVE 2040 STR MOTOR	6634-WTTC-EL	2008-08-08	$ 1,000	0.45
100	164384	DRIVE 2010 STR CLEAN MOTOR	6634-WTTC-EL	2008-08-08	$ 1,000	0.45
101	164390	DRIVE 2020 STR MOTOR	6634-WTTC-EL	2002-01-05	$ 1,000	0.4
102	62685	UPS 01 BATTERY BANK LL	6634-WTTC-EL	2008-08-08	$ 1,000	0.45
103	315494	UPS 02 BATTERY BANK LL	6634-WTTC-EL	1993-01-01	$ 1,000	0.5
104	164587	SAFETY EYE WASH/SHOWER 01	6634-WTTC-HS	1993-01-01	$ 10,000	0.45
105	315481	FIRE EXTINGUISHER ALL BUILDINGS	6634-WTTC-HS	1993-01-01	$ 5,000	0.5
106	278217	TANK LOW LIFT SCBA	6634-WTTC-HS	1993-01-01	$ 2,000	0.4
107	123762	SAFETY ATMOSPHERIC TESTER	6634-WTTC-HS	2008-08-08	$ 2,000	0.5
108	164743	SAFETY FIRE SYSTEM	6634-WTTC-HS	1993-01-01	$ 1,000	0.55
109	164590	SAFETY EYE WASH/SHOWER 02	6634-WTTC-HS	1993-01-01	$ 1,000	0.5
110	164742	SAFETY ATMOSPHERE DETECTOR	6634-WTTC-HS	2008-08-08	$ 650	0.3
111	164703	SAFETY EMER LIGHTING SAFETY 7	6634-WTTC-HS	1993-01-01	$ 500	0.65
112	164704	SAFETY EMER LIGHTING SAFETY 8	6634-WTTC-HS	2008-08-08	$ 500	0.4
113	164701	SAFETY EMER LIGHTING SAFETY 6	6634-WTTC-HS	1993-01-01	$ 500	0.6
114	164686	SAFETY EMER LIGHTING SAFETY 5	6634-WTTC-HS	2008-08-08	$ 500	0.6
115	164666	SAFETY EMER LIGHTING SAFETY 4	6634-WTTC-HS	2008-08-08	$ 500	0.65
116	164629	SAFETY EMER LIGHTING WASHROOM	6634-WTTC-HS	2008-08-08	$ 500	0.6
117	164630	SAFETY EMER LIGHTING MAIN ENTRANCE	6634-WTTC-HS	2008-08-08	$ 500	0.65
118	164631	SAFETY EMER LIGHTING BOARDROOM	6634-WTTC-HS	1993-01-01	$ 500	0.7
119	164632	SAFETY EMER LIGHTING SAFETY 1	6634-WTTC-HS	1993-01-01	$ 500	0.65
120	164633	SAFETY EMER LIGHTING SAFETY 2	6634-WTTC-HS	1993-01-01	$ 500	0.6
121	164635	SAFETY EMER LIGHTING SAFETY 3	6634-WTTC-HS	1993-01-01	$ 500	0.7
122	164584	SAFETY EMER LIGHTING CHEMICAL 1	6634-WTTC-HS	2008-08-08	$ 500	0.5
123	164585	SAFETY EMER LIGHTING CHEMICAL 2	6634-WTTC-HS	1993-01-01	$ 500	0.55
124	164496	SAFETY EMER LIGHTING UV AREA	6634-WTTC-HS	2008-08-08	$ 500	0.5
125	164436	SAFETY EMER LIGHTING XR AREA	6634-WTTC-HS	2008-08-08	$ 500	0.7
126	164437	SAFETY EMER LIGHTING MAINT AREA	6634-WTTC-HS	2020-01-01	$ 500	0.65
127	164439	SAFETY EMER LIGHTING W&D AREA LIFT FILT	6634-WTTC-HS	2008-08-08	$ 500	0.75

128	164440	SAFETY EMER LIGHTING MICRO FILT	6634-WTTC-HS	2008-08-08	$ 500	0.75
129	164441	SAFETY EMER LIGHTING LFIT TRUCK	6634-WTTC-HS	1993-01-01	$ 500	0.7
130	164443	SAFETY EMER LIGHTING LIFT TRUCK	6634-WTTC-HS	1993-01-01	$ 500	0.6
131	164554	SAFETY EMER LIGHTING DIST AREA	6634-WTTC-HS	2008-08-08	$ 500	0.6
132	164487	SAFETY EMER LIGHTING HL AREA	6634-WTTC-HS	2008-08-08	$ 500	0.55
133	164524	SAFETY EMER LIGHTING HL AREA	6634-WTTC-HS	2008-08-08	$ 500	0.55
134	164682	HEAT EXCHANGER AHU0010 AIR CONDITIONER	6634-WTTC-HV	2003-06-13	$ 150,000	0.55
135	164672	HEATER NATURAL GAS MAU0020	6634-WTTC-HV	1993-01-01	$ 50,000	0.6
136	315308	PUMP CENT HWP0034 HEAT RECIRC	6634-WTTC-HV	2003-06-13	$ 10,000	0.45
137	164671	HEATER AHU0010	6634-WTTC-HV	1993-01-01	$ 10,000	0.55
138	164677	PUMP CENT HWP0035	6634-WTTC-HV	1993-01-01	$ 10,000	0.35
139	164586	FAN 0021 EXHAUST EMERGENCY	6634-WTTC-HV	2008-08-08	$ 7,000	0.45
140	164678	BOILER B-1	6634-WTTC-HV	2008-08-08	$ 5,000	0.55
141	164679	BOILER B-2	6634-WTTC-HV	2008-08-08	$ 5,000	0.6
142	62770	HEATER ELECTRIC 01 FORCED AIR	6634-WTTC-HV	1993-01-01	$ 2,500	0.3
143	62795	HEATER ELECTRIC UH01	6634-WTTC-HV	1992-01-01	$ 2,000	0.15
144	62796	HEATER ELECTRIC UH05	6634-WTTC-HV	1993-01-01	$ 2,000	0.35
145	62797	HEATER ELECTRIC UH01-A	6634-WTTC-HV	2008-08-08	$ 2,000	0.2
146	62798	HEATER ELECTRIC UH01-B	6634-WTTC-HV	2001-01-09	$ 2,000	0.25
147	164592	HEATER 4104 ACID CIP TANK	6634-WTTC-HV	2008-08-08	$ 2,000	0.35
148	164611	HEATER 4004 CIP/EFM CAUSTIC	6634-WTTC-HV	2008-08-08	$ 2,000	0.25
149	315311	HEAT EXCHANGER AHU0030 AIR CONDITIONER	6634-WTTC-HV	2001-01-09	$ 2,000	0.5
150	315307	HEATER NATURAL GAS WATER TANKLESS	6634-WTTC-HV	2001-01-09	$ 2,000	0.9
151	164680	FAN EF0022 EXHAUST	6634-WTTC-HV	2008-08-08	$ 2,000	0.65
152	164555	HEATER 0014 DIST AREA	6634-WTTC-HV	2008-08-08	$ 1,000	0.35
153	164442	HEATER UH-0015	6634-WTTC-HV	2008-08-08	$ 1,000	0.35
154	164438	HEATER UH-0012	6634-WTTC-HV	1993-01-01	$ 1,000	0.3
155	62684	HEATER ELECTRIC UH01 ELECTRIC LL	6634-WTTC-HV	2008-08-08	$ 1,000	0.35
156	164435	HEATER ELECTRIC UH-0013	6634-WTTC-HV	2008-08-08	$ 1,000	0.35
157	62835	HEATER ELECTRIC 01 TOWER	6634-WTTC-HV	2008-08-08	$ 1,000	0.6
158	62710	HEATER ELECTRIC UH02 CL 2	6634-WTTC-HV	1993-01-01	$ 1,000	0.4
159	62728	HEATER ELECTRIC UH07 PLANT	6634-WTTC-HV	2008-08-08	$ 1,000	0.4
160	62729	FAN EF06 EXHAUST PLANT	6634-WTTC-HV	2008-08-08	$ 1,000	0.35
161	62678	HEATER ELECTRIC UH02 ELECTRIC LL	6634-WTTC-HV	2008-08-08	$ 1,000	0.4
162	62679	HEATER ELECTRIC UH04 ELECTRIC LL	6634-WTTC-HV	2008-08-08	$ 1,000	0.3
163	62680	HEATER ELECTRIC UH03 ELECTRIC LL	6634-WTTC-HV	2008-08-08	$ 1,000	0.2
164	62700	FAN 01 EXHAUST CHLORINE BLDG	6634-WTTC-HV	2008-08-08	$ 1,000	0.25
165	62701	FAN 02 EXHAUST CHLORINE BLDG	6634-WTTC-HV	2008-08-08	$ 1,000	0.4
166	62705	HEATER ELECTRIC UH01 CL 2	6634-WTTC-HV	2008-08-08	$ 1,000	0.4
167	62706	LOUVRE 01 CL2 STORAGE	6634-WTTC-HV	2008-08-08	$ 1,000	0.6
168	62834	FAN 01 EXHAUST ELECT TOWER	6634-WTTC-HV	2008-08-08	$ 500	0.25
169	62674	FAN EF03 EXHAUST LL	6634-WTTC-HV	2008-08-08	$ 500	0.35
170	62675	FAN EF04 EXHAUST LL	6634-WTTC-HV	2008-08-08	$ 500	0.25
171	62676	FAN EF05 EXHAUST LL	6634-WTTC-HV	2008-08-08	$ 500	0.25
172	164685	HEATER UH0023	6634-WTTC-HV	2003-07-09	$ 500	0.35
173	164693	HEATER UH0016	6634-WTTC-HV	2008-08-08	$ 500	0.6
174	164711	TANK STORAGE WATER WEST LORNE STAND PIPE	6634-WTTC-PR	2008-08-08	$ 2,000,000	0.6
175	164705	TANK STORAGE WATER SOUTH	6634-WTTC-PR	2008-08-08	$ 500,000	0.55
176	164706	TANK STORAGE WATER NORTH	6634-WTTC-PR	2008-08-08	$ 500,000	0.5
177	164643	FILTER 1 WATER MICRO PALL RACK	6634-WTTC-PR	2008-08-08	$ 400,000	-0.01
178	164644	FILTER 2 WATER MICRO PALL RACK	6634-WTTC-PR	2009-03-14	$ 400,000	0.05
179	164651	FILTER 3 WATER MICRO PALL RACK	6634-WTTC-PR	2008-08-08	$ 400,000	0.1
180	164658	FILTER 4 WATER MICRO PALL RACK	6634-WTTC-PR	2008-08-08	$ 400,000	0.15
181	360539	PIPING INTAKE	6634-WTTC-PR	2008-08-08	$ 300,000	0.3
182	360535	PIPING PROCESS ALL BUILDINGS	6634-WTTC-PR	2000-01-01	$ 200,000	0.5
183	164502	UV LIGHT 5021	6634-WTTC-PR	2008-08-08	$ 200,000	0.4
184	164507	UV LIGHT 5022	6634-WTTC-PR	2008-08-08	$ 200,000	0.45
185	315499	TANK PROCESS WET WELL 01 EAST LL	6634-WTTC-PR	2008-08-08	$ 500,000	0.65
186	315500	TANK PROCESS WET WELL 02 WEST LL	6634-WTTC-PR	2008-08-08	$ 500,000	0.65
187	164460	PUMP CENT 7010 HL	6634-WTTC-PR	2008-08-08	$ 100,000	0.65
188	164466	PUMP CENT 7020 HL	6634-WTTC-PR	2008-08-08	$ 100,000	0.35
189	164472	PUMP CENT 7030 HL	6634-WTTC-PR	2008-08-08	$ 100,000	0.25
190	164478	PUMP CENT 7040 HL	6634-WTTC-PR	2008-08-08	$ 100,000	0.3
191	315251	VALVE REGULATING PSI 7051	6634-WTTC-PR	2008-08-08	$ 30,000	0.8
192	315252	VALVE REGULATING PSI 7061	6634-WTTC-PR	2008-08-08	$ 30,000	0.8

193	62809	VALVE GATE 01 LL	6634-WTTC-PR	2008-08-08	$ 25,000	0.35
194	62810	VALVE GATE 02 LL	6634-WTTC-PR	2008-08-08	$ 25,000	0.75
195	62811	VALVE GLOBE 01 BACKFLUSH LL	6634-WTTC-PR	2008-08-08	$ 25,000	0.35
196	164335	PUMP CENT 1 VERT TURBINE LL	6634-WTTC-PR	2008-08-08	$ 15,000	0.35
197	164340	PUMP CENT 2 VERT TURBINE LL	6634-WTTC-PR	2008-08-08	$ 15,000	0.45
198	164345	PUMP CENT 3 VERT TURBINE LL	6634-WTTC-PR	2008-08-08	$ 15,000	0.15
199	164350	PUMP CENT 4 VERT TURBINE LL	6634-WTTC-PR	2008-08-08	$ 15,000	0.5
200	315304	COMPRESSOR AIR AC4701 COMPRESSOR B	6634-WTTC-PR	2008-08-08	$ 10,000	0.5
201	315305	COMPRESSOR AIR AC4702 COMPRESSOR A	6634-WTTC-PR	2008-08-08	$ 10,000	0.55
202	62638	ANALYZER TURBIDITY AIT109 RAW	6634-WTTC-PR	1993-01-01	$ 10,000	0.5
203	62646	VALVE SLUICE GATE W2 SURGE	6634-WTTC-PR	1993-01-01	$ 10,000	0.3
204	62647	VALVE SLUICE GATE 01 INTAKE	6634-WTTC-PR	1993-01-01	$ 10,000	0.3
205	62666	VALVE GATE E2 SLUICE SURGE	6634-WTTC-PR	2008-08-08	$ 10,000	0.45
206	62667	VALVE GATE 03 PUMP WELL ISOL	6634-WTTC-PR	2008-08-08	$ 10,000	0.4
207	62816	PUMP CENT 01 FIRE TOWER	6634-WTTC-PR	2008-08-08	$ 10,000	0.2
208	123011	ANALYZER TURBIDITY 1 FILTER	6634-WTTC-PR	2008-08-08	$ 10,000	0.55
209	123012	ANALYZER TURBIDITY 2 FILTER	6634-WTTC-PR	2008-08-08	$ 10,000	0.5
210	123013	ANALYZER TURBIDITY 3 FILTER	6634-WTTC-PR	1993-01-01	$ 10,000	0.45
211	164391	STRAINER 2030 RAW WATER	6634-WTTC-PR	2008-08-08	$ 10,000	-0.01
212	164386	STRAINER 2020 RAW WATER	6634-WTTC-PR	2008-08-08	$ 10,000	0.6
213	164382	STRAINER 2010 WATER RAW	6634-WTTC-PR	2008-08-08	$ 10,000	0.6
214	123933	PUMP 1	6634-WTTC-PR	2008-08-08	$ 10,000	0.3
215	123934	PUMP 2	6634-WTTC-PR	2008-08-08	$ 10,000	0.35
216	164336	MOTOR 1 PUMP ELECT LL	6634-WTTC-PR	1993-01-01	$ 10,000	-0.01
217	164341	MOTOR 2 PUMP ELECT LL	6634-WTTC-PR	2008-08-08	$ 10,000	-0.01
218	164346	MOTOR 3 PUMP ELECT LL	6634-WTTC-PR	2008-08-08	$ 10,000	-0.01
219	164351	MOTOR 4 PUMP ELECT LL	6634-WTTC-PR	2008-08-08	$ 10,000	-0.01
220	164355	METER FLOW FIT1017 EAST DISCHARGE	6634-WTTC-PR	2008-08-08	$ 10,000	0.6
221	164361	METER FLOW FIT 1027 RAW WEST DICHARGE	6634-WTTC-PR	2008-08-08	$ 10,000	0.65
222	164396	STRAINER 2040 RAW WATER	6634-WTTC-PR	2008-08-08	$ 10,000	0.5
223	164495	ANALYZER UV AIT5004	6634-WTTC-PR	2008-08-08	$ 10,000	0.5
224	164461	MOTOR 7010 ELECTRIC HL	6634-WTTC-PR	2008-08-08	$ 10,000	0.4
225	164467	MOTOR 7040 ELECTRIC HL	6634-WTTC-PR	2008-08-08	$ 10,000	0.25
226	164473	MOTOR 7030 ELECTRIC	6634-WTTC-PR	2008-08-08	$ 10,000	0.3
227	164479	MOTOR 7020 ELECTRIC HL	6634-WTTC-PR	2008-08-08	$ 10,000	0.45
228	164712	METER FLOW GLENCOE CHAMBER	6634-WTTC-PR	2008-08-08	$ 8,000	0.5
229	164713	METER FLOW PIONEER CHAMBER	6634-WTTC-PR	2008-08-08	$ 8,000	0.6
230	164714	METER FLOW MARSH CHAMBER	6634-WTTC-PR	2008-08-08	$ 8,000	0.65
231	164715	METER FLOW SILVER CLAY CHAMBER	6634-WTTC-PR	1989-01-01	$ 8,000	0.3
232	164716	METER FLOW EAGLE WEST CHAMBER	6634-WTTC-PR	1989-01-01	$ 8,000	0.35
233	164717	METER FLOW A	6634-WTTC-PR	2008-08-08	$ 8,000	0.75
234	164718	METER FLOW B EAGELE EAST CHAMBER	6634-WTTC-PR	2008-08-08	$ 8,000	0.35
235	62688	VALVE BUTTERFLY 01 ISOL RAW LL	6634-WTTC-PR	2008-08-08	$ 8,000	0.35
236	164528	METER FLOW FE7052 EAST DIST	6634-WTTC-PR	2008-08-08	$ 8,000	0.35
237	164536	METER FLOW FE7062 WEST DIST	6634-WTTC-PR	2008-08-08	$ 8,000	0.4
238	164522	ANALYZER CHLORINE AIT7001 PRE HL	6634-WTTC-PR	2008-08-08	$ 5,500	0.4
239	164489	ANALYZER CHLORINE AIT5005 UV INLET	6634-WTTC-PR	1993-01-01	$ 5,500	0.6
240	164493	ANALYZER CHLORINE AIT5006 UV OUTLET	6634-WTTC-PR	2008-08-08	$ 5,500	0.6
241	164546	ANALYZER CHLORINE AIT7004 DIST	6634-WTTC-PR	2008-08-08	$ 5,500	0.45
242	164407	ANALYZER TURBIDITY RAW SCATTER	6634-WTTC-PR	2008-08-08	$ 5,500	0.55
243	164408	ANALYZER CHLORINE RAW	6634-WTTC-PR	2008-08-08	$ 5,500	0.7
244	315313	VALVE RELIEF 7074 PRESSURE GRAHAM DIST	6634-WTTC-PR	1993-01-01	$ 5,000	0.75
245	315314	VALVE RELIEF 7064 PRESSURE WEST LORNE	6634-WTTC-PR	1993-01-01	$ 5,000	0.8
246	315315	VALVE RELIEF 7054 EAST DIST LINE	6634-WTTC-PR	2008-08-08	$ 5,000	0.8
247	164627	PUMP SUBMERSIBLE WP9010 DRAIN PUMP	6634-WTTC-PR	1993-01-01	$ 5,000	0.4
248	164628	PUMP SUBMERSIBLE WP9020 DRAIN PUMP	6634-WTTC-PR	2008-08-08	$ 5,000	0.45
249	164639	METER FLOW FIT3105 INLET	6634-WTTC-PR	2008-08-08	$ 5,000	0.3
250	164654	METER FLOW FIT3305 INLET	6634-WTTC-PR	2008-08-08	$ 5,000	0.5
251	164661	METER FLOW FIT3405 INLET	6634-WTTC-PR	2008-08-08	$ 5,000	0.45
252	164599	PUMP CENT P4204 RECYCLE	6634-WTTC-PR	2008-08-08	$ 5,000	0.4
253	164600	MOTOR P4204 ELECTRIC RECYCLE	6634-WTTC-PR	2008-08-08	$ 5,000	0.35
254	62691	METER FLOW 01 SERVICE WATER	6634-WTTC-PR	2008-08-08	$ 5,000	0.4
255	62661	VALVE CHECK 01 LL	6634-WTTC-PR	2008-08-08	$ 5,000	0.4
256	62812	VALVE REGULATING 01 FLOW RAW	6634-WTTC-PR	2008-08-08	$ 5,000	0.25
257	62817	MOTOR 01 BOOSTER ELEC SP	6634-WTTC-PR	2008-08-08	$ 5,000	0.8

258	62823	TRANSMITTER PRESSURE 01 LEVEL	6634-WTTC-PR	2008-08-08	$ 5,000	0.55
259	62829	VALVE REGULATING 01 PRESSURE ALTITUDE	6634-WTTC-PR	2008-08-08	$ 5,000	0.85
260	62831	VALVE BUTTERFLY 04 ISOL SP	6634-WTTC-PR	2008-08-08	$ 5,000	0.25
261	62833	VALVE BUTTERFLY 05 ISOL SP	6634-WTTC-PR	2008-08-08	$ 5,000	0.3
262	123766	PUMP CENT P4204 RECYCLE	6634-WTTC-PR	2008-08-08	$ 5,000	0.6
263	123767	MOTOR P4204 ELECTRIC RECYCLE	6634-WTTC-PR	1993-01-01	$ 5,000	0.65
264	164376	VALVE DIAPHRAGM BACKFLUSH RAW	6634-WTTC-PR	2008-08-08	$ 5,000	0.45
265	164490	ANALYZER TURBIDITY AIT5001 UV INLET	6634-WTTC-PR	2008-08-08	$ 5,000	0.8
266	164492	ANALYZER AIT5027 PEROXIDE OUT	6634-WTTC-PR	2008-08-08	$ 5,000	0.65
267	164545	ANALYZER TURBIDITY AIT7003 DIST	6634-WTTC-PR	2008-08-08	$ 5,000	0.4
268	164449	PUMP CENT 4310 RF	6634-WTTC-PR	2008-08-08	$ 5,000	0.7
269	164454	PUMP CENT 4320 RF	6634-WTTC-PR	2008-08-08	$ 5,000	0.7
270	164459	METER FLOW 4301	6634-WTTC-PR	2012-01-28	$ 5,000	0.55
271	164409	TANK PROCESS 4350 WET WELL HOLDING RFR	6634-WTTC-PR	2008-08-08	$ 5,000	0.6
272	164421	ANALYZER TURBIDITY RFRP DISCHARGE	6634-WTTC-PR	2008-08-08	$ 5,000	0.6
273	164634	TANK STORAGE AR4710 AIR	6634-WTTC-PR	1993-01-01	$ 4,000	0.55
274	164637	ANALYZER PARTICLE AIT3120	6634-WTTC-PR	2008-08-08	$ 4,000	0.35
275	164638	ANALYZER TURBIDITY AIT3119	6634-WTTC-PR	2008-08-08	$ 4,000	0.45
276	164645	ANALYZER PARTICLE AIT3220	6634-WTTC-PR	2008-08-08	$ 4,000	0.3
277	164646	ANALYZER TURBIDITY AIT3219	6634-WTTC-PR	2008-08-08	$ 4,000	0.45
278	164647	METER FLOW FIT3205 INLET	6634-WTTC-PR	2008-08-08	$ 4,000	0.25
279	164648	TRANSMITTER PRESSURE PIT3204	6634-WTTC-PR	2008-08-08	$ 4,000	0.35
280	164652	ANALYZER PARTICLE AIT3320	6634-WTTC-PR	2008-08-08	$ 4,000	0.4
281	164653	ANALYZER TURBIDITY AIT3319	6634-WTTC-PR	2008-08-08	$ 4,000	0.6
282	164659	ANALYZER PARTICLE AIT3420	6634-WTTC-PR	2008-08-08	$ 4,000	0.45
283	164660	ANALYZER TURBIDITY AIT3419	6634-WTTC-PR	2008-08-08	$ 4,000	0.55
284	62683	PUMP SUBMERSIBLE 01 LL	6634-WTTC-PR	2008-08-08	$ 4,000	0.3
285	62635	METER LEVEL LIT116 WELL 1 EAST	6634-WTTC-PR	2008-08-08	$ 4,000	0.2
286	123026	ANALYZER CHLORINE AIT1401 PRE	6634-WTTC-PR	2008-08-08	$ 4,000	0.6
287	164734	VALVE BACKFLOW 3 PREVENTER	6634-WTTC-PR	2008-08-08	$ 3,500	0.4
288	164720	VALVE BACKFLOW 1 PREVENTER	6634-WTTC-PR	2008-08-08	$ 3,500	0.35
289	164721	VALVE BACKFLOW 2 PREVENTER	6634-WTTC-PR	2008-08-08	$ 3,500	0.4
290	63099	VALVE BACKFLOW PREVENTER	6634-WTTC-PR	2008-08-08	$ 3,500	0.45
291	164548	VALVE BACKFLOW PREVENTER	6634-WTTC-PR	2008-08-08	$ 3,500	0.5
292	164617	ACTUATOR PNEUMATIC V4607	6634-WTTC-PR	2008-08-08	$ 3,000	0.3
293	164626	VALVE GATE W 69004 SETTLING POND	6634-WTTC-PR	2008-08-08	$ 3,000	0.6
294	164597	ACTUATOR PNEUMATIC V4032	6634-WTTC-PR	2008-08-08	$ 3,000	0.35
295	164598	ACTUATOR PNEUMATIC V4282	6634-WTTC-PR	2008-08-08	$ 3,000	0.4
296	164603	ACTUATOR PNEUMATIC V4125	6634-WTTC-PR	2008-08-08	$ 3,000	0.4
297	164605	ACTUATOR PNEUMATIC V4227	6634-WTTC-PR	2008-08-08	$ 3,000	0.35
298	164607	ACTUATOR PNEUMATIC V4289	6634-WTTC-PR	1989-01-01	$ 3,000	0.55
299	62640	ANALYZER PH AIT111 LL RAW	6634-WTTC-PR	2022-09-01	$ 3,000	1
300	62645	METER LEVEL LIT131 WELL 2 EAST	6634-WTTC-PR	1989-01-01	$ 3,000	0.25
301	62672	VALVE BUTTERFLY 02 ISOL BW	6634-WTTC-PR	2008-08-08	$ 3,000	0.3
302	62717	METER FLOW FIT224 DISPLAY	6634-WTTC-PR	2008-08-08	$ 3,000	0.4
303	123768	PUMP CENT P4609 NEUTRILZATION TANK	6634-WTTC-PR	2008-08-08	$ 3,000	0.25
304	164373	VALVE RELIEF PRESSURE	6634-WTTC-PR	2008-08-08	$ 3,000	0.6
305	164378	ACTUATOR ELECTRIC WEST RAW LINE	6634-WTTC-PR	2008-08-08	$ 3,000	0.8
306	164380	ACTUATOR ELECTRIC EAST RAW LINE	6634-WTTC-PR	2008-08-08	$ 3,000	0.75
307	123772	ACTUATOR PNEUMATIC V4019	6634-WTTC-PR	2008-08-08	$ 3,000	-0.01
308	164484	VALVE RELIEF 7005 PRESSURE	6634-WTTC-PR	2008-08-08	$ 3,000	0.4
309	164431	METER FLOW XR PUMP	6634-WTTC-PR	2008-08-08	$ 3,000	0.4
310	164668	ANALYZER PH PORTABLE	6634-WTTC-PR	2008-08-08	$ 2,500	0.25
311	164624	METER FLOW FIT9005	6634-WTTC-PR	2008-08-08	$ 2,500	0.35
312	164625	METER FLOW FIT9006	6634-WTTC-PR	2008-08-08	$ 2,500	0.4
313	164665	METER LEVEL LIT9002	6634-WTTC-PR	2008-08-08	$ 2,500	0.4
314	164571	ANALYZER HPE5105 GAS PEROXIDE	6634-WTTC-PR	2008-08-08	$ 2,500	0.4
315	315496	SCALE CHLORINE CYLINDER	6634-WTTC-PR	2008-08-08	$ 2,500	0.9
316	62689	ANALYZER CHLORINE AAH113 GAS DETECT	6634-WTTC-PR	2008-08-08	$ 2,500	0.7
317	62699	ANALYZER CHLORINE AAH112 GAS DETECT	6634-WTTC-PR	2008-08-08	$ 2,500	0.8
318	164556	METER LEVEL LIT8004 HYPO DAY TANK	6634-WTTC-PR	2008-08-08	$ 2,500	0.45
319	164557	METER LEVEL LIT8002 HYPO TANK	6634-WTTC-PR	2008-08-08	$ 2,500	0.4
320	164550	METER FLOW FE7092 PROCESS LINE	6634-WTTC-PR	2008-08-08	$ 2,500	0.3
321	315360	ANALYZER CHLORINE DR900 PORTABLE	6634-WTTC-PR	2008-08-08	$ 2,364	1
322	62985	METER LEVEL M LIT-6021 Outside Storage tank	6634-WTTC-PR	2008-08-08	$ 2,085	0.6

323	62990	METER LEVEL M LIT-6021 Outside Storage tank	6634-WTTC-PR	2008-08-08	$ 2,085	0.55
324	315316	VALVE CHLORINE INJECTOR	6634-WTTC-PR	2008-08-08	$ 2,000	0.4
325	315317	VALVE CHLORINE INJECTOR	6634-WTTC-PR	2008-08-08	$ 2,000	0.3
326	164774	ANALYZER PH /DO	6634-WTTC-PR	2008-08-08	$ 2,000	0.65
327	164775	VALVE STAND BY RAW WATER INTAKE	6634-WTTC-PR	2008-08-08	$ 2,000	0.6
328	164642	METER FLOW FIT3111 RECIRCULATING	6634-WTTC-PR	2008-08-08	$ 2,000	0.55
329	164650	METER FLOW FIT3211 RECIRCULATING	6634-WTTC-PR	2008-08-08	$ 2,000	0.4
330	164657	METER FLOW FIT3311 RECIRCULATING	6634-WTTC-PR	2008-08-08	$ 2,000	0.45
331	164664	METER FLOW FIT3411 RECIRCULATING	6634-WTTC-PR	2008-08-08	$ 2,000	0.55
332	164569	METER FLOW LIT5102 PEROXIDE T	6634-WTTC-PR	2008-08-08	$ 2,000	0.4
333	315492	VALVE THERMAL MIXING HVAC ROOM	6634-WTTC-PR	2008-08-08	$ 2,000	0.7
334	62708	VALVE BACKFLOW PREVENTER 25030 THOMPSON L	6634-WTTC-PR	2008-08-08	$ 2,000	0.25
335	62677	VALVE BACKFLOW PREVENTER 25030 THOMPSON L	6634-WTTC-PR	2008-08-08	$ 2,000	0.75
336	62668	VALVE BACKFLOW PREVENTER 25030 THOMPSON L	6634-WTTC-PR	2008-08-08	$ 2,000	0.25
337	62673	VALVE BACKFLOW PREVENTER 25030 THOMPSON L	6634-WTTC-PR	2008-08-08	$ 2,000	0.65
338	62819	VALVE 01 TOWER ALTITUDE	6634-WTTC-PR	2008-08-08	$ 2,000	0.5
339	62826	VALVE GATE 01 ISOL SP	6634-WTTC-PR	2008-08-08	$ 2,000	0.3
340	62827	VALVE GATE 02 ISOL SP	6634-WTTC-PR	2008-08-08	$ 2,000	0.25
341	62828	VALVE ALTITUDE	6634-WTTC-PR	2008-08-08	$ 2,000	0.2
342	62830	VALVE GATE 03 ISOL SP	6634-WTTC-PR	2008-08-08	$ 2,000	0.2
343	123018	TRANSMITTER PRESSURE IONA IN	6634-WTTC-PR	2008-08-08	$ 2,000	0.55
344	123310	VALVE BACKFLOW PREVENTER 25030 THOMPSON L	6634-WTTC-PR	2008-08-08	$ 2,000	0.45
345	164444	PUMP CENT 4214 CDP	6634-WTTC-PR	2008-08-08	$ 2,000	0.25
346	164566	METER FLOW FE5104 PEROXIDE	6634-WTTC-PR	2008-08-08	$ 2,000	0.5
347	164553	METER FLOW FE7082	6634-WTTC-PR	2008-08-08	$ 2,000	0.7
348	164465	ACTUATOR ELECTRIC MV7011	6634-WTTC-PR	2008-08-08	$ 2,000	0.45
349	164471	ACTUATOR ELECTRIC MV7011	6634-WTTC-PR	2008-08-08	$ 2,000	0.4
350	164477	ACTUATOR ELECTRIC MV7031	6634-WTTC-PR	2008-08-08	$ 2,000	0.4
351	164483	ACTUATOR ELECTRIC MV7041	6634-WTTC-PR	2008-08-08	$ 2,000	0.35
352	164423	PUMP CENT 2050 XRP	6634-WTTC-PR	2008-08-08	$ 2,000	0.4
353	164425	PUMP CENT 2060 XRP	6634-WTTC-PR	1993-01-01	$ 2,000	0.4
354	164772	ANALYZER DO PROBE LL	6634-WTTC-PR	1993-01-01	$ 1,500	0.6
355	164580	METER FLOW 4121 CIP ACID	6634-WTTC-PR	2008-08-08	$ 1,500	0.4
356	164577	METER FLOW FIT4017 CIP CAUSTIC	6634-WTTC-PR	2008-08-08	$ 1,500	0.35
357	164574	METER FLOW FIT4505 S.B CIP	6634-WTTC-PR	2008-08-08	$ 1,500	0.4
358	62964	ANALYZER CHLORINE PORTABLE	6634-WTTC-PR	2008-08-08	$ 1,500	0.6
359	164561	METER FLOW 4405 HYPO CIP	6634-WTTC-PR	2008-08-08	$ 1,500	0.4
360	164463	VALVE CHECK 7010 HL OUTLET	6634-WTTC-PR	2008-08-08	$ 1,500	0.5
361	164469	VALVE CHECK 7020 HL OUTLET	6634-WTTC-PR	2008-08-08	$ 1,500	0.45
362	164475	VALVE CHECK 7030 HL INLET	6634-WTTC-PR	2008-08-08	$ 1,500	0.4
363	164481	VALVE CHECK 7040 HL OUTLET	6634-WTTC-PR		$ 1,500	0.45
364	164411	PUMP CENT 4370 RFR	6634-WTTC-PR	2008-08-08	$ 1,500	0.7
365	164413	PUMP CENT 4360 RFR	6634-WTTC-PR		$ 1,500	0.7
366	164773	ANALYZER PH PROBE LL	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
367	248471	PUMP CENT 2 RAW SAMPLING	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
368	164613	ANALYZER PH AE4620	6634-WTTC-PR	2008-08-08	$ 1,000	0.3
369	164614	ANALYZER CONDUCTIVITY ORP 4619	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
370	164615	TRANSMITTER PRESSURE 4605	6634-WTTC-PR	2008-08-08	$ 1,000	0.35
371	164498	ACTUATOR ELECTRIC MV5023 UV IN	6634-WTTC-PR	2008-08-08	$ 1,000	0.4
372	315497	VALVE REGULATING 01 CHLORINE VACUUM OPERA	6634-WTTC-PR	1993-01-01	$ 1,000	0.4
373	315498	VALVE REGULATING 02 CHLORINE VACUUM OPERA	6634-WTTC-PR	1993-01-01	$ 1,000	0.4
374	62709	VALVE GATE 02 SERVICE WATER	6634-WTTC-PR	1993-01-01	$ 1,000	0.35
375	62690	VALVE GATE 01 SERVICE WATER	6634-WTTC-PR	1993-01-01	$ 1,000	0.5
376	62692	VALVE GATE 03 SERVICE WATER	6634-WTTC-PR	2001-01-01	$ 1,000	0.15
377	62634	VALVE BUTTERFLY 02 ISO LL	6634-WTTC-PR	1993-01-01	$ 1,000	0.25
378	62653	VALVE BUTTERFLY 03 LL	6634-WTTC-PR	1993-01-01	$ 1,000	0.35
379	62659	VALVE BUTTERFLY 04 LL	6634-WTTC-PR	1993-01-01	$ 1,000	0.35
380	62660	VALVE BUTTERFLY 01 ISOL LL	6634-WTTC-PR	1992-01-01	$ 1,000	0.55
381	62662	VALVE PLUG 01 ISOL PR LL	6634-WTTC-PR	2008-08-08	$ 1,000	0.4
382	62813	VALVE BUTTERFLY 01 ISOL HL	6634-WTTC-PR	2008-08-08	$ 1,000	0.35
383	62814	VALVE BUTTERFLY 01 ISOL HL	6634-WTTC-PR	2008-08-08	$ 1,000	0.4
384	62815	VALVE BUTTERFLY 01 ISOL HL	6634-WTTC-PR	1993-01-01	$ 1,000	0.3
385	62818	ACTUATOR ELECTRIC 01 FLOW	6634-WTTC-PR	1993-01-01	$ 1,000	0.45
386	62824	ACTUATOR ELECTRIC 01 FLOW SP	6634-WTTC-PR	1993-01-01	$ 1,000	0.65
387	62825	ACTUATOR ELECTRIC 02 FLOW SP	6634-WTTC-PR	1992-01-01	$ 1,000	0.55

388	62832	VALVE CHECK 01 SP	6634-WTTC-PR	1992-01-01	$ 1,000	0.45
389	62791	ANALYZER PH 01 PORTABLE LAB	6634-WTTC-PR	1992-01-01	$ 1,000	0.2
390	164392	VALVE BUTTERFLY 2030 STR ISO	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
391	164393	VALVE BUTTERFLY 2030 STR ISO	6634-WTTC-PR	1993-01-01	$ 1,000	0.6
392	164394	VALVE BUTTERFLY 2030 STR ISO	6634-WTTC-PR	1993-01-01	$ 1,000	0.65
393	164385	VALVE BUTTERFLY 2010 STR CLEAN DISCHARGE	6634-WTTC-PR	1993-01-01	$ 1,000	0.55
394	164387	VALVE BUTTERFLY 2020 STR ISO	6634-WTTC-PR	1993-01-01	$ 1,000	0.5
395	164388	VALVE BUTTERFLY 2020 STR ISO	6634-WTTC-PR	1993-01-01	$ 1,000	0.65
396	164389	VALVE BUTTERFLY 2020 STR CLEAN DISCHARGE	6634-WTTC-PR	2008-08-08	$ 1,000	0.7
397	164377	VALVE BUTTERFLY 01 WEST RAW LINE	6634-WTTC-PR	1992-01-01	$ 1,000	0.25
398	164379	VALVE BUTTERFLY 02 EAST RAW LINE	6634-WTTC-PR	1992-01-01	$ 1,000	0.25
399	164381	VALVE BUTTERFLY 2010 STR ISO	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
400	164383	VALVE BUTTERFLY 2010 STR ISO	6634-WTTC-PR	2008-08-10	$ 1,000	0.55
401	163379	VALVE BUTTERFLY 02 EAST RAW LINE	6634-WTTC-PR	2008-08-08	$ 1,000	0.4
402	164333	TRANSMITTER TEMP RAW SAMPLING	6634-WTTC-PR	2008-08-08	$ 1,000	0.7
403	164337	VALVE CHECK 1 LL	6634-WTTC-PR	1993-01-01	$ 1,000	0.4
404	164338	VALVE RELIEF 01 AIR LL	6634-WTTC-PR	2008-08-08	$ 1,000	0.5
405	164342	VALVE RELIEF 02 AIR LL	6634-WTTC-PR	1992-01-01	$ 1,000	0.45
406	164343	VALVE CHECK 2 LL	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
407	164347	VALVE RELIEF 03 AIR LL	6634-WTTC-PR	1992-01-01	$ 1,000	0.4
408	164348	VALVE CHECK 3 LL	6634-WTTC-PR	2008-08-08	$ 1,000	0.4
409	164352	VALVE RELIEF 04 AIR LL	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
410	164353	VALVE CHECK 4 LL	6634-WTTC-PR	1992-01-01	$ 1,000	0.35
411	164356	VALVE BUTTERFLY BUTTERFLY EAST ISOLATION	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
412	164357	VALVE BUTTERFLY ISOLATION WEST	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
413	164358	VALVE RELIEF AIR EAST	6634-WTTC-PR	2008-08-08	$ 1,000	0.65
414	164359	VALVE RELIEF AIR WEST	6634-WTTC-PR	2008-08-08	$ 1,000	0.65
415	164360	VALVE BUTTERFLY METER ISO WEST	6634-WTTC-PR	2008-08-08	$ 1,000	0.45
416	164362	VALVE BUTTERFLY METER ISO WEST	6634-WTTC-PR	2008-08-08	$ 1,000	0.5
417	164397	VALVE BUTTERFLY 2040 STR ISO	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
418	164398	VALVE BUTTERFLY 2040 STR ISO	6634-WTTC-PR	2008-08-10	$ 1,000	0.6
419	164399	VALVE BUTTERFLY 2040 STR ISO	6634-WTTC-PR	2002-01-05	$ 1,000	0.6
420	164511	ACTUATOR ELECTRIC UV OUTLET	6634-WTTC-PR	1993-01-01	$ 1,000	0.4
421	164519	VALVE RELIEF AIR	6634-WTTC-PR	1992-01-01	$ 1,000	0.65
422	164520	VALVE RELIEF AIR	6634-WTTC-PR	2008-08-08	$ 1,000	0.65
423	164532	VALVE RELIEF EAST DIST ISOL	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
424	164540	VALVE BUTTERFLY WEST DIST ISOLATION	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
425	164544	VALVE BUTTERFLY GRAHAM DIST	6634-WTTC-PR	2008-08-08	$ 1,000	0.65
426	164462	VALVE BUTTERFLY 7010 HL INLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.45
427	164464	VALVE BUTTERFLY 7010 HL OUTLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.5
428	164468	VALVE BUTTERFLY 7020 HL INLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.5
429	164470	VALVE BUTTERFLY 7020 HL OUTLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
430	164474	VALVE BUTTERFLY 7030 HL INLET	6634-WTTC-PR	1993-01-01	$ 1,000	0.55
431	164476	VALVE BUTTERFLY 7030 HL OUTLET	6634-WTTC-PR	1993-01-01	$ 1,000	0.5
432	164480	VALVE BUTTERFLY 7040 HL INLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
433	164482	VALVE BUTTERFLY 7040 HL OUTLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
434	164485	VALVE BUTTERFLY PRV7005 INLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.5
435	164486	VALVE BUTTERFLY PRV7005 OUTLET	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
436	164402	VALVE RELIEF 01 AIR	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
437	164403	VALVE RELIEF 02 AIR	6634-WTTC-PR	2008-08-08	$ 1,000	0.55
438	164404	TRANSMITTER PRESSURE PRE STR	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
439	164405	TRANSMITTER PRESSURE POST STR	6634-WTTC-PR	2008-08-08	$ 1,000	0.7
440	164406	TRANSMITTER TEMP POST STRAINER	6634-WTTC-PR	2008-08-08	$ 1,000	0.6
441	164410	TRANSMITTER PRESSURE RFR TANK	6634-WTTC-PR	2008-08-08	$ 1,000	0.45
442	164424	MOTOR 2050 ELECTRIC XRP	6634-WTTC-PR	2008-08-08	$ 1,000	0.45
443	164426	MOTOR 2060 ELECTRIC XRP	6634-WTTC-PR	2008-08-08	$ 1,000	0.3
444	164450	MOTOR 4310 RF PUMP	6634-WTTC-PR	2008-08-08	$ 750	0.4
445	164455	MOTOR 4320 ELECTRIC EF	6634-WTTC-PR	2008-08-08	$ 750	0.5
446	164620	MOTOR 4609 ELECTRIC	6634-WTTC-PR	2008-08-08	$ 700	0.3
447	62980	ANALYZER CHLORINE Portable	6634-WTTC-PR	2008-08-08	$ 679	0.8
448	164687	VALVE RELIEF UV1 AIR	6634-WTTC-PR	2008-08-08	$ 500	0.6
449	164688	VALVE RELIEF UV2 AIR	6634-WTTC-PR	2008-08-08	$ 500	0.6
450	164681	MOTOR ELECTRIC EF	6634-WTTC-PR	2008-08-08	$ 500	0.5
451	164612	TRANSMITTER PRESSURE LIT4006	6634-WTTC-PR	1992-01-01	$ 500	0.25
452	164616	VALVE BUTTERFLY HV4651	6634-WTTC-PR	2008-08-08	$ 500	0.6

453	164618	VALVE BUTTERFLY HV4607	6634-WTTC-PR	2008-08-08	$	500	0.6
454	164621	VALVE BUTTERFLY HV4652	6634-WTTC-PR	2008-08-08	$	500	0.55
455	164591	TRANSMITTER PRESSURE LIT4106	6634-WTTC-PR	2008-08-08	$	500	0.4
456	164636	TRANSMITTER PRESSURE 4711	6634-WTTC-PR	2008-08-08	$	500	0.6
457	164640	TRANSMITTER PRESSURE PIT3104	6634-WTTC-PR	2008-08-08	$	500	0.55
458	164641	TRANSMITTER PRESSURE PIT3121	6634-WTTC-PR	2008-08-08	$	500	0.6
459	164649	TRANSMITTER PRESSURE PIT3221	6634-WTTC-PR	2008-08-08	$	500	0.4
460	164655	TRANSMITTER PRESSURE PIT3304	6634-WTTC-PR	2008-08-08	$	500	0.25
461	164656	TRANSMITTER PRESSURE PIT3321	6634-WTTC-PR	2008-08-08	$	500	0.35
462	164662	TRANSMITTER PRESSURE PIT3404	6634-WTTC-PR	2008-08-08	$	500	0.35
463	164663	TRANSMITTER PRESSURE PIT3421	6634-WTTC-PR	2008-08-08	$	500	0.4
464	164593	VALVE BUTTERFLY HV4150	6634-WTTC-PR	2008-08-08	$	500	0.5
465	164594	TRANSMITTER TEMP TT4107	6634-WTTC-PR	2008-08-08	$	500	0.35
466	164596	VALVE BUTTERFLY V4019	6634-WTTC-PR	2008-08-08	$	500	0.55
467	164601	VALVE BUTTERFLY V4032	6634-WTTC-PR	2008-08-08	$	500	0.6
468	164602	VALVE BUTTERFLY V4282	6634-WTTC-PR	2008-08-08	$	500	0.55
469	164604	VALVE BUTTERFLY V4125	6634-WTTC-PR	2008-08-08	$	500	0.6
470	164606	VALVE BUTTERFLY V4227	6634-WTTC-PR	2008-08-08	$	500	0.55
471	164608	VALVE BUTTERFLY V4289	6634-WTTC-PR	2008-08-08	$	500	0.7
472	164609	TRANSMITTER TEMP TT4007	6634-WTTC-PR	2008-08-08	$	500	0.25
473	164610	VALVE BUTTERFLY HV4050	6634-WTTC-PR	2008-08-08	$	500	0.55
474	164497	VALVE BUTTERFLY INLET	6634-WTTC-PR	2008-08-08	$	500	0.55
475	164374	VALVE BUTTERFLY PRV ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.5
476	164375	VALVE BUTTERFLY BACKFLUSH ISOL	6634-WTTC-PR	2008-08-08	$	500	0.5
477	123773	STRAINER 02 RFR AMIAD	6634-WTTC-PR	2008-08-08	$	500	0.65
478	164339	VALVE BUTTERFLY 1 ISOLATION LL	6634-WTTC-PR	2008-08-08	$	500	0.55
479	164344	VALVE BUTTERFLY 2 ISOLATION LL	6634-WTTC-PR	2008-08-08	$	500	0.4
480	164349	VALVE BUTTERFLY 3 ISOLATION LL	6634-WTTC-PR	2008-08-08	$	500	0.5
481	164354	VALVE BUTTERFLY 4 ISOLATION LL	6634-WTTC-PR	2008-08-08	$	500	0.6
482	164363	TRANSMITTER PRESSURE WEST FLOW	6634-WTTC-PR	2008-08-08	$	500	0.4
483	164364	TRANSMITTER PRESSURE EAST FLOW	6634-WTTC-PR	2008-08-08	$	500	0.45
484	164445	MOTOR 4214 CDP PUMP	6634-WTTC-PR	2008-08-08	$	500	0.4
485	164446	VALVE BUTTERFLY CDP4214	6634-WTTC-PR	2008-08-08	$	500	0.6
486	164447	VALVE BUTTERFLY CDP4214	6634-WTTC-PR	2008-08-08	$	500	0.6
487	164500	VALVE BUTTERFLY UV1 BY-PASS	6634-WTTC-PR	2008-08-08	$	500	0.55
488	164501	VALVE BUTTERFLY UV1 ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.6
489	164503	VALVE BUTTERFLY UV1 ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.6
490	164504	VALVE BUTTERFLY UV2 BY-PASS	6634-WTTC-PR	2008-08-08	$	500	0.55
491	164505	VALVE CHECK UV1 BY-PASS	6634-WTTC-PR	2008-08-08	$	500	0.25
492	164506	VALVE BUTTERFLY UV2-A ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.55
493	164508	VALVE BUTTERFLY UV2-B ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.6
494	164509	VALVE BUTTERFLY UV2 BY-PASS	6634-WTTC-PR	2008-08-08	$	500	0.6
495	164510	VALVE BUTTERFLY UV OUTLET	6634-WTTC-PR	2008-08-08	$	500	0.55
496	164514	ACTUATOR ELECTRIC 01 UV1 COOLING	6634-WTTC-PR	2008-08-08	$	500	0.45
497	164515	ACTUATOR ELECTRIC 1 UV2 COOLING	6634-WTTC-PR	2008-08-08	$	500	0.45
498	164516	ACTUATOR ELECTRIC 2 UV2 COOLING	6634-WTTC-PR	2008-08-08	$	500	0.4
499	164517	ACTUATOR ELECTRIC 02 UV1 COOLING	6634-WTTC-PR	2008-08-08	$	500	0.4
500	164518	VALVE BUTTERFLY ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.5
501	164521	VALVE BUTTERFLY ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.55
502	164523	TRANSMITTER PRESSURE PIT7002	6634-WTTC-PR	2008-08-08	$	500	0.4
503	164488	TRANSMITTER PRESSURE PIT7005	6634-WTTC-PR	2008-08-08	$	500	0.4
504	164494	TRANSMITTER PRESSURE PIT5003	6634-WTTC-PR	2008-08-08	$	500	0.4
505	164525	VALVE BUTTERFLY PRV7051 ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.4
506	164527	VALVE BUTTERFLY PRV7051 ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.5
507	164529	VALVE BUTTERFLY ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.5
508	164530	TRANSMITTER PRESSURE PIT7053	6634-WTTC-PR	2008-08-08	$	500	0.4
509	164533	VALVE BUTTERFLY PRV7061 ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.6
510	164535	VALVE BUTTERFLY PRV7061 ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.6
511	164537	VALVE BUTTERFLY TRANSFER ISOL	6634-WTTC-PR	1993-01-01	$	500	0.5
512	164538	TRANSMITTER PRESSURE PIT7061	6634-WTTC-PR	2008-08-08	$	500	0.4
513	164541	VALVE BUTTERFLY GRAHAM ROAD	6634-WTTC-PR	2008-08-08	$	500	0.6
514	164542	VALVE BUTTERFLY TRANSFER ISOLATION	6634-WTTC-PR	2008-08-08	$	500	0.55
515	164547	VALVE GATE BFP ISOLATION INLET	6634-WTTC-PR	2008-08-08	$	500	0.65
516	164549	VALVE GATE BFP ISOLATION OUT	6634-WTTC-PR	2008-08-08	$	500	0.6
517	164451	VALVE BUTTERFLY RF4310 INLET	6634-WTTC-PR	2008-08-08	$	500	0.45

518	164452	VALVE CHECK RF4310 OUTLET	6634-WTTC-PR	2008-08-08	$ 500	0.5
519	164453	VALVE BUTTERFLY RF4310 OUTLET	6634-WTTC-PR	2008-08-08	$ 500	0.65
520	164456	VALVE BUTTERFLY RF4320 INLET	6634-WTTC-PR	2008-08-08	$ 500	0.7
521	164457	VALVE CHECK RF4320 OUTLET	6634-WTTC-PR	2008-08-08	$ 500	0.5
522	164458	VALVE BUTTERFLY RF4320 OUTLET	6634-WTTC-PR	2008-08-08	$ 500	0.65
523	164412	MOTOR 4370 ELECTRIC RFR	6634-WTTC-PR	2008-08-08	$ 500	0.6
524	164414	MOTOR 4360 ELECTRIC RFR	6634-WTTC-PR	2008-08-08	$ 500	0.6
525	164415	STRAINER 01 RFR WATER	6634-WTTC-PR	2008-08-08	$ 500	0.55
526	164417	VALVE BUTTERFLY RFRP4360 INLET	6634-WTTC-PR	2008-08-08	$ 500	0.6
527	164418	VALVE BUTTERFLY 4360 OUTLET	6634-WTTC-PR	1993-01-01	$ 500	0.65
528	164419	VALVE BUTTERFLY RFRP4370 INLET	6634-WTTC-PR	1993-01-01	$ 500	0.55
529	164420	VALVE BUTTERFLY 4370 OUT	6634-WTTC-PR	2008-08-08	$ 500	0.6
530	164422	TRANSMITTER PRESSURE RFRP	6634-WTTC-PR	2018-11-21	$ 500	0.75
531	164427	VALVE BUTTERFLY XRP2050 INLET	6634-WTTC-PR	2018-11-28	$ 500	-0.01
532	164428	VALVE BUTTERFLY XRP2060 INLET	6634-WTTC-PR	2008-08-08	$ 500	-0.01
533	164429	VALVE BUTTERFLY XRP 2050 OUTLET	6634-WTTC-PR	2008-08-08	$ 500	-0.01
534	164430	VALVE BUTTERFLY XRP 2060 OUTLET	6634-WTTC-PR	1993-01-01	$ 500	-0.01
535	164432	VALVE CHECK XRP2050	6634-WTTC-PR	1993-01-01	$ 500	0.55
536	164433	VALVE CHECK XRP2050	6634-WTTC-PR	2016-01-22	$ 500	0.6
537	164551	VALVE BUTTERFLY FE7092 ISOLATION	6634-WTTC-PR	2001-01-09	$ 250	0.4
538	164552	VALVE REGULATING PRESSURE	6634-WTTC-PR	2002-02-03	$ 250	0.35

Appendix D – Planned Program

Tri-County Planned Program

Line #	Asset ID	Asset	Treatment Description	Forecast Cost ($)	Forecast Year
1	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2023
2	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	9,898	2023
3	164567	PUMP DIAPHRAGM HPR5110 PEROXIDE	Reconstruction	4,000	2023
4	164579	PUMP DIAPHRAGM ATP4115 CIP ACID	Reconstruction	4,000	2023
5	164588	PUMP DIAPHRAGM CFP8020 CL2 TRIM	Reconstruction	4,000	2023
6	123769	PUMP DIAPHRAGM CTP4015 CIP CAUSTIC	Reconstruction	13,000	2023
7	360540	SCADA SERVER NEW PLANT	Reconstruction	221,000	2023
8	315318	DRIVE VFD HL PUMP 04	Maintenance	13,333	2023
9	315320	DRIVE VFD HL PUMP 01	Rehabilitation	13,333	2023
10	315324	DRIVE VFD HL PUMP 03	Rehabilitation	13,333	2023
11	315319	DRIVE VFD LL PUMP 03	Rehabilitation	8,333	2023
12	315326	DRIVE VFD LL PUMP 01	Rehabilitation	8,333	2023
13	315327	DRIVE VFD LL PUMP 04	Rehabilitation	8,333	2023
14	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2023
15	315494	UPS 02 BATTERY BANK LL	Reconstruction	2,500	2023
16	278217	TANK LOW LIFT SCBA	Reconstruction	8,000	2023
17	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2023
18	62795	HEATER ELECTRIC UH01	Reconstruction	5,000	2023
19	164643	FILTER 1 WATER MICRO PALL RACK	Reconstruction	380,000	2023
20	360535	PIPING PROCESS ALL BUILDINGS	Maintenance	50,000	2023
21	164502	UV LIGHT 5021	Maintenance	4,000	2023
22	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2023
23	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2023
24	315304	COMPRESSOR AIR AC4701 COMPRESSOR B	Reconstruction	11,000	2023
25	164391	STRAINER 2030 RAW WATER	Rehabilitation	5,000	2023
26	164336	MOTOR 1 PUMP ELECT LL	Rehabilitation	5,000	2023
27	164522	ANALYZER CHLORINE AIT7001 PRE HL	Reconstruction	6,500	2023
28	123772	ACTUATOR PNEUMATIC V4019	Reconstruction	3,000	2023
29	315317	VALVE CHLORINE INJECTOR	Reconstruction	7,500	2023
30	164427	VALVE BUTTERFLY XRP2050 INLET	Reconstruction	500	2023
31	164428	VALVE BUTTERFLY XRP2060 INLET	Reconstruction	500	2023
32	164429	VALVE BUTTERFLY XRP 2050 OUTLET	Reconstruction	500	2023
33	164430	VALVE BUTTERFLY XRP 2060 OUTLET	Reconstruction	500	2023
34					
35					
36	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2024
37	360533	BUILDING ROOF NEW PLANT	Maintenance	17,424	2024
38	315478	BUILDING ROADS	Maintenance	84,320	2024
39	360540	SCADA SERVER NEW PLANT	Reconstruction	166,000	2024
40	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2024
41	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2024
42	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2024
43	62797	HEATER ELECTRIC UH01-A	Rehabilitation	1,479	2024
44	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	4,115	2024
45	62680	HEATER ELECTRIC UH03 ELECTRIC LL	Reconstruction	2,116	2024

46	164644	FILTER 2 WATER MICRO PALL RACK	Reconstruction	400,000	2024
47	360535	PIPING PROCESS ALL BUILDINGS	Maintenance	50,000	2024
48	164502	UV LIGHT 5021	Maintenance	4,000	2024
49	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2024
50	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2024
51	164382	STRAINER 2010 WATER RAW	Rehabilitation	5,000	2024
52	164341	MOTOR 2 PUMP ELECT LL	Rehabilitation	5,000	2024
53	164712	METER FLOW GLENCOE CHAMBER	Reconstruction	15,000	2024
54	164716	METER FLOW EAGLE WEST CHAMBER	Reconstruction	15,000	2024
55	164546	ANALYZER CHLORINE AIT7004 DIST	Reconstruction	6,500	2024
56	164617	ACTUATOR PNEUMATIC V4607	Reconstruction	3,000	2024
57	315316	VALVE CHLORINE INJECTOR	Reconstruction	7,500	2024
58					
59					
60	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2025
61	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	61,243	2025
62	336381	BUILDING ROOF LOW LIFT	Maintenance	4,760	2025
63	336384	BUILDING ROOF OLD PLANT	Maintenance	9,481	2025
64	164573	PUMP DIAPHRAGM BSTP4502 CIP BISUL	Reconstruction	4,000	2025
65	360540	SCADA SERVER NEW PLANT	Maintenance	47,338	2025
66	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2025
67	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2025
68	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2025
69	62797	HEATER ELECTRIC UH01-A	Reconstruction	2,000	2025
70	62798	HEATER ELECTRIC UH01-B	Reconstruction	2,000	2025
71	164611	HEATER 4004 CIP/EFM CAUSTIC	Reconstruction	2,158	2025
72	164438	HEATER UH-0012	Reconstruction	1,248	2025
73	62729	FAN EF06 EXHAUST PLANT	Reconstruction	1,000	2025
74	164705	TANK STORAGE WATER SOUTH	Maintenance	20,000	2025
75	164706	TANK STORAGE WATER NORTH	Maintenance	20,000	2025
76	164651	FILTER 3 WATER MICRO PALL RACK	Reconstruction	420,000	2025
77	164502	UV LIGHT 5021	Maintenance	4,000	2025
78	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2025
79	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2025
80	164386	STRAINER 2020 RAW WATER	Rehabilitation	5,000	2025
81	164346	MOTOR 3 PUMP ELECT LL	Rehabilitation	5,000	2025
82	164489	ANALYZER CHLORINE AIT5005 UV INLET	Reconstruction	6,500	2025
83	164597	ACTUATOR PNEUMATIC V4032	Reconstruction	3,000	2025
84	315497	VALVE REGULATING 01 CHLORINE VACUUM OPEI	Reconstruction	7,500	2025
85	62634	VALVE BUTTERFLY 02 ISO LL	Reconstruction	1,000	2025
86	164377	VALVE BUTTERFLY 01 WEST RAW LINE	Reconstruction	1,000	2025
87					
88					
89	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2026
90	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	42,279	2026
91	315480	BUILDING FENCING	Maintenance	17,498	2026
92	123427	ENGINE DIESEL STANDBY OLD	Reconstruction	27,600	2026
93	123428	GENERATOR ELECTRIC	Reconstruction	28,500	2026
94	164692	PANEL TRANSFER GENERATOR	Reconstruction	17,448	2026
95	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2026
96	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2026
97	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2026

98	62770	HEATER ELECTRIC 01 FORCED AIR	Reconstruction	2,202	2026
99	164555	HEATER 0014 DIST AREA	Reconstruction	1,273	2026
100	164658	FILTER 4 WATER MICRO PALL RACK	Reconstruction	440,000	2026
101	164502	UV LIGHT 5021	Maintenance	4,000	2026
102	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2026
103	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2026
104	164351	MOTOR 4 PUMP ELECT LL	Rehabilitation	5,000	2026
105	164493	ANALYZER CHLORINE AIT5006 UV OUTLET	Reconstruction	6,500	2026
106	164409	TANK PROCESS 4350 WET WELL HOLDING RFR	Reconstruction	15,000	2026
107	164605	ACTUATOR PNEUMATIC V4227	Reconstruction	3,000	2026
108	315498	VALVE REGULATING 02 CHLORINE VACUUM OPEI	Reconstruction	7,500	2026
109					
110					
111	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2027
112	336381	BUILDING ROOF LOW LIFT	Maintenance	23,107	2027
113	123771	PUMP DIAPHRAGM CFP8040 HYPO POST	Reconstruction	7,500	2027
114	164560	PUMP DIAPHRAGM CLTP4402 HYPO CIP	Reconstruction	4,000	2027
115	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2027
116	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2027
117	164743	SAFETY FIRE SYSTEM	Reconstruction	9,404	2027
118	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2027
119	164671	HEATER AHU0010	Reconstruction	25,000	2027
120	164678	BOILER B-1	Reconstruction	23,000	2027
121	164679	BOILER B-2	Reconstruction	23,000	2027
122	164592	HEATER 4104 ACID CIP TANK	Rehabilitation	1,298	2027
123	164435	HEATER ELECTRIC UH-0013	Reconstruction	2,246	2027
124	62700	FAN 01 EXHAUST CHLORINE BLDG	Reconstruction	1,000	2027
125	62675	FAN EF04 EXHAUST LL	Reconstruction	1,000	2027
126	62676	FAN EF05 EXHAUST LL	Reconstruction	1,000	2027
127	164711	TANK STORAGE WATER WEST LORNE STAND PIPI	Rehabilitation	1,000,000	2027
128	164502	UV LIGHT 5021	Maintenance	20,000	2027
129	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2027
130	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2027
131	164472	PUMP CENT 7030 HL	Maintenance	7,500	2027
132	164478	PUMP CENT 7040 HL	Maintenance	7,500	2027
133	164335	PUMP CENT 1 VERT TURBINE LL	Rehabilitation	10,000	2027
134	164345	PUMP CENT 3 VERT TURBINE LL	Rehabilitation	10,000	2027
135	315305	COMPRESSOR AIR AC4702 COMPRESSOR A	Reconstruction	46,274	2027
136	164467	MOTOR 7040 ELECTRIC HL	Rehabilitation	5,000	2027
137	164408	ANALYZER CHLORINE RAW	Reconstruction	6,500	2027
138	164603	ACTUATOR PNEUMATIC V4125	Reconstruction	3,000	2027
139	62653	VALVE BUTTERFLY 03 LL	Reconstruction	1,000	2027
140	62815	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	1,000	2027
141					
142					
143	315312	PUMP DIAPHRAGM CFP8030 HYPO POST UV	Reconstruction	7,500	2028
144	164568	PUMP DIAPHRAGM HPR5120 PEROXIDE	Reconstruction	4,000	2028
145	164589	PUMP DIAPHRAGM CFP8010 CL2 TRIM	Reconstruction	4,000	2028
146	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2028
147	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2028
148	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2028
149	164442	HEATER UH-0015	Reconstruction	1,549	2028

150	62684	HEATER ELECTRIC UH01 ELECTRIC LL	Reconstruction	2,520	2028
151	164507	UV LIGHT 5022	Maintenance	20,000	2028
152	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2028
153	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2028
154	164460	PUMP CENT 7010 HL	Maintenance	7,500	2028
155	164466	PUMP CENT 7020 HL	Maintenance	7,500	2028
156	164340	PUMP CENT 2 VERT TURBINE LL	Rehabilitation	10,000	2028
157	164350	PUMP CENT 4 VERT TURBINE LL	Rehabilitation	10,000	2028
158	315304	COMPRESSOR AIR AC4701 COMPRESSOR B	Reconstruction	47,199	2028
159	164473	MOTOR 7030 ELECTRIC	Rehabilitation	5,000	2028
160	164407	ANALYZER TURBIDITY RAW SCATTER	Reconstruction	6,500	2028
161	164598	ACTUATOR PNEUMATIC V4282	Reconstruction	3,000	2028
162					
163					
164	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2029
165	123764	VEHICLE WTP TRUCK F-250	Reconstruction	50,000	2029
166	123765	VEHICLE WTP TRUCK ARCTIC SNOW PLOW	Reconstruction	7,600	2029
167	62681	LIFTING DEVICE CHAINFALL 01	Reconstruction	460	2029
168	164582	TANK PROCESS CCT4001 CAUSTIC CIP/EFM	Reconstruction	4,478	2029
169	62687	MCC 02 LOW LIFT	Reconstruction	23,000	2029
170	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2029
171	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2029
172	164590	SAFETY EYE WASH/SHOWER 02	Reconstruction	7,464	2029
173	164680	FAN EF0022 EXHAUST	Rehabilitation	1,350	2029
174	62705	HEATER ELECTRIC UH01 CL 2	Reconstruction	2,686	2029
175	164685	HEATER UH0023	Reconstruction	475	2029
176	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2029
177	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2029
178	315304	COMPRESSOR AIR AC4701 COMPRESSOR B	Reconstruction	24,072	2029
179	315305	COMPRESSOR AIR AC4702 COMPRESSOR A	Reconstruction	24,072	2029
180	62646	VALVE SLUICE GATE W2 SURGE	Reconstruction	8,700	2029
181	123933	PUMP 1	Reconstruction	10,449	2029
182	62812	VALVE REGULATING 01 FLOW RAW	Reconstruction	4,750	2029
183	164637	ANALYZER PARTICLE AIT3120	Reconstruction	3,800	2029
184	164645	ANALYZER PARTICLE AIT3220	Reconstruction	3,800	2029
185	164647	METER FLOW FIT3205 INLET	Reconstruction	3,800	2029
186	164720	VALVE BACKFLOW 1 PREVENTER	Reconstruction	3,325	2029
187	62640	ANALYZER PH AIT111 LL RAW	Reconstruction	2,760	2029
188	62645	METER LEVEL LIT131 WELL 2 EAST	Reconstruction	2,850	2029
189	164668	ANALYZER PH PORTABLE	Reconstruction	2,375	2029
190	164650	METER FLOW FIT3211 RECIRCULATING	Reconstruction	1,840	2029
191	62708	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,840	2029
192	62668	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,740	2029
193	62827	VALVE GATE 02 ISOL SP	Reconstruction	1,900	2029
194	62828	VALVE ALTITUDE	Reconstruction	1,840	2029
195	62830	VALVE GATE 03 ISOL SP	Reconstruction	1,900	2029
196	62692	VALVE GATE 03 SERVICE WATER	Reconstruction	950	2029
197	164511	ACTUATOR ELECTRIC UV OUTLET	Reconstruction	920	2029
198	164426	MOTOR 2060 ELECTRIC XRP	Reconstruction	950	2029
199	164612	TRANSMITTER PRESSURE LIT4006	Reconstruction	475	2029
200	164655	TRANSMITTER PRESSURE PIT3304	Reconstruction	475	2029
201	164663	TRANSMITTER PRESSURE PIT3421	Reconstruction	475	2029

202	164505	VALVE CHECK UV1 BY-PASS	Reconstruction	475	2029
203					
204					
205	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2030
206	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	11,088	2030
207	164694	PANEL POWER FACTOR CORRECTION PFC-0052 EL	Reconstruction	9,500	2030
208	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2030
209	164372	PANEL STARTER 4 LL PUMP	Reconstruction	7,600	2030
210	62642	PANEL CONTROL 01 SAMPLE PUMPS	Reconstruction	3,480	2030
211	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2030
212	164742	SAFETY ATMOSPHERE DETECTOR	Reconstruction	566	2030
213	62796	HEATER ELECTRIC UH05	Reconstruction	1,584	2030
214	164438	HEATER UH-0012	Reconstruction	950	2030
215	62679	HEATER ELECTRIC UH04 ELECTRIC LL	Reconstruction	870	2030
216	62701	FAN 02 EXHAUST CHLORINE BLDG	Reconstruction	920	2030
217	360539	PIPING INTAKE	Maintenance	51,000	2030
218	123933	PUMP 1	Reconstruction	9,200	2030
219	164715	METER FLOW SILVER CLAY CHAMBER	Reconstruction	7,360	2030
220	164639	METER FLOW FIT3105 INLET	Reconstruction	4,350	2030
221	62831	VALVE BUTTERFLY 04 ISOL SP	Reconstruction	4,750	2030
222	62683	PUMP SUBMERSIBLE 01 LL	Reconstruction	3,680	2030
223	62635	METER LEVEL LIT116 WELL 1 EAST	Reconstruction	3,800	2030
224	62672	VALVE BUTTERFLY 02 ISOL BW	Reconstruction	2,610	2030
225	123768	PUMP CENT P4609 NEUTRILZATION TANK	Reconstruction	2,850	2030
226	164625	METER FLOW FIT9006	Reconstruction	2,300	2030
227	164444	PUMP CENT 4214 CDP	Reconstruction	1,900	2030
228	164425	PUMP CENT 2060 XRP	Reconstruction	1,840	2030
229	164561	METER FLOW 4405 HYPO CIP	Reconstruction	1,425	2030
230	164613	ANALYZER PH AE4620	Reconstruction	920	2030
231	62662	VALVE PLUG 01 ISOL PR LL	Reconstruction	950	2030
232	62791	ANALYZER PH 01 PORTABLE LAB	Reconstruction	920	2030
233	163379	VALVE BUTTERFLY 02 EAST RAW LINE	Reconstruction	920	2030
234	164620	MOTOR 4609 ELECTRIC	Reconstruction	644	2030
235	164609	TRANSMITTER TEMP TT4007	Reconstruction	475	2030
236	164494	TRANSMITTER PRESSURE PIT5003	Reconstruction	475	2030
237					
238					
239	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2031
240	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2031
241	164369	PANEL STARTER 1 LL PUMP	Reconstruction	7,360	2031
242	164384	DRIVE 2010 STR CLEAN MOTOR	Reconstruction	920	2031
243	164677	PUMP CENT HWP0035	Reconstruction	9,200	2031
244	62809	VALVE GATE 01 LL	Reconstruction	23,750	2031
245	123934	PUMP 2	Reconstruction	9,500	2031
246	164528	METER FLOW FE7052 EAST DIST	Reconstruction	7,600	2031
247	164600	MOTOR P4204 ELECTRIC RECYCLE	Reconstruction	4,750	2031
248	62833	VALVE BUTTERFLY 05 ISOL SP	Reconstruction	4,350	2031
249	164646	ANALYZER TURBIDITY AIT3219	Reconstruction	3,680	2031
250	164624	METER FLOW FIT9005	Reconstruction	2,175	2031
251	164556	METER LEVEL LIT8004 HYPO DAY TANK	Reconstruction	2,175	2031
252	62826	VALVE GATE 01 ISOL SP	Reconstruction	1,840	2031
253	164483	ACTUATOR ELECTRIC MV7041	Reconstruction	1,840	2031

254	164469	VALVE CHECK 7020 HL OUTLET	Reconstruction	1,425	2031
255	164615	TRANSMITTER PRESSURE 4605	Reconstruction	920	2031
256	62709	VALVE GATE 02 SERVICE WATER	Reconstruction	950	2031
257	62813	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	920	2031
258	164410	TRANSMITTER PRESSURE RFR TANK	Reconstruction	870	2031
259	164656	TRANSMITTER PRESSURE PIT3321	Reconstruction	435	2031
260	164662	TRANSMITTER PRESSURE PIT3404	Reconstruction	460	2031
261	164529	VALVE BUTTERFLY ISOLATION	Reconstruction	460	2031
262	164432	VALVE CHECK XRP2050	Reconstruction	475	2031
263	164552	VALVE REGULATING PRESSURE	Reconstruction	218	2031
264					
265					
266	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	117,834	2032
267	315476	BUILDING LIGHTING ALL BUILDINGS	Maintenance	17,305	2032
268	123761	LIFTING DEVICE FORK LIFT MAN BASKET	Reconstruction	1,840	2032
269	62794	PANEL TRANSFER 01 ELECT HL	Reconstruction	9,200	2032
270	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2032
271	315493	PANEL PLC CP-1000 LL	Reconstruction	9,200	2032
272	315495	PANEL POWER FACTOR CORRECTION PFC-0056 LL	Reconstruction	9,500	2032
273	164395	DRIVE 2030 STR MOTOR	Reconstruction	920	2032
274	164390	DRIVE 2020 STR MOTOR	Reconstruction	950	2032
275	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2032
276	164704	SAFETY EMER LIGHTING SAFETY 8	Reconstruction	475	2032
277	164678	BOILER B-1	Reconstruction	95,045	2032
278	62710	HEATER ELECTRIC UH02 CL 2	Reconstruction	920	2032
279	62728	HEATER ELECTRIC UH07 PLANT	Reconstruction	950	2032
280	62678	HEATER ELECTRIC UH02 ELECTRIC LL	Reconstruction	950	2032
281	62834	FAN 01 EXHAUST ELECT TOWER	Reconstruction	4,944	2032
282	62667	VALVE GATE 03 PUMP WELL ISOL	Reconstruction	9,200	2032
283	164461	MOTOR 7010 ELECTRIC HL	Reconstruction	9,200	2032
284	164718	METER FLOW B EAGELE EAST CHAMBER	Reconstruction	7,600	2032
285	164627	PUMP SUBMERSIBLE WP9010 DRAIN PUMP	Reconstruction	4,600	2032
286	164654	METER FLOW FIT3305 INLET	Reconstruction	4,600	2032
287	164599	PUMP CENT P4204 RECYCLE	Reconstruction	4,600	2032
288	164545	ANALYZER TURBIDITY AIT7003 DIST	Reconstruction	4,750	2032
289	164648	TRANSMITTER PRESSURE PIT3204	Reconstruction	3,480	2032
290	164652	ANALYZER PARTICLE AIT3320	Reconstruction	3,680	2032
291	164734	VALVE BACKFLOW 3 PREVENTER	Reconstruction	3,220	2032
292	164721	VALVE BACKFLOW 2 PREVENTER	Reconstruction	3,220	2032
293	62717	METER FLOW FIT224 DISPLAY	Reconstruction	2,760	2032
294	164484	VALVE RELIEF 7005 PRESSURE	Reconstruction	2,850	2032
295	164665	METER LEVEL LIT9002	Reconstruction	2,375	2032
296	164571	ANALYZER HPE5105 GAS PEROXIDE	Reconstruction	2,300	2032
297	164569	METER FLOW LIT5102 PEROXIDE T	Reconstruction	1,840	2032
298	164471	ACTUATOR ELECTRIC MV7011	Reconstruction	1,900	2032
299	164477	ACTUATOR ELECTRIC MV7031	Reconstruction	1,740	2032
300	164423	PUMP CENT 2050 XRP	Reconstruction	1,900	2032
301	164580	METER FLOW 4121 CIP ACID	Reconstruction	1,305	2032
302	164577	METER FLOW FIT4017 CIP CAUSTIC	Reconstruction	1,380	2032
303	164574	METER FLOW FIT4505 S.B CIP	Reconstruction	1,425	2032
304	164475	VALVE CHECK 7030 HL INLET	Reconstruction	1,305	2032
305	164498	ACTUATOR ELECTRIC MV5023 UV IN	Reconstruction	950	2032

306	315497	VALVE REGULATING 01 CHLORINE VACUUM OPEI	Reconstruction	870	2032
307	62659	VALVE BUTTERFLY 04 LL	Reconstruction	870	2032
308	62814	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	950	2032
309	164379	VALVE BUTTERFLY 02 EAST RAW LINE	Reconstruction	870	2032
310	164381	VALVE BUTTERFLY 2010 STR ISO	Reconstruction	920	2032
311	164347	VALVE RELIEF 03 AIR LL	Reconstruction	950	2032
312	164464	VALVE BUTTERFLY 7010 HL OUTLET	Reconstruction	920	2032
313	164476	VALVE BUTTERFLY 7030 HL OUTLET	Reconstruction	950	2032
314	164450	MOTOR 4310 RF PUMP	Reconstruction	690	2032
315	164591	TRANSMITTER PRESSURE LIT4106	Reconstruction	460	2032
316	164601	VALVE BUTTERFLY V4032	Reconstruction	460	2032
317	164344	VALVE BUTTERFLY 2 ISOLATION LL	Reconstruction	475	2032
318	164445	MOTOR 4214 CDP PUMP	Reconstruction	475	2032
319	164523	TRANSMITTER PRESSURE PIT7002	Reconstruction	435	2032
320	164488	TRANSMITTER PRESSURE PIT7005	Reconstruction	460	2032
321	164525	VALVE BUTTERFLY PRV7051 ISOLATION	Reconstruction	460	2032
322	164527	VALVE BUTTERFLY PRV7051 ISOLATION	Reconstruction	475	2032
323	164530	TRANSMITTER PRESSURE PIT7053	Reconstruction	475	2032
324	164537	VALVE BUTTERFLY TRANSFER ISOL	Reconstruction	475	2032
325					
326					
327	360537	SETTLING POND NEW PLANT	Maintenance	300,000	2033
328	315478	BUILDING ROADS	Rehabilitation	265,535	2033
329	164570	TANK PROCESS HPT5101 PEROXIDE	Reconstruction	2,850	2033
330	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2033
331	164371	PANEL STARTER 3 LL PUMP	Reconstruction	7,360	2033
332	315486	PANEL BREAKER HLP-7040 HL PUMP 04	Reconstruction	6,960	2033
333	164707	PANEL ALARM/DIALER	Reconstruction	72,710	2033
334	164367	SWITCH DISCONNECT 3 LL PUMP	Reconstruction	1,840	2033
335	164400	DRIVE 2040 STR MOTOR	Reconstruction	950	2033
336	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2033
337	164587	SAFETY EYE WASH/SHOWER 01	Reconstruction	8,700	2033
338	315308	PUMP CENT HWP0034 HEAT RECIRC	Reconstruction	9,200	2033
339	62674	FAN EF03 EXHAUST LL	Reconstruction	5,482	2033
340	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	50,000	2033
341	164661	METER FLOW FIT3405 INLET	Reconstruction	4,750	2033
342	164376	VALVE DIAPHRAGM BACKFLUSH RAW	Reconstruction	4,600	2033
343	164634	TANK STORAGE AR4710 AIR	Reconstruction	3,680	2033
344	164659	ANALYZER PARTICLE AIT3420	Reconstruction	3,680	2033
345	63099	VALVE BACKFLOW PREVENTER	Reconstruction	3,325	2033
346	164657	METER FLOW FIT3311 RECIRCULATING	Reconstruction	1,900	2033
347	123018	TRANSMITTER PRESSURE IONA IN	Reconstruction	1,740	2033
348	123310	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,840	2033
349	164465	ACTUATOR ELECTRIC MV7011	Reconstruction	1,840	2033
350	164481	VALVE CHECK 7040 HL OUTLET	Reconstruction	1,380	2033
351	164411	PUMP CENT 4370 RFR	Reconstruction	1,425	2033
352	62832	VALVE CHECK 01 SP	Reconstruction	950	2033
353	164383	VALVE BUTTERFLY 2010 STR ISO	Reconstruction	950	2033
354	164360	VALVE BUTTERFLY METER ISO WEST	Reconstruction	920	2033
355	164532	VALVE RELIEF EAST DIST ISOL	Reconstruction	920	2033
356	164462	VALVE BUTTERFLY 7010 HL INLET	Reconstruction	950	2033
357	164470	VALVE BUTTERFLY 7020 HL OUTLET	Reconstruction	870	2033

358	164474	VALVE BUTTERFLY 7030 HL INLET	Reconstruction	920	2033
359	164424	MOTOR 2050 ELECTRIC XRP	Reconstruction	920	2033
360	164640	TRANSMITTER PRESSURE PIT3104	Reconstruction	460	2033
361	164339	VALVE BUTTERFLY 1 ISOLATION LL	Reconstruction	460	2033
362	164506	VALVE BUTTERFLY UV2-A ISOLATION	Reconstruction	435	2033
363	164510	VALVE BUTTERFLY UV OUTLET	Reconstruction	460	2033
364	164451	VALVE BUTTERFLY RF4310 INLET	Reconstruction	460	2033
365					
366					
367	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	49,442	2034
368	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	13,745	2034
369	315480	BUILDING FENCING	Maintenance	2,500	2034
370	315479	BUILDING DRAINAGE	Maintenance	10,000	2034
371	315489	LIFTING DEVICE A FRAME 2 TON HL PUMPS AREA	Reconstruction	4,750	2034
372	164731	LIFTING DEVICE SALA TRI-POD	Reconstruction	1,840	2034
373	164559	TANK PROCESS CHLORINE DAY	Reconstruction	870	2034
374	62779	UPS 01 BATTERY BANK HL			2034
375	62836	MCC 03 TOWER			2034
376	164698	PANEL CONTROL CP-2000 HMI			2034
377	164689	MCC MCC-0061 ELECTRICAL ROOM			2034
378	164690	MCC MCC-0060 ELECTRICAL ROOM	Reconstruction	85,734	2034
379	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2034
380	164370	PANEL STARTER 2 LL PUMP			2034
381	315484	PANEL BREAKER HLP-7020 HL PUMP 02			2034
382	164691	PANEL SWB-0051 BREAKER			2034
383	164695	TRANSFORMER AIR T-0053	Reconstruction	1,840	2034
384	164700	TRANSFORMER AIR 0072	Reconstruction	1,900	2034
385	315481	FIRE EXTINGUISHER ALL BUILDINGS	Reconstruction	4,750	2034
386	123762	SAFETY ATMOSPHERIC TESTER	Reconstruction	1,900	2034
387	164743	SAFETY FIRE SYSTEM	Reconstruction	57,683	2034
388	164590	SAFETY EYE WASH/SHOWER 02	Reconstruction	920	2034
389	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	460	2034
390	164629	SAFETY EMER LIGHTING WASHROOM	Reconstruction	460	2034
391	164632	SAFETY EMER LIGHTING SAFETY 1	Reconstruction	475	2034
392	164584	SAFETY EMER LIGHTING CHEMICAL 1	Reconstruction	475	2034
393	164496	SAFETY EMER LIGHTING UV AREA	Reconstruction	475	2034
394	164437	SAFETY EMER LIGHTING MAINT AREA	Reconstruction	475	2034
395	164439	SAFETY EMER LIGHTING W&D AREA LIFT FILT	Reconstruction	435	2034
396	164682	HEAT EXCHANGER AHU0010 AIR CONDITIONER	Rehabilitation	108,774	2034
397	164586	FAN 0021 EXHAUST EMERGENCY	Rehabilitation	5,144	2034
398	360535	PIPING PROCESS ALL BUILDINGS	Maintenance	14,000	2034
399	164460	PUMP CENT 7010 HL	Rehabilitation	69,000	2034
400	62647	VALVE SLUICE GATE 01 INTAKE	Reconstruction	9,200	2034
401	62816	PUMP CENT 01 FIRE TOWER	Reconstruction	9,500	2034
402	123012	ANALYZER TURBIDITY 2 FILTER	Reconstruction	9,200	2034
403	164386	STRAINER 2020 RAW WATER	Reconstruction	9,200	2034
404	164382	STRAINER 2010 WATER RAW	Reconstruction	9,500	2034
405	164361	METER FLOW FIT 1027 RAW WEST DICHARGE	Reconstruction	9,200	2034
406	164396	STRAINER 2040 RAW WATER	Reconstruction	9,500	2034
407	164495	ANALYZER UV AIT5004	Reconstruction	8,700	2034
408	164712	METER FLOW GLENCOE CHAMBER	Reconstruction	7,360	2034
409	164536	METER FLOW FE7062 WEST DIST	Reconstruction	6,960	2034

410	62691	METER FLOW 01 SERVICE WATER	Reconstruction	4,350	2034
411	62661	VALVE CHECK 01 LL	Reconstruction	4,600	2034
412	123766	PUMP CENT P4204 RECYCLE	Reconstruction	4,600	2034
413	123767	MOTOR P4204 ELECTRIC RECYCLE	Reconstruction	4,750	2034
414	164626	VALVE GATE W 69004 SETTLING POND	Reconstruction	2,850	2034
415	164550	METER FLOW FE7092 PROCESS LINE	Reconstruction	2,375	2034
416	62985	METER LEVEL M LIT-6021 Outside Storage tank	Reconstruction	1,981	2034
417	62819	VALVE 01 TOWER ALTITUDE	Reconstruction	1,900	2034
418	164614	ANALYZER CONDUCTIVITY ORP 4619	Reconstruction	950	2034
419	62690	VALVE GATE 01 SERVICE WATER	Reconstruction	920	2034
420	164387	VALVE BUTTERFLY 2020 STR ISO	Reconstruction	920	2034
421	164338	VALVE RELIEF 01 AIR LL	Reconstruction	920	2034
422	164348	VALVE CHECK 3 LL	Reconstruction	920	2034
423	164357	VALVE BUTTERFLY ISOLATION WEST	Reconstruction	950	2034
424	164358	VALVE RELIEF AIR EAST	Reconstruction	920	2034
425	164359	VALVE RELIEF AIR WEST	Reconstruction	950	2034
426	164362	VALVE BUTTERFLY METER ISO WEST	Reconstruction	950	2034
427	164519	VALVE RELIEF AIR	Reconstruction	950	2034
428	164480	VALVE BUTTERFLY 7040 HL INLET	Reconstruction	920	2034
429	164402	VALVE RELIEF 01 AIR	Reconstruction	870	2034
430	164618	VALVE BUTTERFLY HV4607	Reconstruction	475	2034
431	164649	TRANSMITTER PRESSURE PIT3221	Reconstruction	460	2034
432	164604	VALVE BUTTERFLY V4125	Reconstruction	460	2034
433	164374	VALVE BUTTERFLY PRV ISOLATION	Reconstruction	475	2034
434	164375	VALVE BUTTERFLY BACKFLUSH ISOL	Reconstruction	460	2034
435	123773	STRAINER 02 RFR AMIAD	Reconstruction	475	2034
436	164354	VALVE BUTTERFLY 4 ISOLATION LL	Reconstruction	460	2034
437	164363	TRANSMITTER PRESSURE WEST FLOW	Reconstruction	475	2034
438	164501	VALVE BUTTERFLY UV1 ISOLATION	Reconstruction	460	2034
439	164517	ACTUATOR ELECTRIC 02 UV1 COOLING	Reconstruction	435	2034
440	164518	VALVE BUTTERFLY ISOLATION	Reconstruction	460	2034
441	164538	TRANSMITTER PRESSURE PIT7061	Reconstruction	460	2034
442	164452	VALVE CHECK RF4310 OUTLET	Reconstruction	475	2034
443	164457	VALVE CHECK RF4320 OUTLET	Reconstruction	475	2034
444	164420	VALVE BUTTERFLY 4370 OUT	Reconstruction	460	2034
445	164433	VALVE CHECK XRP2050	Reconstruction	460	2034
446					
447					
448	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	3,934	2035
449	123760	VEHICLE LIFT TRUCK CLAR	Reconstruction	4,600	2035
450	164572	TANK T4510A BISFULFITE DAY	Reconstruction	950	2035
451	164578	TANK PROCESS T4110A CIP ACID DAY	Reconstruction	950	2035
452	164683	MCC MCC-0062 MECHANICAL ROOM	Reconstruction	19,000	2035
453	62778	PANEL PLC ICP-B HL	Reconstruction	9,500	2035
454	164696	PANEL CONTROL UV1			2035
455	164690	MCC MCC-0060 ELECTRICAL ROOM			2035
456	164692	PANEL TRANSFER GENERATOR			2035
457	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2035
458	315490	PANEL LIGHTING LP-0055A HVAC ROOM	Reconstruction	6,960	2035
459	315491	PANEL LIGHTING LP-0055 HVAC ROOM	Reconstruction	7,360	2035
460	315485	PANEL BREAKER HLP-7030 HL PUMP 03			2035
461	164684	TRANSFORMER AIR T-0055	Reconstruction	2,850	2035

462	164365	SWITCH DISCONNECT 1 LL PUMP	Reconstruction	1,900	2035
463	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2035
464	164631	SAFETY EMER LIGHTING BOARDROOM	Reconstruction	460	2035
465	164635	SAFETY EMER LIGHTING SAFETY 3	Reconstruction	460	2035
466	164585	SAFETY EMER LIGHTING CHEMICAL 2	Reconstruction	460	2035
467	164487	SAFETY EMER LIGHTING HL AREA	Reconstruction	460	2035
468	164524	SAFETY EMER LIGHTING HL AREA	Reconstruction	475	2035
469	62674	FAN EF03 EXHAUST LL	Reconstruction	5,246	2035
470	315252	VALVE REGULATING PSI 7061	Reconstruction	28,500	2035
471	62811	VALVE GLOBE 01 BACKFLUSH LL	Reconstruction	23,000	2035
472	62666	VALVE GATE E2 SLUICE SURGE	Reconstruction	9,500	2035
473	123013	ANALYZER TURBIDITY 3 FILTER	Reconstruction	9,500	2035
474	164628	PUMP SUBMERSIBLE WP9020 DRAIN PUMP	Reconstruction	4,750	2035
475	62823	TRANSMITTER PRESSURE 01 LEVEL	Reconstruction	4,750	2035
476	164449	PUMP CENT 4310 RF	Reconstruction	4,350	2035
477	164459	METER FLOW 4301	Reconstruction	4,750	2035
478	164660	ANALYZER TURBIDITY AIT3419	Reconstruction	3,800	2035
479	164607	ACTUATOR PNEUMATIC V4289	Reconstruction	2,850	2035
480	164642	METER FLOW FIT3111 RECIRCULATING	Reconstruction	1,900	2035
481	164664	METER FLOW FIT3411 RECIRCULATING	Reconstruction	1,740	2035
482	315492	VALVE THERMAL MIXING HVAC ROOM	Reconstruction	1,900	2035
483	62660	VALVE BUTTERFLY 01 ISOL LL	Reconstruction	920	2035
484	62818	ACTUATOR ELECTRIC 01 FLOW	Reconstruction	920	2035
485	62825	ACTUATOR ELECTRIC 02 FLOW SP	Reconstruction	920	2035
486	164385	VALVE BUTTERFLY 2010 STR CLEAN DISCHARGE	Reconstruction	950	2035
487	164342	VALVE RELIEF 02 AIR LL	Reconstruction	950	2035
488	164343	VALVE CHECK 2 LL	Reconstruction	920	2035
489	164352	VALVE RELIEF 04 AIR LL	Reconstruction	950	2035
490	164353	VALVE CHECK 4 LL	Reconstruction	870	2035
491	164397	VALVE BUTTERFLY 2040 STR ISO	Reconstruction	870	2035
492	164486	VALVE BUTTERFLY PRV7005 OUTLET	Reconstruction	950	2035
493	164403	VALVE RELIEF 02 AIR	Reconstruction	920	2035
494	164621	VALVE BUTTERFLY HV4652	Reconstruction	435	2035
495	164594	TRANSMITTER TEMP TT4107	Reconstruction	475	2035
496	164596	VALVE BUTTERFLY V4019	Reconstruction	435	2035
497	164602	VALVE BUTTERFLY V4282	Reconstruction	475	2035
498	164606	VALVE BUTTERFLY V4227	Reconstruction	475	2035
499	164497	VALVE BUTTERFLY INLET	Reconstruction	460	2035
500	164364	TRANSMITTER PRESSURE EAST FLOW	Reconstruction	460	2035
501	164500	VALVE BUTTERFLY UV1 BY-PASS	Reconstruction	475	2035
502	164521	VALVE BUTTERFLY ISOLATION	Reconstruction	475	2035
503					
504					
505	360533	BUILDING ROOF NEW PLANT	Maintenance	300,000	2036
506	164581	TANK PROCESS T4601 NEUTRALISATION CIP	Reconstruction	5,700	2036
507	164558	TANK STORAGE CHLORINE	Reconstruction	4,750	2036
508	164575	TANK PROCESS T4010A CAUSTIC DAY	Reconstruction	920	2036
509	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2036
510	164448	BATTERY-CHARGER	Reconstruction	1,840	2036
511	164366	SWITCH DISCONNECT 2 LL PUMP	Reconstruction	1,740	2036
512	315309	TRANSFORMER AIR COMPRESSOR	Reconstruction	1,840	2036
513	315310	TRANSFORMER AIR COMPRESSOR	Reconstruction	1,900	2036

514	164702	TRANSFORMER AIR 0054	Reconstruction	1,740	2036
515	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2036
516	164633	SAFETY EMER LIGHTING SAFETY 2	Reconstruction	435	2036
517	164554	SAFETY EMER LIGHTING DIST AREA	Reconstruction	475	2036
518	164672	HEATER NATURAL GAS MAU0020	Rehabilitation	34,500	2036
519	62835	HEATER ELECTRIC 01 TOWER	Reconstruction	1,784	2036
520	62706	LOUVRE 01 CL2 STORAGE	Reconstruction	5,352	2036
521	164355	METER FLOW FIT1017 EAST DISCHARGE	Reconstruction	9,500	2036
522	164713	METER FLOW PIONEER CHAMBER	Reconstruction	7,600	2036
523	315313	VALVE RELIEF 7074 PRESSURE GRAHAM DIST	Reconstruction	4,750	2036
524	164421	ANALYZER TURBIDITY RFRP DISCHARGE	Reconstruction	4,750	2036
525	164653	ANALYZER TURBIDITY AIT3319	Reconstruction	3,800	2036
526	123026	ANALYZER CHLORINE AIT1401 PRE	Reconstruction	3,480	2036
527	164548	VALVE BACKFLOW PREVENTER	Reconstruction	3,045	2036
528	164380	ACTUATOR ELECTRIC EAST RAW LINE	Reconstruction	2,610	2036
529	164775	VALVE STAND BY RAW WATER INTAKE	Reconstruction	1,840	2036
530	62677	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,900	2036
531	164772	ANALYZER DO PROBE LL	Reconstruction	1,425	2036
532	62964	ANALYZER CHLORINE PORTABLE	Reconstruction	1,380	2036
533	164773	ANALYZER PH PROBE LL	Reconstruction	920	2036
534	164393	VALVE BUTTERFLY 2030 STR ISO	Reconstruction	870	2036
535	164356	VALVE BUTTERFLY BUTTERFLY EAST ISOLATION	Reconstruction	920	2036
536	164398	VALVE BUTTERFLY 2040 STR ISO	Reconstruction	920	2036
537	164485	VALVE BUTTERFLY PRV7005 INLET	Reconstruction	920	2036
538	164404	TRANSMITTER PRESSURE PRE STR	Reconstruction	950	2036
539	164406	TRANSMITTER TEMP POST STRAINER	Reconstruction	950	2036
540	164455	MOTOR 4320 ELECTRIC EF	Reconstruction	713	2036
541	164687	VALVE RELIEF UV1 AIR	Reconstruction	460	2036
542	164688	VALVE RELIEF UV2 AIR	Reconstruction	475	2036
543	164616	VALVE BUTTERFLY HV4651	Reconstruction	460	2036
544	164349	VALVE BUTTERFLY 3 ISOLATION LL	Reconstruction	435	2036
545	164447	VALVE BUTTERFLY CDP4214	Reconstruction	460	2036
546	164508	VALVE BUTTERFLY UV2-B ISOLATION	Reconstruction	460	2036
547	164533	VALVE BUTTERFLY PRV7061 ISOLATION	Reconstruction	435	2036
548	164535	VALVE BUTTERFLY PRV7061 ISOLATION	Reconstruction	460	2036
549	164412	MOTOR 4370 ELECTRIC RFR	Reconstruction	475	2036
550	164414	MOTOR 4360 ELECTRIC RFR	Reconstruction	460	2036
551					
552					
553	164724	LIFTING DEVICE MAIN LIFT	Reconstruction	475	2037
554	164622	GENERATOR ELECTRIC STAND-BY	Reconstruction	38,000	2037
555	164623	ENGINE DIESEL STANDBY NEW	Maintenance	153,020	2037
556	123427	ENGINE DIESEL STANDBY OLD	Reconstruction	27,600	2037
557	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2037
558	164699	PANEL CONTROL MAIN FILTRATION	Reconstruction	9,500	2037
559	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2037
560	164368	SWITCH DISCONNECT 4 LL PUMP	Reconstruction	1,900	2037
561	164743	SAFETY FIRE SYSTEM	Reconstruction	950	2037
562	164436	SAFETY EMER LIGHTING XR AREA	Reconstruction	460	2037
563	164441	SAFETY EMER LIGHTING LFIT TRUCK	Reconstruction	475	2037
564	164682	HEAT EXCHANGER AHU0010 AIR CONDITIONER	Reconstruction	142,500	2037
565	62795	HEATER ELECTRIC UH01	Reconstruction	1,819	2037

566	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,369	2037
567	164502	UV LIGHT 5021	Reconstruction	200,000	2037
568	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	50,000	2037
569	164714	METER FLOW MARSH CHAMBER	Reconstruction	6,960	2037
570	315314	VALVE RELIEF 7064 PRESSURE WEST LORNE	Reconstruction	4,600	2037
571	164492	ANALYZER AIT5027 PEROXIDE OUT	Reconstruction	4,600	2037
572	164454	PUMP CENT 4320 RF	Reconstruction	4,600	2037
573	164378	ACTUATOR ELECTRIC WEST RAW LINE	Reconstruction	2,850	2037
574	62689	ANALYZER CHLORINE AAH113 GAS DETECT	Reconstruction	2,300	2037
575	164557	METER LEVEL LIT8002 HYPO TANK	Reconstruction	2,300	2037
576	62990	METER LEVEL M LIT-6021 Outside Storage tank	Reconstruction	1,814	2037
577	164774	ANALYZER PH /DO	Reconstruction	1,900	2037
578	62673	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,840	2037
579	164413	PUMP CENT 4360 RFR	Reconstruction	1,380	2037
580	62824	ACTUATOR ELECTRIC 01 FLOW SP	Reconstruction	950	2037
581	164392	VALVE BUTTERFLY 2030 STR ISO	Reconstruction	950	2037
582	164394	VALVE BUTTERFLY 2030 STR ISO	Reconstruction	920	2037
583	164388	VALVE BUTTERFLY 2020 STR ISO	Reconstruction	950	2037
584	164389	VALVE BUTTERFLY 2020 STR CLEAN DISCHARGE	Reconstruction	920	2037
585	164337	VALVE CHECK 1 LL	Reconstruction	870	2037
586	164544	VALVE BUTTERFLY GRAHAM DIST	Reconstruction	920	2037
587	164405	TRANSMITTER PRESSURE POST STR	Reconstruction	920	2037
588	62980	ANALYZER CHLORINE Portable	Reconstruction	645	2037
589	164608	VALVE BUTTERFLY V4289	Reconstruction	460	2037
590	164504	VALVE BUTTERFLY UV2 BY-PASS	Reconstruction	460	2037
591	164516	ACTUATOR ELECTRIC 2 UV2 COOLING	Reconstruction	475	2037
592	164547	VALVE GATE BFP ISOLATION INLET	Reconstruction	475	2037
593	164453	VALVE BUTTERFLY RF4310 OUTLET	Reconstruction	435	2037
594	164456	VALVE BUTTERFLY RF4320 INLET	Reconstruction	460	2037
595	164458	VALVE BUTTERFLY RF4320 OUTLET	Reconstruction	460	2037
596	164419	VALVE BUTTERFLY RFRP4370 INLET	Reconstruction	475	2037
597	164551	VALVE BUTTERFLY FE7092 ISOLATION	Reconstruction	238	2037
598					
599					
600	164725	LIFTING DEVICE LIFT TRI-POD SYSTEM	Reconstruction	1,900	2038
601	164499	MIXER FLASH PEROXIDE SM5025	Reconstruction	2,375	2038
602	164697	PANEL CONTROL UV2	Reconstruction	9,500	2038
603	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2038
604	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2038
605	164701	SAFETY EMER LIGHTING SAFETY 6	Reconstruction	460	2038
606	164686	SAFETY EMER LIGHTING SAFETY 5	Reconstruction	475	2038
607	164693	HEATER UH0016	Reconstruction	1,856	2038
608	164507	UV LIGHT 5022	Reconstruction	200,000	2038
609	62810	VALVE GATE 02 LL	Reconstruction	21,750	2038
610	164717	METER FLOW A	Reconstruction	7,360	2038
611	164638	ANALYZER TURBIDITY AIT3119	Reconstruction	3,680	2038
612	164373	VALVE RELIEF PRESSURE	Reconstruction	2,760	2038
613	315496	SCALE CHLORINE CYLINDER	Reconstruction	2,375	2038
614	164540	VALVE BUTTERFLY WEST DIST ISOLATION	Reconstruction	950	2038
615	164482	VALVE BUTTERFLY 7040 HL OUTLET	Reconstruction	950	2038
616	164641	TRANSMITTER PRESSURE PIT3121	Reconstruction	475	2038
617	164446	VALVE BUTTERFLY CDP4214	Reconstruction	435	2038

618	164503	VALVE BUTTERFLY UV1 ISOLATION	Reconstruction	475	2038
619	164509	VALVE BUTTERFLY UV2 BY-PASS	Reconstruction	475	2038
620	164514	ACTUATOR ELECTRIC 01 UV1 COOLING	Reconstruction	475	2038
621	164515	ACTUATOR ELECTRIC 1 UV2 COOLING	Reconstruction	460	2038
622	164541	VALVE BUTTERFLY GRAHAM ROAD	Reconstruction	475	2038
623	164422	TRANSMITTER PRESSURE RFRP	Reconstruction	475	2038
624					
625					
626	336384	BUILDING ROOF OLD PLANT	Maintenance	37,612	2039
627	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2039
628	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2039
629	315311	HEAT EXCHANGER AHU0030 AIR CONDITIONER	Reconstruction	1,893	2039
630	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,369	2039
631	62680	HEATER ELECTRIC UH03 ELECTRIC LL	Reconstruction	3,275	2039
632	315251	VALVE REGULATING PSI 7051	Reconstruction	27,600	2039
633	164490	ANALYZER TURBIDITY AIT5001 UV INLET	Reconstruction	4,750	2039
634	123026	ANALYZER CHLORINE AIT1401 PRE	Reconstruction	3,480	2039
635	62699	ANALYZER CHLORINE AAH112 GAS DETECT	Reconstruction	2,375	2039
636					
637					
638	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2040
639	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2040
640	164666	SAFETY EMER LIGHTING SAFETY 4	Reconstruction	435	2040
641	164630	SAFETY EMER LIGHTING MAIN ENTRANCE	Reconstruction	475	2040
642	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,759	2040
643	164435	HEATER ELECTRIC UH-0013	Reconstruction	1,856	2040
644	164685	HEATER UH0023	Reconstruction	3,341	2040
645	62638	ANALYZER TURBIDITY AIT109 RAW	Reconstruction	9,500	2040
646	315360	ANALYZER CHLORINE DR900 PORTABLE	Reconstruction	2,175	2040
647	164566	METER FLOW FE5104 PEROXIDE	Reconstruction	1,840	2040
648	164463	VALVE CHECK 7010 HL OUTLET	Reconstruction	1,380	2040
649	164468	VALVE BUTTERFLY 7020 HL INLET	Reconstruction	950	2040
650	164681	MOTOR ELECTRIC EF	Reconstruction	460	2040
651	164593	VALVE BUTTERFLY HV4150	Reconstruction	460	2040
652					
653					
654	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	68,916	2041
655	164732	LIFTING DEVICE SALA BLOCK	Reconstruction	1,900	2041
656	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2041
657	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2041
658	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,893	2041
659	164555	HEATER 0014 DIST AREA	Reconstruction	1,970	2041
660	164693	HEATER UH0016	Reconstruction	3,407	2041
661	164336	MOTOR 1 PUMP ELECT LL	Reconstruction	9,200	2041
662	62688	VALVE BUTTERFLY 01 ISOL RAW LL	Reconstruction	7,360	2041
663	164427	VALVE BUTTERFLY XRP2050 INLET	Reconstruction	460	2041
664					
665					
666	164583	TANK PROCESS ACT4101 ACID CIP	Reconstruction	4,750	2042
667	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2042
668	164401	PANEL CONTROL STRAINER	Reconstruction	2,760	2042
669	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2042

315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,031	2042
164438	HEATER UH-0012	Reconstruction	3,475	2042
62680	HEATER ELECTRIC UH03 ELECTRIC LL	Reconstruction	2,009	2042
123011	ANALYZER TURBIDITY 1 FILTER	Reconstruction	8,700	2042
164617	ACTUATOR PNEUMATIC V4607	Reconstruction	2,760	2042
248471	PUMP CENT 2 RAW SAMPLING	Reconstruction	950	2042
164610	VALVE BUTTERFLY HV4050	Reconstruction	435	2042
164542	VALVE BUTTERFLY TRANSFER ISOLATION	Reconstruction	460	2042
164415	STRAINER 01 RFR WATER	Reconstruction	475	2042
315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	109,983	2043
62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2043
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2043
315488	PANEL DISTRIBUTION DP-0053 ELEC ROOM	Reconstruction	8,700	2043
315483	PANEL BREAKER HLP-7010 HL PUMP 01	Reconstruction	7,600	2043
62770	HEATER ELECTRIC 01 FORCED AIR	Reconstruction	3,545	2043
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,173	2043
62684	HEATER ELECTRIC UH01 ELECTRIC LL	Reconstruction	2,049	2043
62729	FAN EF06 EXHAUST PLANT	Reconstruction	920	2043
164346	MOTOR 3 PUMP ELECT LL	Reconstruction	8,700	2043
315315	VALVE RELIEF 7054 EAST DIST LINE	Reconstruction	4,750	2043
62817	MOTOR 01 BOOSTER ELEC SP	Reconstruction	4,600	2043
164431	METER FLOW XR PUMP	Reconstruction	2,760	2043
62634	VALVE BUTTERFLY 02 ISO LL	Reconstruction	920	2043
360533	BUILDING ROOF NEW PLANT	Maintenance	1,014,561	2044
336381	BUILDING ROOF LOW LIFT	Rehabilitation	200,000	2044
62682	LIFTING DEVICE 02 BRIDGE LL	Reconstruction	10,000	2044
123761	LIFTING DEVICE FORK LIFT MAN BASKET	Reconstruction	10,000	2044
62681	LIFTING DEVICE CHAINFALL 01	Reconstruction	5,000	2044
164567	PUMP DIAPHRAGM HPR5110 PEROXIDE	Reconstruction	4,750	2044
123769	PUMP DIAPHRAGM CTP4015 CIP CAUSTIC	Reconstruction	4,350	2044
315318	DRIVE VFD HL PUMP 04	Maintenance	9,200	2044
315324	DRIVE VFD HL PUMP 03	Maintenance	2,073	2044
315319	DRIVE VFD LL PUMP 03	Reconstruction	17,154	2044
315326	DRIVE VFD LL PUMP 01	Reconstruction	17,713	2044
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2044
62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2044
278217	TANK LOW LIFT SCBA	Reconstruction	1,840	2044
164743	SAFETY FIRE SYSTEM	Reconstruction	45,314	2044
164672	HEATER NATURAL GAS MAU0020	Reconstruction	200,900	2044
164611	HEATER 4004 CIP/EFM CAUSTIC	Reconstruction	2,091	2044
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,315	2044
164685	HEATER UH0023	Reconstruction	3,617	2044
123772	ACTUATOR PNEUMATIC V4019	Reconstruction	2,760	2044
315317	VALVE CHLORINE INJECTOR	Reconstruction	1,840	2044
164428	VALVE BUTTERFLY XRP2060 INLET	Reconstruction	475	2044
164429	VALVE BUTTERFLY XRP 2050 OUTLET	Reconstruction	435	2044
164430	VALVE BUTTERFLY XRP 2060 OUTLET	Reconstruction	460	2044

336383	BUILDING ROOF CHLORINE	Maintenance	7,462	2045
123771	PUMP DIAPHRAGM CFP8040 HYPO POST	Reconstruction	4,600	2045
62687	MCC 02 LOW LIFT	Reconstruction	23,000	2045
315482	PANEL LIGHTING LP-0054 ELEC ROOM	Reconstruction	9,200	2045
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2045
315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2045
62797	HEATER ELECTRIC UH01-A	Reconstruction	2,132	2045
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,462	2045
62700	FAN 01 EXHAUST CHLORINE BLDG	Reconstruction	950	2045
62675	FAN EF04 EXHAUST LL	Reconstruction	475	2045
62676	FAN EF05 EXHAUST LL	Reconstruction	460	2045
164644	FILTER 2 WATER MICRO PALL RACK	Reconstruction	400,000	2045
164335	PUMP CENT 1 VERT TURBINE LL	Reconstruction	14,250	2045
164341	MOTOR 2 PUMP ELECT LL	Reconstruction	9,500	2045
164467	MOTOR 7040 ELECTRIC HL	Reconstruction	9,500	2045
164716	METER FLOW EAGLE WEST CHAMBER	Reconstruction	7,600	2045
62829	VALVE REGULATING 01 PRESSURE ALTITUDE	Reconstruction	4,600	2045
164637	ANALYZER PARTICLE AIT3120	Reconstruction	3,800	2045
315316	VALVE CHLORINE INJECTOR	Reconstruction	1,740	2045
164650	METER FLOW FIT3211 RECIRCULATING	Reconstruction	1,840	2045
62828	VALVE ALTITUDE	Reconstruction	1,840	2045
62653	VALVE BUTTERFLY 03 LL	Reconstruction	950	2045
164511	ACTUATOR ELECTRIC UV OUTLET	Reconstruction	920	2045
164520	VALVE RELIEF AIR	Reconstruction	870	2045
164426	MOTOR 2060 ELECTRIC XRP	Reconstruction	950	2045
164663	TRANSMITTER PRESSURE PIT3421	Reconstruction	475	2045
164418	VALVE BUTTERFLY 4360 OUTLET	Reconstruction	460	2045
315478	BUILDING ROADS	Maintenance	119,603	2046
315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	25,443	2046
164573	PUMP DIAPHRAGM BSTP4502 CIP BISUL	Reconstruction	4,750	2046
62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2046
164694	PANEL POWER FACTOR CORRECTION PFC-0052 EL	Reconstruction	9,500	2046
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2046
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,611	2046
164651	FILTER 3 WATER MICRO PALL RACK	Reconstruction	400,000	2046
164340	PUMP CENT 2 VERT TURBINE LL	Reconstruction	13,050	2046
164479	MOTOR 7020 ELECTRIC HL	Reconstruction	9,200	2046
164489	ANALYZER CHLORINE AIT5005 UV INLET	Reconstruction	5,225	2046
164597	ACTUATOR PNEUMATIC V4032	Reconstruction	2,610	2046
315478	BUILDING ROADS	Maintenance	121,995	2047
315476	BUILDING LIGHTING ALL BUILDINGS	Maintenance	13,974	2047
336384	BUILDING ROOF OLD PLANT	Maintenance	34,337	2047
123764	VEHICLE WTP TRUCK F-250	Reconstruction	50,000	2047
123765	VEHICLE WTP TRUCK ARCTIC SNOW PLOW	Reconstruction	7,600	2047
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2047
62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2047
315481	FIRE EXTINGUISHER ALL BUILDINGS	Reconstruction	13,974	2047

774	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,764	2047
775	62646	VALVE SLUICE GATE W2 SURGE	Reconstruction	8,700	2047
776	164351	MOTOR 4 PUMP ELECT LL	Reconstruction	9,200	2047
777	164493	ANALYZER CHLORINE AIT5006 UV OUTLET	Reconstruction	4,785	2047
778	62812	VALVE REGULATING 01 FLOW RAW	Reconstruction	4,750	2047
779	164645	ANALYZER PARTICLE AIT3220	Reconstruction	3,800	2047
780	164720	VALVE BACKFLOW 1 PREVENTER	Reconstruction	3,325	2047
781	62645	METER LEVEL LIT131 WELL 2 EAST	Reconstruction	2,850	2047
782	164668	ANALYZER PH PORTABLE	Reconstruction	2,375	2047
783	62827	VALVE GATE 02 ISOL SP	Reconstruction	1,900	2047
784	164553	METER FLOW FE7082	Reconstruction	1,900	2047
785	164333	TRANSMITTER TEMP RAW SAMPLING	Reconstruction	950	2047
786	164612	TRANSMITTER PRESSURE LIT4006	Reconstruction	475	2047
787	164655	TRANSMITTER PRESSURE PIT3304	Reconstruction	475	2047
788	164529	VALVE BUTTERFLY ISOLATION	Reconstruction	460	2047
789	164432	VALVE CHECK XRP2050	Reconstruction	475	2047
790					
791					
792	315478	BUILDING ROADS	Maintenance	124,436	2048
793	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	127,824	2048
794	164560	PUMP DIAPHRAGM CLTP4402 HYPO CIP	Reconstruction	4,600	2048
795	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2048
796	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2048
797	164440	SAFETY EMER LIGHTING MICRO FILT	Reconstruction	460	2048
798	164671	HEATER AHU0010	Reconstruction	9,500	2048
799	164678	BOILER B-1	Reconstruction	4,350	2048
800	164679	BOILER B-2	Reconstruction	4,600	2048
801	164592	HEATER 4104 ACID CIP TANK	Reconstruction	1,900	2048
802	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,919	2048
803	62701	FAN 02 EXHAUST CHLORINE BLDG	Reconstruction	920	2048
804	164472	PUMP CENT 7030 HL	Reconstruction	87,000	2048
805	164478	PUMP CENT 7040 HL	Rehabilitation	75,000	2048
806	164603	ACTUATOR PNEUMATIC V4125	Reconstruction	2,850	2048
807	164625	METER FLOW FIT9006	Reconstruction	2,300	2048
808	164425	PUMP CENT 2060 XRP	Reconstruction	1,840	2048
809	164561	METER FLOW 4405 HYPO CIP	Reconstruction	1,425	2048
810	62662	VALVE PLUG 01 ISOL PR LL	Reconstruction	950	2048
811	62815	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	870	2048
812	164381	VALVE BUTTERFLY 2010 STR ISO	Reconstruction	920	2048
813	163379	VALVE BUTTERFLY 02 EAST RAW LINE	Reconstruction	920	2048
814	164601	VALVE BUTTERFLY V4032	Reconstruction	460	2048
815	164494	TRANSMITTER PRESSURE PIT5003	Reconstruction	475	2048

Tri-County Asset Inventory $ 18,144,614

Index	Asset Number	Asset Description	Asset Class	Installation Date	Replacement Cost	Performance Score
1	360537	SETTLING POND NEW PLANT	6634-WTTC-BG	1989-01-01T	$ 1,000,000	0.45
2	360533	BUILDING ROOF NEW PLANT	6634-WTTC-BG	2008-08-08T	$ 3,000,000	0.6
3	315478	BUILDING ROADS	6634-WTTC-BG	2008-08-08T	$ 600,000	0.5
4	315475	BUILDING FLOOR ALL BUILDINGS	6634-WTTC-BG	2008-08-08T	$ 2,000,000	0.5
5	315476	BUILDING LIGHTING ALL BUILDINGS	6634-WTTC-BG	2008-08-08T	$ 500,000	0.3
6	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	6634-WTTC-BG	2008-08-08T	$ 500,000	0.5
7	336381	BUILDING ROOF LOW LIFT	6634-WTTC-BG	2008-08-08T	$ 300,000	0.7
8	336383	BUILDING ROOF CHLORINE	6634-WTTC-BG	1991-07-01T	$ 200,000	0.7
9	336384	BUILDING ROOF OLD PLANT	6634-WTTC-BG	2008-08-08T	$ 200,000	0.4
10	315480	BUILDING FENCING	6634-WTTC-BG	1993-01-01T	$ 50,000	0.5
11	123764	VEHICLE WTP TRUCK F-250	6634-WTTC-BG	2008-08-08T	$ 50,000	0.25
12	315479	BUILDING DRAINAGE	6634-WTTC-BG	2016-01-22T	$ 50,000	0.5
13	123765	VEHICLE WTP TRUCK ARCTIC SNOW PLOW	6634-WTTC-BG	2001-01-09T	$ 8,000	0.3
14	123760	VEHICLE LIFT TRUCK CLAR	6634-WTTC-BG	2008-08-08T	$ 5,000	0.35
15	315489	LIFTING DEVICE A FRAME 2 TON HL PUMPS AREA	6634-WTTC-BG	1993-01-01T	$ 5,000	0.6
16	62682	LIFTING DEVICE 02 BRIDGE LL	6634-WTTC-BG	1993-01-01T	$ 3,000	0.7
17	123761	LIFTING DEVICE FORK LIFT MAN BASKET	6634-WTTC-BG	2008-08-08T	$ 2,000	0.5
18	164725	LIFTING DEVICE LIFT TRI-POD SYSTEM	6634-WTTC-BG	2003-06-13T	$ 2,000	0.6
19	164731	LIFTING DEVICE SALA TRI-POD	6634-WTTC-BG	2003-06-13T	$ 2,000	0.65
20	164732	LIFTING DEVICE SALA BLOCK	6634-WTTC-BG	1993-01-01T	$ 2,000	0.7
21	62681	LIFTING DEVICE CHAINFALL 01	6634-WTTC-BG	2008-08-08T	$ 500	0.2
22	164724	LIFTING DEVICE MAIN LIFT	6634-WTTC-BG	2008-08-08T	$ 500	0.55
23	164581	TANK PROCESS T4601 NEUTRALISATION CIP	6634-WTTC-CH	2008-08-08T	$ 6,000	0.6
24	315312	PUMP DIAPHRAGM CFP8030 HYPO POST UV	6634-WTTC-CH	2008-08-08T	$ 5,000	0.6
25	164567	PUMP DIAPHRAGM HPR5110 PEROXIDE	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
26	164568	PUMP DIAPHRAGM HPR5120 PEROXIDE	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
27	164573	PUMP DIAPHRAGM BSTP4502 CIP BISUL	6634-WTTC-CH	2008-08-08T	$ 5,000	0.4
28	164579	PUMP DIAPHRAGM ATP4115 CIP ACID	6634-WTTC-CH	2008-08-08T	$ 5,000	0.25
29	164582	TANK PROCESS CCT4001 CAUSTIC CIP/EFM	6634-WTTC-CH	2008-08-08T	$ 5,000	0.55
30	164583	TANK PROCESS ACT4101 ACID CIP	6634-WTTC-CH	2008-08-08T	$ 5,000	0.55
31	164588	PUMP DIAPHRAGM CFP8020 CL2 TRIM	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
32	164589	PUMP DIAPHRAGM CFP8010 CL2 TRIM	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
33	123769	PUMP DIAPHRAGM CTP4015 CIP CAUSTIC	6634-WTTC-CH	2008-08-08T	$ 5,000	-0.01
34	123771	PUMP DIAPHRAGM CFP8040 HYPO POST	6634-WTTC-CH	2008-08-08T	$ 5,000	0.45
35	164558	TANK STORAGE CHLORINE	6634-WTTC-CH	2008-08-08T	$ 5,000	0.6
36	164560	PUMP DIAPHRAGM CLTP4402 HYPO CIP	6634-WTTC-CH	2008-08-08T	$ 5,000	0.4
37	164570	TANK PROCESS HPT5101 PEROXIDE	6634-WTTC-CH	2008-08-08T	$ 3,000	0.45
38	164499	MIXER FLASH PEROXIDE SM5025	6634-WTTC-CH	2008-08-08T	$ 2,500	0.6
39	164572	TANK T4510A BISFULFITE DAY	6634-WTTC-CH	2008-08-08T	$ 1,000	0.55
40	164575	TANK PROCESS T4010A CAUSTIC DAY	6634-WTTC-CH	2008-08-08T	$ 1,000	0.6
41	164578	TANK PROCESS T4110A CIP ACID DAY	6634-WTTC-CH	2008-08-08T	$ 1,000	0.55
42	164559	TANK PROCESS CHLORINE DAY	6634-WTTC-CH	1989-01-01T	$ 1,000	0.65
43	360540	SCADA SERVER NEW PLANT	6634-WTTC-EL	2008-08-08T	$ 160,000	-0.01
44	164622	GENERATOR ELECTRIC STAND-BY	6634-WTTC-EL	2008-08-08T	$ 40,000	0.5
45	164623	ENGINE DIESEL STANDBY NEW	6634-WTTC-EL	2011-01-19T	$ 500,000	0.55
46	315318	DRIVE VFD HL PUMP 04	6634-WTTC-EL	2022-06-15T	$ 40,000	1
47	315320	DRIVE VFD HL PUMP 01	6634-WTTC-EL	2022-06-22T	$ 34,557	1
48	315324	DRIVE VFD HL PUMP 03	6634-WTTC-EL	1993-01-01T	$ 34,557	0.85
49	123427	ENGINE DIESEL STANDBY OLD	6634-WTTC-EL	2002-01-05T	$ 30,000	0.4
50	123428	GENERATOR ELECTRIC	6634-WTTC-EL	1993-01-01T	$ 30,000	0.45
51	62687	MCC 02 LOW LIFT	6634-WTTC-EL	2008-08-08T	$ 25,000	0.4
52	164683	MCC MCC-0062 MECHANICAL ROOM	6634-WTTC-EL	2008-08-08T	$ 20,000	0.55
53	315319	DRIVE VFD LL PUMP 03	6634-WTTC-EL	2008-08-08T	$ 18,645	-0.01
54	315326	DRIVE VFD LL PUMP 01	6634-WTTC-EL	2008-08-08T	$ 18,645	0.2
55	315327	DRIVE VFD LL PUMP 04	6634-WTTC-EL	1993-01-01T	$ 18,645	0.2
56	62794	PANEL TRANSFER 01 ELECT HL	6634-WTTC-EL	1993-01-01T	$ 10,000	0.4
57	62778	PANEL PLC ICP-B HL	6634-WTTC-EL	8/8/2008	$ 10,000	0.55
58	62779	UPS 01 BATTERY BANK HL	6634-WTTC-EL	5/20/2019	$ 10,000	0.55
59	62836	MCC 03 TOWER	6634-WTTC-EL	6/6/2023	$ 10,000	0.65
60	164694	PANEL POWER FACTOR CORRECTION PFC-0052 ELEC	6634-WTTC-EL	8/8/2008	$ 10,000	0.45
61	164696	PANEL CONTROL UV1	6634-WTTC-EL	8/8/2008	$ 10,000	0.55
62	164697	PANEL CONTROL UV2	6634-WTTC-EL	8/8/2008	$ 10,000	0.6

63	164698	PANEL CONTROL CP-2000 HMI	6634-WTTC-EL	7/1/1991	$ 10,000	0.4
64	164699	PANEL CONTROL MAIN FILTRATION	6634-WTTC-EL	8/8/2008	$ 10,000	0.65
65	164689	MCC MCC-0061 ELECTRICAL ROOM	6634-WTTC-EL	8/8/2008	$ 10,000	0.5
66	164690	MCC MCC-0060 ELECTRICAL ROOM	6634-WTTC-EL	8/8/2008	$ 10,000	0.55
67	164692	PANEL TRANSFER GENERATOR	6634-WTTC-EL	8/8/2008	$ 10,000	0.55
68	315482	PANEL LIGHTING LP-0054 ELEC ROOM	6634-WTTC-EL	8/8/2008	$ 10,000	0.65
69	315487	PANEL PLC CP-5001 ELEC ROOM	6634-WTTC-EL	1/1/1989	$ 10,000	0.35
70	315488	PANEL DISTRIBUTION DP-0053 ELEC ROOM	6634-WTTC-EL	8/8/2008	$ 10,000	0.6
71	315493	PANEL PLC CP-1000 LL	6634-WTTC-EL	8/8/2008	$ 10,000	0.4
72	315495	PANEL POWER FACTOR CORRECTION PFC-0056 LL EL	6634-WTTC-EL	8/8/2008	$ 10,000	0.5
73	164369	PANEL STARTER 1 LL PUMP	6634-WTTC-EL	8/8/2008	$ 8,000	0.35
74	164370	PANEL STARTER 2 LL PUMP	6634-WTTC-EL	9/19/2009	$ 8,000	0.4
75	164371	PANEL STARTER 3 LL PUMP	6634-WTTC-EL	1/19/2011	$ 8,000	0.45
76	164372	PANEL STARTER 4 LL PUMP	6634-WTTC-EL	8/8/2008	$ 8,000	0.3
77	315490	PANEL LIGHTING LP-0055A HVAC ROOM	6634-WTTC-EL	8/8/2008	$ 8,000	0.55
78	315491	PANEL LIGHTING LP-0055 HVAC ROOM	6634-WTTC-EL	8/8/2008	$ 8,000	0.7
79	315483	PANEL BREAKER HLP-7010 HL PUMP 01	6634-WTTC-EL	8/8/2008	$ 8,000	0.6
80	315484	PANEL BREAKER HLP-7020 HL PUMP 02	6634-WTTC-EL	8/8/2008	$ 8,000	0.65
81	315485	PANEL BREAKER HLP-7030 HL PUMP 03	6634-WTTC-EL	8/8/2008	$ 8,000	0.7
82	315486	PANEL BREAKER HLP-7040 HL PUMP 04	6634-WTTC-EL	8/8/2008	$ 8,000	0.55
83	164707	PANEL ALARM/DIALER	6634-WTTC-EL	6/15/2022	$ 5,000	0.55
84	164691	PANEL SWB-0051 BREAKER	6634-WTTC-EL	6/22/2022	$ 5,000	0.6
85	62642	PANEL CONTROL 01 SAMPLE PUMPS	6634-WTTC-EL	1/1/1993	$ 4,000	0.3
86	164401	PANEL CONTROL STRAINER	6634-WTTC-EL	8/8/2008	$ 3,000	0.55
87	164684	TRANSFORMER AIR T-0055	6634-WTTC-EL	8/8/2008	$ 3,000	0.55
88	164448	BATTERY-CHARGER	6634-WTTC-EL	1/1/1993	$ 2,000	0.5
89	164365	SWITCH DISCONNECT 1 LL PUMP	6634-WTTC-EL	1/1/1993	$ 2,000	0.55
90	164366	SWITCH DISCONNECT 2 LL PUMP	6634-WTTC-EL	1/1/1993	$ 2,000	0.5
91	164367	SWITCH DISCONNECT 3 LL PUMP	6634-WTTC-EL	1/1/1993	$ 2,000	0.45
92	164368	SWITCH DISCONNECT 4 LL PUMP	6634-WTTC-EL	1/1/1993	$ 2,000	0.4
93	315309	TRANSFORMER AIR COMPRESSOR	6634-WTTC-EL	1/1/1993	$ 2,000	0.6
94	315310	TRANSFORMER AIR COMPRESSOR	6634-WTTC-EL	1/1/1993	$ 2,000	0.6
95	164695	TRANSFORMER AIR T-0053	6634-WTTC-EL	8/8/2008	$ 2,000	0.5
96	164700	TRANSFORMER AIR 0072	6634-WTTC-EL	8/8/2008	$ 2,000	0.6
97	164702	TRANSFORMER AIR 0054	6634-WTTC-EL	8/8/2008	$ 2,000	0.6
98	164395	DRIVE 2030 STR MOTOR	6634-WTTC-EL	8/8/2008	$ 1,000	0.4
99	164400	DRIVE 2040 STR MOTOR	6634-WTTC-EL	8/8/2008	$ 1,000	0.45
100	164384	DRIVE 2010 STR CLEAN MOTOR	6634-WTTC-EL	8/8/2008	$ 1,000	0.45
101	164390	DRIVE 2020 STR MOTOR	6634-WTTC-EL	1/5/2002	$ 1,000	0.4
102	62685	UPS 01 BATTERY BANK LL	6634-WTTC-EL	8/8/2008	$ 1,000	0.45
103	315494	UPS 02 BATTERY BANK LL	6634-WTTC-EL	1/1/1993	$ 1,000	0.5
104	164587	SAFETY EYE WASH/SHOWER 01	6634-WTTC-HS	1/1/1993	$ 10,000	0.45
105	315481	FIRE EXTINGUISHER ALL BUILDINGS	6634-WTTC-HS	1/1/1993	$ 5,000	0.5
106	278217	TANK LOW LIFT SCBA	6634-WTTC-HS	1/1/1993	$ 2,000	0.4
107	123762	SAFETY ATMOSPHERIC TESTER	6634-WTTC-HS	8/8/2008	$ 2,000	0.5
108	164743	SAFETY FIRE SYSTEM	6634-WTTC-HS	1/1/1993	$ 1,000	0.55
109	164590	SAFETY EYE WASH/SHOWER 02	6634-WTTC-HS	1/1/1993	$ 1,000	0.5
110	164742	SAFETY ATMOSPHERE DETECTOR	6634-WTTC-HS	8/8/2008	$ 650	0.3
111	164703	SAFETY EMER LIGHTING SAFETY 7	6634-WTTC-HS	1/1/1993	$ 500	0.65
112	164704	SAFETY EMER LIGHTING SAFETY 8	6634-WTTC-HS	8/8/2008	$ 500	0.4
113	164701	SAFETY EMER LIGHTING SAFETY 6	6634-WTTC-HS	1/1/1993	$ 500	0.6
114	164686	SAFETY EMER LIGHTING SAFETY 5	6634-WTTC-HS	8/8/2008	$ 500	0.6
115	164666	SAFETY EMER LIGHTING SAFETY 4	6634-WTTC-HS	8/8/2008	$ 500	0.65
116	164629	SAFETY EMER LIGHTING WASHROOM	6634-WTTC-HS	8/8/2008	$ 500	0.6
117	164630	SAFETY EMER LIGHTING MAIN ENTRANCE	6634-WTTC-HS	8/8/2008	$ 500	0.65
118	164631	SAFETY EMER LIGHTING BOARDROOM	6634-WTTC-HS	1/1/1993	$ 500	0.7
119	164632	SAFETY EMER LIGHTING SAFETY 1	6634-WTTC-HS	1/1/1993	$ 500	0.65
120	164633	SAFETY EMER LIGHTING SAFETY 2	6634-WTTC-HS	1/1/1993	$ 500	0.6
121	164635	SAFETY EMER LIGHTING SAFETY 3	6634-WTTC-HS	1/1/1993	$ 500	0.7
122	164584	SAFETY EMER LIGHTING CHEMICAL 1	6634-WTTC-HS	8/8/2008	$ 500	0.5
123	164585	SAFETY EMER LIGHTING CHEMICAL 2	6634-WTTC-HS	1/1/1993	$ 500	0.55
124	164496	SAFETY EMER LIGHTING UV AREA	6634-WTTC-HS	8/8/2008	$ 500	0.5
125	164436	SAFETY EMER LIGHTING XR AREA	6634-WTTC-HS	8/8/2008	$ 500	0.7
126	164437	SAFETY EMER LIGHTING MAINT AREA	6634-WTTC-HS	1/1/2020	$ 500	0.65
127	164439	SAFETY EMER LIGHTING W&D AREA LIFT FILT	6634-WTTC-HS	8/8/2008	$ 500	0.75

128	164440	SAFETY EMER LIGHTING MICRO FILT	6634-WTTC-HS	8/8/2008	$ 500	0.75
129	164441	SAFETY EMER LIGHTING LFIT TRUCK	6634-WTTC-HS	1/1/1993	$ 500	0.7
130	164443	SAFETY EMER LIGHTING LIFT TRUCK	6634-WTTC-HS	1/1/1993	$ 500	0.6
131	164554	SAFETY EMER LIGHTING DIST AREA	6634-WTTC-HS	8/8/2008	$ 500	0.6
132	164487	SAFETY EMER LIGHTING HL AREA	6634-WTTC-HS	8/8/2008	$ 500	0.55
133	164524	SAFETY EMER LIGHTING HL AREA	6634-WTTC-HS	8/8/2008	$ 500	0.55
134	164682	HEAT EXCHANGER AHU0010 AIR CONDITIONER	6634-WTTC-HV	6/13/2003	$ 150,000	0.55
135	164672	HEATER NATURAL GAS MAU0020	6634-WTTC-HV	1/1/1993	$ 50,000	0.6
136	315308	PUMP CENT HWP0034 HEAT RECIRC	6634-WTTC-HV	6/13/2003	$ 10,000	0.45
137	164671	HEATER AHU0010	6634-WTTC-HV	1/1/1993	$ 10,000	0.55
138	164677	PUMP CENT HWP0035	6634-WTTC-HV	1/1/1993	$ 10,000	0.35
139	164586	FAN 0021 EXHAUST EMERGENCY	6634-WTTC-HV	8/8/2008	$ 7,000	0.45
140	164678	BOILER B-1	6634-WTTC-HV	8/8/2008	$ 5,000	0.55
141	164679	BOILER B-2	6634-WTTC-HV	8/8/2008	$ 5,000	0.6
142	62770	HEATER ELECTRIC 01 FORCED AIR	6634-WTTC-HV	1/1/1993	$ 2,500	0.3
143	62795	HEATER ELECTRIC UH01	6634-WTTC-HV	1/1/1992	$ 2,000	0.15
144	62796	HEATER ELECTRIC UH05	6634-WTTC-HV	1/1/1993	$ 2,000	0.35
145	62797	HEATER ELECTRIC UH01-A	6634-WTTC-HV	8/8/2008	$ 2,000	0.2
146	62798	HEATER ELECTRIC UH01-B	6634-WTTC-HV	1/9/2001	$ 2,000	0.25
147	164592	HEATER 4104 ACID CIP TANK	6634-WTTC-HV	8/8/2008	$ 2,000	0.35
148	164611	HEATER 4004 CIP/EFM CAUSTIC	6634-WTTC-HV	8/8/2008	$ 2,000	0.25
149	315311	HEAT EXCHANGER AHU0030 AIR CONDITIONER	6634-WTTC-HV	1/9/2001	$ 2,000	0.5
150	315307	HEATER NATURAL GAS WATER TANKLESS	6634-WTTC-HV	1/9/2001	$ 2,000	0.9
151	164680	FAN EF0022 EXHAUST	6634-WTTC-HV	8/8/2008	$ 2,000	0.65
152	164555	HEATER 0014 DIST AREA	6634-WTTC-HV	8/8/2008	$ 1,000	0.35
153	164442	HEATER UH-0015	6634-WTTC-HV	8/8/2008	$ 1,000	0.35
154	164438	HEATER UH-0012	6634-WTTC-HV	1/1/1993	$ 1,000	0.3
155	62684	HEATER ELECTRIC UH01 ELECTRIC LL	6634-WTTC-HV	8/8/2008	$ 1,000	0.35
156	164435	HEATER ELECTRIC UH-0013	6634-WTTC-HV	8/8/2008	$ 1,000	0.35
157	62835	HEATER ELECTRIC 01 TOWER	6634-WTTC-HV	8/8/2008	$ 1,000	0.6
158	62710	HEATER ELECTRIC UH02 CL 2	6634-WTTC-HV	1/1/1993	$ 1,000	0.4
159	62728	HEATER ELECTRIC UH07 PLANT	6634-WTTC-HV	8/8/2008	$ 1,000	0.4
160	62729	FAN EF06 EXHAUST PLANT	6634-WTTC-HV	8/8/2008	$ 1,000	0.35
161	62678	HEATER ELECTRIC UH02 ELECTRIC LL	6634-WTTC-HV	8/8/2008	$ 1,000	0.4
162	62679	HEATER ELECTRIC UH04 ELECTRIC LL	6634-WTTC-HV	8/8/2008	$ 1,000	0.3
163	62680	HEATER ELECTRIC UH03 ELECTRIC LL	6634-WTTC-HV	8/8/2008	$ 1,000	0.2
164	62700	FAN 01 EXHAUST CHLORINE BLDG	6634-WTTC-HV	8/8/2008	$ 1,000	0.25
165	62701	FAN 02 EXHAUST CHLORINE BLDG	6634-WTTC-HV	8/8/2008	$ 1,000	0.4
166	62705	HEATER ELECTRIC UH01 CL 2	6634-WTTC-HV	8/8/2008	$ 1,000	0.4
167	62706	LOUVRE 01 CL2 STORAGE	6634-WTTC-HV	8/8/2008	$ 1,000	0.6
168	62834	FAN 01 EXHAUST ELECT TOWER	6634-WTTC-HV	8/8/2008	$ 500	0.25
169	62674	FAN EF03 EXHAUST LL	6634-WTTC-HV	8/8/2008	$ 500	0.35
170	62675	FAN EF04 EXHAUST LL	6634-WTTC-HV	8/8/2008	$ 500	0.25
171	62676	FAN EF05 EXHAUST LL	6634-WTTC-HV	8/8/2008	$ 500	0.25
172	164685	HEATER UH0023	6634-WTTC-HV	7/9/2003	$ 500	0.35
173	164693	HEATER UH0016	6634-WTTC-HV	8/8/2008	$ 500	0.6
174	164711	TANK STORAGE WATER WEST LORNE STAND PIPE	6634-WTTC-PR	8/8/2008	$ 2,000,000	0.6
175	164705	TANK STORAGE WATER SOUTH	6634-WTTC-PR	8/8/2008	$ 500,000	0.55
176	164706	TANK STORAGE WATER NORTH	6634-WTTC-PR	8/8/2008	$ 500,000	0.5
177	164643	FILTER 1 WATER MICRO PALL RACK	6634-WTTC-PR	8/8/2008	$ 400,000	-0.01
178	164644	FILTER 2 WATER MICRO PALL RACK	6634-WTTC-PR	3/14/2009	$ 400,000	0.05
179	164651	FILTER 3 WATER MICRO PALL RACK	6634-WTTC-PR	8/8/2008	$ 400,000	0.1
180	164658	FILTER 4 WATER MICRO PALL RACK	6634-WTTC-PR	8/8/2008	$ 400,000	0.15
181	360539	PIPING INTAKE	6634-WTTC-PR	8/8/2008	$ 300,000	0.3
182	360535	PIPING PROCESS ALL BUILDINGS	6634-WTTC-PR	1/1/2000	$ 200,000	0.5
183	164502	UV LIGHT 5021	6634-WTTC-PR	8/8/2008	$ 200,000	0.4
184	164507	UV LIGHT 5022	6634-WTTC-PR	8/8/2008	$ 200,000	0.45
185	315499	TANK PROCESS WET WELL 01 EAST LL	6634-WTTC-PR	8/8/2008	$ 500,000	0.65
186	315500	TANK PROCESS WET WELL 02 WEST LL	6634-WTTC-PR	8/8/2008	$ 500,000	0.65
187	164460	PUMP CENT 7010 HL	6634-WTTC-PR	8/8/2008	$ 100,000	0.65
188	164466	PUMP CENT 7020 HL	6634-WTTC-PR	8/8/2008	$ 100,000	0.35
189	164472	PUMP CENT 7030 HL	6634-WTTC-PR	8/8/2008	$ 100,000	0.25
190	164478	PUMP CENT 7040 HL	6634-WTTC-PR	8/8/2008	$ 100,000	0.3
191	315251	VALVE REGULATING PSI 7051	6634-WTTC-PR	8/8/2008	$ 30,000	0.8
192	315252	VALVE REGULATING PSI 7061	6634-WTTC-PR	8/8/2008	$ 30,000	0.8

193	62809	VALVE GATE 01 LL	6634-WTTC-PR	8/8/2008	$ 25,000	0.35
194	62810	VALVE GATE 02 LL	6634-WTTC-PR	8/8/2008	$ 25,000	0.75
195	62811	VALVE GLOBE 01 BACKFLUSH LL	6634-WTTC-PR	8/8/2008	$ 25,000	0.35
196	164335	PUMP CENT 1 VERT TURBINE LL	6634-WTTC-PR	8/8/2008	$ 15,000	0.35
197	164340	PUMP CENT 2 VERT TURBINE LL	6634-WTTC-PR	8/8/2008	$ 15,000	0.45
198	164345	PUMP CENT 3 VERT TURBINE LL	6634-WTTC-PR	8/8/2008	$ 15,000	0.15
199	164350	PUMP CENT 4 VERT TURBINE LL	6634-WTTC-PR	8/8/2008	$ 15,000	0.5
200	315304	COMPRESSOR AIR AC4701 COMPRESSOR B	6634-WTTC-PR	8/8/2008	$ 10,000	0.5
201	315305	COMPRESSOR AIR AC4702 COMPRESSOR A	6634-WTTC-PR	8/8/2008	$ 10,000	0.55
202	62638	ANALYZER TURBIDITY AIT109 RAW	6634-WTTC-PR	1/1/1993	$ 10,000	0.5
203	62646	VALVE SLUICE GATE W2 SURGE	6634-WTTC-PR	1/1/1993	$ 10,000	0.3
204	62647	VALVE SLUICE GATE 01 INTAKE	6634-WTTC-PR	1/1/1993	$ 10,000	0.3
205	62666	VALVE GATE E2 SLUICE SURGE	6634-WTTC-PR	8/8/2008	$ 10,000	0.45
206	62667	VALVE GATE 03 PUMP WELL ISOL	6634-WTTC-PR	8/8/2008	$ 10,000	0.4
207	62816	PUMP CENT 01 FIRE TOWER	6634-WTTC-PR	8/8/2008	$ 10,000	0.2
208	123011	ANALYZER TURBIDITY 1 FILTER	6634-WTTC-PR	8/8/2008	$ 10,000	0.55
209	123012	ANALYZER TURBIDITY 2 FILTER	6634-WTTC-PR	8/8/2008	$ 10,000	0.5
210	123013	ANALYZER TURBIDITY 3 FILTER	6634-WTTC-PR	1/1/1993	$ 10,000	0.45
211	164391	STRAINER 2030 RAW WATER	6634-WTTC-PR	8/8/2008	$ 10,000	-0.01
212	164386	STRAINER 2020 RAW WATER	6634-WTTC-PR	8/8/2008	$ 10,000	0.6
213	164382	STRAINER 2010 WATER RAW	6634-WTTC-PR	8/8/2008	$ 10,000	0.6
214	123933	PUMP 1	6634-WTTC-PR	8/8/2008	$ 10,000	0.3
215	123934	PUMP 2	6634-WTTC-PR	8/8/2008	$ 10,000	0.35
216	164336	MOTOR 1 PUMP ELECT LL	6634-WTTC-PR	1/1/1993	$ 10,000	-0.01
217	164341	MOTOR 2 PUMP ELECT LL	6634-WTTC-PR	8/8/2008	$ 10,000	-0.01
218	164346	MOTOR 3 PUMP ELECT LL	6634-WTTC-PR	8/8/2008	$ 10,000	-0.01
219	164351	MOTOR 4 PUMP ELECT LL	6634-WTTC-PR	8/8/2008	$ 10,000	-0.01
220	164355	METER FLOW FIT1017 EAST DISCHARGE	6634-WTTC-PR	8/8/2008	$ 10,000	0.6
221	164361	METER FLOW FIT 1027 RAW WEST DICHARGE	6634-WTTC-PR	8/8/2008	$ 10,000	0.65
222	164396	STRAINER 2040 RAW WATER	6634-WTTC-PR	8/8/2008	$ 10,000	0.5
223	164495	ANALYZER UV AIT5004	6634-WTTC-PR	8/8/2008	$ 10,000	0.5
224	164461	MOTOR 7010 ELECTRIC HL	6634-WTTC-PR	8/8/2008	$ 10,000	0.4
225	164467	MOTOR 7040 ELECTRIC HL	6634-WTTC-PR	8/8/2008	$ 10,000	0.25
226	164473	MOTOR 7030 ELECTRIC	6634-WTTC-PR	8/8/2008	$ 10,000	0.3
227	164479	MOTOR 7020 ELECTRIC HL	6634-WTTC-PR	8/8/2008	$ 10,000	0.45
228	164712	METER FLOW GLENCOE CHAMBER	6634-WTTC-PR	8/8/2008	$ 8,000	0.5
229	164713	METER FLOW PIONEER CHAMBER	6634-WTTC-PR	8/8/2008	$ 8,000	0.6
230	164714	METER FLOW MARSH CHAMBER	6634-WTTC-PR	8/8/2008	$ 8,000	0.65
231	164715	METER FLOW SILVER CLAY CHAMBER	6634-WTTC-PR	1/1/1989	$ 8,000	0.3
232	164716	METER FLOW EAGLE WEST CHAMBER	6634-WTTC-PR	1/1/1989	$ 8,000	0.35
233	164717	METER FLOW A	6634-WTTC-PR	8/8/2008	$ 8,000	0.75
234	164718	METER FLOW B EAGELE EAST CHAMBER	6634-WTTC-PR	8/8/2008	$ 8,000	0.35
235	62688	VALVE BUTTERFLY 01 ISOL RAW LL	6634-WTTC-PR	8/8/2008	$ 8,000	0.35
236	164528	METER FLOW FE7052 EAST DIST	6634-WTTC-PR	8/8/2008	$ 8,000	0.35
237	164536	METER FLOW FE7062 WEST DIST	6634-WTTC-PR	8/8/2008	$ 8,000	0.4
238	164522	ANALYZER CHLORINE AIT7001 PRE HL	6634-WTTC-PR	8/8/2008	$ 5,500	0.4
239	164489	ANALYZER CHLORINE AIT5005 UV INLET	6634-WTTC-PR	1/1/1993	$ 5,500	0.6
240	164493	ANALYZER CHLORINE AIT5006 UV OUTLET	6634-WTTC-PR	8/8/2008	$ 5,500	0.6
241	164546	ANALYZER CHLORINE AIT7004 DIST	6634-WTTC-PR	8/8/2008	$ 5,500	0.45
242	164407	ANALYZER TURBIDITY RAW SCATTER	6634-WTTC-PR	8/8/2008	$ 5,500	0.55
243	164408	ANALYZER CHLORINE RAW	6634-WTTC-PR	8/8/2008	$ 5,500	0.7
244	315313	VALVE RELIEF 7074 PRESSURE GRAHAM DIST	6634-WTTC-PR	1/1/1993	$ 5,000	0.75
245	315314	VALVE RELIEF 7064 PRESSURE WEST LORNE	6634-WTTC-PR	1/1/1993	$ 5,000	0.8
246	315315	VALVE RELIEF 7054 EAST DIST LINE	6634-WTTC-PR	8/8/2008	$ 5,000	0.8
247	164627	PUMP SUBMERSIBLE WP9010 DRAIN PUMP	6634-WTTC-PR	1/1/1993	$ 5,000	0.4
248	164628	PUMP SUBMERSIBLE WP9020 DRAIN PUMP	6634-WTTC-PR	8/8/2008	$ 5,000	0.45
249	164639	METER FLOW FIT3105 INLET	6634-WTTC-PR	8/8/2008	$ 5,000	0.3
250	164654	METER FLOW FIT3305 INLET	6634-WTTC-PR	8/8/2008	$ 5,000	0.5
251	164661	METER FLOW FIT3405 INLET	6634-WTTC-PR	8/8/2008	$ 5,000	0.45
252	164599	PUMP CENT P4204 RECYCLE	6634-WTTC-PR	8/8/2008	$ 5,000	0.4
253	164600	MOTOR P4204 ELECTRIC RECYCLE	6634-WTTC-PR	8/8/2008	$ 5,000	0.35
254	62691	METER FLOW 01 SERVICE WATER	6634-WTTC-PR	8/8/2008	$ 5,000	0.4
255	62661	VALVE CHECK 01 LL	6634-WTTC-PR	8/8/2008	$ 5,000	0.4
256	62812	VALVE REGULATING 01 FLOW RAW	6634-WTTC-PR	8/8/2008	$ 5,000	0.25
257	62817	MOTOR 01 BOOSTER ELEC SP	6634-WTTC-PR	8/8/2008	$ 5,000	0.8

258	62823	TRANSMITTER PRESSURE 01 LEVEL	6634-WTTC-PR	8/8/2008	$ 5,000	0.55
259	62829	VALVE REGULATING 01 PRESSURE ALTITUDE	6634-WTTC-PR	8/8/2008	$ 5,000	0.85
260	62831	VALVE BUTTERFLY 04 ISOL SP	6634-WTTC-PR	8/8/2008	$ 5,000	0.25
261	62833	VALVE BUTTERFLY 05 ISOL SP	6634-WTTC-PR	8/8/2008	$ 5,000	0.3
262	123766	PUMP CENT P4204 RECYCLE	6634-WTTC-PR	8/8/2008	$ 5,000	0.6
263	123767	MOTOR P4204 ELECTRIC RECYCLE	6634-WTTC-PR	1/1/1993	$ 5,000	0.65
264	164376	VALVE DIAPHRAGM BACKFLUSH RAW	6634-WTTC-PR	8/8/2008	$ 5,000	0.45
265	164490	ANALYZER TURBIDITY AIT5001 UV INLET	6634-WTTC-PR	8/8/2008	$ 5,000	0.8
266	164492	ANALYZER AIT5027 PEROXIDE OUT	6634-WTTC-PR	8/8/2008	$ 5,000	0.65
267	164545	ANALYZER TURBIDITY AIT7003 DIST	6634-WTTC-PR	8/8/2008	$ 5,000	0.4
268	164449	PUMP CENT 4310 RF	6634-WTTC-PR	8/8/2008	$ 5,000	0.7
269	164454	PUMP CENT 4320 RF	6634-WTTC-PR	8/8/2008	$ 5,000	0.7
270	164459	METER FLOW 4301	6634-WTTC-PR	1/28/2012	$ 5,000	0.55
271	164409	TANK PROCESS 4350 WET WELL HOLDING RFR	6634-WTTC-PR	8/8/2008	$ 5,000	0.6
272	164421	ANALYZER TURBIDITY RFRP DISCHARGE	6634-WTTC-PR	8/8/2008	$ 5,000	0.6
273	164634	TANK STORAGE AR4710 AIR	6634-WTTC-PR	1/1/1993	$ 4,000	0.55
274	164637	ANALYZER PARTICLE AIT3120	6634-WTTC-PR	8/8/2008	$ 4,000	0.35
275	164638	ANALYZER TURBIDITY AIT3119	6634-WTTC-PR	8/8/2008	$ 4,000	0.45
276	164645	ANALYZER PARTICLE AIT3220	6634-WTTC-PR	8/8/2008	$ 4,000	0.3
277	164646	ANALYZER TURBIDITY AIT3219	6634-WTTC-PR	8/8/2008	$ 4,000	0.45
278	164647	METER FLOW FIT3205 INLET	6634-WTTC-PR	8/8/2008	$ 4,000	0.25
279	164648	TRANSMITTER PRESSURE PIT3204	6634-WTTC-PR	8/8/2008	$ 4,000	0.35
280	164652	ANALYZER PARTICLE AIT3320	6634-WTTC-PR	8/8/2008	$ 4,000	0.4
281	164653	ANALYZER TURBIDITY AIT3319	6634-WTTC-PR	8/8/2008	$ 4,000	0.6
282	164659	ANALYZER PARTICLE AIT3420	6634-WTTC-PR	8/8/2008	$ 4,000	0.45
283	164660	ANALYZER TURBIDITY AIT3419	6634-WTTC-PR	8/8/2008	$ 4,000	0.55
284	62683	PUMP SUBMERSIBLE 01 LL	6634-WTTC-PR	8/8/2008	$ 4,000	0.3
285	62635	METER LEVEL LIT116 WELL 1 EAST	6634-WTTC-PR	8/8/2008	$ 4,000	0.2
286	123026	ANALYZER CHLORINE AIT1401 PRE	6634-WTTC-PR	8/8/2008	$ 4,000	0.6
287	164734	VALVE BACKFLOW 3 PREVENTER	6634-WTTC-PR	8/8/2008	$ 3,500	0.4
288	164720	VALVE BACKFLOW 1 PREVENTER	6634-WTTC-PR	8/8/2008	$ 3,500	0.35
289	164721	VALVE BACKFLOW 2 PREVENTER	6634-WTTC-PR	8/8/2008	$ 3,500	0.4
290	63099	VALVE BACKFLOW PREVENTER	6634-WTTC-PR	8/8/2008	$ 3,500	0.45
291	164548	VALVE BACKFLOW PREVENTER	6634-WTTC-PR	8/8/2008	$ 3,500	0.5
292	164617	ACTUATOR PNEUMATIC V4607	6634-WTTC-PR	8/8/2008	$ 3,000	0.3
293	164626	VALVE GATE W 69004 SETTLING POND	6634-WTTC-PR	8/8/2008	$ 3,000	0.6
294	164597	ACTUATOR PNEUMATIC V4032	6634-WTTC-PR	8/8/2008	$ 3,000	0.35
295	164598	ACTUATOR PNEUMATIC V4282	6634-WTTC-PR	8/8/2008	$ 3,000	0.4
296	164603	ACTUATOR PNEUMATIC V4125	6634-WTTC-PR	8/8/2008	$ 3,000	0.4
297	164605	ACTUATOR PNEUMATIC V4227	6634-WTTC-PR	8/8/2008	$ 3,000	0.35
298	164607	ACTUATOR PNEUMATIC V4289	6634-WTTC-PR	1/1/1989	$ 3,000	0.55
299	62640	ANALYZER PH AIT111 LL RAW	6634-WTTC-PR	9/1/2022	$ 3,000	1
300	62645	METER LEVEL LIT131 WELL 2 EAST	6634-WTTC-PR	1/1/1989	$ 3,000	0.25
301	62672	VALVE BUTTERFLY 02 ISOL BW	6634-WTTC-PR	8/8/2008	$ 3,000	0.3
302	62717	METER FLOW FIT224 DISPLAY	6634-WTTC-PR	8/8/2008	$ 3,000	0.4
303	123768	PUMP CENT P4609 NEUTRILZATION TANK	6634-WTTC-PR	8/8/2008	$ 3,000	0.25
304	164373	VALVE RELIEF PRESSURE	6634-WTTC-PR	8/8/2008	$ 3,000	0.6
305	164378	ACTUATOR ELECTRIC WEST RAW LINE	6634-WTTC-PR	8/8/2008	$ 3,000	0.8
306	164380	ACTUATOR ELECTRIC EAST RAW LINE	6634-WTTC-PR	8/8/2008	$ 3,000	0.75
307	123772	ACTUATOR PNEUMATIC V4019	6634-WTTC-PR	8/8/2008	$ 3,000	-0.01
308	164484	VALVE RELIEF 7005 PRESSURE	6634-WTTC-PR	8/8/2008	$ 3,000	0.4
309	164431	METER FLOW XR PUMP	6634-WTTC-PR	8/8/2008	$ 3,000	0.4
310	164668	ANALYZER PH PORTABLE	6634-WTTC-PR	8/8/2008	$ 2,500	0.25
311	164624	METER FLOW FIT9005	6634-WTTC-PR	8/8/2008	$ 2,500	0.35
312	164625	METER FLOW FIT9006	6634-WTTC-PR	8/8/2008	$ 2,500	0.4
313	164665	METER LEVEL LIT9002	6634-WTTC-PR	8/8/2008	$ 2,500	0.4
314	164571	ANALYZER HPE5105 GAS PEROXIDE	6634-WTTC-PR	8/8/2008	$ 2,500	0.4
315	315496	SCALE CHLORINE CYLINDER	6634-WTTC-PR	8/8/2008	$ 2,500	0.9
316	62689	ANALYZER CHLORINE AAH113 GAS DETECT	6634-WTTC-PR	8/8/2008	$ 2,500	0.7
317	62699	ANALYZER CHLORINE AAH112 GAS DETECT	6634-WTTC-PR	8/8/2008	$ 2,500	0.8
318	164556	METER LEVEL LIT8004 HYPO DAY TANK	6634-WTTC-PR	8/8/2008	$ 2,500	0.45
319	164557	METER LEVEL LIT8002 HYPO TANK	6634-WTTC-PR	8/8/2008	$ 2,500	0.4
320	164550	METER FLOW FE7092 PROCESS LINE	6634-WTTC-PR	8/8/2008	$ 2,500	0.3
321	315360	ANALYZER CHLORINE DR900 PORTABLE	6634-WTTC-PR	8/8/2008	$ 2,364	1
322	62985	METER LEVEL M LIT-6021 Outside Storage tank	6634-WTTC-PR	8/8/2008	$ 2,085	0.6

323	62990	METER LEVEL M LIT-6021 Outside Storage tank	6634-WTTC-PR	8/8/2008	$ 2,085	0.55
324	315316	VALVE CHLORINE INJECTOR	6634-WTTC-PR	8/8/2008	$ 2,000	0.4
325	315317	VALVE CHLORINE INJECTOR	6634-WTTC-PR	8/8/2008	$ 2,000	0.3
326	164774	ANALYZER PH /DO	6634-WTTC-PR	8/8/2008	$ 2,000	0.65
327	164775	VALVE STAND BY RAW WATER INTAKE	6634-WTTC-PR	8/8/2008	$ 2,000	0.6
328	164642	METER FLOW FIT3111 RECIRCULATING	6634-WTTC-PR	8/8/2008	$ 2,000	0.55
329	164650	METER FLOW FIT3211 RECIRCULATING	6634-WTTC-PR	8/8/2008	$ 2,000	0.4
330	164657	METER FLOW FIT3311 RECIRCULATING	6634-WTTC-PR	8/8/2008	$ 2,000	0.45
331	164664	METER FLOW FIT3411 RECIRCULATING	6634-WTTC-PR	8/8/2008	$ 2,000	0.55
332	164569	METER FLOW LIT5102 PEROXIDE T	6634-WTTC-PR	8/8/2008	$ 2,000	0.4
333	315492	VALVE THERMAL MIXING HVAC ROOM	6634-WTTC-PR	8/8/2008	$ 2,000	0.7
334	62708	VALVE BACKFLOW PREVENTER 25030 THOMPSON LI	6634-WTTC-PR	8/8/2008	$ 2,000	0.25
335	62677	VALVE BACKFLOW PREVENTER 25030 THOMPSON LI	6634-WTTC-PR	8/8/2008	$ 2,000	0.75
336	62668	VALVE BACKFLOW PREVENTER 25030 THOMPSON LI	6634-WTTC-PR	8/8/2008	$ 2,000	0.25
337	62673	VALVE BACKFLOW PREVENTER 25030 THOMPSON LI	6634-WTTC-PR	8/8/2008	$ 2,000	0.65
338	62819	VALVE 01 TOWER ALTITUDE	6634-WTTC-PR	8/8/2008	$ 2,000	0.5
339	62826	VALVE GATE 01 ISOL SP	6634-WTTC-PR	8/8/2008	$ 2,000	0.3
340	62827	VALVE GATE 02 ISOL SP	6634-WTTC-PR	8/8/2008	$ 2,000	0.25
341	62828	VALVE ALTITUDE	6634-WTTC-PR	8/8/2008	$ 2,000	0.2
342	62830	VALVE GATE 03 ISOL SP	6634-WTTC-PR	8/8/2008	$ 2,000	0.2
343	123018	TRANSMITTER PRESSURE IONA IN	6634-WTTC-PR	8/8/2008	$ 2,000	0.55
344	123310	VALVE BACKFLOW PREVENTER 25030 THOMPSON LI	6634-WTTC-PR	8/8/2008	$ 2,000	0.45
345	164444	PUMP CENT 4214 CDP	6634-WTTC-PR	8/8/2008	$ 2,000	0.25
346	164566	METER FLOW FE5104 PEROXIDE	6634-WTTC-PR	8/8/2008	$ 2,000	0.5
347	164553	METER FLOW FE7082	6634-WTTC-PR	8/8/2008	$ 2,000	0.7
348	164465	ACTUATOR ELECTRIC MV7011	6634-WTTC-PR	8/8/2008	$ 2,000	0.45
349	164471	ACTUATOR ELECTRIC MV7011	6634-WTTC-PR	8/8/2008	$ 2,000	0.4
350	164477	ACTUATOR ELECTRIC MV7031	6634-WTTC-PR	8/8/2008	$ 2,000	0.4
351	164483	ACTUATOR ELECTRIC MV7041	6634-WTTC-PR	8/8/2008	$ 2,000	0.35
352	164423	PUMP CENT 2050 XRP	6634-WTTC-PR	8/8/2008	$ 2,000	0.4
353	164425	PUMP CENT 2060 XRP	6634-WTTC-PR	1/1/1993	$ 2,000	0.4
354	164772	ANALYZER DO PROBE LL	6634-WTTC-PR	1/1/1993	$ 1,500	0.6
355	164580	METER FLOW 4121 CIP ACID	6634-WTTC-PR	8/8/2008	$ 1,500	0.4
356	164577	METER FLOW FIT4017 CIP CAUSTIC	6634-WTTC-PR	8/8/2008	$ 1,500	0.35
357	164574	METER FLOW FIT4505 S.B CIP	6634-WTTC-PR	8/8/2008	$ 1,500	0.4
358	62964	ANALYZER CHLORINE PORTABLE	6634-WTTC-PR	8/8/2008	$ 1,500	0.6
359	164561	METER FLOW 4405 HYPO CIP	6634-WTTC-PR	8/8/2008	$ 1,500	0.4
360	164463	VALVE CHECK 7010 HL OUTLET	6634-WTTC-PR	8/8/2008	$ 1,500	0.5
361	164469	VALVE CHECK 7020 HL OUTLET	6634-WTTC-PR	8/8/2008	$ 1,500	0.45
362	164475	VALVE CHECK 7030 HL INLET	6634-WTTC-PR	8/8/2008	$ 1,500	0.4
363	164481	VALVE CHECK 7040 HL OUTLET	6634-WTTC-PR		$ 1,500	0.45
364	164411	PUMP CENT 4370 RFR	6634-WTTC-PR	8/8/2008	$ 1,500	0.7
365	164413	PUMP CENT 4360 RFR	6634-WTTC-PR		$ 1,500	0.7
366	164773	ANALYZER PH PROBE LL	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
367	248471	PUMP CENT 2 RAW SAMPLING	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
368	164613	ANALYZER PH AE4620	6634-WTTC-PR	8/8/2008	$ 1,000	0.3
369	164614	ANALYZER CONDUCTIVITY ORP 4619	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
370	164615	TRANSMITTER PRESSURE 4605	6634-WTTC-PR	8/8/2008	$ 1,000	0.35
371	164498	ACTUATOR ELECTRIC MV5023 UV IN	6634-WTTC-PR	8/8/2008	$ 1,000	0.4
372	315497	VALVE REGULATING 01 CHLORINE VACUUM OPERAT	6634-WTTC-PR	1/1/1993	$ 1,000	0.4
373	315498	VALVE REGULATING 02 CHLORINE VACUUM OPERAT	6634-WTTC-PR	1/1/1993	$ 1,000	0.4
374	62709	VALVE GATE 02 SERVICE WATER	6634-WTTC-PR	1/1/1993	$ 1,000	0.35
375	62690	VALVE GATE 01 SERVICE WATER	6634-WTTC-PR	1/1/1993	$ 1,000	0.5
376	62692	VALVE GATE 03 SERVICE WATER	6634-WTTC-PR	1/1/2001	$ 1,000	0.15
377	62634	VALVE BUTTERFLY 02 ISO LL	6634-WTTC-PR	1/1/1993	$ 1,000	0.25
378	62653	VALVE BUTTERFLY 03 LL	6634-WTTC-PR	1/1/1993	$ 1,000	0.35
379	62659	VALVE BUTTERFLY 04 LL	6634-WTTC-PR	1/1/1993	$ 1,000	0.35
380	62660	VALVE BUTTERFLY 01 ISOL LL	6634-WTTC-PR	1/1/1992	$ 1,000	0.55
381	62662	VALVE PLUG 01 ISOL PR LL	6634-WTTC-PR	8/8/2008	$ 1,000	0.4
382	62813	VALVE BUTTERFLY 01 ISOL HL	6634-WTTC-PR	8/8/2008	$ 1,000	0.35
383	62814	VALVE BUTTERFLY 01 ISOL HL	6634-WTTC-PR	8/8/2008	$ 1,000	0.4
384	62815	VALVE BUTTERFLY 01 ISOL HL	6634-WTTC-PR	1/1/1993	$ 1,000	0.3
385	62818	ACTUATOR ELECTRIC 01 FLOW	6634-WTTC-PR	1/1/1993	$ 1,000	0.45
386	62824	ACTUATOR ELECTRIC 01 FLOW SP	6634-WTTC-PR	1/1/1993	$ 1,000	0.65
387	62825	ACTUATOR ELECTRIC 02 FLOW SP	6634-WTTC-PR	1/1/1992	$ 1,000	0.55

388	62832	VALVE CHECK 01 SP	6634-WTTC-PR	1/1/1992	$ 1,000	0.45
389	62791	ANALYZER PH 01 PORTABLE LAB	6634-WTTC-PR	1/1/1992	$ 1,000	0.2
390	164392	VALVE BUTTERFLY 2030 STR ISO	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
391	164393	VALVE BUTTERFLY 2030 STR ISO	6634-WTTC-PR	1/1/1993	$ 1,000	0.6
392	164394	VALVE BUTTERFLY 2030 STR ISO	6634-WTTC-PR	1/1/1993	$ 1,000	0.65
393	164385	VALVE BUTTERFLY 2010 STR CLEAN DISCHARGE	6634-WTTC-PR	1/1/1993	$ 1,000	0.55
394	164387	VALVE BUTTERFLY 2020 STR ISO	6634-WTTC-PR	1/1/1993	$ 1,000	0.5
395	164388	VALVE BUTTERFLY 2020 STR ISO	6634-WTTC-PR	1/1/1993	$ 1,000	0.65
396	164389	VALVE BUTTERFLY 2020 STR CLEAN DISCHARGE	6634-WTTC-PR	8/8/2008	$ 1,000	0.7
397	164377	VALVE BUTTERFLY 01 WEST RAW LINE	6634-WTTC-PR	1/1/1992	$ 1,000	0.25
398	164379	VALVE BUTTERFLY 02 EAST RAW LINE	6634-WTTC-PR	1/1/1992	$ 1,000	0.25
399	164381	VALVE BUTTERFLY 2010 STR ISO	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
400	164383	VALVE BUTTERFLY 2010 STR ISO	6634-WTTC-PR	8/10/2008	$ 1,000	0.55
401	163379	VALVE BUTTERFLY 02 EAST RAW LINE	6634-WTTC-PR	8/8/2008	$ 1,000	0.4
402	164333	TRANSMITTER TEMP RAW SAMPLING	6634-WTTC-PR	8/8/2008	$ 1,000	0.7
403	164337	VALVE CHECK 1 LL	6634-WTTC-PR	1/1/1993	$ 1,000	0.4
404	164338	VALVE RELIEF 01 AIR LL	6634-WTTC-PR	8/8/2008	$ 1,000	0.5
405	164342	VALVE RELIEF 02 AIR LL	6634-WTTC-PR	1/1/1992	$ 1,000	0.45
406	164343	VALVE CHECK 2 LL	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
407	164347	VALVE RELIEF 03 AIR LL	6634-WTTC-PR	1/1/1992	$ 1,000	0.4
408	164348	VALVE CHECK 3 LL	6634-WTTC-PR	8/8/2008	$ 1,000	0.4
409	164352	VALVE RELIEF 04 AIR LL	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
410	164353	VALVE CHECK 4 LL	6634-WTTC-PR	1/1/1992	$ 1,000	0.35
411	164356	VALVE BUTTERFLY BUTTERFLY EAST ISOLATION	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
412	164357	VALVE BUTTERFLY ISOLATION WEST	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
413	164358	VALVE RELIEF AIR EAST	6634-WTTC-PR	8/8/2008	$ 1,000	0.65
414	164359	VALVE RELIEF AIR WEST	6634-WTTC-PR	8/8/2008	$ 1,000	0.65
415	164360	VALVE BUTTERFLY METER ISO WEST	6634-WTTC-PR	8/8/2008	$ 1,000	0.45
416	164362	VALVE BUTTERFLY METER ISO WEST	6634-WTTC-PR	8/8/2008	$ 1,000	0.5
417	164397	VALVE BUTTERFLY 2040 STR ISO	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
418	164398	VALVE BUTTERFLY 2040 STR ISO	6634-WTTC-PR	8/10/2008	$ 1,000	0.6
419	164399	VALVE BUTTERFLY 2040 STR ISO	6634-WTTC-PR	1/5/2002	$ 1,000	0.6
420	164511	ACTUATOR ELECTRIC UV OUTLET	6634-WTTC-PR	1/1/1993	$ 1,000	0.4
421	164519	VALVE RELIEF AIR	6634-WTTC-PR	1/1/1992	$ 1,000	0.65
422	164520	VALVE RELIEF AIR	6634-WTTC-PR	8/8/2008	$ 1,000	0.65
423	164532	VALVE RELIEF EAST DIST ISOL	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
424	164540	VALVE BUTTERFLY WEST DIST ISOLATION	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
425	164544	VALVE BUTTERFLY GRAHAM DIST	6634-WTTC-PR	8/8/2008	$ 1,000	0.65
426	164462	VALVE BUTTERFLY 7010 HL INLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.45
427	164464	VALVE BUTTERFLY 7010 HL OUTLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.5
428	164468	VALVE BUTTERFLY 7020 HL INLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.5
429	164470	VALVE BUTTERFLY 7020 HL OUTLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
430	164474	VALVE BUTTERFLY 7030 HL INLET	6634-WTTC-PR	1/1/1993	$ 1,000	0.55
431	164476	VALVE BUTTERFLY 7030 HL OUTLET	6634-WTTC-PR	1/1/1993	$ 1,000	0.5
432	164480	VALVE BUTTERFLY 7040 HL INLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
433	164482	VALVE BUTTERFLY 7040 HL OUTLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
434	164485	VALVE BUTTERFLY PRV7005 INLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.5
435	164486	VALVE BUTTERFLY PRV7005 OUTLET	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
436	164402	VALVE RELIEF 01 AIR	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
437	164403	VALVE RELIEF 02 AIR	6634-WTTC-PR	8/8/2008	$ 1,000	0.55
438	164404	TRANSMITTER PRESSURE PRE STR	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
439	164405	TRANSMITTER PRESSURE POST STR	6634-WTTC-PR	8/8/2008	$ 1,000	0.7
440	164406	TRANSMITTER TEMP POST STRAINER	6634-WTTC-PR	8/8/2008	$ 1,000	0.6
441	164410	TRANSMITTER PRESSURE RFR TANK	6634-WTTC-PR	8/8/2008	$ 1,000	0.45
442	164424	MOTOR 2050 ELECTRIC XRP	6634-WTTC-PR	8/8/2008	$ 1,000	0.45
443	164426	MOTOR 2060 ELECTRIC XRP	6634-WTTC-PR	8/8/2008	$ 1,000	0.3
444	164450	MOTOR 4310 RF PUMP	6634-WTTC-PR	8/8/2008	$ 750	0.4
445	164455	MOTOR 4320 ELECTRIC EF	6634-WTTC-PR	8/8/2008	$ 750	0.5
446	164620	MOTOR 4609 ELECTRIC	6634-WTTC-PR	8/8/2008	$ 700	0.3
447	62980	ANALYZER CHLORINE Portable	6634-WTTC-PR	8/8/2008	$ 679	0.8
448	164687	VALVE RELIEF UV1 AIR	6634-WTTC-PR	8/8/2008	$ 500	0.6
449	164688	VALVE RELIEF UV2 AIR	6634-WTTC-PR	8/8/2008	$ 500	0.6
450	164681	MOTOR ELECTRIC EF	6634-WTTC-PR	8/8/2008	$ 500	0.5
451	164612	TRANSMITTER PRESSURE LIT4006	6634-WTTC-PR	1/1/1992	$ 500	0.25
452	164616	VALVE BUTTERFLY HV4651	6634-WTTC-PR	8/8/2008	$ 500	0.6

453	164618	VALVE BUTTERFLY HV4607	6634-WTTC-PR	8/8/2008	$ 500	0.6
454	164621	VALVE BUTTERFLY HV4652	6634-WTTC-PR	8/8/2008	$ 500	0.55
455	164591	TRANSMITTER PRESSURE LIT4106	6634-WTTC-PR	8/8/2008	$ 500	0.4
456	164636	TRANSMITTER PRESSURE 4711	6634-WTTC-PR	8/8/2008	$ 500	0.6
457	164640	TRANSMITTER PRESSURE PIT3104	6634-WTTC-PR	8/8/2008	$ 500	0.55
458	164641	TRANSMITTER PRESSURE PIT3121	6634-WTTC-PR	8/8/2008	$ 500	0.6
459	164649	TRANSMITTER PRESSURE PIT3221	6634-WTTC-PR	8/8/2008	$ 500	0.4
460	164655	TRANSMITTER PRESSURE PIT3304	6634-WTTC-PR	8/8/2008	$ 500	0.25
461	164656	TRANSMITTER PRESSURE PIT3321	6634-WTTC-PR	8/8/2008	$ 500	0.35
462	164662	TRANSMITTER PRESSURE PIT3404	6634-WTTC-PR	8/8/2008	$ 500	0.35
463	164663	TRANSMITTER PRESSURE PIT3421	6634-WTTC-PR	8/8/2008	$ 500	0.4
464	164593	VALVE BUTTERFLY HV4150	6634-WTTC-PR	8/8/2008	$ 500	0.5
465	164594	TRANSMITTER TEMP TT4107	6634-WTTC-PR	8/8/2008	$ 500	0.35
466	164596	VALVE BUTTERFLY V4019	6634-WTTC-PR	8/8/2008	$ 500	0.55
467	164601	VALVE BUTTERFLY V4032	6634-WTTC-PR	8/8/2008	$ 500	0.6
468	164602	VALVE BUTTERFLY V4282	6634-WTTC-PR	8/8/2008	$ 500	0.55
469	164604	VALVE BUTTERFLY V4125	6634-WTTC-PR	8/8/2008	$ 500	0.6
470	164606	VALVE BUTTERFLY V4227	6634-WTTC-PR	8/8/2008	$ 500	0.55
471	164608	VALVE BUTTERFLY V4289	6634-WTTC-PR	8/8/2008	$ 500	0.7
472	164609	TRANSMITTER TEMP TT4007	6634-WTTC-PR	8/8/2008	$ 500	0.25
473	164610	VALVE BUTTERFLY HV4050	6634-WTTC-PR	8/8/2008	$ 500	0.55
474	164497	VALVE BUTTERFLY INLET	6634-WTTC-PR	8/8/2008	$ 500	0.55
475	164374	VALVE BUTTERFLY PRV ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.5
476	164375	VALVE BUTTERFLY BACKFLUSH ISOL	6634-WTTC-PR	8/8/2008	$ 500	0.5
477	123773	STRAINER 02 RFR AMIAD	6634-WTTC-PR	8/8/2008	$ 500	0.65
478	164339	VALVE BUTTERFLY 1 ISOLATION LL	6634-WTTC-PR	8/8/2008	$ 500	0.55
479	164344	VALVE BUTTERFLY 2 ISOLATION LL	6634-WTTC-PR	8/8/2008	$ 500	0.4
480	164349	VALVE BUTTERFLY 3 ISOLATION LL	6634-WTTC-PR	8/8/2008	$ 500	0.5
481	164354	VALVE BUTTERFLY 4 ISOLATION LL	6634-WTTC-PR	8/8/2008	$ 500	0.6
482	164363	TRANSMITTER PRESSURE WEST FLOW	6634-WTTC-PR	8/8/2008	$ 500	0.4
483	164364	TRANSMITTER PRESSURE EAST FLOW	6634-WTTC-PR	8/8/2008	$ 500	0.45
484	164445	MOTOR 4214 CDP PUMP	6634-WTTC-PR	8/8/2008	$ 500	0.4
485	164446	VALVE BUTTERFLY CDP4214	6634-WTTC-PR	8/8/2008	$ 500	0.6
486	164447	VALVE BUTTERFLY CDP4214	6634-WTTC-PR	8/8/2008	$ 500	0.6
487	164500	VALVE BUTTERFLY UV1 BY-PASS	6634-WTTC-PR	8/8/2008	$ 500	0.55
488	164501	VALVE BUTTERFLY UV1 ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.6
489	164503	VALVE BUTTERFLY UV1 ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.6
490	164504	VALVE BUTTERFLY UV2 BY-PASS	6634-WTTC-PR	8/8/2008	$ 500	0.55
491	164505	VALVE CHECK UV1 BY-PASS	6634-WTTC-PR	8/8/2008	$ 500	0.25
492	164506	VALVE BUTTERFLY UV2-A ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.55
493	164508	VALVE BUTTERFLY UV2-B ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.6
494	164509	VALVE BUTTERFLY UV2 BY-PASS	6634-WTTC-PR	8/8/2008	$ 500	0.6
495	164510	VALVE BUTTERFLY UV OUTLET	6634-WTTC-PR	8/8/2008	$ 500	0.55
496	164514	ACTUATOR ELECTRIC 01 UV1 COOLING	6634-WTTC-PR	8/8/2008	$ 500	0.45
497	164515	ACTUATOR ELECTRIC 1 UV2 COOLING	6634-WTTC-PR	8/8/2008	$ 500	0.45
498	164516	ACTUATOR ELECTRIC 2 UV2 COOLING	6634-WTTC-PR	8/8/2008	$ 500	0.4
499	164517	ACTUATOR ELECTRIC 02 UV1 COOLING	6634-WTTC-PR	8/8/2008	$ 500	0.4
500	164518	VALVE BUTTERFLY ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.5
501	164521	VALVE BUTTERFLY ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.55
502	164523	TRANSMITTER PRESSURE PIT7002	6634-WTTC-PR	8/8/2008	$ 500	0.4
503	164488	TRANSMITTER PRESSURE PIT7005	6634-WTTC-PR	8/8/2008	$ 500	0.4
504	164494	TRANSMITTER PRESSURE PIT5003	6634-WTTC-PR	8/8/2008	$ 500	0.4
505	164525	VALVE BUTTERFLY PRV7051 ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.4
506	164527	VALVE BUTTERFLY PRV7051 ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.5
507	164529	VALVE BUTTERFLY ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.5
508	164530	TRANSMITTER PRESSURE PIT7053	6634-WTTC-PR	8/8/2008	$ 500	0.4
509	164533	VALVE BUTTERFLY PRV7061 ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.6
510	164535	VALVE BUTTERFLY PRV7061 ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.6
511	164537	VALVE BUTTERFLY TRANSFER ISOL	6634-WTTC-PR	1/1/1993	$ 500	0.5
512	164538	TRANSMITTER PRESSURE PIT7061	6634-WTTC-PR	8/8/2008	$ 500	0.4
513	164541	VALVE BUTTERFLY GRAHAM ROAD	6634-WTTC-PR	8/8/2008	$ 500	0.6
514	164542	VALVE BUTTERFLY TRANSFER ISOLATION	6634-WTTC-PR	8/8/2008	$ 500	0.55
515	164547	VALVE GATE BFP ISOLATION INLET	6634-WTTC-PR	8/8/2008	$ 500	0.65
516	164549	VALVE GATE BFP ISOLATION OUT	6634-WTTC-PR	8/8/2008	$ 500	0.6
517	164451	VALVE BUTTERFLY RF4310 INLET	6634-WTTC-PR	8/8/2008	$ 500	0.45

518	164452	VALVE CHECK RF4310 OUTLET	6634-WTTC-PR	8/8/2008	$ 500	0.5
519	164453	VALVE BUTTERFLY RF4310 OUTLET	6634-WTTC-PR	8/8/2008	$ 500	0.65
520	164456	VALVE BUTTERFLY RF4320 INLET	6634-WTTC-PR	8/8/2008	$ 500	0.7
521	164457	VALVE CHECK RF4320 OUTLET	6634-WTTC-PR	8/8/2008	$ 500	0.5
522	164458	VALVE BUTTERFLY RF4320 OUTLET	6634-WTTC-PR	8/8/2008	$ 500	0.65
523	164412	MOTOR 4370 ELECTRIC RFR	6634-WTTC-PR	8/8/2008	$ 500	0.6
524	164414	MOTOR 4360 ELECTRIC RFR	6634-WTTC-PR	8/8/2008	$ 500	0.6
525	164415	STRAINER 01 RFR WATER	6634-WTTC-PR	8/8/2008	$ 500	0.55
526	164417	VALVE BUTTERFLY RFRP4360 INLET	6634-WTTC-PR	8/8/2008	$ 500	0.6
527	164418	VALVE BUTTERFLY 4360 OUTLET	6634-WTTC-PR	1/1/1993	$ 500	0.65
528	164419	VALVE BUTTERFLY RFRP4370 INLET	6634-WTTC-PR	1/1/1993	$ 500	0.55
529	164420	VALVE BUTTERFLY 4370 OUT	6634-WTTC-PR	8/8/2008	$ 500	0.6
530	164422	TRANSMITTER PRESSURE RFRP	6634-WTTC-PR	11/21/2018	$ 500	0.75
531	164427	VALVE BUTTERFLY XRP2050 INLET	6634-WTTC-PR	11/28/2018	$ 500	-0.01
532	164428	VALVE BUTTERFLY XRP2060 INLET	6634-WTTC-PR	8/8/2008	$ 500	-0.01
533	164429	VALVE BUTTERFLY XRP 2050 OUTLET	6634-WTTC-PR	8/8/2008	$ 500	-0.01
534	164430	VALVE BUTTERFLY XRP 2060 OUTLET	6634-WTTC-PR	1/1/1993	$ 500	-0.01
535	164432	VALVE CHECK XRP2050	6634-WTTC-PR	1/1/1993	$ 500	0.55
536	164433	VALVE CHECK XRP2050	6634-WTTC-PR	1/22/2016	$ 500	0.6
537	164551	VALVE BUTTERFLY FE7092 ISOLATION	6634-WTTC-PR	1/9/2001	$ 250	0.4
538	164552	VALVE REGULATING PRESSURE	6634-WTTC-PR	2/3/2002	$ 250	0.35

Tri-County Planned Program

Line #	Asset ID	Asset	Treatment Description	Forecast Cost ($)	Forecast Year
1	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2023
2	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	9,898	2023
3	164567	PUMP DIAPHRAGM HPR5110 PEROXIDE	Reconstruction	4,000	2023
4	164579	PUMP DIAPHRAGM ATP4115 CIP ACID	Reconstruction	4,000	2023
5	164588	PUMP DIAPHRAGM CFP8020 CL2 TRIM	Reconstruction	4,000	2023
6	123769	PUMP DIAPHRAGM CTP4015 CIP CAUSTIC	Reconstruction	13,000	2023
7	360540	SCADA SERVER NEW PLANT	Reconstruction	221,000	2023
8	315318	DRIVE VFD HL PUMP 04	Maintenance	13,333	2023
9	315320	DRIVE VFD HL PUMP 01	Rehabilitation	13,333	2023
10	315324	DRIVE VFD HL PUMP 03	Rehabilitation	13,333	2023
11	315319	DRIVE VFD LL PUMP 03	Rehabilitation	8,333	2023
12	315326	DRIVE VFD LL PUMP 01	Rehabilitation	8,333	2023
13	315327	DRIVE VFD LL PUMP 04	Rehabilitation	8,333	2023
14	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2023
15	315494	UPS 02 BATTERY BANK LL	Reconstruction	2,500	2023
16	278217	TANK LOW LIFT SCBA	Reconstruction	8,000	2023
17	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2023
18	62795	HEATER ELECTRIC UH01	Reconstruction	5,000	2023
19	164643	FILTER 1 WATER MICRO PALL RACK	Reconstruction	380,000	2023
20	360535	PIPING PROCESS ALL BUILDINGS	Maintenance	50,000	2023
21	164502	UV LIGHT 5021	Maintenance	4,000	2023
22	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2023
23	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2023
24	315304	COMPRESSOR AIR AC4701 COMPRESSOR B	Reconstruction	11,000	2023
25	164391	STRAINER 2030 RAW WATER	Rehabilitation	5,000	2023
26	164336	MOTOR 1 PUMP ELECT LL	Rehabilitation	5,000	2023
27	164522	ANALYZER CHLORINE AIT7001 PRE HL	Reconstruction	6,500	2023
28	123772	ACTUATOR PNEUMATIC V4019	Reconstruction	3,000	2023
29	315317	VALVE CHLORINE INJECTOR	Reconstruction	7,500	2023
30	164427	VALVE BUTTERFLY XRP2050 INLET	Reconstruction	500	2023
31	164428	VALVE BUTTERFLY XRP2060 INLET	Reconstruction	500	2023
32	164429	VALVE BUTTERFLY XRP 2050 OUTLET	Reconstruction	500	2023
33	164430	VALVE BUTTERFLY XRP 2060 OUTLET	Reconstruction	500	2023
34					
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36	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2024
37	360533	BUILDING ROOF NEW PLANT	Maintenance	17,424	2024
38	315478	BUILDING ROADS	Maintenance	84,320	2024
39	360540	SCADA SERVER NEW PLANT	Reconstruction	166,000	2024
40	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2024
41	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2024
42	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2024
43	62797	HEATER ELECTRIC UH01-A	Rehabilitation	1,479	2024

315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	4,115	2024
62680	HEATER ELECTRIC UH03 ELECTRIC LL	Reconstruction	2,116	2024
164644	FILTER 2 WATER MICRO PALL RACK	Reconstruction	400,000	2024
360535	PIPING PROCESS ALL BUILDINGS	Maintenance	50,000	2024
164502	UV LIGHT 5021	Maintenance	4,000	2024
315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2024
315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2024
164382	STRAINER 2010 WATER RAW	Rehabilitation	5,000	2024
164341	MOTOR 2 PUMP ELECT LL	Rehabilitation	5,000	2024
164712	METER FLOW GLENCOE CHAMBER	Reconstruction	15,000	2024
164716	METER FLOW EAGLE WEST CHAMBER	Reconstruction	15,000	2024
164546	ANALYZER CHLORINE AIT7004 DIST	Reconstruction	6,500	2024
164617	ACTUATOR PNEUMATIC V4607	Reconstruction	3,000	2024
315316	VALVE CHLORINE INJECTOR	Reconstruction	7,500	2024
360537	SETTLING POND NEW PLANT	Maintenance	5,000	2025
315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	61,243	2025
336381	BUILDING ROOF LOW LIFT	Maintenance	4,760	2025
336384	BUILDING ROOF OLD PLANT	Maintenance	9,481	2025
164573	PUMP DIAPHRAGM BSTP4502 CIP BISUL	Reconstruction	4,000	2025
360540	SCADA SERVER NEW PLANT	Maintenance	47,338	2025
62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2025
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2025
164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2025
62797	HEATER ELECTRIC UH01-A	Reconstruction	2,000	2025
62798	HEATER ELECTRIC UH01-B	Reconstruction	2,000	2025
164611	HEATER 4004 CIP/EFM CAUSTIC	Reconstruction	2,158	2025
164438	HEATER UH-0012	Reconstruction	1,248	2025
62729	FAN EF06 EXHAUST PLANT	Reconstruction	1,000	2025
164705	TANK STORAGE WATER SOUTH	Maintenance	20,000	2025
164706	TANK STORAGE WATER NORTH	Maintenance	20,000	2025
164651	FILTER 3 WATER MICRO PALL RACK	Reconstruction	420,000	2025
164502	UV LIGHT 5021	Maintenance	4,000	2025
315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2025
315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2025
164386	STRAINER 2020 RAW WATER	Rehabilitation	5,000	2025
164346	MOTOR 3 PUMP ELECT LL	Rehabilitation	5,000	2025
164489	ANALYZER CHLORINE AIT5005 UV INLET	Reconstruction	6,500	2025
164597	ACTUATOR PNEUMATIC V4032	Reconstruction	3,000	2025
315497	VALVE REGULATING 01 CHLORINE VACUUM OPEI	Reconstruction	7,500	2025
62634	VALVE BUTTERFLY 02 ISO LL	Reconstruction	1,000	2025
164377	VALVE BUTTERFLY 01 WEST RAW LINE	Reconstruction	1,000	2025
360537	SETTLING POND NEW PLANT	Maintenance	5,000	2026
315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	42,279	2026
315480	BUILDING FENCING	Maintenance	17,498	2026
123427	ENGINE DIESEL STANDBY OLD	Reconstruction	27,600	2026

93	123428	GENERATOR ELECTRIC	Reconstruction	28,500	2026
94	164692	PANEL TRANSFER GENERATOR	Reconstruction	17,448	2026
95	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2026
96	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2026
97	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2026
98	62770	HEATER ELECTRIC 01 FORCED AIR	Reconstruction	2,202	2026
99	164555	HEATER 0014 DIST AREA	Reconstruction	1,273	2026
100	164658	FILTER 4 WATER MICRO PALL RACK	Reconstruction	440,000	2026
101	164502	UV LIGHT 5021	Maintenance	4,000	2026
102	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2026
103	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2026
104	164351	MOTOR 4 PUMP ELECT LL	Rehabilitation	5,000	2026
105	164493	ANALYZER CHLORINE AIT5006 UV OUTLET	Reconstruction	6,500	2026
106	164409	TANK PROCESS 4350 WET WELL HOLDING RFR	Reconstruction	15,000	2026
107	164605	ACTUATOR PNEUMATIC V4227	Reconstruction	3,000	2026
108	315498	VALVE REGULATING 02 CHLORINE VACUUM OPEI	Reconstruction	7,500	2026
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110					
111	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2027
112	336381	BUILDING ROOF LOW LIFT	Maintenance	23,107	2027
113	123771	PUMP DIAPHRAGM CFP8040 HYPO POST	Reconstruction	7,500	2027
114	164560	PUMP DIAPHRAGM CLTP4402 HYPO CIP	Reconstruction	4,000	2027
115	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2027
116	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2027
117	164743	SAFETY FIRE SYSTEM	Reconstruction	9,404	2027
118	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2027
119	164671	HEATER AHU0010	Reconstruction	25,000	2027
120	164678	BOILER B-1	Reconstruction	23,000	2027
121	164679	BOILER B-2	Reconstruction	23,000	2027
122	164592	HEATER 4104 ACID CIP TANK	Rehabilitation	1,298	2027
123	164435	HEATER ELECTRIC UH-0013	Reconstruction	2,246	2027
124	62700	FAN 01 EXHAUST CHLORINE BLDG	Reconstruction	1,000	2027
125	62675	FAN EF04 EXHAUST LL	Reconstruction	1,000	2027
126	62676	FAN EF05 EXHAUST LL	Reconstruction	1,000	2027
127	164711	TANK STORAGE WATER WEST LORNE STAND PIPE	Rehabilitation	1,000,000	2027
128	164502	UV LIGHT 5021	Maintenance	20,000	2027
129	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2027
130	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2027
131	164472	PUMP CENT 7030 HL	Maintenance	7,500	2027
132	164478	PUMP CENT 7040 HL	Maintenance	7,500	2027
133	164335	PUMP CENT 1 VERT TURBINE LL	Rehabilitation	10,000	2027
134	164345	PUMP CENT 3 VERT TURBINE LL	Rehabilitation	10,000	2027
135	315305	COMPRESSOR AIR AC4702 COMPRESSOR A	Reconstruction	46,274	2027
136	164467	MOTOR 7040 ELECTRIC HL	Rehabilitation	5,000	2027
137	164408	ANALYZER CHLORINE RAW	Reconstruction	6,500	2027
138	164603	ACTUATOR PNEUMATIC V4125	Reconstruction	3,000	2027
139	62653	VALVE BUTTERFLY 03 LL	Reconstruction	1,000	2027
140	62815	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	1,000	2027
141					

315312	PUMP DIAPHRAGM CFP8030 HYPO POST UV	Reconstruction	7,500	2028
164568	PUMP DIAPHRAGM HPR5120 PEROXIDE	Reconstruction	4,000	2028
164589	PUMP DIAPHRAGM CFP8010 CL2 TRIM	Reconstruction	4,000	2028
62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2028
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2028
164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	10,000	2028
164442	HEATER UH-0015	Reconstruction	1,549	2028
62684	HEATER ELECTRIC UH01 ELECTRIC LL	Reconstruction	2,520	2028
164507	UV LIGHT 5022	Maintenance	20,000	2028
315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2028
315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2028
164460	PUMP CENT 7010 HL	Maintenance	7,500	2028
164466	PUMP CENT 7020 HL	Maintenance	7,500	2028
164340	PUMP CENT 2 VERT TURBINE LL	Rehabilitation	10,000	2028
164350	PUMP CENT 4 VERT TURBINE LL	Rehabilitation	10,000	2028
315304	COMPRESSOR AIR AC4701 COMPRESSOR B	Reconstruction	47,199	2028
164473	MOTOR 7030 ELECTRIC	Rehabilitation	5,000	2028
164407	ANALYZER TURBIDITY RAW SCATTER	Reconstruction	6,500	2028
164598	ACTUATOR PNEUMATIC V4282	Reconstruction	3,000	2028
360537	SETTLING POND NEW PLANT	Maintenance	5,000	2029
123764	VEHICLE WTP TRUCK F-250	Reconstruction	50,000	2029
123765	VEHICLE WTP TRUCK ARCTIC SNOW PLOW	Reconstruction	7,600	2029
62681	LIFTING DEVICE CHAINFALL 01	Reconstruction	460	2029
164582	TANK PROCESS CCT4001 CAUSTIC CIP/EFM	Reconstruction	4,478	2029
62687	MCC 02 LOW LIFT	Reconstruction	23,000	2029
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2029
62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2029
164590	SAFETY EYE WASH/SHOWER 02	Reconstruction	7,464	2029
164680	FAN EF0022 EXHAUST	Rehabilitation	1,350	2029
62705	HEATER ELECTRIC UH01 CL 2	Reconstruction	2,686	2029
164685	HEATER UH0023	Reconstruction	475	2029
315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	5,000	2029
315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	5,000	2029
315304	COMPRESSOR AIR AC4701 COMPRESSOR B	Reconstruction	24,072	2029
315305	COMPRESSOR AIR AC4702 COMPRESSOR A	Reconstruction	24,072	2029
62646	VALVE SLUICE GATE W2 SURGE	Reconstruction	8,700	2029
123933	PUMP 1	Reconstruction	10,449	2029
62812	VALVE REGULATING 01 FLOW RAW	Reconstruction	4,750	2029
164637	ANALYZER PARTICLE AIT3120	Reconstruction	3,800	2029
164645	ANALYZER PARTICLE AIT3220	Reconstruction	3,800	2029
164647	METER FLOW FIT3205 INLET	Reconstruction	3,800	2029
164720	VALVE BACKFLOW 1 PREVENTER	Reconstruction	3,325	2029
62640	ANALYZER PH AIT111 LL RAW	Reconstruction	2,760	2029
62645	METER LEVEL LIT131 WELL 2 EAST	Reconstruction	2,850	2029
164668	ANALYZER PH PORTABLE	Reconstruction	2,375	2029
164650	METER FLOW FIT3211 RECIRCULATING	Reconstruction	1,840	2029

191	62708	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,840	2029
192	62668	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,740	2029
193	62827	VALVE GATE 02 ISOL SP	Reconstruction	1,900	2029
194	62828	VALVE ALTITUDE	Reconstruction	1,840	2029
195	62830	VALVE GATE 03 ISOL SP	Reconstruction	1,900	2029
196	62692	VALVE GATE 03 SERVICE WATER	Reconstruction	950	2029
197	164511	ACTUATOR ELECTRIC UV OUTLET	Reconstruction	920	2029
198	164426	MOTOR 2060 ELECTRIC XRP	Reconstruction	950	2029
199	164612	TRANSMITTER PRESSURE LIT4006	Reconstruction	475	2029
200	164655	TRANSMITTER PRESSURE PIT3304	Reconstruction	475	2029
201	164663	TRANSMITTER PRESSURE PIT3421	Reconstruction	475	2029
202	164505	VALVE CHECK UV1 BY-PASS	Reconstruction	475	2029
203					
204					
205	360537	SETTLING POND NEW PLANT	Maintenance	5,000	2030
206	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	11,088	2030
207	164694	PANEL POWER FACTOR CORRECTION PFC-0052 EL	Reconstruction	9,500	2030
208	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2030
209	164372	PANEL STARTER 4 LL PUMP	Reconstruction	7,600	2030
210	62642	PANEL CONTROL 01 SAMPLE PUMPS	Reconstruction	3,480	2030
211	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2030
212	164742	SAFETY ATMOSPHERE DETECTOR	Reconstruction	566	2030
213	62796	HEATER ELECTRIC UH05	Reconstruction	1,584	2030
214	164438	HEATER UH-0012	Reconstruction	950	2030
215	62679	HEATER ELECTRIC UH04 ELECTRIC LL	Reconstruction	870	2030
216	62701	FAN 02 EXHAUST CHLORINE BLDG	Reconstruction	920	2030
217	360539	PIPING INTAKE	Maintenance	51,000	2030
218	123933	PUMP 1	Reconstruction	9,200	2030
219	164715	METER FLOW SILVER CLAY CHAMBER	Reconstruction	7,360	2030
220	164639	METER FLOW FIT3105 INLET	Reconstruction	4,350	2030
221	62831	VALVE BUTTERFLY 04 ISOL SP	Reconstruction	4,750	2030
222	62683	PUMP SUBMERSIBLE 01 LL	Reconstruction	3,680	2030
223	62635	METER LEVEL LIT116 WELL 1 EAST	Reconstruction	3,800	2030
224	62672	VALVE BUTTERFLY 02 ISOL BW	Reconstruction	2,610	2030
225	123768	PUMP CENT P4609 NEUTRILZATION TANK	Reconstruction	2,850	2030
226	164625	METER FLOW FIT9006	Reconstruction	2,300	2030
227	164444	PUMP CENT 4214 CDP	Reconstruction	1,900	2030
228	164425	PUMP CENT 2060 XRP	Reconstruction	1,840	2030
229	164561	METER FLOW 4405 HYPO CIP	Reconstruction	1,425	2030
230	164613	ANALYZER PH AE4620	Reconstruction	920	2030
231	62662	VALVE PLUG 01 ISOL PR LL	Reconstruction	950	2030
232	62791	ANALYZER PH 01 PORTABLE LAB	Reconstruction	920	2030
233	163379	VALVE BUTTERFLY 02 EAST RAW LINE	Reconstruction	920	2030
234	164620	MOTOR 4609 ELECTRIC	Reconstruction	644	2030
235	164609	TRANSMITTER TEMP TT4007	Reconstruction	475	2030
236	164494	TRANSMITTER PRESSURE PIT5003	Reconstruction	475	2030
237					
238					
239	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2031

240	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2031
241	164369	PANEL STARTER 1 LL PUMP	Reconstruction	7,360	2031
242	164384	DRIVE 2010 STR CLEAN MOTOR	Reconstruction	920	2031
243	164677	PUMP CENT HWP0035	Reconstruction	9,200	2031
244	62809	VALVE GATE 01 LL	Reconstruction	23,750	2031
245	123934	PUMP 2	Reconstruction	9,500	2031
246	164528	METER FLOW FE7052 EAST DIST	Reconstruction	7,600	2031
247	164600	MOTOR P4204 ELECTRIC RECYCLE	Reconstruction	4,750	2031
248	62833	VALVE BUTTERFLY 05 ISOL SP	Reconstruction	4,350	2031
249	164646	ANALYZER TURBIDITY AIT3219	Reconstruction	3,680	2031
250	164624	METER FLOW FIT9005	Reconstruction	2,175	2031
251	164556	METER LEVEL LIT8004 HYPO DAY TANK	Reconstruction	2,175	2031
252	62826	VALVE GATE 01 ISOL SP	Reconstruction	1,840	2031
253	164483	ACTUATOR ELECTRIC MV7041	Reconstruction	1,840	2031
254	164469	VALVE CHECK 7020 HL OUTLET	Reconstruction	1,425	2031
255	164615	TRANSMITTER PRESSURE 4605	Reconstruction	920	2031
256	62709	VALVE GATE 02 SERVICE WATER	Reconstruction	950	2031
257	62813	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	920	2031
258	164410	TRANSMITTER PRESSURE RFR TANK	Reconstruction	870	2031
259	164656	TRANSMITTER PRESSURE PIT3321	Reconstruction	435	2031
260	164662	TRANSMITTER PRESSURE PIT3404	Reconstruction	460	2031
261	164529	VALVE BUTTERFLY ISOLATION	Reconstruction	460	2031
262	164432	VALVE CHECK XRP2050	Reconstruction	475	2031
263	164552	VALVE REGULATING PRESSURE	Reconstruction	218	2031
264					
265					
266	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	117,834	2032
267	315476	BUILDING LIGHTING ALL BUILDINGS	Maintenance	17,305	2032
268	123761	LIFTING DEVICE FORK LIFT MAN BASKET	Reconstruction	1,840	2032
269	62794	PANEL TRANSFER 01 ELECT HL	Reconstruction	9,200	2032
270	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2032
271	315493	PANEL PLC CP-1000 LL	Reconstruction	9,200	2032
272	315495	PANEL POWER FACTOR CORRECTION PFC-0056 LL	Reconstruction	9,500	2032
273	164395	DRIVE 2030 STR MOTOR	Reconstruction	920	2032
274	164390	DRIVE 2020 STR MOTOR	Reconstruction	950	2032
275	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2032
276	164704	SAFETY EMER LIGHTING SAFETY 8	Reconstruction	475	2032
277	164678	BOILER B-1	Reconstruction	95,045	2032
278	62710	HEATER ELECTRIC UH02 CL 2	Reconstruction	920	2032
279	62728	HEATER ELECTRIC UH07 PLANT	Reconstruction	950	2032
280	62678	HEATER ELECTRIC UH02 ELECTRIC LL	Reconstruction	950	2032
281	62834	FAN 01 EXHAUST ELECT TOWER	Reconstruction	4,944	2032
282	62667	VALVE GATE 03 PUMP WELL ISOL	Reconstruction	9,200	2032
283	164461	MOTOR 7010 ELECTRIC HL	Reconstruction	9,200	2032
284	164718	METER FLOW B EAGELE EAST CHAMBER	Reconstruction	7,600	2032
285	164627	PUMP SUBMERSIBLE WP9010 DRAIN PUMP	Reconstruction	4,600	2032
286	164654	METER FLOW FIT3305 INLET	Reconstruction	4,600	2032
287	164599	PUMP CENT P4204 RECYCLE	Reconstruction	4,600	2032
288	164545	ANALYZER TURBIDITY AIT7003 DIST	Reconstruction	4,750	2032

289	164648	TRANSMITTER PRESSURE PIT3204	Reconstruction	3,480	2032
290	164652	ANALYZER PARTICLE AIT3320	Reconstruction	3,680	2032
291	164734	VALVE BACKFLOW 3 PREVENTER	Reconstruction	3,220	2032
292	164721	VALVE BACKFLOW 2 PREVENTER	Reconstruction	3,220	2032
293	62717	METER FLOW FIT224 DISPLAY	Reconstruction	2,760	2032
294	164484	VALVE RELIEF 7005 PRESSURE	Reconstruction	2,850	2032
295	164665	METER LEVEL LIT9002	Reconstruction	2,375	2032
296	164571	ANALYZER HPE5105 GAS PEROXIDE	Reconstruction	2,300	2032
297	164569	METER FLOW LIT5102 PEROXIDE T	Reconstruction	1,840	2032
298	164471	ACTUATOR ELECTRIC MV7011	Reconstruction	1,900	2032
299	164477	ACTUATOR ELECTRIC MV7031	Reconstruction	1,740	2032
300	164423	PUMP CENT 2050 XRP	Reconstruction	1,900	2032
301	164580	METER FLOW 4121 CIP ACID	Reconstruction	1,305	2032
302	164577	METER FLOW FIT4017 CIP CAUSTIC	Reconstruction	1,380	2032
303	164574	METER FLOW FIT4505 S.B CIP	Reconstruction	1,425	2032
304	164475	VALVE CHECK 7030 HL INLET	Reconstruction	1,305	2032
305	164498	ACTUATOR ELECTRIC MV5023 UV IN	Reconstruction	950	2032
306	315497	VALVE REGULATING 01 CHLORINE VACUUM OPEI	Reconstruction	870	2032
307	62659	VALVE BUTTERFLY 04 LL	Reconstruction	870	2032
308	62814	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	950	2032
309	164379	VALVE BUTTERFLY 02 EAST RAW LINE	Reconstruction	870	2032
310	164381	VALVE BUTTERFLY 2010 STR ISO	Reconstruction	920	2032
311	164347	VALVE RELIEF 03 AIR LL	Reconstruction	950	2032
312	164464	VALVE BUTTERFLY 7010 HL OUTLET	Reconstruction	920	2032
313	164476	VALVE BUTTERFLY 7030 HL OUTLET	Reconstruction	950	2032
314	164450	MOTOR 4310 RF PUMP	Reconstruction	690	2032
315	164591	TRANSMITTER PRESSURE LIT4106	Reconstruction	460	2032
316	164601	VALVE BUTTERFLY V4032	Reconstruction	460	2032
317	164344	VALVE BUTTERFLY 2 ISOLATION LL	Reconstruction	475	2032
318	164445	MOTOR 4214 CDP PUMP	Reconstruction	475	2032
319	164523	TRANSMITTER PRESSURE PIT7002	Reconstruction	435	2032
320	164488	TRANSMITTER PRESSURE PIT7005	Reconstruction	460	2032
321	164525	VALVE BUTTERFLY PRV7051 ISOLATION	Reconstruction	460	2032
322	164527	VALVE BUTTERFLY PRV7051 ISOLATION	Reconstruction	475	2032
323	164530	TRANSMITTER PRESSURE PIT7053	Reconstruction	475	2032
324	164537	VALVE BUTTERFLY TRANSFER ISOL	Reconstruction	475	2032
325					
326					
327	360537	SETTLING POND NEW PLANT	Maintenance	300,000	2033
328	315478	BUILDING ROADS	Rehabilitation	265,535	2033
329	164570	TANK PROCESS HPT5101 PEROXIDE	Reconstruction	2,850	2033
330	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2033
331	164371	PANEL STARTER 3 LL PUMP	Reconstruction	7,360	2033
332	315486	PANEL BREAKER HLP-7040 HL PUMP 04	Reconstruction	6,960	2033
333	164707	PANEL ALARM/DIALER	Reconstruction	72,710	2033
334	164367	SWITCH DISCONNECT 3 LL PUMP	Reconstruction	1,840	2033
335	164400	DRIVE 2040 STR MOTOR	Reconstruction	950	2033
336	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2033
337	164587	SAFETY EYE WASH/SHOWER 01	Reconstruction	8,700	2033

338	315308	PUMP CENT HWP0034 HEAT RECIRC	Reconstruction	9,200	2033
339	62674	FAN EF03 EXHAUST LL	Reconstruction	5,482	2033
340	315500	TANK PROCESS WET WELL 02 WEST LL	Maintenance	50,000	2033
341	164661	METER FLOW FIT3405 INLET	Reconstruction	4,750	2033
342	164376	VALVE DIAPHRAGM BACKFLUSH RAW	Reconstruction	4,600	2033
343	164634	TANK STORAGE AR4710 AIR	Reconstruction	3,680	2033
344	164659	ANALYZER PARTICLE AIT3420	Reconstruction	3,680	2033
345	63099	VALVE BACKFLOW PREVENTER	Reconstruction	3,325	2033
346	164657	METER FLOW FIT3311 RECIRCULATING	Reconstruction	1,900	2033
347	123018	TRANSMITTER PRESSURE IONA IN	Reconstruction	1,740	2033
348	123310	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,840	2033
349	164465	ACTUATOR ELECTRIC MV7011	Reconstruction	1,840	2033
350	164481	VALVE CHECK 7040 HL OUTLET	Reconstruction	1,380	2033
351	164411	PUMP CENT 4370 RFR	Reconstruction	1,425	2033
352	62832	VALVE CHECK 01 SP	Reconstruction	950	2033
353	164383	VALVE BUTTERFLY 2010 STR ISO	Reconstruction	950	2033
354	164360	VALVE BUTTERFLY METER ISO WEST	Reconstruction	920	2033
355	164532	VALVE RELIEF EAST DIST ISOL	Reconstruction	920	2033
356	164462	VALVE BUTTERFLY 7010 HL INLET	Reconstruction	950	2033
357	164470	VALVE BUTTERFLY 7020 HL OUTLET	Reconstruction	870	2033
358	164474	VALVE BUTTERFLY 7030 HL INLET	Reconstruction	920	2033
359	164424	MOTOR 2050 ELECTRIC XRP	Reconstruction	920	2033
360	164640	TRANSMITTER PRESSURE PIT3104	Reconstruction	460	2033
361	164339	VALVE BUTTERFLY 1 ISOLATION LL	Reconstruction	460	2033
362	164506	VALVE BUTTERFLY UV2-A ISOLATION	Reconstruction	435	2033
363	164510	VALVE BUTTERFLY UV OUTLET	Reconstruction	460	2033
364	164451	VALVE BUTTERFLY RF4310 INLET	Reconstruction	460	2033
365					
366					
367	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	49,442	2034
368	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	13,745	2034
369	315480	BUILDING FENCING	Maintenance	2,500	2034
370	315479	BUILDING DRAINAGE	Maintenance	10,000	2034
371	315489	LIFTING DEVICE A FRAME 2 TON HL PUMPS AREA	Reconstruction	4,750	2034
372	164731	LIFTING DEVICE SALA TRI-POD	Reconstruction	1,840	2034
373	164559	TANK PROCESS CHLORINE DAY	Reconstruction	870	2034
374	62779	UPS 01 BATTERY BANK HL			2034
375	62836	MCC 03 TOWER			2034
376	164698	PANEL CONTROL CP-2000 HMI			2034
377	164689	MCC MCC-0061 ELECTRICAL ROOM			2034
378	164690	MCC MCC-0060 ELECTRICAL ROOM	Reconstruction	85,734	2034
379	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2034
380	164370	PANEL STARTER 2 LL PUMP			2034
381	315484	PANEL BREAKER HLP-7020 HL PUMP 02			2034
382	164691	PANEL SWB-0051 BREAKER			2034
383	164695	TRANSFORMER AIR T-0053	Reconstruction	1,840	2034
384	164700	TRANSFORMER AIR 0072	Reconstruction	1,900	2034
385	315481	FIRE EXTINGUISHER ALL BUILDINGS	Reconstruction	4,750	2034
386	123762	SAFETY ATMOSPHERIC TESTER	Reconstruction	1,900	2034

387	164743	SAFETY FIRE SYSTEM	Reconstruction	57,683	2034
388	164590	SAFETY EYE WASH/SHOWER 02	Reconstruction	920	2034
389	164703	SAFETY EMER LIGHTING SAFETY 7	Reconstruction	460	2034
390	164629	SAFETY EMER LIGHTING WASHROOM	Reconstruction	460	2034
391	164632	SAFETY EMER LIGHTING SAFETY 1	Reconstruction	475	2034
392	164584	SAFETY EMER LIGHTING CHEMICAL 1	Reconstruction	475	2034
393	164496	SAFETY EMER LIGHTING UV AREA	Reconstruction	475	2034
394	164437	SAFETY EMER LIGHTING MAINT AREA	Reconstruction	475	2034
395	164439	SAFETY EMER LIGHTING W&D AREA LIFT FILT	Reconstruction	435	2034
396	164682	HEAT EXCHANGER AHU0010 AIR CONDITIONER	Rehabilitation	108,774	2034
397	164586	FAN 0021 EXHAUST EMERGENCY	Rehabilitation	5,144	2034
398	360535	PIPING PROCESS ALL BUILDINGS	Maintenance	14,000	2034
399	164460	PUMP CENT 7010 HL	Rehabilitation	69,000	2034
400	62647	VALVE SLUICE GATE 01 INTAKE	Reconstruction	9,200	2034
401	62816	PUMP CENT 01 FIRE TOWER	Reconstruction	9,500	2034
402	123012	ANALYZER TURBIDITY 2 FILTER	Reconstruction	9,200	2034
403	164386	STRAINER 2020 RAW WATER	Reconstruction	9,200	2034
404	164382	STRAINER 2010 WATER RAW	Reconstruction	9,500	2034
405	164361	METER FLOW FIT 1027 RAW WEST DICHARGE	Reconstruction	9,200	2034
406	164396	STRAINER 2040 RAW WATER	Reconstruction	9,500	2034
407	164495	ANALYZER UV AIT5004	Reconstruction	8,700	2034
408	164712	METER FLOW GLENCOE CHAMBER	Reconstruction	7,360	2034
409	164536	METER FLOW FE7062 WEST DIST	Reconstruction	6,960	2034
410	62691	METER FLOW 01 SERVICE WATER	Reconstruction	4,350	2034
411	62661	VALVE CHECK 01 LL	Reconstruction	4,600	2034
412	123766	PUMP CENT P4204 RECYCLE	Reconstruction	4,600	2034
413	123767	MOTOR P4204 ELECTRIC RECYCLE	Reconstruction	4,750	2034
414	164626	VALVE GATE W 69004 SETTLING POND	Reconstruction	2,850	2034
415	164550	METER FLOW FE7092 PROCESS LINE	Reconstruction	2,375	2034
416	62985	METER LEVEL M LIT-6021 Outside Storage tank	Reconstruction	1,981	2034
417	62819	VALVE 01 TOWER ALTITUDE	Reconstruction	1,900	2034
418	164614	ANALYZER CONDUCTIVITY ORP 4619	Reconstruction	950	2034
419	62690	VALVE GATE 01 SERVICE WATER	Reconstruction	920	2034
420	164387	VALVE BUTTERFLY 2020 STR ISO	Reconstruction	920	2034
421	164338	VALVE RELIEF 01 AIR LL	Reconstruction	920	2034
422	164348	VALVE CHECK 3 LL	Reconstruction	920	2034
423	164357	VALVE BUTTERFLY ISOLATION WEST	Reconstruction	950	2034
424	164358	VALVE RELIEF AIR EAST	Reconstruction	920	2034
425	164359	VALVE RELIEF AIR WEST	Reconstruction	950	2034
426	164362	VALVE BUTTERFLY METER ISO WEST	Reconstruction	950	2034
427	164519	VALVE RELIEF AIR	Reconstruction	950	2034
428	164480	VALVE BUTTERFLY 7040 HL INLET	Reconstruction	920	2034
429	164402	VALVE RELIEF 01 AIR	Reconstruction	870	2034
430	164618	VALVE BUTTERFLY HV4607	Reconstruction	475	2034
431	164649	TRANSMITTER PRESSURE PIT3221	Reconstruction	460	2034
432	164604	VALVE BUTTERFLY V4125	Reconstruction	460	2034
433	164374	VALVE BUTTERFLY PRV ISOLATION	Reconstruction	475	2034
434	164375	VALVE BUTTERFLY BACKFLUSH ISOL	Reconstruction	460	2034
435	123773	STRAINER 02 RFR AMIAD	Reconstruction	475	2034

436	164354	VALVE BUTTERFLY 4 ISOLATION LL	Reconstruction	460	2034
437	164363	TRANSMITTER PRESSURE WEST FLOW	Reconstruction	475	2034
438	164501	VALVE BUTTERFLY UV1 ISOLATION	Reconstruction	460	2034
439	164517	ACTUATOR ELECTRIC 02 UV1 COOLING	Reconstruction	435	2034
440	164518	VALVE BUTTERFLY ISOLATION	Reconstruction	460	2034
441	164538	TRANSMITTER PRESSURE PIT7061	Reconstruction	460	2034
442	164452	VALVE CHECK RF4310 OUTLET	Reconstruction	475	2034
443	164457	VALVE CHECK RF4320 OUTLET	Reconstruction	475	2034
444	164420	VALVE BUTTERFLY 4370 OUT	Reconstruction	460	2034
445	164433	VALVE CHECK XRP2050	Reconstruction	460	2034
446					
447					
448	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	3,934	2035
449	123760	VEHICLE LIFT TRUCK CLAR	Reconstruction	4,600	2035
450	164572	TANK T4510A BISFULFITE DAY	Reconstruction	950	2035
451	164578	TANK PROCESS T4110A CIP ACID DAY	Reconstruction	950	2035
452	164683	MCC MCC-0062 MECHANICAL ROOM	Reconstruction	19,000	2035
453	62778	PANEL PLC ICP-B HL	Reconstruction	9,500	2035
454	164696	PANEL CONTROL UV1			2035
455	164690	MCC MCC-0060 ELECTRICAL ROOM			2035
456	164692	PANEL TRANSFER GENERATOR			2035
457	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2035
458	315490	PANEL LIGHTING LP-0055A HVAC ROOM	Reconstruction	6,960	2035
459	315491	PANEL LIGHTING LP-0055 HVAC ROOM	Reconstruction	7,360	2035
460	315485	PANEL BREAKER HLP-7030 HL PUMP 03			2035
461	164684	TRANSFORMER AIR T-0055	Reconstruction	2,850	2035
462	164365	SWITCH DISCONNECT 1 LL PUMP	Reconstruction	1,900	2035
463	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2035
464	164631	SAFETY EMER LIGHTING BOARDROOM	Reconstruction	460	2035
465	164635	SAFETY EMER LIGHTING SAFETY 3	Reconstruction	460	2035
466	164585	SAFETY EMER LIGHTING CHEMICAL 2	Reconstruction	460	2035
467	164487	SAFETY EMER LIGHTING HL AREA	Reconstruction	460	2035
468	164524	SAFETY EMER LIGHTING HL AREA	Reconstruction	475	2035
469	62674	FAN EF03 EXHAUST LL	Reconstruction	5,246	2035
470	315252	VALVE REGULATING PSI 7061	Reconstruction	28,500	2035
471	62811	VALVE GLOBE 01 BACKFLUSH LL	Reconstruction	23,000	2035
472	62666	VALVE GATE E2 SLUICE SURGE	Reconstruction	9,500	2035
473	123013	ANALYZER TURBIDITY 3 FILTER	Reconstruction	9,500	2035
474	164628	PUMP SUBMERSIBLE WP9020 DRAIN PUMP	Reconstruction	4,750	2035
475	62823	TRANSMITTER PRESSURE 01 LEVEL	Reconstruction	4,750	2035
476	164449	PUMP CENT 4310 RF	Reconstruction	4,350	2035
477	164459	METER FLOW 4301	Reconstruction	4,750	2035
478	164660	ANALYZER TURBIDITY AIT3419	Reconstruction	3,800	2035
479	164607	ACTUATOR PNEUMATIC V4289	Reconstruction	2,850	2035
480	164642	METER FLOW FIT3111 RECIRCULATING	Reconstruction	1,900	2035
481	164664	METER FLOW FIT3411 RECIRCULATING	Reconstruction	1,740	2035
482	315492	VALVE THERMAL MIXING HVAC ROOM	Reconstruction	1,900	2035
483	62660	VALVE BUTTERFLY 01 ISOL LL	Reconstruction	920	2035
484	62818	ACTUATOR ELECTRIC 01 FLOW	Reconstruction	920	2035

485	62825	ACTUATOR ELECTRIC 02 FLOW SP	Reconstruction	920	2035
486	164385	VALVE BUTTERFLY 2010 STR CLEAN DISCHARGE	Reconstruction	950	2035
487	164342	VALVE RELIEF 02 AIR LL	Reconstruction	950	2035
488	164343	VALVE CHECK 2 LL	Reconstruction	920	2035
489	164352	VALVE RELIEF 04 AIR LL	Reconstruction	950	2035
490	164353	VALVE CHECK 4 LL	Reconstruction	870	2035
491	164397	VALVE BUTTERFLY 2040 STR ISO	Reconstruction	870	2035
492	164486	VALVE BUTTERFLY PRV7005 OUTLET	Reconstruction	950	2035
493	164403	VALVE RELIEF 02 AIR	Reconstruction	920	2035
494	164621	VALVE BUTTERFLY HV4652	Reconstruction	435	2035
495	164594	TRANSMITTER TEMP TT4107	Reconstruction	475	2035
496	164596	VALVE BUTTERFLY V4019	Reconstruction	435	2035
497	164602	VALVE BUTTERFLY V4282	Reconstruction	475	2035
498	164606	VALVE BUTTERFLY V4227	Reconstruction	475	2035
499	164497	VALVE BUTTERFLY INLET	Reconstruction	460	2035
500	164364	TRANSMITTER PRESSURE EAST FLOW	Reconstruction	460	2035
501	164500	VALVE BUTTERFLY UV1 BY-PASS	Reconstruction	475	2035
502	164521	VALVE BUTTERFLY ISOLATION	Reconstruction	475	2035
503					
504					
505	360533	BUILDING ROOF NEW PLANT	Maintenance	300,000	2036
506	164581	TANK PROCESS T4601 NEUTRALISATION CIP	Reconstruction	5,700	2036
507	164558	TANK STORAGE CHLORINE	Reconstruction	4,750	2036
508	164575	TANK PROCESS T4010A CAUSTIC DAY	Reconstruction	920	2036
509	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2036
510	164448	BATTERY-CHARGER	Reconstruction	1,840	2036
511	164366	SWITCH DISCONNECT 2 LL PUMP	Reconstruction	1,740	2036
512	315309	TRANSFORMER AIR COMPRESSOR	Reconstruction	1,840	2036
513	315310	TRANSFORMER AIR COMPRESSOR	Reconstruction	1,900	2036
514	164702	TRANSFORMER AIR 0054	Reconstruction	1,740	2036
515	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2036
516	164633	SAFETY EMER LIGHTING SAFETY 2	Reconstruction	435	2036
517	164554	SAFETY EMER LIGHTING DIST AREA	Reconstruction	475	2036
518	164672	HEATER NATURAL GAS MAU0020	Rehabilitation	34,500	2036
519	62835	HEATER ELECTRIC 01 TOWER	Reconstruction	1,784	2036
520	62706	LOUVRE 01 CL2 STORAGE	Reconstruction	5,352	2036
521	164355	METER FLOW FIT1017 EAST DISCHARGE	Reconstruction	9,500	2036
522	164713	METER FLOW PIONEER CHAMBER	Reconstruction	7,600	2036
523	315313	VALVE RELIEF 7074 PRESSURE GRAHAM DIST	Reconstruction	4,750	2036
524	164421	ANALYZER TURBIDITY RFRP DISCHARGE	Reconstruction	4,750	2036
525	164653	ANALYZER TURBIDITY AIT3319	Reconstruction	3,800	2036
526	123026	ANALYZER CHLORINE AIT1401 PRE	Reconstruction	3,480	2036
527	164548	VALVE BACKFLOW PREVENTER	Reconstruction	3,045	2036
528	164380	ACTUATOR ELECTRIC EAST RAW LINE	Reconstruction	2,610	2036
529	164775	VALVE STAND BY RAW WATER INTAKE	Reconstruction	1,840	2036
530	62677	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,900	2036
531	164772	ANALYZER DO PROBE LL	Reconstruction	1,425	2036
532	62964	ANALYZER CHLORINE PORTABLE	Reconstruction	1,380	2036
533	164773	ANALYZER PH PROBE LL	Reconstruction	920	2036

534	164393	VALVE BUTTERFLY 2030 STR ISO	Reconstruction	870	2036
535	164356	VALVE BUTTERFLY BUTTERFLY EAST ISOLATION	Reconstruction	920	2036
536	164398	VALVE BUTTERFLY 2040 STR ISO	Reconstruction	920	2036
537	164485	VALVE BUTTERFLY PRV7005 INLET	Reconstruction	920	2036
538	164404	TRANSMITTER PRESSURE PRE STR	Reconstruction	950	2036
539	164406	TRANSMITTER TEMP POST STRAINER	Reconstruction	950	2036
540	164455	MOTOR 4320 ELECTRIC EF	Reconstruction	713	2036
541	164687	VALVE RELIEF UV1 AIR	Reconstruction	460	2036
542	164688	VALVE RELIEF UV2 AIR	Reconstruction	475	2036
543	164616	VALVE BUTTERFLY HV4651	Reconstruction	460	2036
544	164349	VALVE BUTTERFLY 3 ISOLATION LL	Reconstruction	435	2036
545	164447	VALVE BUTTERFLY CDP4214	Reconstruction	460	2036
546	164508	VALVE BUTTERFLY UV2-B ISOLATION	Reconstruction	460	2036
547	164533	VALVE BUTTERFLY PRV7061 ISOLATION	Reconstruction	435	2036
548	164535	VALVE BUTTERFLY PRV7061 ISOLATION	Reconstruction	460	2036
549	164412	MOTOR 4370 ELECTRIC RFR	Reconstruction	475	2036
550	164414	MOTOR 4360 ELECTRIC RFR	Reconstruction	460	2036
551					
552					
553	164724	LIFTING DEVICE MAIN LIFT	Reconstruction	475	2037
554	164622	GENERATOR ELECTRIC STAND-BY	Reconstruction	38,000	2037
555	164623	ENGINE DIESEL STANDBY NEW	Maintenance	153,020	2037
556	123427	ENGINE DIESEL STANDBY OLD	Reconstruction	27,600	2037
557	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2037
558	164699	PANEL CONTROL MAIN FILTRATION	Reconstruction	9,500	2037
559	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2037
560	164368	SWITCH DISCONNECT 4 LL PUMP	Reconstruction	1,900	2037
561	164743	SAFETY FIRE SYSTEM	Reconstruction	950	2037
562	164436	SAFETY EMER LIGHTING XR AREA	Reconstruction	460	2037
563	164441	SAFETY EMER LIGHTING LFIT TRUCK	Reconstruction	475	2037
564	164682	HEAT EXCHANGER AHU0010 AIR CONDITIONER	Reconstruction	142,500	2037
565	62795	HEATER ELECTRIC UH01	Reconstruction	1,819	2037
566	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,369	2037
567	164502	UV LIGHT 5021	Reconstruction	200,000	2037
568	315499	TANK PROCESS WET WELL 01 EAST LL	Maintenance	50,000	2037
569	164714	METER FLOW MARSH CHAMBER	Reconstruction	6,960	2037
570	315314	VALVE RELIEF 7064 PRESSURE WEST LORNE	Reconstruction	4,600	2037
571	164492	ANALYZER AIT5027 PEROXIDE OUT	Reconstruction	4,600	2037
572	164454	PUMP CENT 4320 RF	Reconstruction	4,600	2037
573	164378	ACTUATOR ELECTRIC WEST RAW LINE	Reconstruction	2,850	2037
574	62689	ANALYZER CHLORINE AAH113 GAS DETECT	Reconstruction	2,300	2037
575	164557	METER LEVEL LIT8002 HYPO TANK	Reconstruction	2,300	2037
576	62990	METER LEVEL M LIT-6021 Outside Storage tank	Reconstruction	1,814	2037
577	164774	ANALYZER PH /DO	Reconstruction	1,900	2037
578	62673	VALVE BACKFLOW PREVENTER 25030 THOMPSON	Reconstruction	1,840	2037
579	164413	PUMP CENT 4360 RFR	Reconstruction	1,380	2037
580	62824	ACTUATOR ELECTRIC 01 FLOW SP	Reconstruction	950	2037
581	164392	VALVE BUTTERFLY 2030 STR ISO	Reconstruction	950	2037
582	164394	VALVE BUTTERFLY 2030 STR ISO	Reconstruction	920	2037

583	164388	VALVE BUTTERFLY 2020 STR ISO	Reconstruction	950	2037
584	164389	VALVE BUTTERFLY 2020 STR CLEAN DISCHARGE	Reconstruction	920	2037
585	164337	VALVE CHECK 1 LL	Reconstruction	870	2037
586	164544	VALVE BUTTERFLY GRAHAM DIST	Reconstruction	920	2037
587	164405	TRANSMITTER PRESSURE POST STR	Reconstruction	920	2037
588	62980	ANALYZER CHLORINE Portable	Reconstruction	645	2037
589	164608	VALVE BUTTERFLY V4289	Reconstruction	460	2037
590	164504	VALVE BUTTERFLY UV2 BY-PASS	Reconstruction	460	2037
591	164516	ACTUATOR ELECTRIC 2 UV2 COOLING	Reconstruction	475	2037
592	164547	VALVE GATE BFP ISOLATION INLET	Reconstruction	475	2037
593	164453	VALVE BUTTERFLY RF4310 OUTLET	Reconstruction	435	2037
594	164456	VALVE BUTTERFLY RF4320 INLET	Reconstruction	460	2037
595	164458	VALVE BUTTERFLY RF4320 OUTLET	Reconstruction	460	2037
596	164419	VALVE BUTTERFLY RFRP4370 INLET	Reconstruction	475	2037
597	164551	VALVE BUTTERFLY FE7092 ISOLATION	Reconstruction	238	2037
598					
599					
600	164725	LIFTING DEVICE LIFT TRI-POD SYSTEM	Reconstruction	1,900	2038
601	164499	MIXER FLASH PEROXIDE SM5025	Reconstruction	2,375	2038
602	164697	PANEL CONTROL UV2	Reconstruction	9,500	2038
603	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2038
604	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2038
605	164701	SAFETY EMER LIGHTING SAFETY 6	Reconstruction	460	2038
606	164686	SAFETY EMER LIGHTING SAFETY 5	Reconstruction	475	2038
607	164693	HEATER UH0016	Reconstruction	1,856	2038
608	164507	UV LIGHT 5022	Reconstruction	200,000	2038
609	62810	VALVE GATE 02 LL	Reconstruction	21,750	2038
610	164717	METER FLOW A	Reconstruction	7,360	2038
611	164638	ANALYZER TURBIDITY AIT3119	Reconstruction	3,680	2038
612	164373	VALVE RELIEF PRESSURE	Reconstruction	2,760	2038
613	315496	SCALE CHLORINE CYLINDER	Reconstruction	2,375	2038
614	164540	VALVE BUTTERFLY WEST DIST ISOLATION	Reconstruction	950	2038
615	164482	VALVE BUTTERFLY 7040 HL OUTLET	Reconstruction	950	2038
616	164641	TRANSMITTER PRESSURE PIT3121	Reconstruction	475	2038
617	164446	VALVE BUTTERFLY CDP4214	Reconstruction	435	2038
618	164503	VALVE BUTTERFLY UV1 ISOLATION	Reconstruction	475	2038
619	164509	VALVE BUTTERFLY UV2 BY-PASS	Reconstruction	475	2038
620	164514	ACTUATOR ELECTRIC 01 UV1 COOLING	Reconstruction	475	2038
621	164515	ACTUATOR ELECTRIC 1 UV2 COOLING	Reconstruction	460	2038
622	164541	VALVE BUTTERFLY GRAHAM ROAD	Reconstruction	475	2038
623	164422	TRANSMITTER PRESSURE RFRP	Reconstruction	475	2038
624					
625					
626	336384	BUILDING ROOF OLD PLANT	Maintenance	37,612	2039
627	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2039
628	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2039
629	315311	HEAT EXCHANGER AHU0030 AIR CONDITIONER	Reconstruction	1,893	2039
630	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,369	2039
631	62680	HEATER ELECTRIC UH03 ELECTRIC LL	Reconstruction	3,275	2039

315251	VALVE REGULATING PSI 7051	Reconstruction	27,600	2039
164490	ANALYZER TURBIDITY AIT5001 UV INLET	Reconstruction	4,750	2039
123026	ANALYZER CHLORINE AIT1401 PRE	Reconstruction	3,480	2039
62699	ANALYZER CHLORINE AAH112 GAS DETECT	Reconstruction	2,375	2039
62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2040
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2040
164666	SAFETY EMER LIGHTING SAFETY 4	Reconstruction	435	2040
164630	SAFETY EMER LIGHTING MAIN ENTRANCE	Reconstruction	475	2040
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,759	2040
164435	HEATER ELECTRIC UH-0013	Reconstruction	1,856	2040
164685	HEATER UH0023	Reconstruction	3,341	2040
62638	ANALYZER TURBIDITY AIT109 RAW	Reconstruction	9,500	2040
315360	ANALYZER CHLORINE DR900 PORTABLE	Reconstruction	2,175	2040
164566	METER FLOW FE5104 PEROXIDE	Reconstruction	1,840	2040
164463	VALVE CHECK 7010 HL OUTLET	Reconstruction	1,380	2040
164468	VALVE BUTTERFLY 7020 HL INLET	Reconstruction	950	2040
164681	MOTOR ELECTRIC EF	Reconstruction	460	2040
164593	VALVE BUTTERFLY HV4150	Reconstruction	460	2040
315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	68,916	2041
164732	LIFTING DEVICE SALA BLOCK	Reconstruction	1,900	2041
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2041
62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2041
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	6,893	2041
164555	HEATER 0014 DIST AREA	Reconstruction	1,970	2041
164693	HEATER UH0016	Reconstruction	3,407	2041
164336	MOTOR 1 PUMP ELECT LL	Reconstruction	9,200	2041
62688	VALVE BUTTERFLY 01 ISOL RAW LL	Reconstruction	7,360	2041
164427	VALVE BUTTERFLY XRP2050 INLET	Reconstruction	460	2041
164583	TANK PROCESS ACT4101 ACID CIP	Reconstruction	4,750	2042
315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2042
164401	PANEL CONTROL STRAINER	Reconstruction	2,760	2042
315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2042
315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,031	2042
164438	HEATER UH-0012	Reconstruction	3,475	2042
62680	HEATER ELECTRIC UH03 ELECTRIC LL	Reconstruction	2,009	2042
123011	ANALYZER TURBIDITY 1 FILTER	Reconstruction	8,700	2042
164617	ACTUATOR PNEUMATIC V4607	Reconstruction	2,760	2042
248471	PUMP CENT 2 RAW SAMPLING	Reconstruction	950	2042
164610	VALVE BUTTERFLY HV4050	Reconstruction	435	2042
164542	VALVE BUTTERFLY TRANSFER ISOLATION	Reconstruction	460	2042
164415	STRAINER 01 RFR WATER	Reconstruction	475	2042

681	315477	BUILDING DOORS AND WINDOWS ALL BUILDINGS	Maintenance	109,983	2043
682	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2043
683	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2043
684	315488	PANEL DISTRIBUTION DP-0053 ELEC ROOM	Reconstruction	8,700	2043
685	315483	PANEL BREAKER HLP-7010 HL PUMP 01	Reconstruction	7,600	2043
686	62770	HEATER ELECTRIC 01 FORCED AIR	Reconstruction	3,545	2043
687	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,173	2043
688	62684	HEATER ELECTRIC UH01 ELECTRIC LL	Reconstruction	2,049	2043
689	62729	FAN EF06 EXHAUST PLANT	Reconstruction	920	2043
690	164346	MOTOR 3 PUMP ELECT LL	Reconstruction	8,700	2043
691	315315	VALVE RELIEF 7054 EAST DIST LINE	Reconstruction	4,750	2043
692	62817	MOTOR 01 BOOSTER ELEC SP	Reconstruction	4,600	2043
693	164431	METER FLOW XR PUMP	Reconstruction	2,760	2043
694	62634	VALVE BUTTERFLY 02 ISO LL	Reconstruction	920	2043
695					
696					
697	360533	BUILDING ROOF NEW PLANT	Maintenance	1,014,561	2044
698	336381	BUILDING ROOF LOW LIFT	Rehabilitation	200,000	2044
699	62682	LIFTING DEVICE 02 BRIDGE LL	Reconstruction	10,000	2044
700	123761	LIFTING DEVICE FORK LIFT MAN BASKET	Reconstruction	10,000	2044
701	62681	LIFTING DEVICE CHAINFALL 01	Reconstruction	5,000	2044
702	164567	PUMP DIAPHRAGM HPR5110 PEROXIDE	Reconstruction	4,750	2044
703	123769	PUMP DIAPHRAGM CTP4015 CIP CAUSTIC	Reconstruction	4,350	2044
704	315318	DRIVE VFD HL PUMP 04	Maintenance	9,200	2044
705	315324	DRIVE VFD HL PUMP 03	Maintenance	2,073	2044
706	315319	DRIVE VFD LL PUMP 03	Reconstruction	17,154	2044
707	315326	DRIVE VFD LL PUMP 01	Reconstruction	17,713	2044
708	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2044
709	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2044
710	278217	TANK LOW LIFT SCBA	Reconstruction	1,840	2044
711	164743	SAFETY FIRE SYSTEM	Reconstruction	45,314	2044
712	164672	HEATER NATURAL GAS MAU0020	Reconstruction	200,900	2044
713	164611	HEATER 4004 CIP/EFM CAUSTIC	Reconstruction	2,091	2044
714	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,315	2044
715	164685	HEATER UH0023	Reconstruction	3,617	2044
716	123772	ACTUATOR PNEUMATIC V4019	Reconstruction	2,760	2044
717	315317	VALVE CHLORINE INJECTOR	Reconstruction	1,840	2044
718	164428	VALVE BUTTERFLY XRP2060 INLET	Reconstruction	475	2044
719	164429	VALVE BUTTERFLY XRP 2050 OUTLET	Reconstruction	435	2044
720	164430	VALVE BUTTERFLY XRP 2060 OUTLET	Reconstruction	460	2044
721					
722					
723	336383	BUILDING ROOF CHLORINE	Maintenance	7,462	2045
724	123771	PUMP DIAPHRAGM CFP8040 HYPO POST	Reconstruction	4,600	2045
725	62687	MCC 02 LOW LIFT	Reconstruction	23,000	2045
726	315482	PANEL LIGHTING LP-0054 ELEC ROOM	Reconstruction	9,200	2045
727	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2045
728	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2045
729	62797	HEATER ELECTRIC UH01-A	Reconstruction	2,132	2045

730	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,462	2045
731	62700	FAN 01 EXHAUST CHLORINE BLDG	Reconstruction	950	2045
732	62675	FAN EF04 EXHAUST LL	Reconstruction	475	2045
733	62676	FAN EF05 EXHAUST LL	Reconstruction	460	2045
734	164644	FILTER 2 WATER MICRO PALL RACK	Reconstruction	400,000	2045
735	164335	PUMP CENT 1 VERT TURBINE LL	Reconstruction	14,250	2045
736	164341	MOTOR 2 PUMP ELECT LL	Reconstruction	9,500	2045
737	164467	MOTOR 7040 ELECTRIC HL	Reconstruction	9,500	2045
738	164716	METER FLOW EAGLE WEST CHAMBER	Reconstruction	7,600	2045
739	62829	VALVE REGULATING 01 PRESSURE ALTITUDE	Reconstruction	4,600	2045
740	164637	ANALYZER PARTICLE AIT3120	Reconstruction	3,800	2045
741	315316	VALVE CHLORINE INJECTOR	Reconstruction	1,740	2045
742	164650	METER FLOW FIT3211 RECIRCULATING	Reconstruction	1,840	2045
743	62828	VALVE ALTITUDE	Reconstruction	1,840	2045
744	62653	VALVE BUTTERFLY 03 LL	Reconstruction	950	2045
745	164511	ACTUATOR ELECTRIC UV OUTLET	Reconstruction	920	2045
746	164520	VALVE RELIEF AIR	Reconstruction	870	2045
747	164426	MOTOR 2060 ELECTRIC XRP	Reconstruction	950	2045
748	164663	TRANSMITTER PRESSURE PIT3421	Reconstruction	475	2045
749	164418	VALVE BUTTERFLY 4360 OUTLET	Reconstruction	460	2045
750					
751					
752	315478	BUILDING ROADS	Maintenance	119,603	2046
753	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	25,443	2046
754	164573	PUMP DIAPHRAGM BSTP4502 CIP BISUL	Reconstruction	4,750	2046
755	62779	UPS 01 BATTERY BANK HL	Maintenance	1,500	2046
756	164694	PANEL POWER FACTOR CORRECTION PFC-0052 EL	Reconstruction	9,500	2046
757	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2046
758	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,611	2046
759	164651	FILTER 3 WATER MICRO PALL RACK	Reconstruction	400,000	2046
760	164340	PUMP CENT 2 VERT TURBINE LL	Reconstruction	13,050	2046
761	164479	MOTOR 7020 ELECTRIC HL	Reconstruction	9,200	2046
762	164489	ANALYZER CHLORINE AIT5005 UV INLET	Reconstruction	5,225	2046
763	164597	ACTUATOR PNEUMATIC V4032	Reconstruction	2,610	2046
764					
765					
766	315478	BUILDING ROADS	Maintenance	121,995	2047
767	315476	BUILDING LIGHTING ALL BUILDINGS	Maintenance	13,974	2047
768	336384	BUILDING ROOF OLD PLANT	Maintenance	34,337	2047
769	123764	VEHICLE WTP TRUCK F-250	Reconstruction	50,000	2047
770	123765	VEHICLE WTP TRUCK ARCTIC SNOW PLOW	Reconstruction	7,600	2047
771	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2047
772	62685	UPS 01 BATTERY BANK LL	Reconstruction	1,500	2047
773	315481	FIRE EXTINGUISHER ALL BUILDINGS	Reconstruction	13,974	2047
774	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,764	2047
775	62646	VALVE SLUICE GATE W2 SURGE	Reconstruction	8,700	2047
776	164351	MOTOR 4 PUMP ELECT LL	Reconstruction	9,200	2047
777	164493	ANALYZER CHLORINE AIT5006 UV OUTLET	Reconstruction	4,785	2047
778	62812	VALVE REGULATING 01 FLOW RAW	Reconstruction	4,750	2047

779	164645	ANALYZER PARTICLE AIT3220	Reconstruction	3,800	2047
780	164720	VALVE BACKFLOW 1 PREVENTER	Reconstruction	3,325	2047
781	62645	METER LEVEL LIT131 WELL 2 EAST	Reconstruction	2,850	2047
782	164668	ANALYZER PH PORTABLE	Reconstruction	2,375	2047
783	62827	VALVE GATE 02 ISOL SP	Reconstruction	1,900	2047
784	164553	METER FLOW FE7082	Reconstruction	1,900	2047
785	164333	TRANSMITTER TEMP RAW SAMPLING	Reconstruction	950	2047
786	164612	TRANSMITTER PRESSURE LIT4006	Reconstruction	475	2047
787	164655	TRANSMITTER PRESSURE PIT3304	Reconstruction	475	2047
788	164529	VALVE BUTTERFLY ISOLATION	Reconstruction	460	2047
789	164432	VALVE CHECK XRP2050	Reconstruction	475	2047
790					
791					
792	315478	BUILDING ROADS	Maintenance	124,436	2048
793	315475	BUILDING FLOOR ALL BUILDINGS	Maintenance	127,824	2048
794	164560	PUMP DIAPHRAGM CLTP4402 HYPO CIP	Reconstruction	4,600	2048
795	315487	PANEL PLC CP-5001 ELEC ROOM	Maintenance	2,500	2048
796	315494	UPS 02 BATTERY BANK LL	Reconstruction	1,500	2048
797	164440	SAFETY EMER LIGHTING MICRO FILT	Reconstruction	460	2048
798	164671	HEATER AHU0010	Reconstruction	9,500	2048
799	164678	BOILER B-1	Reconstruction	4,350	2048
800	164679	BOILER B-2	Reconstruction	4,600	2048
801	164592	HEATER 4104 ACID CIP TANK	Reconstruction	1,900	2048
802	315307	HEATER NATURAL GAS WATER TANKLESS	Reconstruction	7,919	2048
803	62701	FAN 02 EXHAUST CHLORINE BLDG	Reconstruction	920	2048
804	164472	PUMP CENT 7030 HL	Reconstruction	87,000	2048
805	164478	PUMP CENT 7040 HL	Rehabilitation	75,000	2048
806	164603	ACTUATOR PNEUMATIC V4125	Reconstruction	2,850	2048
807	164625	METER FLOW FIT9006	Reconstruction	2,300	2048
808	164425	PUMP CENT 2060 XRP	Reconstruction	1,840	2048
809	164561	METER FLOW 4405 HYPO CIP	Reconstruction	1,425	2048
810	62662	VALVE PLUG 01 ISOL PR LL	Reconstruction	950	2048
811	62815	VALVE BUTTERFLY 01 ISOL HL	Reconstruction	870	2048
812	164381	VALVE BUTTERFLY 2010 STR ISO	Reconstruction	920	2048
813	163379	VALVE BUTTERFLY 02 EAST RAW LINE	Reconstruction	920	2048
814	164601	VALVE BUTTERFLY V4032	Reconstruction	460	2048
815	164494	TRANSMITTER PRESSURE PIT5003	Reconstruction	475	2048