

NB2.

Tweed Drinking Water System Annual Water Report

Reporting period of January 1, 2013 – December 31, 2013

Prepared For: The Corporation of the Municipality of Tweed

Prepared By:



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of the Environment in the Province of Ontario including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water Taking and Transfer Regulation.

Report Availability	2
Compliance Report Card	2
Quality Control Measures	3
System Process Description	3
Raw Source	3
Treatment.....	4
Treatment Chemicals used during the reporting year:	4
Summary of Non-Compliance	4
Adverse Water Quality Incidents	4
Non-Compliance.....	4
Non-Compliance Identified in a Ministry Inspection:	4
Flows	5
Raw Water Flows.....	5
<i>Raw Water Volume Taken: RW3</i>	5
Treated Water Flows	5
Regulatory Sample Results Summary	6
Microbiological Testing – Table 1	6
Operational Testing – Table 2	6
On-Line	6
In-House	6
Laboratory – Reg. 170/03.....	7
Additional Legislated Samples – Table 3	7
Lead Sampling – Table 4.....	7
Inorganic Parameters – Table 5	8
Organic Parameters – Table 6.....	9
List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards – Table 7.	10
Maintenance Summary	11
QEMS	12
Water Taking and Transfer Data	12

Report Availability

Population Served:	< 10,000
Website where the annual report can be viewed by the public:	www.twp.tweed.on.ca
Alternate location where annual report will be available for inspection and is free of charge:	Municipal Office
How are system users notified that the annual report is available and is free of charge?	Public access/notice via Municipal Website and Bi-weekly Municipal News Column
Number of Designated Facilities served:	None
Has a copy of this report been provided to all Designated Facilities?	N/A
Number of Interested Parties reported to:	N/A
Has a copy of this report been provided to all Interested Parties?	N/A
The following Drinking-Water Systems receive drinking water from this system:	N/A
Has a copy of this report been provided to connected owners?	N/A

Compliance Report Card

Drinking Water System Number:	220001557
System Owner:	The Corporation of the Municipality of Tweed
Operating Authority:	Ontario Clean Water Agency (OAP #568)
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2013 – December 31, 2013

Event Summary	# of Events	Date	Details
Ministry of Environment Inspections	1	May 28 2013	Unannounced Focused Routine Inspection Rating 100%
Ministry of Labour Inspections	0		
DWQMS Audits	1	Mar 12 2013	12 Month Surveillance Audit performed by SAI Global
AWQI's	1	Aug 06 2013	AWQI# 113365 Treated Water Sodium Exceedance
Non-Compliance	0		
Community Complaints	0		
Spills	0		

Quality Control Measures

The Corporation of the Municipality of Tweed facilities are part of OCWA's operational Trent Valley Hub. The facilities are supported by hub, regional and corporate resources. Operational Services are delivered by OCWA staff that live and work in the community.

OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional "Value Added" and operational support services that the Corporation of the Municipality of Tweed benefits from including:

- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
 - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
 - Process Data Collection (PDC) facility operating information repository, which consolidates field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
 - Work Management System (WMS) tracks and reports maintenance activities, and creates predictive and preventative reports.
 - WonderWare wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Access to a network of operational compliance and support experts at the hub, region and corporate level
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling

System Process Description

Raw Source

Raw water sources for the Tweed Drinking Water System are from two separate groundwater wells. The main service well is the Crookston Well or Well #3, Well #1 is only utilized as an emergency stand-by well.

Treatment

No treatment exists at the Well #1 pump house. In the event that this standby well is needed to be put into operation, it is designed to pump water to the Well 3 treatment subsystem for further treatment and disinfection. Well #3 subsystem is equipped with submersible pumps ultra violet light for primary disinfection and sodium hypochlorite for secondary disinfection. Well #3 (Crookston) has a nitrate uranium removal system (ion exchange). The facility is equipped with on-line, alarmed continuous monitoring for treated water free chlorine residual and turbidity and distribution system free chlorine residual. The facility also contains a well pump lock out system in the case of disinfection failure.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Chloride	Softener	Sifto Canada Corp
Sodium Hypochlorite	Disinfection	Brenntag

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Cause			Corrective Action Taken
		Parameter	Result	Exceedance of	
Aug 6, 2013	113365	Sodium	24 mg/L	20 mg/L	The Operating Authority for the Municipality of Tweed resampled for Sodium on August 14, 2013; the result is once again in exceedance in the treated water with a result of 26.0mg/L. A notice provided by the HPEC Health Unit advising consumers of the elevated sodium in the Tweed DWS was posted on the municipal website and mailed directly to consumers.

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status

Non-Compliance Identified in a Ministry Inspection:

Ministry of Environment Inspection Rating: 100%

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
n/a				

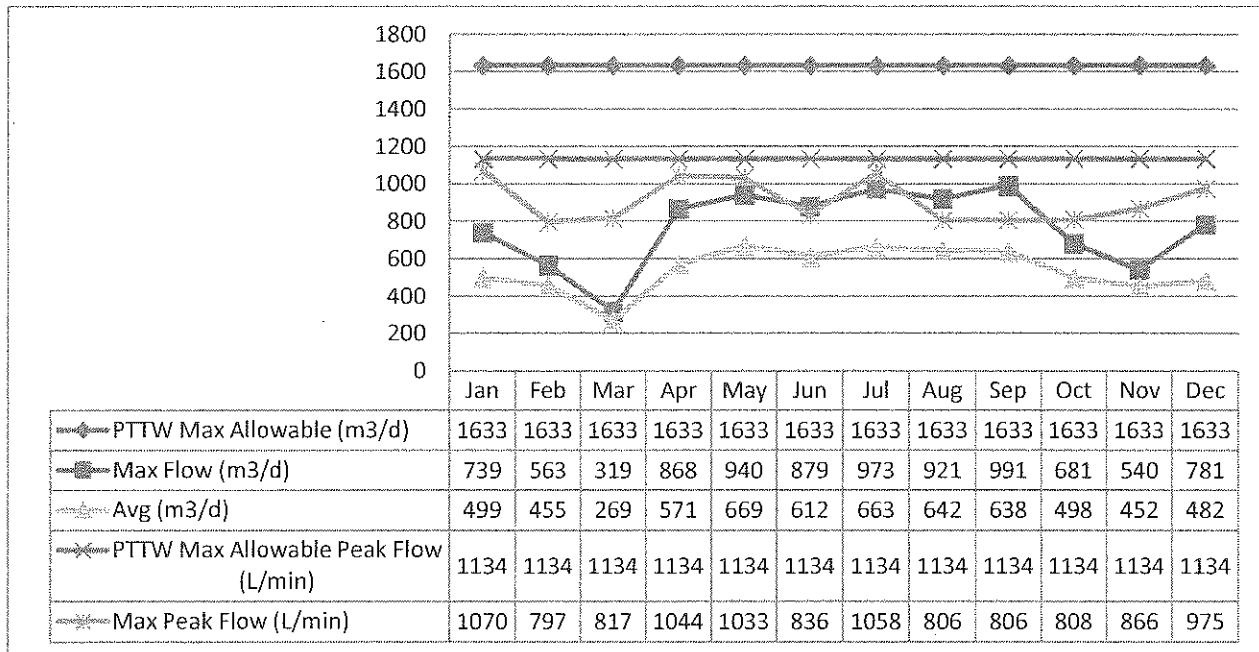
Flows

The Tweed Drinking Water System is has a rated capacity of 1633 m3/day.

Raw Water Flows

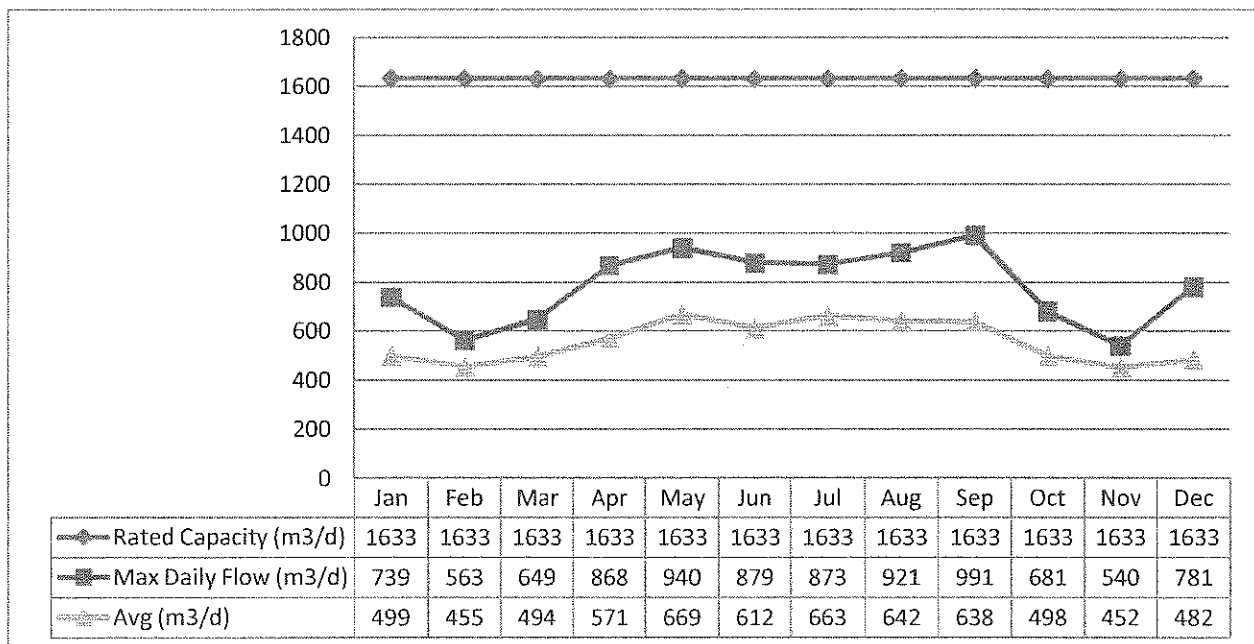
The Raw Water flows are regulated under the Permit to Take Water.

Raw Water Volume Taken: RW3



Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.



Regulatory Sample Results Summary

- RW1 =Raw Water Well 1
- RW3 = Raw Water Well 3
- TW=Treated Water
- DW=Distribution Water

Microbiological Testing - Table 1

Location	Number of Samples	E.coli Results (min) - (max)	Total Coliform Results (min) – (max)	Number of HPC Samples	HPC Results (min) - (max)
Raw Water – RW 1	53	0 - 0	0 - 0	~	~
Raw Water – RW 3	53	0 - 0	0 - 0	~	~
Treated Water - TW	53	0 - 0	0 - 0	53	0 - 1
Distribution - DW	126	0 - 0	0 - 0	125	0 - 11

Operational Testing - Table 2

On-Line

	Range of Results (min # - max #)
Treated Water Chlorine	0.52 – 3.31 mg/L*
Distribution Free Chlorine	0.96 – 2.97 mg/L
Treated Water Fluoride	Fluoride is not added at this facility

* Instrument spikes and dips recorded by on-line instrumentation were a result of air bubbles and various maintenance and calibration activities. Power interruptions may also cause an instrument reading to drop to zero. All events are reviewed for compliance with O. Reg. 170/03 and if warranted, are reported to the Ministry of Environment as Adverse Water Quality Incidents

In-House

Parameter	# of grab samples taken	Range of Results (min # - max #)
Raw Well 1 Turbidity	12	0.20 – 0.87 NTU
Raw Well 1 UVT	12	80.6 – 95.5 %
Raw Well 3 Turbidity	12	0.14 - 0.47 NTU
Raw Well 3 UVT	12	87.0 – 94.9 %
Treated Free Chlorine	53	1.61 – 2.40
Distribution Free Chlorine	130	0.42 – 2.18

Laboratory - Reg. 170/03

Parameter	# of grab samples taken	Range of Results (min # - max #)
Treated Well 3 Uranium	5	6.05 – 8.40 ug/L
Treated Well 3 Fluoride	4	0.72 – 0.84 mg/L
Distribution Uranium	4	8.42 – 10.0 ug/L

Additional Legislated Samples – Table 3

Legal Document	Date of Issuance	Parameter	# of grab samples taken	Range of Results (min # - max #)
PTTW #0687-6K5JCW	March 22, 2006	Ammonia Raw Well 1	4	<0.04 - <0.04 mg/L
		Uranium Raw Well 1	4	293 – 356 ug/L
		Ammonia Raw Well 3	4	<0.04 – 0.08 mg/L
		Uranium Raw Well 3	4	16.4– 21.5 ug/L

Lead Sampling – Table 4

The Lead Sampling Program is required under O.Reg 170/03. This system qualified for the plumbing exemption.

Location	Date	pH	Alkalinity (mg/L) as CaCO ₃
Hydrant #1	18-Mar-13	7.99	327
Hydrant #88	18-Mar-13	8.16	306
Hydrant #13	26-Sept-13	7.70	238
Hydrant #88	26-Sep-13	7.60	237

Inorganic Parameters – Table 5

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level
- Note: Fluoride and Sodium are only required to be tested every 60 months.

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Antimony: Sb (ug/L) - TW3	2013/03/04	0.27	6.0	No	No
Arsenic: As (ug/L) - TW3	2013/03/04	1.30	25.0	No	No
Barium: Ba (ug/L) - TW3	2013/03/04	393.00	1000.0	No	No
Boron: B (ug/L) - TW3	2013/03/04	22.00	5000.0	No	No
Cadmium: Cd (ug/L) - TW3	2013/03/04	0.0080	5.0	No	No
Chromium: Cr (ug/L) - TW3	2013/03/04	0.80	50.0	No	No
Lead: Pb (ug/L) - DW	2012/03/07	0.34	1.0	No	No
Mercury: Hg (ug/L) - TW3	2013/03/04	< 0.010	1.0	No	No
Selenium: Se (ug/L) - TW3	2013/03/04	< 1.00	10.0	No	No
Sodium: Na (mg/L) - TW3	2013/08/14	26.00	20.0	Yes	Yes
Uranium: U (ug/L) - TW3	2013 Average	6.86	20.0	No	No
Fluoride Residual: Mean (mg/L) - TW3	2013 Average	0.76	1.5	No	Yes
Nitrite (mg/L) - TW3	2013/10/07	< 0.0030	1.0	No	No
Nitrite (mg/L) - TW3	2013/01/07	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2013/04/02	< 0.0030	1.0	No	No
Nitrite (mg/L) - TW3	2013/07/15	< 0.0030	1.0	No	No
Nitrate (mg/L) - TW3	2013/10/07	2.04	10.0	No	No
Nitrate (mg/L) - TW3	2013/01/07	1.82	10.0	No	No
Nitrate (mg/L) - TW3	2013/04/02	2.81	10.0	No	No
Nitrate (mg/L) - TW3	2013/07/15	3.15	10.0	No	No

Uranium and Fluoride typically exceed half of the maximum acceptable concentration (1/2 MAC) as these parameters are considered naturally occurring. To comply with Regulation 170/03 sampling is increased from annually to quarterly. There is no duty to report ½ MAC exceedances; Duty to report only occurs if we exceed the MAC. Excerpt from Regulation 170/03:

Increased frequency under ss. 13-2 and 13-4

13-5. (1) If a test result obtained under section 13-2 or 13-4 for a parameter exceeds half of the standard prescribed for the parameter in Schedule 2 to the Ontario Drinking Water Quality Standards, the frequency of sampling and testing for that parameter under that section shall be increased so that at least one water sample is taken and tested every three months.

Organic Parameters – Table 6

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Alachlor (ug/L) - TW3	2013/03/04	< 0.020	5.0	No	No
Aldicarb (ug/L) - TW3	2013/03/04	< 0.010	9.0	No	No
Aldrin + Dieldrin (ug/L) - TW3	2013/03/04	< 0.010	0.7	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	2013/03/04	0.050	5.0	No	No
Azinphos-methyl (ug/L) - TW3	2013/03/04	< 0.020	20.0	No	No
Bendiocarb (ug/L) - TW3	2013/03/04	< 0.010	40.0	No	No
Benzene (ug/L) - TW3	2013/03/04	< 0.32	5.0	No	No
Benzo(a)pyrene (ug/L) - TW3	2013/03/04	< 0.0040	0.0	No	No
Bromoxynil (ug/L) - TW3	2013/03/04	< 0.33	5.0	No	No
Carbaryl (ug/L) - TW3	2013/03/04	< 0.010	90.0	No	No
Carbofuran (ug/L) - TW3	2013/03/04	< 0.010	90.0	No	No
Carbon Tetrachloride (ug/L) - TW3	2013/03/04	< 0.16	5.0	No	No
Chlordane:Total (ug/L) - TW3	2013/03/04	< 0.010	7.0	No	No
Chlorpyrifos (ug/L) - TW3	2013/03/04	< 0.020	90.0	No	No
Cyanazine (ug/L) - TW3	2013/03/04	< 0.030	10.0	No	No
Diazinon (ug/L) - TW3	2013/03/04	< 0.020	20.0	No	No
Dicamba (ug/L) - TW3	2013/03/04	< 0.20	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW3	2013/03/04	< 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW3	2013/03/04	< 0.36	5.0	No	No
Dichlorodiphenyltrichloroethane(DDT) + metabolites (ug/L) - TW3	2013/03/04	< 0.010	30.0	No	No
1,2-Dichloroethane (ug/L) - TW3	2013/03/04	< 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW3	2013/03/04	< 0.33	14.0	No	No
Dichloromethane (ug/L) - TW3	2013/03/04	< 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW3	2013/03/04	< 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	2013/03/04	< 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW3	2013/03/04	< 0.40	9.0	No	No
Dimethoate (ug/L) - TW3	2013/03/04	< 0.030	20.0	No	No
Dinoseb (ug/L) - TW3	2013/03/04	< 0.36	10.0	No	No
Diquat (ug/L) - TW3	2013/03/04	< 1.00	70.0	No	No
Diuron (ug/L) - TW3	2013/03/04	< 0.030	150.0	No	No
Glyphosate (ug/L) - TW3	2013/03/04	< 6.00	280.0	No	No
Heptachlor+Heptachlor Epoxide (ug/L) - TW3	2013/03/04	< 0.010	3.0	No	No

Lindane (ug/L) - TW3	2013/03/04	< 0.010	4.0	No	No
Malathion (ug/L) - TW3	2013/03/04	< 0.020	190.0	No	No
Methoxychlor (ug/L) - TW3	2013/03/04	< 0.010	900.0	No	No
Metolachlor (ug/L) - TW3	2013/03/04	< 0.010	50.0	No	No
Metribuzin (ug/L) - TW3	2013/03/04	< 0.020	80.0	No	No
Monochlorobenzene (ug/L) - TW3	2013/03/04	< 0.30	80.0	No	No
Paraquat (ug/L) - TW3	2013/03/04	< 1.00	10.0	No	No
Parathion (ug/L) - TW3	2013/03/04	< 0.020	50.0	No	No
Pentachlorophenol (ug/L) - TW3	2013/03/04	< 0.15	60.0	No	No
Phorate (ug/L) - TW3	2013/03/04	< 0.010	2.0	No	No
Picloram (ug/L) - TW3	2013/03/04	< 1.00	190.0	No	No
Polychlorinated Bichenysl(PCB) (ug/L) - TW3	2013/03/04	< 0.040	3.0	No	No
Prometryne (ug/L) - TW3	2013/03/04	< 0.030	1.0	No	No
Simazine (ug/L) - TW3	2013/03/04	< 0.010	10.0	No	No
THM (ug/L) - DW	2013	17.00	100.0	No	No
Temephos (ug/L) - TW3	2013/03/04	< 0.010	280.0	No	No
Terbufos (ug/L) - TW3	2013/03/04	< 0.010	1.0	No	No
Tetrachloroethylene (ug/L) - TW3	2013/03/04	< 0.35	30.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW3	2013/03/04	< 0.14	100.0	No	No
Triallate (ug/L) - TW3	2013/03/04	< 0.010	230.0	No	No
Trichloroethylene (ug/L) - TW3	2013/03/04	< 0.44	50.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW3	2013/03/04	< 0.25	5.0	No	No
2,4,5-Trichlorophenoxy acetic acid (ug/L) - TW3	2013/03/04	< 0.22	280.0	No	No
Trifluralin (ug/L) - TW3	2013/03/04	< 0.020	45.0	No	No
Vinyl Chloride (ug/L) - TW3	2013/03/04	< 0.17	2.0	No	No

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards – Table 7.

Parameter	Location	Date of Sample	Value	½ MAC
Fluoride Residual: Mean (mg/L)	TW 3	01/07/2013	0.84	0.75
Fluoride Residual: Mean (mg/L)	TW 3	07/10/2013	0.78	0.75

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential) Small Municipal Non-Residential has been removed and Non Municipal Year Round Residential has been added.

Maintenance Summary

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the The Corporation of the Municipality of Tweed in the form of a "Capital Forecast". This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Preventative Maintenance Work Orders Completed	176
Operational Maintenance Work Orders Completed	19
Capital Maintenance Work Orders Completed	1
Weekly Maintenance Work Orders Completed	384

Maintenance Highlights: major expenses incurred to install, repair or replace required equipment

• 2 Preventive Maintenance kits for chlorine pumps	\$623.76
• 2 chlorine injector check valves	\$171.00
• Ion Exchange parts and preventative maintenance	\$4,743.75
• 12 U.V. Bulbs	\$4,170.74
• 2 - Spare membrane cap kits for the chlorine analyzer probes.	\$126.45
• Spare free chlorine sensor probe	\$2,266.14
• Chlorine Standard Kit	\$225.40
• Turbidity Block Standard	\$492.53
• Emergency Repair – Replaced Pilot Valve in Pneumatic Panel	\$495.54
• Emergency Repair – Spare Parts Kit Hood Sealing gasket for Pump	\$904.83
• Emergency Repair – Troubleshoot CL2 Pump #2	\$769.36

QEMS

The Ontario Clean Water Agency has been awarded Full Scope – Entire DWQMS accreditation from SAI Global on March 19, 2013 following the offsite 12 month Surveillance Audit on March 12, 2013

Water Taking and Transfer Data

Data for the reporting period of January 1, 2013 - December 31, 2013 was submitted electronically to the Ministry of the Environment on January 22, 2014 under Permit to Take Water #1674-8WAL9T September 27, 2012.



Ministry of the
Environment

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Water Taking Data submitted successfully.

Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 1674-8WAL9T

Permit Holder: THE CORPORATION OF THE MUNICIPALITY OF TWEED.

Received on: Jan 22, 2014 2:18 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.