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# Tweed Drinking Water System Annual Water Report

Reporting period of January 1, 2011 – December 31, 2011

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.

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## Report Availability

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

## Compliance Report Card

<b>Drinking Water System Number:</b>	220001557
<b>System Owner:</b>	The Corporation of the Municipality of Tweed
<b>Operating Authority:</b>	Ontario Clean Water Agency (OAP #568)
<b>Drinking Water System Category:</b>	Large Municipal Residential
<b>Reporting Period:</b>	January 1, 2011 – December 31, 2011

Event Summary	# of Events	Date	Details
Ministry of Environment Inspections	1	May 3	Announced Focused Routine Inspection Rating 100%
Ministry of Labour Inspections	0		
DWQMS Audits	1	Oct 12	Onsite verification audit by CGSB, awaiting Full Scope Entire Accreditation
AWQI's	1	Nov 21	1 Total Coliform – resample Result of 0 cfu/100ml
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 who 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) that tracks and reports maintenance activities, and creates predictive and preventative reports.
  - Outpost 5 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	
Nov 21, 2011	104287	Total Coliform	1	0 cfu/100ml	Resample – Result of 0 cfu/100ml

**Non-Compliance**

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

**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				

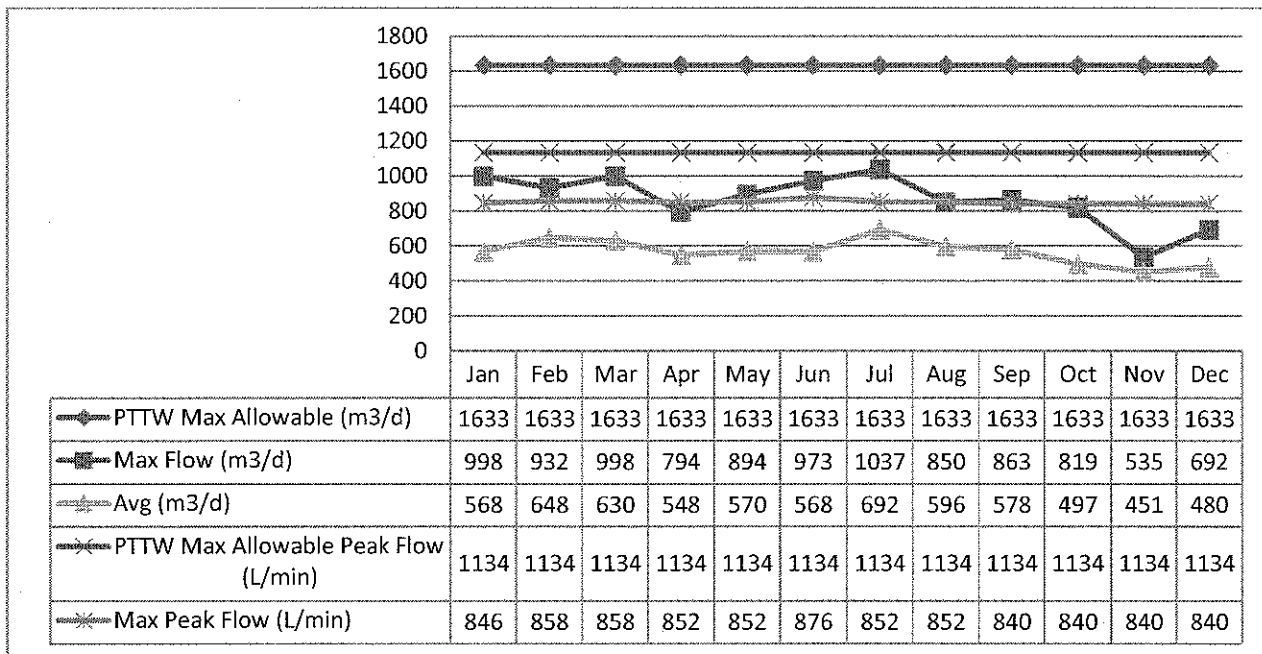
## Flows

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

### Raw Water Flows

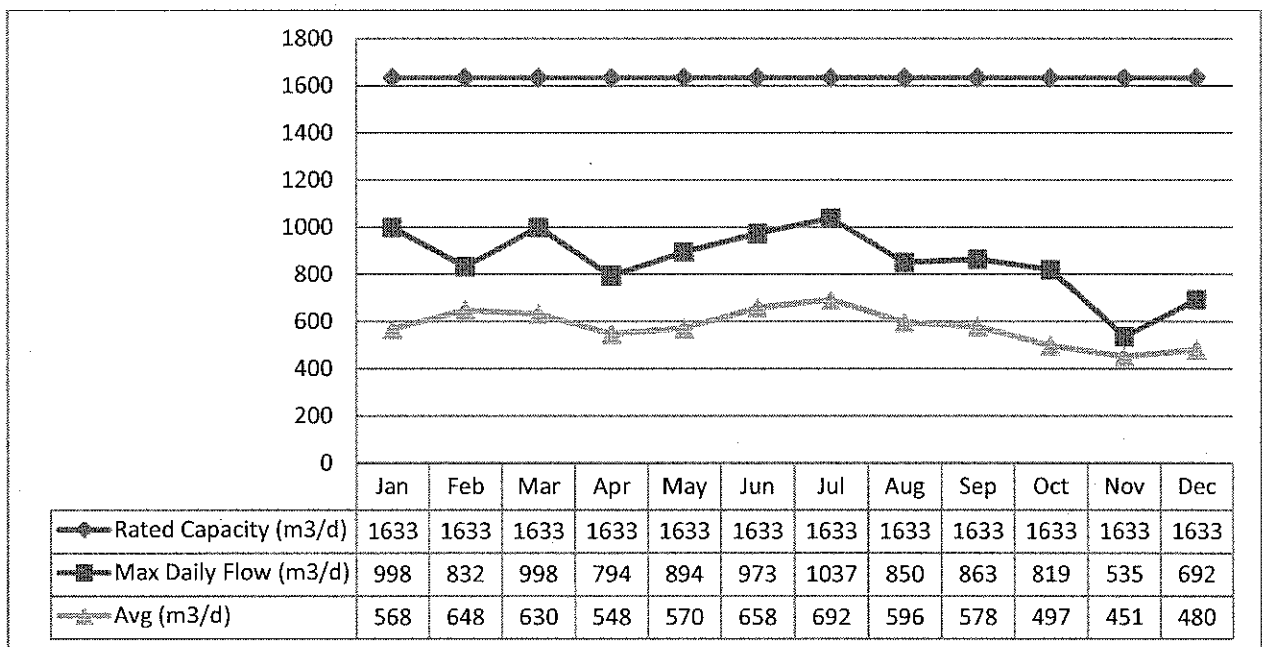
The Raw Water flows are regulated under the Permit to Take Water.

#### 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	52	0-6	0-27		
Raw Water – RW 3	52	0-6	0-0		
Treated Water - TW	52	0-0	0-0	52	0-2
Distribution - DW	131	0-0	0-1	131	0-84

### Operational Testing - Table 2

#### On-Line

	Range of Results (min # - max #)
Raw Well 3 Turbidity	0.0-1.99 NTU
Treated Water Chlorine	0.0 – 3.10 mg/L
Distribution Free Chlorine	0.91 – 3.56 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	0.28 - 0.78 NTU
Raw Well 3 Turbidity	12	0.17 - 0.37 NTU
Treated Free Chlorine	52	1.35 – 2.15
Distribution Free Chlorine	128	0.42 – 1.91

#### Laboratory – MOE/MOH Recommendation

Parameter	# of grab samples taken	Range of Results (min # - max #)
Treated Water Fluoride	Fluoride is not used at this facility	
Treated Well 3 Uranium	5	8.12 – 10.9 ug/L
Treated Well 3 Fluoride	4	0.76 – 0.91 mg/L
Distribution Uranium	4	10.3 – 12.6 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	Total Ammonia Nitrogen Raw Well 1	4	<0.04 - .04 mg/L
		Total Ammonia Nitrogen Raw Well 3	4	<0.04 – 0.09 mg/L
		Uranium Raw Well 1	4	280 – 310 ug/L
		Uranium Raw Well 3	4	18.8 – 21.1 ug/L

### Lead Sampling - Table 4

The Lead Sampling Program is required under O.Reg 170/03. This system is under reduced sampling. No sampling required until the Spring 2012 sampling period.

Location	Date	pH	Alkalinity (mg/L) as CaCO <sub>3</sub>
Hydrant #1	29-Mar-11	6.9	247
Hydrant #88	29-Mar-11	7.2	245
Hydrant #1	20-Sep-11	7.4	218
Hydrant #88	20-Sep-11	7.5	219

### 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	2011/03/07	0.32	6.0	No	No
Arsenic: As (ug/L) - TW3	2011/03/07	1.10	25.0	No	No
Barium: Ba (ug/L) - TW3	2011/03/07	345.00	1000.0	No	No
Boron: B (ug/L) - TW3	2011/03/07	26.00	5000.0	No	No
Cadmium: Cd (ug/L) - TW3	2011/03/07	< 0.0030	5.0	No	No
Chromium: Cr (ug/L) - TW3	2011/03/07	< 0.50	50.0	No	No
Lead: Pb (ug/L) - DW	2009/03/09	0.32	1.0	No	No
Mercury: Hg (ug/L) - TW3	2011/03/07	< 0.020	1.0	No	No
Selenium: Se (ug/L) - TW3	2011/03/07	< 1.00	10.0	No	No



Sodium: Na (mg/L) - TW3	2008/08/06	19.20	20.0	No	No
Uranium: U (ug/L) - TW3	2011/10/03	10.60	20.0	No	Yes
Fluoride Residual: Mean (mg/L) - TW3	2011/10/03	0.76	1.5	No	No
Nitrite (mg/L) - TW3	2011/10/03	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2011/01/04	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2011/04/04	< 0.0050	1.0	No	No
Nitrite (mg/L) - TW3	2011/07/04	< 0.0050	1.0	No	No
Nitrate (mg/L) - TW3	2011/10/03	3.46	10.0	No	No
Nitrate (mg/L) - TW3	2011/01/04	2.26	10.0	No	No
Nitrate (mg/L) - TW3	2011/04/04	2.98	10.0	No	No
Nitrate (mg/L) - TW3	2011/07/04	3.14	10.0	No	No

### 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	2011/03/07	< 0.020	5.0	No	No
Aldicarb (ug/L) - TW3	2011/03/07	< 0.010	9.0	No	No
Aldrin + Dieldrin (ug/L) - TW3	2011/03/07	< 0.010	0.7	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	2011/03/07	0.040	5.0	No	No
Azinphos-methyl (ug/L) - TW3	2011/03/07	< 0.020	20.0	No	No
Bendiocarb (ug/L) - TW3	2011/03/07	< 0.010	40.0	No	No
Benzene (ug/L) - TW3	2011/03/07	< 0.32	5.0	No	No
Benzo(a)pyrene (ug/L) - TW3	2011/03/07	< 0.0040	0.0	No	No
Bromoxynil (ug/L) - TW3	2011/03/07	< 0.33	5.0	No	No
Carbaryl (ug/L) - TW3	2011/03/07	< 0.010	90.0	No	No
Carbofuran (ug/L) - TW3	2011/03/07	< 0.010	90.0	No	No
Carbon Tetrachloride (ug/L) - TW3	2011/03/07	< 0.16	5.0	No	No
Chlordane:Total (ug/L) - TW3	2011/03/07	< 0.010	7.0	No	No
Chlorpyrifos (ug/L) - TW3	2011/03/07	< 0.020	90.0	No	No
Cyanazine (ug/L) - TW3	2011/03/07	< 0.030	10.0	No	No
Diazinon (ug/L) - TW3	2011/03/07	< 0.020	20.0	No	No
Dicamba (ug/L) - TW3	2011/03/07	< 0.20	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW3	2011/03/07	< 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW3	2011/03/07	< 0.36	5.0	No	No
Dichlorodiphenyltrichloroethane(DDT) + metabolites (ug/L) - TW3	2011/03/07	< 0.010	30.0	No	No

1,2-Dichloroethane (ug/L) - TW3	2011/03/07	< 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW3	2011/03/07	< 0.33	14.0	No	No
Dichloromethane (ug/L) - TW3	2011/03/07	< 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW3	2011/03/07	< 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	2011/03/07	< 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW3	2011/03/07	< 0.40	9.0	No	No
Dimethoate (ug/L) - TW3	2011/03/07	< 0.030	20.0	No	No
Dinoseb (ug/L) - TW3	2011/03/07	< 0.36	10.0	No	No
Diquat (ug/L) - TW3	2011/03/07	< 1.00	70.0	No	No
Diuron (ug/L) - TW3	2011/03/07	< 0.030	150.0	No	No
Glyphosate (ug/L) - TW3	2011/03/07	< 6.00	280.0	No	No
Heptachlor+Hepachlor Epoxide (ug/L) - TW3	2011/03/07	< 0.010	3.0	No	No
Lindane: (ug/L) - TW3	2011/03/07	< 0.010	4.0	No	No
Malathion (ug/L) - TW3	2011/03/07	< 0.020	190.0	No	No
Methoxychlor (ug/L) - TW3	2011/03/07	< 0.010	900.0	No	No
Metolachlor (ug/L) - TW3	2011/03/07	< 0.010	50.0	No	No
Metribuzin (ug/L) - TW3	2011/03/07	< 0.020	80.0	No	No
Monochlorobenzene (ug/L) - TW3	2011/03/07	< 0.30	80.0	No	No
Paraquat (ug/L) - TW3	2011/03/07	< 1.00	10.0	No	No
Parathion (ug/L) - TW3	2011/03/07	< 0.020	50.0	No	No
Pentachlorophenol (ug/L) - TW3	2011/03/07	< 0.15	60.0	No	No
Phorate (ug/L) - TW3	2011/03/07	< 0.010	2.0	No	No
Picloram (ug/L) - TW3	2011/03/07	< 0.25	190.0	No	No
Polychlorinated Bichenysl(PCB) (ug/L) - TW3	2011/03/07	< 0.040	3.0	No	No
Prometryne (ug/L) - TW3	2011/03/07	< 0.030	1.0	No	No
Simazine (ug/L) - TW3	2011/03/07	< 0.010	10.0	No	No
THM (ug/L) - DW	2011	18.75	100.0	No	No
Temephos (ug/L) - TW3	2011/03/07	< 0.010	280.0	No	No
Terbufos (ug/L) - TW3	2011/03/07	< 0.010	1.0	No	No
Tetrachloroethylene (ug/L) - TW3	2011/03/07	< 0.35	30.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW3	2011/03/07	< 0.14	100.0	No	No
Triallate (ug/L) - TW3	2011/03/07	< 0.010	230.0	No	No
Trichloroethylene (ug/L) - TW3	2011/03/07	< 0.43	50.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW3	2011/03/07	< 0.25	5.0	No	No
2,4,5-Trichlorophenoxy acetic acid (ug/L) - TW3	2011/03/07	< 0.22	280.0	No	No
Trifluralin (ug/L) - TW3	2011/03/07	< 0.020	45.0	No	No
Vinyl Chloride (ug/L) - TW3	2011/03/07	< 0.17	2.0	No	No

## 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	171
Operational Maintenance Work Orders Completed	11
Capital Maintenance Work Orders Completed	1
Weekly Maintenance Work Orders Completed	420

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

<ul style="list-style-type: none"> <li>• 2 Preventive Maintenance kits for chlorine pumps</li> </ul>
<ul style="list-style-type: none"> <li>• 2 chlorine injector check valves</li> </ul>
<ul style="list-style-type: none"> <li>• Annual Backflow preventer re-certification.</li> </ul>
<ul style="list-style-type: none"> <li>• Annual flowmeter calibrations.</li> </ul>
<ul style="list-style-type: none"> <li>• 2 - Spare membrane cap kits for the chlorine analyzer probes.</li> </ul>
<ul style="list-style-type: none"> <li>• Annual U.V calibration</li> </ul>
<ul style="list-style-type: none"> <li>• Diesel inspection</li> </ul>
<ul style="list-style-type: none"> <li>• Spare chlorine analyzer probe</li> </ul>
<ul style="list-style-type: none"> <li>• 12 U.V. Bulbs</li> </ul>

## QEMS

The Ontario Clean Water Agency has received limited scope accreditation from the Canadian General Standards Board (CGSB) and submitted the application for full scope accreditation in May 2011.

## Water Taking and Transfer Data

Data for the reporting period of January 1, 2011 - December 31, 2011 was submitted electronically to the Ministry of the Environment on February 23, 2012 under Permit to Take Water 0687-6K5JCW Issued March 22 2006

### Email Confirmation:

The screenshot displays the WTRS web interface. At the top left is the Ontario logo. In the center is the WTRS logo with 'ONPROG' above it. At the top right is the Ministry of the Environment logo. Below these is a navigation menu with links: WT DATA | REPORTS | SEARCH WT DATA | ADMINISTRATION | USER PROFILE | CONTACT US | HELP | HOME | LOGOUT |. Below the menu is a breadcrumb trail: Location: WTRS / WT DATA / Input WT Record. The main content area features a green box with the text 'Water Taking Data submitted successfully.' Below this is a 'Confirmation:' section containing the following text: 'Thank you for submitting your water taking data online.', 'Permit Number: 0687-6K5JCW', 'Permit Holder: THE CORPORATION OF THE MUNICIPALITY OF TWEED.', 'Received on: Feb 27, 2012 8:47 AM', and a disclaimer: '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.'