Environment Accounts and Statistics Division

Industrial Water Survey: Fossil-Fuel and Nuclear Electric Power Generating Plants, 2007

Collected under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S19.

This document is confidential when completed.

Français au verso

Correct pre-printed information, if necessary, using the corresponding boxes below:

0001 Legal name

0002 Business name

0003 C/O

0028 Last name of contact

0008 First name of contact

0004 Address

0005 City

0006 Province/Territory or State

0052 Country

0007 Postal code/Zip code

Please read before completing

Survey Purpose

This survey collects detailed information on water use in Canada by the manufacturing, mining and electrical power generating industries. The survey asks information on who uses water, how much, where and at what cost. This data will be used to track the state of stocks of water on a regional basis in Canada and will also be used in the development of environmental accounts and indicators.

Return of Questionnaire(s)

Please return the completed questionnaire(s) to Statistics Canada within 30 days of receipt by mail, using the enclosed envelope. **If you are unable to do so, call 1 866 855-8594** to inform us of the expected completion date. You can also fax it to 1 800 755-5514. Lost the return envelope, need help to complete your questionnaire(s)? Call us at 1 866 855-8594.

Fax or Other Electronic Transmission Disclosure

Statistics Canada advises you that there could be a risk of disclosure during the facsimile or other electronic transmission. However, upon receipt, Statistics Canada will provide the guaranteed level of protection afforded to all information collected under the authority of the *Statistics Act*.

Authority

This survey is conducted under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S19.

COMPLETION OF THIS QUESTIONNAIRE IS A LEGAL REQUIREMENT UNDER THE STATISTICS ACT.

Confidentiality

Statistics Canada is prohibited by law from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable business. The data reported on this questionnaire will be treated in strict confidence.

Data-sharing Agreements

In an effort to reduce respondent burden, Statistics Canada has entered into an agreement with Environment Canada under **Section 12 of the *Statistics Act*** for sharing of data herein. Environment Canada has undertaken to keep the information confidential and to use it for statistical purposes only. This Section 12 agreement shall not apply if an authorized officer or person of your company objects **in writing to the Chief Statistician and mails that letter to the Operations and Integration Division of Statistics Canada** with the completed questionnaire.

Planned Data Linkage

In order to enhance the analytic possibilities of this survey, Statistics Canada intends to combine the information from the Industrial Water Survey with the information your company/business provided on the Annual Survey of Manufactures.

Person primarily responsible for completing this questionnaire, if different from above:

0026 1 ◯ Mr. 2 ◯ Mrs. 3 ◯ Miss 4 ◯ Ms 5 ◯ Dr.

0054 Last name

0013 First name

0014 Title

0017 Telephone number ( ) - extension 0027

0016 Fax number ( ) -

0020 Website address

0018 E-mail address

For Statistics Canada use only

Rec. Y M D | Ed. Y M D | Kyd. Y M D | Bat. | Coll. | FSC

4-2300-12: 2008-01-14 STC/ESP-291-75412

Statistics Canada Statistique Canada

Canada

REPORTING YEAR: JANUARY 1, 2007 TO DECEMBER 31, 2007

NOTE i) Water volumes are to be reported in the units in use at this facility; please check only one box and use this unit of measure throughout the questionnaire.

Line 1

C0101

1 ☐ cubic metres

2 ☐ other – specify C0102

ii) **Where data are not available, please estimate.**

SECTION 1: MONTHLY AND ANNUAL TOTAL WATER INTAKE AND DISCHARGE

INSTRUCTIONS

(i) In this section, under intake, please report by month the quantity of "new water" brought into your operation for **all** power plant uses. For the purpose of this questionnaire "new water" is defined as water introduced for the first time into this facility **regardless of source or quality** (including sanitary/domestic water intake). It also includes water diverted from a natural resource into storage ponds or outside holding facilities for later use.

(ii) Where you supply water to adjacent or tenant industry(ies) or municipality(ies), please report estimated water intake for your establishment only.

(iii) Under discharge, please report the quantity of water routed to its ultimate point of discharge (including sanitary/domestic discharge).

(iv) Under discharge **do not report** the volume of water released to ponds, lagoons or basins and intended for recirculation or reuse until such water is actually discharged to a location beyond the control of the facility.

(v) Under discharge **do not include** any water lost in production through evaporation, permanently held in open or closed storage, or otherwise consumed (e.g. included in a final product).

	Month	Volume per month	
		Intake	Discharge
2	January	C1001	C1101
3	February	C1002	C1102
4	March	C1003	C1103
5	April	C1004	C1104
6	May	C1005	C1105
7	June	C1006	C1106
8	July	C1007	C1107
9	August	C1008	C1108
10	September	C1009	C1109
11	October	C1010	C1110
12	November	C1011	C1111
13	December	C1012	C1112
14	**ANNUAL TOTAL**	C1013	C1113

15 If total discharge volume (C1113) is greater than total intake volume (C1013), please indicate reason:

C1201

SECTION 2: WATER INTAKE BY SOURCE AND KIND

INSTRUCTIONS

(i) Please report your volumes of intake water by source and its usual characteristic.

(ii) Freshwater is defined as water containing 900 parts per million, or less, of total dissolved solids.

(iii) Saline / brackish water is defined as water containing more than 900 parts per million of total dissolved solids.

Where data are not available, please estimate.

	Source	Volume per year	
		Freshwater	Saline / Brackish
16	Public water utility system	C2401	XXXX
17	Self-supplied surface water system (lake, river, etc.)	C2402	XXXX
18	Self-supplied groundwater system (well, spring, etc.)	C2403	C2203
19	Self-supplied tide water (salt water) body (estuary, bay, ocean, etc.)	XXXX	C2204
20	Other sources *(specify)* C2000	C2405	C2205
21	**TOTAL**	C2406	C2206

NOTE: The sum of C2406 and C2206 (line 21, above) should equal C1013 at line 14 on previous page.

Estimated annual cost of water acquisition:

22 Payment to public utility — C2301 $,___,___,___,___ .00 (Millions, Thousands, Hundreds)

23 Estimated annual operating and maintenance costs of intake water acquisition (excluding water treatment costs which are covered on the next page). Operating and maintenance costs should only include your material, labour and energy costs incurred to operate and maintain your systems that bring water into your facility — C2302 $,___,___,___,___ .00 (Millions, Thousands, Hundreds)

24 (If applicable) Cost of your annual intake licence (estimate if permit not purchased annually) — C2303 $,___,___,___,___ .00 (Millions, Thousands, Hundreds)

SECTION 3: INTAKE WATER - TREATMENT

25 Did this establishment treat any **intake** water? C3001 1 ☐ Yes

3 ☐ No ➔ ***If no, go to Section 4***

INSTRUCTIONS

(i) Indicate the volume of intake **water treated** within your establishment prior to initial use. Do not include treatment of water for re-use.

Where data are not available, please estimate.

	Category of treatment	Volume per year
26	Screening	C3201
27	Filtration	C3202
28	Chlorination - disinfection (includes for process and for biological control)	C3203
29	Corrosion and slime control	C3204
30	Alkalinity control	C3205
31	Hardness (or water softening)	C3206
32	Coagulation / flocculation	C3207
33	Other *(specify)* C321	C3210
	Other *(specify)* C3214	C3211
	Other *(specify)* C3215	C3212

34 Estimated annual operating and maintenance cost of your intake water treatment. Operating and maintenance costs should only include your material, labour and energy costs incurred to operate and maintain systems to treat water brought into your facility

C3101 $ ☐ , ☐☐☐ (Millions) , ☐☐☐ (Thousands) , ☐☐☐ (Hundreds) .00

SECTION 4: WATER INTAKE BY PURPOSE

INSTRUCTIONS

(i) Report the amount of water within your facility by **initial** use. This section should not include recirculated water (for a definition of "recirculated water", see section 5).

(ii) In Line 38 "Other uses" should not include water pumped by the facility, and intended for initial use outside the facility.

Where data are not available, please estimate.

	Purpose	Volume per year
35	Cooling, condensing and steam - defined as water **which does not come in direct contact** with the products, materials or by-products of the processing operation. It includes pass-through water used in the operation of cooling or process equipment (including air conditioning) and water introduced into boilers for the production of steam for either process operations or electric power	C4102
36	Pollution control (e.g. wet flue gas desulphurization, etc.)	C4106
37	Sanitary service/Domestic use - This is water used for toilets, janitorial services, lawn watering, washing of vehicles, etc.	C4103
38	Other uses *(specify)* C4000	C4104
39	Total (Lines 35 to 38 should equal sum of figures reported in Line 14, C1013)	C4105

40	What were the estimated water losses (including evaporation and seepage):	
	(i) in cooling cycle?	C4201
	(ii) pollution control (e.g.wet flue gas desulphurization, etc.)?	C4202
	(iii) in ash control system (include evaporation losses from ponds)?	C4203
41	What was the amount of boiler make-up water required for power generation purpose (excluding production for steam sales or transfer)?	C4204

42 Is there a water-cooled condenser in your plant? C4205 1 ☐ Yes 3 ☐ No

		Temperature
43	If yes, what was the actual temperature rise of the cooling water in your condenser cooling cycle? Minimum	C4206 °C
	Maximum	C4207 °C

44	Please indicate the type of cooling system employed in your establishment:	
	(i) Once-through	C4208 1 ☐ Yes
	(ii Cooling ponds	C4213 1 ☐ Yes
	(iii) Cooling tower	C4214 1 ☐ Yes
	(iv) Other methods	C4211 1 ☐ Yes
45	Did this plant produce steam for purposes other than electric power generation (i.e. heating, process or for sale)?	C4212 1 ☐ Yes 3 ☐ No

SECTION 5: WATER RECIRCULATED OR REUSED BY PURPOSE

Recirculated water refers to water used at least twice in an industrial establishment. It is water that **leaves** a particular subsystem and **re-enters** it or is **used in another** subsystem. It does not refer to water that circulates many times within the same sub-system (i.e. it excludes closed-loop systems).

46 Did this facility recirculate or reuse water? C5001 1 ☐ Yes

3 ☐ No ➔ ***If no, go to Section 6***

INSTRUCTIONS

(i) Please report the volume of water recirculated or reused.

Where data are not available, please estimate.

	Purpose	Volume per year
47	Cooling, condensing and steam	C5102
48	Pollution control (e.g.wet flue gas desulphurization, etc.)	C5105
49	Other uses *(specify)* C5000	C5103
50	Total (Lines 47 to 49)	C5104

51 Estimated annual operating and maintenance cost of water recirculation. Operating and maintenance costs should only include your material, labour and energy costs incurred to operate and maintain systems to recirculate water in your facility C5201

$ ☐☐☐ , ☐☐☐ , ☐☐☐ , ☐☐☐ .00

Millions Thousands Hundreds

SECTION 6: WATER DISCHARGE AND ITS TREATMENT

INSTRUCTIONS

(i) Please report the volume of all water routed by this facility to its ultimate point of discharge by the most advanced treatment process used.

(ii) Do not report the volume of water released and intended for re-use or recirculation until it is actually discharged to a location beyond the control of the facility.

(iii) Do not include the volume of water lost in production through evaporation, permanently held in open or closed storage or otherwise consumed and not brought to the ultimate point of discharge.

52 Is discharge volume metered or otherwise measured? C6001

1 ☐ Yes

3 ☐ No *(If no, please provide your best estimate below.)*

INSTRUCTIONS

The sum of all amounts entered below should equal C1113 from Section 1 (page 2).

Type of treatment	Point of discharge: Public utilities	Surface Freshwater bodies	Tide water (Ocean)	Ground water	Other
	Annual volume				
53 Water not treated at this facility before discharge	C6101	C6102	C6106	C6103	C6104
54 Primary or mechanical (the physical removal of large solids using grates, screens and settling tanks)	C6201	C6202	C6206	C6203	C6204
55 Secondary or biological (the promotion of bacterial growth and other microbes that break down the organic wastes)	C6301	C6302	C6306	C6303	C6304
56 Tertiary or advanced (the reduction of concentrations of phosphorus or nitrogen through biological or chemical processes)	C6401	C6402	C6406	C6403	C6404

57 Estimated annual operating and maintenance cost for treatment of water discharge. Operating and maintenance costs should only include your material, labour and energy costs incurred to operate and maintain systems to treat water discharged by your facility. C6501

$ ☐☐☐ , ☐☐☐ , ☐☐☐ , ☐☐☐ .00

Millions Thousands Hundreds

SECTION 7: OTHER DETAILS

58 Capital expenditures on water intake, discharge or treatment facilities made at this establishment for 2007. Include all relevant outlays for machinery and equipment purchases, and their installation, as well as for construction related to water intake, discharge and treatment. C7010

$ [ ][ ][ ], [ ][ ][ ], [ ][ ][ ], [ ][ ][ ].00
Millions Thousands Hundreds

		Number
59	Indicate the average number of employees (including administrative staff)	C7001
60	Indicate the number of days of operation of the facility during the reporting period	C7002
61	Indicate the average number of hours this facility operates in an average day	C7003
62	Indicate the amount of electrical power produced at this facility:	
	(i) net generation	C7004 MWh
	(ii) station service	C7005 MWh
63	Indicate the average heat rate of the facility	C7006 BTU/KWh
64	Indicate the electrical generation capacity of this facility	C7007 MW
65	Indicate the total capacity of water intake pumps *(specify unit of measure)*	C7008

66 (i) Does your facility provide water for uses other than in the power plant ..... C7009 1 ☐ Yes 3 ☐ No

(ii) If yes, please explain.

C7011

C7012

Comments

Approximately how long did it take to collect the data and complete this survey? C9910 [ ] Hour(s) C9909 [ ] Minutes

We invite your comments or suggestions on the following or any other topic related to the *Industrial Water Survey*. We appreciate your assistance.

- Questionnaire content
- New questions of interest to your industry
- Clarity of questions
- Order and flow of questions
- Timing of receipt of questionnaire and the period given for response
- Alternative sources of information to further reduce response burden

C9920

C9913

C9914

If you have questions, please contact us.
Telephone (toll free): 1 866 855-8594
Fax: 1 800 755-5514 (within Canada)

Please return this questionnaire in the envelope provided.
THANK YOU FOR YOUR PARTICIPATION IN THIS SURVEY!