

## **CANAL / Envirodat Data Extraction Tool – User guide**

The following provides step by step guidance for using the CANAL website and the Envirodat Data Extraction Tool for researching information concerning water bodies sampled under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement and querying the database to download ambient water quality data.

Please note that Envirodat does not contain data for all Federal or Provincial water quality monitoring and surveillance activities in the Atlantic Provinces – only those related to Environment Canada and its partners, such as the Canada - Newfoundland and Labrador Water Quality Monitoring Agreement.

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## Step 1, Access the CANAL Website

The following Help File provides a step-by-step guide to extracting data from the CANAL Website to your personal desktop at home or at work.

First of all, in the address line of your Internet browser, type [www.gov.nl.ca](http://www.gov.nl.ca). This will bring you to the Government of Newfoundland and Labrador webpage.

From the menu on the left hand side, click on [Departments/Agencies](#).

Under the Departments Menu, click on [Environment and Conservation](#).

From the menu on the left hand side, click on [Water Resources](#) (bullet 9 of 13). This will bring you to the Water Resources Management Division web page. Scroll to the bottom of the page and you'll find a grey box with several links. Click on [Canada - Newfoundland and Labrador Agreements](#). From here, click on the link [CANAL Website](#) (bullet 7 of 10). This will bring you to the homepage of Canada and Newfoundland/Labrador Aqua Link (CANAL).

### Step 1.1, Access the CANAL Interactive Map

In order to access the CANAL Interactive Map, you must first enable pop-ups.

If you have the Google Tool Bar installed, click on [# blocked](#) to de-select the pop-up blocker option (**Figure 1**).

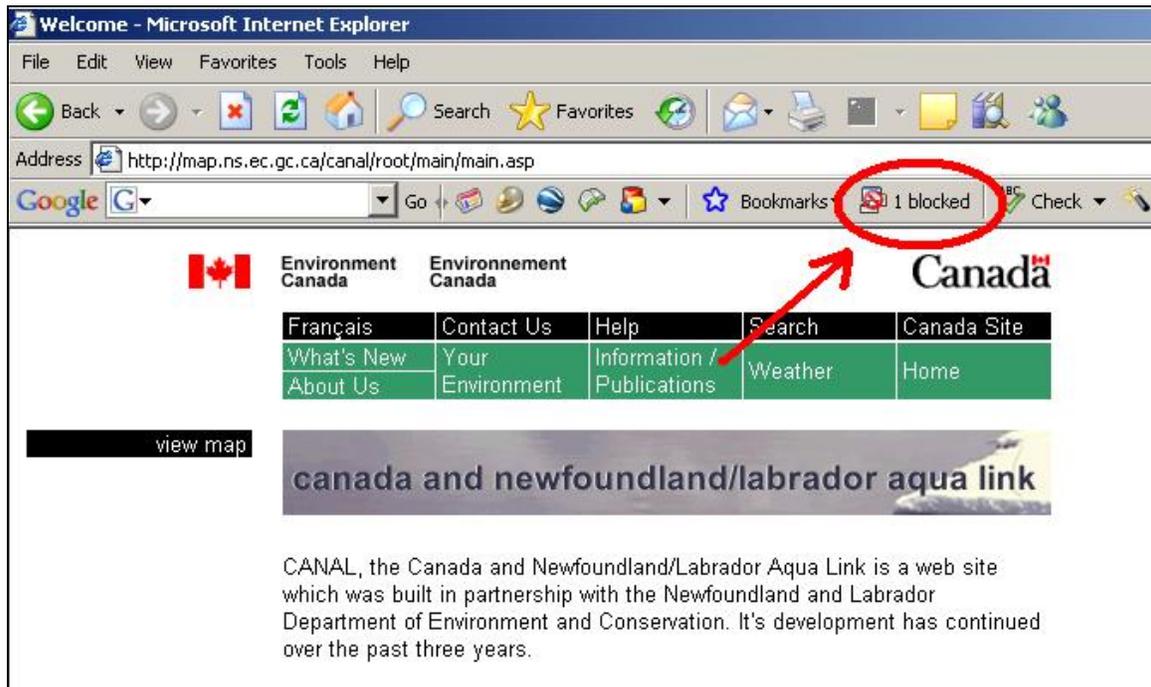
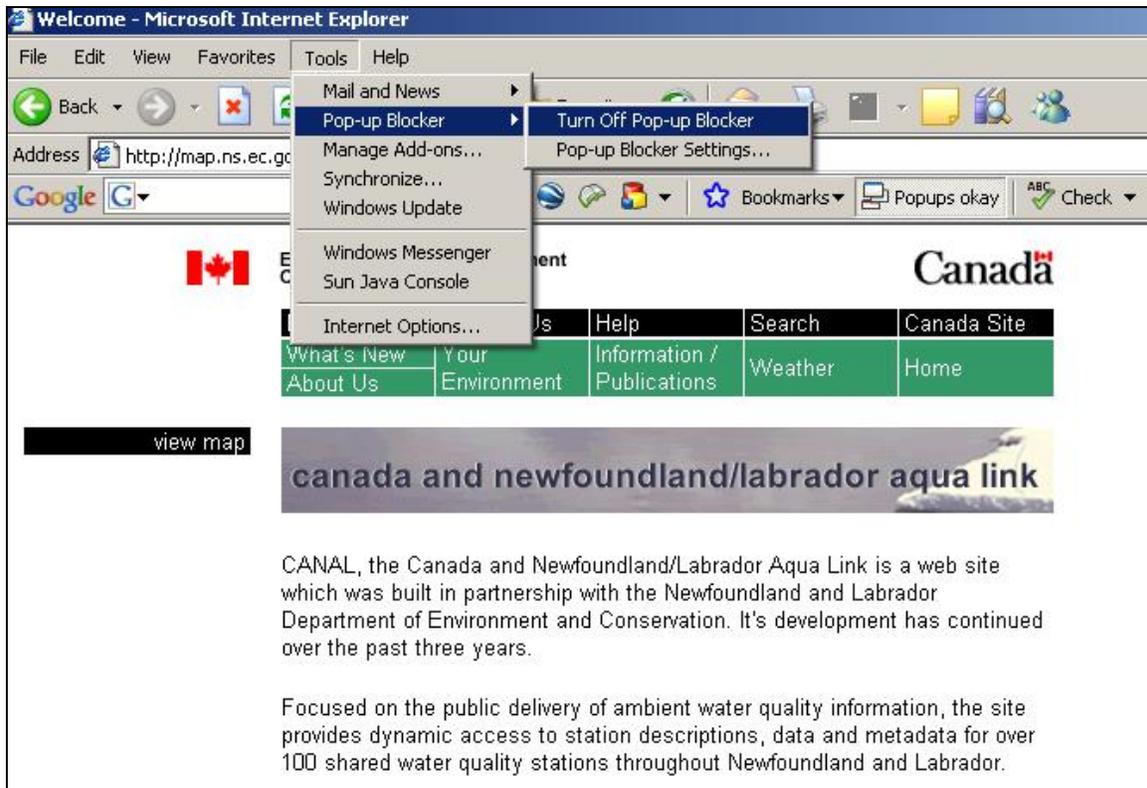


Figure 1

To enable pop-ups from Microsoft Internet Explorer 6.0, click on **Tools** in the browser tool bar, highlight **Pop-up Blocker** and select **Turn Off Pop-up Blocker** (**Figure 2**).



**Figure 2**

To access the CANAL Interactive Map, click on **[view map](#)** on the left hand side of the page (also see **Figure 2**).

If the CANAL Interactive Map does not appear on your screen (**Figure 3**) you will need to download an Autodesk viewer.

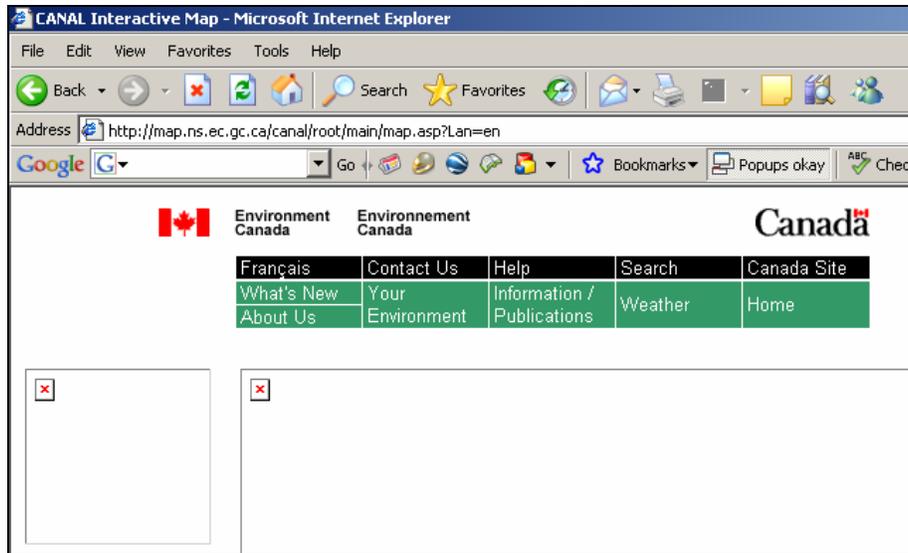


Figure 3

In order to download an Autodesk viewer, you must go back to the CANAL webpage (see **Figure 2**). Scroll down and click on the link [Autodesk MapGuide® Viewer Download](#).

In a new window, the Autodesk MapGuide® website will open (**Figure 4**).

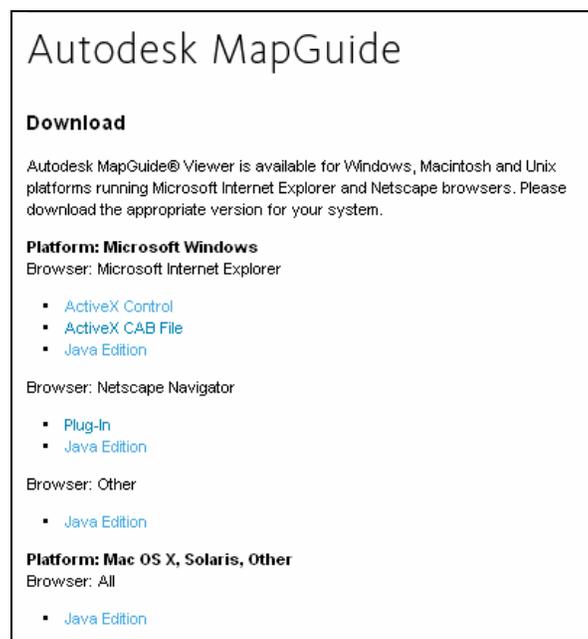


Figure 4

For Microsoft Internet Explorer users, click on [ActiveX Control](#). Choose your language of preference and the File Download – Security Warning window will show (**Figure 5**). Click on [Run](#).



Figure 5

An Internet Explorer – Security Warning may pop up (**Figure 6**), again click on [Run](#).



Figure 6

This will begin the Autodesk MapGuide® Viewer ActiveX Control Release 6.5 Setup Wizard. To begin installation, click [Next](#).

Select Installation Directory, click [Next](#).

Ready to install the application, click [Next](#).

Click on [Finish](#) to exit the Setup Wizard.

To access the CANAL Interactive Map, click on [view map](#) on the left hand side of the CANAL webpage (**Figure 2**) or click on the link at the bottom of the page.

Now you should see the following map (**Figure 7**):

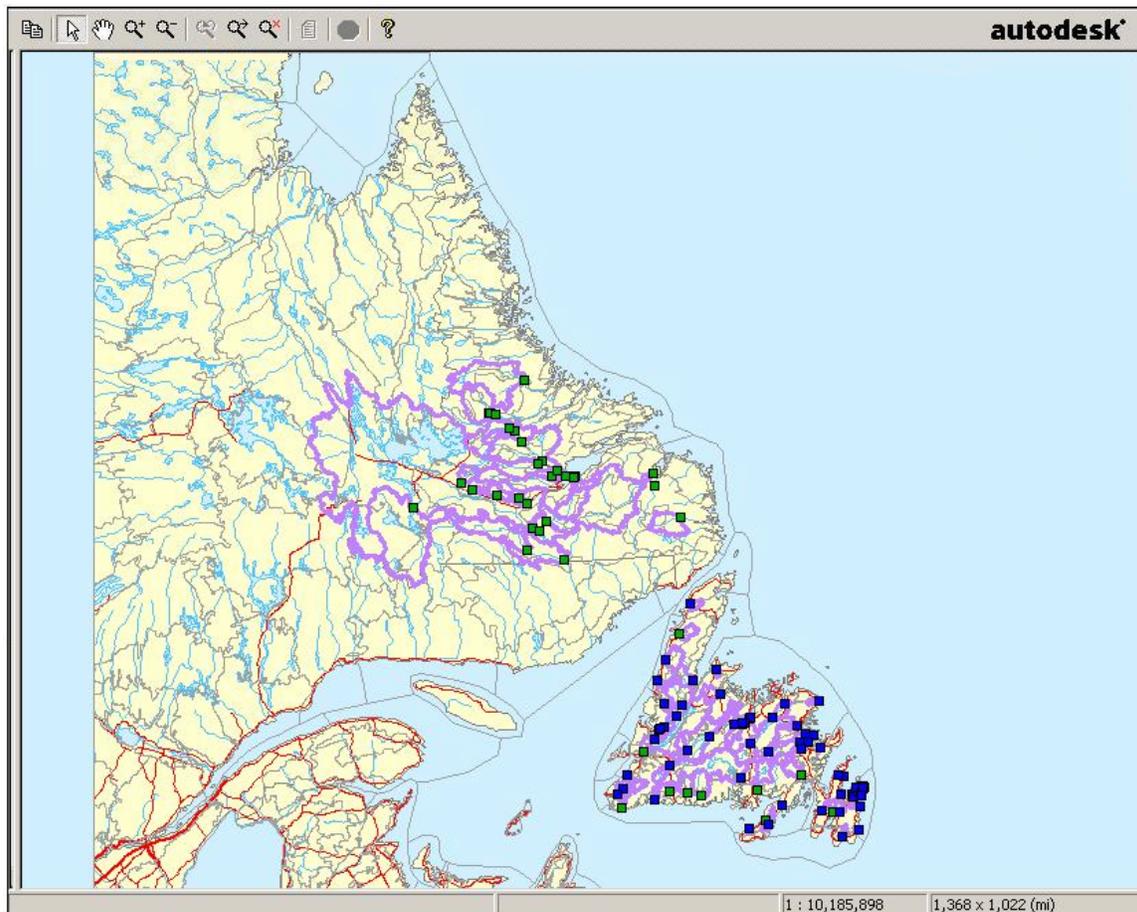


Figure 7

### Step 1.2, Using the Interactive CANAL Map

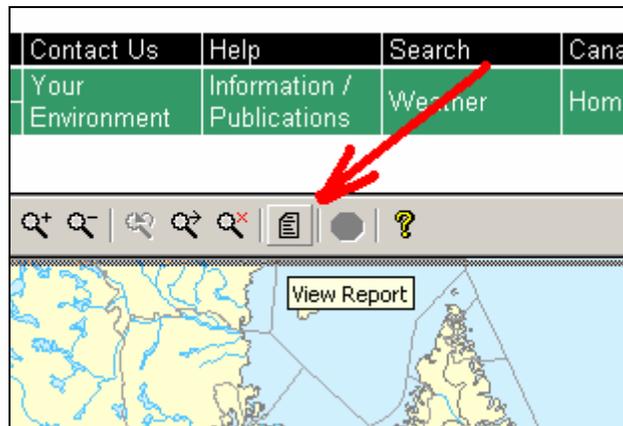
You must click anywhere on this map to activate it.

Ecodistricts are outlined in grey (left, **Figure 8**). Placing the cursor over an Ecodistrict shows the Ecodistrict number (yellow box in center, **Figure 8**). Clicking once highlights the Ecodistrict and its boundaries (right, **Figure 8**).



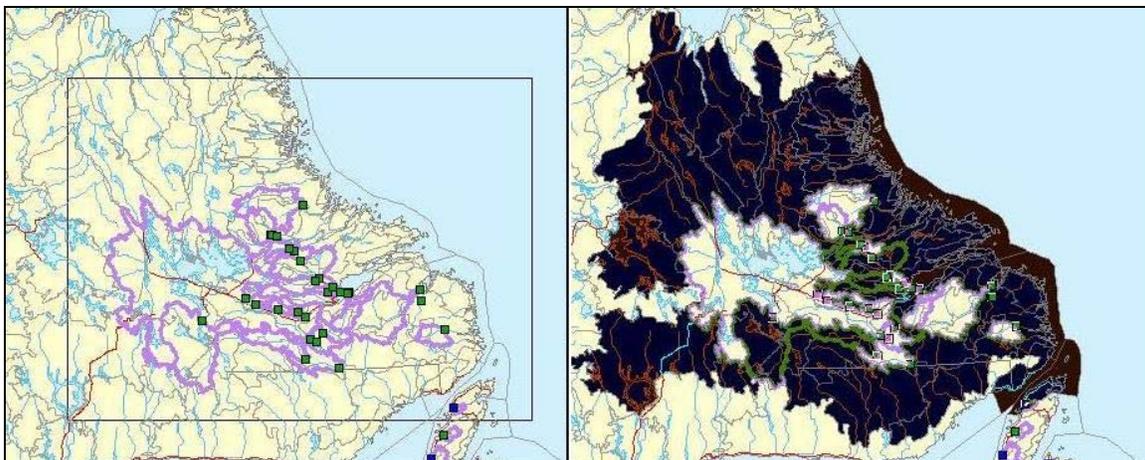
Figure 8

You can access Ecodistrict descriptions by double clicking on an Ecodistrict or by clicking on the [Report Menu](#) button at the top of the interactive map window (**Figure 9**).



**Figure 9**

You can drag the cursor to select multiple Ecodistricts (**Figure 10**).



**Figure 10**

Click on the [Report Menu](#) button (see **Figure 9**) to view the Ecodistrict profiles for the selected areas. A window will pop up, choose [Ecoinfo](#) and click on [OK](#). The Ecodistrict profiles will open in another window.

Delineated watersheds, outlined in purple, divide two drainage areas. Clicking once highlights the Watershed and its boundaries (**Figure 11**).

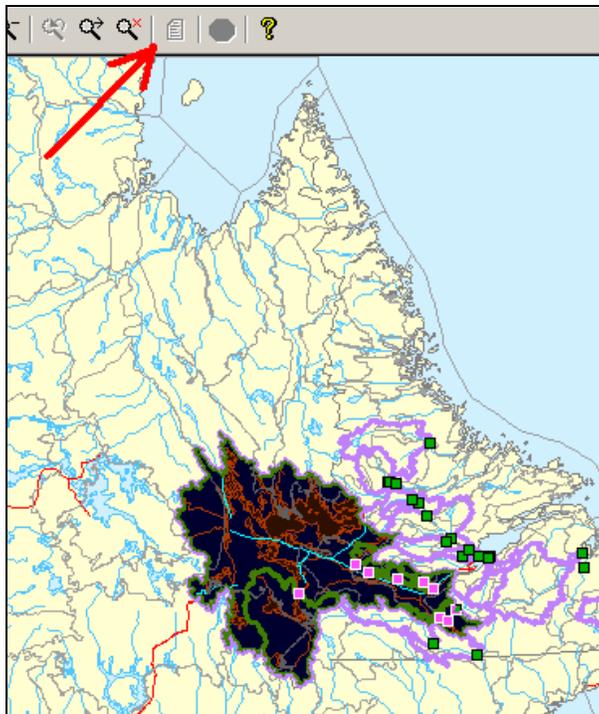


Figure 11

Note: as you can see in **Figure 11**, the [Report Menu](#) button is hidden (compare with **Figure 8**). The difference between choosing a Watershed and an Ecodistrict is that there is no descriptive data for Watersheds.

By placing the cursor over a point shows the Station Name and/or Location (**Figure 12**).



Figure 12

Double clicking the point will bring you to the Water Quality Station Profile (**Figure 13**).

CANAL - Microsoft Internet Explorer

Environment and Conservation  
Government of Newfoundland and Labrador - Canada

Newfoundland  
Labrador

**Water Quality Station Profile**

Station #: **NF02YL0011**, Humber River @ Little Falls  
Latitude: 49.3483 N, Longitude: 57.2363 W

**Description**

Humber River @ Little Falls  
Humber River at Little Falls bridge, Route #422 prior to Sir Richard Squires Memorial Park, left bank 10 m upstream of bridge.

The Humber River is the second largest river system on the island. The headwaters of the Humber River flow from the highlands of the Long Range Mountains, through a series of pools and steades surrounded by extensive boreal forest. It then flows through a deep and heavily forested river valley into a wide flood plain between Adles Lake and Sandy Lake, dominated by extensive marshland. The sampling site is

**Geology, Soils and Cover**

**Bedrock Geology:** Majority of basin comprised mostly of carboniferous rocks, indicative of the Deer Lake Group. Sandstone, conglomerate, siltstone, mudstone, minor limestone, oil shale and coal are the most predominant rock formations found in this group. Portions of the basin lie within the Long Range Complex. Granitic gneiss, metasedimentary gneiss, anorthosite, and gabbro are the main rock formations found in this group.

**Surficial Geology:** Basin mostly high bog and string bog peat accumulations of variable thickness overlying bedrock or surficial deposits. Remainder of the basin mostly till veneer and moraine deposits of variable thickness overlying bedrock.

**Soil Capability:** Soils within the basin range from having severe limitations that restrict the range of crops or require special conservation practices to soils that have no capacity for arable culture or permanent pasture. Isolated pockets of organic soils exist throughout the basin.

**Development**

**SITE DEVELOPMENTS:**

Development Pressure: Low

Hydroelectric Power: Silver Mountain has been proposed as a potential hydroelectric development.

Industry: None

Roads and Highways: Route 422 runs from Cormack to the Hampden Highway, Route 420. Prior to the mid 1960's it was part of the Trans Canada Highway. Currently, only the portion of the road extending to Sir Richard Squires Park is maintained during the summer season.

Forest Access Roads: There is a significant network of forest access roads throughout this basin particularly in previously cutover areas of the Upper Humber headwaters and through Cormack.

**Urban**

Total Population: Approximately 168 permanent and seasonal.

Other Population:

Shoreline Cities & Communities: There are no communities located within the drainage area above the sampling point.

This basin includes portions of census Division 5-Subdivision E (128), and Division 5-Subdivision G (<40 within the basin).

There is a small seasonal population associated with cabin development in the basin. There are 45 private dwellings located in Division 5-Subdivision E, and approximately 20 private dwellings located in Division 5-Subdivision G within the basin.

Municipality Developed Area: Sir Richard Squires Provincial Park is located 5 km upstream from the sampling site. In 2001 there were 2329 camping units registered.

**Recreation**

**BIOTA:**

Fish Species: Atlantic Salmon, Arctic Char, American Eel, Sea Trout, Brook Trout, Rainbow Smelt and Stickleback.

Salmon Sport Fishery: Scheduled- Zone 13, Class I (6 fish/2 per day).

Tributaries of the Humber River will be closed if water levels are low and water temperature rises above 22 °C.

Total catch for 2001 (both retained and released fish)- 5680.

Barriers to Migration: Little Falls located 83 km upstream from outlet, just downstream from sampling site (partial obstruction).

Big Falls located 93 km upstream from outlet (partial obstruction).

Other Aquatic Life:

**Total drainage area = 1877.9 km-squared**

Wetlands	176.0km <sup>2</sup>	(9.36%)
Barren	176.0km <sup>2</sup>	(9.36%)
Lakes	41.2km <sup>2</sup>	(2.19%)
Developed/Urban	14.0km <sup>2</sup>	(0.74%)
Forest	1241.26km <sup>2</sup>	(66.24%)

Landcover data was derived from the Canadian Forest Service's Earth Observation for Sustainable Development of Forests (EOSD) Landcover dataset. The EOSD data is a land cover classification based on Landsat imagery circa 2000 and has a spatial resolution of approximately 30 metres. The landcover scheme shown is an aggregation of the 23 classes included in EOSD and breaks down as follows: Unclassified (no classified data available), Lakes, Barren or developed/urban lands, nonforested Vegetation (grasslands, shrubs etc), Wetlands and Forest.

All material copyright of the Government of Newfoundland and Labrador. No unauthorized use or reproduction permitted. The Government is assumed no responsibility for the accuracy of any material displayed on an unauthorized server.  
Date: 2004/09/17 10:00:00 AM

Figure 13

On the left hand side of the screen you'll see the following menu (**Figure 14**):



**Figure 14**

By clicking on [Station Profile](#), you will view the Water Quality Station Profile (**Figure 13**).

By clicking on [View Bacteria](#), you will view the Bacteriological Conditions for that station (**Figure 15**).

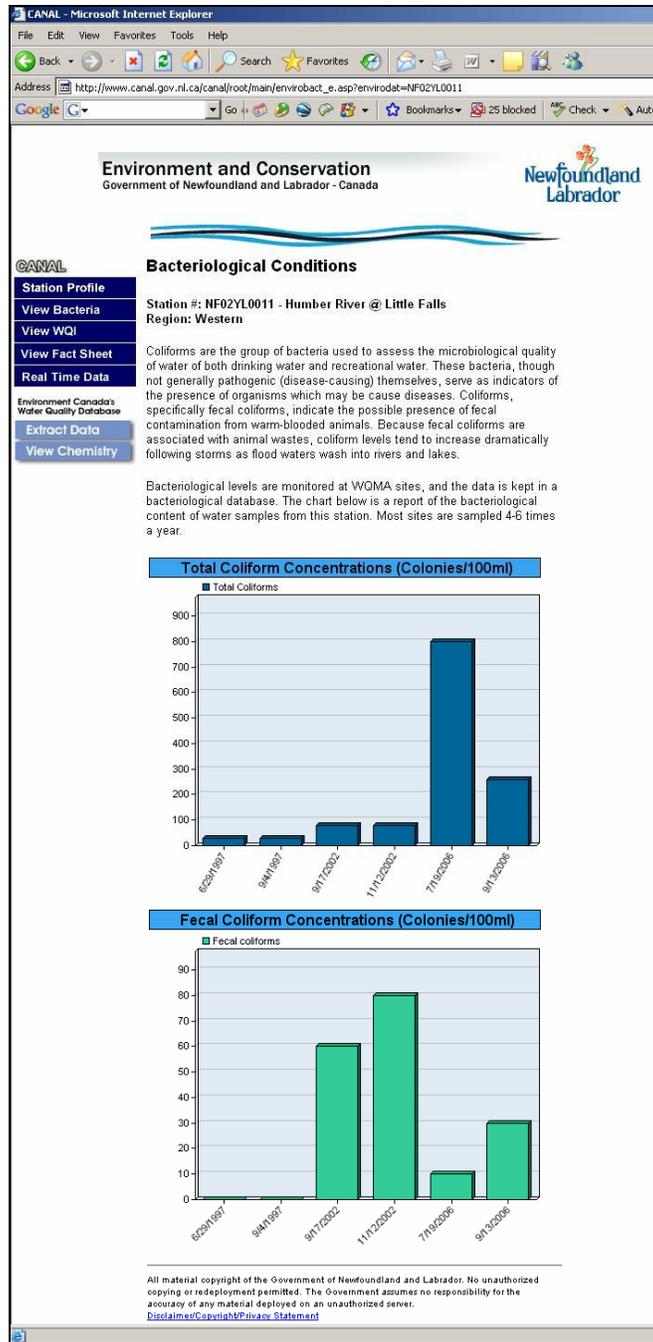


Figure 15

By clicking on [View WQI](#), you will view the Water Quality Index Summary Page for that station (Figure 16).

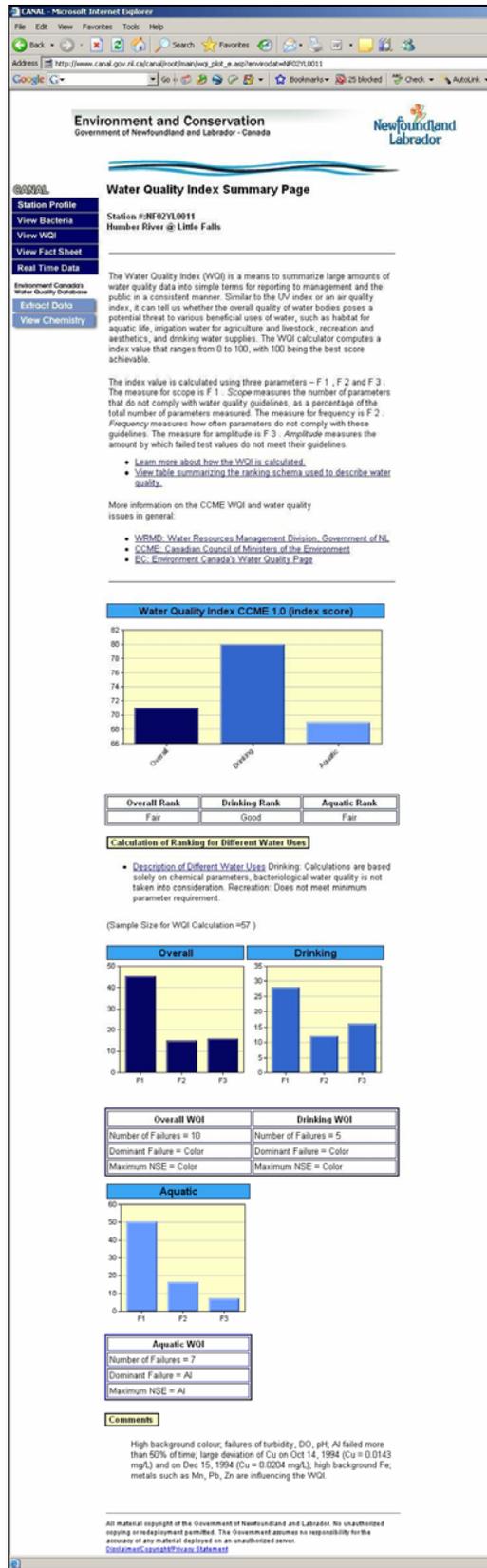


Figure 12

By clicking on [View Fact Sheet](#), you will upload a pdf file corresponding to the station, if the fact sheet exists, (Figure 17).

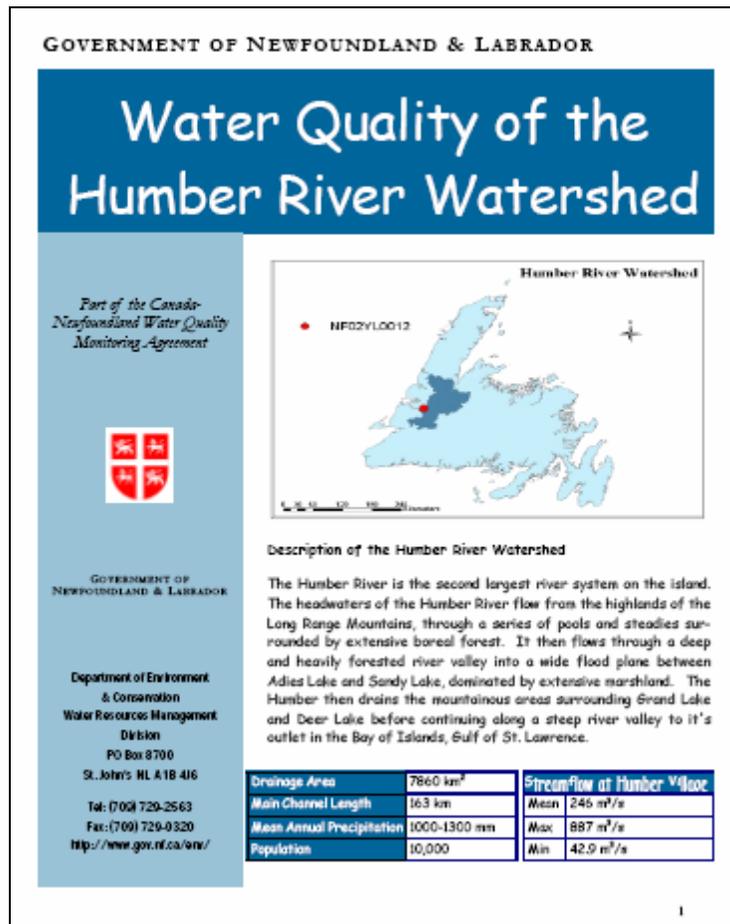


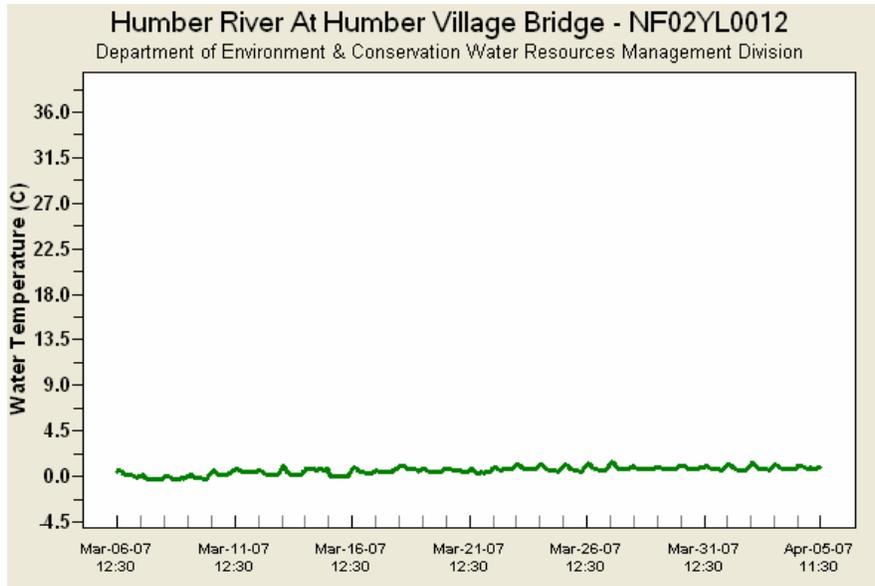
Figure 17

If a fact sheet does not exist, you will be directed to a page stating so (Figure 18).

**The Fact Sheet: NF02YL0011.pdf is not available.**

Figure 18

By clicking on [Real Time Data](#), you will be directed to the Government of Newfoundland and Labrador's website. Here you will see graphs of water quality parameters, such as temperature, pH, specific conductance, dissolved oxygen, turbidity, total dissolved solids, streamflow, stage, etc (Figure 19).



**Figure 19**

If Real Time Data does not exist for a certain site, you will be directed to the Government of Newfoundland and Labrador's website, and you will see something like this (**Figure 20**):

Sorry, the station number you specified does not have real time data.

**Figure 13**

By clicking on either [Extract Data](#) or [View Chemistry](#), you will be linked to Environment Canada's Water Quality Database. When accessing the water quality database through a station profile, the station number will automatically be pre-selected as part of the initial search criteria (see next section).

## Step 2, Extracting Water Quality Data

### Step 2.1, Select Project, Stations, and/or Province

To begin your query, you must select one of three initial search parameters: **Projects**, **Stations**, or **Province** by clicking on the appropriate checkbox and then by clicking on one or many projects, stations, or provinces from the lists below (**Figure 21**).

**1. Select Initial Criteria:**

- Use the following criteria to select your initial search parameters. (at least one checkbox must be checked)
- **\*\*In order to include a parameter, its checkbox must be checked.**

Projects:

- AT0215 | CANADA-NEWFOUNDLAND WATER QUALITY MONITORING AGREEMENT
- AT0216 | NEWFOUNDLAND RECURRENT SURVEYS
- AT0217 | CANADA-NEW BRUNSWICK WATER QUALITY MONITORING AGREEMENT
- AT0219 | VOLATILE ORGANICS IN MUNICIPAL DRINKING WATER SOURCES
- AT0220 | FARM WELL SURVEY - AGRICULTURE CANADA

Stations:

- NF02Y00107 | EXPLOITS RIVER APPROX. 0.5KM DOWNSTREAM FROM DAM
- NF02Y00115 | LOON BAY WATER SUPPLY AT SOUTHEAST POND
- NF02Y00116 | NORTHERN ARM WATER SUPPLY AT MUDDY HOLE POND
- NF02Y00117 | SUMMERFORD WATER SUPPLY AT LONG POND
- NF02Y00118 | EMBREE WATER SUPPLY AT TROKES COVE POND

Provinces:

- NB
- NF
- NS
- PEI

AND join  OR join [what's this?](#)

Figure 21

To select multiple projects, stations, or provinces, press the “Ctrl” key while clicking on desired projects, stations, or provinces. You may also select more than one initial search criteria, such as **Project** and **Province**, to narrow your search.

### Relevant Projects, Newfoundland and Labrador

Project number	Project name
AT0215	Canada—Newfoundland and Labrador Water Quality Agreement

By default, the [And join](#) or [Or join](#) function is set to [And join](#) in order to narrow your search. If you select both a Project and a Station, only water quality samples meeting both criteria will be extracted. For example, samples collected under Project AT0215 for Station NF02ZM0009 will be returned, not samples at this station collected under another project.

Alternatively, you may want to broaden your search to include all samples related to the combination of Projects, Stations and Provinces selected, by clicking on [Or join](#). Note that this option could result in a very high number of samples returned.

Note: Clicking on the [Refresh](#) button in your browser at any time will clear all your results.

### Step 2.2, Refine your criteria

You may refine and narrow your search further by selecting:

- Water Survey of Canada sub-drainage basins (i.e. **Basins**),
- **Media** (e.g. rivers, lakes or groundwater),
- **Variable Name** (e.g. phosphorus or aluminum),
- **Variable Group** (e.g. major ions or metals), or
- a specific **Date Range**.

As in the previous step, click on the checkbox and then select one or many search parameters. For selecting multiple search parameters, press the “Ctrl” key while clicking on the menu items.

For monitoring data collected by the Canada—Newfoundland and Labrador Water Quality Monitoring Agreement (AT0215), only variables in the following variable groups are available: [Major Ions](#), [Metals](#), [Nitrate](#), [Nitrogen](#), [Nutrients](#), [Physicals](#), and [Sulphur](#) (Figure 22).

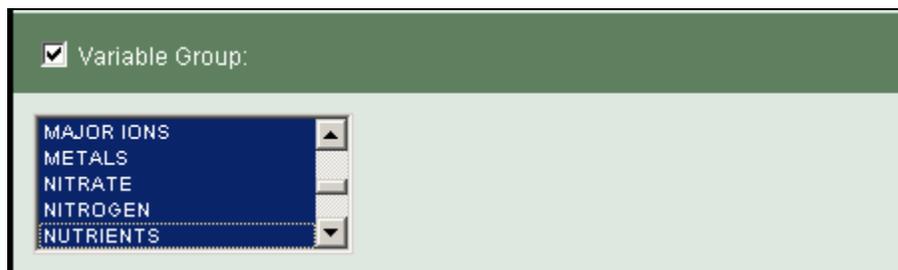


Figure 22

To select a date range, click on the calendar icon next to **From:** and **To:** and use the arrows to change years and months and then by clicking a specific day for that year/month combination.

### **Step 2.3, Select output criteria**

In this step, you select the fields you are interested in acquiring in the generated output file. By default, this includes:

- **Station Number** (following the Envirodat format which identifies the province, ocean and sub-drainage area, and a sequentially assigned 4-digit number, e.g. NF01MZ0009),
- **Station Name**,
- **Station Coordinates** (latitude and longitude, in decimal degrees),
- **Sample Number**,
- **Detection Limit Flag** (i.e. to identify values below detection limits),
- **Lab Code** (to identify the lab in which the analyte was measured)

01	National Laboratory for Environmental Testing, Environment Canada, Burlington, ON
02	Environmental Science Centre, Environment Canada, Moncton, NB
64	Environmental Protection Service, Environment Canada, Halifax, NS
06	Provincial Laboratory, Charlottetown, PEI
12	Provincial Laboratory, Fredericton, NB
80	Field
81	In situ

- **Sample Type** (e.g. discrete, field blank)
- **Sample Date**
- **Variable Name**
- **Variable Group Name**
- **Project Number** (see list box, under Initial Criteria, for a complete list)
- **Media** (e.g. stream, lake, estuary)

When downloading data from the Canada – Newfoundland and Labrador Water Quality Monitoring Agreement, it is important to un-select all unnecessary fields to provide a visually appealing and usable spreadsheet (**Figure 23**).

### 3. Output Criteria:

- (Choose the fields you want included in output)

<input checked="" type="checkbox"/> Station Number	<input type="checkbox"/> Station Name
<input type="checkbox"/> Station Latitude	<input type="checkbox"/> Station Longitude
<input checked="" type="checkbox"/> Sample Number	<input checked="" type="checkbox"/> Detection Limit Flag
<input checked="" type="checkbox"/> Lab Code	<input checked="" type="checkbox"/> Sample Type
<input checked="" type="checkbox"/> Sample Date	<input checked="" type="checkbox"/> Variable Name (Identifier)
<input type="checkbox"/> Variable Group	<input type="checkbox"/> Project Number
<input type="checkbox"/> Media	

Figure 23

Various options can be selected for specifying the output of values that are below detection limits (top of **Figure 24**). By default, these values will be included in the output with a qualifier (e.g. L, for *less than*) merged with the value. Alternatively, this qualifier can be added to a separate field or not included at all (i.e. by clicking on [Hide Qualifier](#)).

#### Detection Limit Values

<input checked="" type="checkbox"/> Include values below detection limit	
<input checked="" type="radio"/> Show Qualifier	<input type="radio"/> Attach Qualifier to value (in same field)
<input type="radio"/> Hide Qualifier	<input checked="" type="radio"/> Add new field for Qualifiers

Figure 24

In addition, you can include [VMV Code Explanations](#) and [Quality Control Data](#) (**Figure 25**). VMV Codes are unique identifiers which link parameters to specific analytical methods used to measure it (for e.g., Total phosphorous by colourimetry with ammonium molybdate). Quality Control Data provides the measured values of field blanks.

<input checked="" type="checkbox"/> Include VMV Code Explanations
<input checked="" type="checkbox"/> Include Quality Control Data

Figure 25

## Step 2.4, Show query results

Click [Show Selected Stations](#) to preview the stations of which data you will be extracting (**Figure 26**). Click [Continue](#), at the bottom of the page, to proceed to the next page which shows the results of your query.

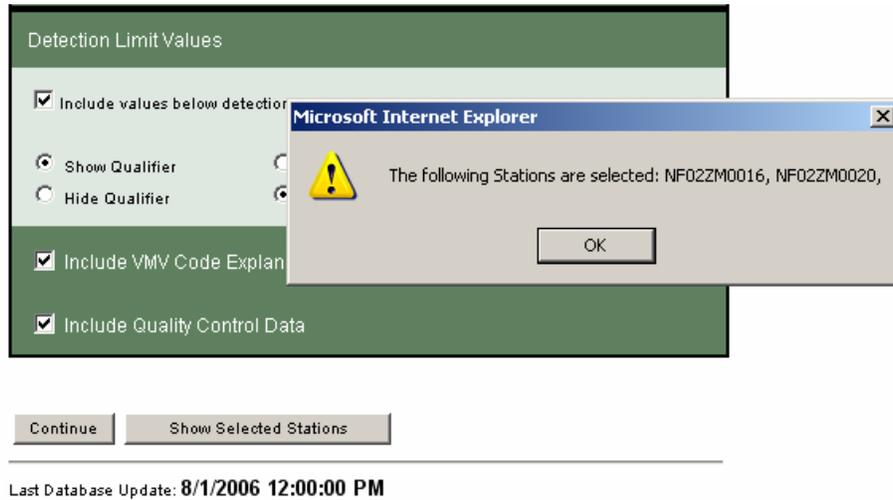


Figure 26

## Step 2.5, See query results and download data file

The results page will allow you to review the criteria you specified in the previous steps (**Figure 27**).

Projects:	AT0215
Stations:	NF02ZM0016 NF02ZM0020
Provinces:	Not Selected
Select Criteria Join Type:	AND
Sub Basins:	Not Selected
Variable Name Identifiers:	Not Selected
Variable Group Identifiers:	MAJOR IONS METALS NITRATE NITROGEN NUTRIENTS PHYSICALS SULPHUR
Media:	Not Selected
Date Range:	Not Selected
Include VMV Chart:	yes
Include QC Data:	yes
Output Criteria:	Station Number, Sample Number, Sample Type, Sample Date, Variable Type,
Detection Limits:	Include Detection Limit Measurements: true Show Qualifier: <b>true</b> Include Qualifier In same field: <b>false</b>

Figure 27

It will also show the number of samples found by year and by media (Figure 28).

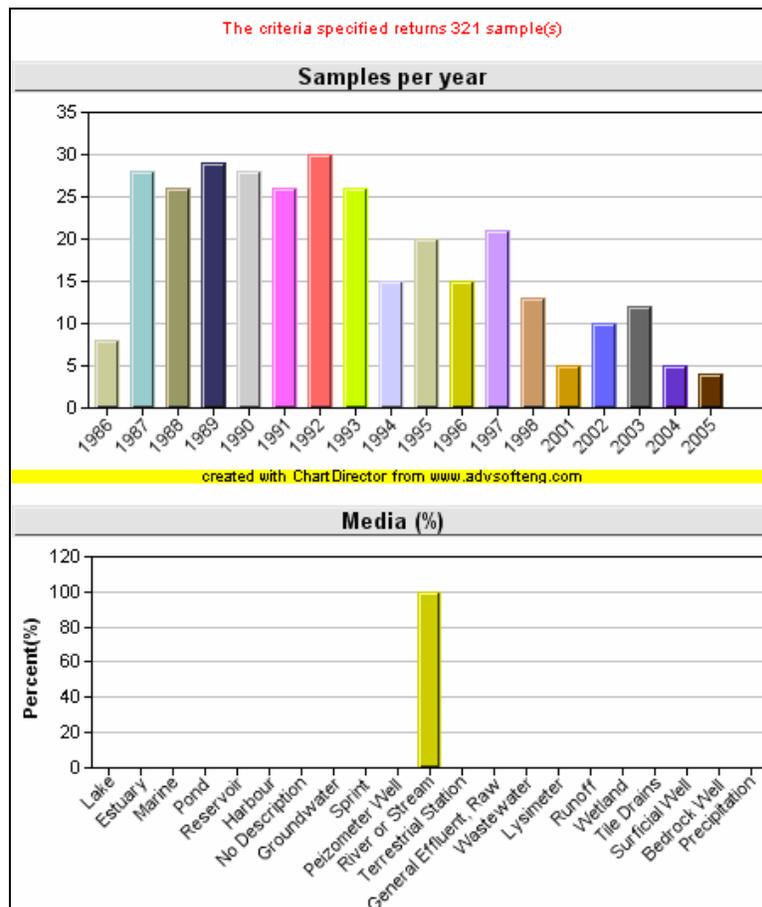
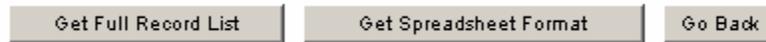


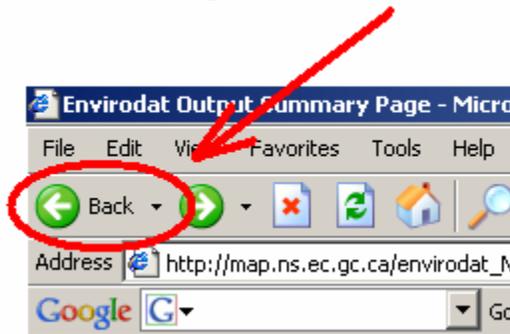
Figure 28

If you are satisfied with the results of your search, you can download the data to your desktop. Once you're reviewed your search results, you can download the data in one of two formats: [Full Record List](#) and [Spreadsheet](#) (**Figure 29**).



**Figure 29**

If you are unsatisfied with your search results, clicking on [Go Back](#) (**Figure 29**) will clear your results, allowing you to start over. Note: To simply edit your selections, click on the [Back](#) button in your internet browser (**Figure 30**).



**Figure 30**

Full Record List has data for every measurement written on a separate row with data quality control and VMV code descriptions appended separately at the bottom of the spreadsheet.

The Spreadsheet Format has each sample written as a separate row with VMV codes written as column headings.

The queried data is automatically written into a tab separated text file and zipped. Once unzipped, this file can be imported into any database or spreadsheet program.

Click on

- [Open](#), to open the file directly from the browser using an application such as WinZip,
- [Save](#), to save the zipped file on your computer on the desktop or other destination in file system, or
- [Cancel](#) if you wish to change the format of the file you download or search criteria from the previous page (**Figure 31**).

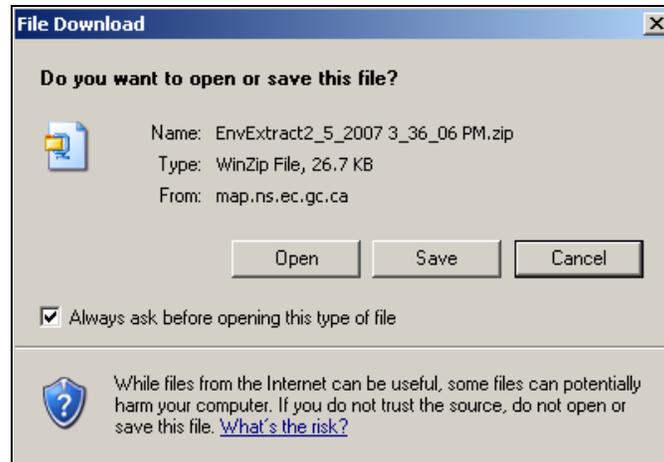


Figure 31

## Step 2.6, Opening and importing the data file

To open the downloaded file, you must have an archiving application installed on your computer that will allow you to open zipped files (such as WinZip). Double clicking on the file icon (if saved to desktop) or the file name in your folder system will activate this application (if one is installed). If you do not have an archive application installed, you may download one from the internet (**Figure 32**).

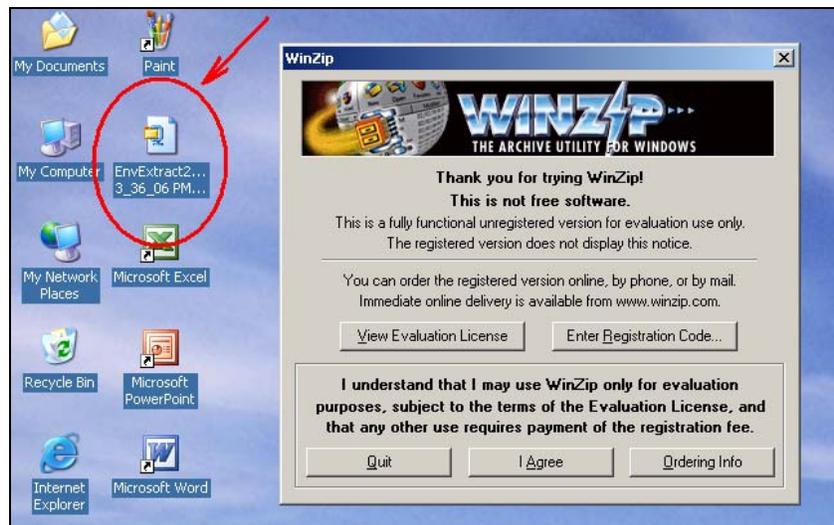


Figure 32

Follow the instructions or use the help file included with your archiving application to extract the zipped data file. Again, you will be prompted to select a destination for your files. Once these have been extracted to your desktop or file system, you are ready to import the file to a database or spreadsheet program. The extracted file will be a text file, named **EnvExtract\_date\_time.txt**.

To open the text file in a database or spreadsheet program (such as Microsoft Excel), right click on the icon (from the desktop) or the file name (from the file folder). From the

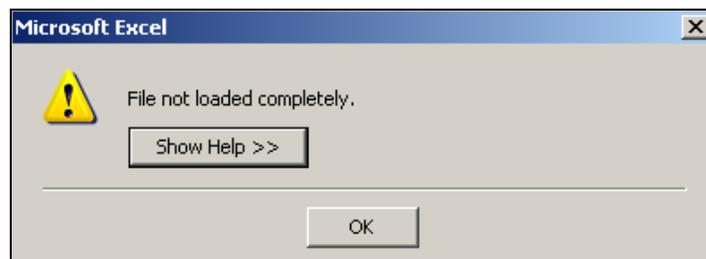
menu, click on [Open With](#) and click on the appropriate program, such as Microsoft Office Excel, or choose another program (**Figure 33**).

For some programs, such as Microsoft Access, you will first need to open an existing database file, then import the new text file (e.g. click [File](#) on the top menu, then [Import](#)).



**Figure 33**

If using Microsoft Excel, you may be prompted with this window (**Figure 34**):



**Figure 34**

This means you are trying to open a file that contains more than 65,536 rows or 256 columns. Click on [Show Help](#) for further instructions, otherwise click [OK](#). In order to address this problem, you should:

- import the text file into another program (such as Microsoft Access),
- download the full record list, or
- re-execute a query with fewer stations, parameters or projects.