Chapter 7

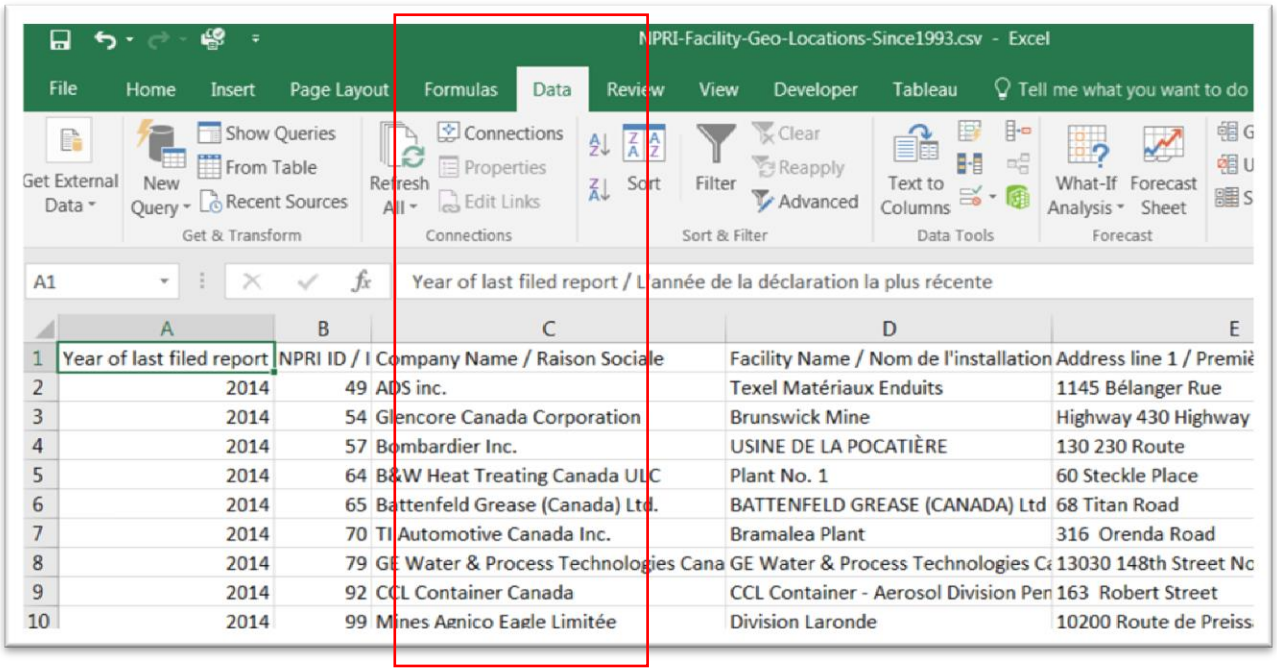
Working with Projections in QGIS

Skills you will learn: There are two tasks you may need to perform with projections. The first is to project a map that has no projection (i.e. has only a geographic coordinate system), the other is to define the projection of a map that is supposed to be projected, but is missing the information.

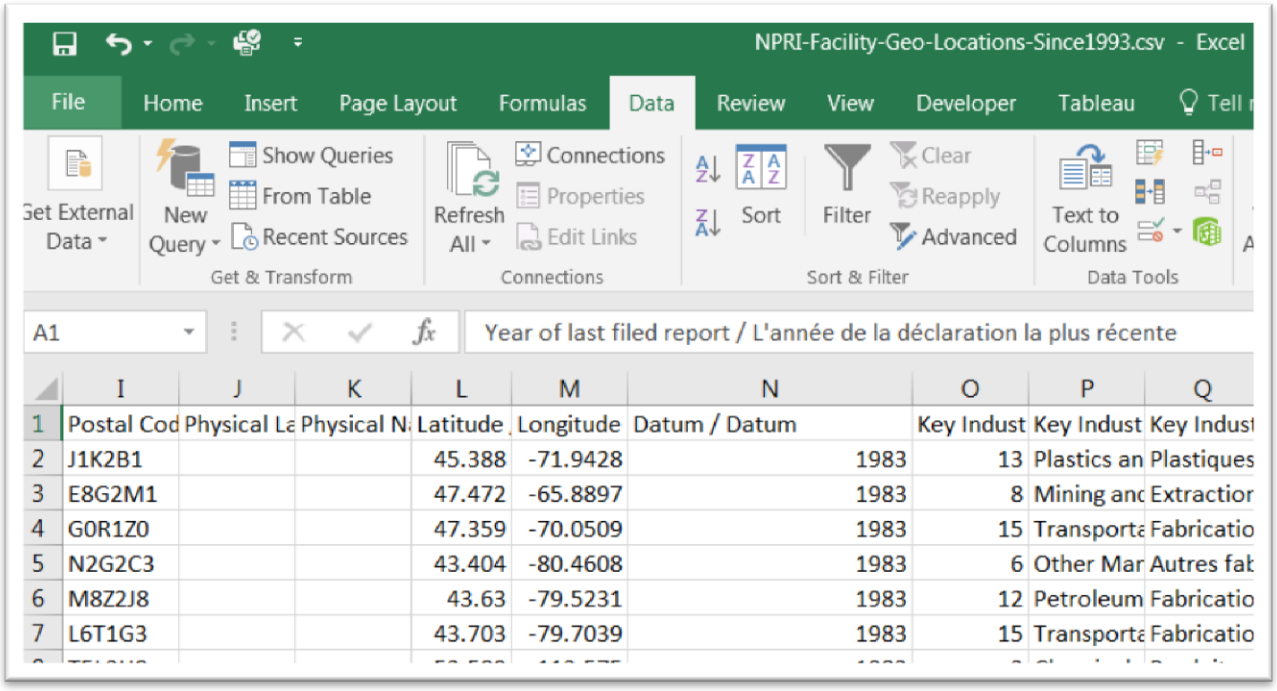
Projecting a map

In this first part of the tutorial, we'll add a projection to a point map of locations of polluting facilities in Canada, derived from a downloaded set of locations available at http://open.canada.ca/data/en/dataset/40e01423-7728-429c-ac9d-2954385ccdfb. The map uses the NAD83 datum, but is not projected.

We'll download the "NPRI-Facility-Geo-Locations-Since1993.csv" file, which you can also obtain by clicking here.

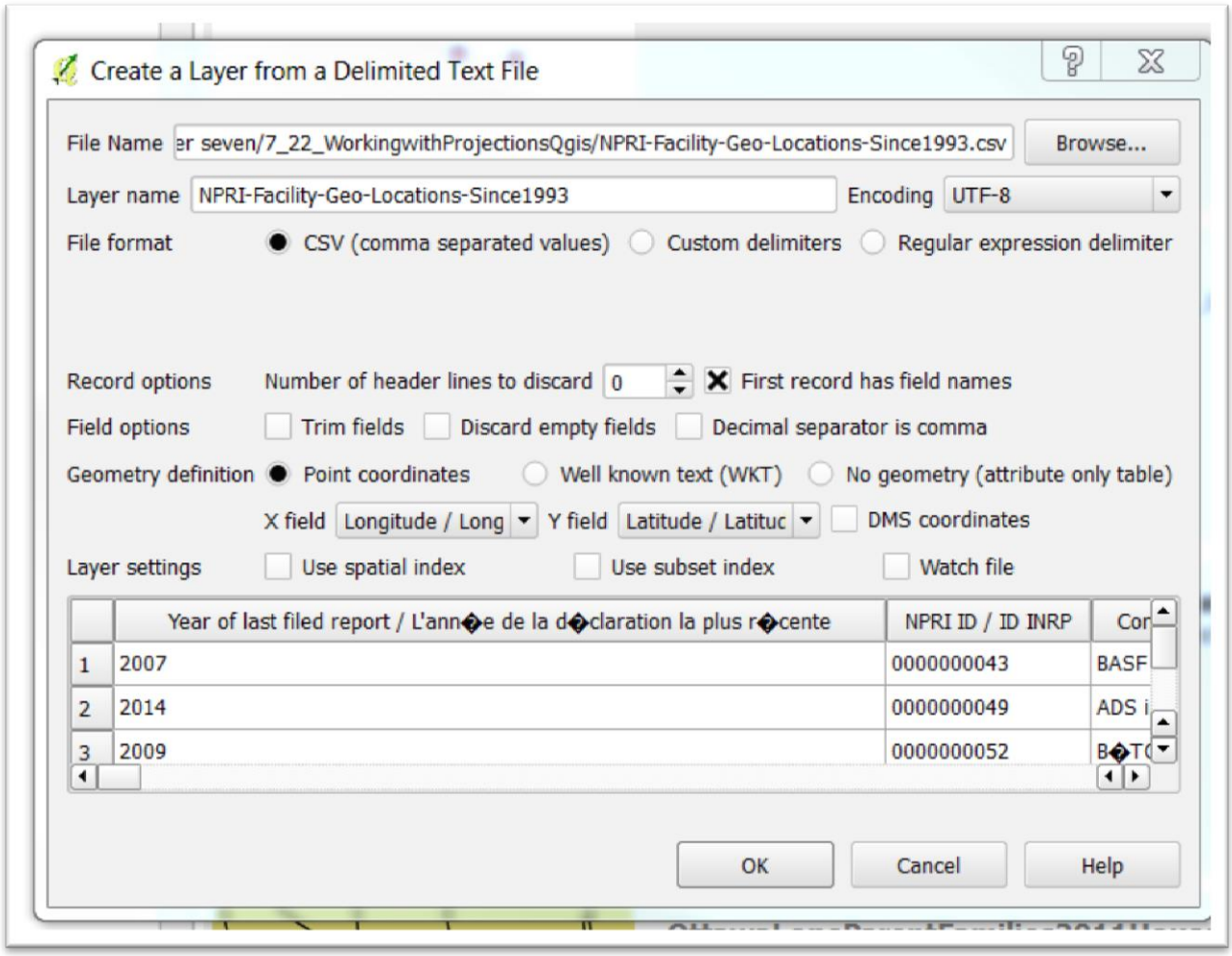


Scroll to the right, and you'll the columns with the latitude and longitude coordinates QGIS will need.

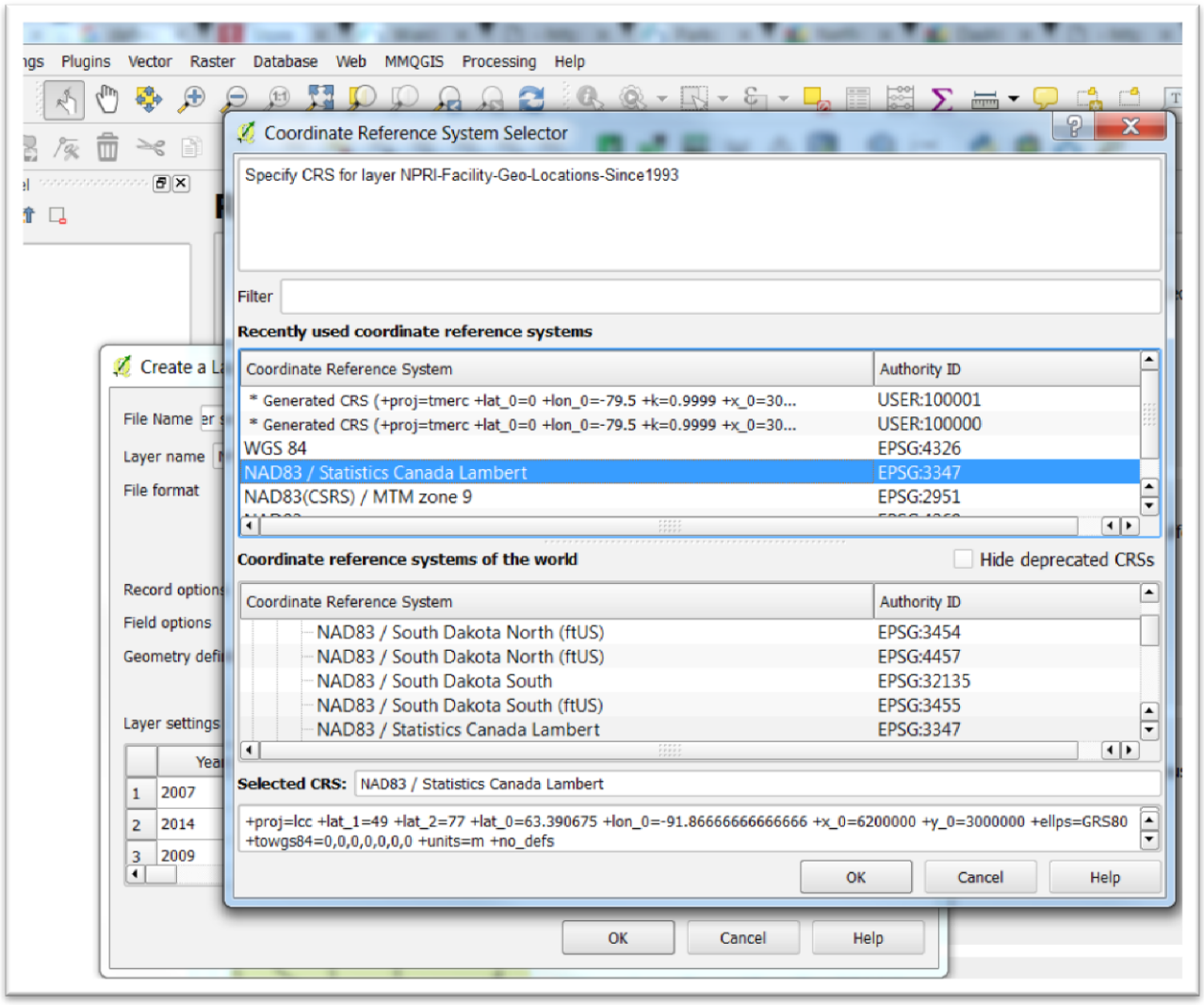


Close the file, and open QGIS.

With the and use the "Create a Layer from a Delimited Text File" dialogue box to import the file. And be sure to assign the X and Y coordinates to the Longitude and Latitude locations, respectively.

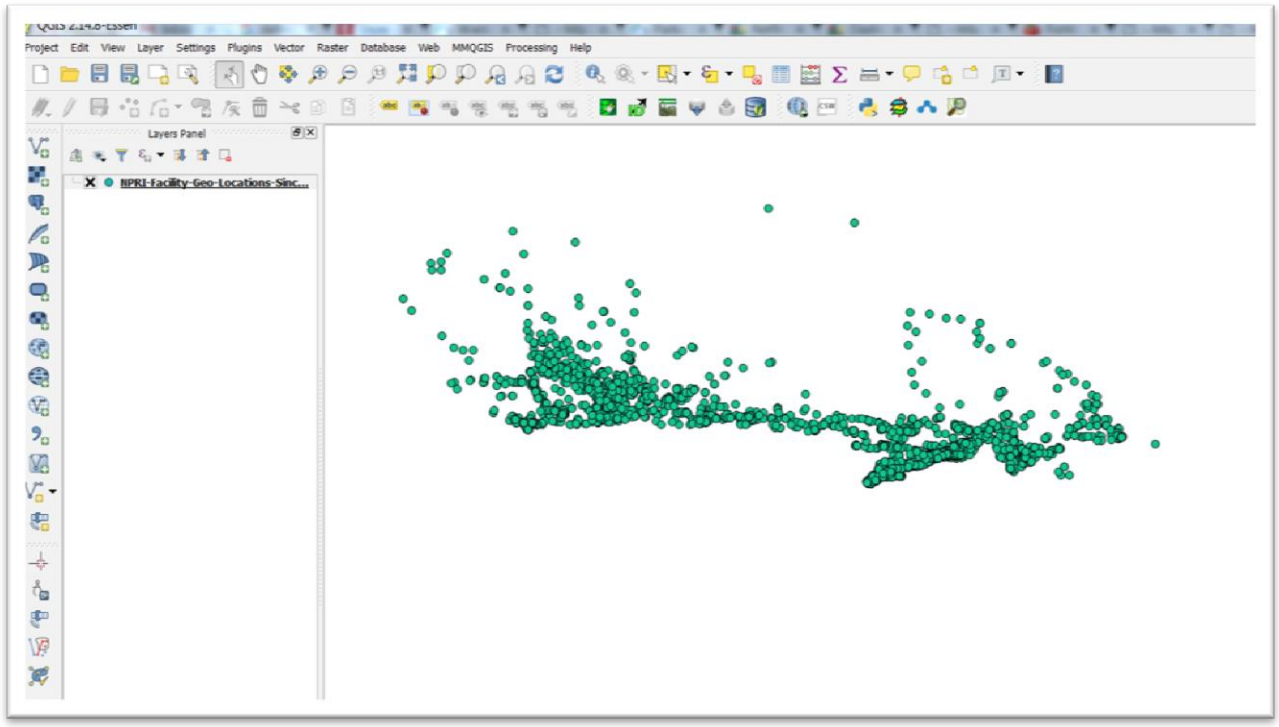

Create a Layer from a Delimited Text File
File Name er seven/7_22_WorkingwithProjectionsQgis/NPRI-Facility-Geo-Locations-Since1993.csv
Browse...
Layer name NPRI-Facility-Geo-Locations-Since1993
Encoding UTF-8
File format CSV (comma separated values) Custom delimiters Regular expression delimiter
Record options Number of header lines to discard 0 First record has field names
Field options Trim fields Discard empty fields Decimal separator is comma
Geometry definition Point coordinates Well known text (WKT) No geometry (attribute only table)
X field Longitude / Long Y field Latitude / Latituc DMS coordinates
Layer settings Use spatial index Use subset index Watch file
Year of last filed report / L'ann�e de la d�claration la plus r�cente
NPRI ID / ID INRP
Cor
1 2007 0000000043 BASF
2 2014 0000000049 ADS i
3 2009 0000000052 B�T
OK
Cancel
Help

Select the “OK” tab.

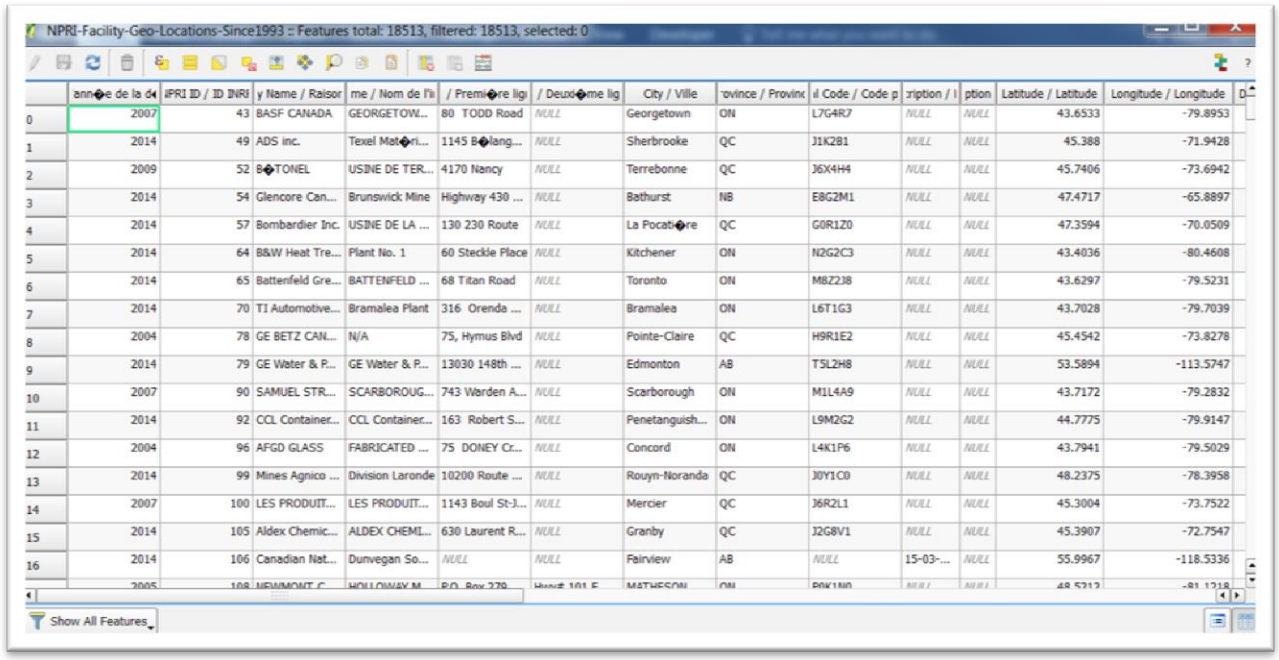


In this case, we will project the map to the Statistics Canada Lambert Conformic projection, which is a good projection for Canada, with its wide east-west extent.

Select OK.



As is our usual practice, your project, and then open the file's attribute table.

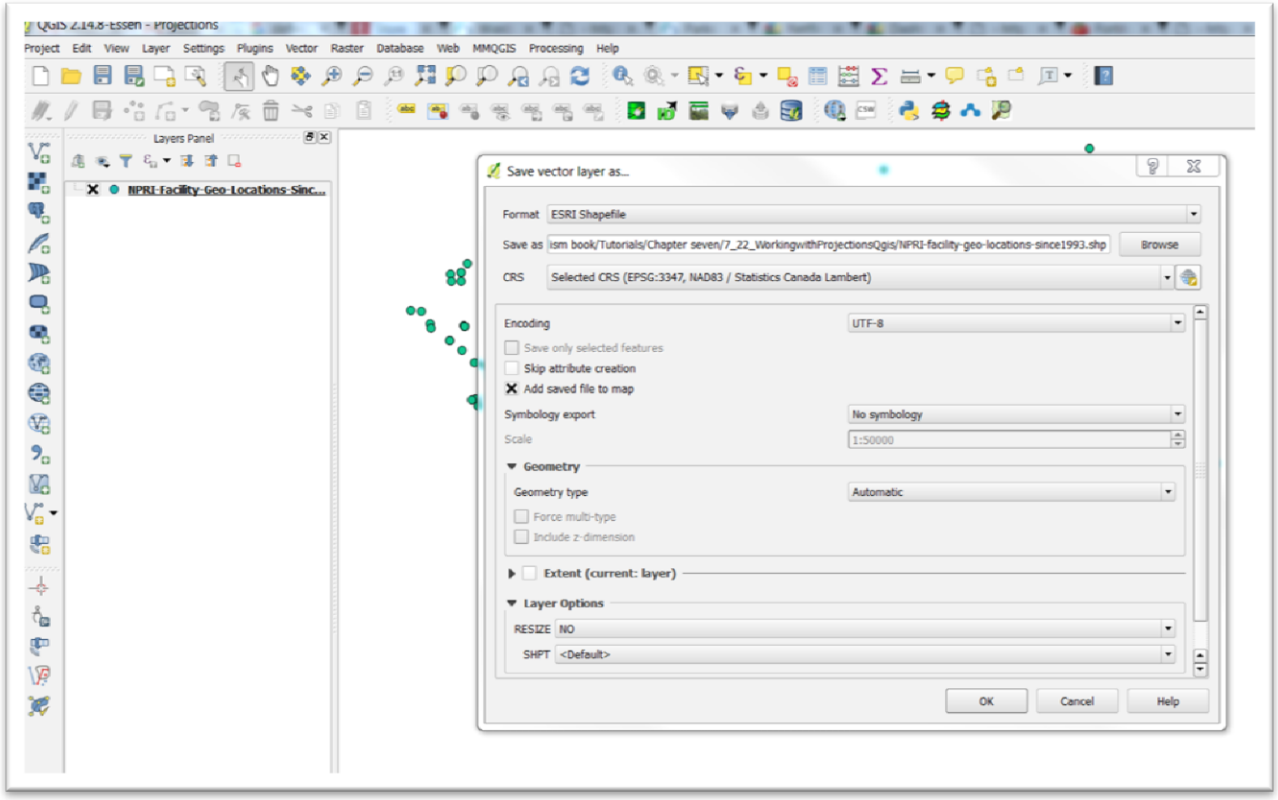


	anné de la d	iPRI ID / ID INRI	y Name / Raisor	me / Nom de l'i	/ Premi re lig	/ Deuxi me lig	City / Ville	rovince / Provinc	il Code / Code p	ription /	ption	Latitude / Latitude	Longitude / Longitude
0	2007	43	BASF CANADA	GEORGETOW...	80 TODD Road	NULL	Georgetown	ON	L7G4R7	NULL	NULL	43.6533	-79.8953
1	2014	49	ADS inc.	Texel Mat ri...	1145 B lang...	NULL	Sherbrooke	QC	J1K2B1	NULL	NULL	45.388	-71.9428
2	2009	52	B TONEL	USINE DE TER...	4170 Nancy	NULL	Terrebonne	QC	J6X4H4	NULL	NULL	45.7406	-73.6942
3	2014	54	Glencore Can...	Brunswick Mine	Highway 430 ...	NULL	Bathurst	NB	E8G2M1	NULL	NULL	47.4717	-65.8897
4	2014	57	Bombardier Inc.	USINE DE LA ...	130 230 Route	NULL	La Pocati re	QC	G0R1Z0	NULL	NULL	47.3594	-70.0509
5	2014	64	B&W Heat Tre...	Plant No. 1	60 Steckle Place	NULL	Kitchener	ON	N2G2C3	NULL	NULL	43.4036	-80.4608
6	2014	65	Battenfeld Gre...	BATTENFELD ...	68 Titan Road	NULL	Toronto	ON	M8Z2J8	NULL	NULL	43.6297	-79.5231
7	2014	70	TI Automotive...	Bramalea Plant	316 Orenda ...	NULL	Bramalea	ON	L6T1G3	NULL	NULL	43.7028	-79.7039
8	2004	78	GE BETZ CAN...	N/A	75, Hymus Blvd	NULL	Pointe-Claire	QC	H9R1E2	NULL	NULL	45.4542	-73.8278
9	2014	79	GE Water & P...	GE Water & P...	13030 148th ...	NULL	Edmonton	AB	T5L2H8	NULL	NULL	53.5894	-113.5747
10	2007	90	SAMUEL STR...	SCARBOROUG...	743 Warden A...	NULL	Scarborough	ON	M1L4A9	NULL	NULL	43.7172	-79.2832
11	2014	92	CCL Container...	CCL Container...	163 Robert S...	NULL	Penetanguish...	ON	L9M2G2	NULL	NULL	44.7775	-79.9147
12	2004	96	AFGD GLASS	FABRICATED ...	75 DONEY Cr...	NULL	Concord	ON	L4K1P6	NULL	NULL	43.7941	-79.5029
13	2014	99	Mines Agnico ...	Division Laronde	10200 Route ...	NULL	Rouyn-Noranda	QC	J0Y1C0	NULL	NULL	48.2375	-78.3958
14	2007	100	LES PRODUIT...	LES PRODUIT...	1143 Boul St-J...	NULL	Mercier	QC	J6R2L1	NULL	NULL	45.3004	-73.7522
15	2014	105	Aldex Chemic...	ALDEX CHEMI...	630 Laurent R...	NULL	Granby	QC	J2G8V1	NULL	NULL	45.3907	-72.7547
16	2014	106	Canadian Nat...	Dunvegan So...	NULL	NULL	Fairview	AB	NULL	15-03-...	NULL	55.9967	-118.5336

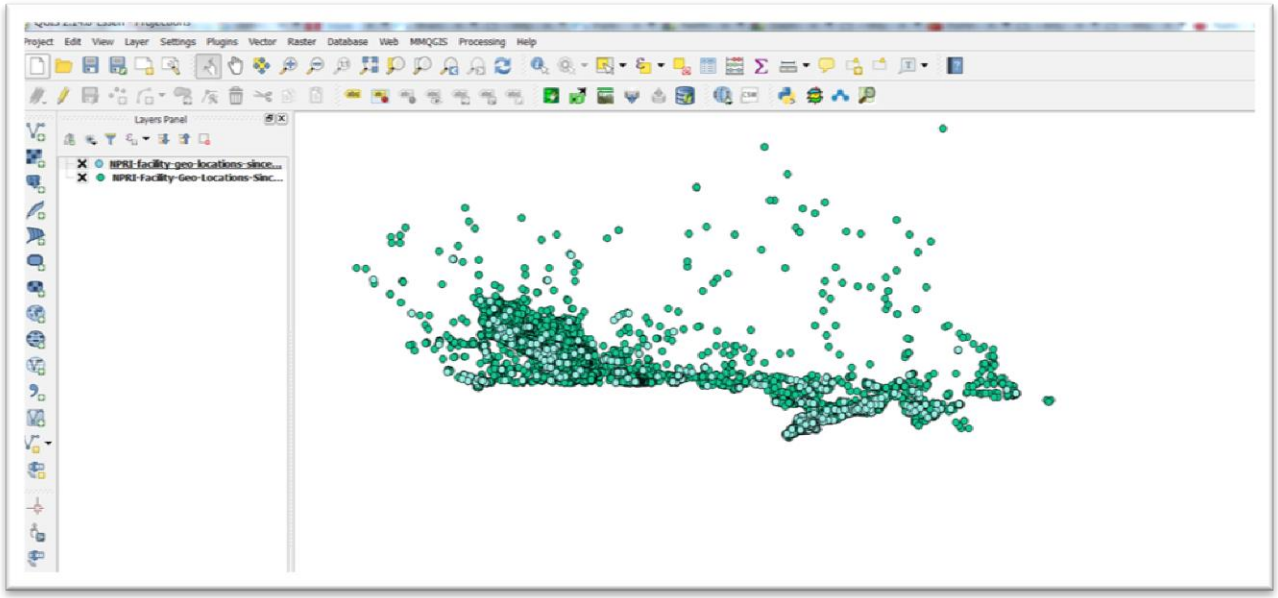
You can now save the layer as a shape file, which will have a projection.

Double click on the Project icon. This opens the project dialogue.

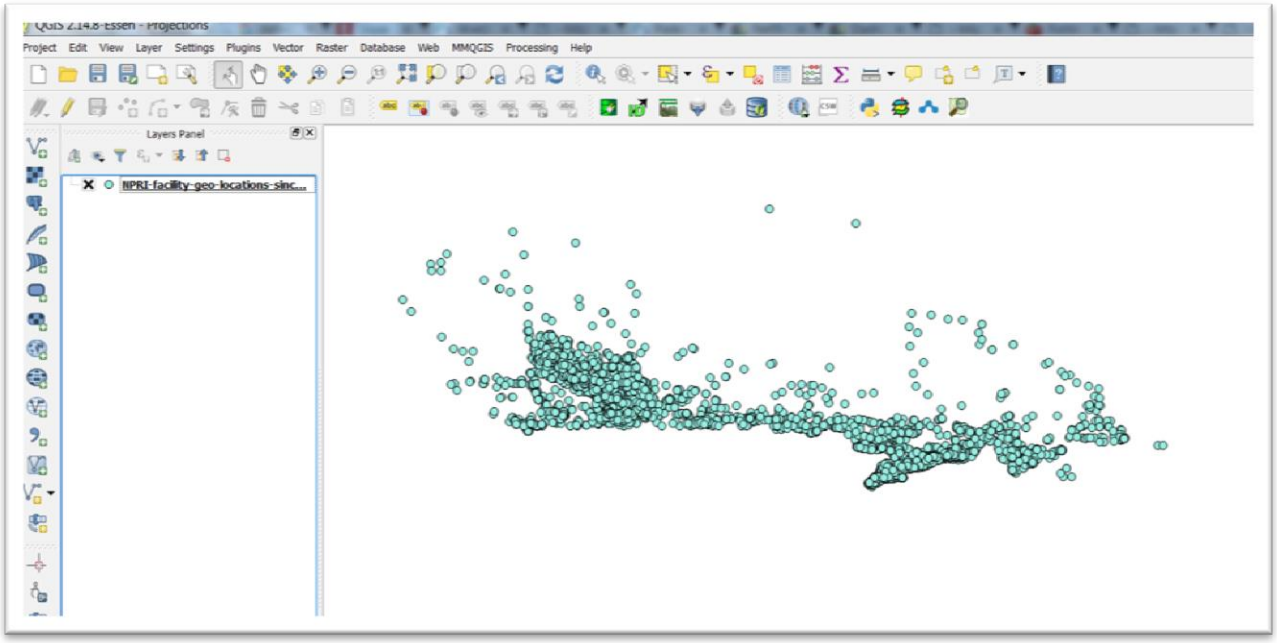
We must now save the layer as a shape file, right right-clicking on the layer, and selecting the "Save as" option from the drop-down menu, which produces a dialogue box.



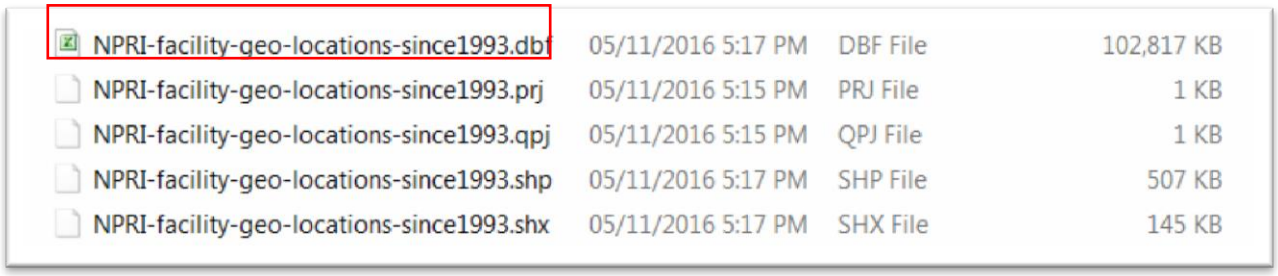
Select OK.



You can delete the csv file.



Browse to your hard drive, and open the folder that contains the shape file so that you can see it's component parts. You can also download this folder in a zipped file by clicking here.



With a shape file now intact, we can continue working with this layer.

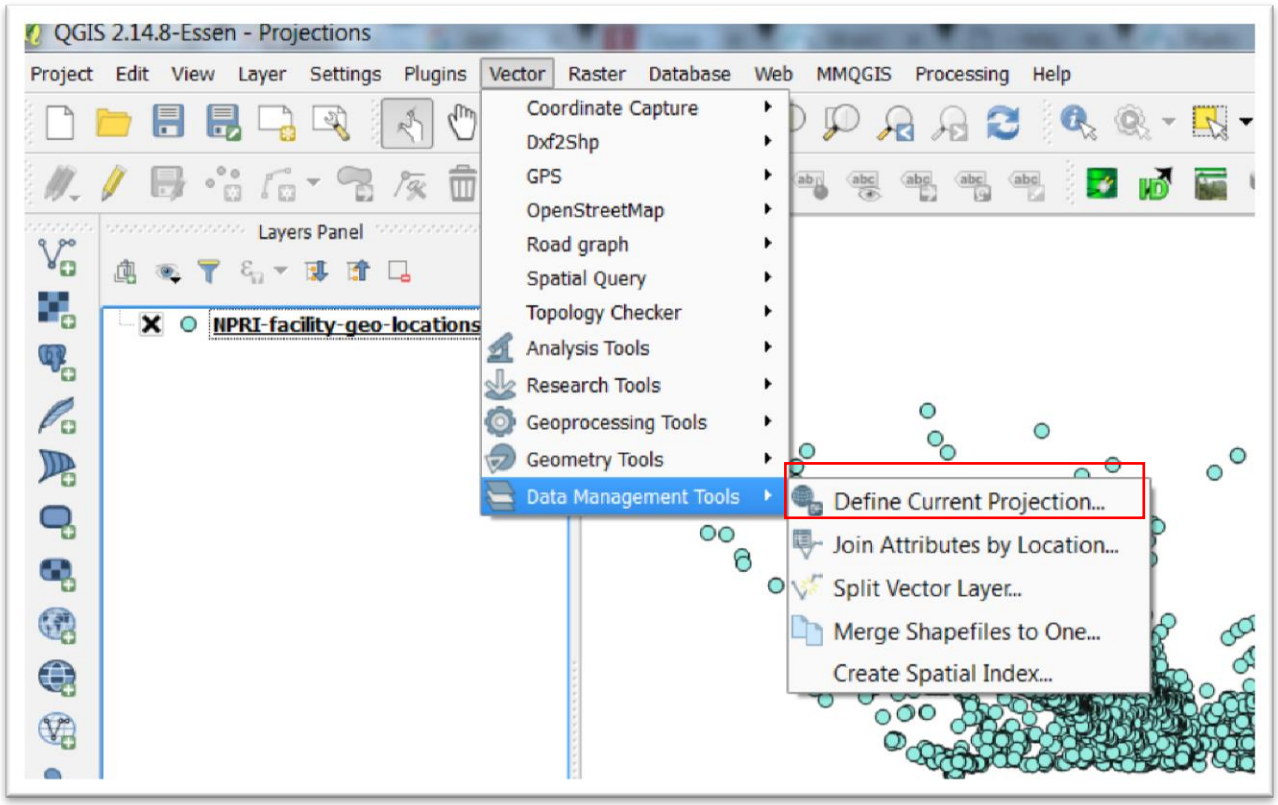
The new, projected layer will be added to the post.

Define projection

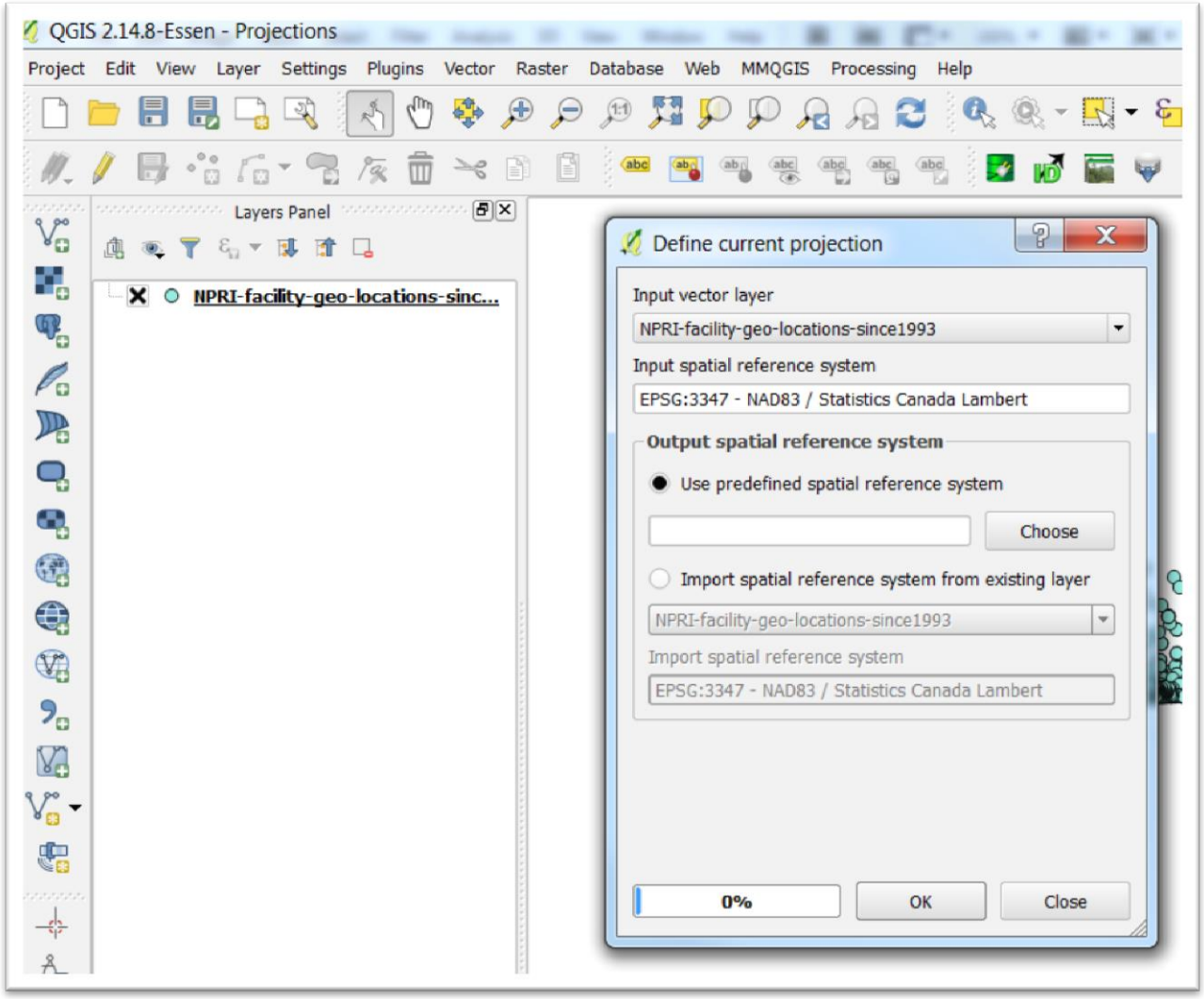
If you have a shapefile that is intended to be projected, but is missing its .prj file highlighted above (see Chapters 6 and 7 of *The Data Journalist* for a discussion of projections and the file structure of a shapefile), use the define projection tool.

You will need to find out what the projection for the map is intended to be, either from the layer's metadata, or if necessary, from the keepers of the data.

Once you know, click on Data Management in the "Vectors" menu.



Select Define Projection. In the dialogue that opens choose the input feature class or shapefile, then choose the projection to be added. Click OK and the projection will be added to the existing layer.



Admittedly, understanding projections takes a while. But given its importance when working with mapping software like QGIS or ArcMap, it's worth spending the time to understand how they work and why they're necessary.