Tutorial for analyzing and mapping contaminated sites data

The federal government oversees thousands of sites that are contaminated with a number of pollutants such as <u>petroleum</u> <u>hydrocarbons</u>, a mixture of chemicals found in crude oil, that carry a collected liability in the billions of dollars. Echoing the <u>Environment Commissioner's concerns</u>, the <u>Parliamentary Budget Office</u> has warned the government that it must get this problem under control.

What's worse, there are still sites, many in and near towns and cities, that have yet to be assessed for contaminants. So this is a huge problem that we should be monitoring and holding government to account.

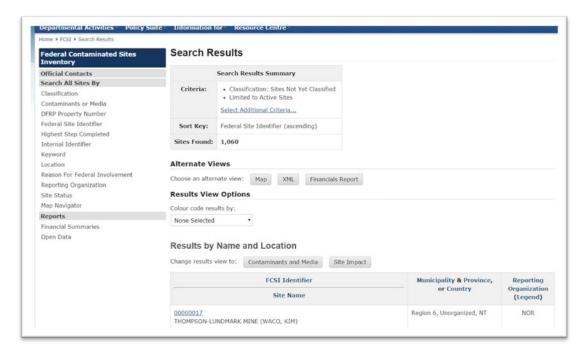
Fortunately, the data is readily available, meaning that tables can be downloaded into Excel, and then filtered for interesting subsets that can be uploaded to Google's Fusion Tables.

Though there have been lots of <u>stories</u> about the most contaminated sites, little attention has been paid to sites that have yet to be assessed but are suspected of being toxic, potentially dangerous, and expensive to clean up.

So let's look at those, identify the federal departments that have the highest number and map them, allowing our audience to see where they're located.

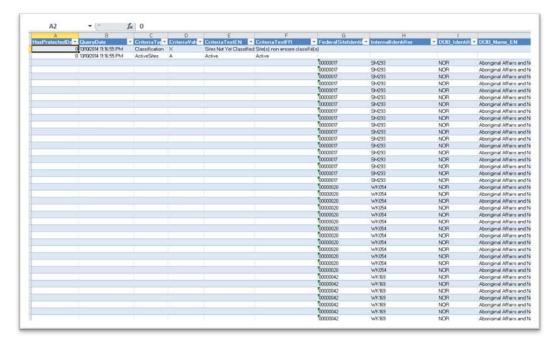
Let's get started.

- 1) Go to the Treasury Board of Canada table entitled <u>"Find Sites by</u> Classification"
- 2) Download the "Active" sites in the "Site(s) not yet classified section".

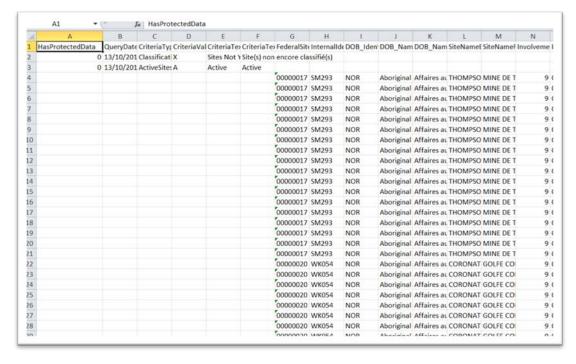


- 3) We had trouble importing the XML tab using our Macs. There are a number of workarounds discussed in this <u>NICAR discussion</u> thread that responded to our request for help.
- 4) You can explore some of the options they discussed. Failing that, download the Excel worksheet that contains the file of sites we will map.
- 5) Please click <u>here</u> to download the Excel file.

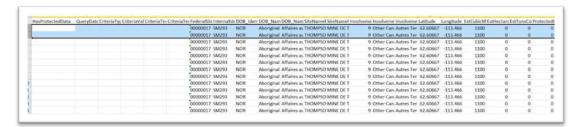
6) The original worksheet is in the <u>XML format</u> and quite messy. So we'll need to clean it up.



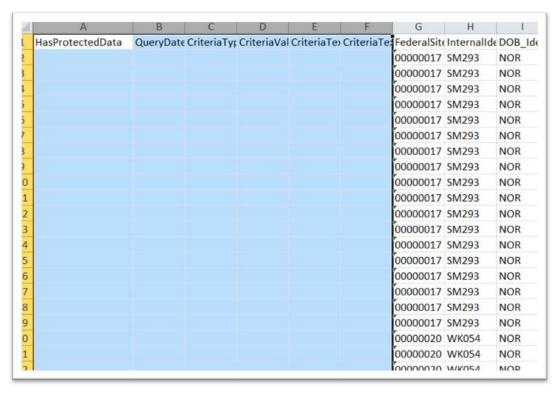
7) Select the entire worksheet, copy and paste it as a "paste special" into a new worksheet. For Mac users, be sure to select the "values" option in the dialog box.

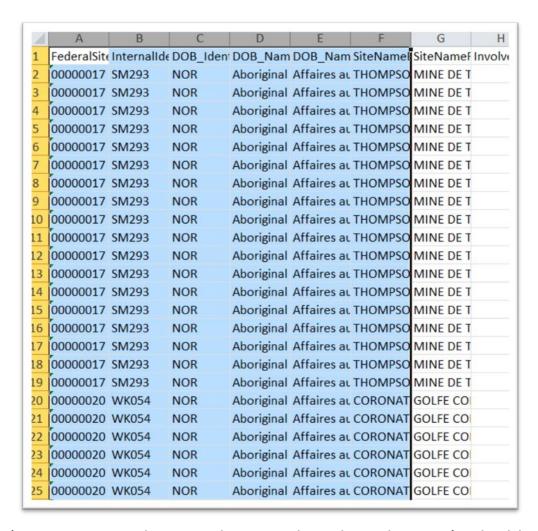


8) Now we'll have to clean it up and remove the duplicates. Highlight rows two and three and delete them.

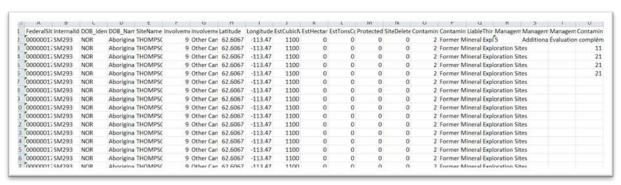


9) Delete the columns A to F.

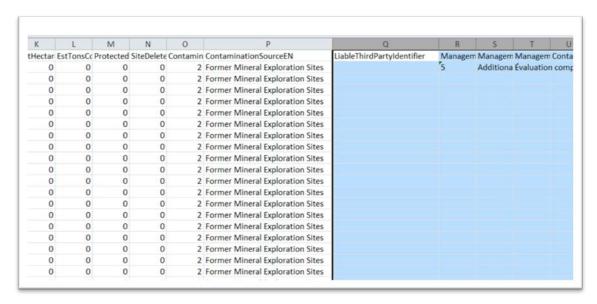




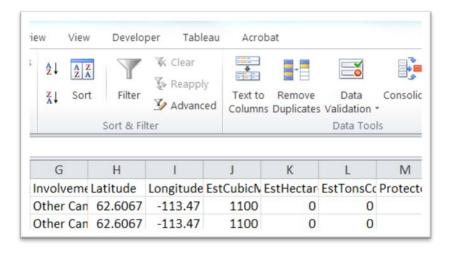
10) Use you short-cut key to select the columns I've highlighted (either because they are in French or otherwise extraneous to this exercise) and delete them.



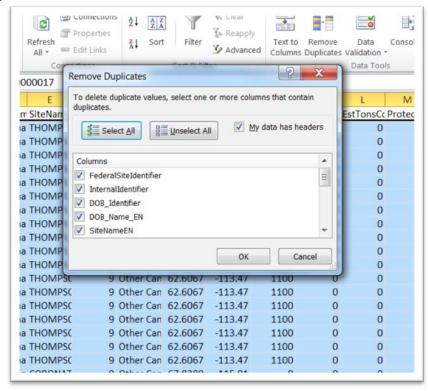
11) Highlight the columns after P – "ContaminationSourceEN" – for the same reasons described above.



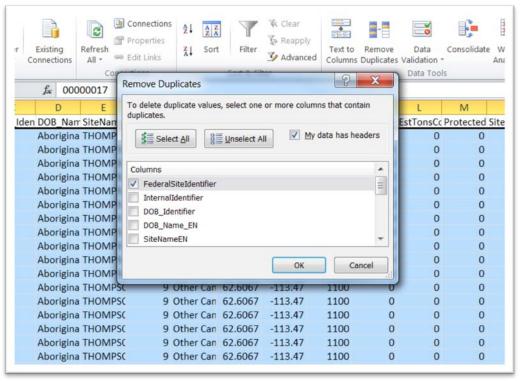
- 12) You should be left with a table with columns A to P with the all-important "Latitude and Longitude", geographic information Fusion Tables will need to place the sites on a map.
- 13) Now we have to get rid of the duplicates.
- 14) Make sure cell A1 is activated and locate your "Remove Duplicates" option, which should be on your menu ribbon above the table.

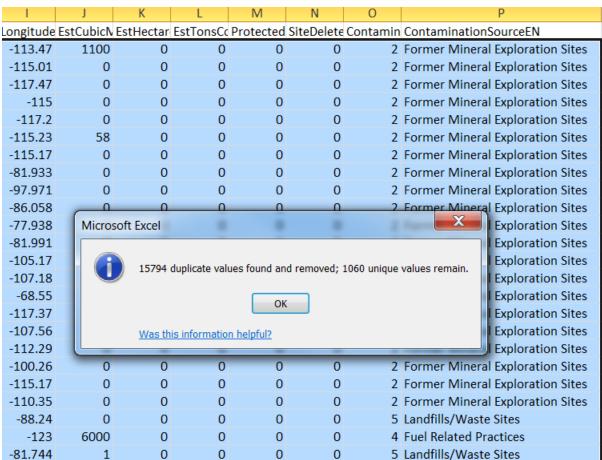


15)



16) Unselect, and then select the first column, the "FederalSiteIdentifier".



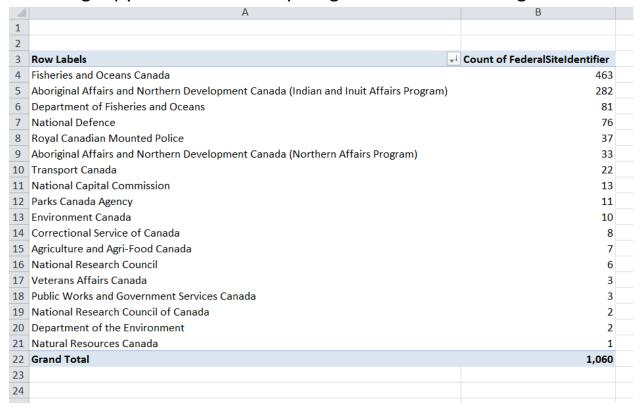


17) Selecting OK, leaves you with 1060 Records or "unique values", the same number contained in the table on the <u>Treasury Board's website</u>.

-114.36 -94.969 -128.82	69 0	0 0.5 0.8	0	0	0	2 Former Mineral Exploration Sites
-128.82			0	0	0	
	32 0	0.0			· U	6 Engineering Assets/Air and Land Transportation
		0.8	0	0	0	7 Marine Facilities/Aquatic Sites
-128.82	32 0	0.02	0	0	0	4 Fuel Related Practices
-128.82	32 0	0	0.01	0	0	6 Engineering Assets/Air and Land Transportati
-128.82	32 2000	0.2	4000	0	0	4 Fuel Related Practices
-128.82	32 500	0.1	1000	0	0	5 Landfills/Waste Sites
-110.95	95 0	0	0	0	0	
8	8 -128.8 8 -128.8	8 -128.82 2000 8 -128.82 500	8 -128.82 2000 0.2 8 -128.82 500 0.1	8 -128.82 2000 0.2 4000 8 -128.82 500 0.1 1000	8 -128.82 2000 0.2 4000 0 8 -128.82 500 0.1 1000 0	8 -128.82 2000 0.2 4000 0 0 8 -128.82 500 0.1 1000 0 0

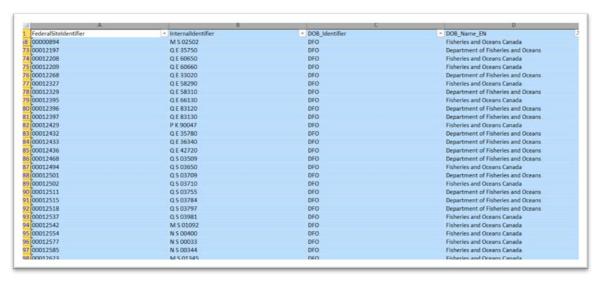
- 18) Mapping this many records randomly is an option, but wouldn't it be better to use a bit of analysis, creating, for instance, a table of top-five departments with the largest number of sites.
- 19) To do this, we'll have to create a pivot table, grouping the departments in column D ("DOB_Name_EN"), counting the ID numbers (now free of duplicates), and sorting the result in descending order.
- 20) Be sure to format your number in the pivot table's column B., label the worksheet, and drag the tab to the right of your

"WorkingCopy" tab so that everything reads from left-to-right.



- 21) We have a slight problem in devising our top-five. Rows four and six are the same department, as are rows five and nine.
- 22) This is kind of duplication is common with databases. For remember the adage: "all data is dirty". (NOTE: Discussed in our <u>textbook</u>, beginning on page 99)
- 23) Let's return to your workingcopy worksheet, and filter for "Fisheries and Oceans Canada" and the "Department of Fisheries

and Oceans".

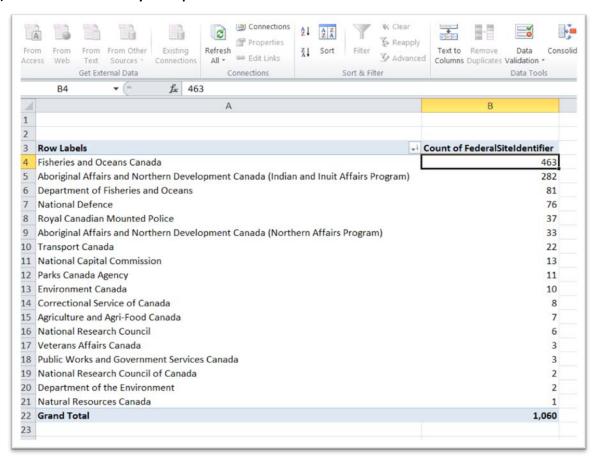


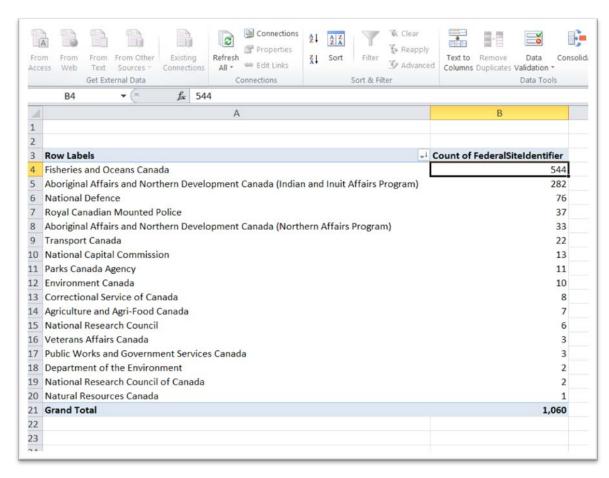
24) The problem is, because the departments are named differently, Excel assumes they are actually separate and treats them as such. So we have to make sure they're all named the same. Because "Fisheries and Oceans Canada" is the first name in the list, list copy it all the way own to the end by highlighting that cell and double-clicking on its bottom right-hand corner.

	D	
¥	DOB_Name_EN	SiteNa
	Fisheries and Oceans Canada	ANSE-E
	Department of Fisheries and Oceans	Provos
	Fisheries and Oceans Canada	Uncont
	Fisheries and Oceans Canada	Uncont
	Department of Fisheries and Oceans	Minor
	Fisheries and Oceans Canada	Lac Sai

D	
D Fisheries and Oceans Canada	ANSE-BLE
Fisheries and Oceans Canada	Provost la
Fisheries and Oceans Canada	Uncontan
Fisheries and Oceans Canada	Uncontair
Fisheries and Oceans Canada	Minor Sho
	32333344
Fisheries and Oceans Canada	Lac Saint-
Fisheries and Oceans Canada	Lac Saint-
Fisheries and Oceans Canada	Ruaux Cer
Fisheries and Oceans Canada	Uncontan
Fisheries and Oceans Canada	Rivière au
Fisheries and Oceans Canada	Docee Riv
Fisheries and Oceans Canada	île Deslaui
Fisheries and Oceans Canada	lle Sainte-
Fisheries and Oceans Canada	Dixie
Fisheries and Oceans Canada	ANGLIERS
Fisheries and Oceans Canada	LANIEL (LA
Fisheries and Oceans Canada	NOTRE-DA
Fisheries and Oceans Canada	NOTRE-DA
Fisheries and Oceans Canada	Gas and d
Fisheries and Oceans Canada	Sillery
Fisheries and Oceans Canada	ST-BARTH
Fisheries and Oceans Canada	GRAND-M
Fisheries and Oceans Canada	EAST DOV
Fisheries and Oceans Canada	Port Au Bi
Fisheries and Oceans Canada	Bear Cove
Fisheries and Oceans Canada	New Chels
Fisheries and Oceans Canada	WEST HEA
Fisheries and Oceans Canada	PINKNEYS
Fisheries and Oceans Canada	PARKERS
Fisheries and Oceans Canada	DUBLIN SI
Fisheries and Oceans Canada	LUNENBU
Fisheries and Oceans Canada	PIGEON H
Fisheries and Oceans Canada	LUNENBU
Fisheries and Oceans Canada	VAL-COM

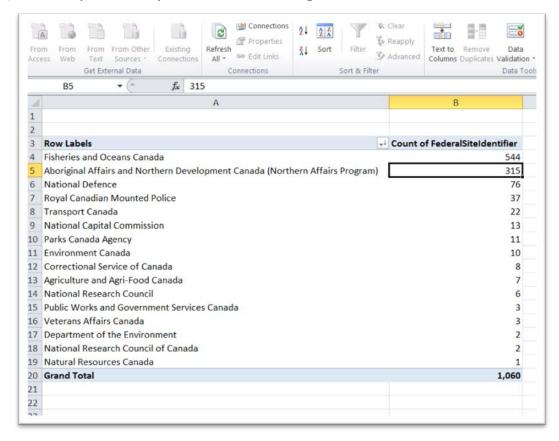
25) Return to your pivot table and click the "refresh" button



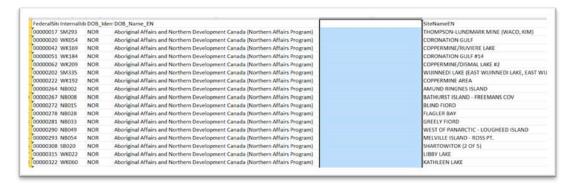


26) Now there is only one fisheries department.

27) Repeat the process for Aboriginal Affairs.



- 28) Now we have our top-five departments.
- 29) Return to the workingcopy worksheet.
- 30) Filter for the five departments on our top-five list, copy the filtered table, and paste it into a new worksheet, labeled "TopFive".
- 31) Insert a new column to the right of column D, DOB_Name.



32) Call the column FT Colour (FT for Fusion Table).

33) In this column, we will assign different <u>coloured icons</u> FT uses to distinguish the points it places on a map.



34)

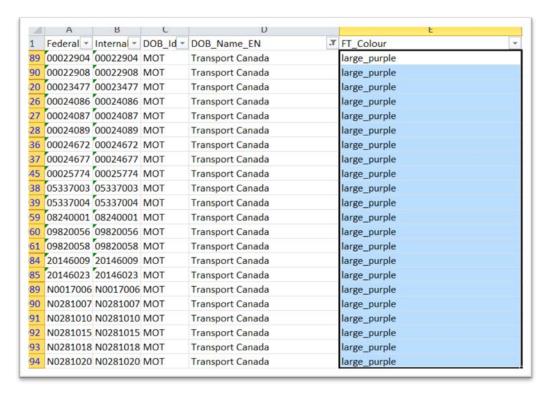
- 35) The "large_red" will represent the highest number; the "large_yellow" the second; the "large_green" the third; the "large_blue" the fourth; the "large_purple" the fifth.
- 36) Filter your new worksheet, and assign the icons to each department as you can see in the next succession of screen shots.

А	А	В	L	υ		E
1	Federal -	Internal *	DOB_Id *	DOB_Name_EN	Ψ,	FT_Colour
58	00000894	M S 02502	DFO	Fisheries and Oceans Canada		large_red
56	00012197	Q E 35750	DFO	Fisheries and Oceans Canada		large_red
57	00012208	Q E 60650	DFO	Fisheries and Oceans Canada		large_red
58	00012209	Q E 60660	DFO	Fisheries and Oceans Canada		large_red
59	00012268	Q E 33020	DFO	Fisheries and Oceans Canada		large_red
60	00012327	Q E 58290	DFO	Fisheries and Oceans Canada		large_red
61	00012329	Q E 58310	DFO	Fisheries and Oceans Canada		large_red
62	00012395	Q E 66130	DFO	Fisheries and Oceans Canada		large_red
63	00012396	Q E 83120	DFO	Fisheries and Oceans Canada		large_red
64	00012397	Q E 83130	DFO	Fisheries and Oceans Canada		large_red
65	00012429	PK 90047	DFO	Fisheries and Oceans Canada		large_red
66	00012432	Q E 35780	DFO	Fisheries and Oceans Canada		large_red
67	00012433	Q E 36340	DFO	Fisheries and Oceans Canada		large_red
68	00012436	Q E 42720	DFO	Fisheries and Oceans Canada		large_red
69	00012468	Q S 03509	DFO	Fisheries and Oceans Canada		large_red
70	00012494	Q S 03650	DFO	Fisheries and Oceans Canada		large_red
71	00012501	Q S 03709	DFO	Fisheries and Oceans Canada		large_red
72	00012502	Q S 03710	DFO	Fisheries and Oceans Canada		large_red
73	00012511	Q S 03755	DFO	Fisheries and Oceans Canada		large_red
74	00012515	Q S 03784	DFO	Fisheries and Oceans Canada		large_red
75	00012518	Q S 03797	DFO	Fisheries and Oceans Canada		large_red
76	00012537	Q S 03981	DFO	Fisheries and Oceans Canada		large_red
77	00012542	M S 01092	DFO	Fisheries and Oceans Canada		large_red
78	00012554	N S 00400	DFO	Fisheries and Oceans Canada		large_red
		N S 00033		Fisheries and Oceans Canada		large_red
80	00012585	N S 00344	DFO	Fisheries and Oceans Canada		large_red
81	00012623	M S 01345	DFO	Fisheries and Oceans Canada		large_red
82	00012626	M S 01241	DFO	Fisheries and Oceans Canada		large_red
83	00012629	M S 01234	DFO	Fisheries and Oceans Canada		large_red

d	Α	В	С	D	E
	Federal *	Internal *	DOB_Id *	DOB_Name_EN	FT_Colour
	00000017	SM293	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000020	WK054	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000042	WK169	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000051	WK184	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000062	WK209	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000202	SM335	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000222	WK192	NOR	Aboriginal Affairs and Northern D	large_yellow
	00000264	NB002	NOR	Aboriginal Affairs and Northern D	large_yellow
)	00000267	NB008	NOR	Aboriginal Affairs and Northern D	large_yellow
L	00000272	NB015	NOR	Aboriginal Affairs and Northern D	large_yellow
2	00000278	NB028	NOR	Aboriginal Affairs and Northern D	large_yellow
3	00000281	NB033	NOR	Aboriginal Affairs and Northern D	large_yellow
4	00000290	NB049	NOR	Aboriginal Affairs and Northern D	large_yellow
5	00000293	NB054	NOR	Aboriginal Affairs and Northern D	large_yellow
5	00000308	SB020	NOR	Aboriginal Affairs and Northern D	- I I I I I I I I I I I I I I I I I I I
7	00000315	WK022	NOR	Aboriginal Affairs and Northern D	large_yellow
В	00000322	WK060	NOR	Aboriginal Affairs and Northern D	large_yellow
9	00000324		NOR	Aboriginal Affairs and Northern D	large_yellow
0	00000374		NOR	Aboriginal Affairs and Northern D	large_yellow
1	00000384		NOR	Aboriginal Affairs and Northern D	large_yellow
2	00000406		NOR	Aboriginal Affairs and Northern D	
3	00000421			Aboriginal Affairs and Northern D	
4	00000441			Aboriginal Affairs and Northern D	
5	00000444			Aboriginal Affairs and Northern D	- International Control of the Contr
6	00000454			Aboriginal Affairs and Northern D	
7		09020996		Aboriginal Affairs and Northern D	
8	00000477	_		Aboriginal Affairs and Northern D	- 10 M - 10 - 10 M - 10
9	00000488	09021136	IIA	Aboriginal Affairs and Northern D	large_yellow

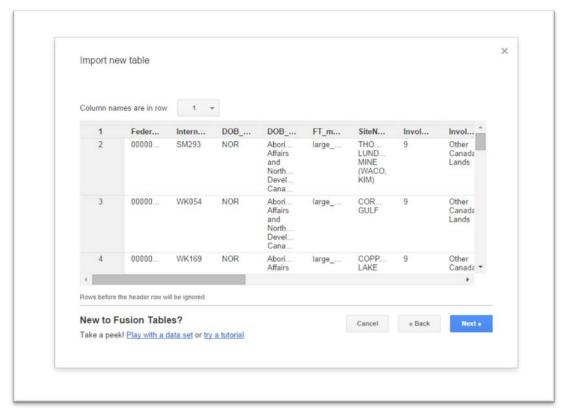
Ø.	А	В	C	U		E
	Federal *	Internal *	DOB_Id -	DOB_Name_EN	Ψ,	FT_Colour
)	00000917	0465-C014	DND	National Defence		large_green
0	00000940	0091-C006	DND	National Defence		large_green
1	00000990	0335-C025	DND	National Defence		large_green
2	00000992	0335-C027	DND	National Defence		large_green
3	00000994	0335-C029	DND	National Defence		large_green
4	00000995	0335-C030	DND	National Defence		large_green
5	00001007	0214-C001	DND	National Defence		large_green
	00001008			National Defence		large_green
7	00001009	0280-C016	DND	National Defence		large_green
17	00008340	0412-C042	DND	National Defence		large_green
18	00008350	0398-C010	DND	National Defence		large_green
19	00008354	0449-C064	DND	National Defence		large_green
	00008363			National Defence		large_green
21	00008364	0291-C003	DND	National Defence		large_green
	00008365			National Defence		large_green
	00008395			National Defence		large_green
24	00008396	0366-C017	DND	National Defence		large_green
25	00008398	0224-C022	DND	National Defence		large_green
26	00008408	0159-C029	DND	National Defence		large_green
27	00008450	0366-C020	DND	National Defence		large_green
28	00008460	0465-C020	DND	National Defence		large_green
29	00008465	0398-C017	DND	National Defence		large_green
30	00008472	0398-C018	DND	National Defence		large_green
31	00008474	0398-C020	DND	National Defence		large_green
32	00008495	0186-C001	DND	National Defence		large_green
33	00008501	0412-C046	DND	National Defence		large_green
34	00008522	0176-C027	DND	National Defence		large_green
35	00008523	0423-C003	DND	National Defence		large_green
36	00008544	0398-C022	DND	National Defence		large_green
37	00008550	0096-C003	DND	National Defence		large_green

1	Α	В	C	D	E
l	Federal *	Internal *	DOB_Id *	DOB_Name_EN	FT_Colour
8	00001051	PR C/24	RCM	Royal Canadian Mounted Police	large_blue
59	00001058	PR F/80	RCM	Royal Canadian Mounted Police	large_blue
56	00022271	PR K/40	RCM	Royal Canadian Mounted Police	large_blue
57	00022382	PR D/176	RCM	Royal Canadian Mounted Police	large_blue
58	00022390	PR D/199	RCM	Royal Canadian Mounted Police	large_blue
59	00022391	PR D/20	RCM	Royal Canadian Mounted Police	large_blue
60	00022423	PR D/68	RCM	Royal Canadian Mounted Police	large_blue
61	00022431	PR D/84	RCM	Royal Canadian Mounted Police	large_blue
62	00022453	PR F/124	RCM	Royal Canadian Mounted Police	large_blue
63	00022455	PR F/128	RCM	Royal Canadian Mounted Police	large_blue
64	00022463	PR F/140	RCM	Royal Canadian Mounted Police	large_blue
65	00022467	PR F/145	RCM	Royal Canadian Mounted Police	large_blue
66	00022500	PR F/232	RCM	Royal Canadian Mounted Police	large_blue
67	00022501	PR F/245	RCM	Royal Canadian Mounted Police	large_blue
68	00022508	PR F/26	RCM	Royal Canadian Mounted Police	large_blue
69	00022514	PR F/27	RCM	Royal Canadian Mounted Police	large_blue
70	00022527	PR F/3	RCM	Royal Canadian Mounted Police	large_blue
71	00022528	PR F/328	RCM	Royal Canadian Mounted Police	large_blue
72	00022557	PR F/56	RCM	Royal Canadian Mounted Police	large_blue
73	00022574	PR F/91	RCM	Royal Canadian Mounted Police	large_blue
74	00022583	PR K/113	RCM	Royal Canadian Mounted Police	large_blue
75	00022585	PR K/116	RCM	Royal Canadian Mounted Police	large_blue
76	00022591	PR K/126	RCM	Royal Canadian Mounted Police	large_blue
77	00022596	PR K/132	RCM	Royal Canadian Mounted Police	large_blue
78	00022603	PR K/142	RCM	Royal Canadian Mounted Police	large_blue
79	00022613	PR K/171	RCM	Royal Canadian Mounted Police	large_blue
80	00022616	PR K/180	RCM	Royal Canadian Mounted Police	large_blue
81	00022617	PR K/182	RCM	Royal Canadian Mounted Police	large_blue
82	00022618	PR K/183	RCM	Royal Canadian Mounted Police	large blue



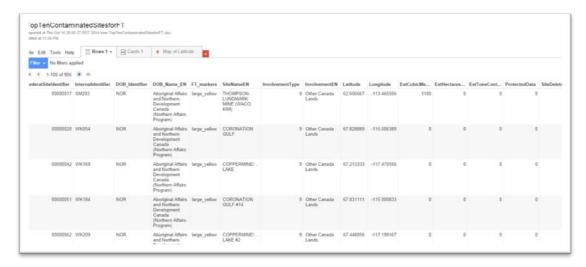
- 37) Double check to make sure all the rows in column E are filled in. The easiest way to do this is apply the filter, and check that column E's drop-down menu contains no blanks. If it does, they will have to be filled in with the appropriate coloured icons.
- 38) Clear the filter, copy the table and paste it into a new file we'll call "TopFiveContaminatedSitesToBeAssessed.xlsx"
- 39) Go to your Google Drive.

40) Import our new workbook into the Fusion Table.

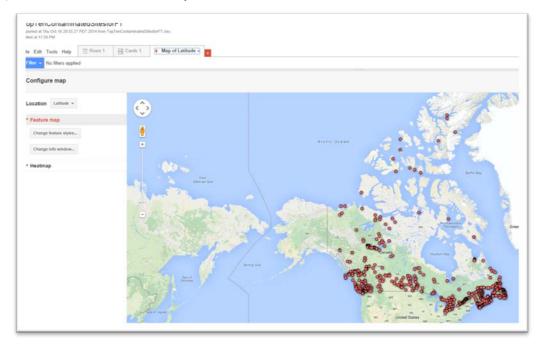


Import new table		×
Table name	TopTenContaminatedSitesforFT	
Allow export	2 2	
Attribute data to	•	
Attribution page link		
Description	Imported at Thu Oct 16 20:55:27 PDT 2014 from TopTenContaminatedSitesforFT.xlsx.	
	For example, what would you like to remember about this table in a year?	
New to Fusion Table	Cancel « Back Fin	sh
Take a peek! Play with a d	ata set or try a tutorial.	

T_markers	SiteNameEN	InvolvementType	Involve	mentEN	Latitude	Longitude	EstCubicMe	EstHectares	EstTonsCont	Pr
irge_yellow	THOMPSON- LUNDMARK MINE (WACO, KIM)	9	Other C Lands	anada	62.606667	-113.465556	1100	0	0	
arge_yellow	CORONATION GULF	9	Other C Lands	anada	67.828889	-115.006389	0	0	0	
				Import	ting					
arge_yellow	COPPERMINE/ LAKE	9	O L	Your rov	ws are being i	0	0			
arge_yellow	CORONATION GULF #14	9	Other C Lands	anada	67.831111	-115.000833	0	0	0	
irge_yellow	COPPERMINE/ LAKE #2	9	Other C	anada	67.448056	-117.199167	0	0	0	

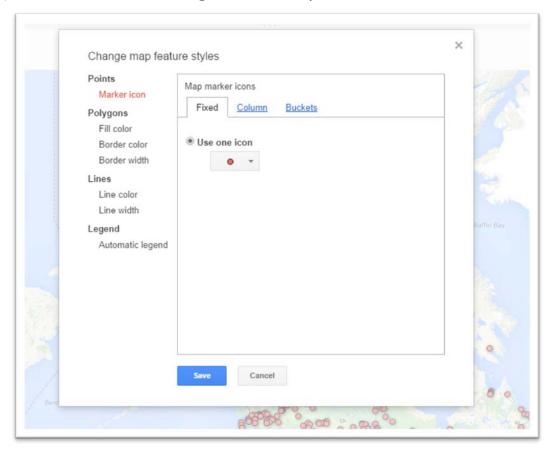


41) Select the "Map of Latitude" tab to see the result.

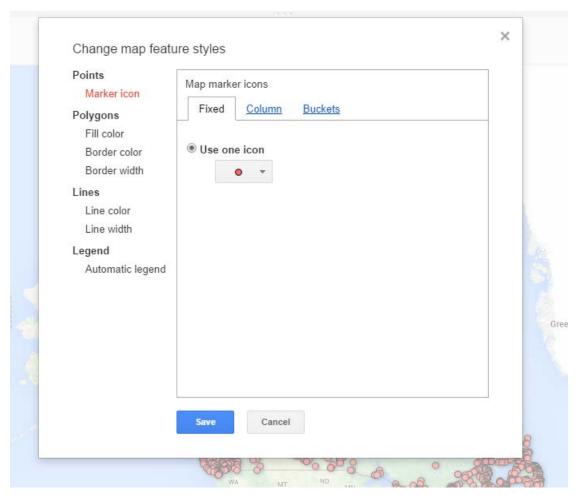


42) Now we'll have to get the Fusion Table to recognize the colours we've assigned to each department.

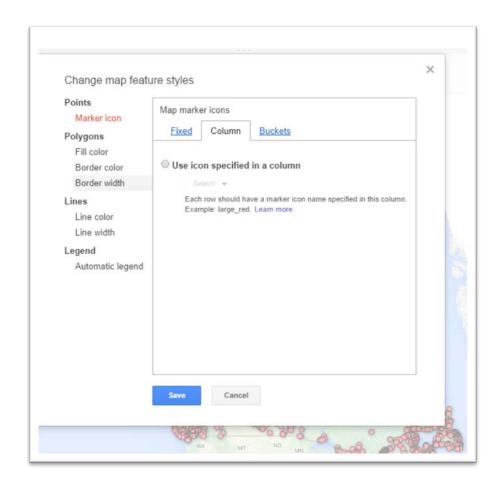
43) Select the "Change feature styles" tab.

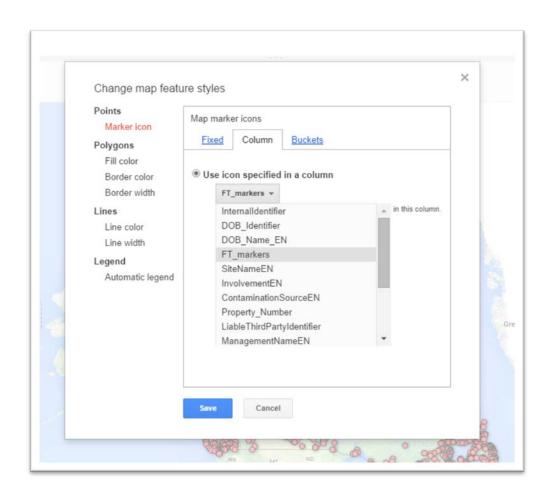


44) The "Marker icon" section under the "Points" section.



45) Select the "Column" tab, and then the column – FT_markers" – that contains the icons.

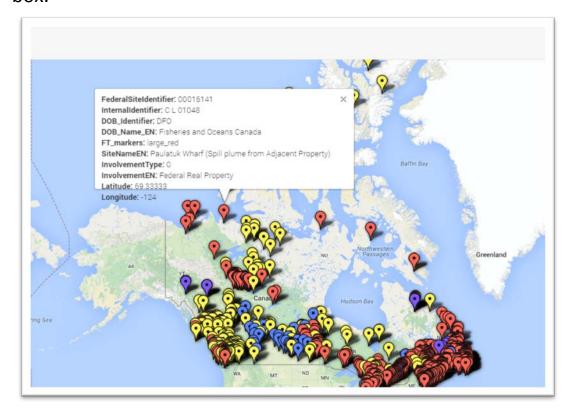




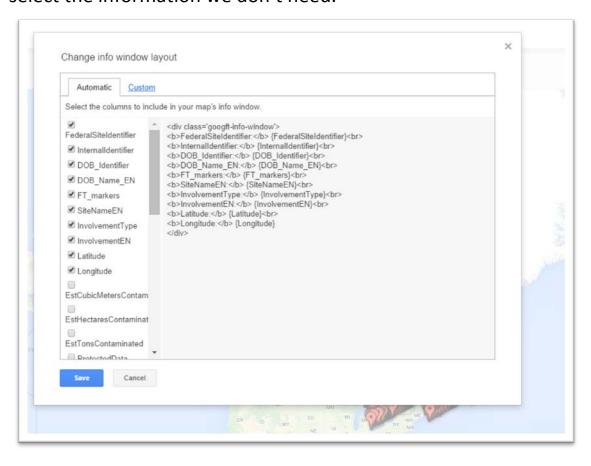
46) Save the result.



47) Click on one of the icons to read the contents in the pop-up box.



48) It's too busy!!! Click on the "Change info window" tab to deselect the information we don't need.

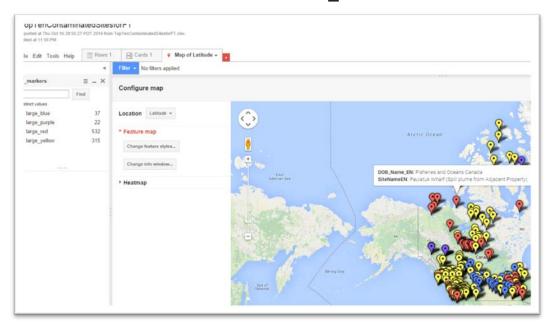


49) Let's stick with two columns: the department "DOB_Name_EN" and "SiteNameEN".

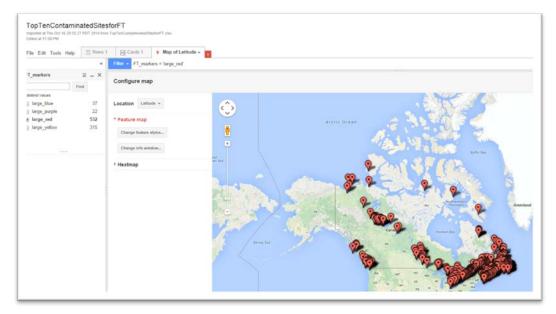


- 50) You could also Select the "ContaminationSourceEN" field, which describes the nature of the site: landfill, industrial, military site, etc.
- 51) If you wanted to create a map with one department, you can simply filter the map by selecting the "Filter" option from the menu at the top, selecting the column you want to filter just like

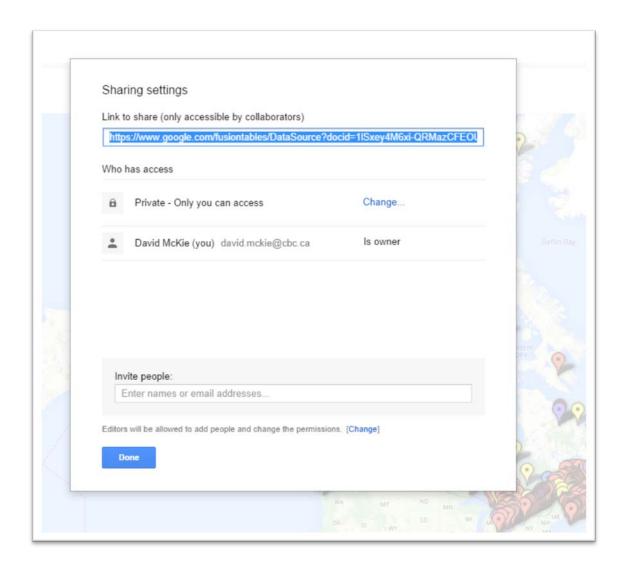
in Excel – which in this case is the "FT_markers".

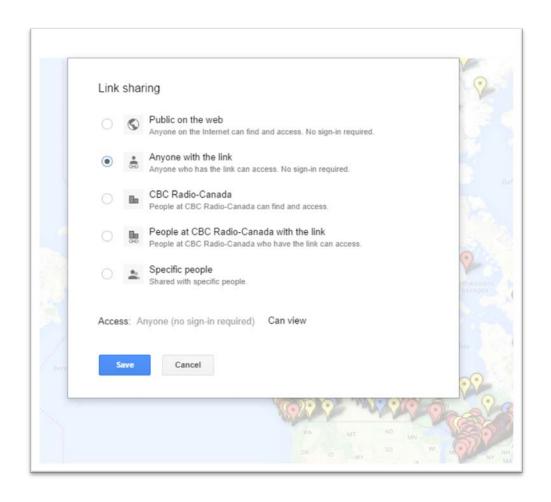


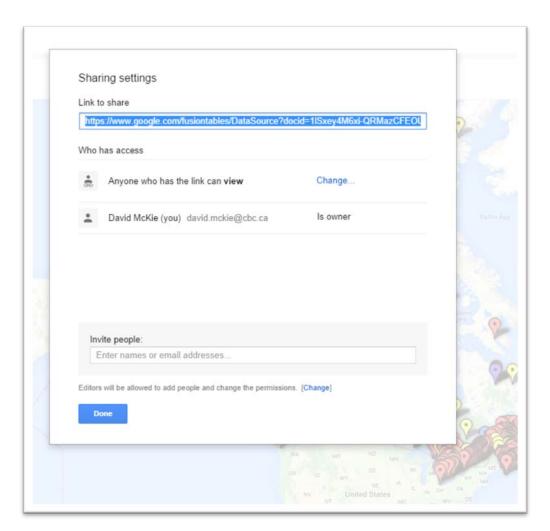
52) Choose the top department.



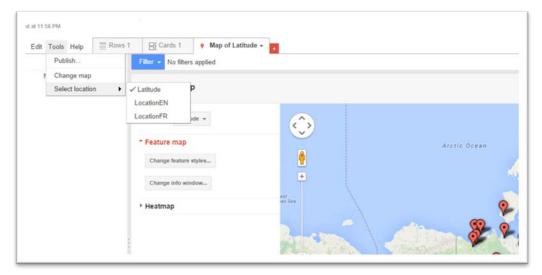
53) Since we want people to select from all departments, let's clear the filter and share the result.



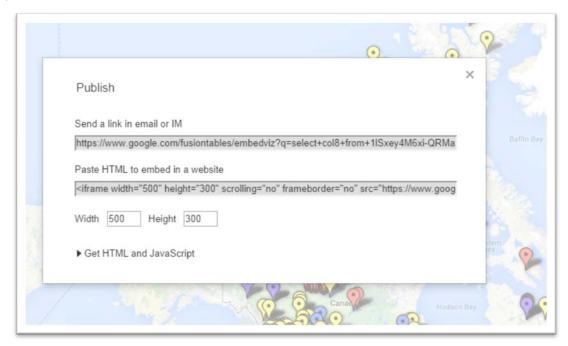




54) To get the embed code, go to "Tools"...



55) ...and "Publish".



56) If you're happy with the dimensions, highlight the code in the bottom triangle and paste it into your Wordpress HTLM view.