ACCOLEDS 2014

Vancouver, BC

Unraveling the mysteries of mapping Census of Agriculture data

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Why Census of Agriculture?

- **haven‘t “played” with it at recent ACCOLEDS**

- **data has 9 digit codes for CCS (Consolidated Census Subdivisions) boundaries…**

	A
5	North Saanich(CCS590117005)
6	Central Saanich(CCS590117015)
7	Saanich(CCS590117021)

…while

- **CCS geospatial boundary files are 7 digits**

Table

BcCCSDs

	FID	Shape *	CCSUID	CCSNAME	PRUID	
▶	0	Polygon	5919015	Cowichan Valley G	59	British Columbia
	1	Polygon	5909016	Fraser Valley B	59	British Columbia
	2	Polygon	5933012	Thompson-Nicola N	59	British Columbia

- **“confidentiality constraints” and amalgamations of CCSs**

- **“agricultural ecumene…where significant agricultural activity is concentrated in Canada…”**

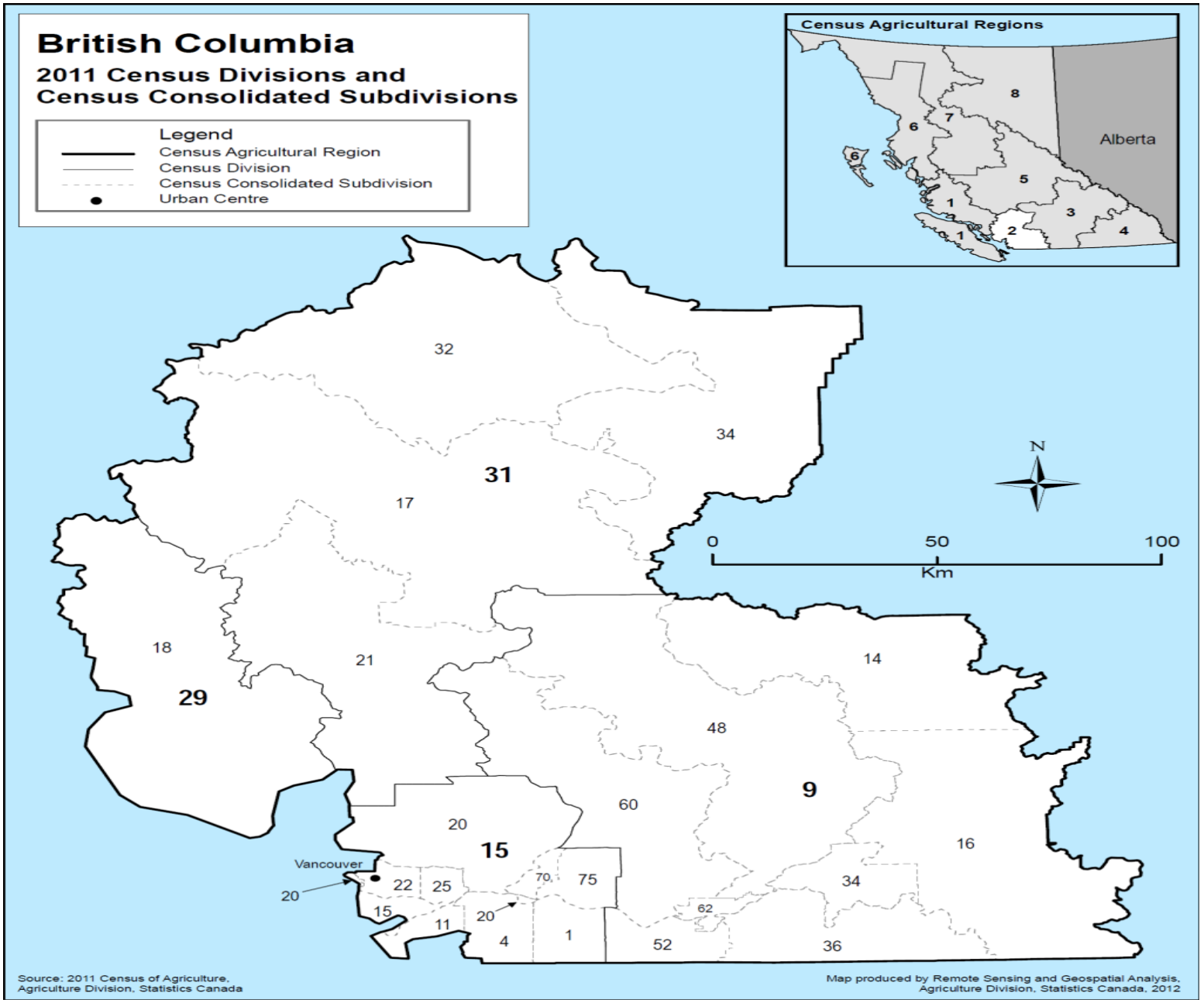
Outline

Part A: “massage” / prepare raw data from Census of Agriculture

Part B: manipulate / prepare the geospatial map layers

Part C: make map(s)

Census of Agriculture Geography



Census

2011 Census of Agriculture

About the Census of Agriculture
Frequently asked questions
Releases
Reference maps
Glossary
Questionnaires

Other links

ARCHIVED - 2006 Census of Agriculture
ARCHIVED - 2001 Census of Agriculture
ARCHIVED - 1996 Census of Agriculture

2011 Census of Agriculture

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About the artists

November 17, 2014

All 2011 Farm and farm operator data are now available without charge in CANSIM: Tables 004-0200 to 004-0242.

Farm and farm operator data

Available without charge in CANSIM: Tables 004-0200 to 004-0242.

The Daily, May 10, 2012
Highlights and analysis

Selected historical farm and operator data

Available without charge in CANSIM: tables 004-0001 to 004-0017.

Socioeconomic overview of the farm population data

The 2011 Census of Agriculture and the National Household Survey Linkage data are available without charge in CANSIM: tables 004-0100 to 004-0129.

The Daily, November 27, 2013
Highlights and analysis
Data quality

Canadian Agriculture at a Glance

Canadian Agriculture at a Glance - Main page

Demographic Changes in Canadian Agriculture
Corn: Canada's third most valuable crop
The changing face of the Canadian fruit and vegetable sector: 1941 to 2011
Feeding the soil puts food on your plate
The changing face of the Canadian hog industry
Pulses in Canada
Overview of livestock farm operating expenses

Boundary files

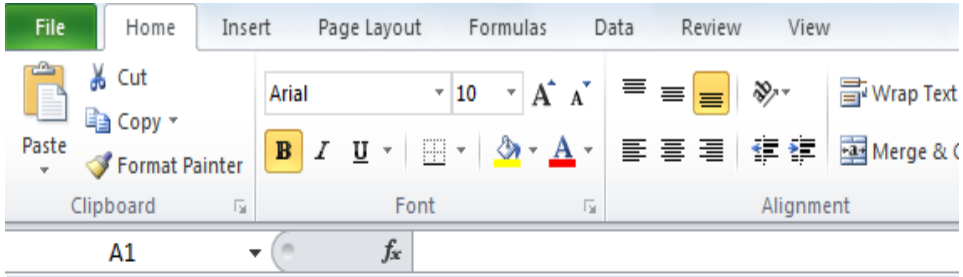
Census Agricultural Regions Boundary File
Census Agricultural Regions Boundary File — Reference Guide
Agricultural Ecumene Boundary File
Agricultural Ecumene Boundary File – Reference Guide

Maps

Reference maps
Thematic maps

Part A. Prepare the data

1. Navigate to RawData.xls and open it (note the intermingled text with CCS, CDs, Prov IDs)



	A	B
1		Organic products, 2011
2		Organic products for sale (104)
3		total number
4	British Columbia(PR590000000)	569
5	Vancouver Island-Coast(CAR590100000)	93
6	Capital(CD590117000)	52
7	North Saanich(CCS590117005)	5
8	Central Saanich(CCS590117015)	6
9	Saanich(CCS590117021)	10
10	Capital F(CCS590117027)	17

2. highlight and right-click to delete top rows and

3. add column headings: Geography & Organics

	A	B
1	Geography	Organics
2	British Columbia(PR590000000)	569
3	Vancouver Island-Coast(CAR5901000(	93
4	Capital(CD590117000)	52
5	North Saanich(CCS590117005)	5
6	Central Saanich(CCS590117015)	6
7	Saanich(CCS590117021)	10
8	Capital F(CCS590117027)	17
9	Capital G(CCS590117029)	7
10	Capital H (Part 2)(CCS590117056)	7

4. (Notice the "notes": "confidentiality constraints"… "amalgamated…")

Delete rows below Norhern Rockies

	A	B	C	D	E	F	G	H	I	J
169	Northern Rockies(CD590859000)	0								
170	Northern Rockies(CCS590859007)	0								
171	Symbols:									
172	X	suppressed to meet the confidentiality requirements of the Statistics Act								
173	..	not available for a specific reference period								
174	0	true zero or a value rounded to zero								
175	General Notes									
176	The nine-digit geographic code at the end of the geographic names comprises two digits for the province, two for the Census Agricultural R									
177	There have been significant refinements in the geographic assignment of agricultural operations and changes in Census Consolidated Subc									
178	Due to confidentiality constraints, the data for one or more geographic areas having very few farms may be combined with the data from anc									
179	Other boundary changes mean that caution should be taken when comparing the data for the following Census Agricultural Regions and Ce									
180	Also in British Columbia there was one boundary change where Census Division 590125000 was split into Census Division 590124000 an									
181	Note(s):									
182	16	Due to confidentiality constraints the data for Census Division "590143000" were amalgamated								
183	17	Due to confidentiality constraints the data for Census Division "590757000" were amalgamated								
184	104	Organic products for sale. The total number of farms reporting does not equal the sum of the part								
185	Source:									
186	Statistics Canada, 2011 Census of Agriculture, Farm and Farm Operator Data, catalogue no. 95-640-XWE.									

5. Insert a column between Geography and Organic and call it PRCDCCS

B1 | PRCDCCS

	A	B	C
1	**Geography**	**PRCDCCS**	**Organics**
2	British Columbia(PR590000000)		569
3	Vancouver Island-Coast(CAR590100000)		93
4	Capital(CD590117000)		52
5	North Saanich(CCS590117005)		5
6	Central Saanich(CCS590117015)		6

6. Insert the following formula into cell B2 and drag it down to the end of the column:
=CONCATENATE(59,MID(A2,FIND("CCS",A2)+7,5))
Formula: In column A, start with and grab 59(BCprovID); then from beginning of CCS, 7 spots forward and grab 5 digits
7. We need 7 digits to match CCS boundary file. (Need to drop CAR part of CCS & don't need Prov or CARs or CDs)

B2 | =CONCATENATE(59,MID(A2,FIND("CCS",A2)+7,5))

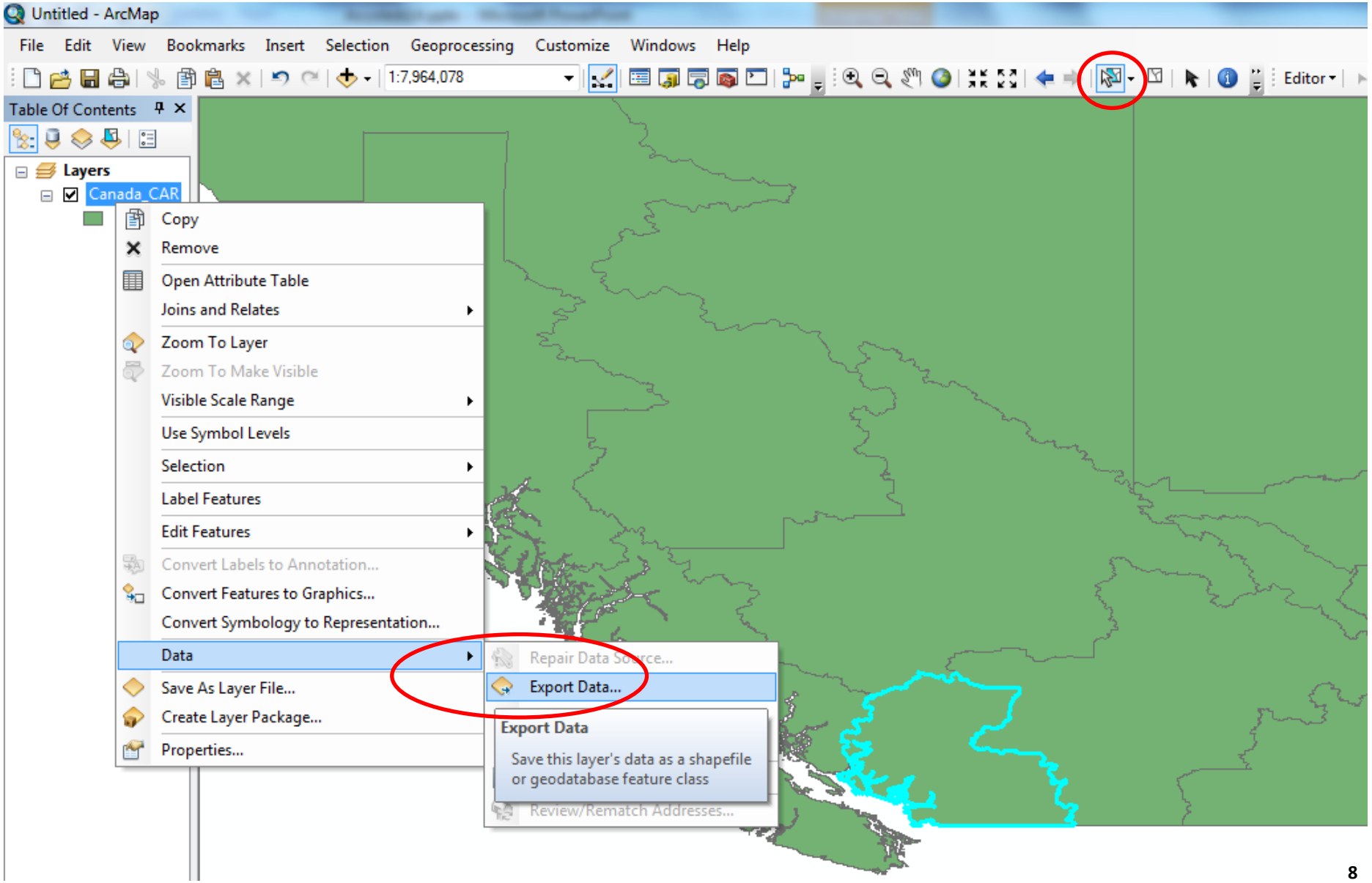
	A	B	C
1	**Geography**	**PRCDCCS**	**Organics**
2	British Columbia(PR590000000)	#VALUE!	569
3	Vancouver Island-Coast(CAR590100000)	#VALUE!	93
4	Capital(CD590117000)	#VALUE!	52
5	North Saanich(CCS590117005)	5917005	5
6	Central Saanich(CCS590117015)	5917015	6
7	Saanich(CCS590117021)	5917021	10
8	Capital F(CCS590117027)	5917027	17
9	Capital G(CCS590117029)	5917029	7
10	Capital H (Part 2)(CCS590117056)	5917056	7
11	Cowichan Valley(CD590119000)	#VALUE!	19
12	North Cowichan(CCS590119008)	5919008	10
13	Cowichan Valley G(CCS590119015)	5919015	1

8. Save the file as ProcessedData.xls

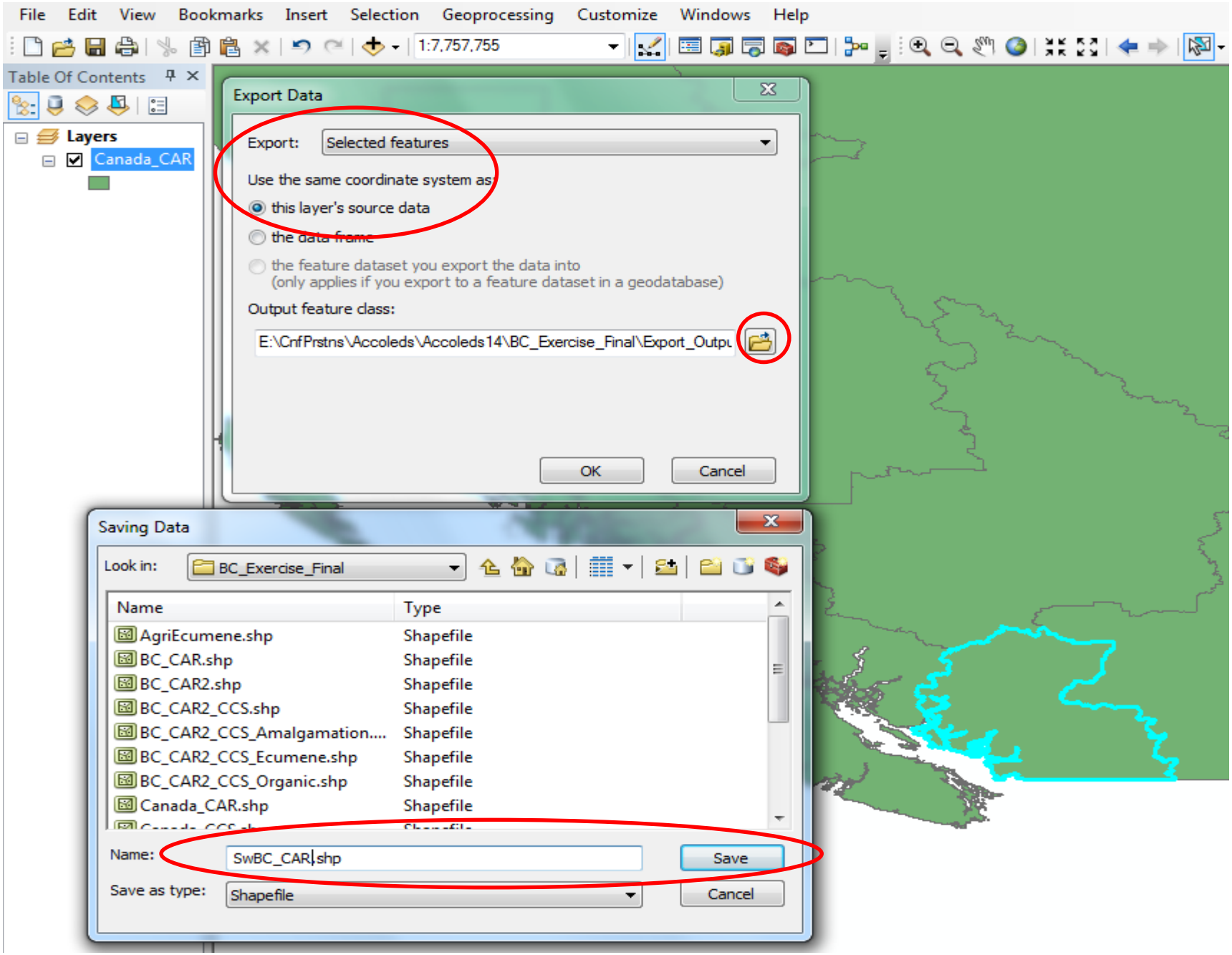
Part B. Prepare the Map Layers

1. Start ArcMap… 2. add Canada_CAR 3. Zoom to SW BC

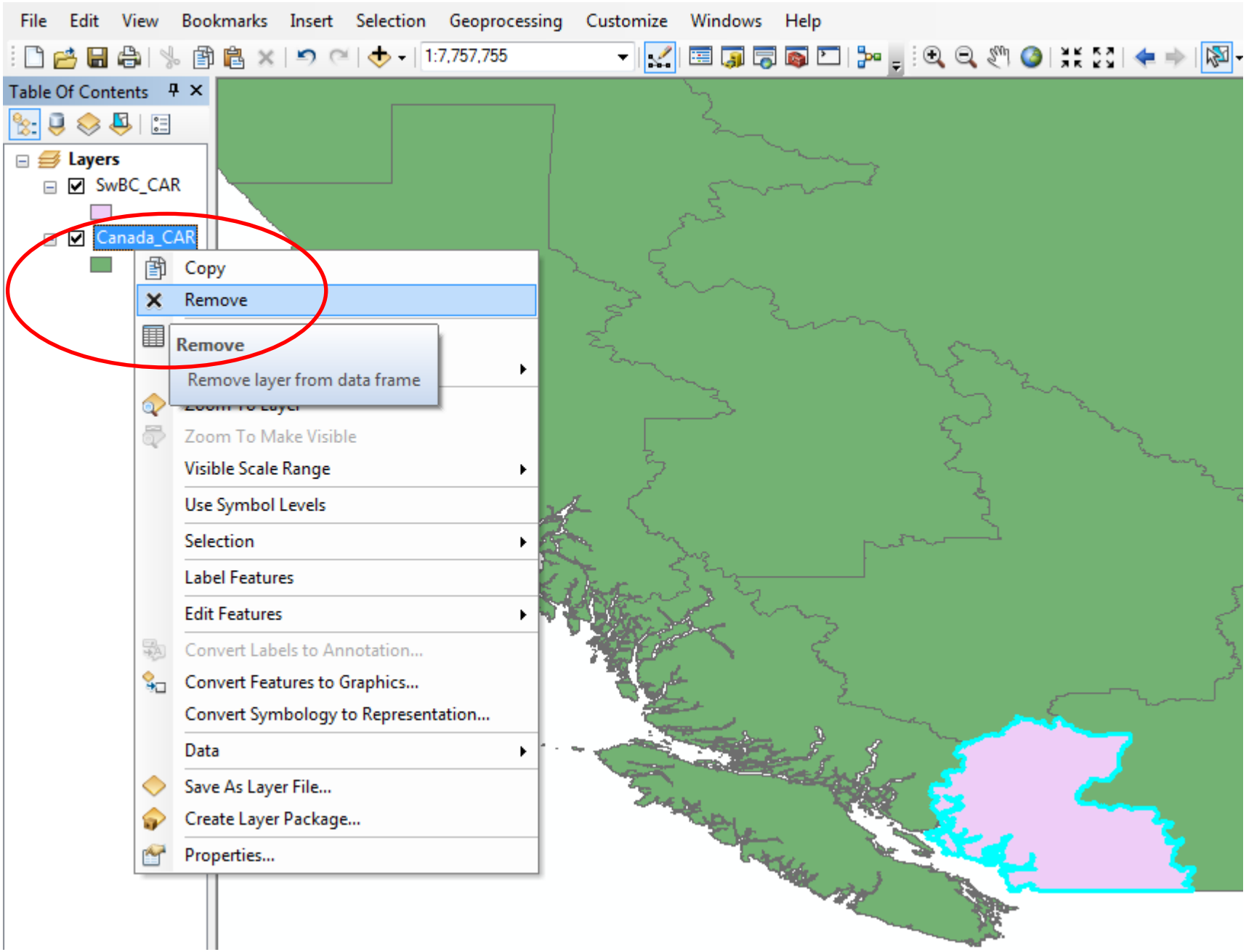
4. Use select and highlight/select Lower Mainland-SW BC 5. right-click Canada_CAR to export data



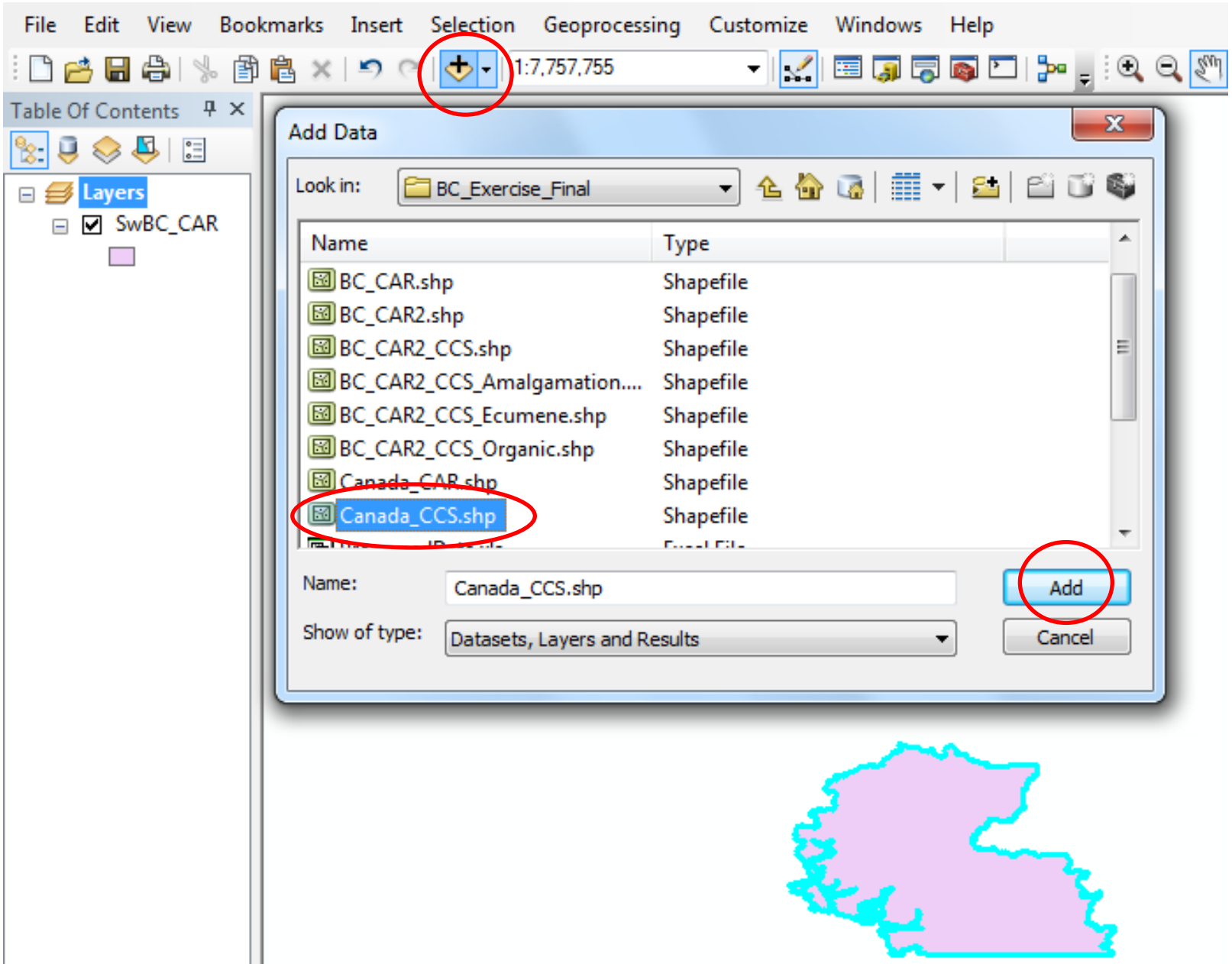
6. Save selected feature as SwBC_CAR.shp and add to map



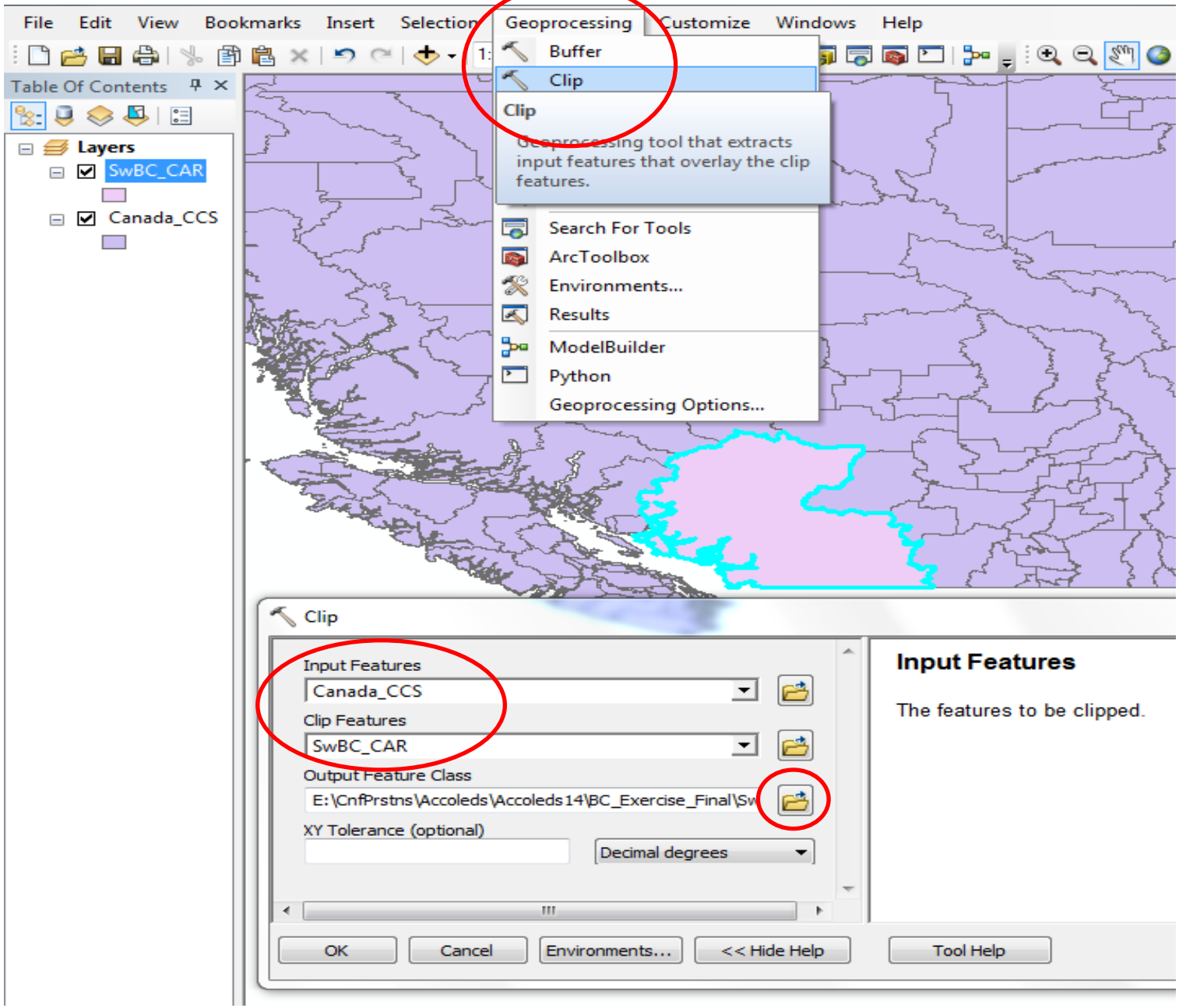
7. Right-click Canada_CAR to remove it.



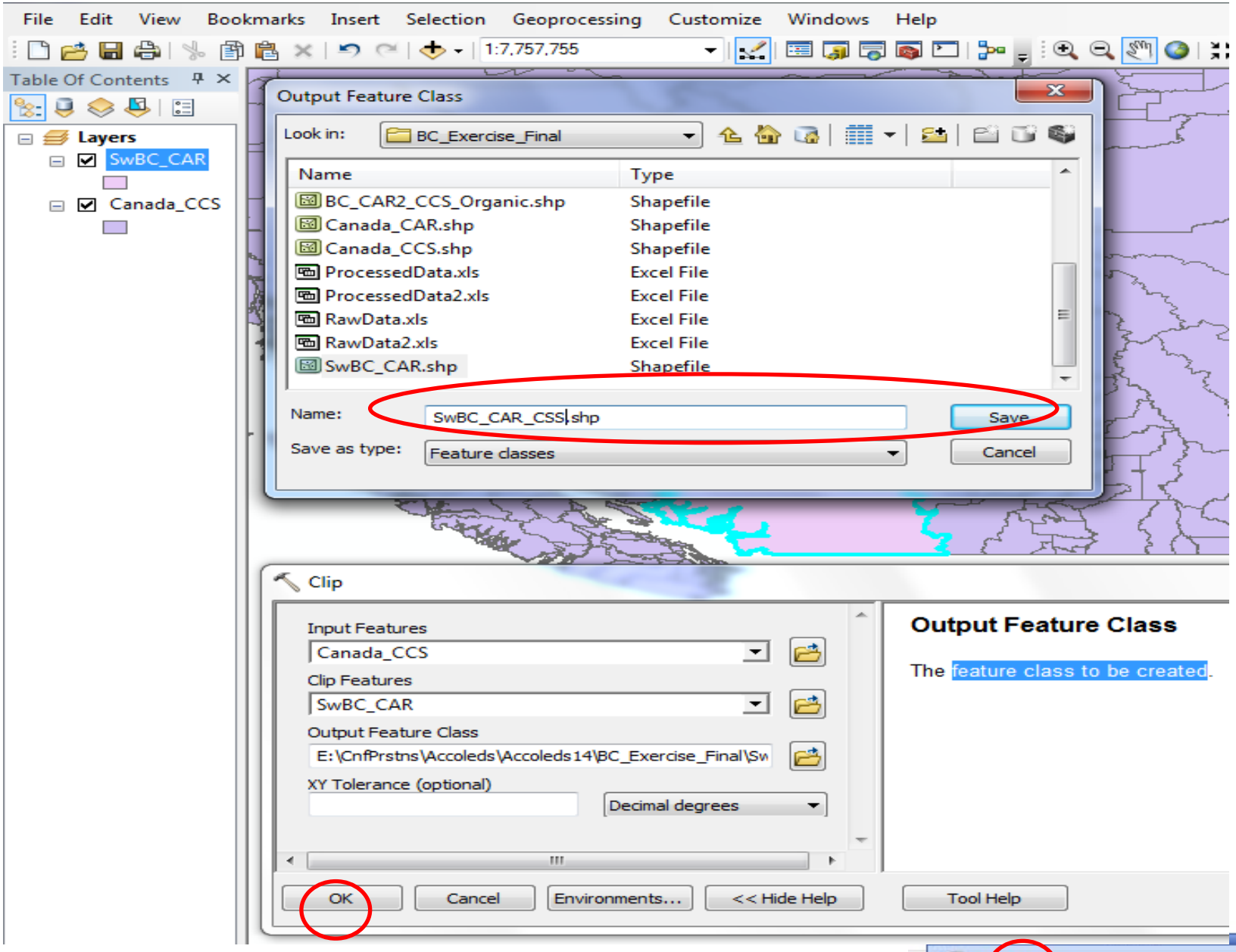
8. Navigate to Canada_CCS and add it.



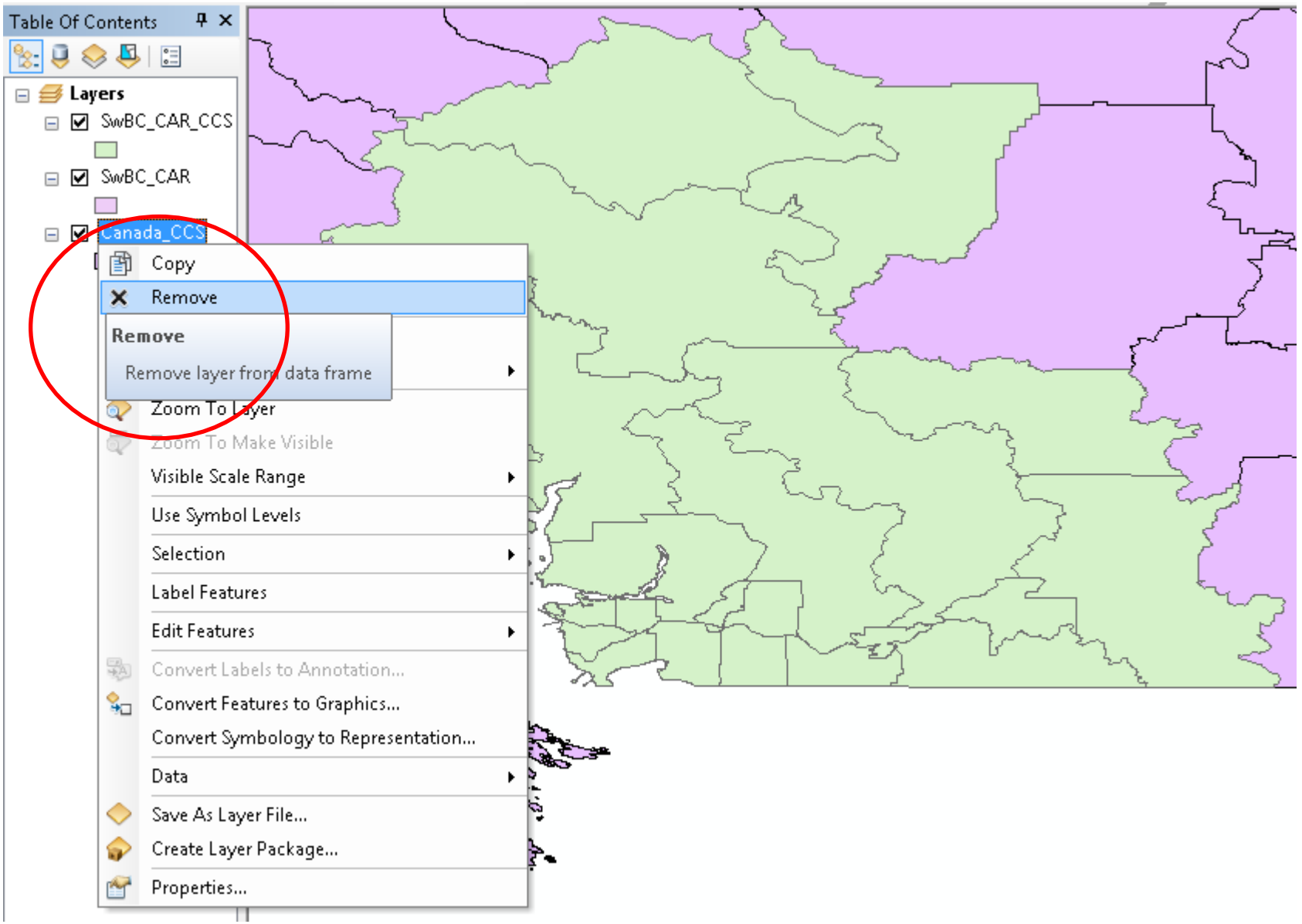
9. Clip Canada_CCS using SwBC_CAR...



10. Clip Canada_CCS using SwBC_CAR... save as SwBC_CAR_CCS.shp

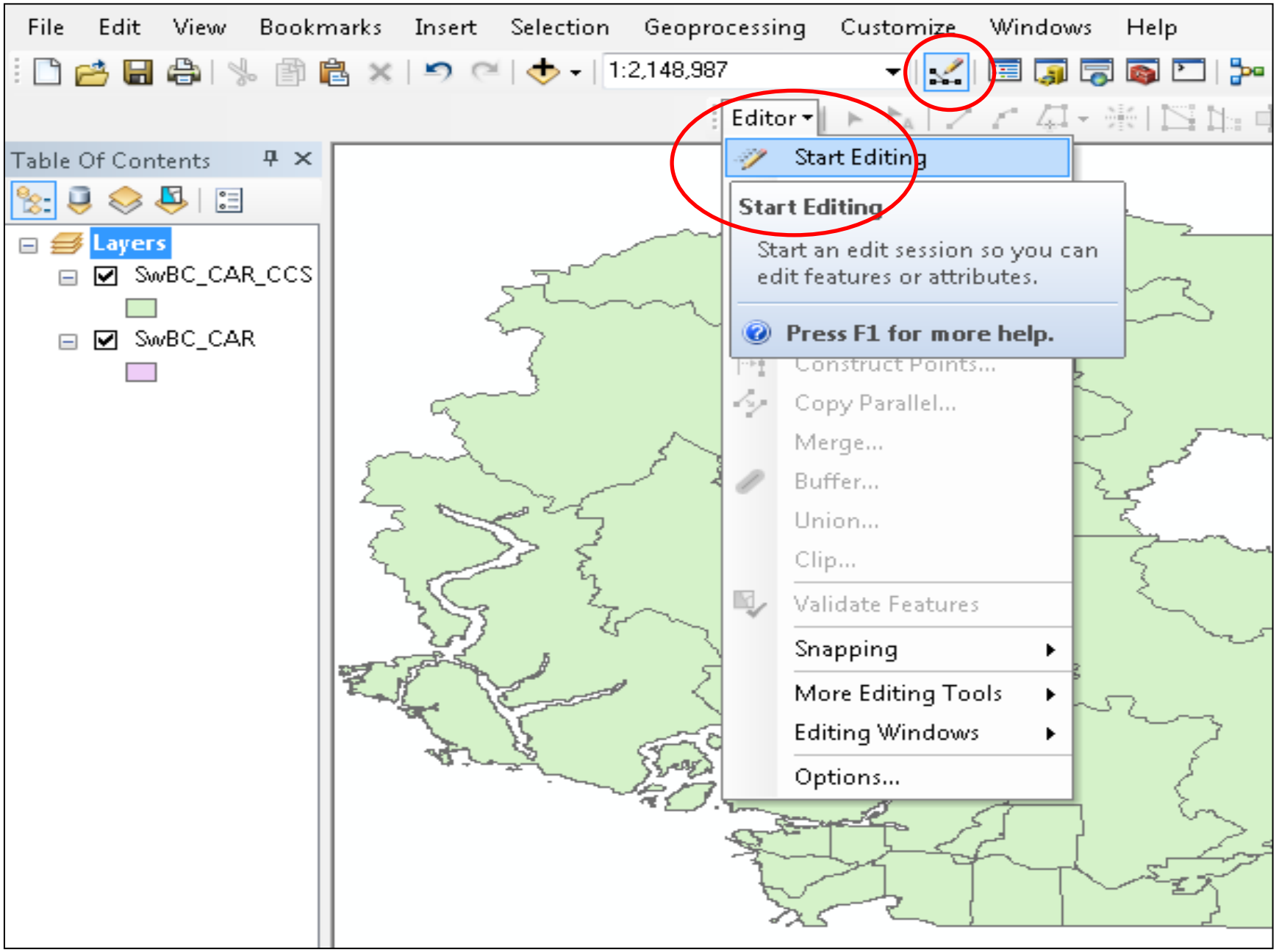


11. Right-click Canada_CSS to remove it

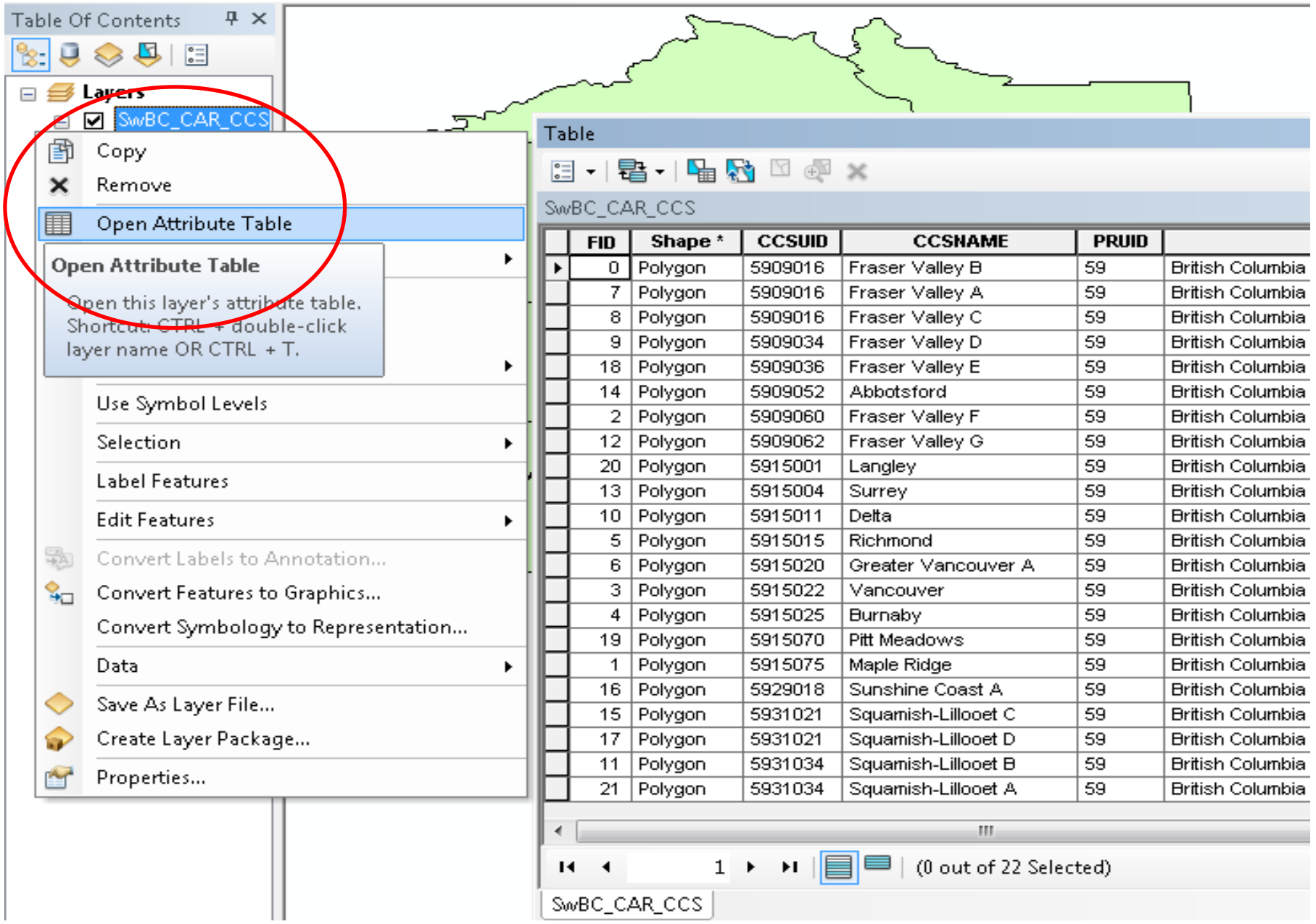


(12. if not already activated, activate the Editor toolbar : Top menu: Customize - Toolbars - Editor).

13. Click on Editor to Start Editing.

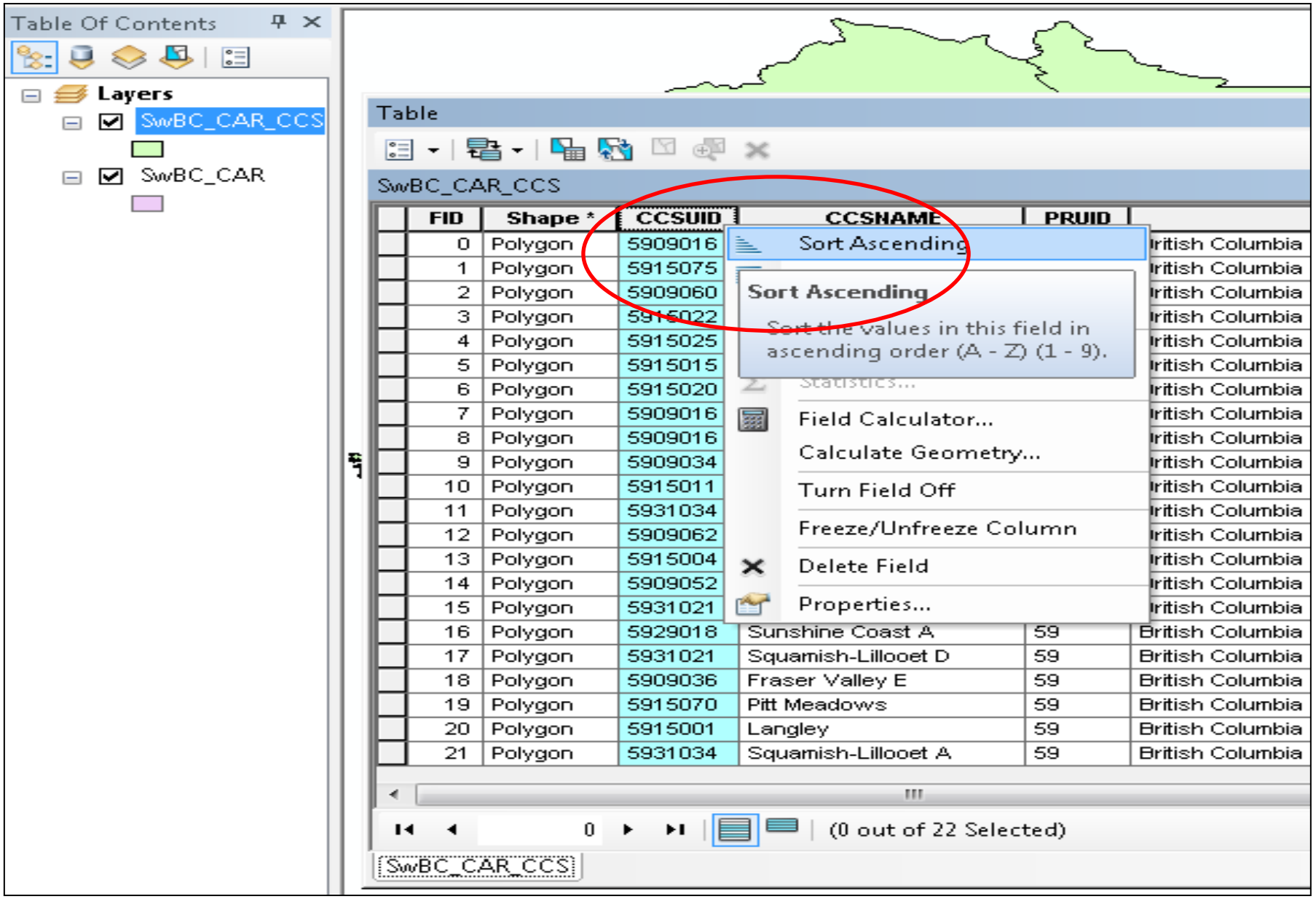


14. Right-click on SwBC_CAR_CCS to open its Attribute Table



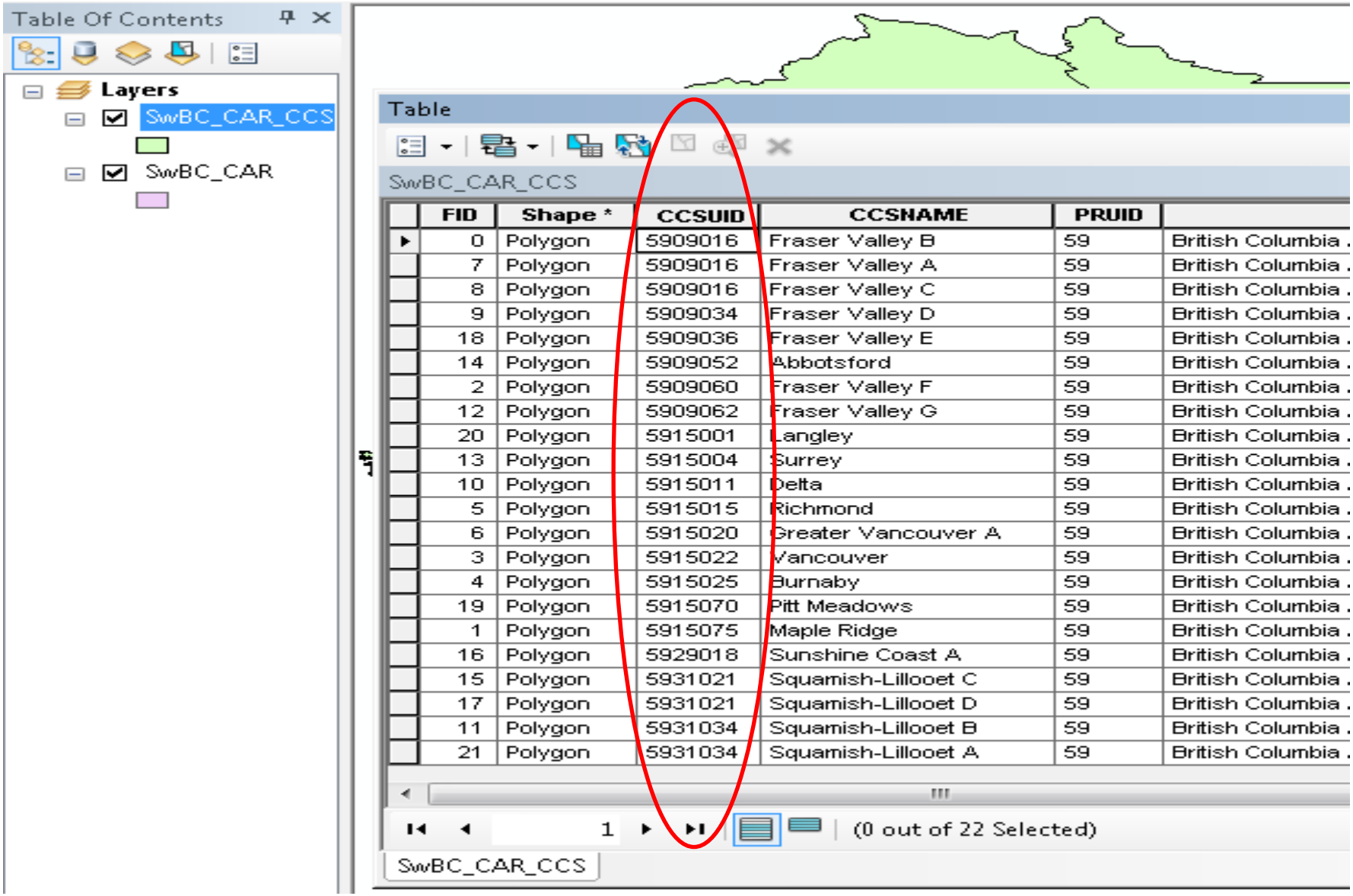
FID	Shape *	CCSUID	CCSNAME	PRUID	
0	Polygon	5909016	Fraser Valley B	59	British Columbia
7	Polygon	5909016	Fraser Valley A	59	British Columbia
8	Polygon	5909016	Fraser Valley C	59	British Columbia
9	Polygon	5909034	Fraser Valley D	59	British Columbia
18	Polygon	5909036	Fraser Valley E	59	British Columbia
14	Polygon	5909052	Abbotsford	59	British Columbia
2	Polygon	5909060	Fraser Valley F	59	British Columbia
12	Polygon	5909062	Fraser Valley G	59	British Columbia
20	Polygon	5915001	Langley	59	British Columbia
13	Polygon	5915004	Surrey	59	British Columbia
10	Polygon	5915011	Delta	59	British Columbia
5	Polygon	5915015	Richmond	59	British Columbia
6	Polygon	5915020	Greater Vancouver A	59	British Columbia
3	Polygon	5915022	Vancouver	59	British Columbia
4	Polygon	5915025	Burnaby	59	British Columbia
19	Polygon	5915070	Pitt Meadows	59	British Columbia
1	Polygon	5915075	Maple Ridge	59	British Columbia
16	Polygon	5929018	Sunshine Coast A	59	British Columbia
15	Polygon	5931021	Squamish-Lillooet C	59	British Columbia
17	Polygon	5931021	Squamish-Lillooet D	59	British Columbia
11	Polygon	5931034	Squamish-Lillooet B	59	British Columbia
21	Polygon	5931034	Squamish-Lillooet A	59	British Columbia

15. Sort Ascending CCSUID because we will change some CCSUIDs because some were amalgamated as per http://www.statcan.gc.ca/ca-ra2011/201105/59-eng.htm



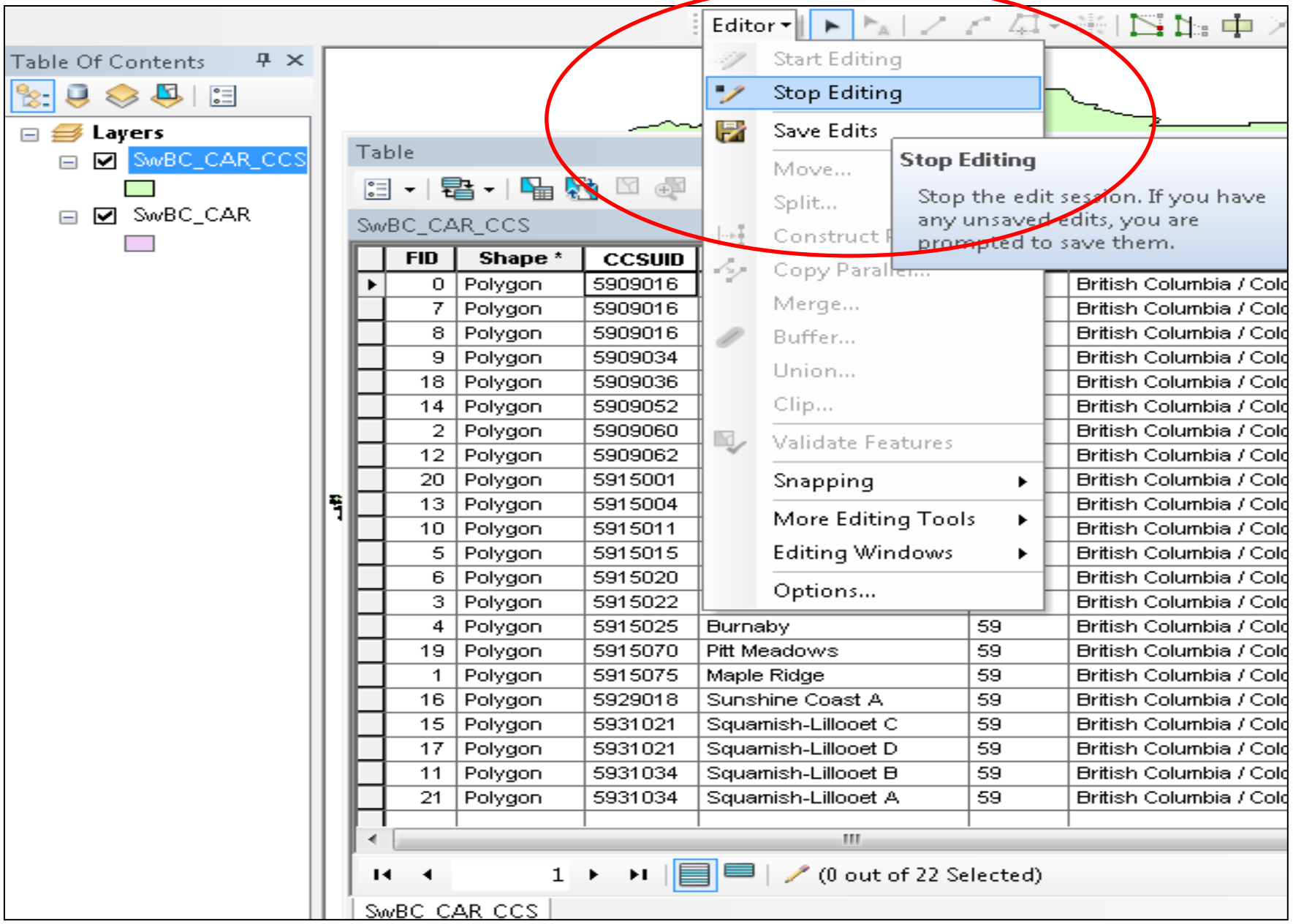
FID	Shape *	CCSUID	CCSNAME	PRUID	
0	Polygon	5909016			ritish Columbia
1	Polygon	5915075			ritish Columbia
2	Polygon	5909060			ritish Columbia
3	Polygon	5915022			ritish Columbia
4	Polygon	5915025			ritish Columbia
5	Polygon	5915015			ritish Columbia
6	Polygon	5915020			ritish Columbia
7	Polygon	5909016			ritish Columbia
8	Polygon	5909016			ritish Columbia
9	Polygon	5909034			ritish Columbia
10	Polygon	5915011			ritish Columbia
11	Polygon	5931034			ritish Columbia
12	Polygon	5909062			ritish Columbia
13	Polygon	5915004			ritish Columbia
14	Polygon	5909052			ritish Columbia
15	Polygon	5931021			ritish Columbia
16	Polygon	5929018	Sunshine Coast A	59	British Columbia
17	Polygon	5931021	Squamish-Lillooet D	59	British Columbia
18	Polygon	5909036	Fraser Valley E	59	British Columbia
19	Polygon	5915070	Pitt Meadows	59	British Columbia
20	Polygon	5915001	Langley	59	British Columbia
21	Polygon	5931034	Squamish-Lillooet A	59	British Columbia

16. Change CCSUID numbers 5909014 & 5909048 to 5909016;
change CCSUID number 5931017 to 5931021;
change CCSUID number 5931032 to 5931034

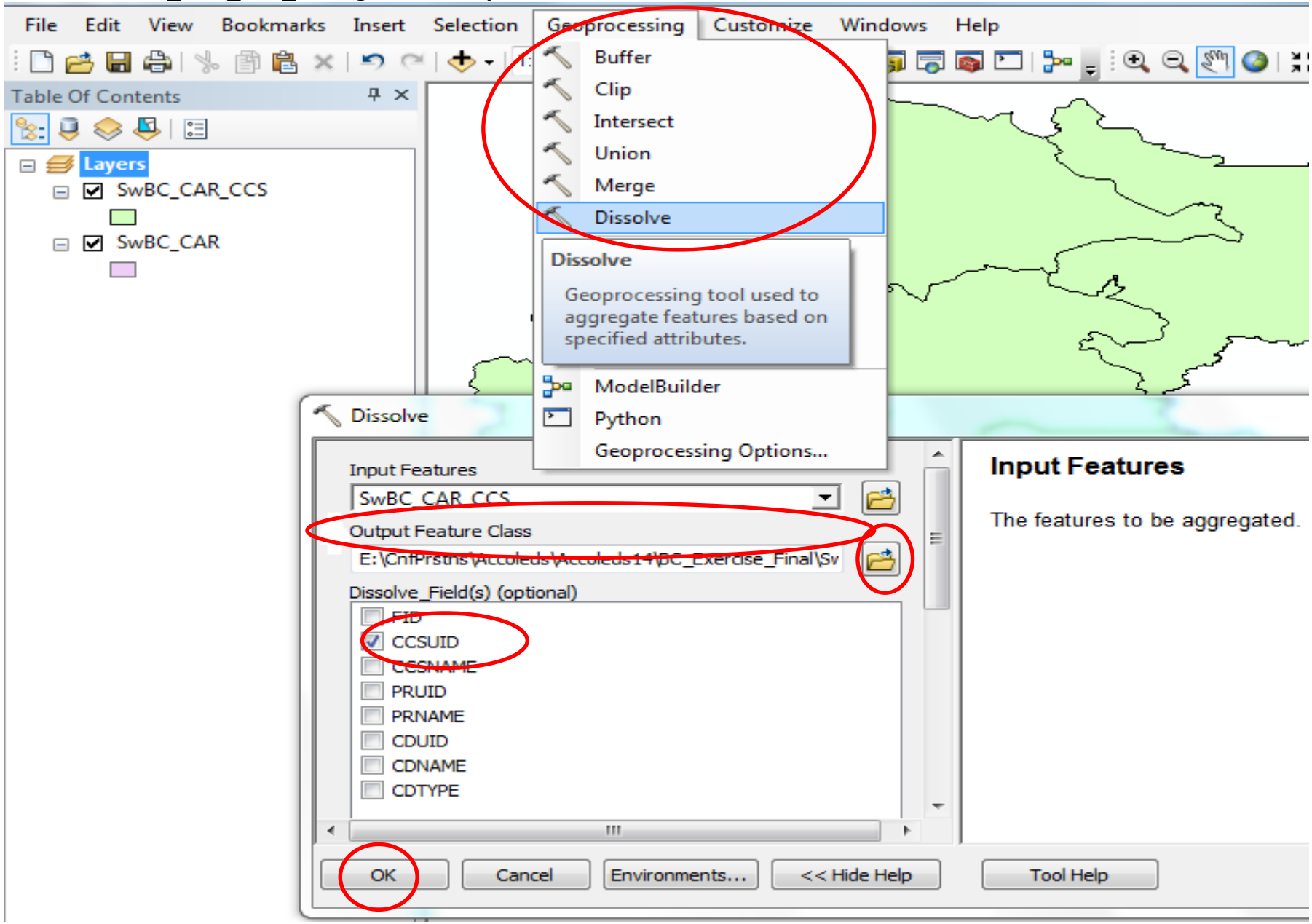


FID	Shape *	CCSUID	CCSNAME	PRUID	
0	Polygon	5909016	Fraser Valley B	59	British Columbia
7	Polygon	5909016	Fraser Valley A	59	British Columbia
8	Polygon	5909016	Fraser Valley C	59	British Columbia
9	Polygon	5909034	Fraser Valley D	59	British Columbia
18	Polygon	5909036	Fraser Valley E	59	British Columbia
14	Polygon	5909052	Abbotsford	59	British Columbia
2	Polygon	5909060	Fraser Valley F	59	British Columbia
12	Polygon	5909062	Fraser Valley G	59	British Columbia
20	Polygon	5915001	Langley	59	British Columbia
13	Polygon	5915004	Surrey	59	British Columbia
10	Polygon	5915011	Delta	59	British Columbia
5	Polygon	5915015	Richmond	59	British Columbia
6	Polygon	5915020	Greater Vancouver A	59	British Columbia
3	Polygon	5915022	Vancouver	59	British Columbia
4	Polygon	5915025	Burnaby	59	British Columbia
19	Polygon	5915070	Pitt Meadows	59	British Columbia
1	Polygon	5915075	Maple Ridge	59	British Columbia
16	Polygon	5929018	Sunshine Coast A	59	British Columbia
15	Polygon	5931021	Squamish-Lillooet C	59	British Columbia
17	Polygon	5931021	Squamish-Lillooet D	59	British Columbia
11	Polygon	5931034	Squamish-Lillooet B	59	British Columbia
21	Polygon	5931034	Squamish-Lillooet A	59	British Columbia

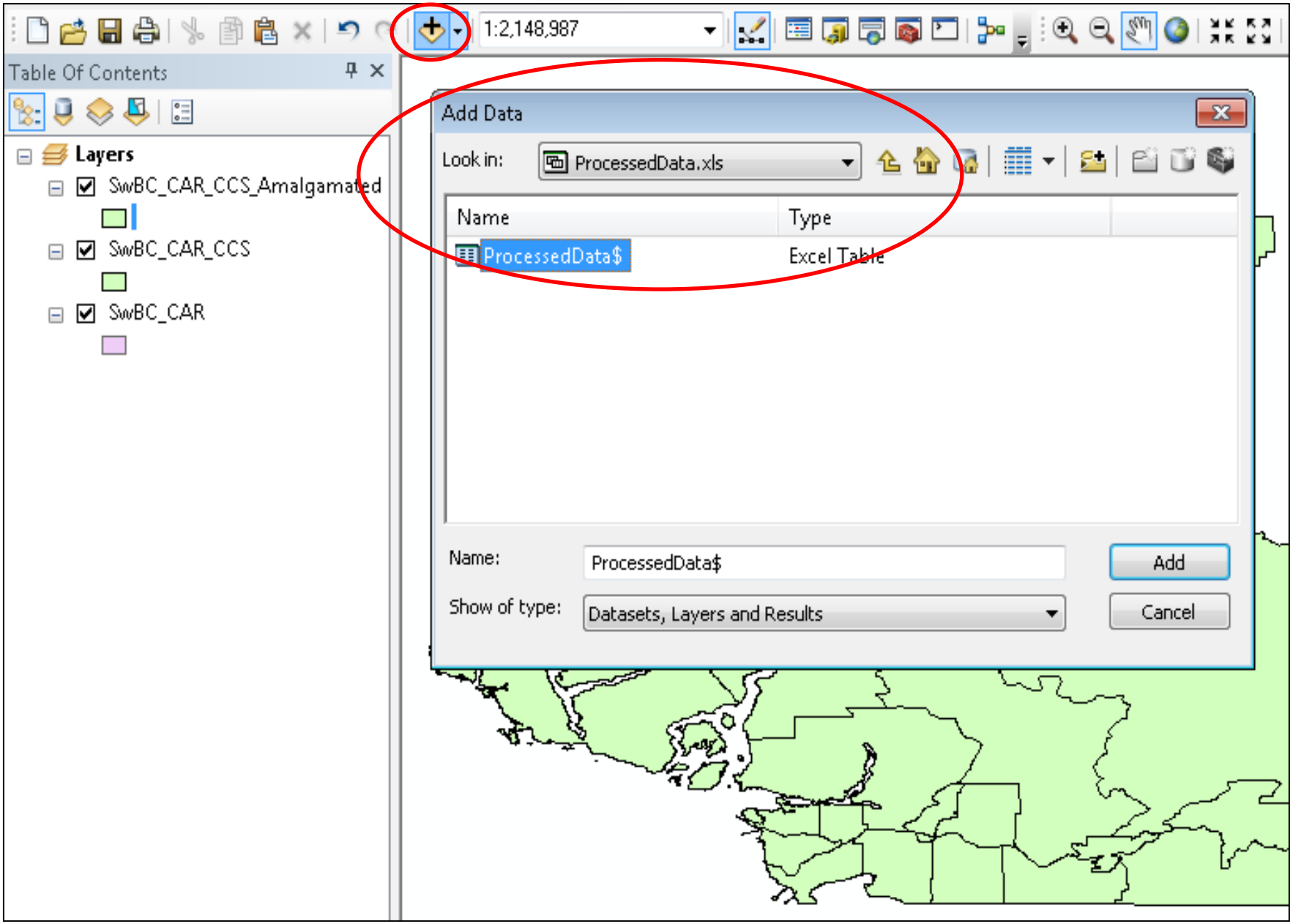
17. on Editor, Stop Editing and Save the Changes; (close the attribute table)



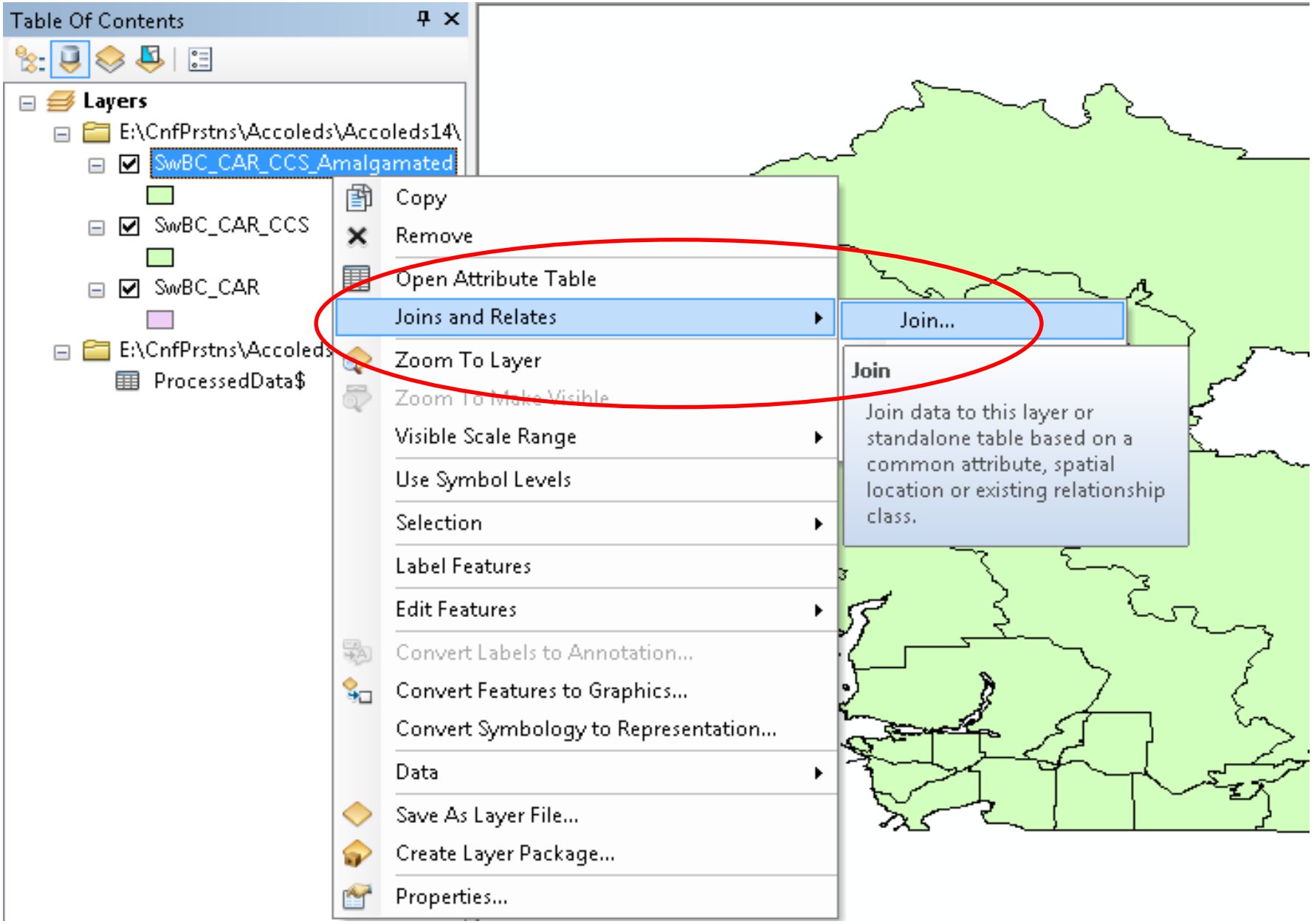
18. Amalgamate the CCSUIDs with the Dissolve tool (to reflect the AgCensus amalgamations); save as SwBC_CAR_CCS_Amalgamated.shp ….



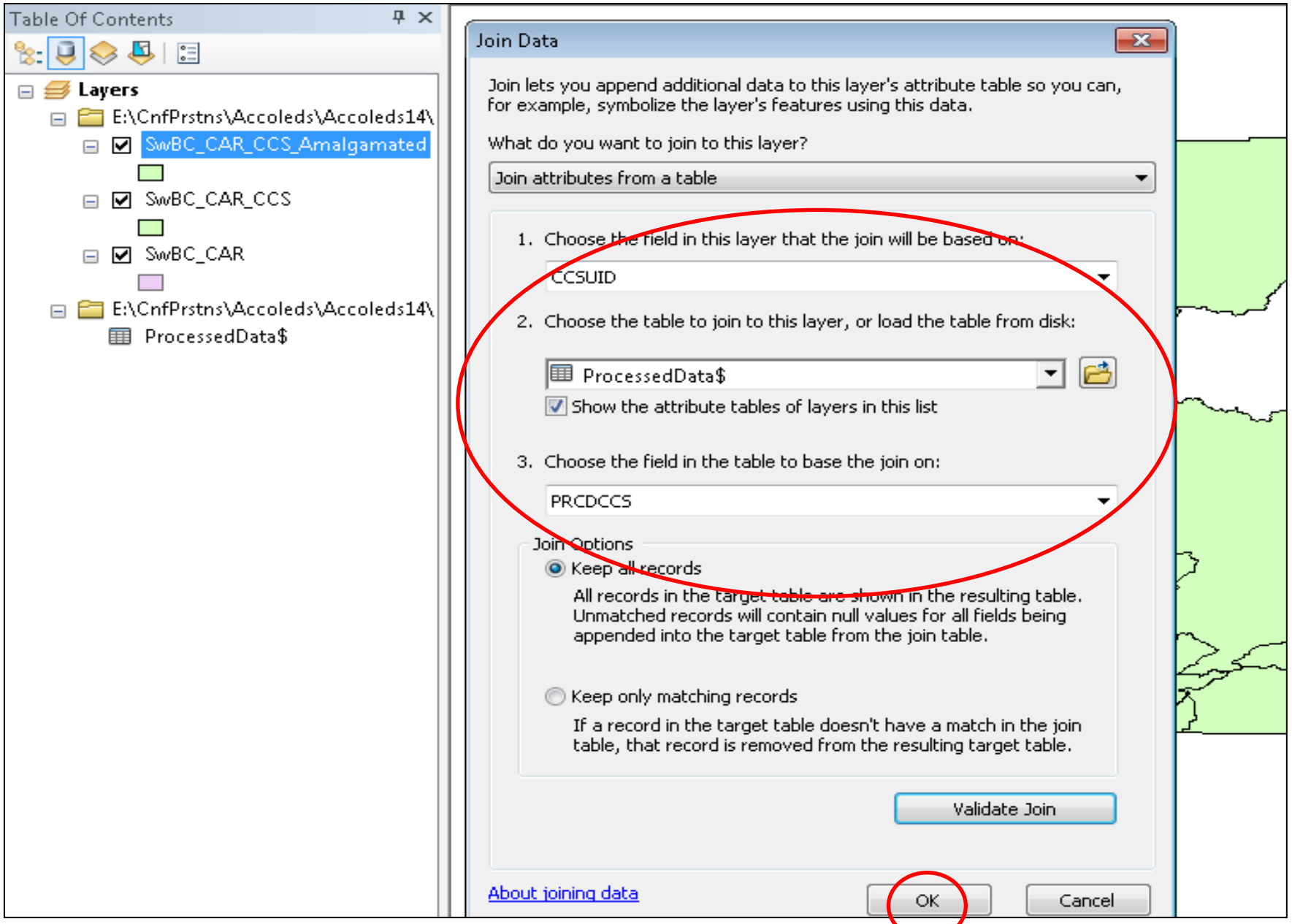
19. navigate to and Add ProcessedData.xls (processedData$ worksheet)



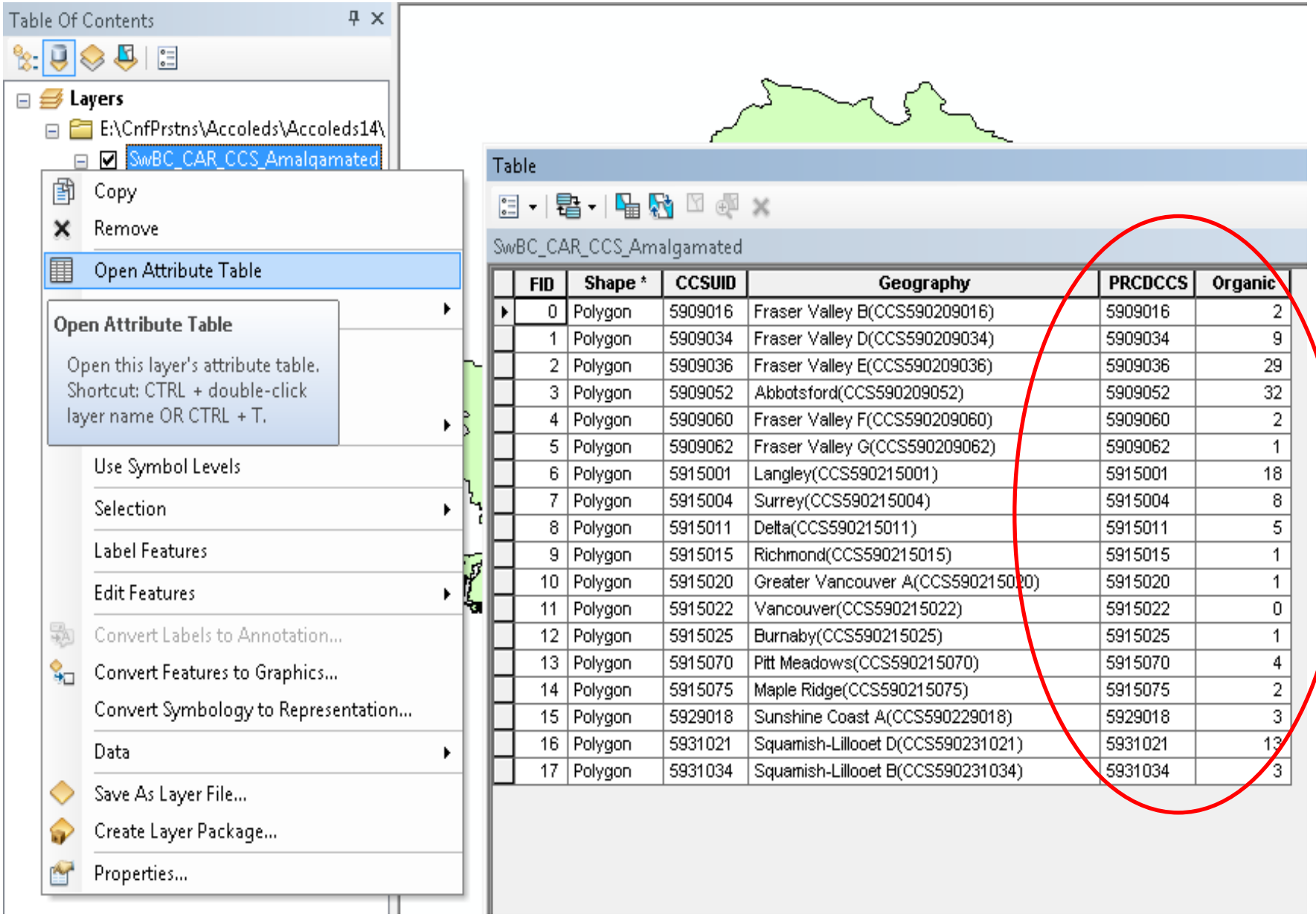
20. right-click on SwBC_CAR_CCS_Amalgamated to join…attributes from a table…



21. Join field CCSUID and ProcessedData field PRCDCCS

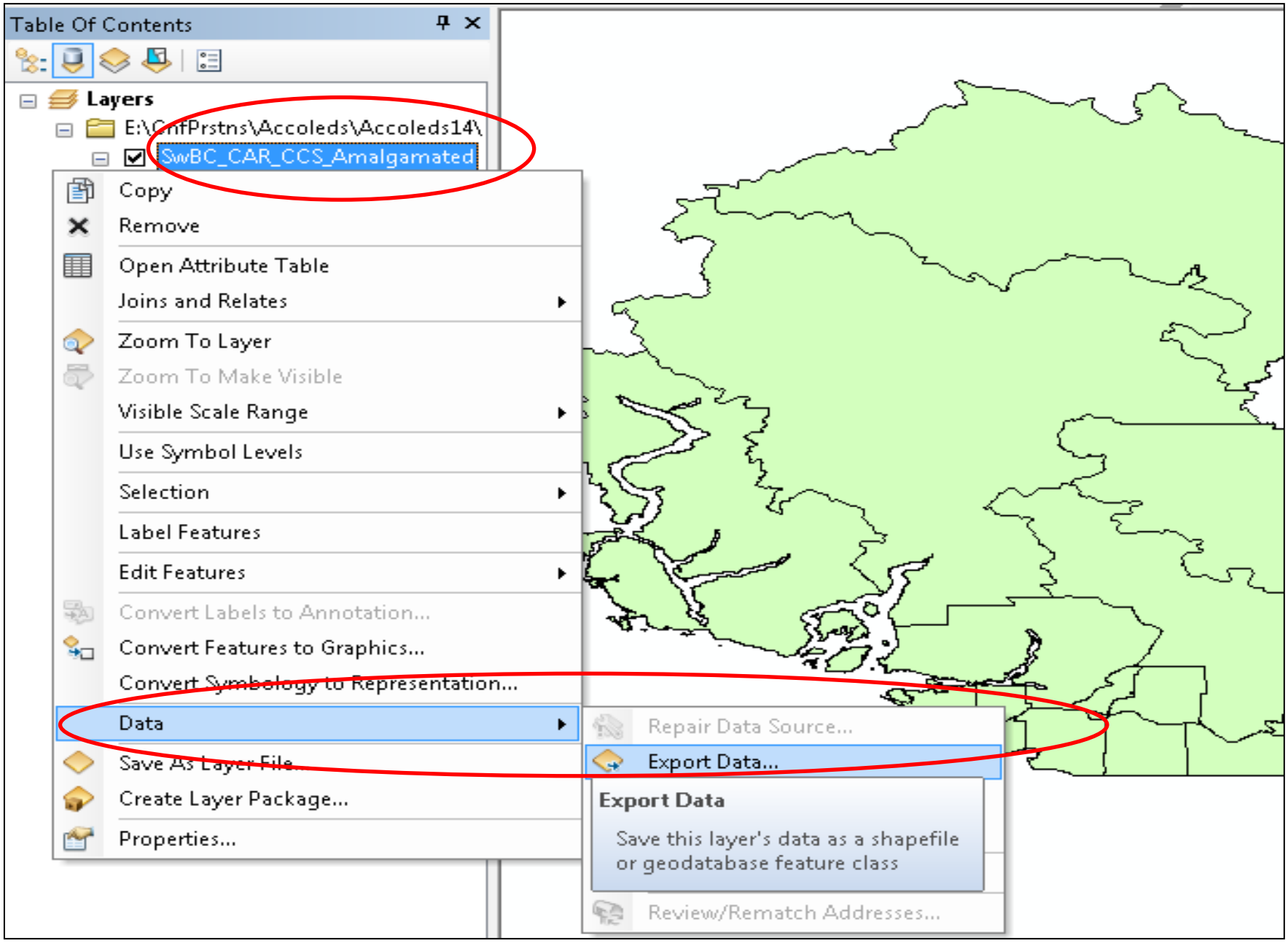


22. ProcessedData has been added to SwBC_CAR_CCS_Amalamated

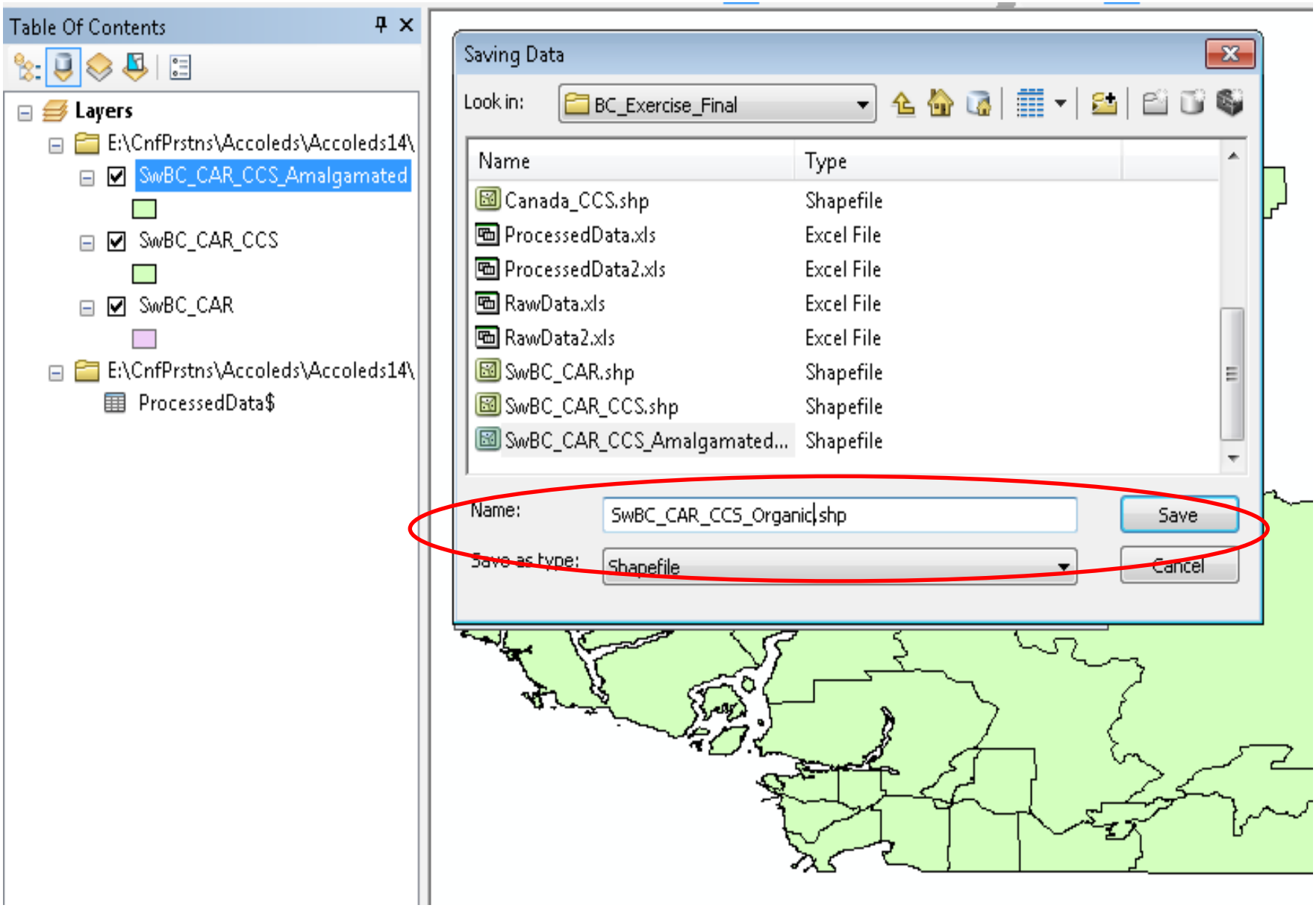


FID	Shape *	CCSUID	Geography	PRCDCCS	Organic
0	Polygon	5909016	Fraser Valley B(CCS590209016)	5909016	2
1	Polygon	5909034	Fraser Valley D(CCS590209034)	5909034	9
2	Polygon	5909036	Fraser Valley E(CCS590209036)	5909036	29
3	Polygon	5909052	Abbotsford(CCS590209052)	5909052	32
4	Polygon	5909060	Fraser Valley F(CCS590209060)	5909060	2
5	Polygon	5909062	Fraser Valley G(CCS590209062)	5909062	1
6	Polygon	5915001	Langley(CCS590215001)	5915001	18
7	Polygon	5915004	Surrey(CCS590215004)	5915004	8
8	Polygon	5915011	Delta(CCS590215011)	5915011	5
9	Polygon	5915015	Richmond(CCS590215015)	5915015	1
10	Polygon	5915020	Greater Vancouver A(CCS590215020)	5915020	1
11	Polygon	5915022	Vancouver(CCS590215022)	5915022	0
12	Polygon	5915025	Burnaby(CCS590215025)	5915025	1
13	Polygon	5915070	Pitt Meadows(CCS590215070)	5915070	4
14	Polygon	5915075	Maple Ridge(CCS590215075)	5915075	2
15	Polygon	5929018	Sunshine Coast A(CCS590229018)	5929018	3
16	Polygon	5931021	Squamish-Lillooet D(CCS590231021)	5931021	13
17	Polygon	5931034	Squamish-Lillooet B(CCS590231034)	5931034	3

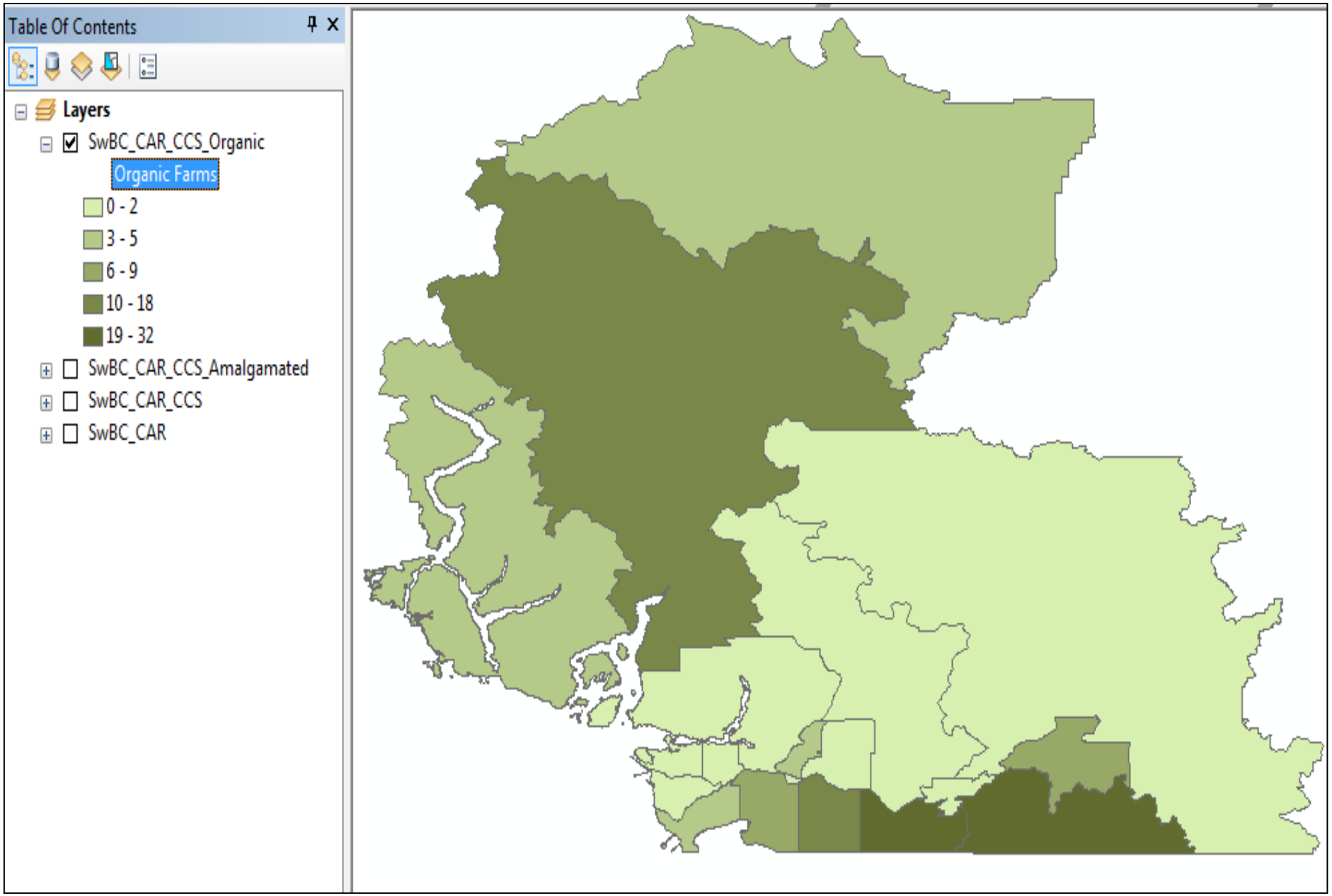
23. right-click SwBC_CAR_CCS_Amalamated to export data…



24. save as SwBC_CAR_CCS_Organic.shp and add to map



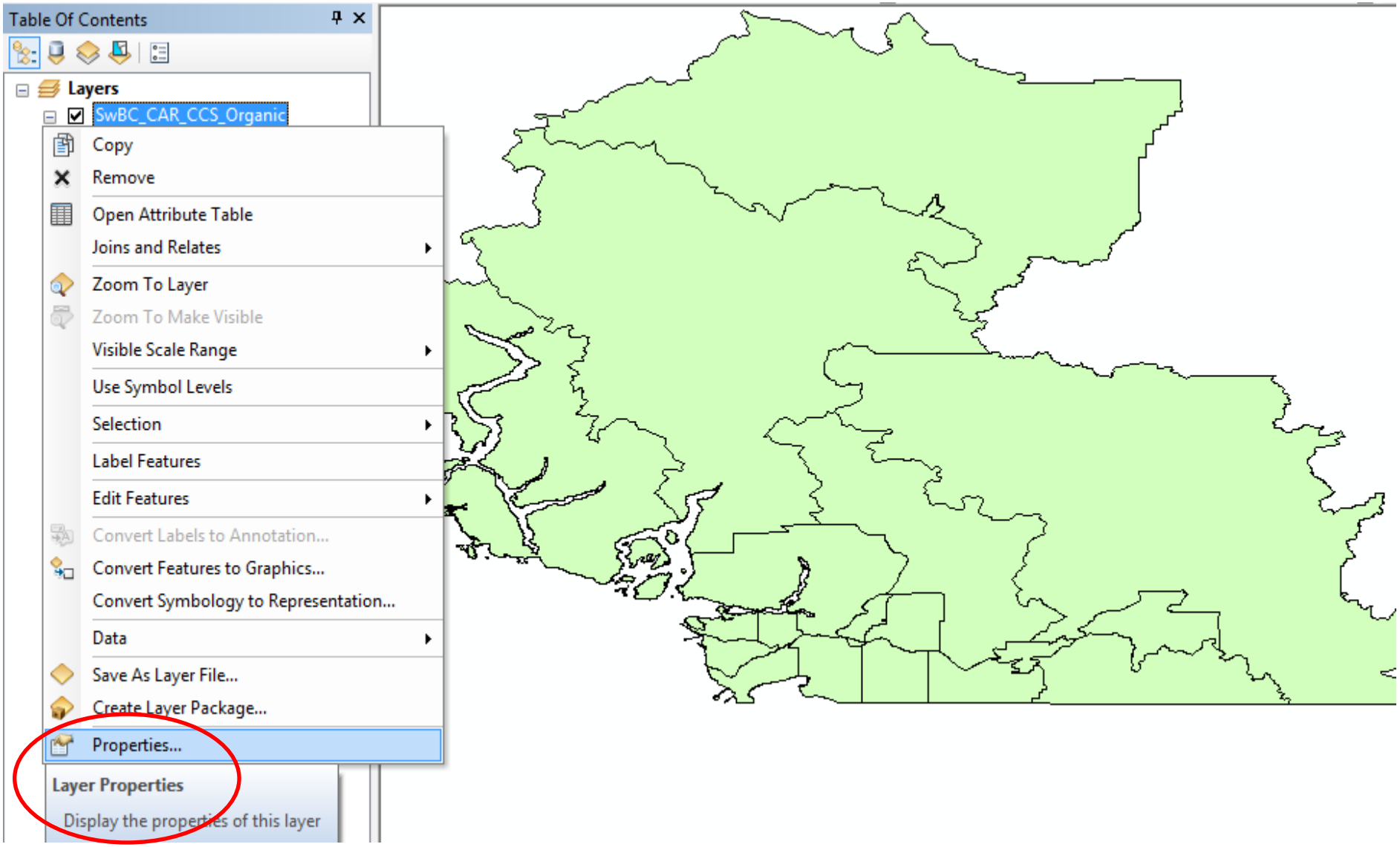
SwBC_CAR_CCS_Organic farms symbolized by choropleth map: "Organic Farms by CCSs"…but…



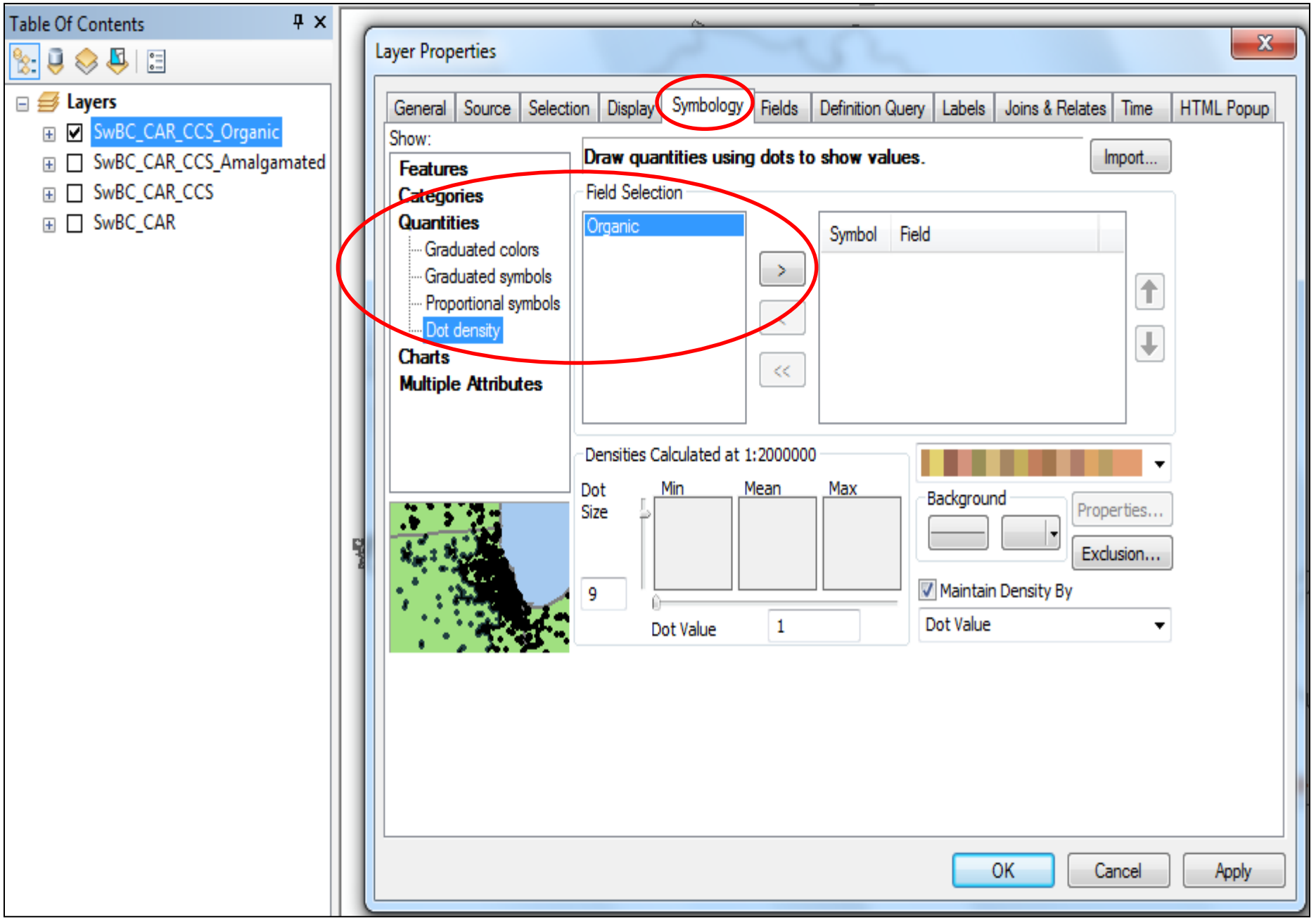
…Choropleth maps are usually better for relative numbers (ratios, percentages, etc) rather than absolute numbers…so…

Part C: Create Map(s)

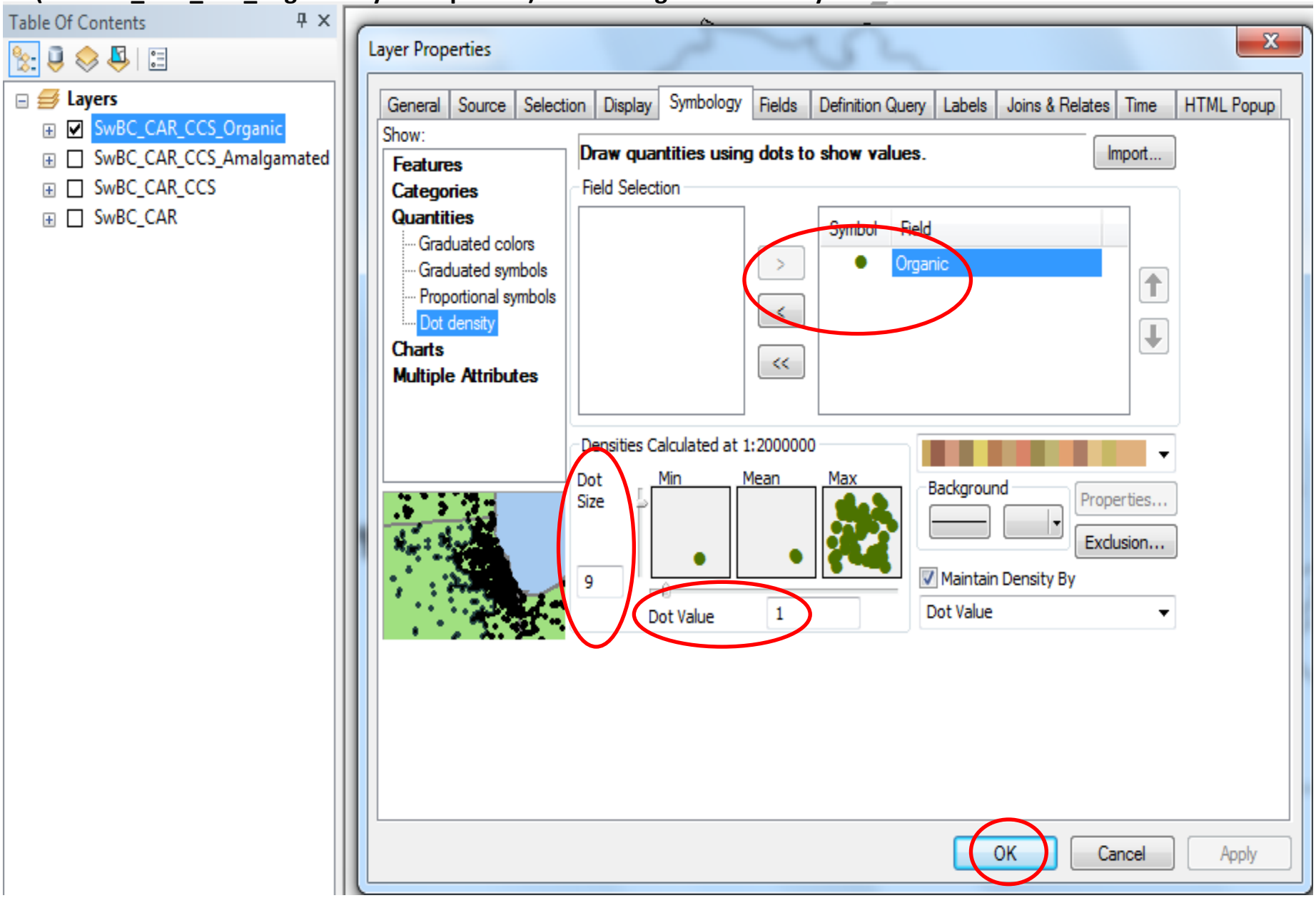
1. double or right-click SwBC_CAR_CCS_Organic for Properties



2. in SwBC_CAR_CCS_Organic Layer Properties, click Symbology, Quantities, Dot Density, and move Organic…

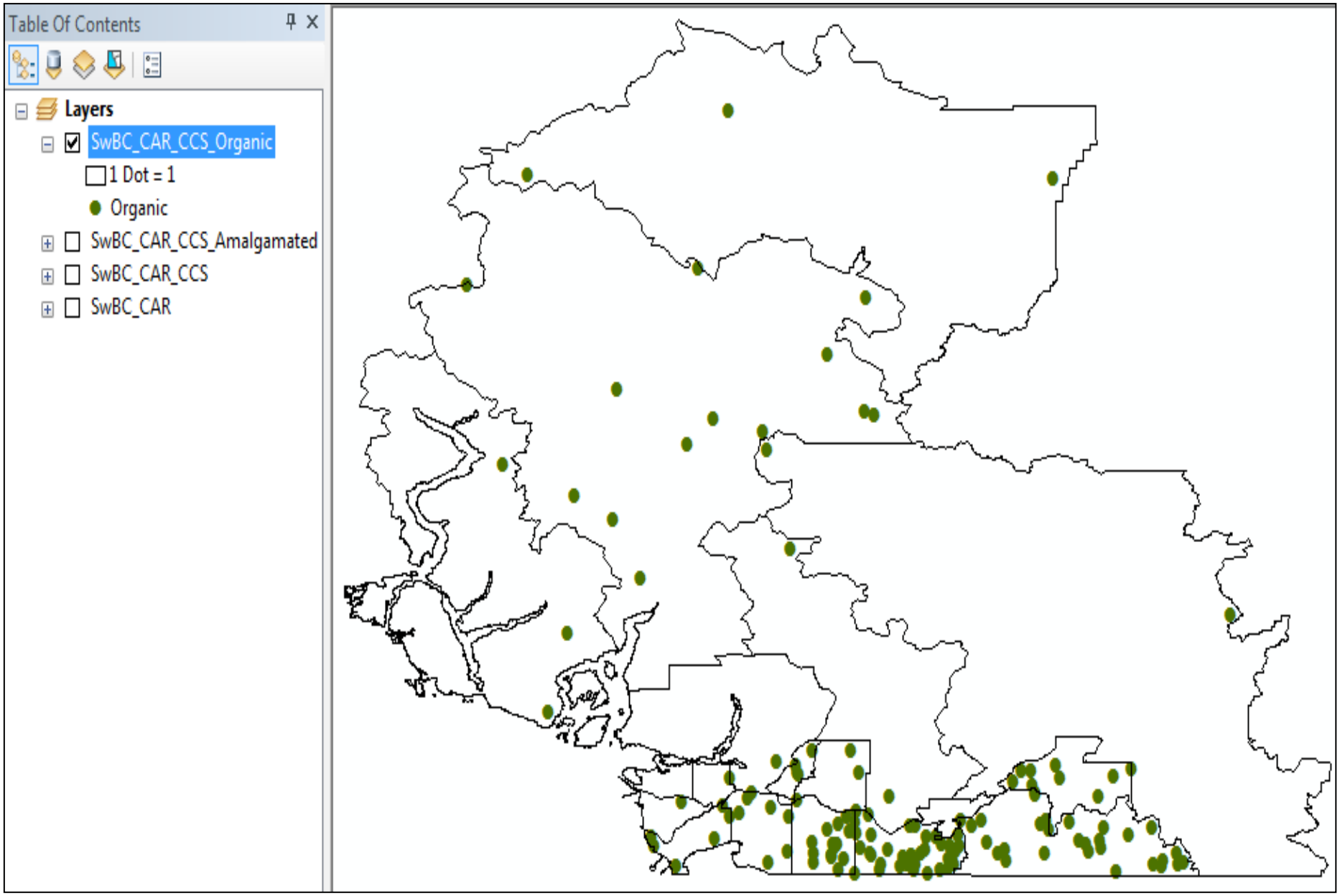


3. (in SwBC_CAR_CCS_Organic Layer Properties) …move Organic over to symbolize it



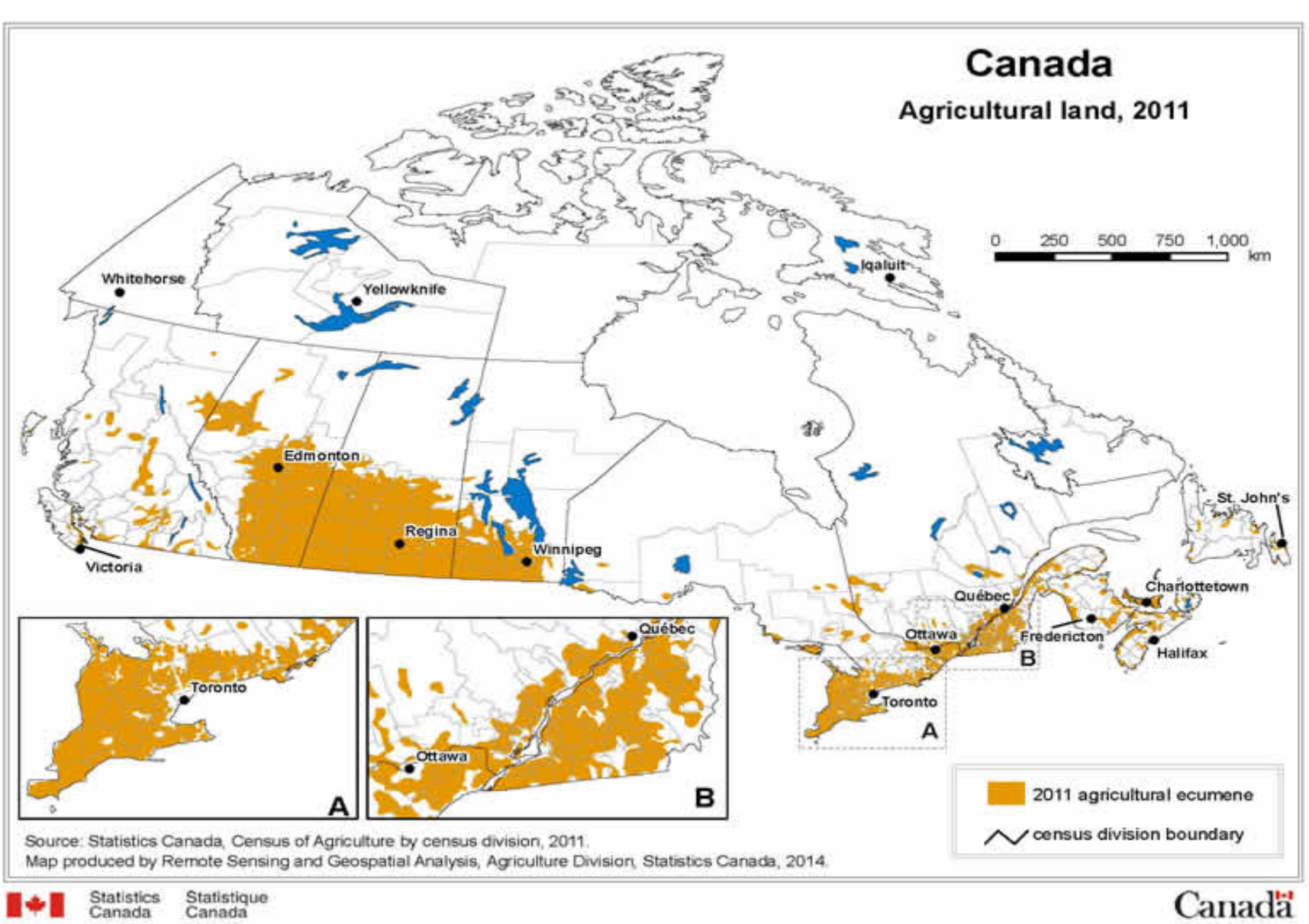
for display purposes, Dot size = 9 and Dot Value: 1 (1 dot = 1 farm); colour can be changed

Organic farms by CCS (by Dot Density within CCSs; dots do not indicate exact geographic location)…



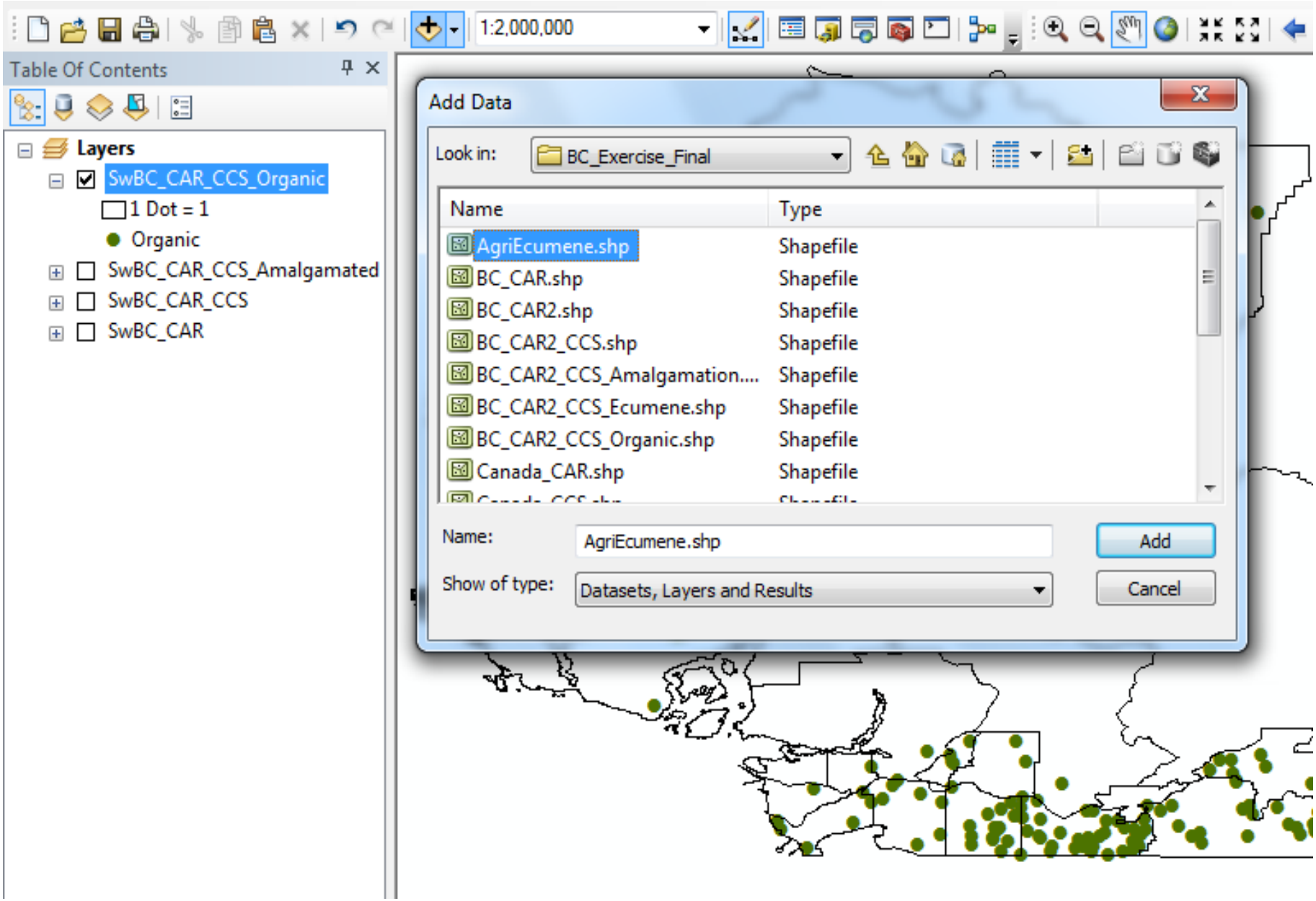
…but this visualization assumes farms are randomly distributed throughout their CCS areas which is not the case… so Agricultural Ecumene Boundary File is useful…

AgricEcumene delineates areas of significant agricultural activity in Canada as indicated by the 2011 CensusAg

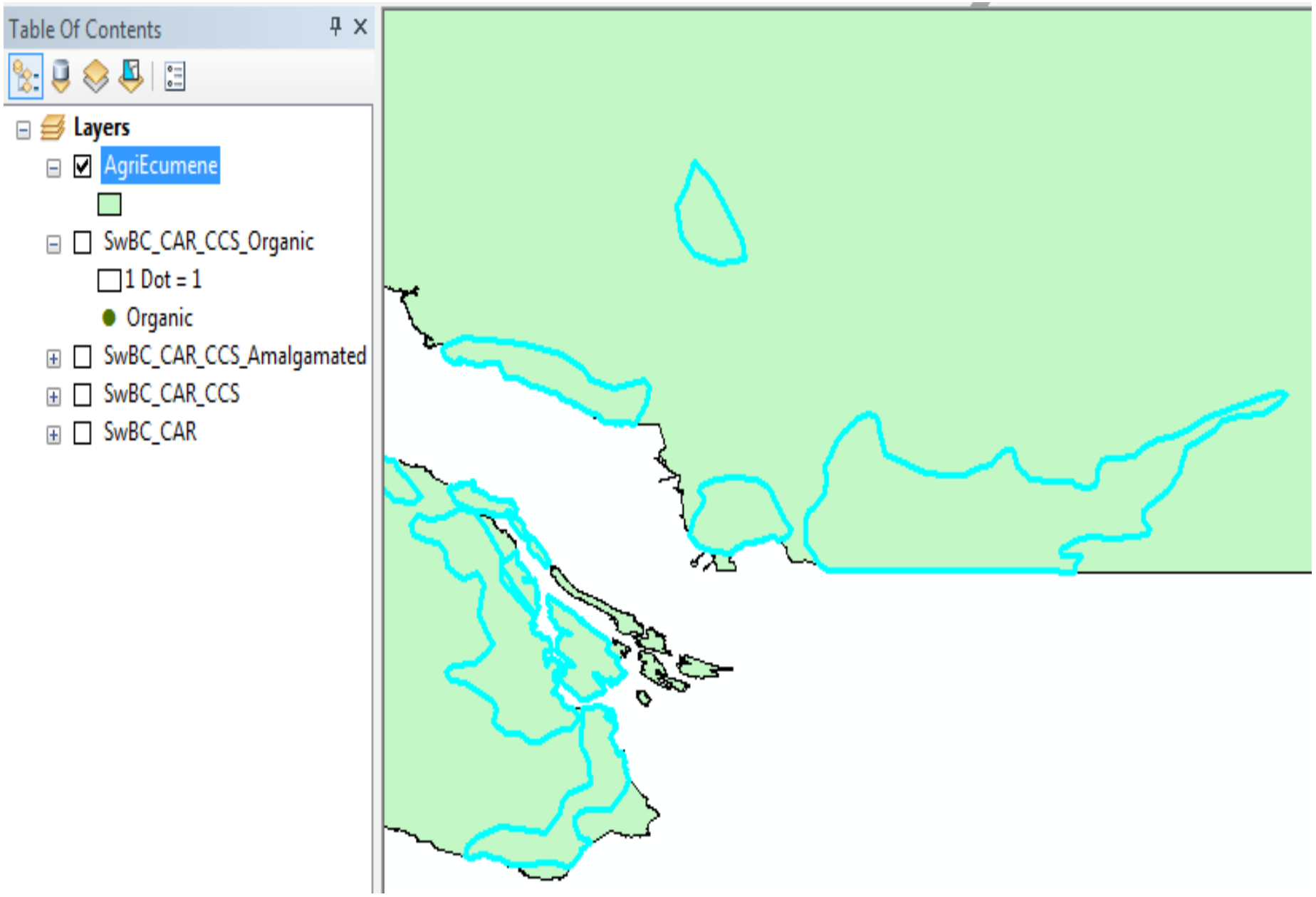


Most/much of Canada, and BC, does not have significant agricultural activity…

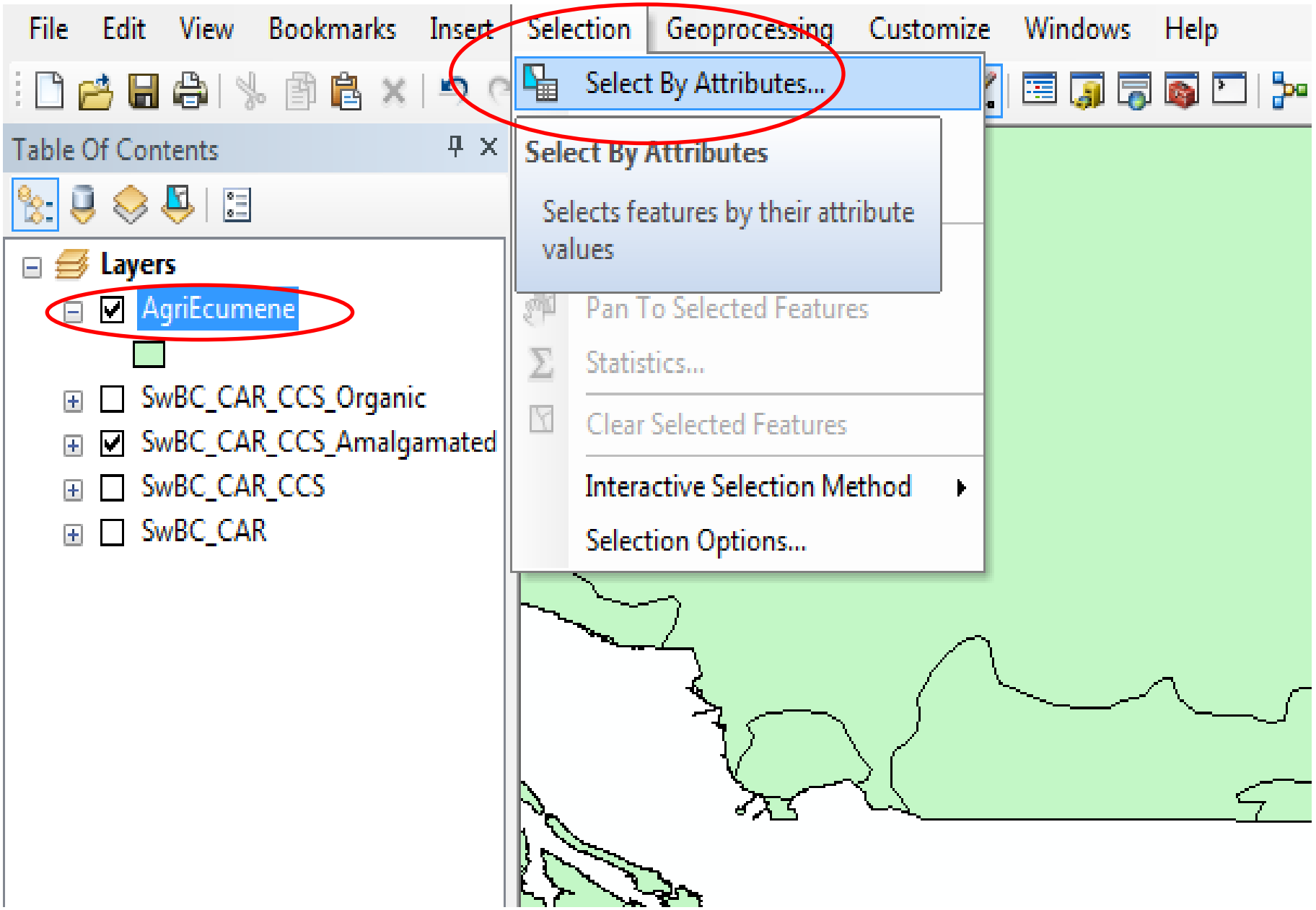
4. navigate to and Add AgriEcumene file



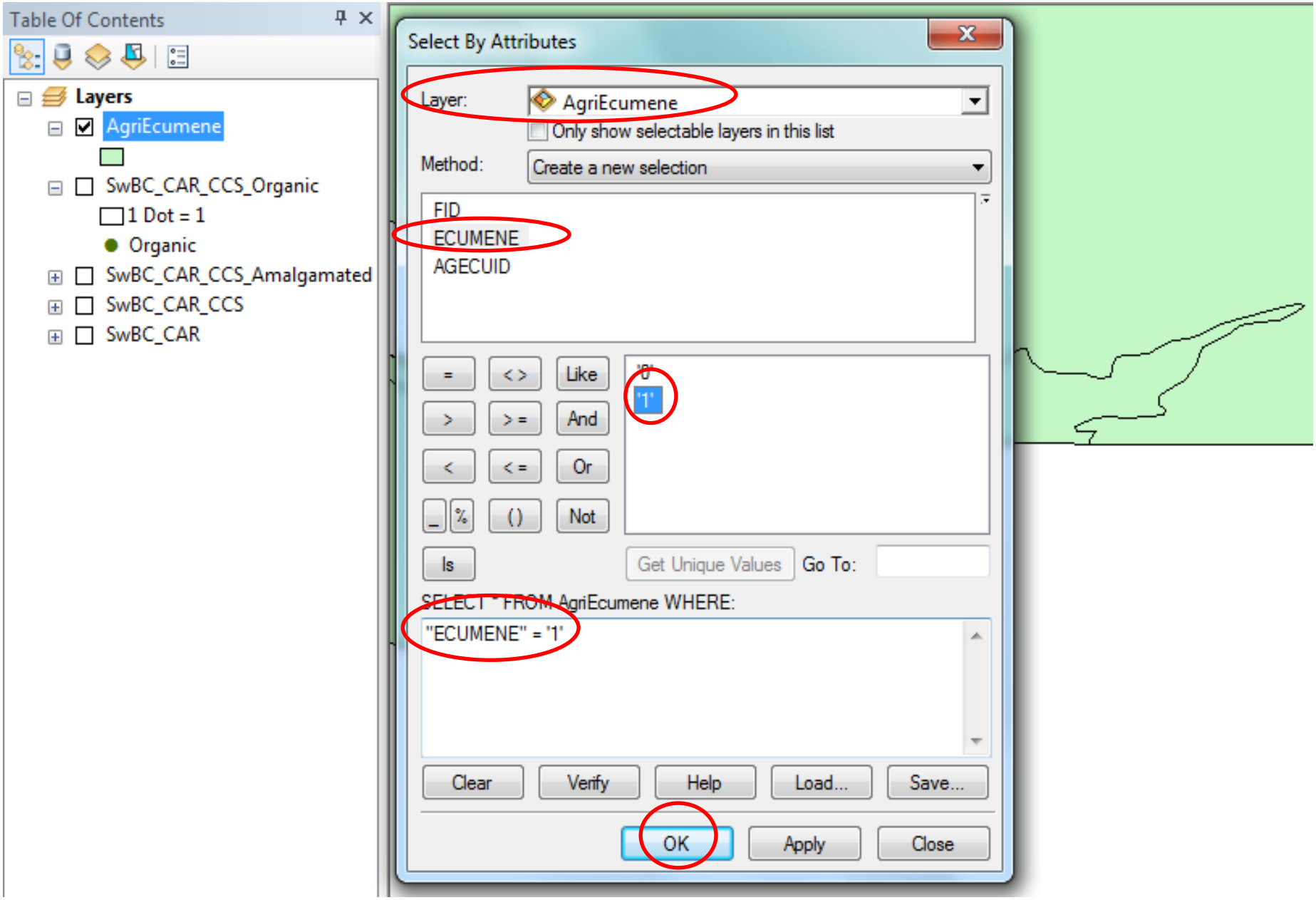
Note the limited areas of significant agricultural activity in Sw BC…(only highlighted here for visualization)



5. Need to Select by Attributes (…"ECUMENE" = '1'…next slide…)

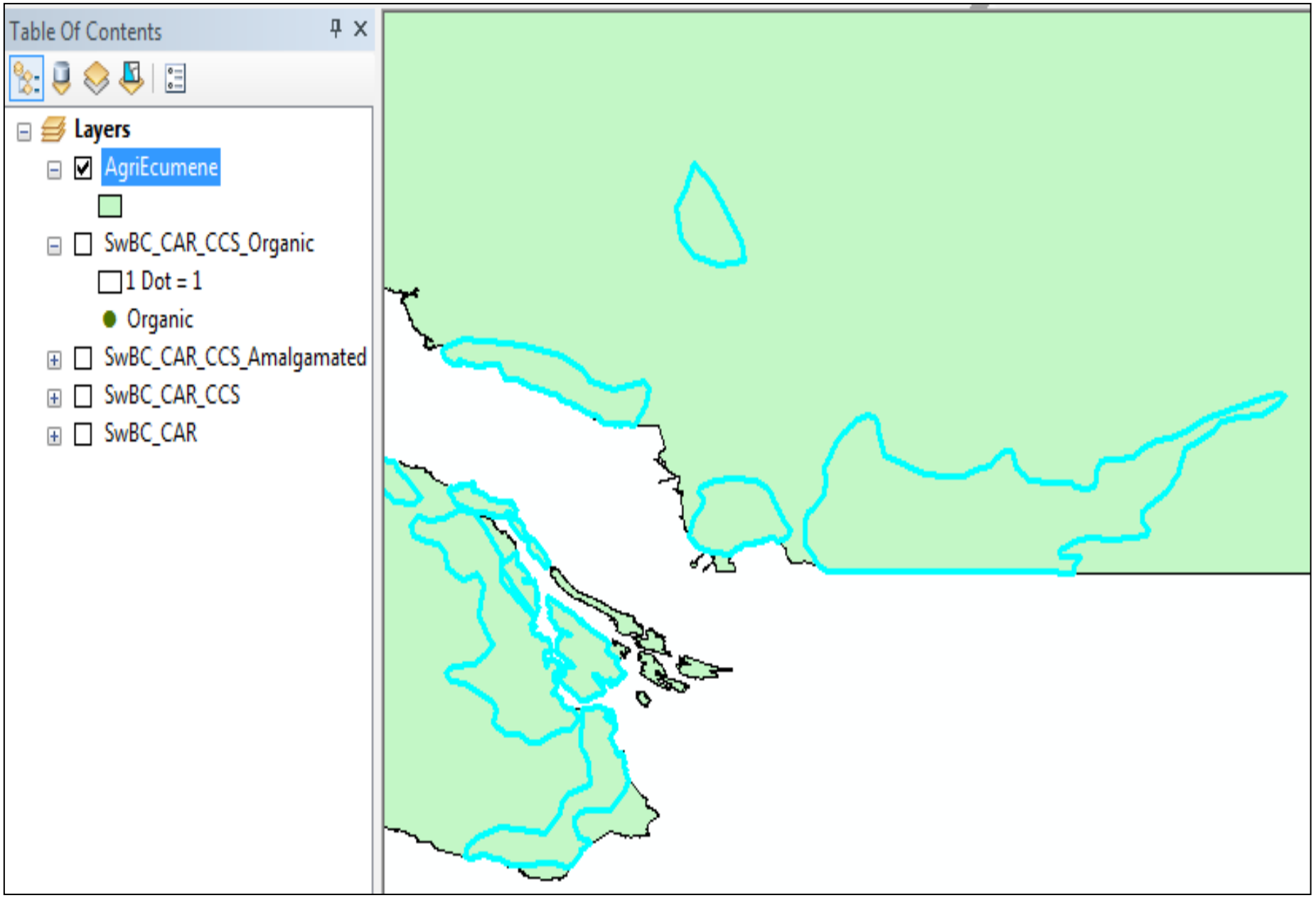


6. Select by Attributes: “ECUMENE” = ‘1’.



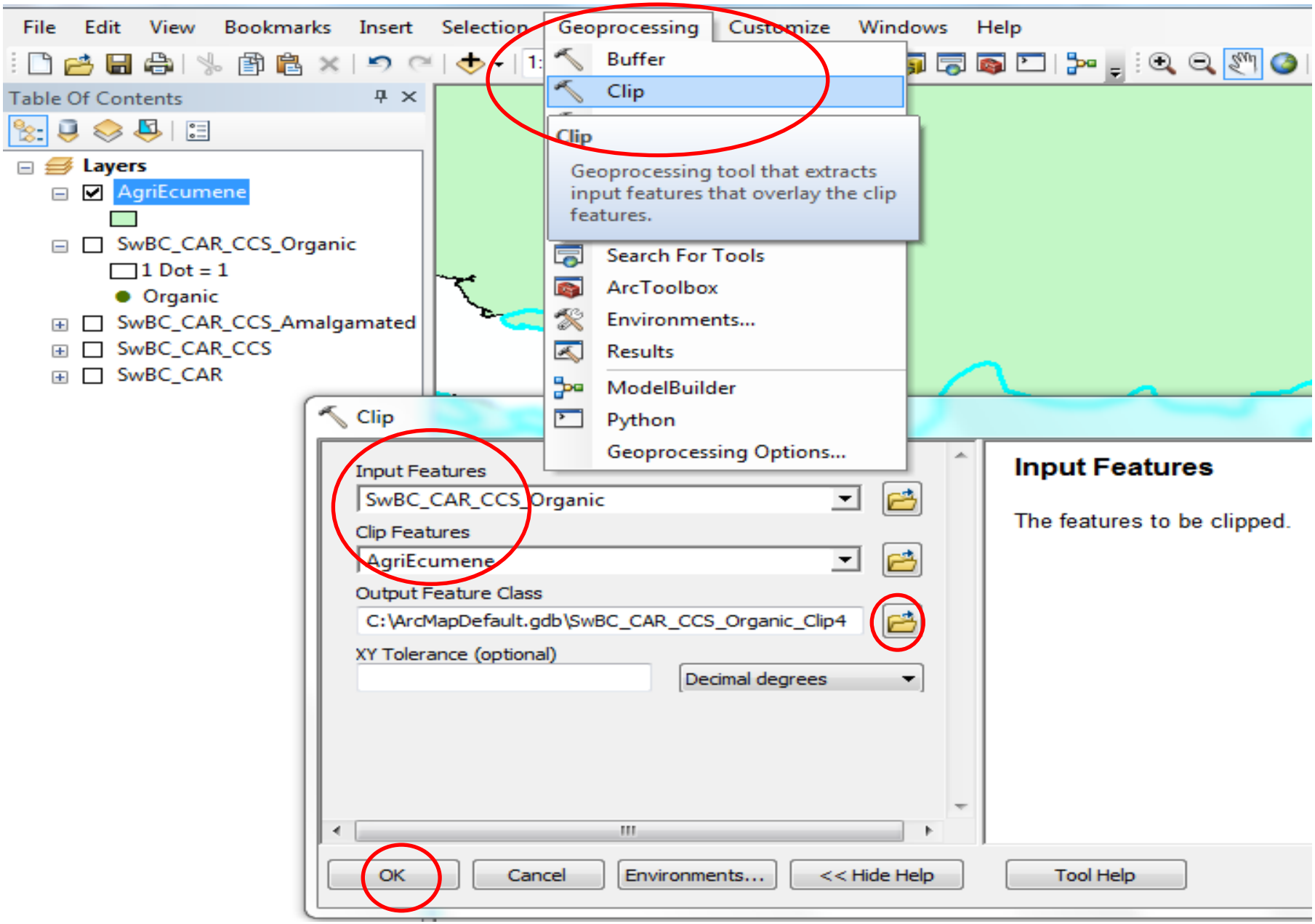
This selects areas where there is significant agricultural activity to meet criteria of minimum agricultural land area or agricultural receipts.

“ECUMENE” = ‘1’ selected…



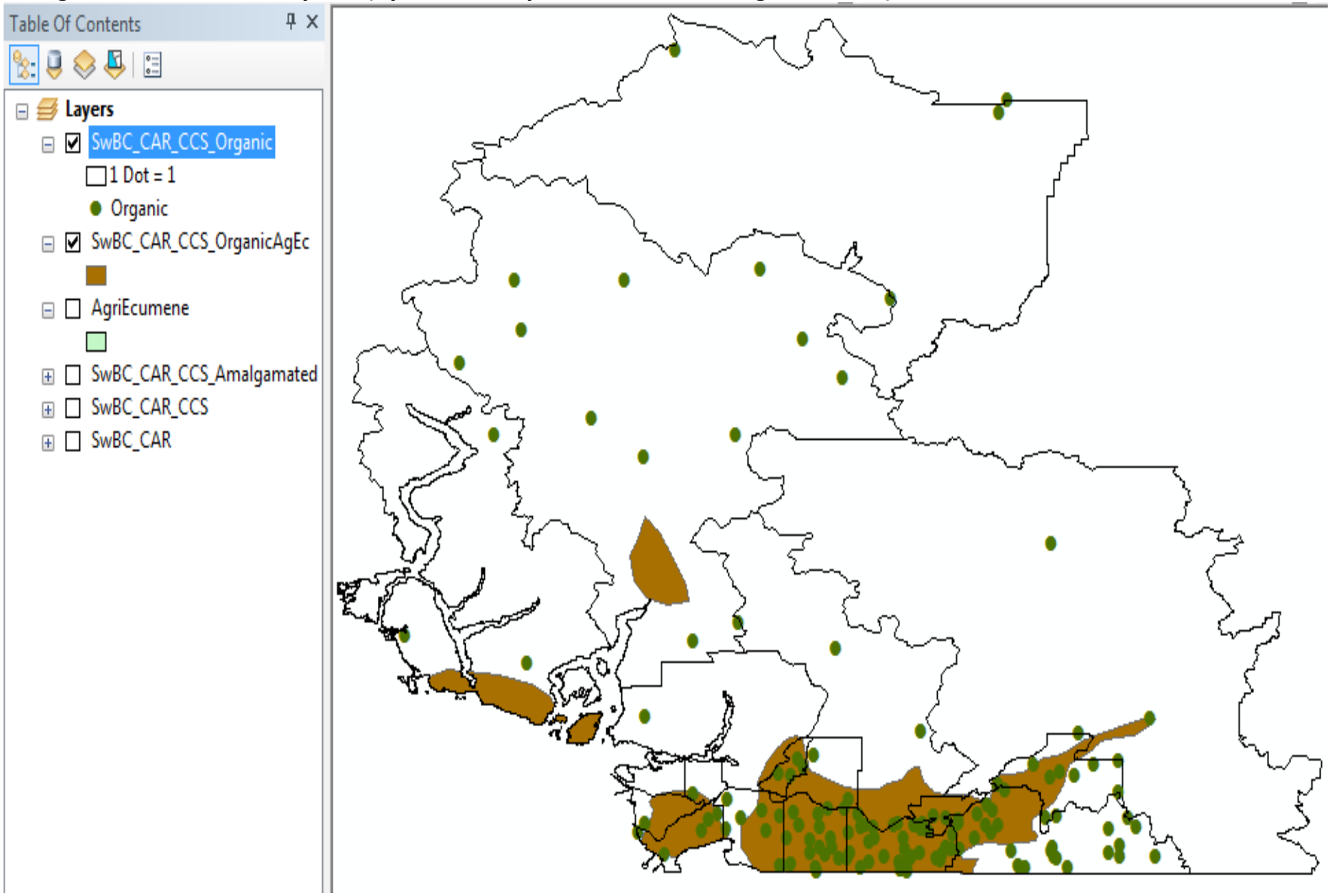
…now with above we will clip…

7. (under Geoprocessing use) Clip SwBC_CAR_CCS_Organic using AgriEcumene…



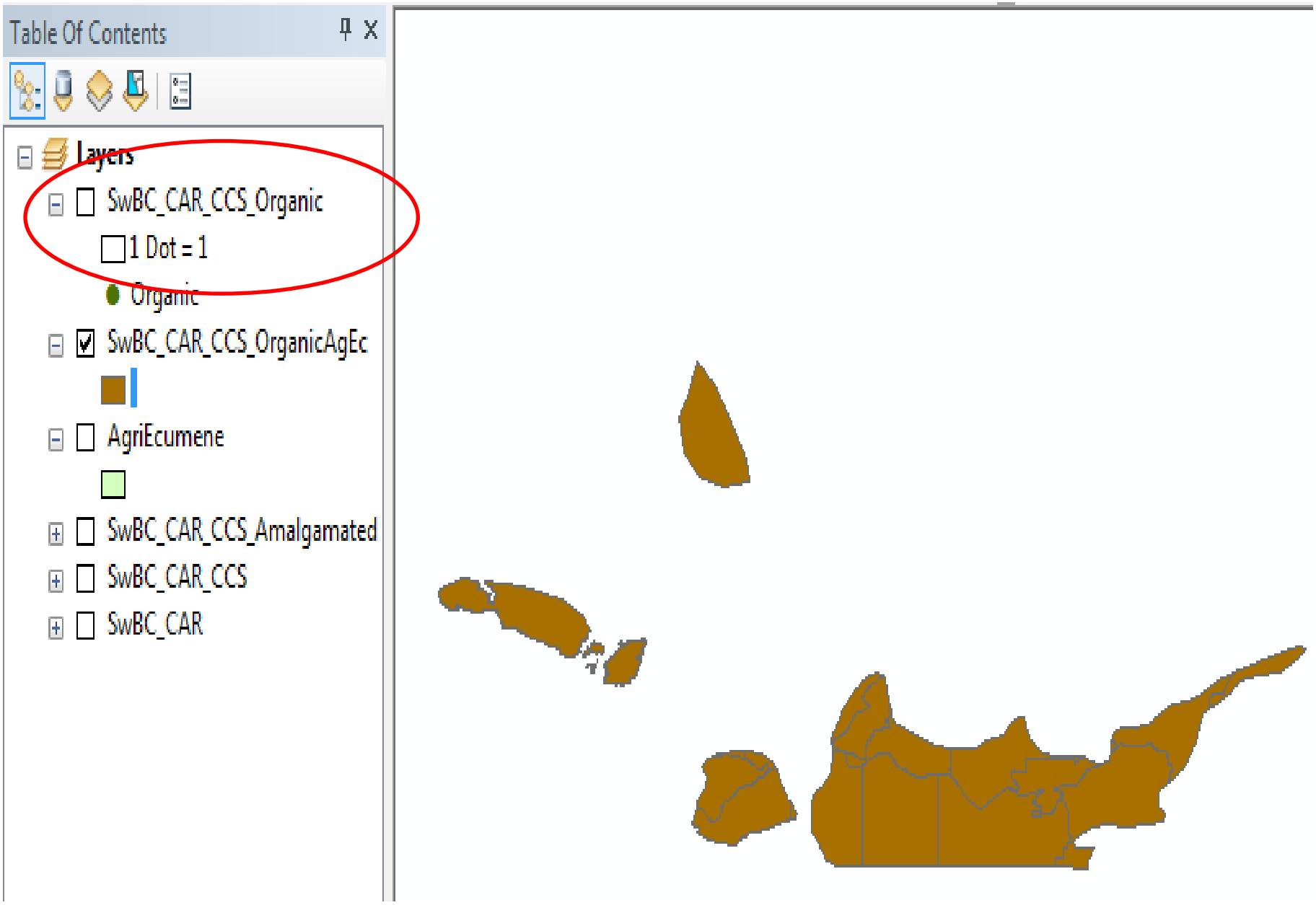
…save file as SwBC_CAR_CCS_OrganicAgEc…

8. un-click AgriEcumene and move SwBC_CAR_CCS_Organic to top of Table of Contents
"Organic Farms in SwBC by CCS (by Dot Density within CCSs over AgriEcumene)"

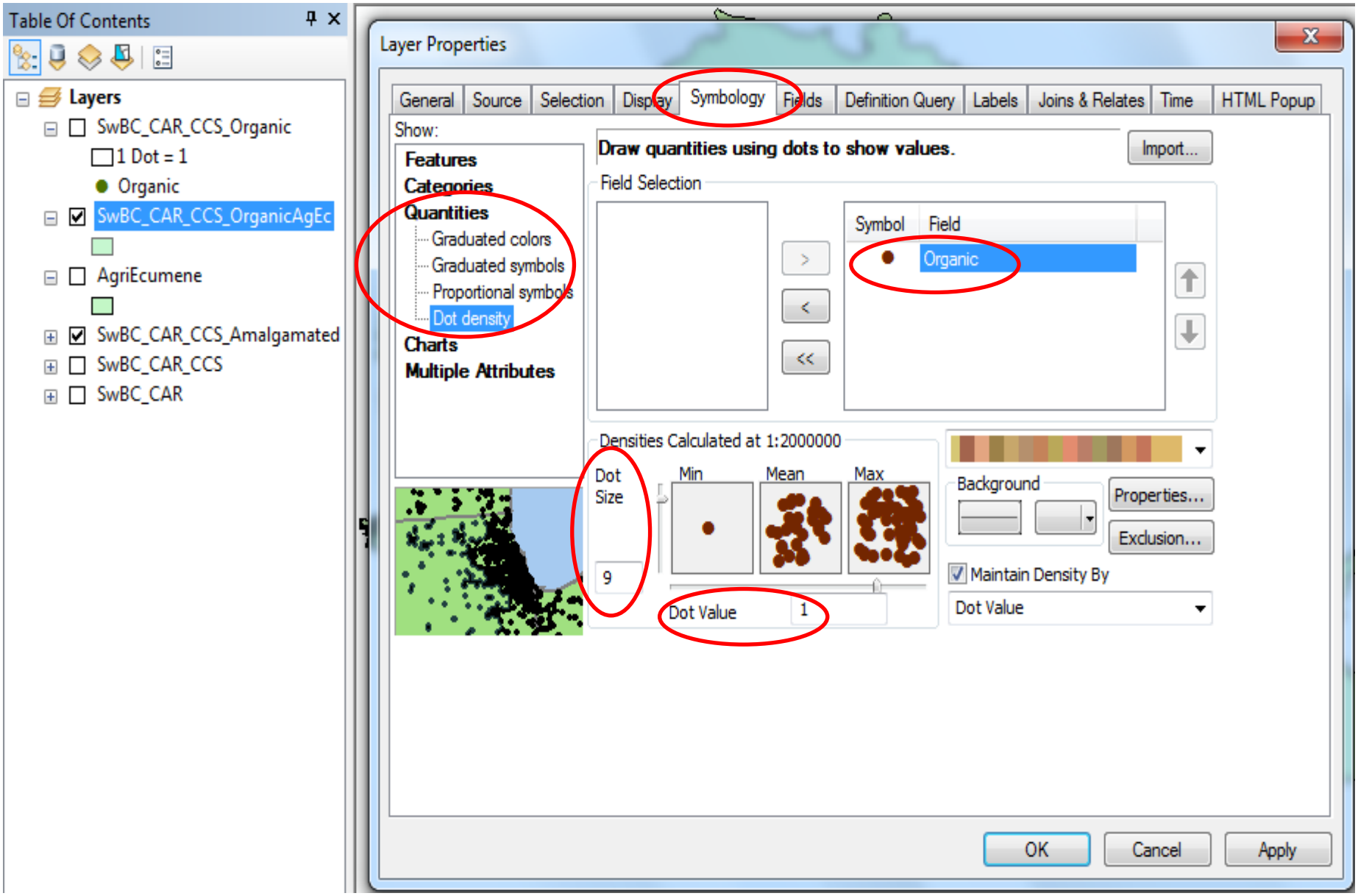


Note how many/some of the organic farms in SwBC_CAR_CCS_Organic are outside the AgricEcumene areas…

9. un-click SwBC_CAR_CCS_Organic b/c we will now symbolize SwBC_CAR_CCS_OrganicAgEc…next slide…

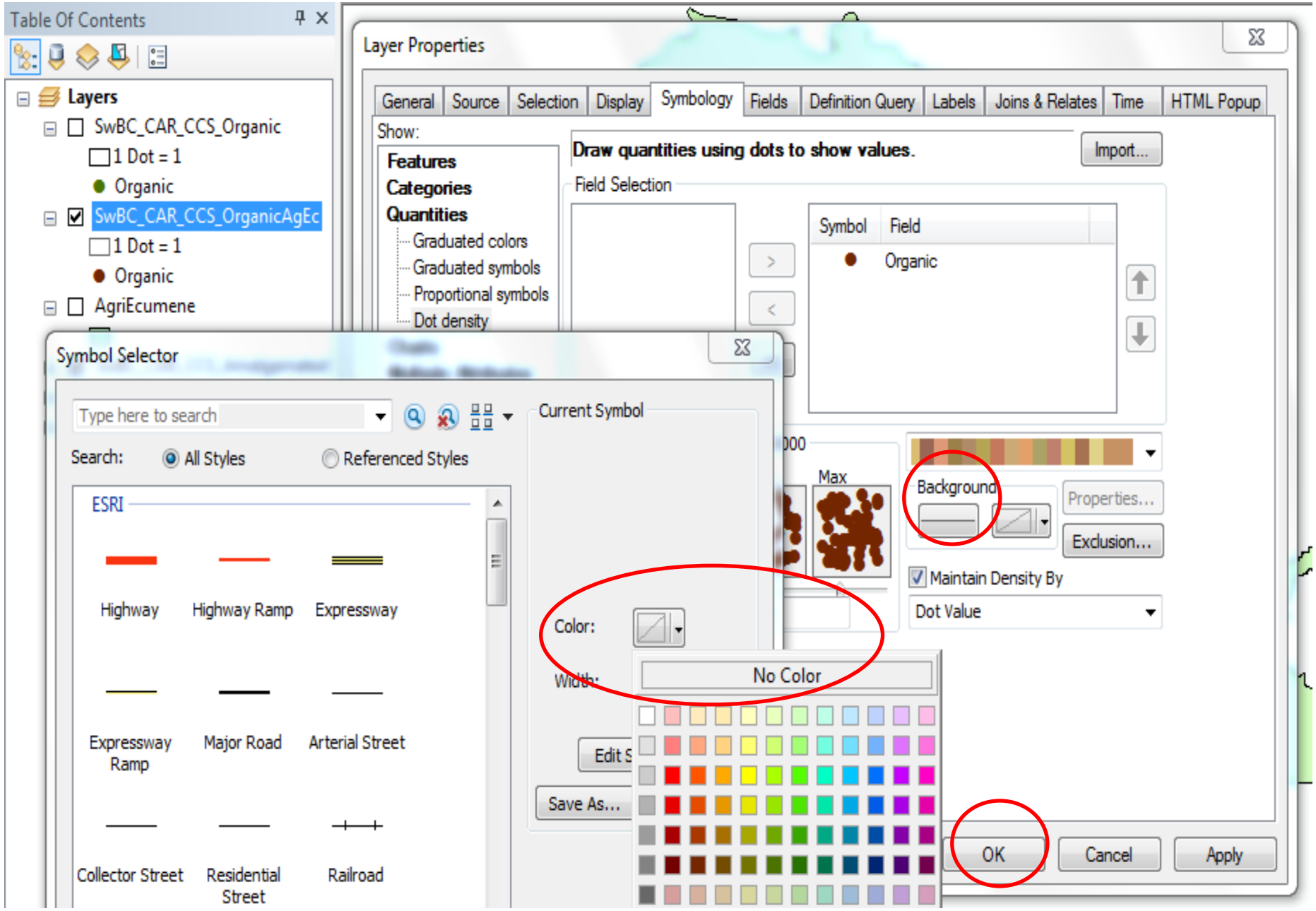


10. symbolize SWBC_CAR_CCS_OrganicAgEc with dot density: Layer Properties–Symbology-Quantities-Dot Density, and move Organic to symbolize it by Dot Density

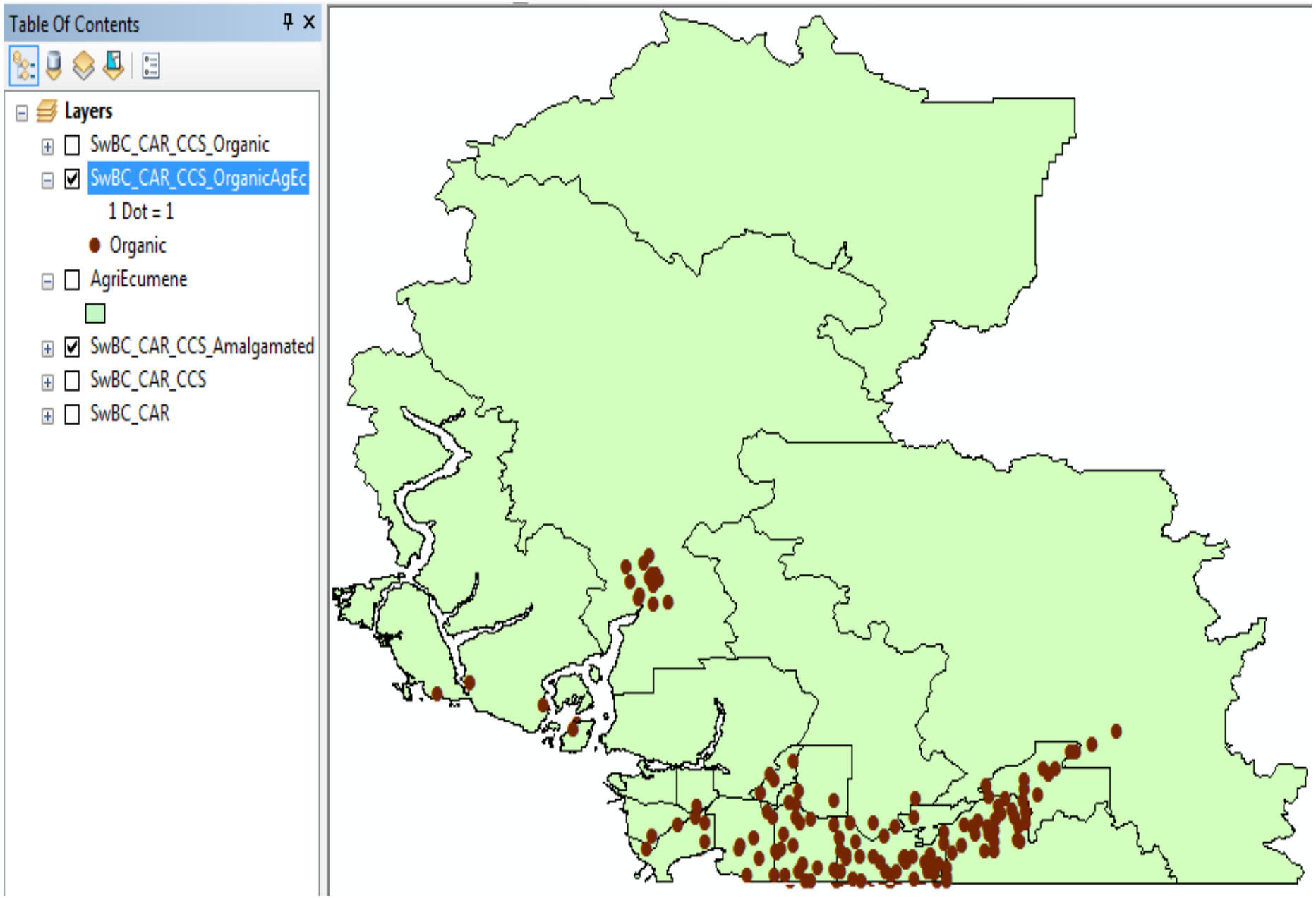


for display purposes, Dot size = 9 and Dot Value: 1 (1 dot = 1 farm); colour can be changed and…see next page…

11. …set Background to No Colour; OK

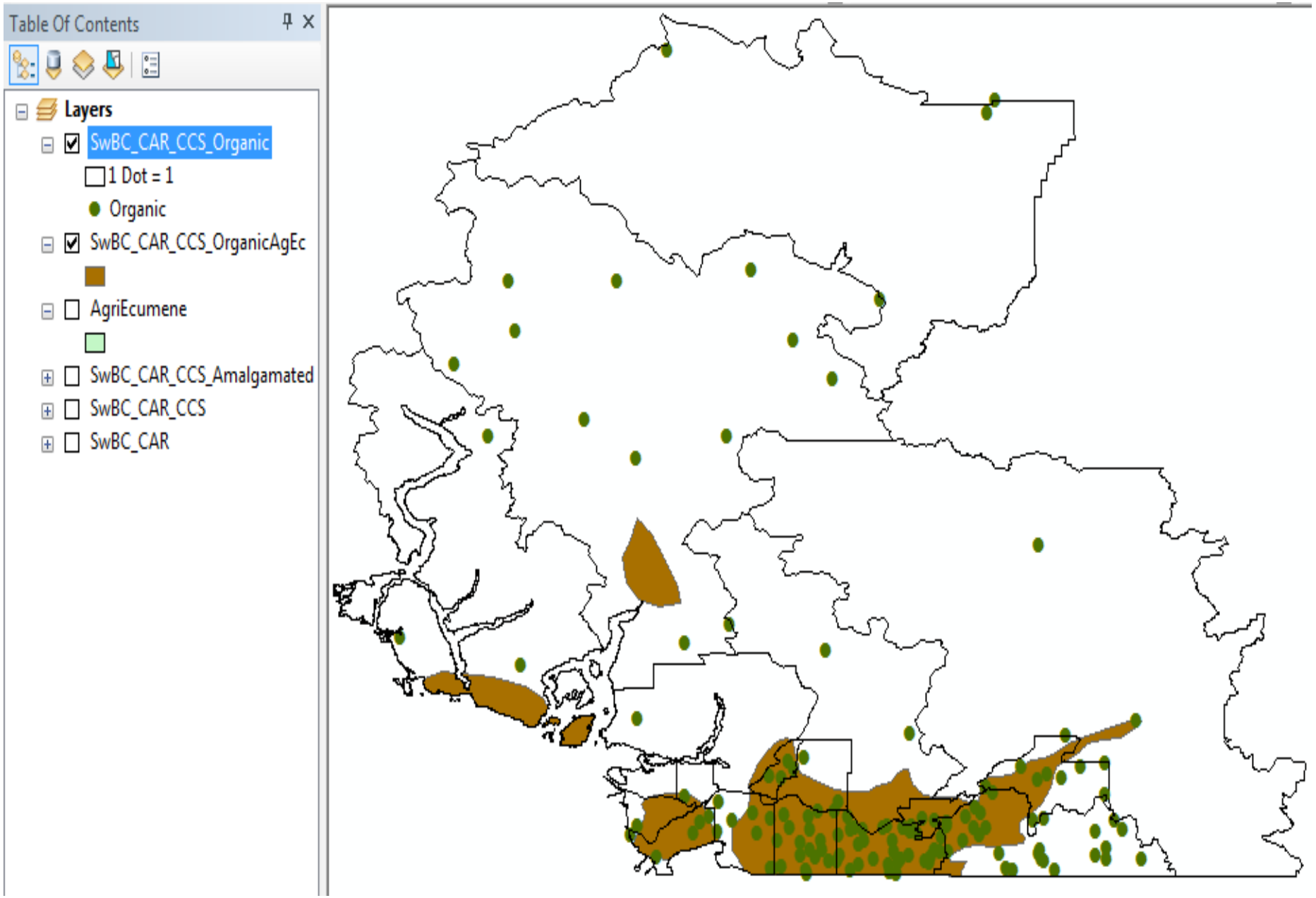


Organic Farms in SwBC by Agricultural Ecumene (by Dot Density)



Compare to map on next slide 44

Organic Farms in SwBC by CCS (by Dot Density within CCSs over AgriEcumene)



Note: This is slide 39 with organic farms within CCSs