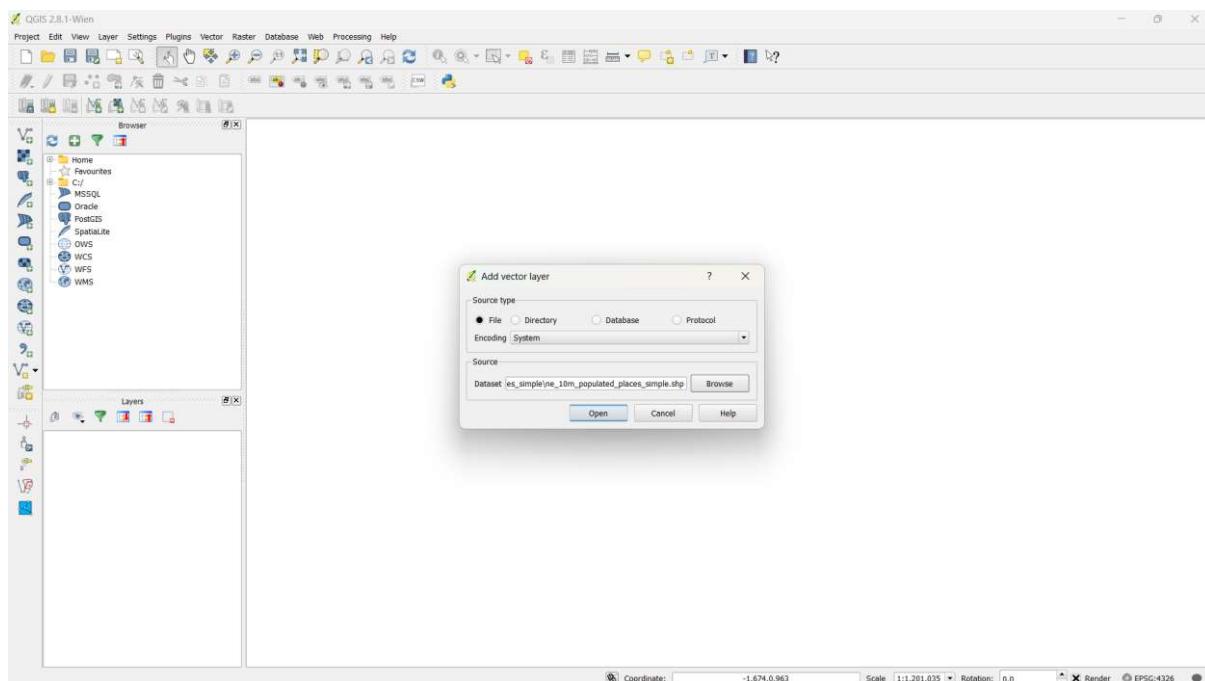


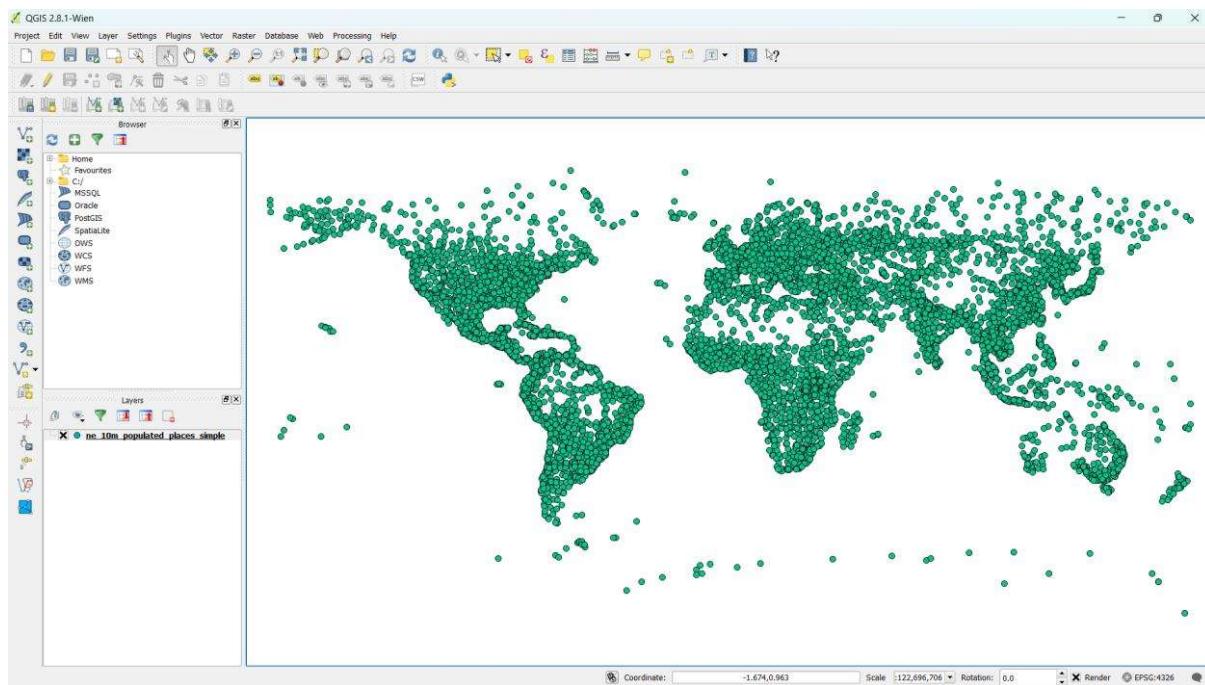
## PRACTICAL – 8

**Aim:** Advanced GIS Operations 1: Nearest Neighbor Analysis, Sampling Raster Data using Points or Polygons, Interpolating Point Data.

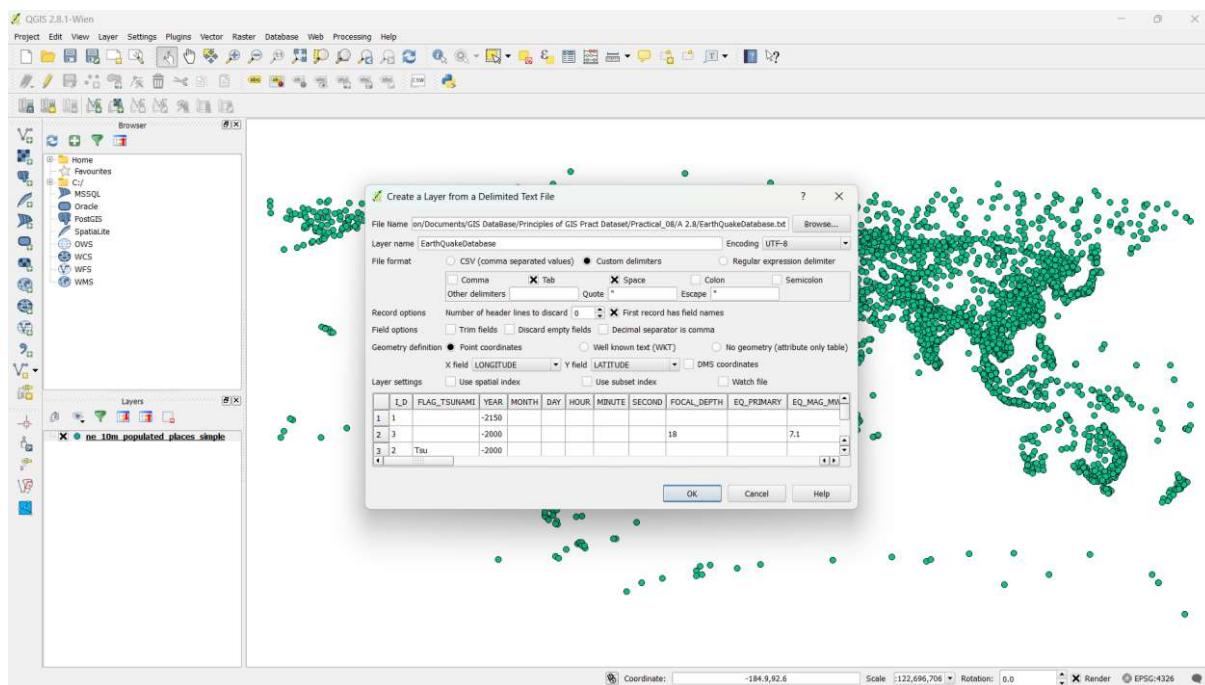
### Steps:

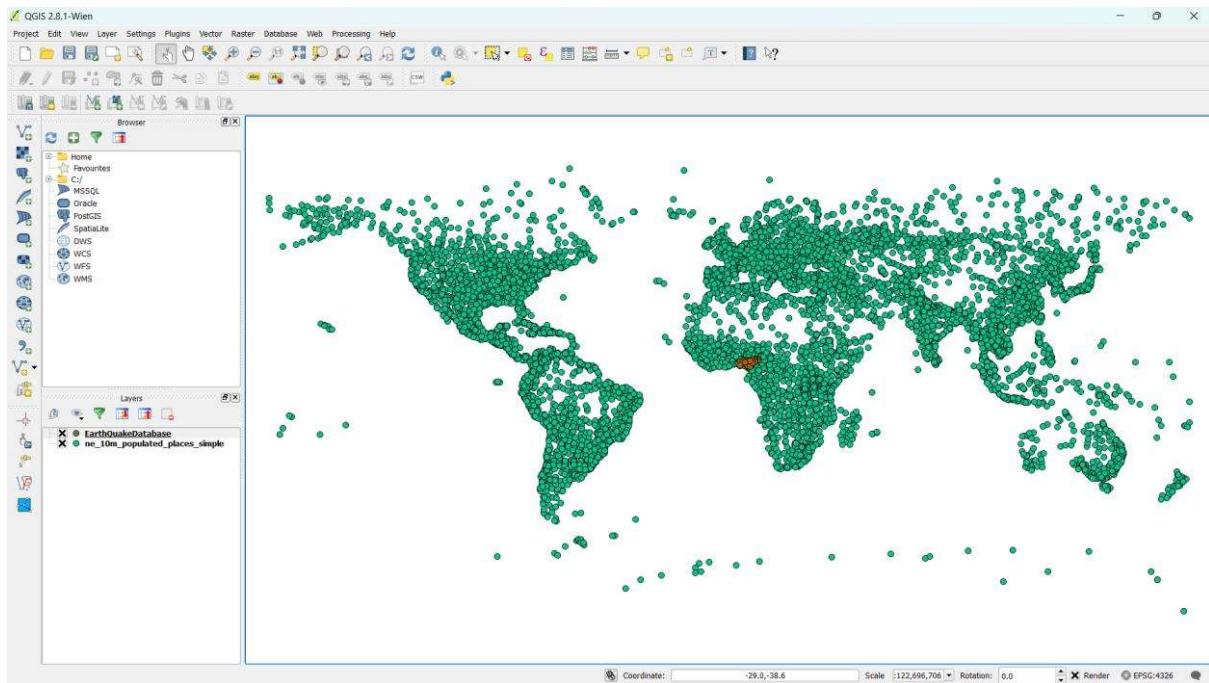
Step 1 – Add the following vector layer.



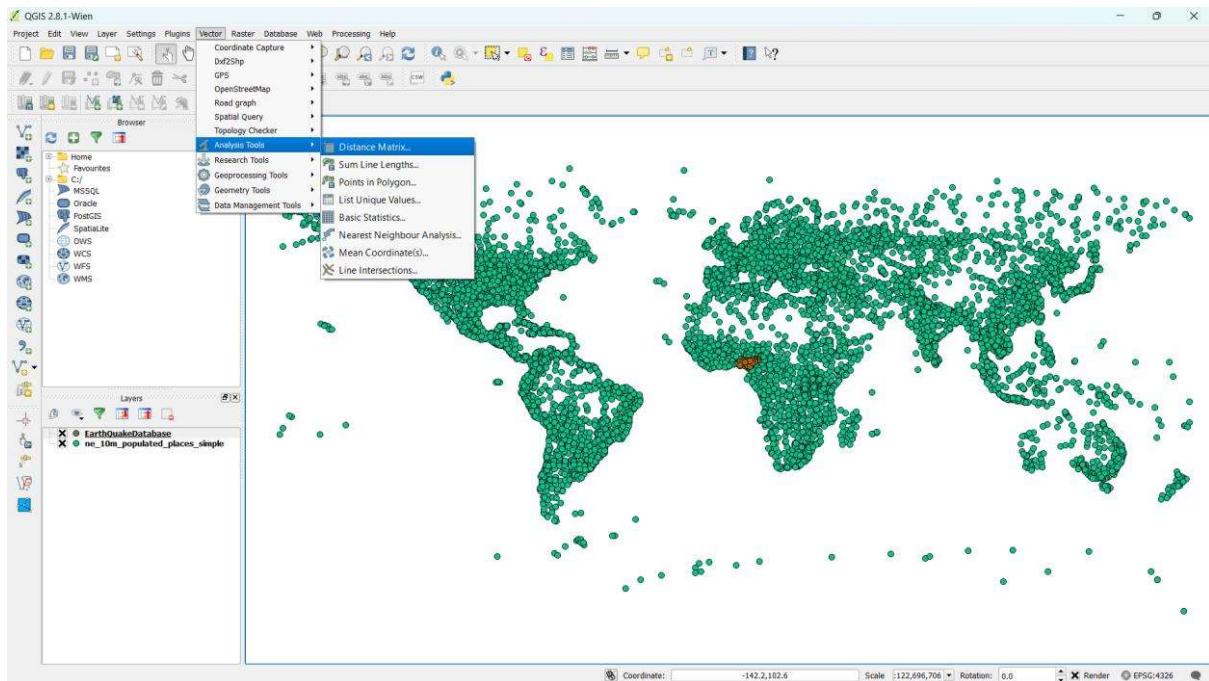


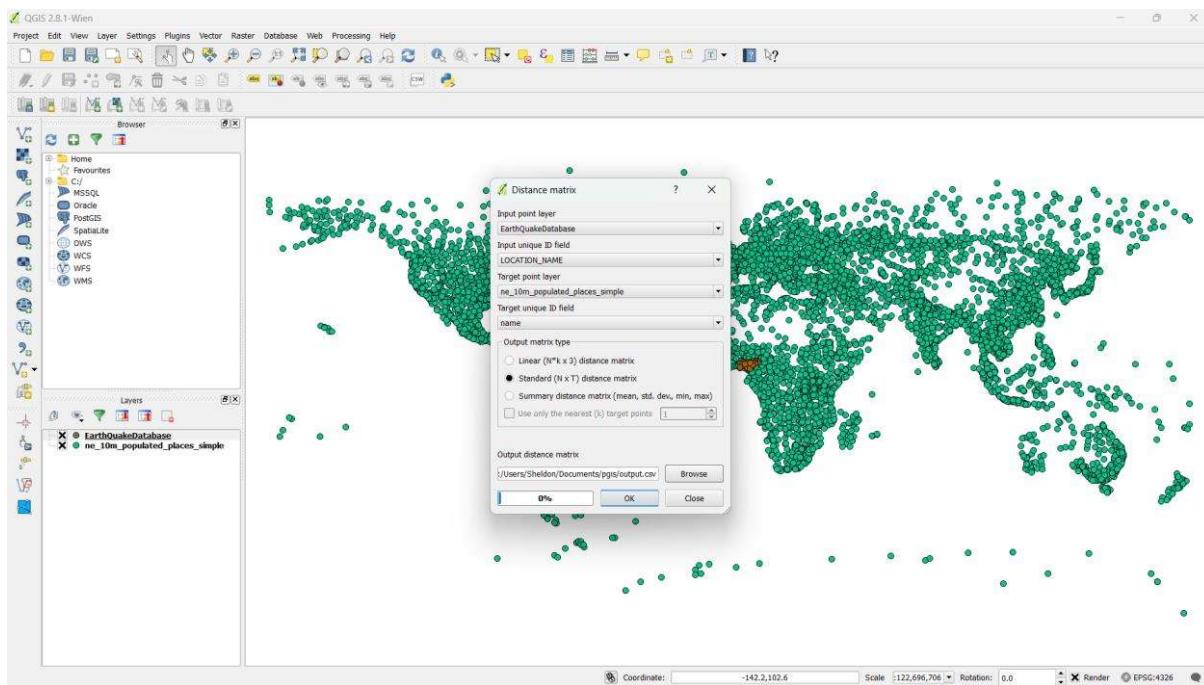
Step 2 – Add a delimited text layer. Set the following parameters and click OK.



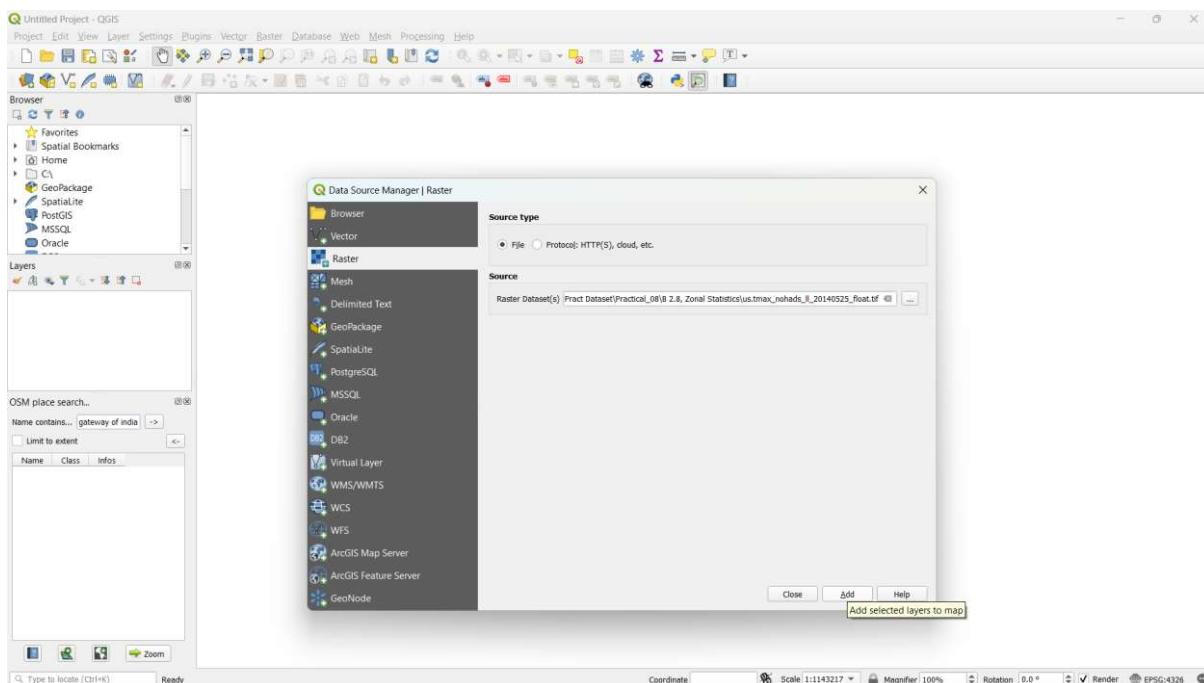


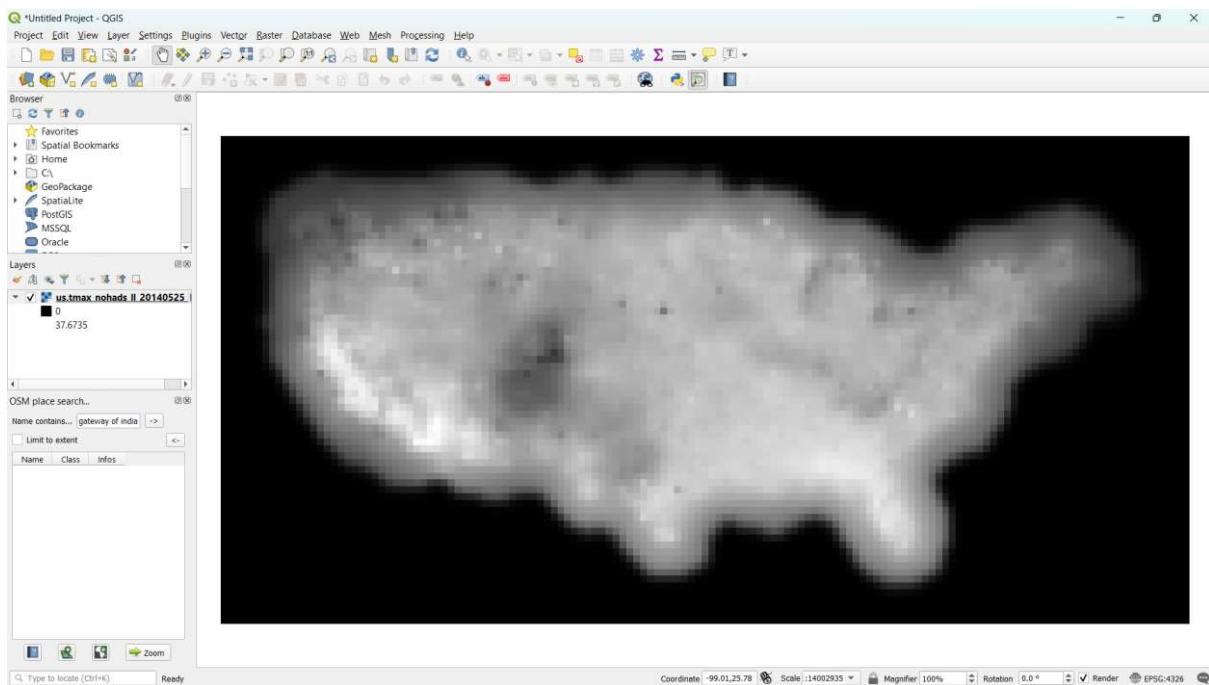
Step 3 – Vector > Analysis Tools > Distance Matrix. Set the following parameters and hit OK.



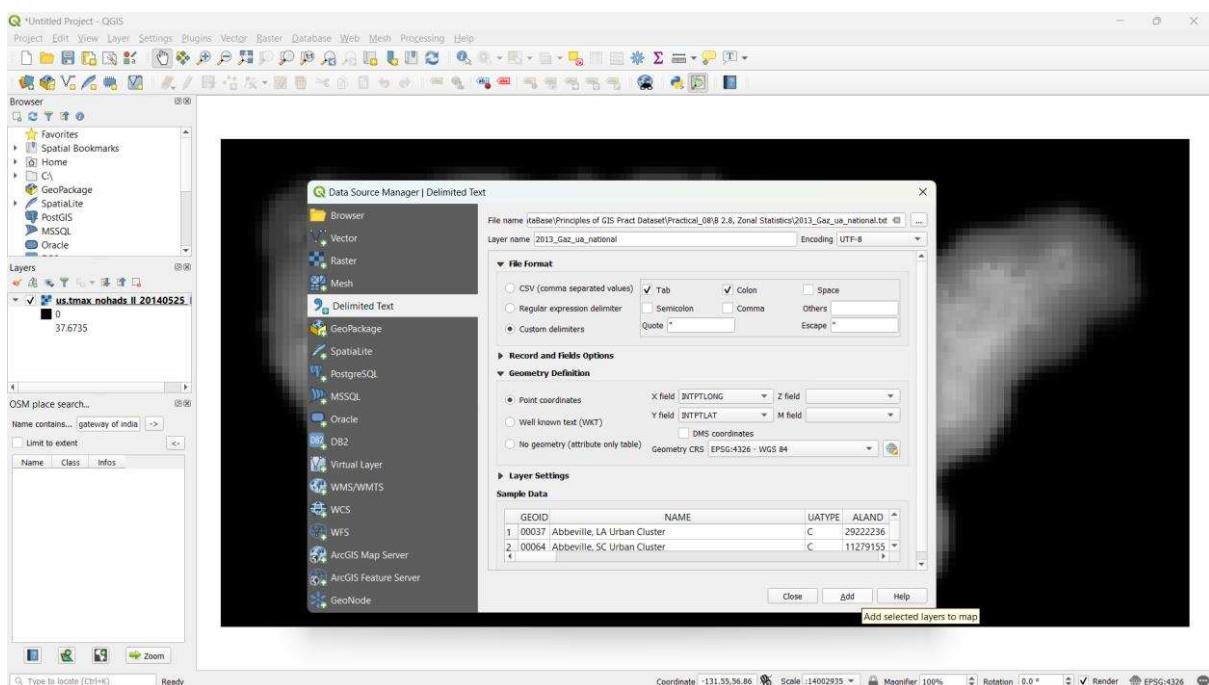


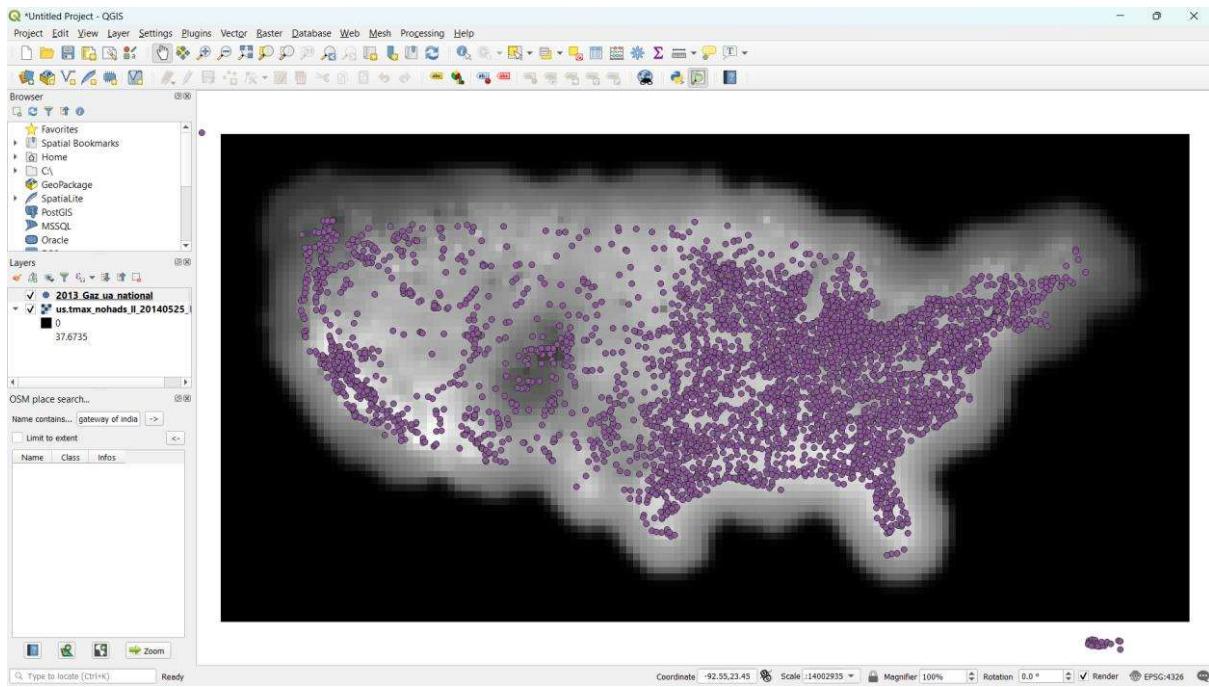
Step 4 – Create a new project. Add the following Raster Layer.



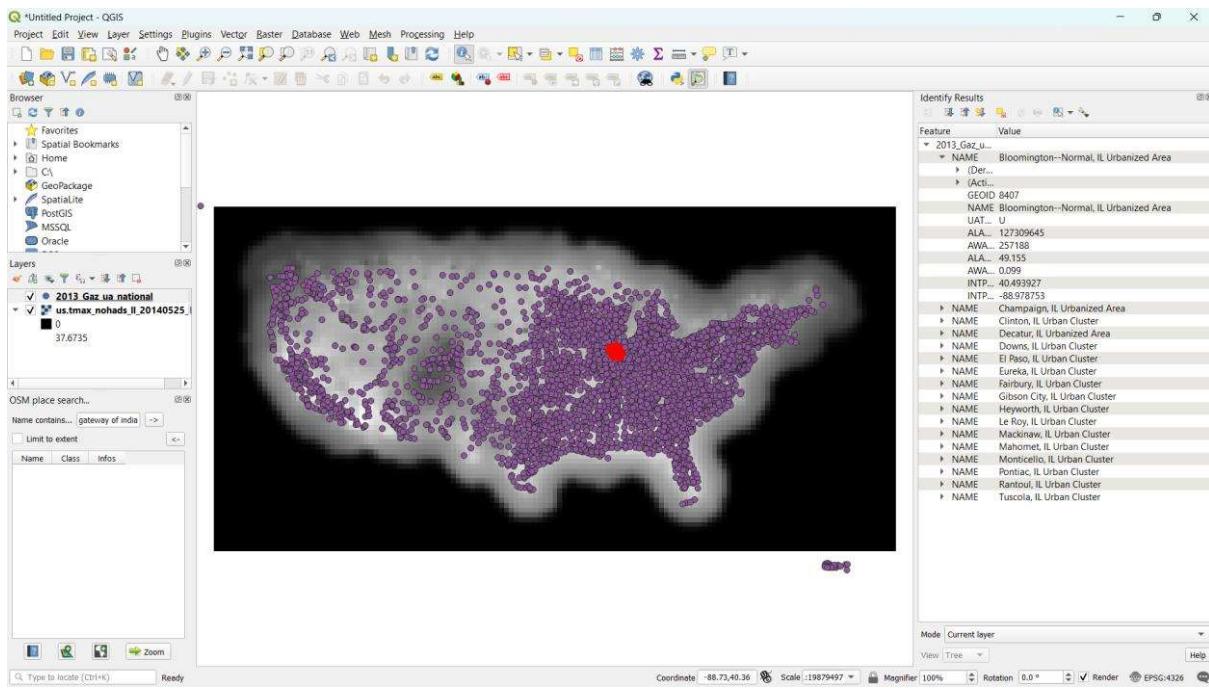


Step 5 – Add the following Delimited Text Layer. Set the following attributes and click add.

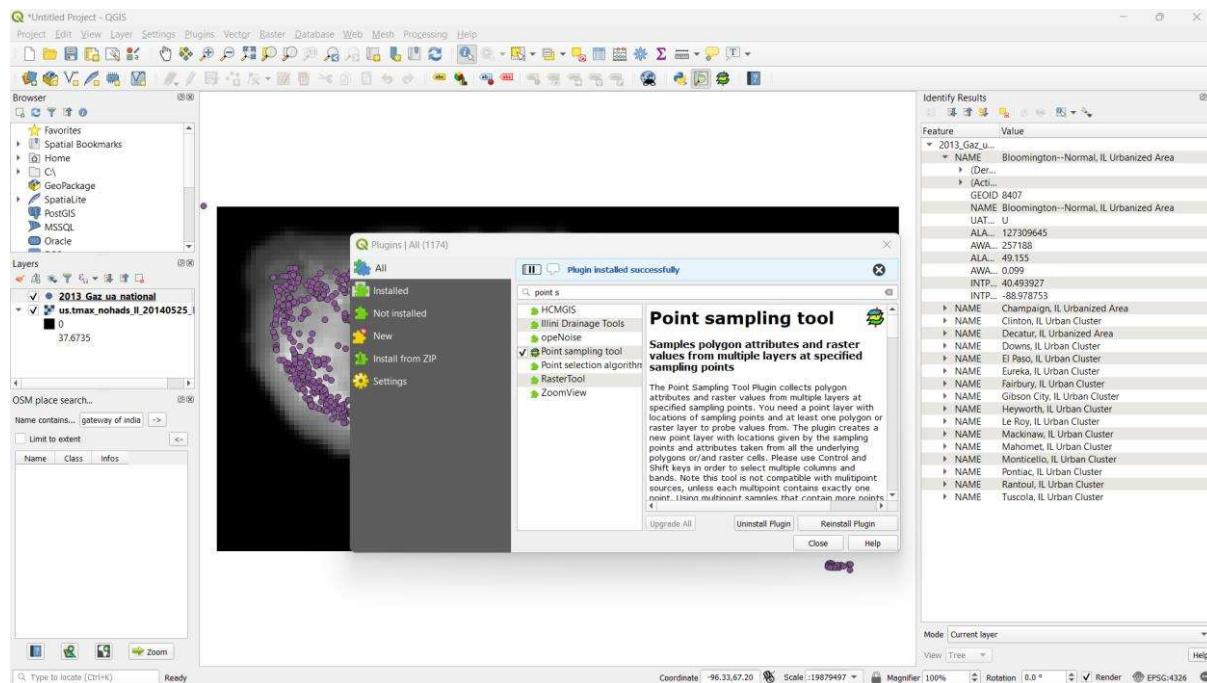




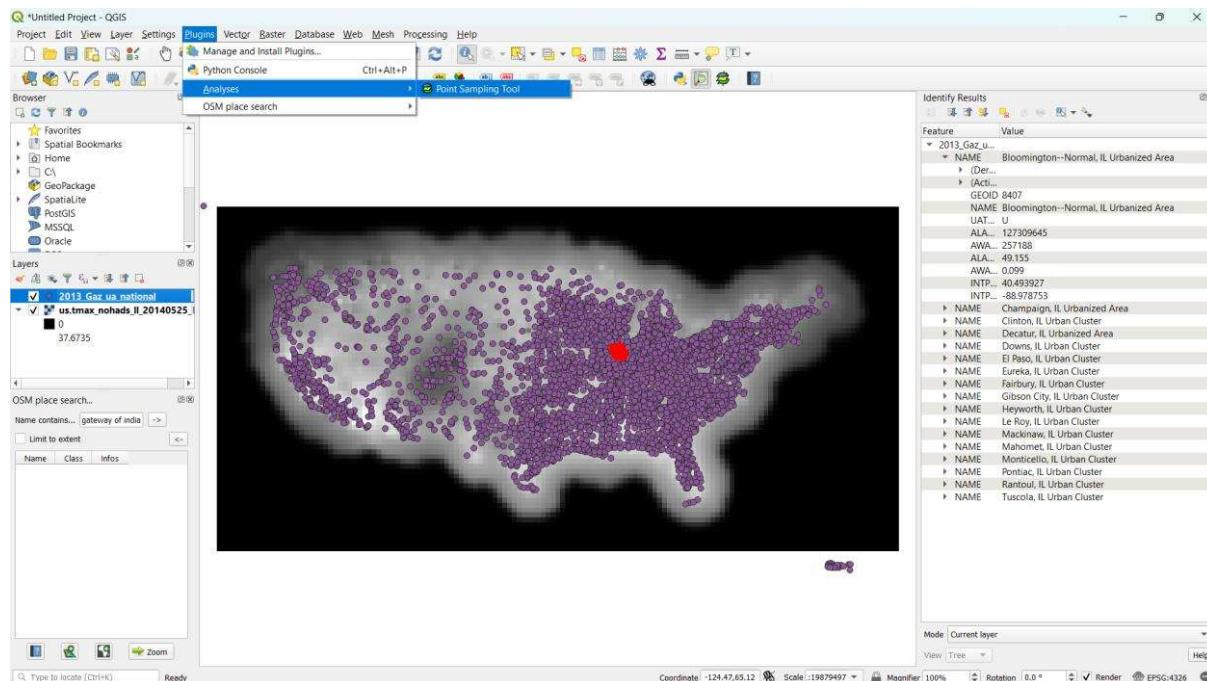
Step 6 – Select the identify features tool and click on any area to show its features.

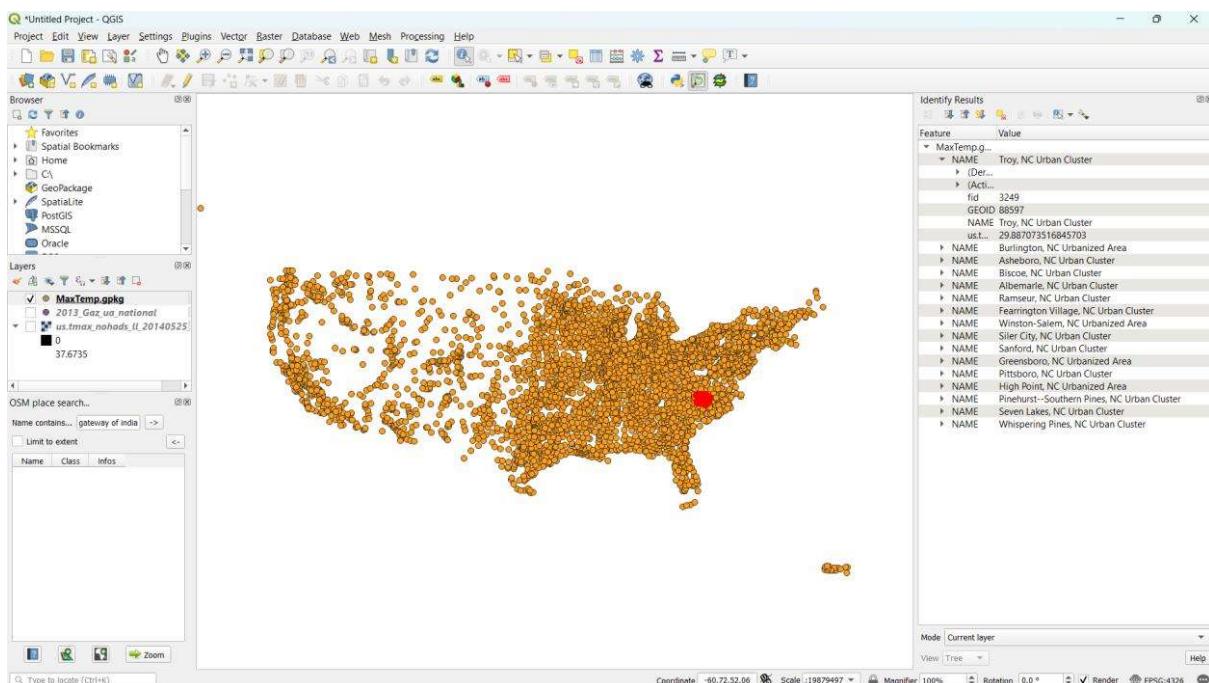
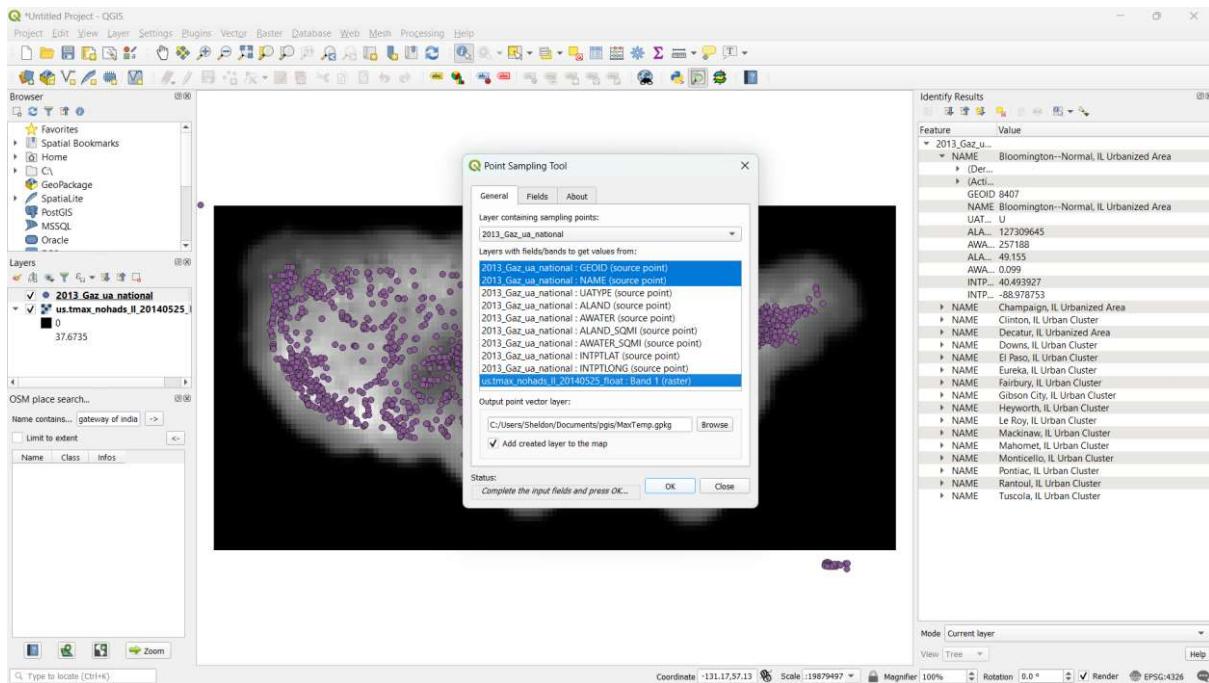


### Step 7 – Install the point sampling tool plugin.

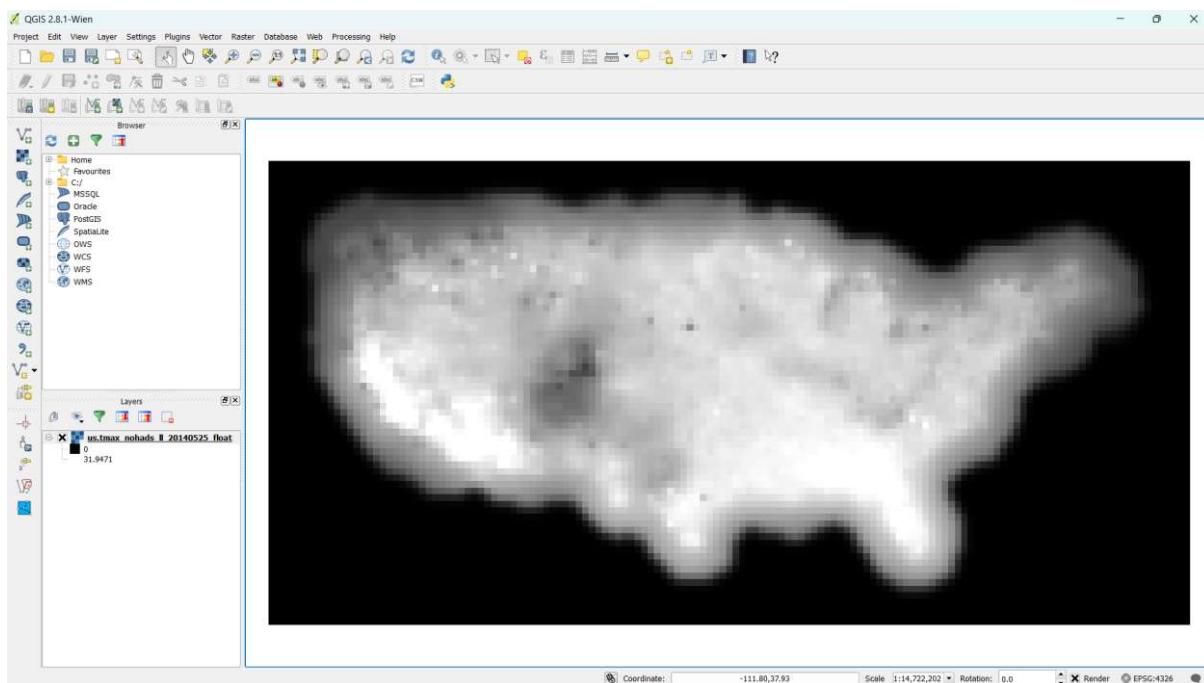
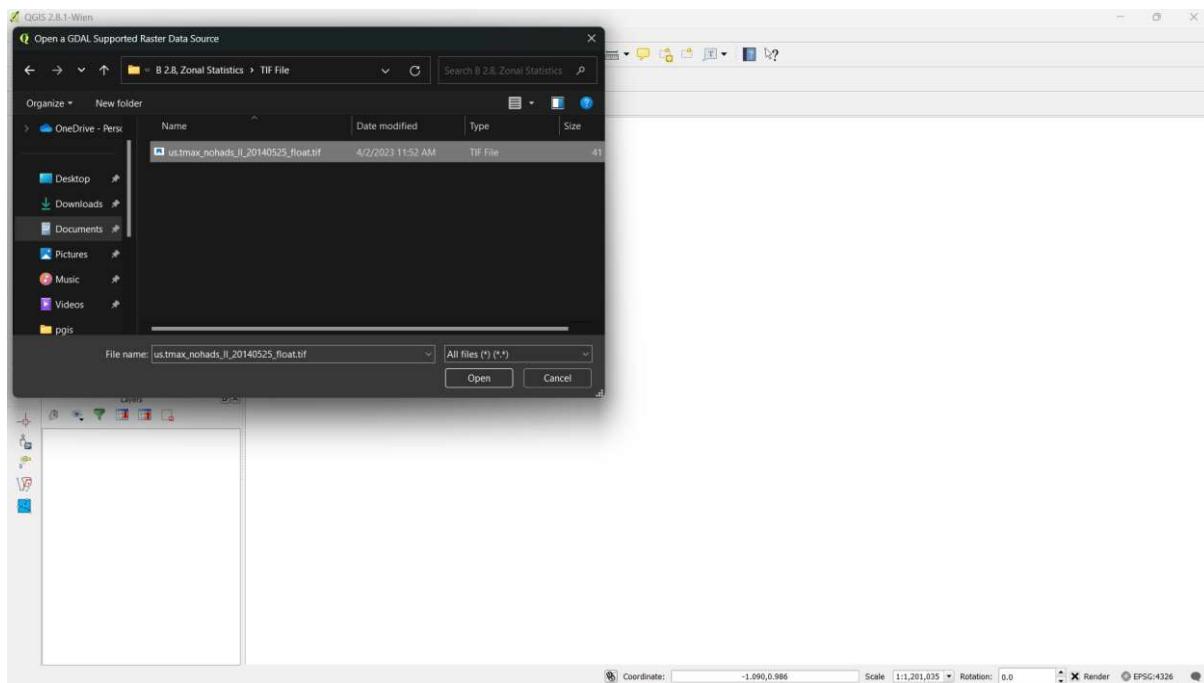


Step 8 – Select the Delimited Text Layer and then Plugin > Analysis > Point Sampling Tool.  
 Set the following parameters and click OK.

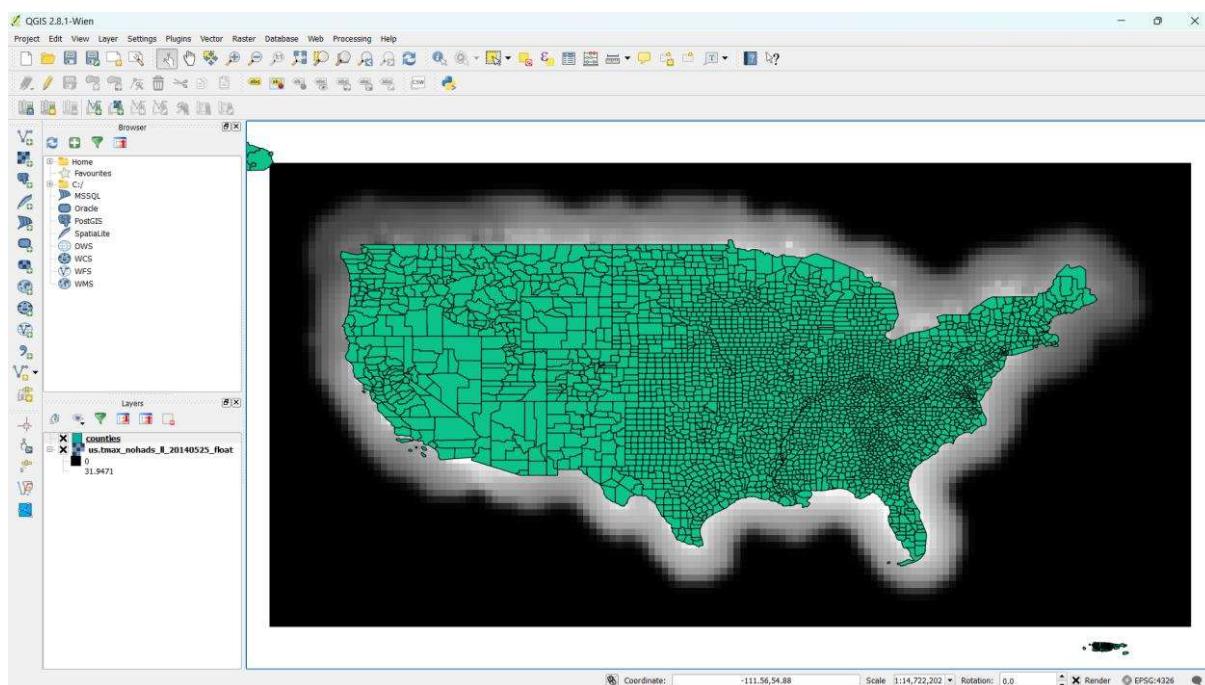
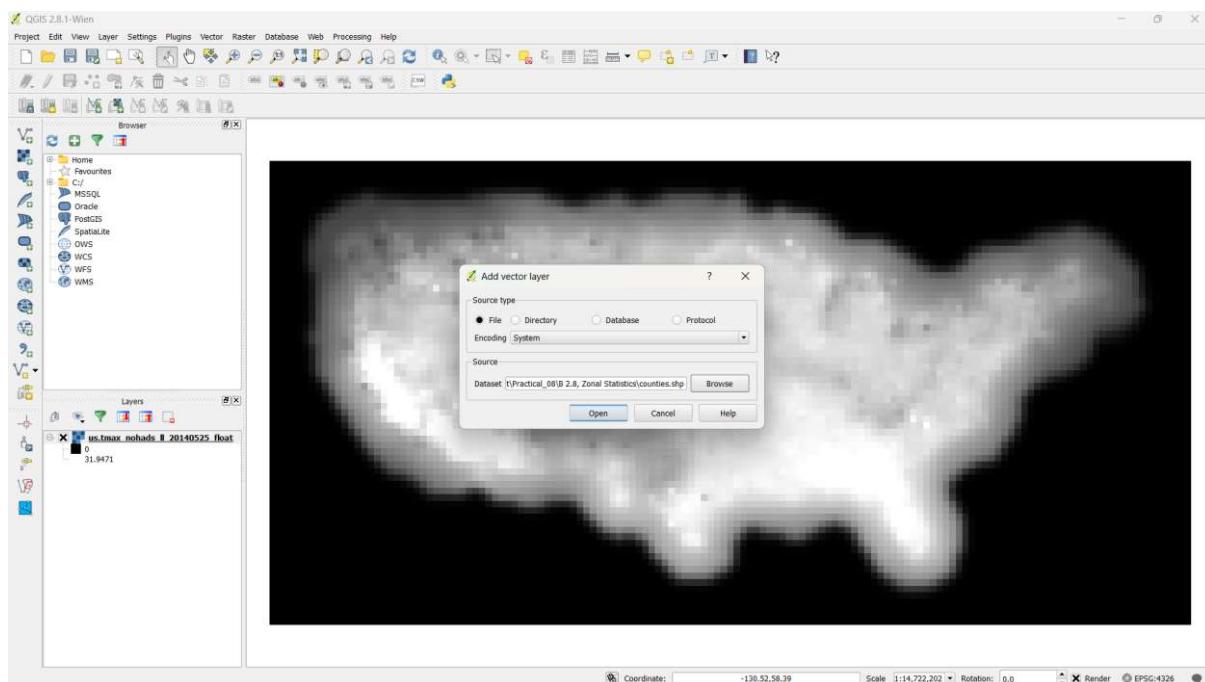




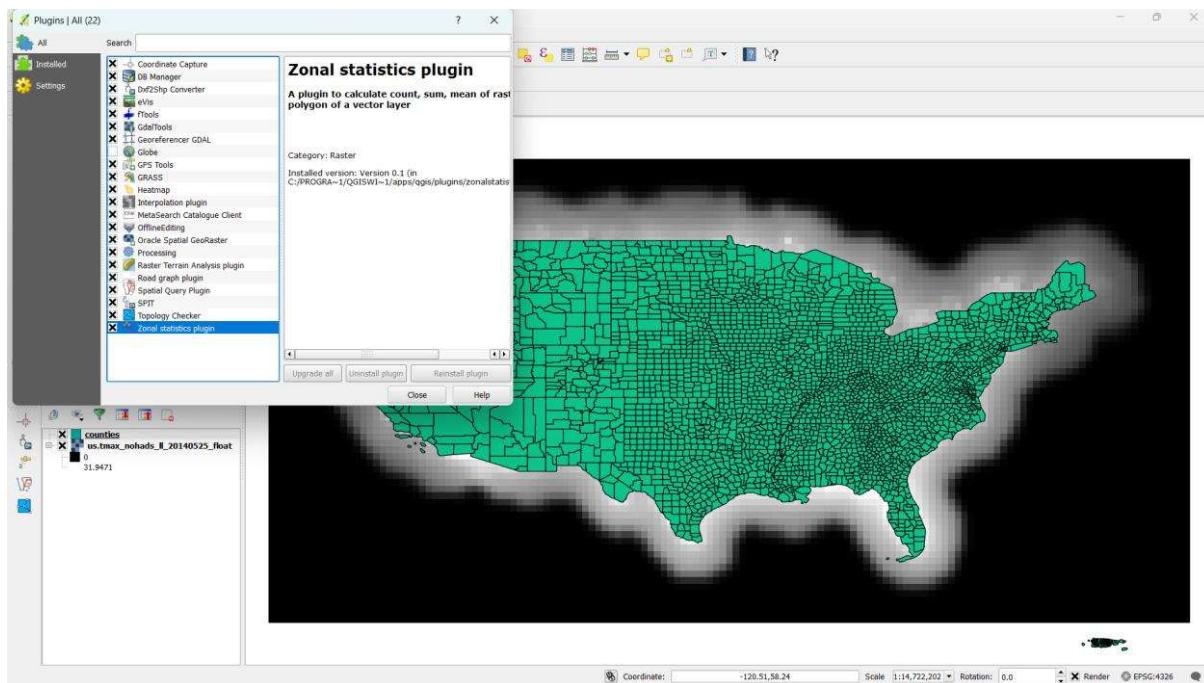
Step 9 – Create a new project. And add a new Raster layer.



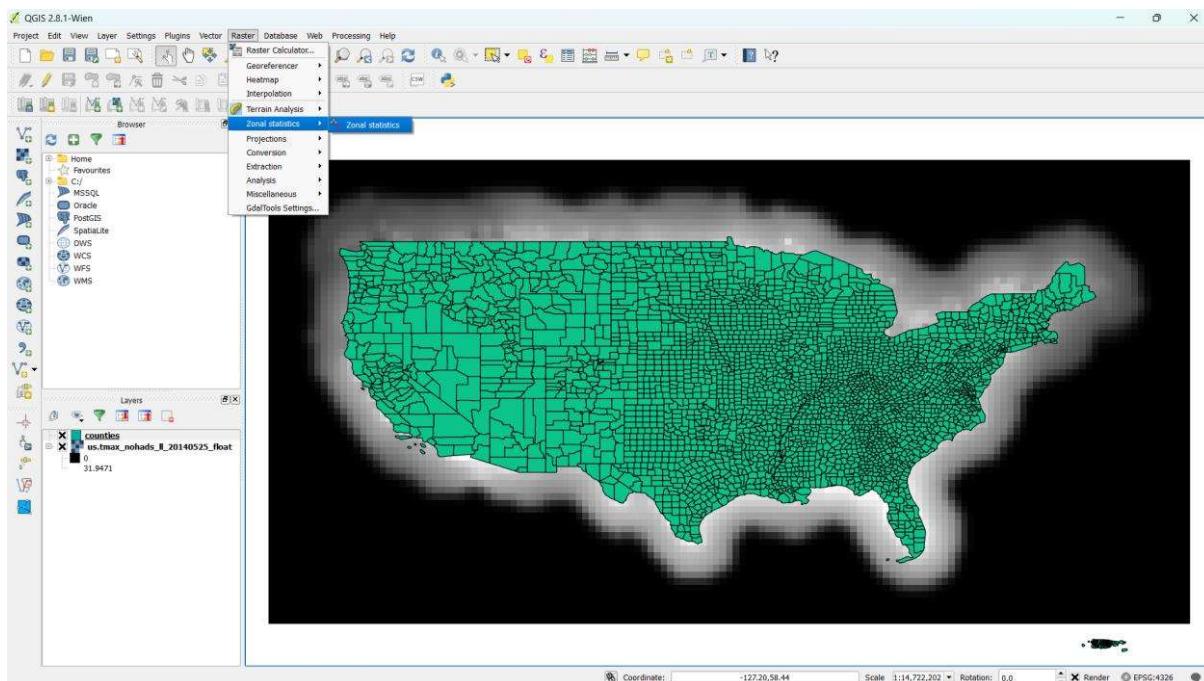
Step 10 – Add the following Vector layer.

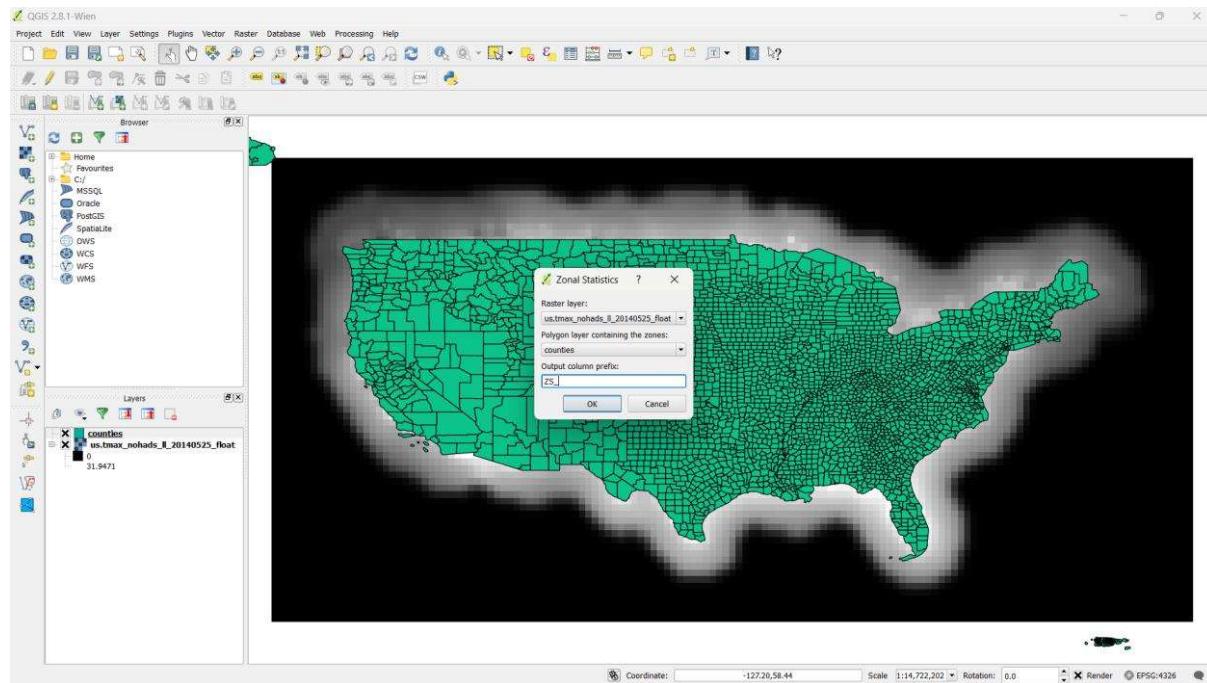


Step 11 – Install Zonal Statistics plugin.



Step 12 – Raster > Zonal Statistics. Set the following preferences and click OK.



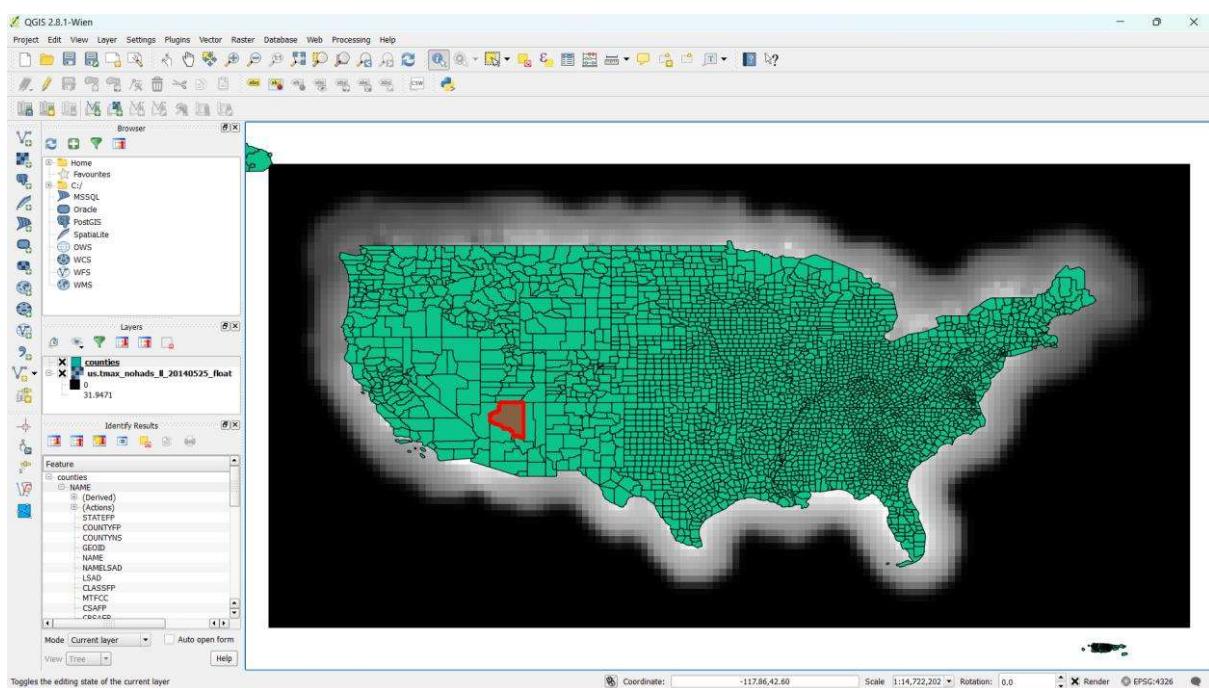


### Step 13 – Open the Attribute Table of the vector layer.

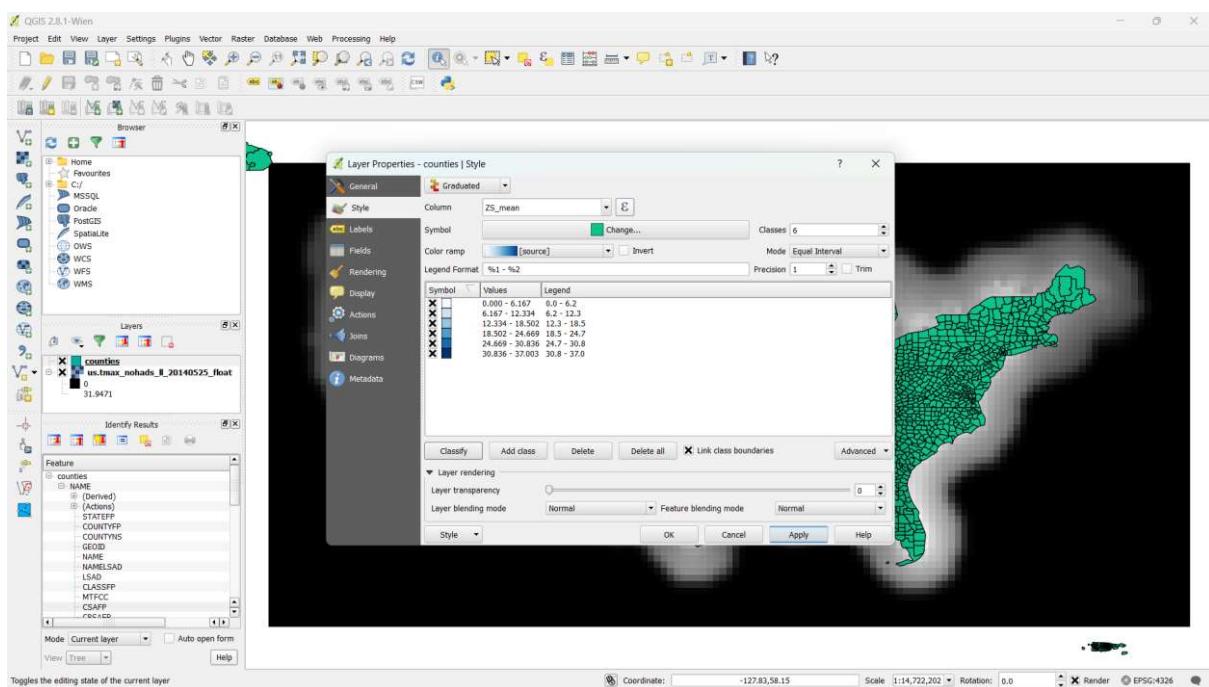
Attribute table - counties : Features total: 3234, filtered: 3234, selected: 0

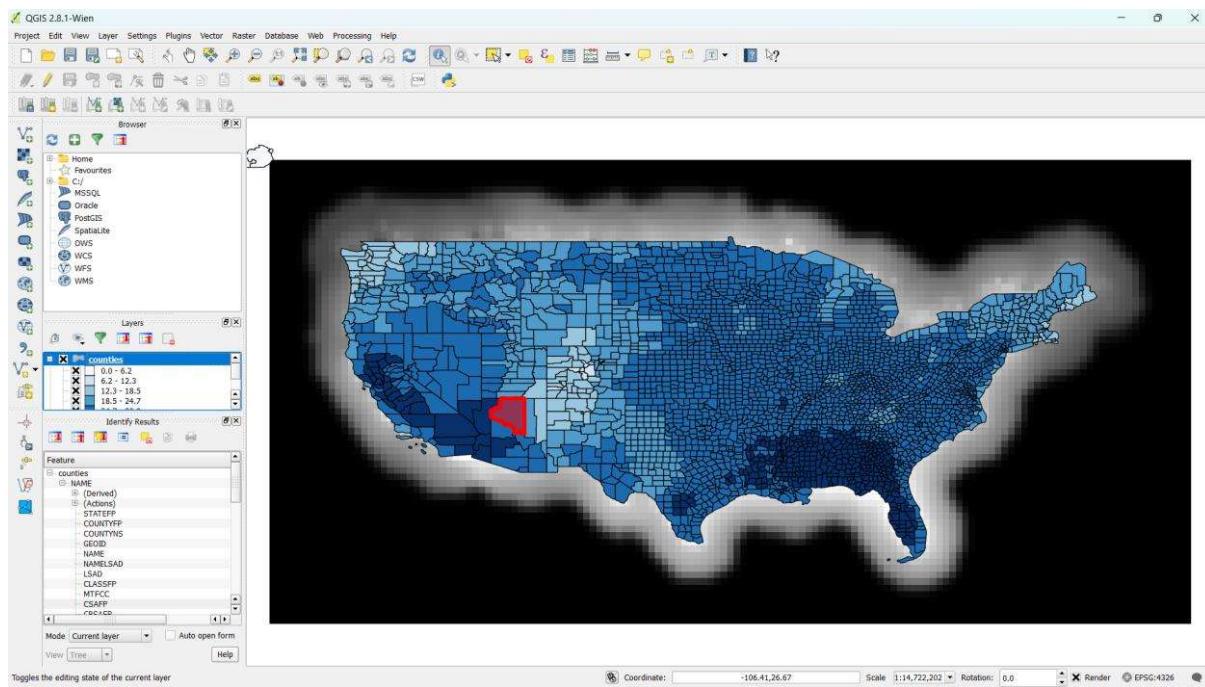
	STATEFP	COUNTYFP	COUNTYNAME	GEOID	NAME	NAMESAD	LSAD	CLASSPP	MTFCC	CSAFFF	CBSSAFF	METDBPP	FUNCSTAT	ALAND	AWATER	INTPTLAT	INTPTLON	ZS_count	ZS_n
0	31	039	00858541	31039	Cuming	Cuming County	06	H1	G4020	NULL	NULL	NULL	A	1477995771	104477556	+017158651	-0067885168	0.646095012...	17.55995
1	53	069	01513275	53069	Wahkiakum	Wahkiakum C...	06	H1	G4020	NULL	NULL	NULL	A	682138834	616582490	+062944537	-123.4244583	0.347354119...	5.5314175
2	35	011	00853054	35011	De Baca	De Baca County	06	H1	G4020	NULL	NULL	NULL	A	6015540562	291594851	+34.3592729	-104.3686961	3.000000000...	67.05088
3	31	109	00853987	31109	Lancaster	Lancaster C...	06	H1	G4020	339	30700	NULL	A	2169236044	228813231	+40.7835474	-096.6886584	0.933446391...	25.96557
4	31	129	00853886	31129	Nuckolls	Nuckolls County	06	H1	G4020	NULL	NULL	NULL	A	1489445230	17184841	+04.7664918	-096.0468422	0.630763924...	17.37914
5	32	065	00853815	32065	Los Angeles	Los Angeles Co...	13	H1	G4020	450	45000	NULL	A	9749847676	17184841	+03.3482760	-118.2430000...	0.646095012...	17.55995
6	46	099	01265772	46099	Menominee	Menominee County	06	H1	G4020	43620	NULL	NULL	A	209004705	17398613	+43.6617723	-090.7957261	0.941020595...	25.28712
7	48	327	01383949	48327	Menard	Menard County	06	H1	G4020	NULL	NULL	NULL	A	2336435914	613556	+30.8843655	-099.8538986	0.881793831...	18.78829
8	06	091	00277310	06091	Sierra	Sierra County	06	H1	G4020	NULL	NULL	NULL	A	2468868351	232981121	+39.3769232	-120.521926	2.000000000...	58.71786
9	21	053	00516873	21053	Clinton	Clinton County	06	H1	G4020	NULL	NULL	NULL	A	510864239	21164510	+36.288647	-085.1534262	0.214693337...	5.477143
10	39	063	01874048	39063	Hancock	Hancock County	06	H1	G4020	248	22300	NULL	A	1376210269	595983	+41.0904711	-081.6660335	0.591729706...	16.85591
11	48	189	01383880	48189	Hale	Hale County	06	H1	G4020	38380	NULL	NULL	A	2602115666	246676	+34.0848364	-101.8228879	1.016631952...	22.35119
12	01	027	00161539	01027	Clay	Clay County	06	H1	G4020	NULL	NULL	NULL	A	1564235220	5284585	+33.2703999	-085.8635254	0.607568651...	19.18467
13	48	011	00183791	48011	Armstrong	Armstrong County	06	H1	G4020	100	11100	NULL	A	2334882004	12219801	+34.9641790	-101.3566823	0.934405186...	21.18708
14	39	003	00853815	39003	Aiken	Aiken County	06	H1	G4020	338	36520	NULL	A	1629500000	1629500000	+03.3482760	-080.3507093	0.646095012...	17.55995
15	43	189	00848976	11389	Attala	Attala County	06	H1	G4020	12260	12260	NULL	A	66663161	23116181	+33.4824637	-080.4731680	0.267723567...	8.426062
16	55	111	01581115	55111	Sauk	Sauk County	06	H1	G4020	257	12460	NULL	A	2152024914	458623230	+43.2796796	-080.8432290	0.977278617...	27.36431
17	05	137	00069602	05137	Stone	Stone County	06	H1	G4020	NULL	NULL	NULL	A	1570579416	7842206	+35.3570312	-092.1405728	0.629984650...	16.47039
18	41	063	01155513	41063	Wallowa	Wallowa County	06	H1	G4020	NULL	NULL	NULL	A	8148605403	1419920	+45.5937530	-117.1855778	2.000000000...	55.50326
19	42	007	01214112	42007	Beaver	Beaver County	06	H1	G4020	428	38000	NULL	A	1125010990	24165978	+46.8841461	-080.3507090	0.490629782...	12.76527
20	28	061	00695754	28061	Jasper	Jasper County	06	H1	G4020	29860	NULL	NULL	A	175444087	3181588	+32.0169894	-089.1194302	0.669970211...	21.30894
21	29	083	00784940	29083	Henry	Henry County	06	H1	G4020	NULL	NULL	NULL	A	180364460	916364460	+38.3864999	-093.7926728	0.782269930...	22.69362
22	08	109	00929104	35035	Otero	Otero County	06	H1	G4020	10460	NULL	NULL	A	185057630	75291173	+33.7859042	-105.7810785	5.000000000...	128.9794
23	37	031	00929104	35003	Catron	Catron County	06	H1	G4020	NULL	NULL	NULL	A	17932247966	14192176	+33.9016583	-108.3620886	9.000000000...	193.1593
24	49	053	01484030	49053	Pocahontas	Pocahontas County	06	H1	G4020	450	20500	NULL	A	1767650000	1767650000	+03.3482760	-080.3507090	0.646095012...	19.70716
25	49	001	01117688	49001	Adeer	Adeer County	06	H1	G4020	NULL	NULL	NULL	A	266435702	14095521	+41.0279596	-111.4502059	0.216990713...	16.50907
26	39	085	01074055	39085	Lake	Lake County	06	H1	G4020	184	17460	NULL	A	1485309532	9244779	+35.8986438	-094.4510258	0.596697145...	16.40946
27	31	775	01799074	51775	Salem	Salem City	25	C7	G4020	40220	NULL	F		59061708	194549013	+15.241163	-081.3924629	1.108831931...	26.63791
28	51	121	01674630	51121	Montgomery	Montgomery ...	06	H1	G4020	13980	NULL	A	1001059703	5813304	+37.1748453	-080.3871310	0.408633400...	10.23288	
29	47	065	01639749	47065	Hamilton	Hamilton County	06	H1	G4020	174	16860	NULL	A	1404937897	86585703	+35.1591860	-085.2022595	0.590380054...	16.60441
30	35	035	00929104	35035	Otero	Otero County	06	H1	G4020	10460	NULL	A	17128141975	37012196	+32.388764	-105.7810785	5.000000000...	128.9794	
31	35	003	00929104	35003	Lincoln	Lincoln County	06	H1	G4020	NULL	NULL	A	17932247966	14192176	+33.9016583	-108.3620886	9.000000000...	193.1593	
32	01	091	00161572	01091	Marengo	Marengo County	06	H1	G4020	NULL	NULL	A	253012418	149945451	+32.2479811	-087.7810919	0.974188793...	31.95079	
33	56	023	01581115	56023	Lincoln	Lincoln County	06	H1	G4020	NULL	NULL	A	105397054	105397054	+33.3482760	-080.3507090	0.646095012...	17.55995	
34	29	011	00758466	29011	Benton	Benton County	06	H1	G4020	NULL	NULL	A	1533679752	12446934	+37.2007899	-094.3940983	0.529932425...	18.21058	
35	48	057	01383814	48057	Calhoun	Calhoun County	06	H1	G4020	544	38900	NULL	A	1321707362	1361903534	+28.4171791	-096.579729	0.948431750...	27.18508
36	51	735	01489436	51735	Poquoson	Poquoson city	25	C7	G4020	545	47260	F		39846697	163453793	+37.2035337	-063.7035337	0.063749331...	2.686848
37	54	075	01559044	54075	Pocahontas	Pocahontas C...	06	H1	G4020	NULL	NULL	A	2435321651	3978950	+38.3260600	-080.6101217	1.005325748...	24.83818	
38	48	077	01383880	48077	Clay	Clay County	06	H1	G4020	48660	NULL	A	2819780751	72591173	+33.7859042	-098.2119714	1.126227080...	31.51637	
39	51	095	01489135	51095	James City	James City Co...	06	H1	G4020	545	47260	NULL	A	368847278	95319553	+37.3248367	-076.7778878	0.188762740...	5.018184
40	31	101	00853872	31101	Keith	Keith County	06	H1	G4020	NULL	NULL	A	2749565172	12467159	+41.1944488	-101.6444444	1.234128782...	30.16990	
41	31	137	00853890	31137	Phelps	Phelps County	06	H1	G4020	NULL	NULL	A	139848577	1646533	+40.516947	-099.4065568	0.594891907...	15.39394	
42	22	019	00758468	22019	Calcasieu	Calcasieu Parish	15	H1	G4020	29340	NULL	A	274942506	79221991	+36.3864588	-093.2119514	1.06261902...	32.21444	
43	22	111	00911853	22111	Union	Union Parish	15	H1	G4020	384	33740	NULL	A	22736464	79221991	+36.3864588	-093.2119514	1.06261902...	32.21444
44	49	135	01101855	46135	Sequoia	Sequoia Co...	06	H1	G4020	28000	NULL	A	1703711664	105674605	+35.5021343	-094.707969	2.000000000...	58.10412	
45	01	049	00161550	01049	Dekalb	Dekalb County	06	H1	G4020	NULL	NULL	A	2012664422	4121499	+34.4609280	-085.8039920	0.791440297...	24.44849	
46	36	101	00974148	36101	Steuben	Steuben County	06	H1	G4020	236	18500	NULL	A	360130161	34993618	+42.2607232	-077.3893233	1.187287411...	19.94790

Step 14 – Select the identify features tool and click to any area to see its features.

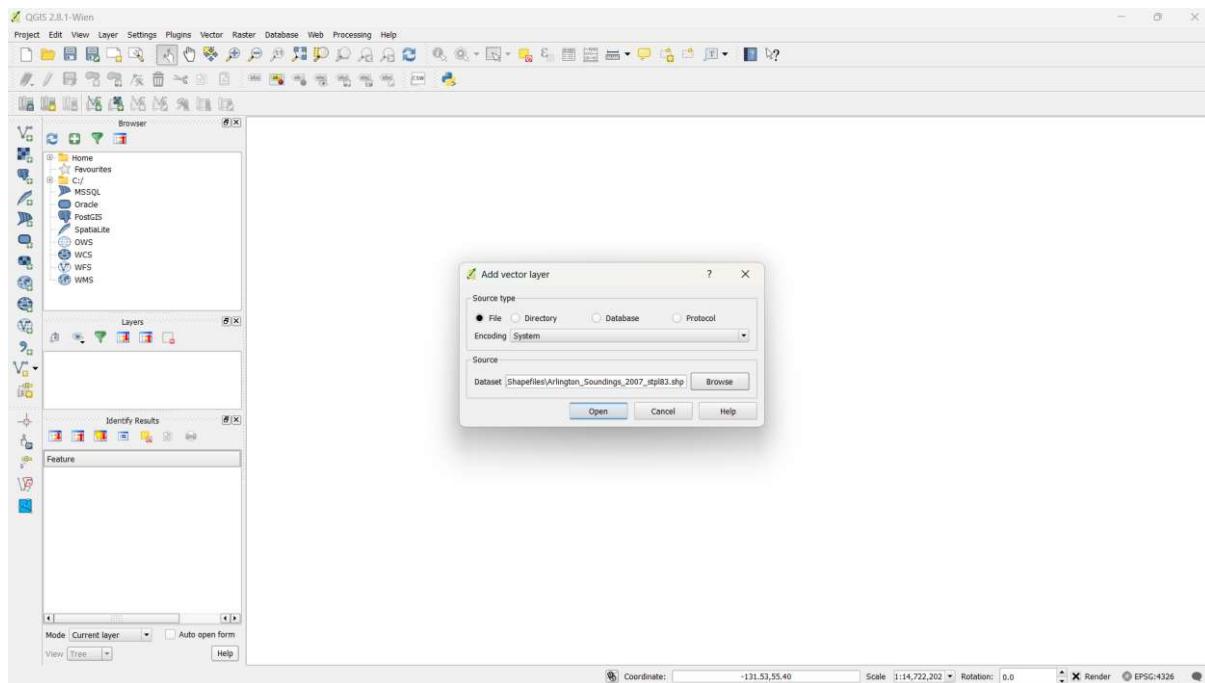


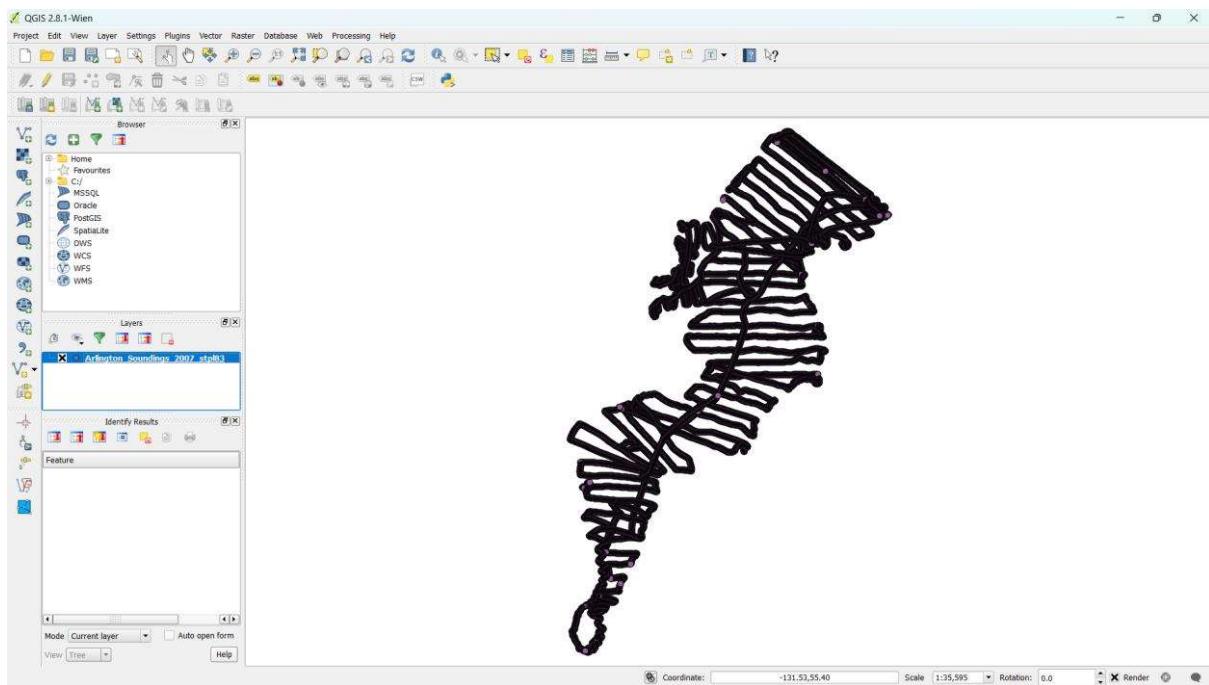
Step 15 – Open the Properties panel of the vector layer and set the following attributes then click apply.



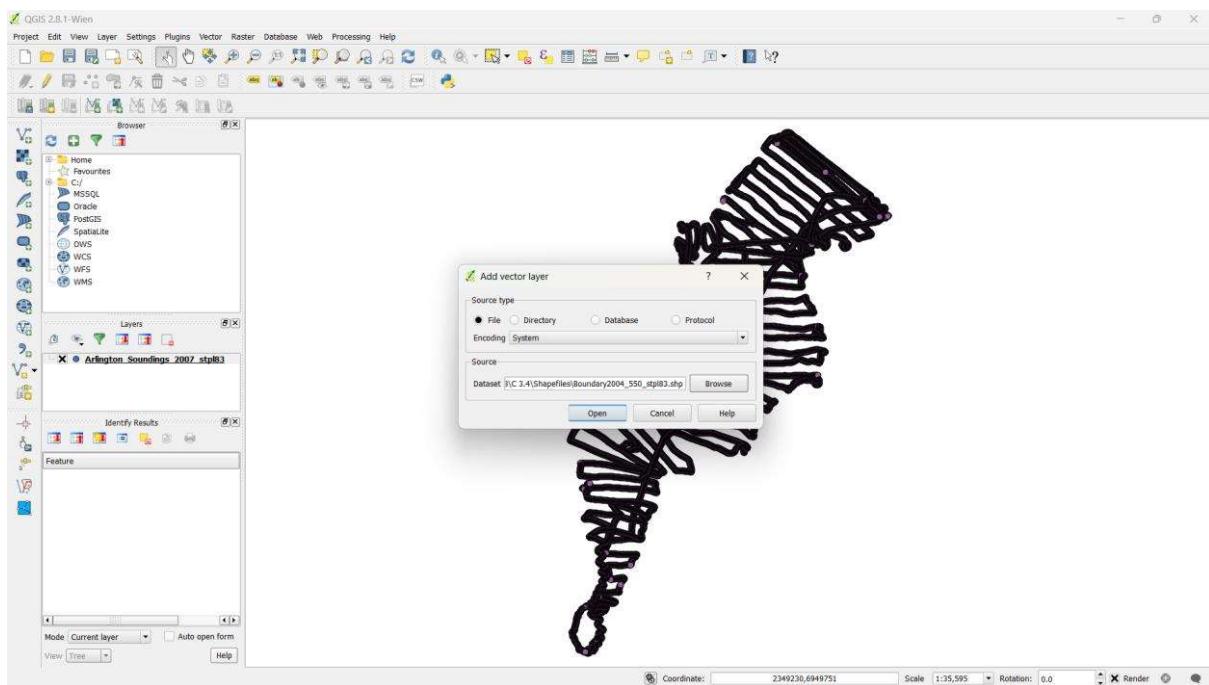


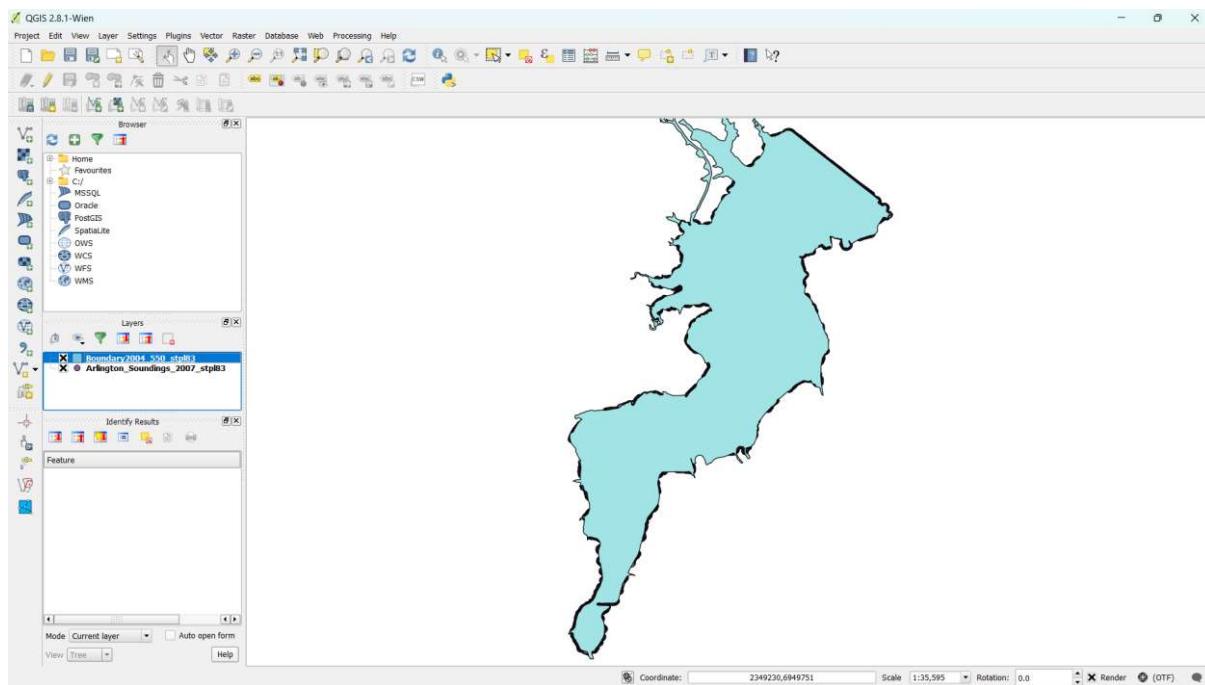
Step 16 – Create a new project. Add the following Vector Layer.



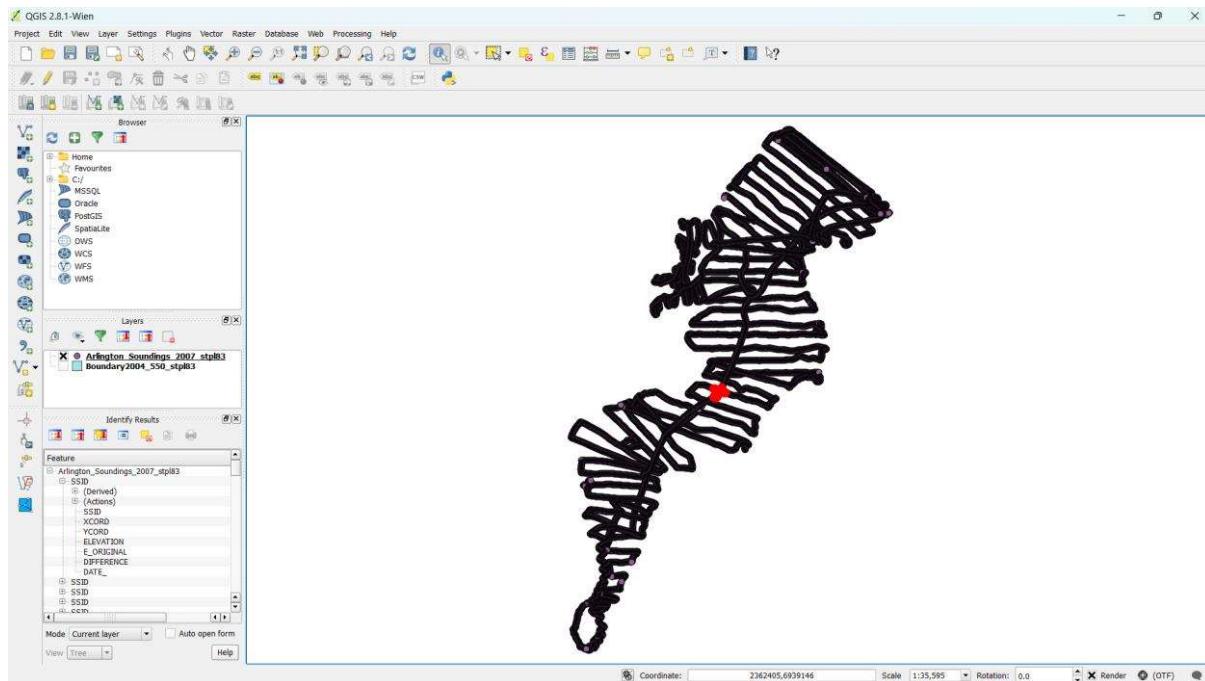


Step 17 – Add the following .shp file.

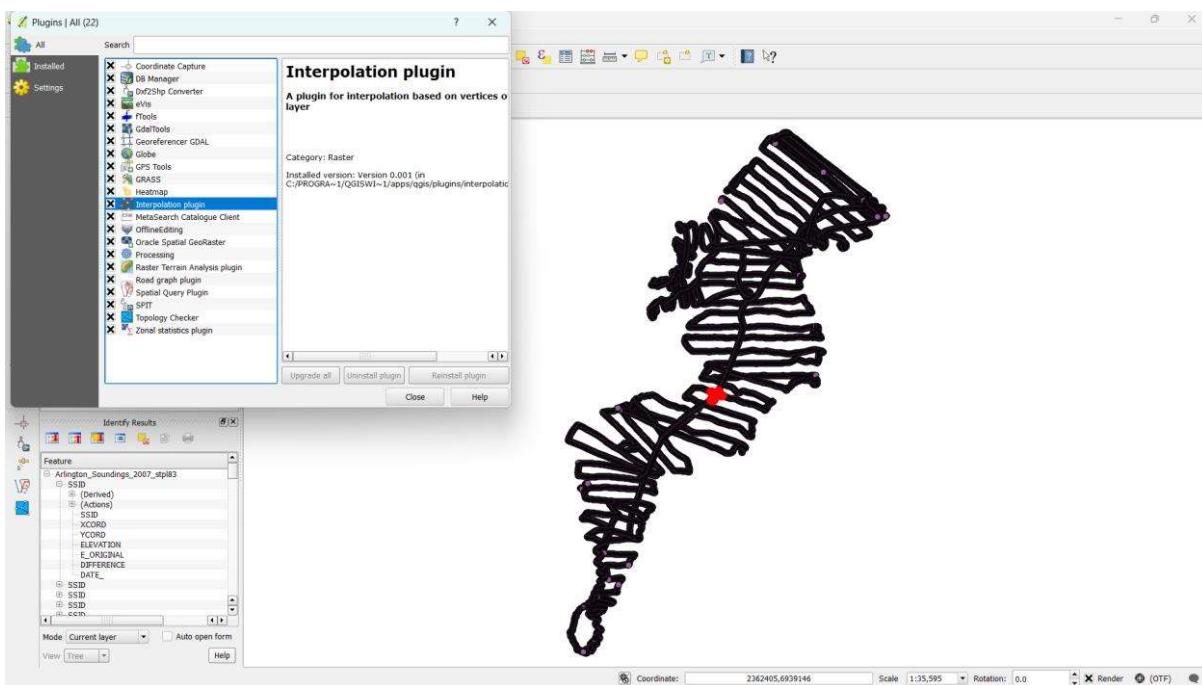




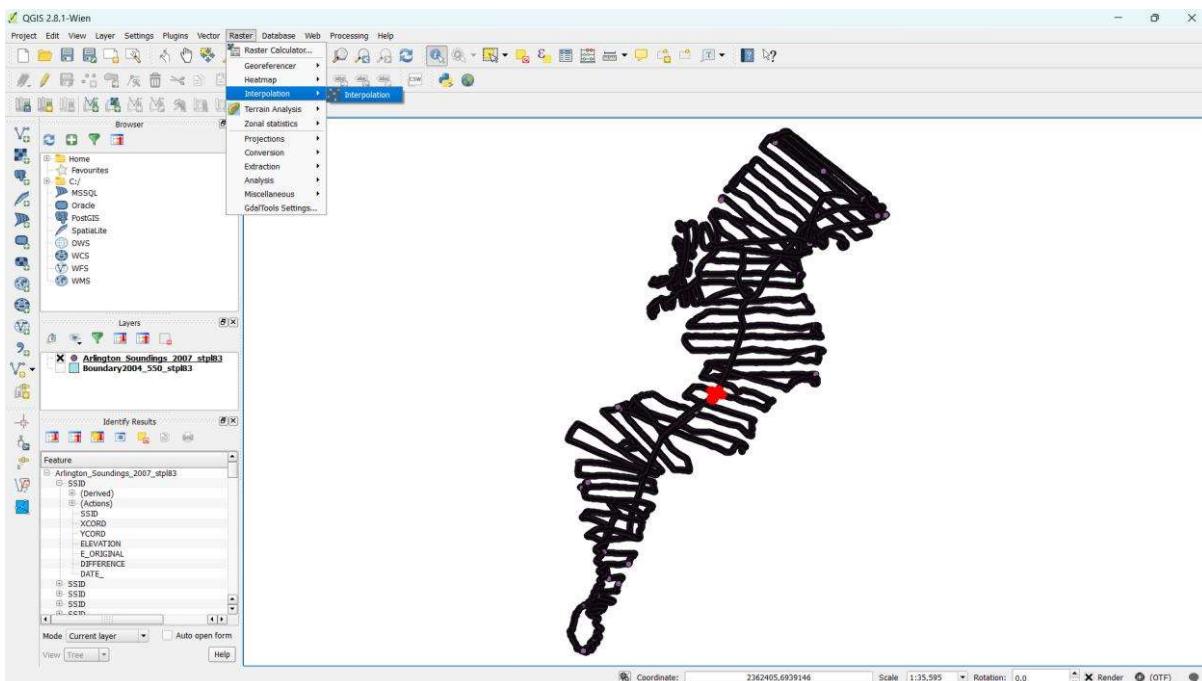
Step 18 – Click anywhere with the identify features tool on to find out the features of that region.

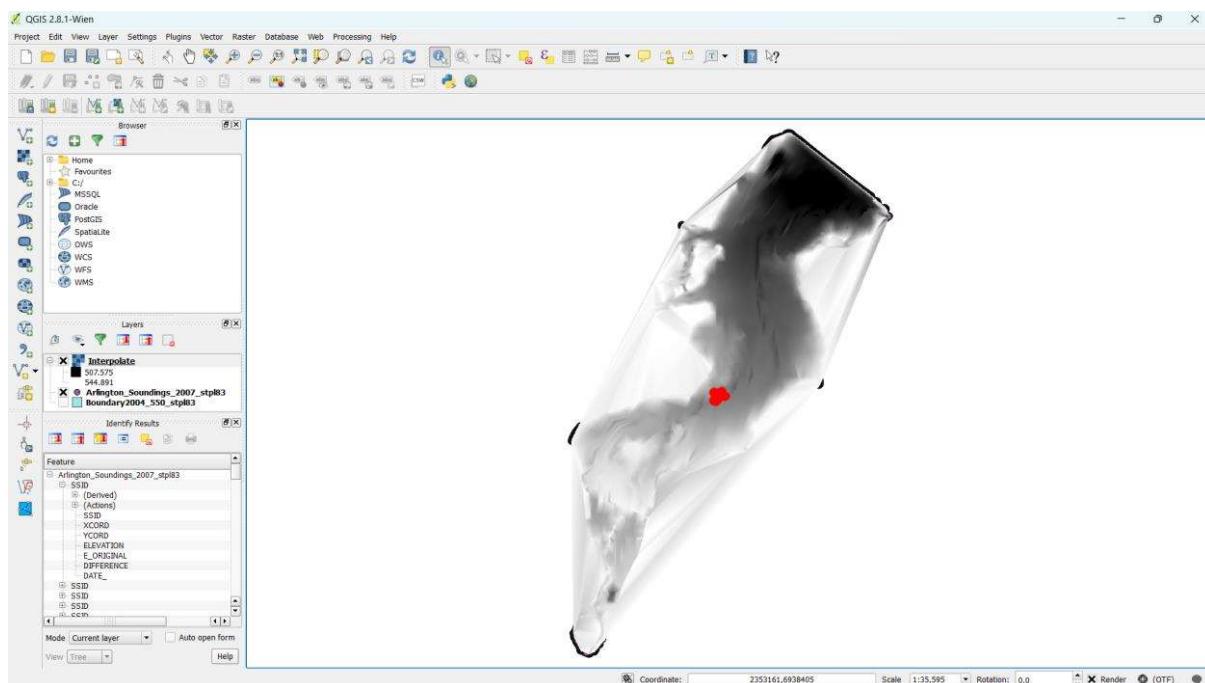
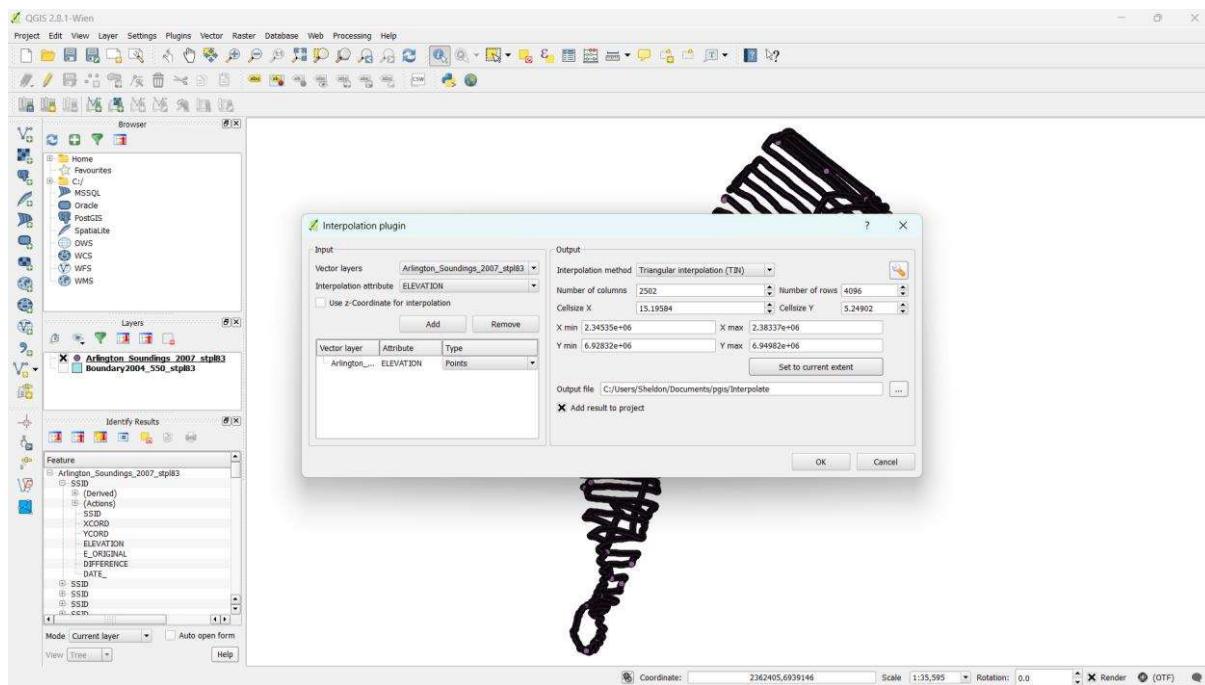


Step 19 – Install Interpolation plugin.

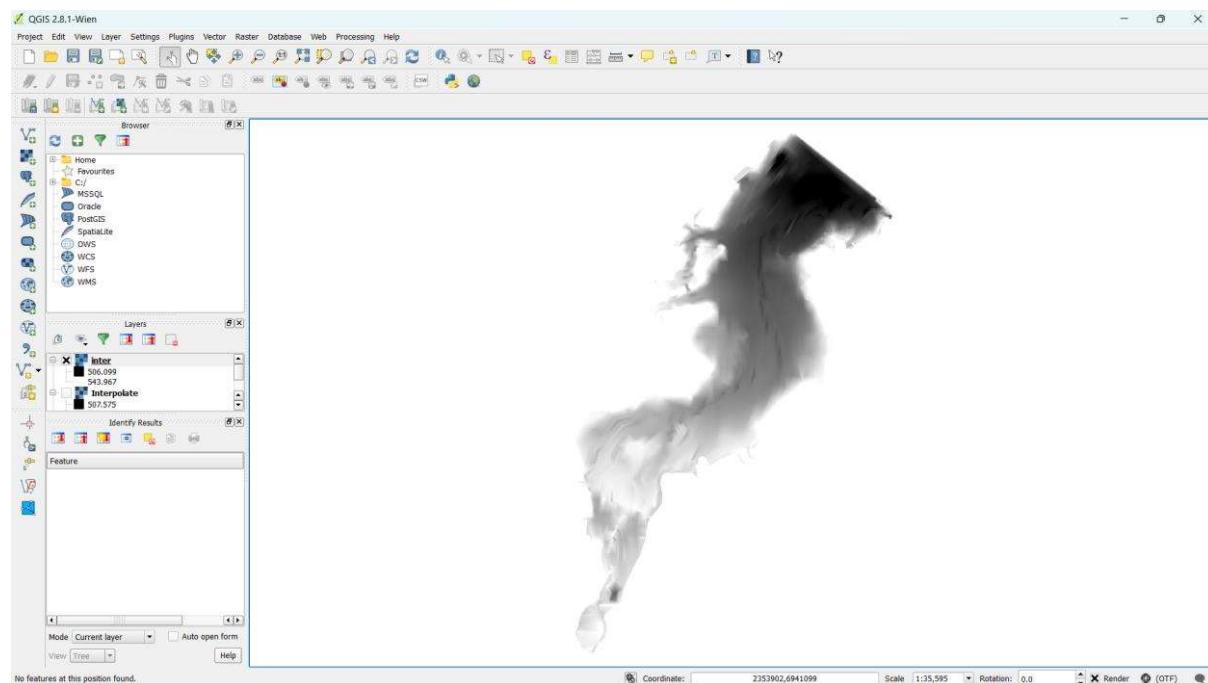
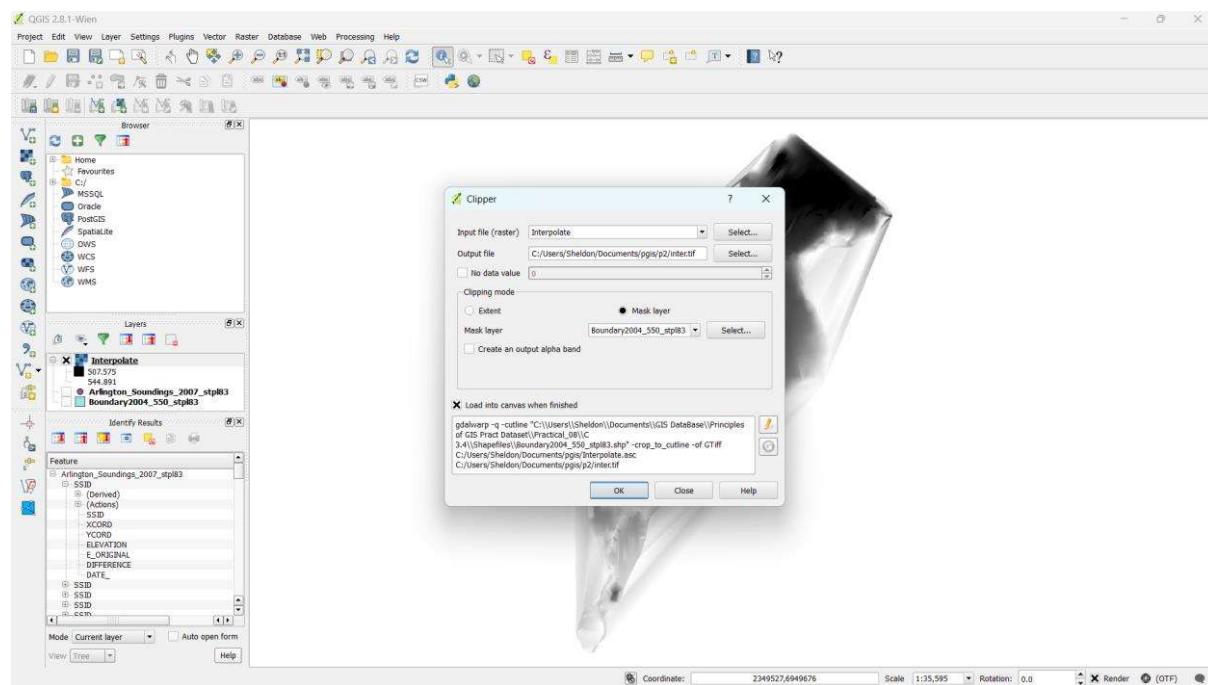


Step 20 – Raster > Interpolation. Set the following parameters and click OK.

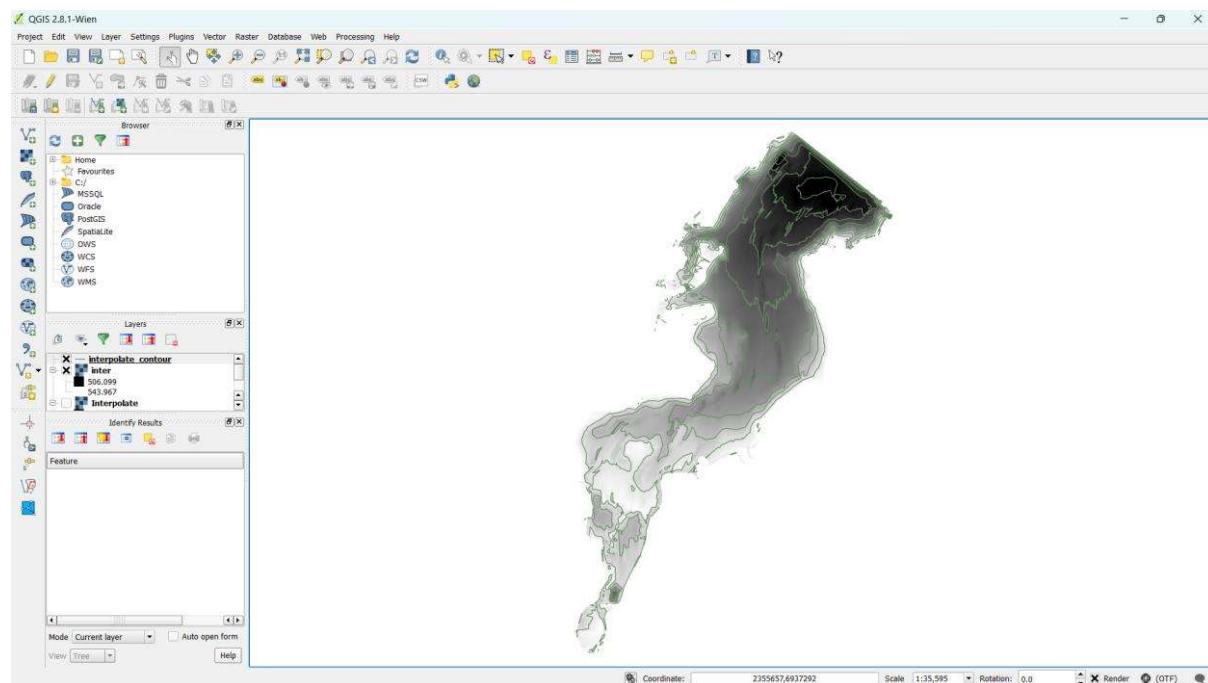
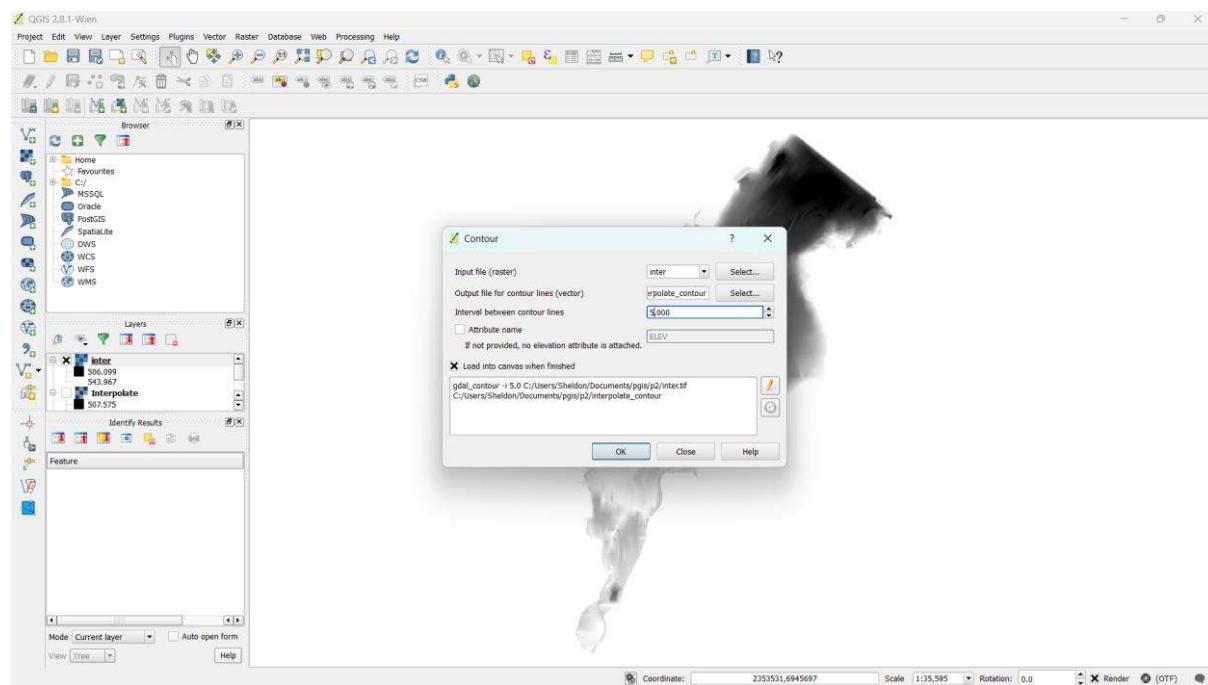




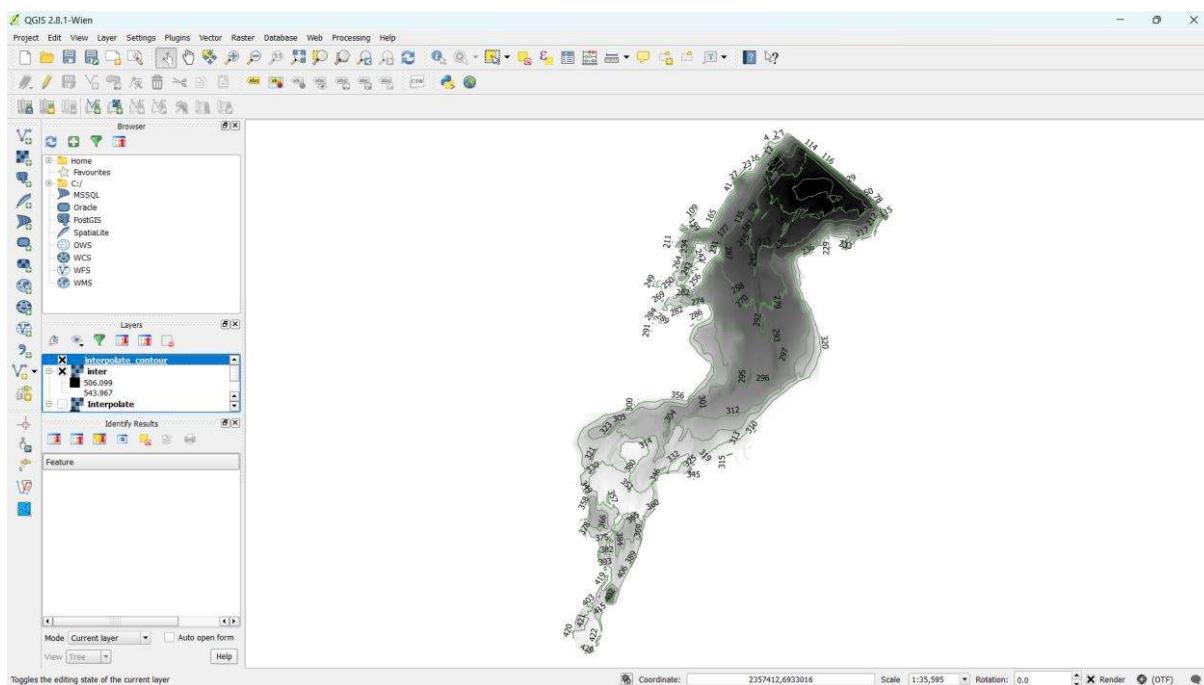
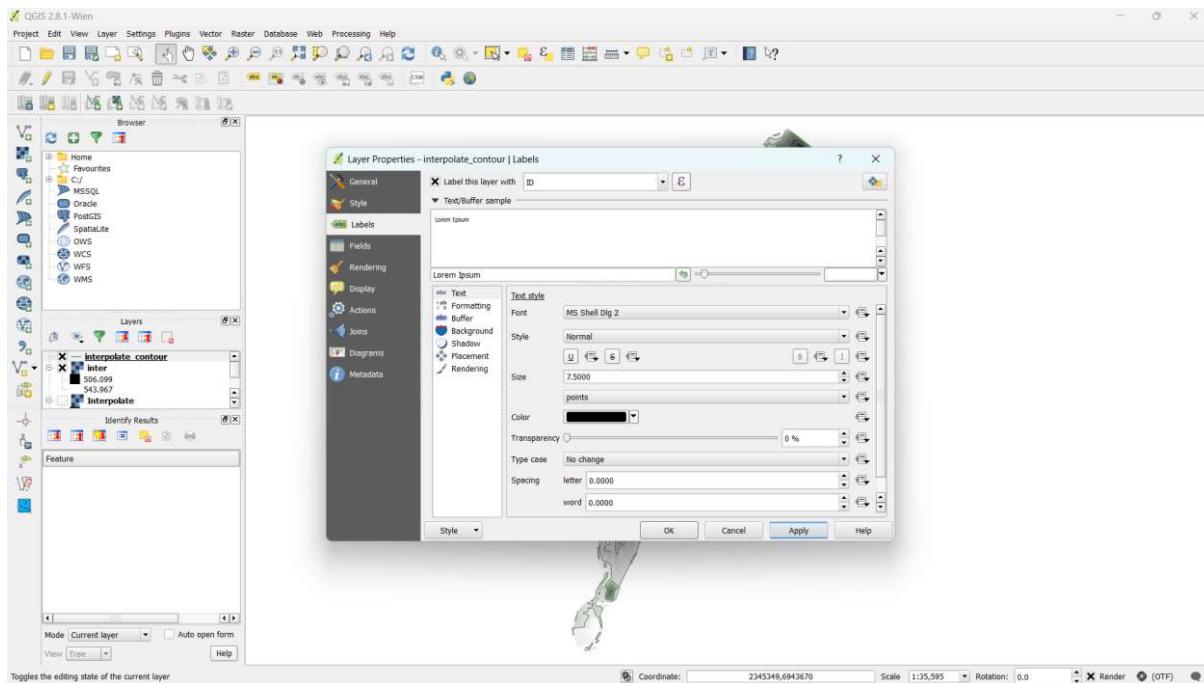
Step 21 – Raster > Extraction > Clipper. Set the following parameters and click OK.



Step 22 – Raster > Extraction > Contour. Set the following attributes and click OK.



Step 23 – Open the properties of the contour layer. Go to the labels tab, set the following attributes and then click Apply.



Step 24 – Open the properties of the clipped layer. Set the following attributes and hit Apply.

