

## **Second Milestone Part 2 Report**

### **Course Information:**

Course code : CSE 6331  
Course Section : 002  
Course Name : Adv topics in Database systems  
Course focus : Spatial, Temporal, and spatial-temporal databases

### **Project Team Information:**

Team member 1 : Sai Venkata Krishnaveni, Devarakonda  
Team member 2 : Kumar, Niraj

## Description:

The requirement of this milestone is to display the maps of different areas by using GIS visualization tools (QGIS). The pre-requisites to display the maps is to install QGIS and load the database (contains the shape files of all tables) on to the QGIS. Once the pre-requisites are fulfilled then follow specific steps mentioned in this document which are required by the query to display the maps with specific areas mentioned in query.

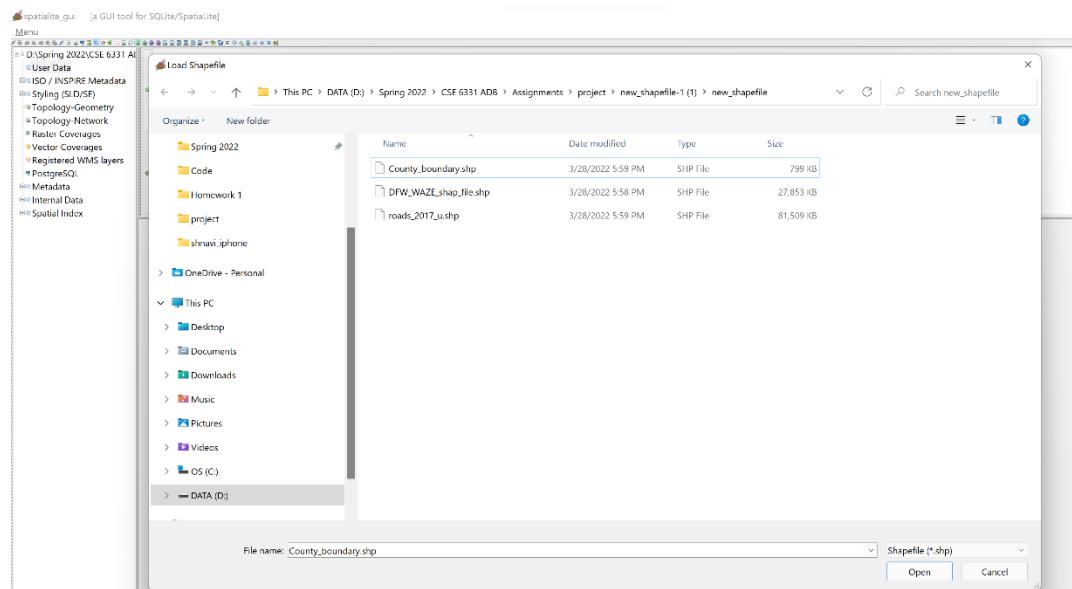
## Pre-requisite steps:

- i) Add county\_boundary, dfw\_waze\_shap\_file and roads\_2017\_u Shapefile in Spatialite gui using steps below

- a. Open spatial GUI app

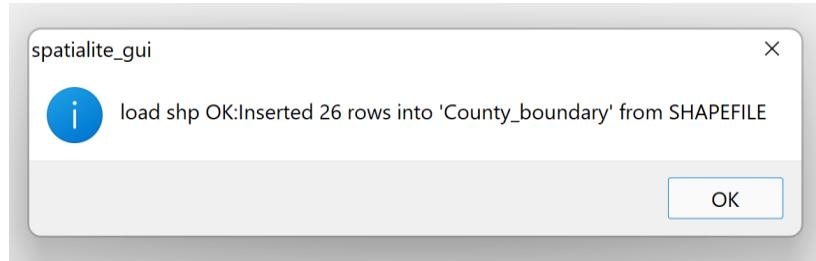


- b. Click on Load Shapefile icon located on the top

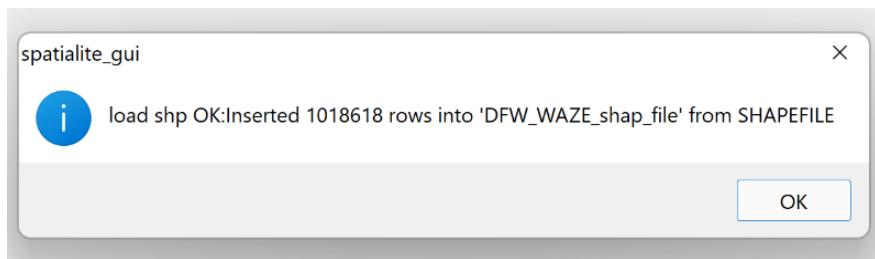


c. Select the shape file to be uploaded

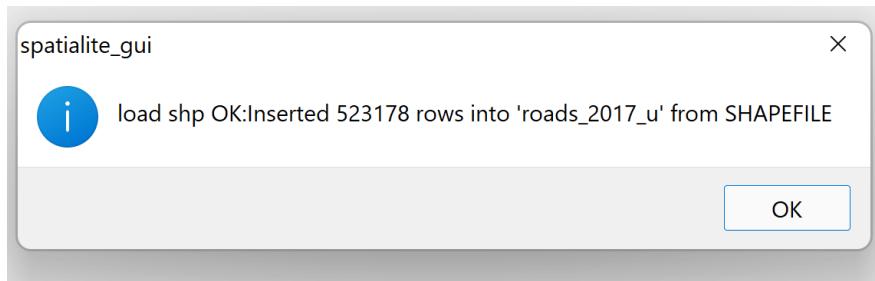
i. For county\_boundary shape file:



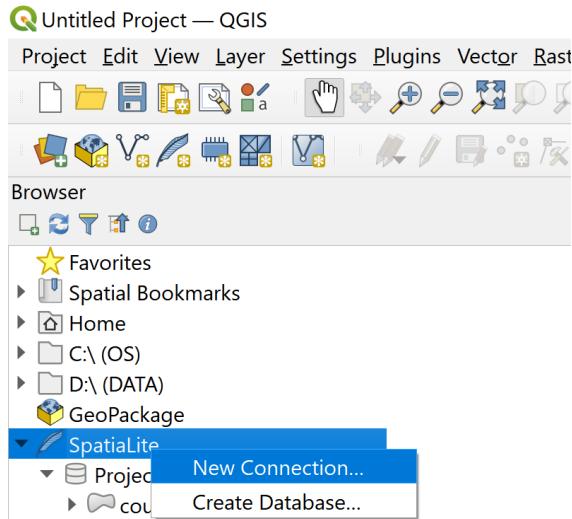
ii. For DFW\_WAZE\_shap\_file shape file:



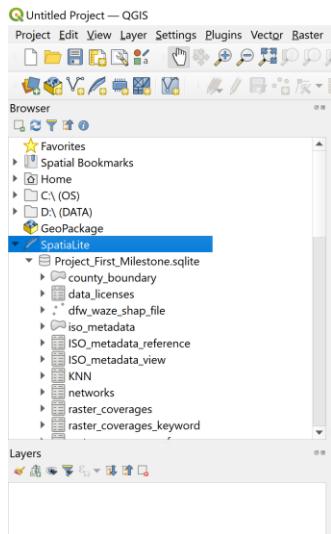
iii. For roads\_2017\_u shape file:



ii) Connect spatialite database with QGIS using New Connection



- iii) Select the spatialite database location and click open. The Spatialite Database will be loaded on the QGIS as shown below

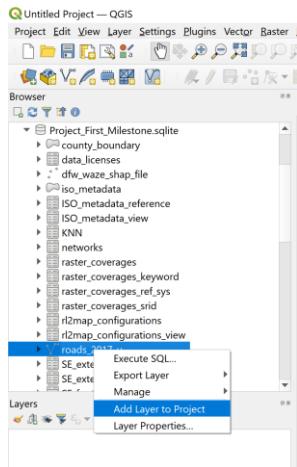


## Questions and queries for the second milestone:

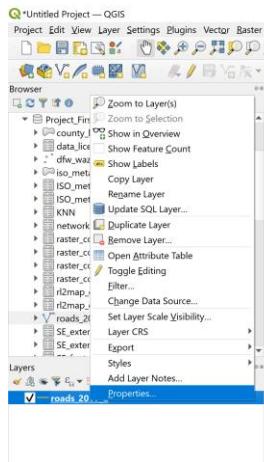
1. Display the roads that are located in Collin county in Red color and in Tarrant county in Black color and in Dallas County in Blue color. The rest of the counties, display the roads in Yellow color. The example below shows Tarrant roads in red and Dallas roads in black – your query is slightly different.

Steps:

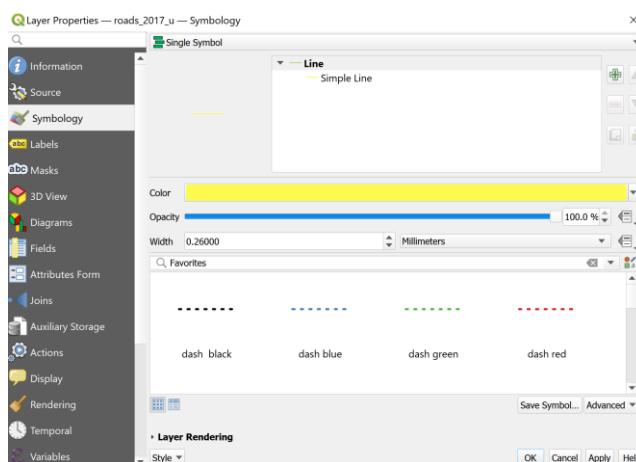
- i) Add roads\_2017\_u layer



- ii) Right click on roads\_2017\_u and select properties

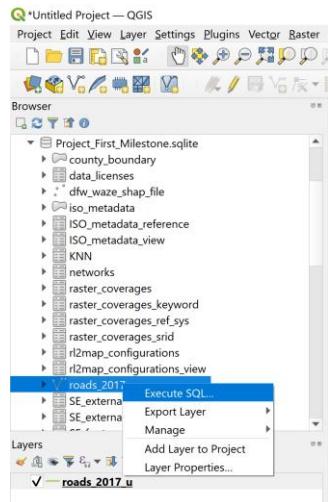


- iii) Choose Symbology and select color option as yellow → click on Apply → click on OK





- iv) Right click on roads\_2017\_u and select Execute SQL



- v) Execute the query below:

```
SELECT r.*, c.cnty_nm FROM county_boundary c,roads_2017_u r
WHERE WITHIN(r.geometry, c.geometry) = 1 and c.cnty_nm in ('Collin',
'Tarrant', 'Dallas')
```

roads\_2017,u — Execute SQL

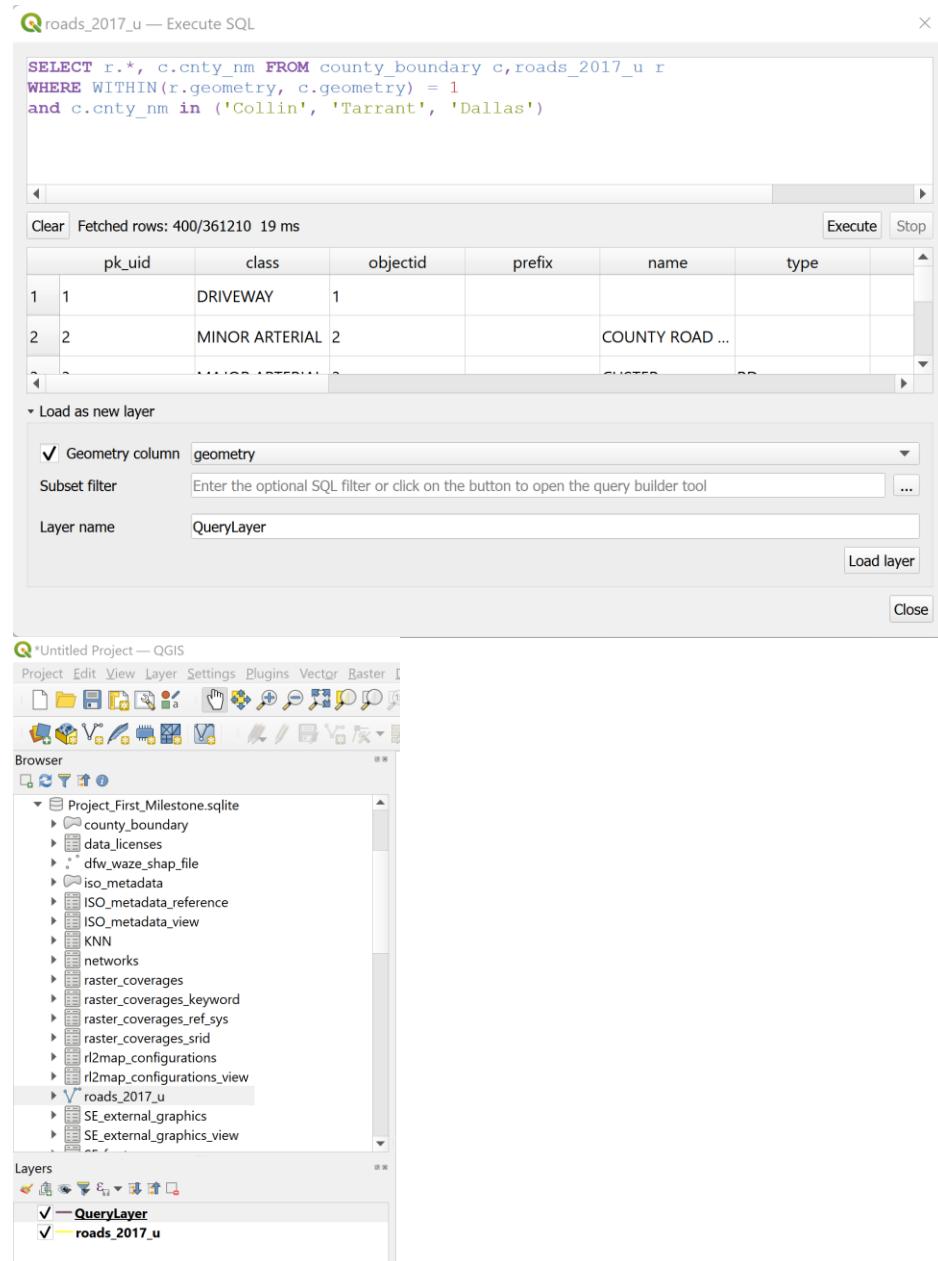
```
SELECT r.*, c.cnty_nm FROM county_boundary c,roads_2017_u r
WHERE WITHIN(r.geometry, c.geometry) = 1
and c.cnty_nm in ('Collin', 'Tarrant', 'Dallas')
```

Clear Fetched rows: 400/361210 19 ms

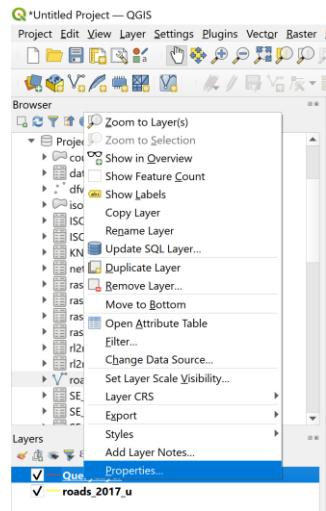
pk_uid	class	objectid	prefix	name	type
1 1	DRIVEWAY	1		COUNTY ROAD ...	
2 2	MINOR ARTERIAL	2		CUSTER RD	
3 3	MAJOR ARTERIAL	3		CENTRAL EXPY	
4 4	ACCESS RAMP	4	N	COUNTY ROAD	
	MINOR ARTERIAL				

Load as new layer Close

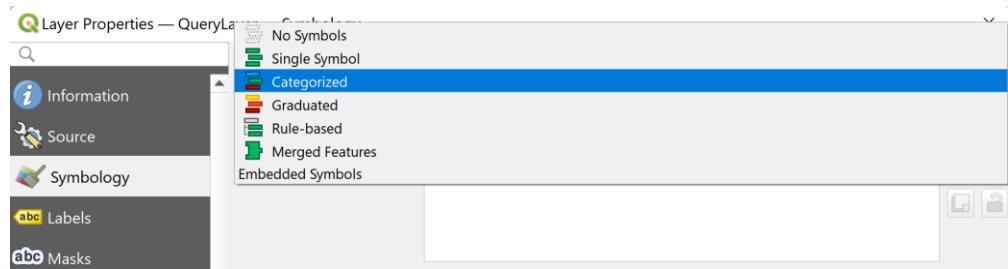
- vi) Click on Load as new layer and select 'Geometry column' check box and enter Layer name as 'QueryLayer'



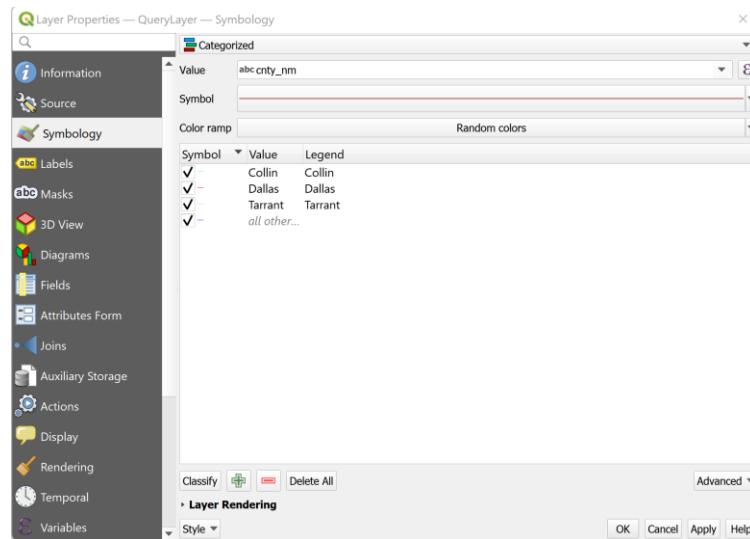
vii) Right click on QueryLayer → Click on Properties



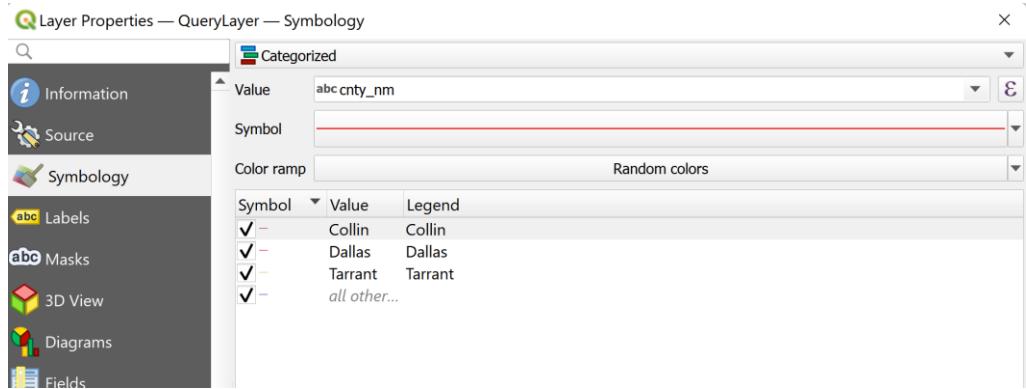
viii) Select Symbology → Select Categorized as shown below



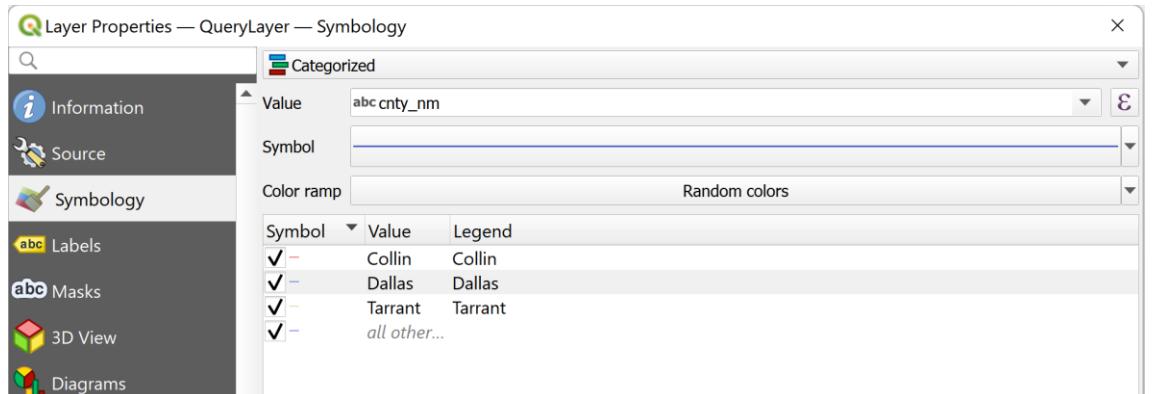
ix) Select Value as cnty\_nm → click on Classify in left bottom of the panel



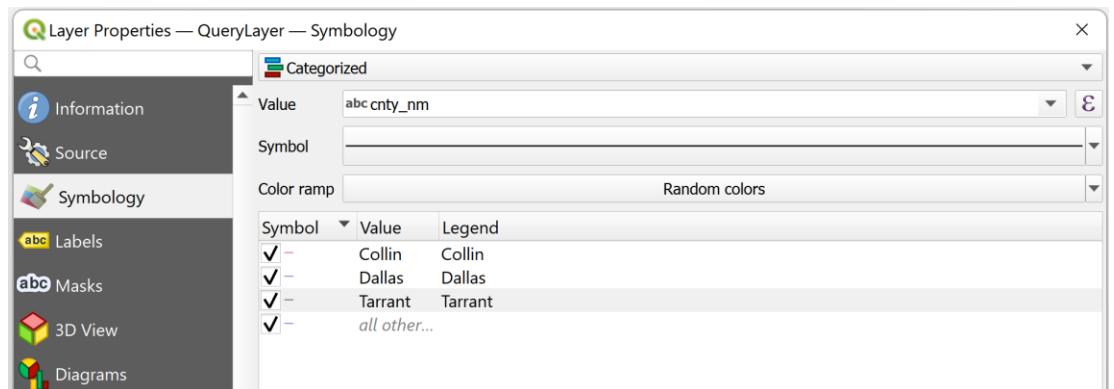
x) Select ‘Collin’ value and change symbol color to ‘Red’



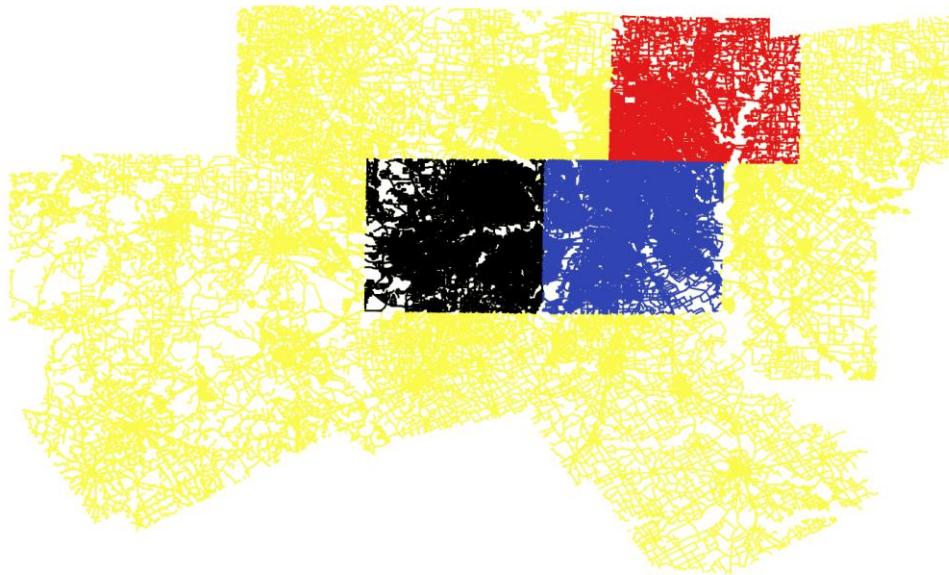
xi) Select ‘Dallas’ value and change symbol color to ‘Blue’



xii) Select ‘Tarrant’ value and change symbol color to ‘Black’



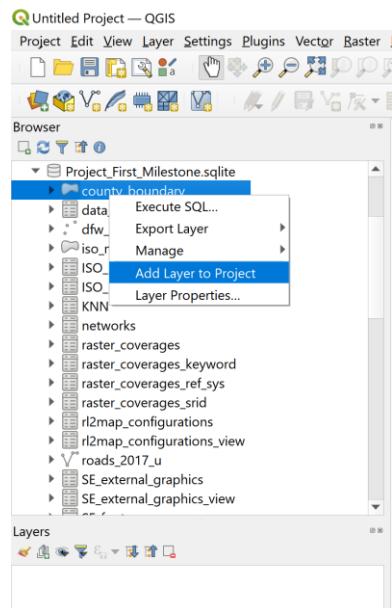
xiii) Click on Apply → Click on Ok



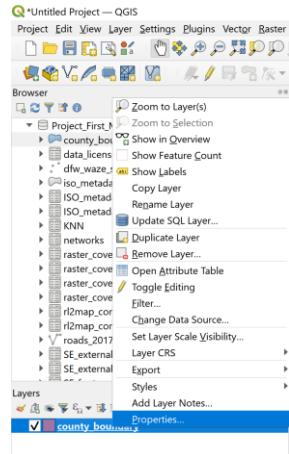
2. Display the roads that are in the class: 'PRIMARY HIGHWAY' in black with the county in the background. Here they are shown in green.

**Steps:**

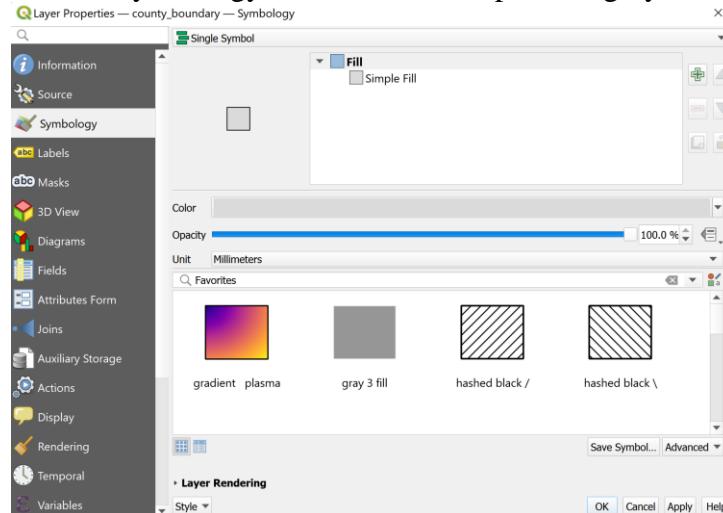
I. Add County\_boundary layer



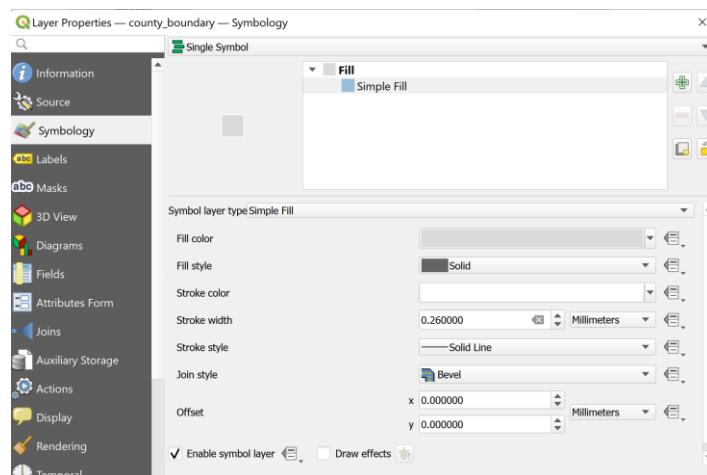
II. Right click on county\_boundary layer and select properties



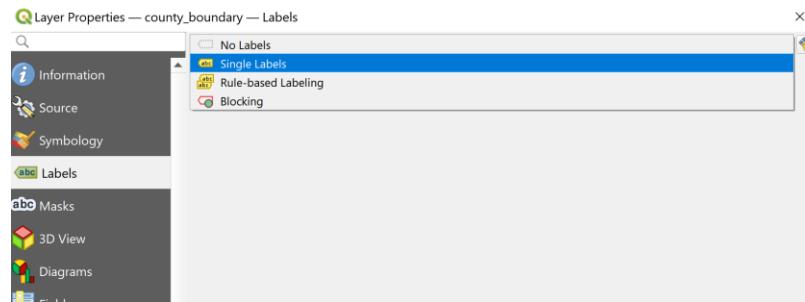
III. Choose Symbology and select color option as gray



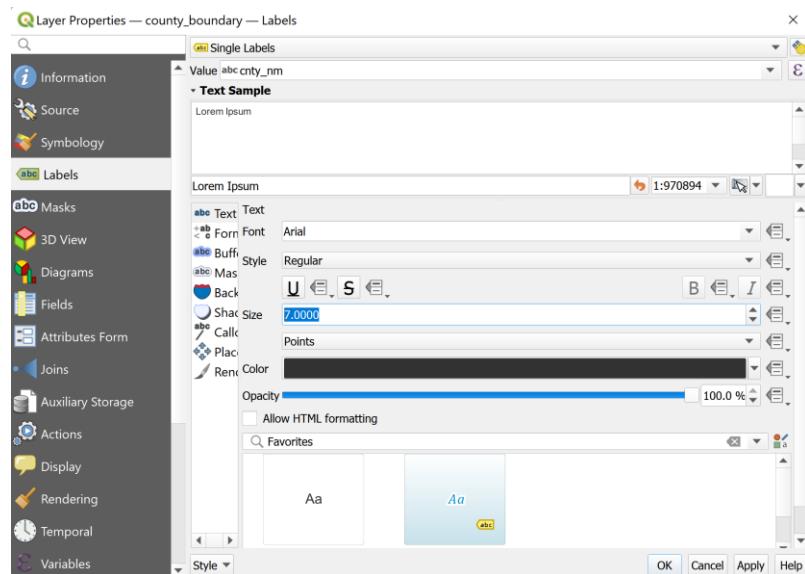
IV. Select simple Fill → select stroke color as 'White'



V. Choose labels and select ‘single labels’ from dropdown



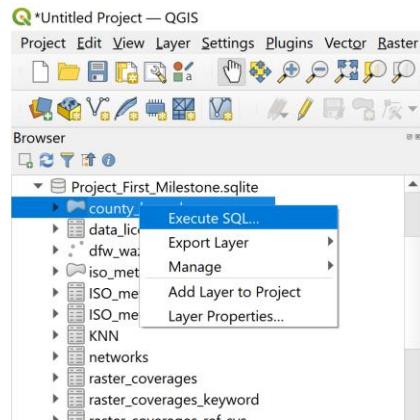
VI. Select value as ‘cnty\_nm’ and size as 7.0000



VII. Click on Apply → click on ok



### VIII. Right click on county\_boundary and select Execute SQL



### IX. Execute the query below:

```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class = 'PRIMARY HIGHWAY'
```

county\_boundary — Execute SQL

```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class = 'PRIMARY HIGHWAY'
```

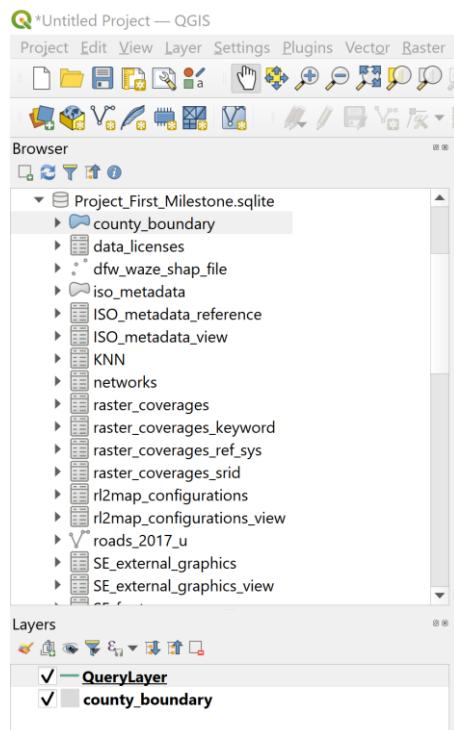
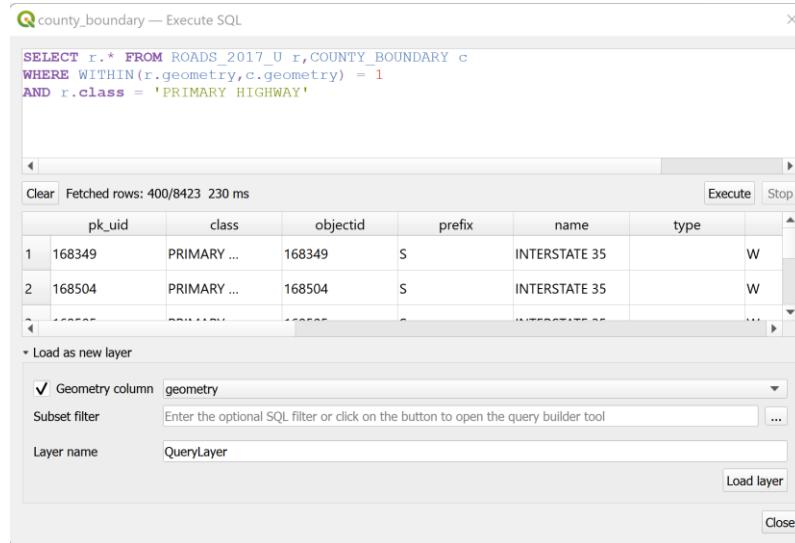
Clear Fetched rows: 400/8423 230 ms

pk_uid	class	objectid	prefix	name	type
1	PRIMARY ...	168349	S	INTERSTATE 35	W
2	PRIMARY ...	168504	S	INTERSTATE 35	W
3	PRIMARY ...	168505	S	INTERSTATE 35	W
4	PRIMARY ...	168694	S	INTERSTATE 35	W
...					

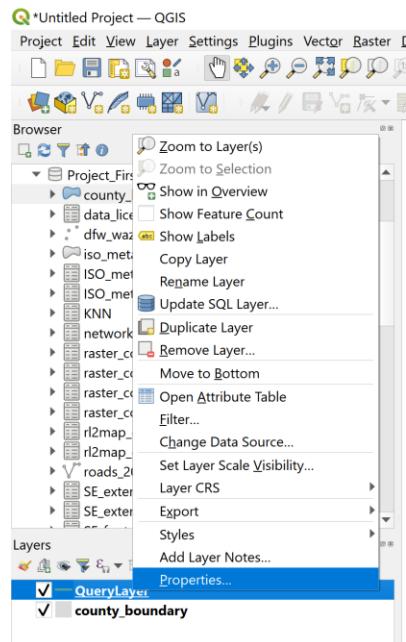
Load as new layer

Close

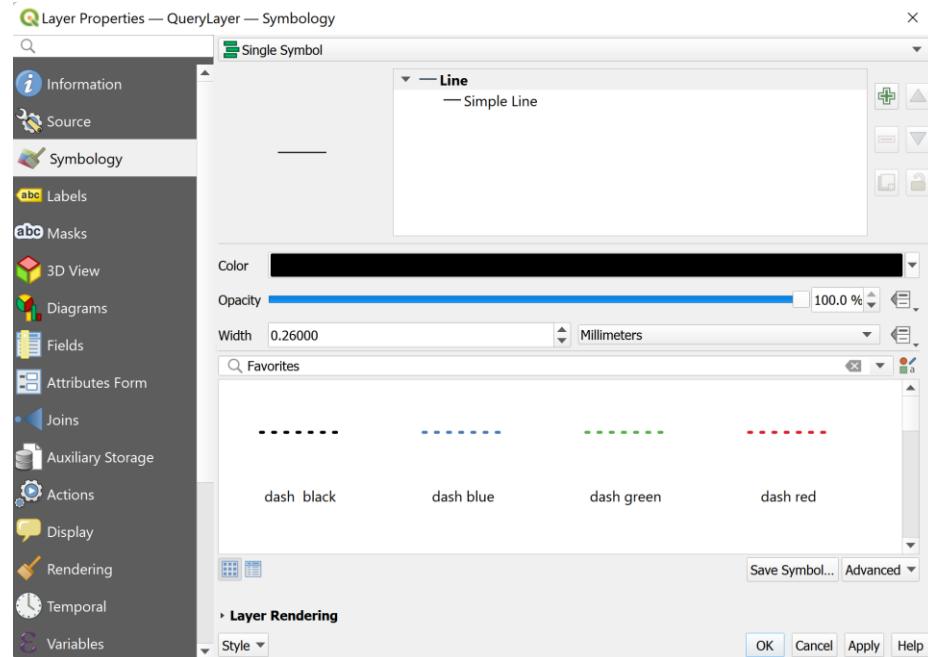
- X. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



xiv) Right click on QueryLayer → Click on Properties



xv) Select Symbology and change color to black



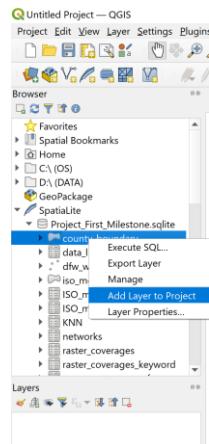
xvi) Click on Apply → Click on Ok



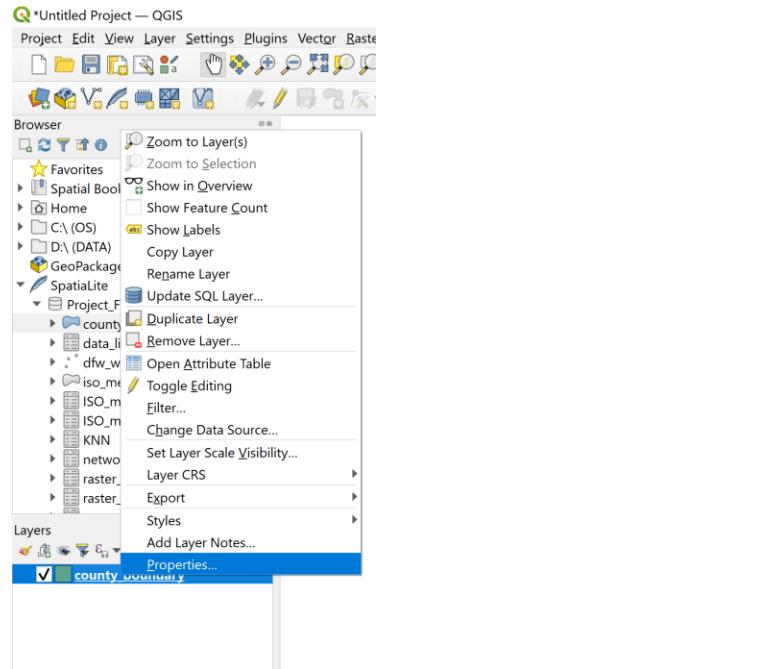
3. Display the roads only with class ‘PRIMARY HIGHWAY’ and class ‘SECONDARY HIGHWAY’. Each class should be in a different color with the county in the background.

**Steps:**

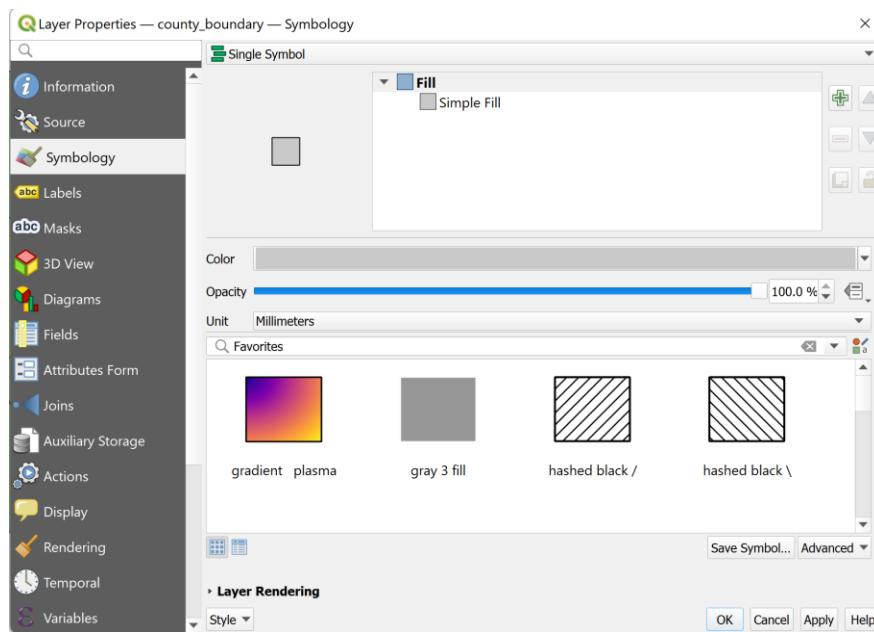
- i. Add County\_boundary layer



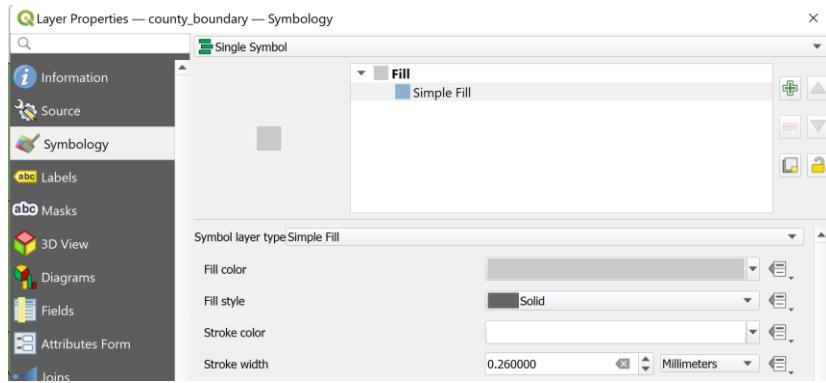
ii. Right click on county\_boundary layer and select properties



iii. Choose Symbology and select color option as gray



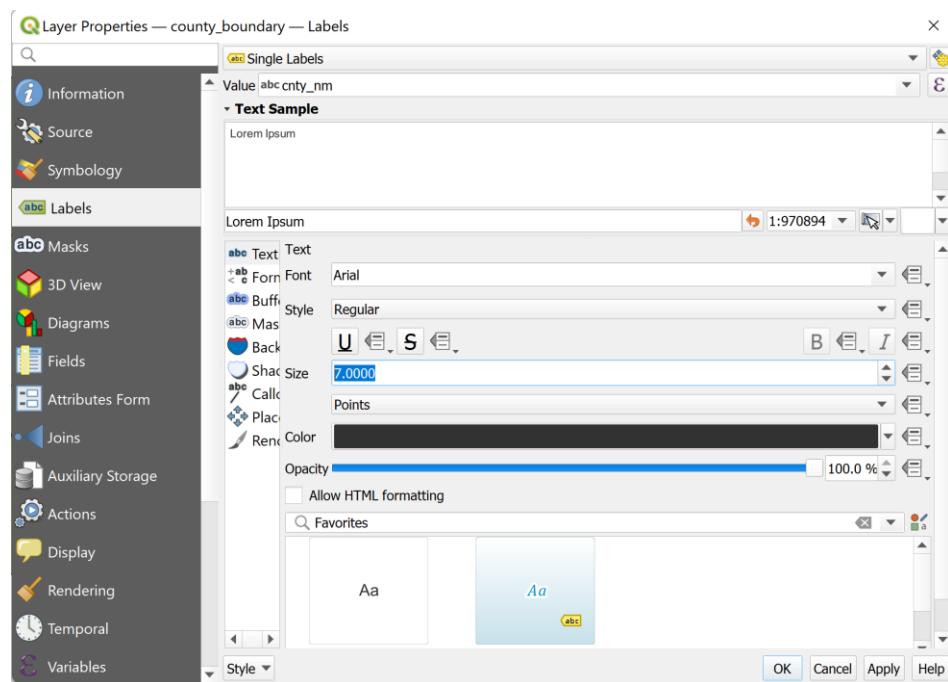
iv. Select simple Fill → select stroke color as ‘White’



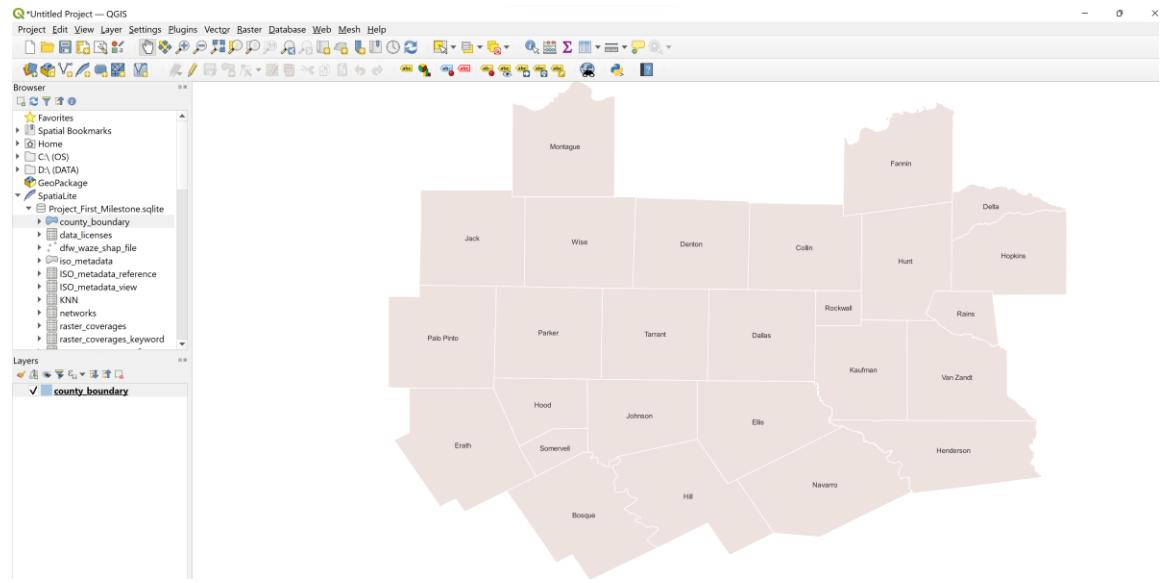
v. Choose labels and select ‘single labels’ from dropdown



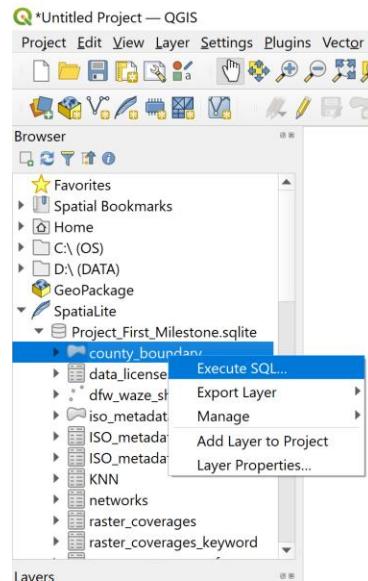
vi. Select value as ‘cnty\_nm’ and size as 7.0000



vii. Click on Apply → click on ok



viii. Right click on county\_boundary and select Execute SQL



ix. Execute the query below:

```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class IN ('PRIMARY HIGHWAY', 'SECONDARY HIGHWAY')
```

Q county\_boundary — Execute SQL

```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class IN ('PRIMARY HIGHWAY', 'SECONDARY HIGHWAY')
```

Clear Fetched rows: 400/16194 17 ms

	pk_uid	class	objectid	prefix	name	type
1	80	SECONDARY ...	80		DALLAS NORTH	TOLL
2	81	SECONDARY ...	81		DALLAS NORTH	TOLL
3	82	SECONDARY ...	82		DALLAS NORTH	TOLL
4	83	SECONDARY ...	83		DALLAS NORTH	TOLL
5	84	SECONDARY ...	84		DALLAS NORTH	TOLL

▼ Load as new layer

Execute Stop Close

- x. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

Q county\_boundary — Execute SQL

```
SELECT r.* FROM ROADS_2017_U r,COUNTY_BOUNDARY c
WHERE WITHIN(r.geometry,c.geometry) = 1
AND r.class IN ('PRIMARY HIGHWAY', 'SECONDARY HIGHWAY')
```

Clear Fetched rows: 400/16194 17 ms

	pk_uid	class	objectid	prefix	name	type
1	80	SECONDARY ...	80		DALLAS NORTH	TOLL
2	81	SECONDARY ...	81		DALLAS NORTH	TOLL
3	82	SECONDARY ...	82		DALLAS NORTH	TOLL
4	83	SECONDARY ...	83		DALLAS NORTH	TOLL
5	84	SECONDARY ...	84		DALLAS NORTH	TOLL

▼ Load as new layer

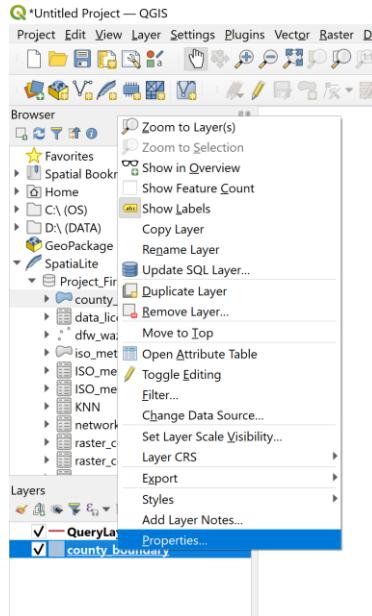
Geometry column

Subset filter  ...

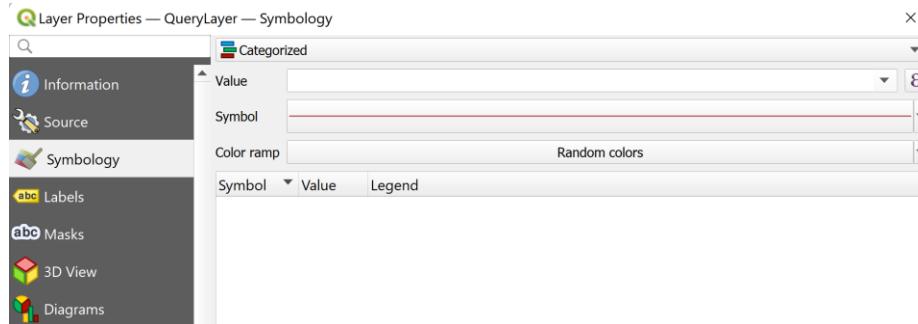
Layer name

Load layer Close

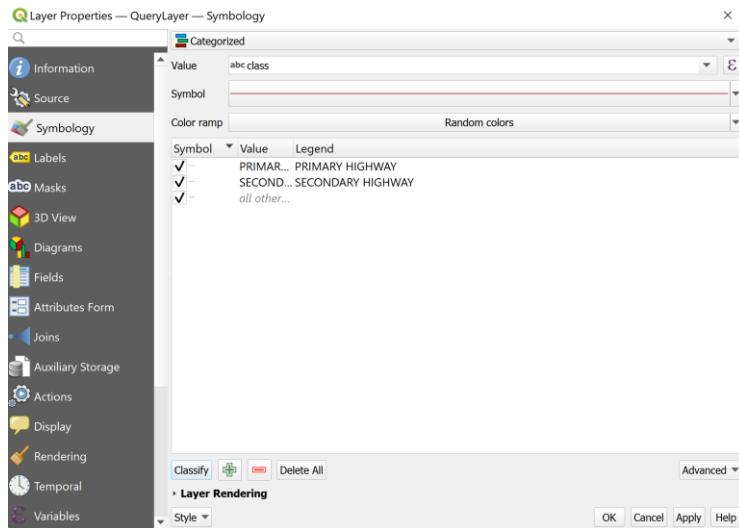
- xi. Right click on QueryLayer → Click on Properties



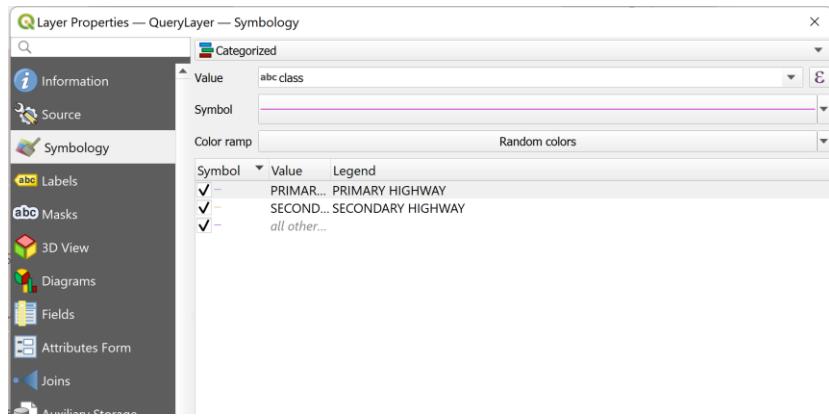
- xii. Select Symbology → Select Categorized as shown below



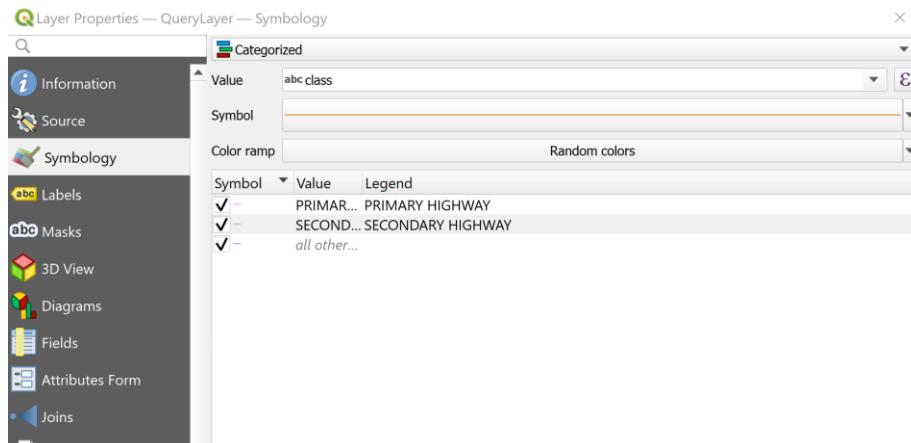
- xiii. Select Value as class → click on Classify in left bottom of the panel



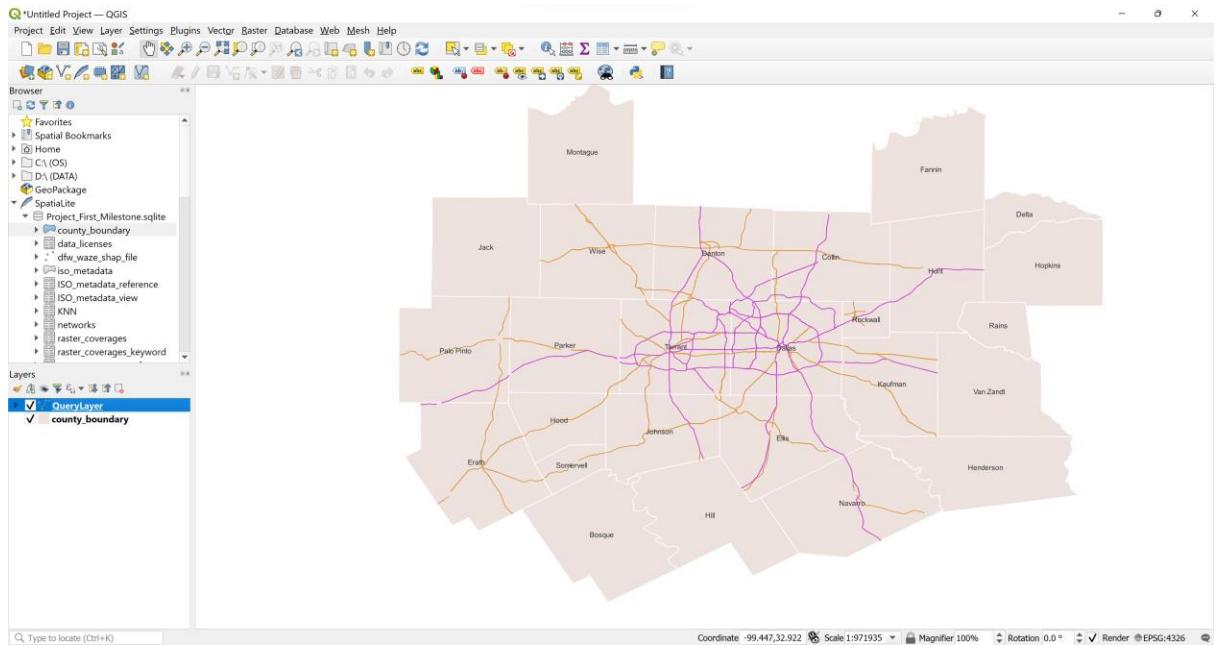
xiv. Select ‘Primary highway’ value and change symbol to purple color



xv. Select ‘Secondary highway’ value and change symbol to mustard color



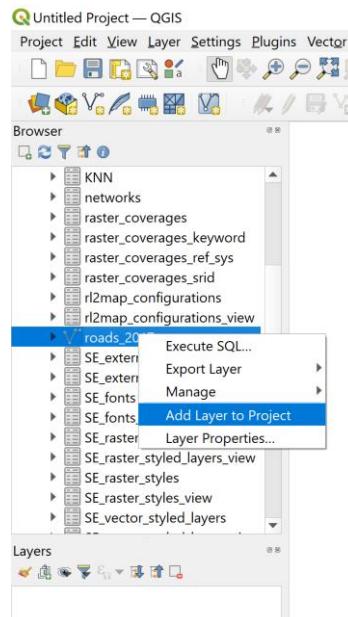
xvi. Click on Apply and then click on Ok



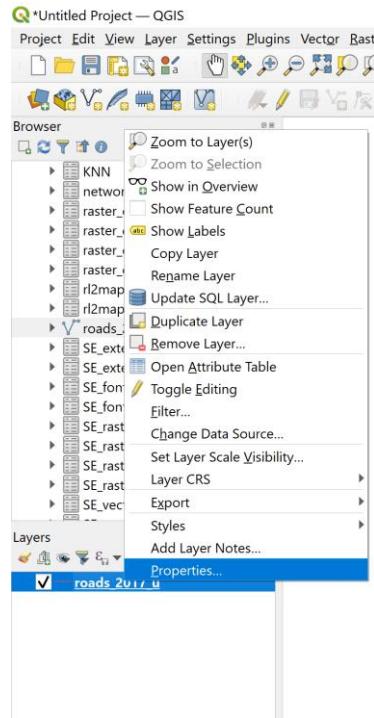
4. Display all the events (From DFW\_WAZE) that happened in Arlington form 6 am to 12 pm on 12/1/2018. Each event should be displayed with different color and the background should be the roads.

### Steps:

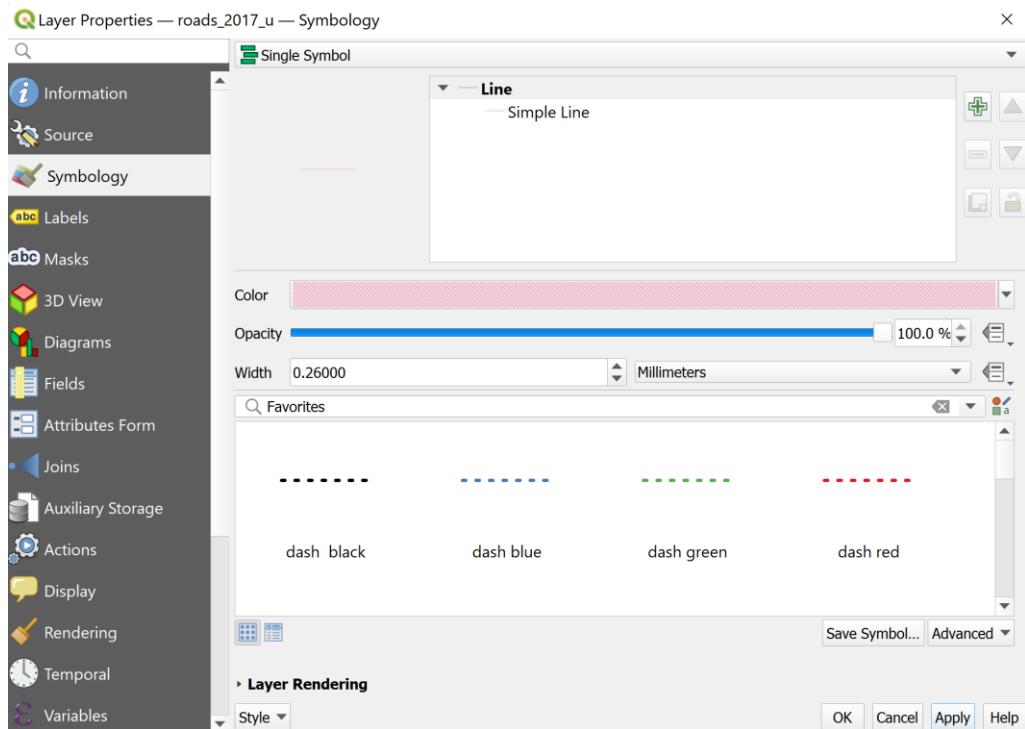
i. Add road\_2017\_u layer



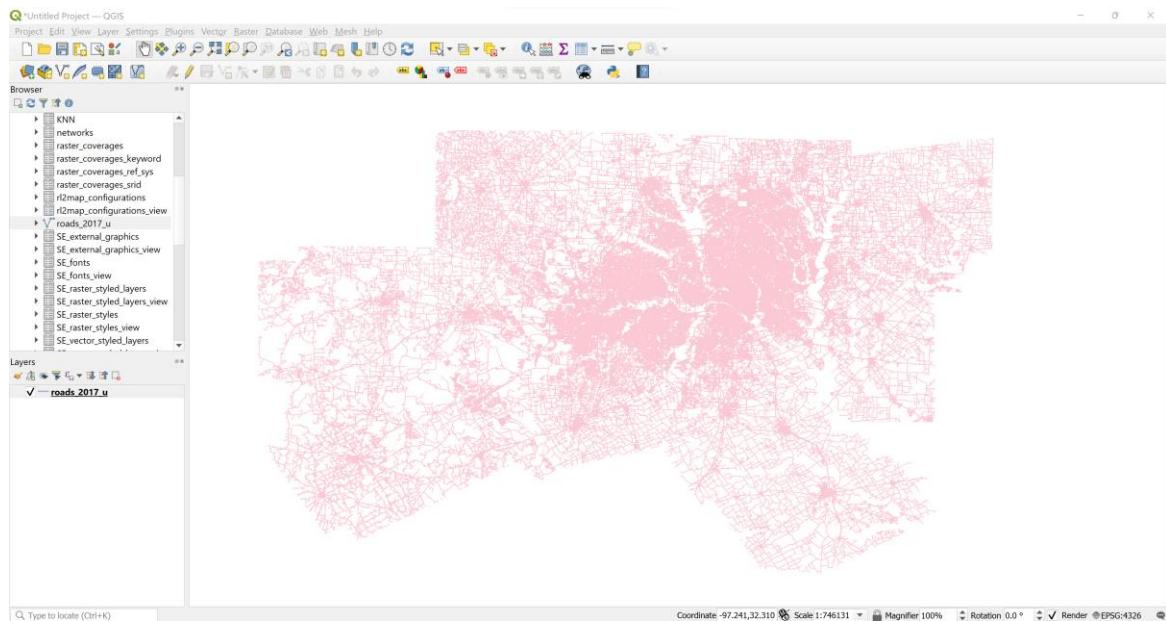
ii. Right click on road\_2017\_u layer and select properties



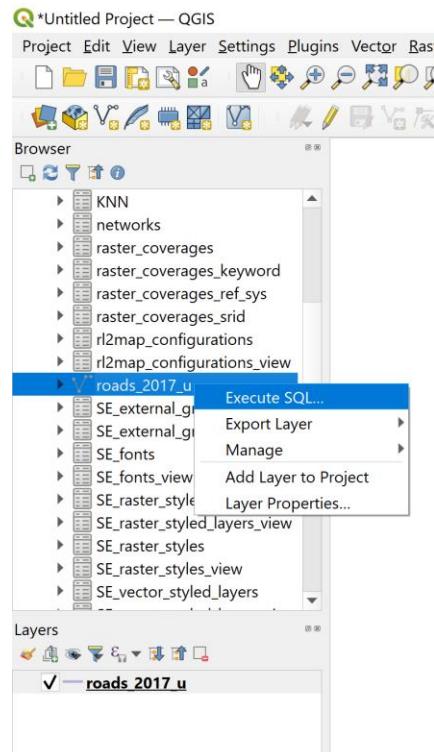
iii. Choose Symbology and select color option as pink



iv. Click on Apply and then click on Ok



v. Right click on roads\_2017\_u and select Execute SQL



vi. Execute the query below:

```
SELECT * FROM DFW_WAZE_shap_file
WHERE CITY = 'Arlington'
AND create_time between '2018-12-01 06:00:00' and '2018-12-01
12:00:00'
```

The screenshot shows the 'roads\_2017\_u — Execute SQL' dialog. At the top, the query is displayed:

```
SELECT * FROM DFW_WAZE_shap_file
WHERE CITY = 'Arlington'
AND create_time between '2018-12-01 06:00:00' and '2018-12-01 12:00:00'
```

Below the query, the results are shown in a table:

pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1	stopped car on ...	I-30 W	Westbound	nan	nan	nan
2	stopped car on ...	I-30 W	Westbound	nan	nan	nan
3	traffic jam	E Sublett Rd	nan	nan	nan	Silo R
4	stopped car on ...	SH-360 N	Northbound	nan	nan	nan
5	stopped car on ...	I-30 W	Westbound	...	...	...

At the bottom of the dialog, there is a 'Load as new layer' button.

vii. Click on Load as new layer and select 'Geometry column' check box and enter Layer name as 'QueryLayer'

The screenshot shows the 'roads\_2017\_u — Execute SQL' dialog with the 'Load as new layer' section expanded. The 'Subset filter' and 'Layer name' fields are visible, and the 'Geometry column' checkbox is checked.

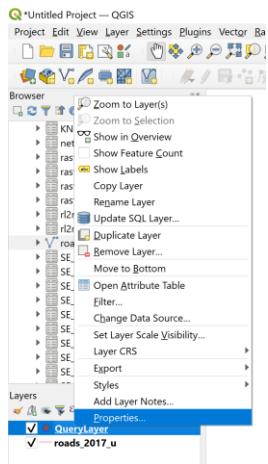
Subset filter: Enter the optional SQL filter or click on the button to open the query builder tool

Layer name: QueryLayer

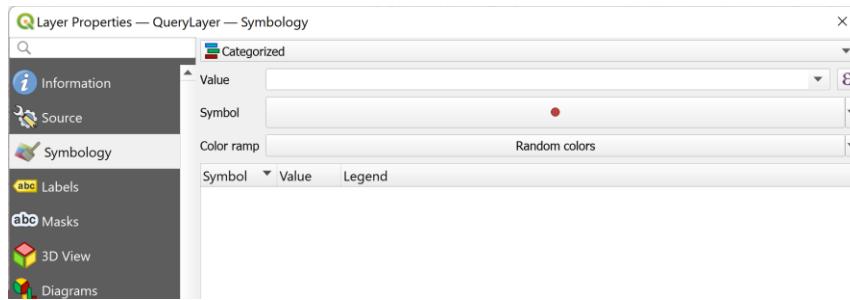
Geometry column: geometry

Load layer

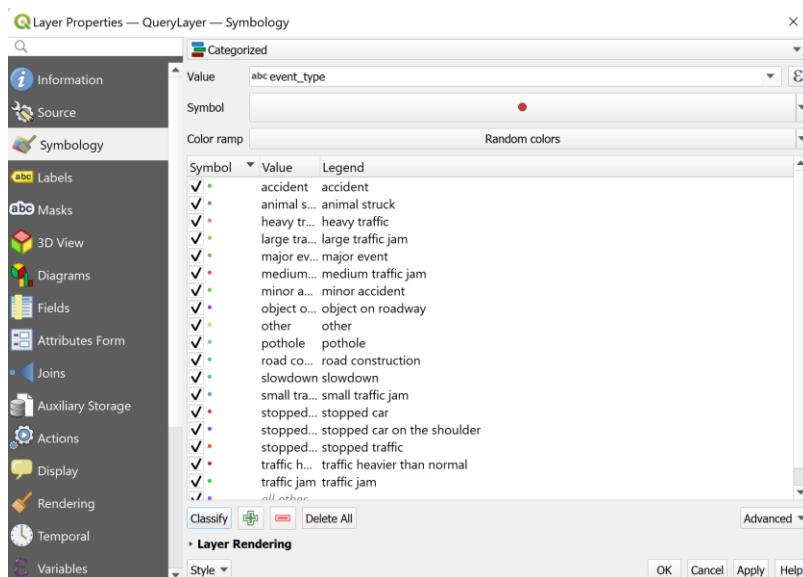
viii. Right click on QueryLayer → Click on Properties



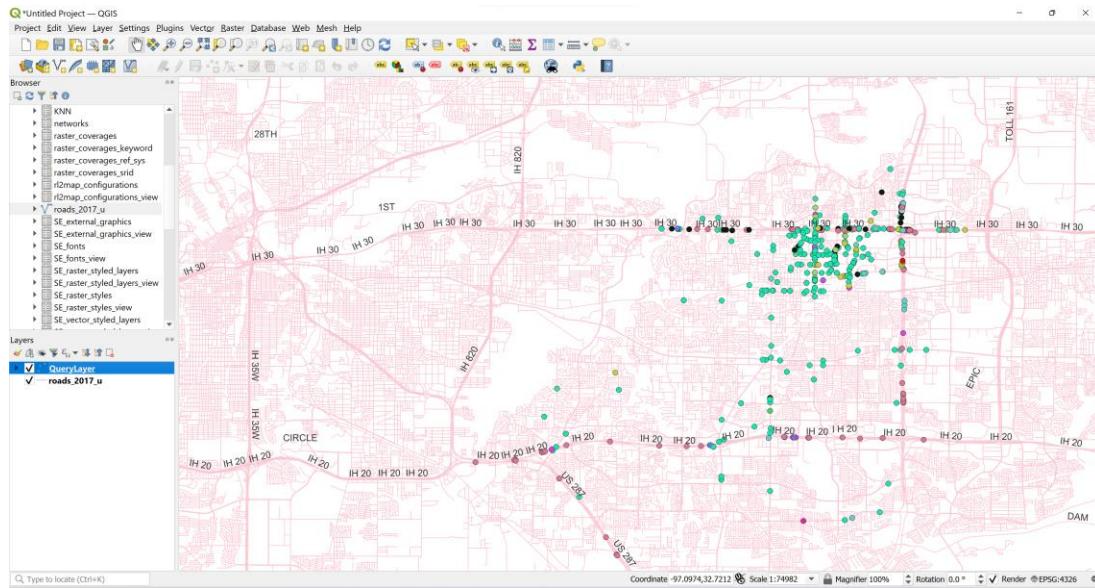
ix. Select Symbology → Select Categorized as shown below



x. Select Value as event\_type → click on Classify in left bottom of the panel



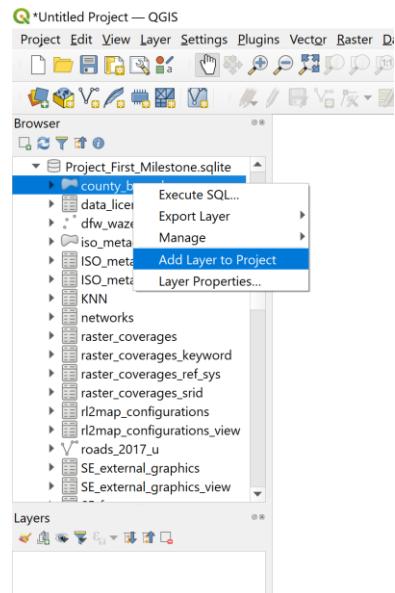
xi. Click on Apply and then click on Ok



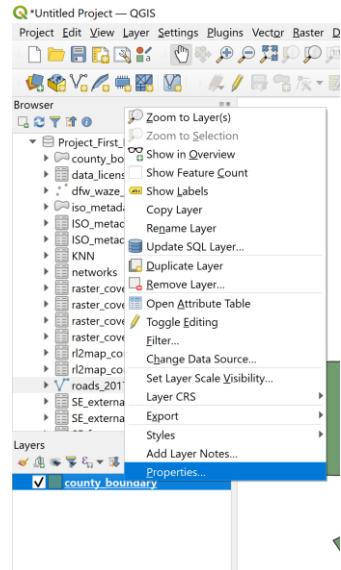
5. Display the accidents that happened in Arlington, Dallas, Denton. Each city event in a different color and the background are the roads and county

**Steps:**

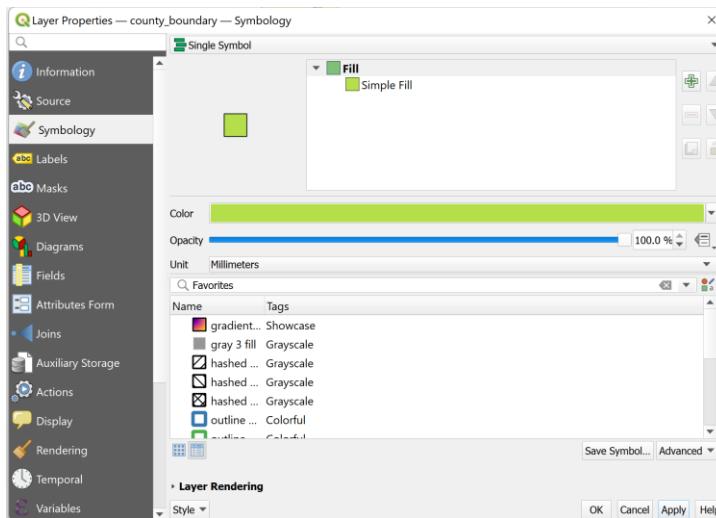
- i. Add county\_boundary layer



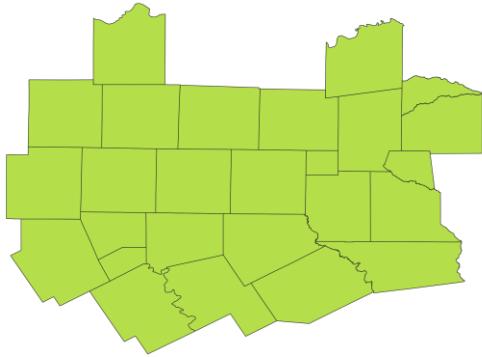
ii. Right click on county\_boundary layer and select properties



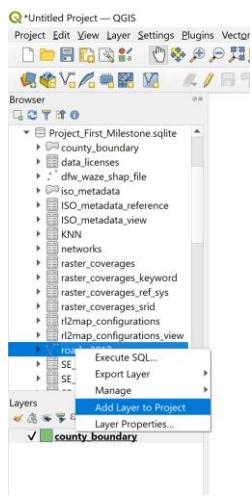
iii. Choose Symbology and select color option as light green



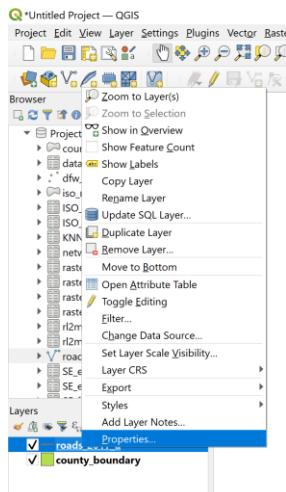
iv. Click on Apply and then click on Ok



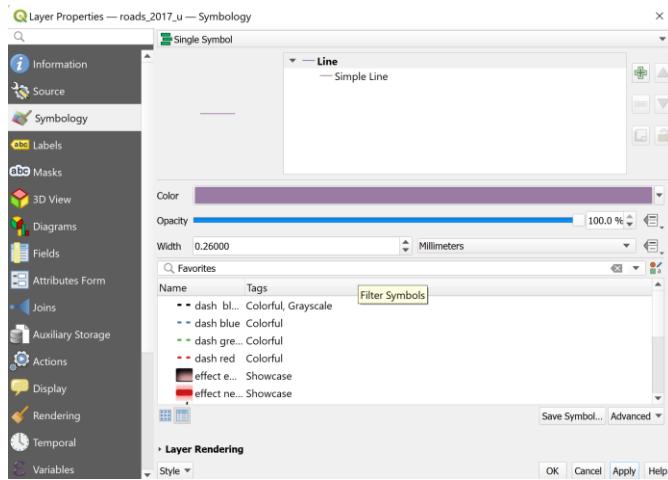
v. Add roads\_2017\_u layer



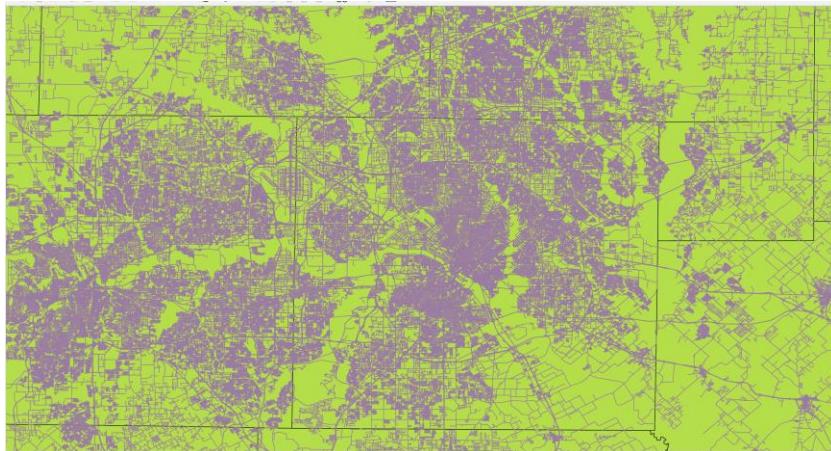
vi. Right click on roads\_2017\_u layer and select properties



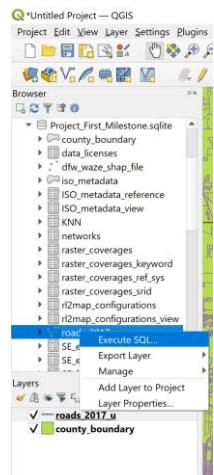
vii. Choose Symbology and select color option as purple



viii. Click on Apply and then click on Ok



ix. Right click on roads\_2017\_u and select Execute SQL



- x. Execute the query below:

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND city in ('Arlington', 'Dallas', 'Denton')
```

roads\_2017\_u — Execute SQL

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND city in ('Arlington', 'Dallas', 'Denton')
```

Clear Fetched rows: 400/2821 2 ms

	pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1	105043	accident	I-30 E	Westbound	nan	nan	nan
2	105206	accident	US-287 N	Northbound	nan	nan	nan
3	105446	accident	Plano Rd	Northbound	nan	nan	nan
4	105678	accident	to Riverfront Blvd	Westbound	nan	nan	nan
5	105679	accident	I-30 W	Eastbound	nan	nan	nan

Load as new layer

Close

- xi. Click on Load as new layer and select 'Geometry column' check box and enter Layer name as 'QueryLayer'

roads\_2017\_u — Execute SQL

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND city in ('Arlington', 'Dallas', 'Denton')
```

Clear Fetched rows: 400/2821 2 ms

	pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1	105043	accident	I-30 E	Westbound	nan	nan	nan
2	105206	accident	US-287 N	Northbound	nan	nan	nan
3	105446	accident	Plano Rd	Northbound	nan	nan	nan
4	105678	accident	to Riverfront Blvd	Westbound	nan	nan	nan
5	105679	accident	I-30 W	Eastbound	nan	nan	nan

Load as new layer

✓ Geometry column geometry

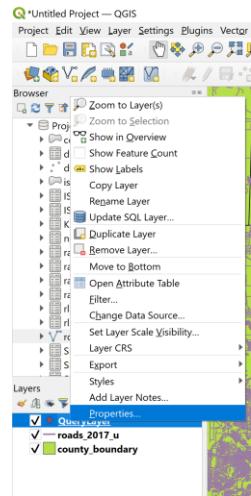
Subset filter Enter the optional SQL filter or click on the button to open the query builder tool

Layer name QueryLayer

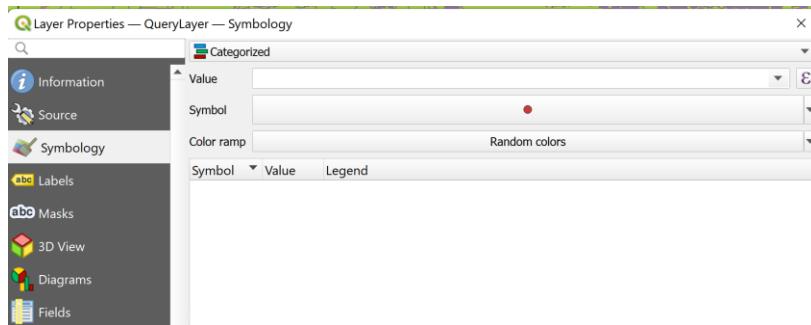
Load layer

Close

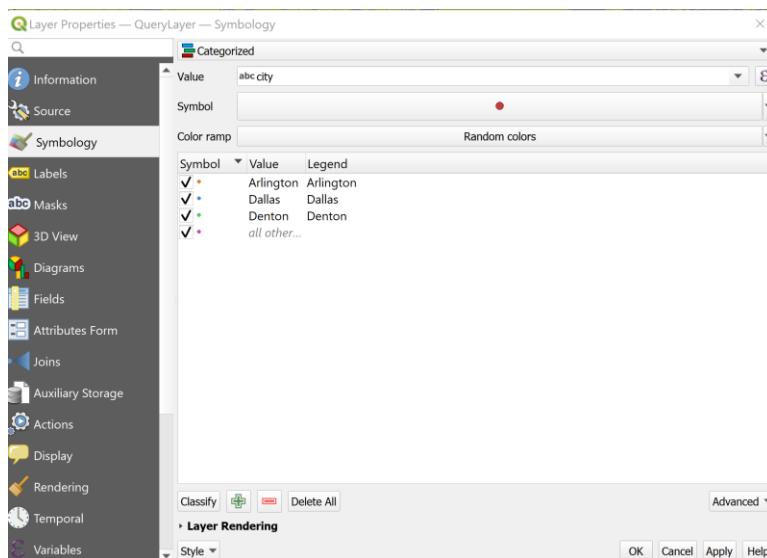
xii. Right click on QueryLayer → Click on Properties



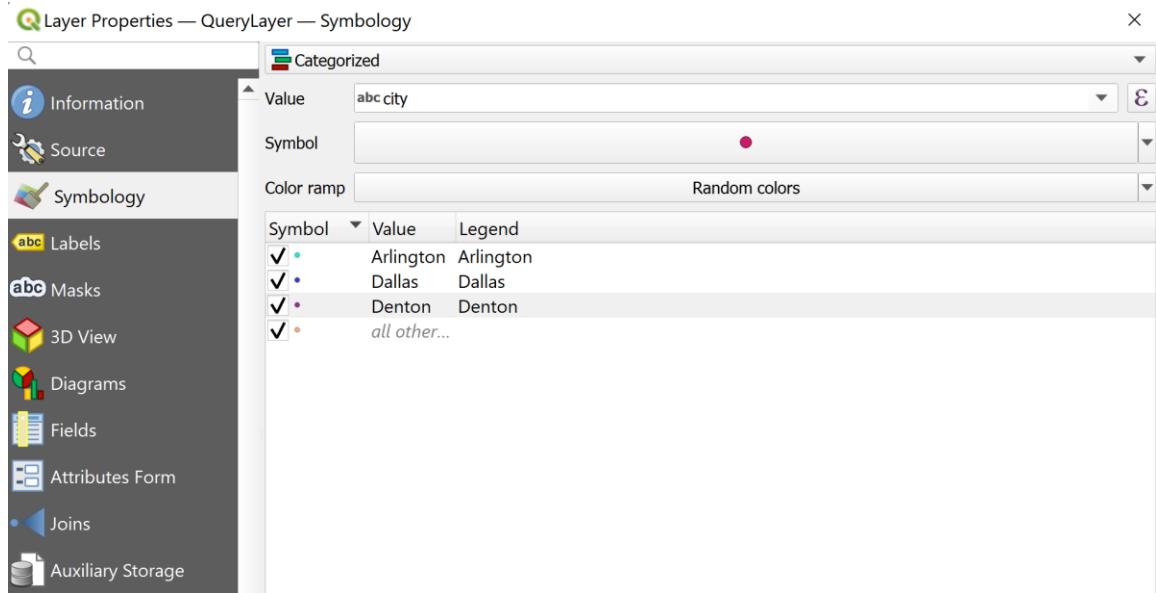
xiii. Select Symbology → Select Categorized as shown below



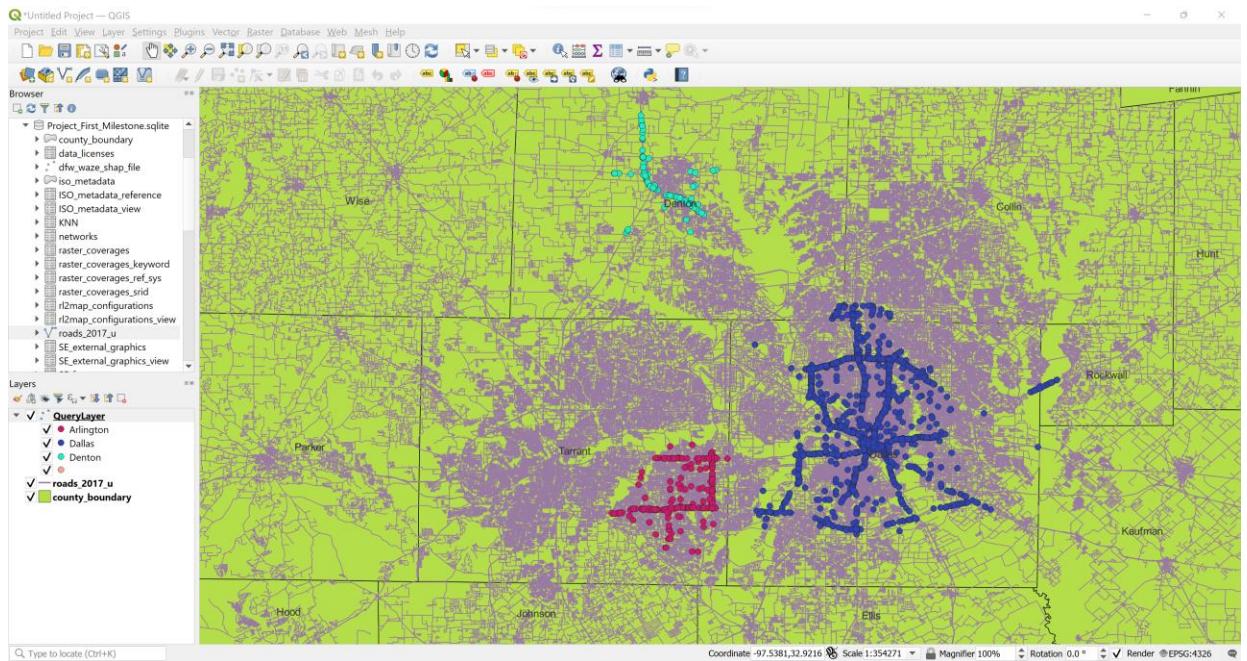
xiv. Select Value as city → click on Classify in left bottom of the panel



xv. Change Arlington color to ‘Red’, Denton color to ‘Green’ and Dallas color to ‘Blue’



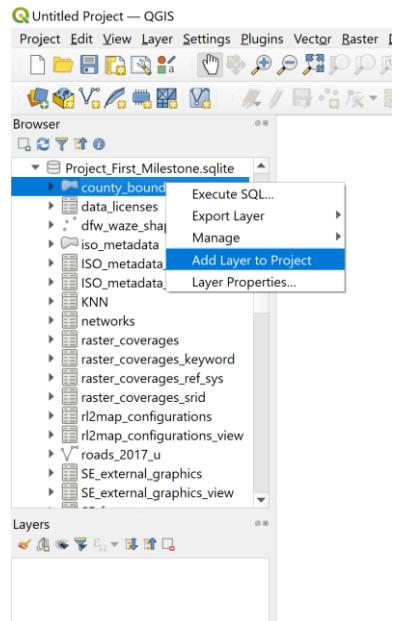
xvi. Click on Apply and then click on Ok



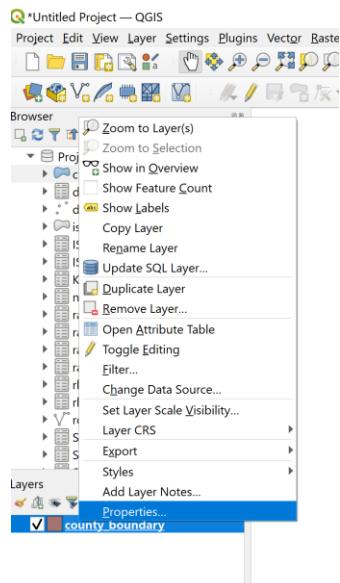
6. Display the event type “accident” that happened in Tarrant County on 12/09/2018 between 6:00 and 19:00 where each city accidents are displayed with different color. Roads and counties need to be in the background.

**Steps:**

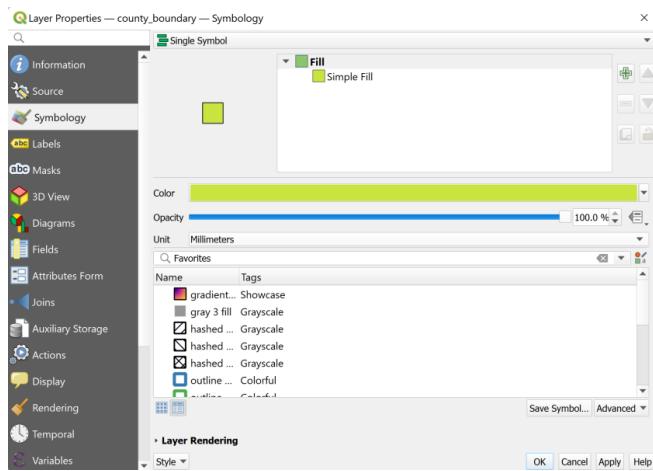
- i. Add county\_boundary layer



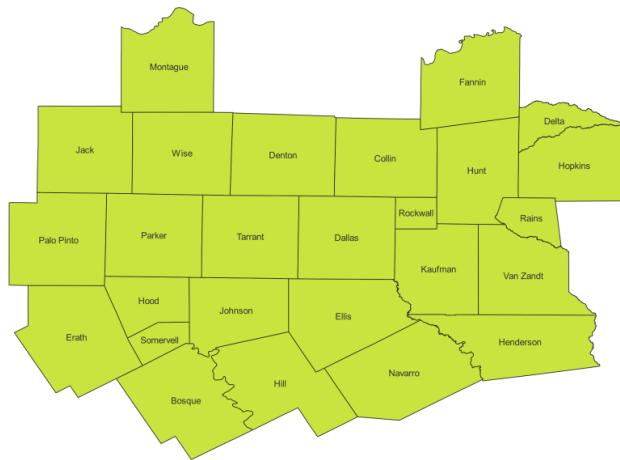
- ii. Right click on county\_boundary layer and select properties



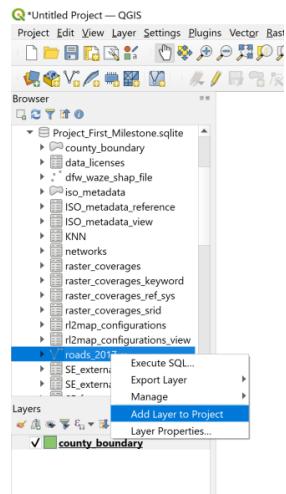
iii. Choose Symbology and select color option as light green



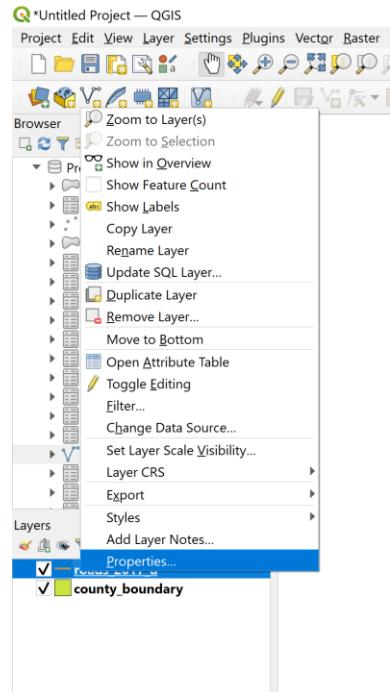
iv. Click on Apply and then click on Ok



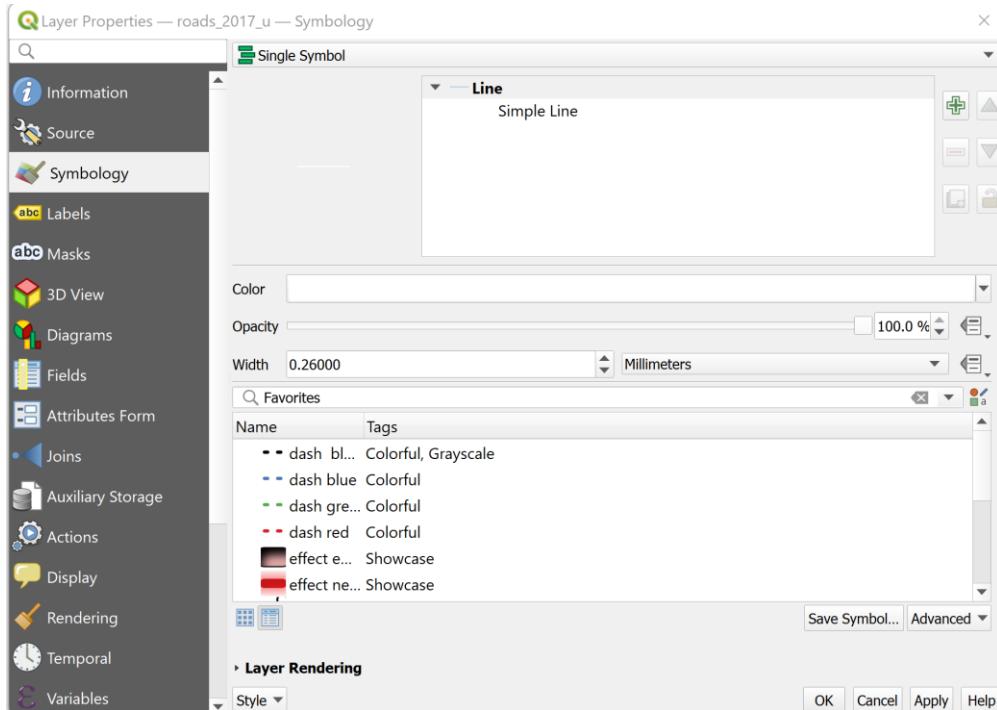
v. Add roads\_2017\_u layer



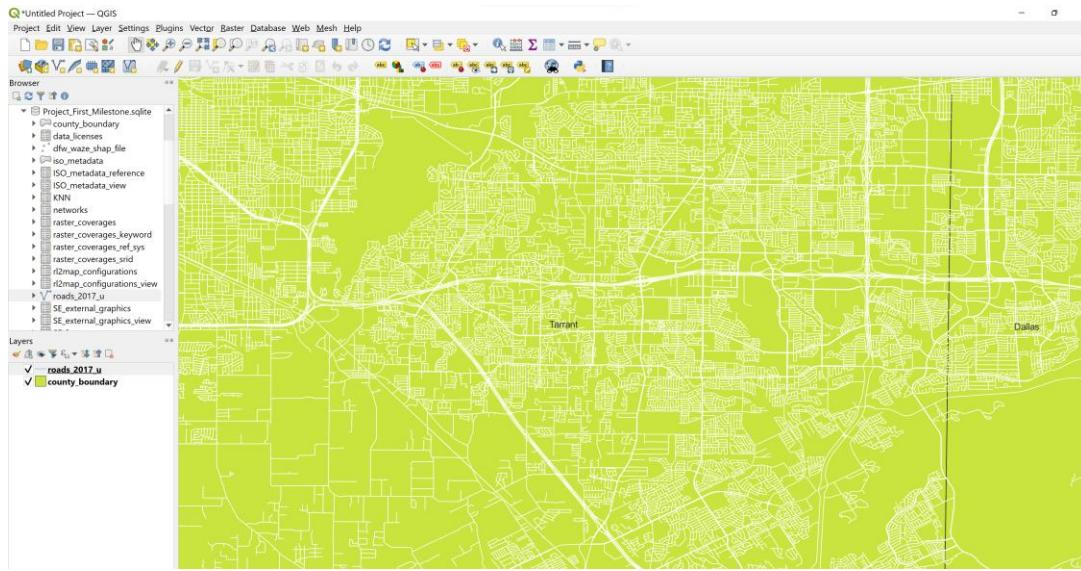
vi. Right click on roads\_2017\_u layer and select properties



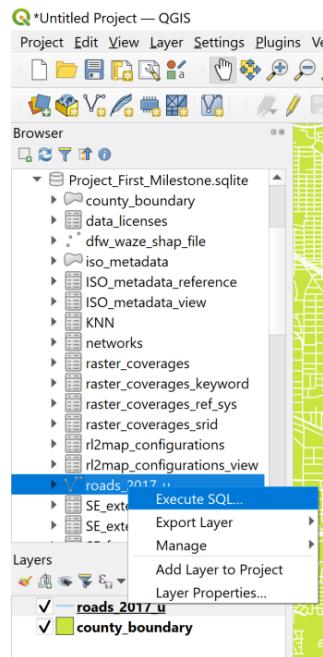
vii. Choose Symbology and select color option as white



viii. Click on Apply and then click on Ok



ix. Right click on roads\_2017\_u and select Execute SQL



x. Execute the query below:

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND county = 'Tarrant'
AND create_time between '2018-12-09 06:00:00' and '2018-12-09
19:00:00'
```

QueryLayer — Update SQL

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND county = 'Tarrant'
AND create_tim between '2018-12-09 06:00:00' and '2018-12-09 19:00:00'
```

	pk_uid	event_type	facility_n	direction	article_co	from_loc
1	1536222	accident	SH-360 N	Northbound	nan	nan
2	1536483	accident	SH-114 E	Westbound	nan	nan
3	1536696	accident	SH-114 W	Westbound	nan	nan

Update Query Layer

Geometry column geometry

Subset filter Enter the optional SQL filter or click on the button to open the query builder tool ...

Layer name QueryLayer

Update Layer Close

- xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

QueryLayer — Update SQL

```
SELECT * FROM DFW_WAZE_shap_file
WHERE event_type = 'accident'
AND county = 'Tarrant'
AND create_tim between '2018-12-09 06:00:00' and '2018-12-09 19:00:00'
```

	pk_uid	event_type	facility_n	direction	article_co	from_loc
1	1536222	accident	SH-360 N	Northbound	nan	nan
2	1536483	accident	SH-114 E	Westbound	nan	nan
3	1536696	accident	SH-114 W	Westbound	nan	nan

Update Query Layer

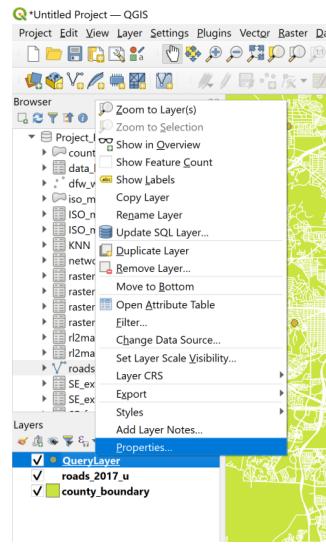
Geometry column geometry

Subset filter Enter the optional SQL filter or click on the button to open the query builder tool ...

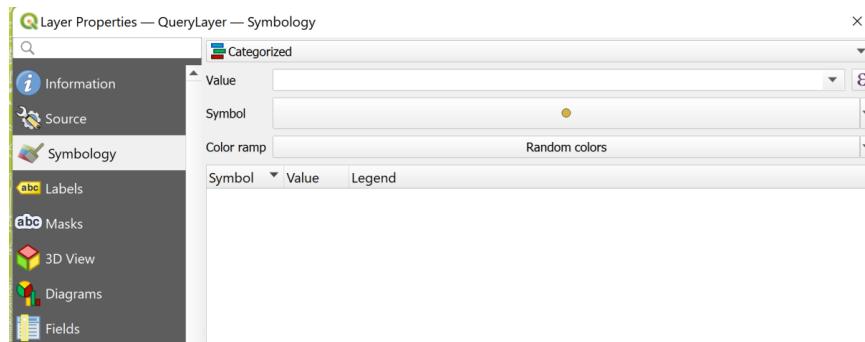
Layer name QueryLayer

Update Layer Close

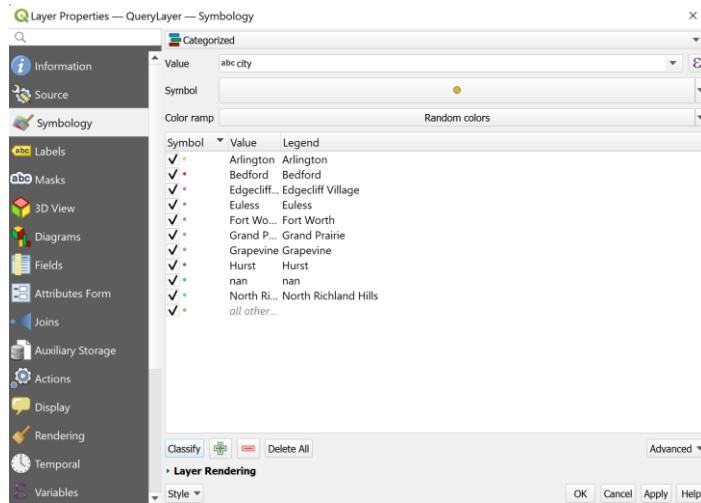
xii. Right click on QueryLayer → Click on Properties



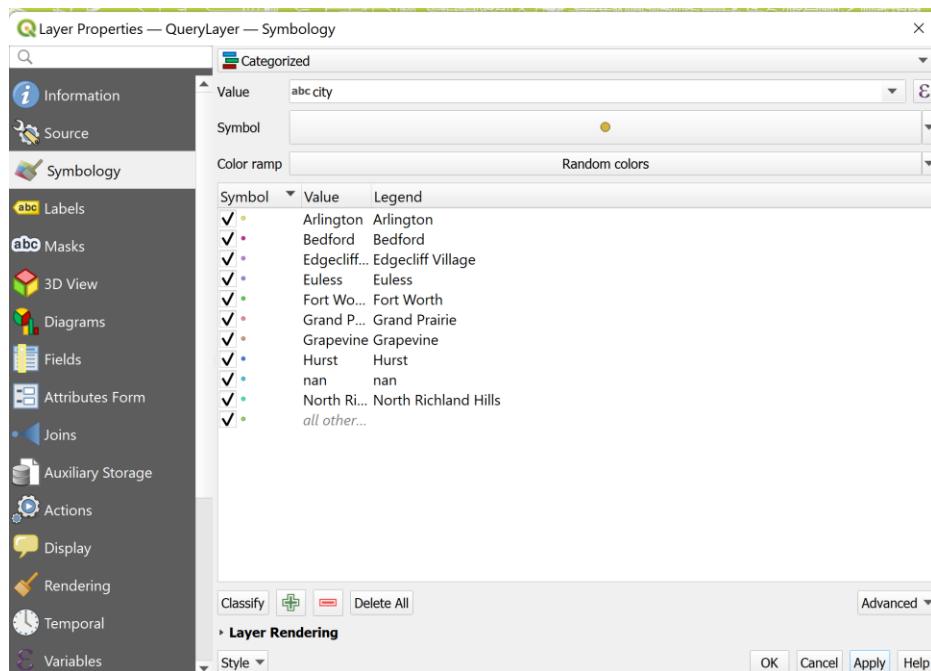
xiii. Select Symbology → Select Categorized as shown below



xiv. Select Value as city → click on Classify in left bottom of the panel



xvii. Select different color for every city



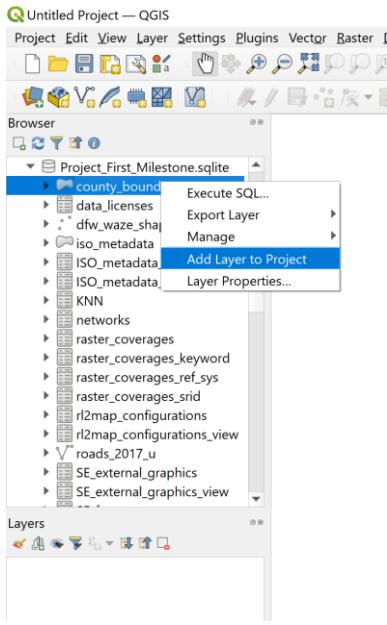
xviii. Click on Apply and then click on Ok



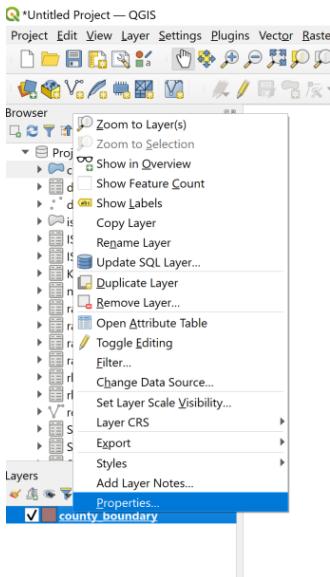
7. Display the “traffic jam” in Collin county on 12/27/2018 between 7:00:00 and 15:00:00 and the background is the roads with county.

**Steps:**

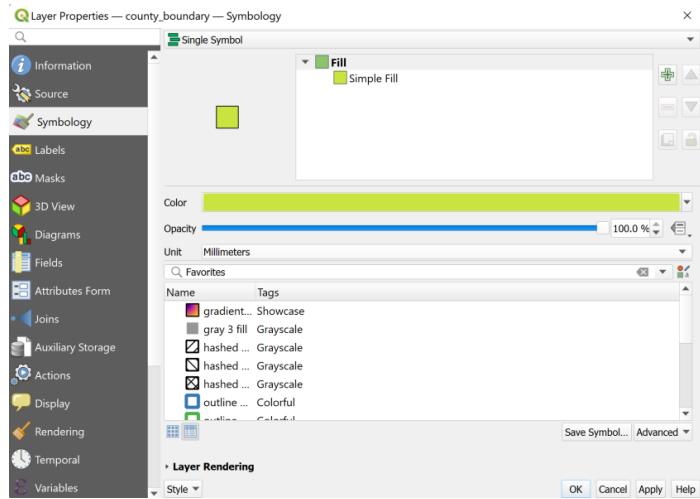
- i. Add county\_boundary layer



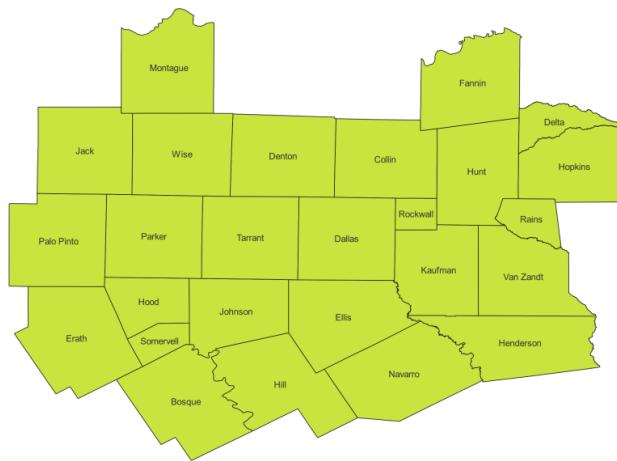
ii. Right click on county\_boundary layer and select properties



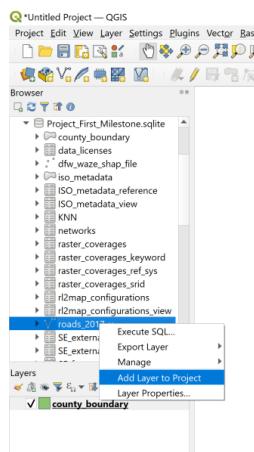
iii. Choose Symbology and select color option as light green



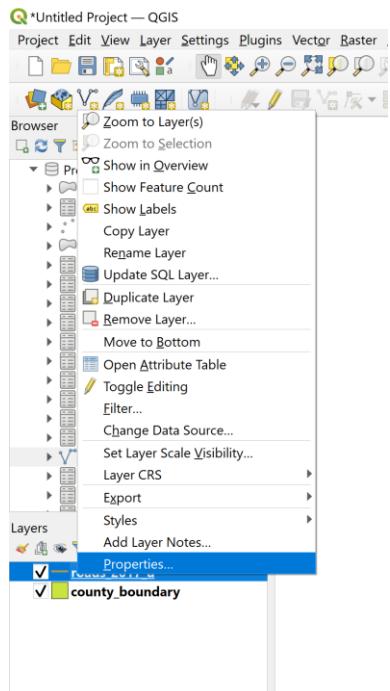
iv. Click on Apply and then click on Ok



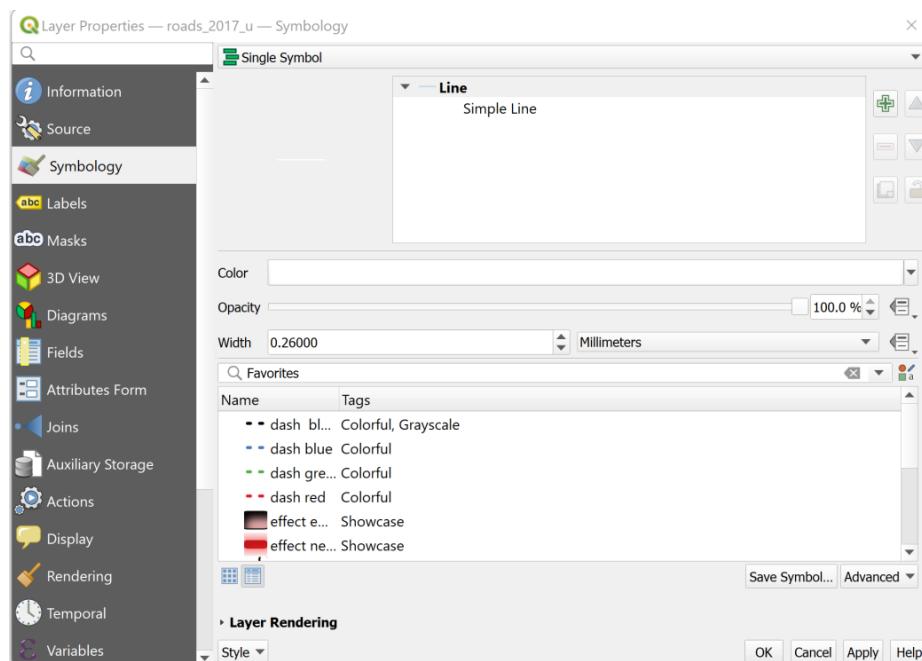
v. Add roads\_2017\_u layer



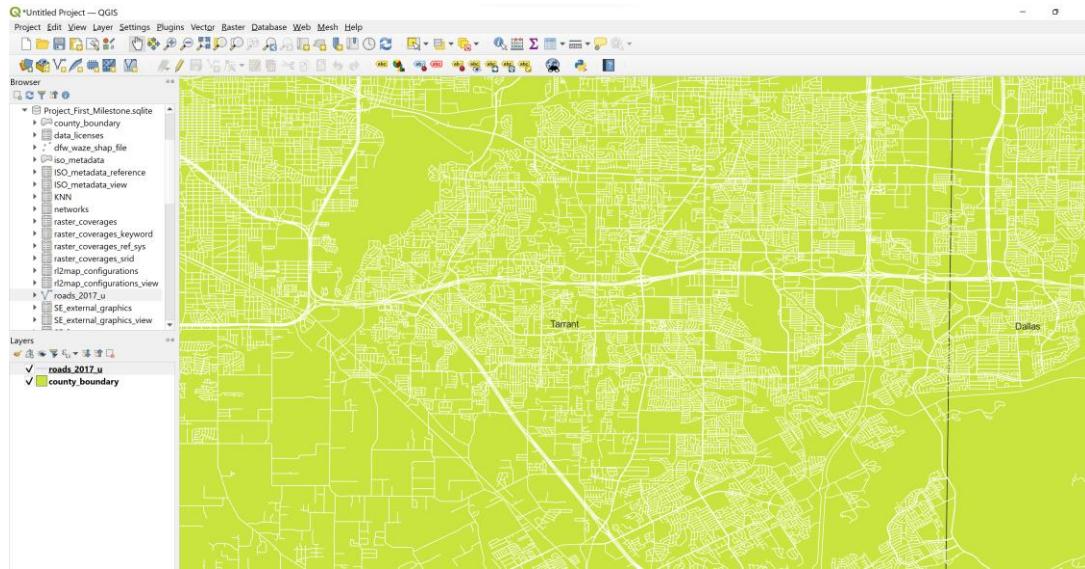
vi. Right click on roads\_2017\_u layer and select properties



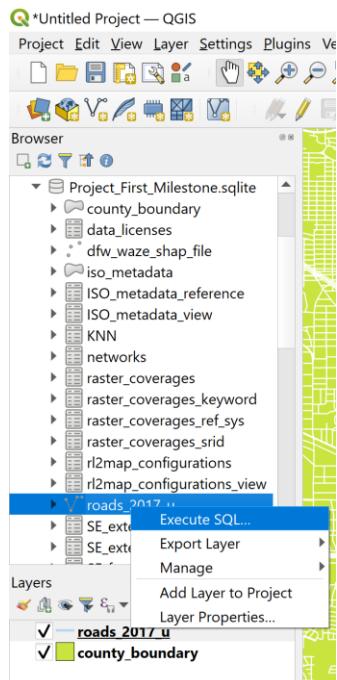
vii. Choose Symbology and select color option as white



viii. Click on Apply and then click on Ok



ix. Right click on roads\_2017\_u and select Execute SQL



x. Execute the query below:

```

SELECT * from DFW_WAZE_shap_file WHERE event_type ="traffic jam"
AND county = "Collin"
AND create_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
AND close_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'

```

QueryLayer — Update SQL

```
SELECT * from DFW_WAZE_shap_file WHERE event_type ="traffic jam" AND
county = "Collin" AND
create_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
AND close_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
```

Clear Fetched rows: 400/601 414 ms Execute Stop

	pk_uid	event_type	facility_n	direction	article_co	from_loc_p
1	2264426	traffic jam	Rockhill Pkwy	nan	nan	Pre
2	2264428	traffic jam	Twin Eagles Dr	nan	nan	Spi
3	2264443	traffic jam	Legacy Dr	nan	nan	Pre

Update Query Layer

Geometry column geometry

Subset filter Column that contains the geometry. filter or click on the button to open the query builder...

Layer name

Update Layer Close

- xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

QueryLayer — Update SQL

```
SELECT * from DFW_WAZE_shap_file WHERE event_type ="traffic jam" AND
county = "Collin" AND
create_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
AND close_time BETWEEN '2018-12-27 07:00:00' AND '2018-12-27 15:00:00'
```

Clear Fetched rows: 400/601 414 ms Execute Stop

	pk_uid	event_type	facility_n	direction	article_co	from_loc_p
1	2264426	traffic jam	Rockhill Pkwy	nan	nan	Pre
2	2264428	traffic jam	Twin Eagles Dr	nan	nan	Spi
3	2264443	traffic jam	Legacy Dr	nan	nan	Pre

Update Query Layer

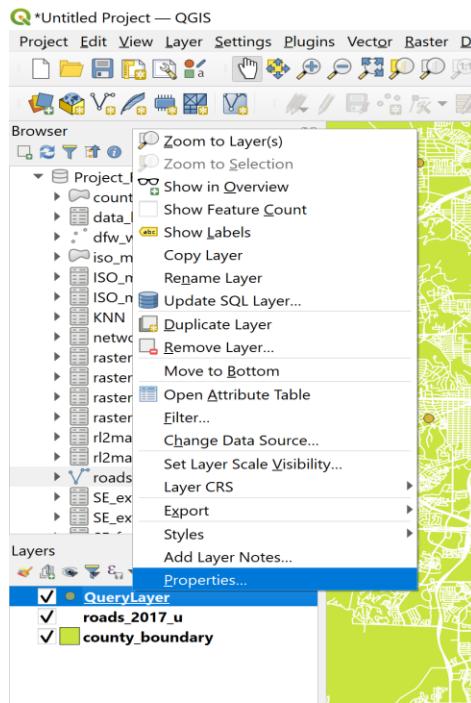
Geometry column geometry

Subset filter Column that contains the geometry. filter or click on the button to open the query builder...

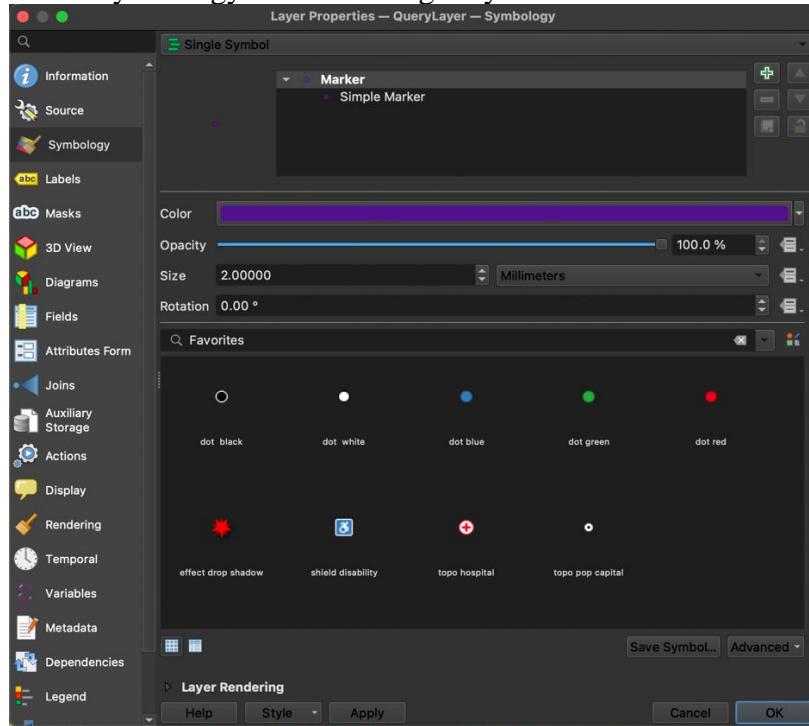
Layer name

Update Layer Close

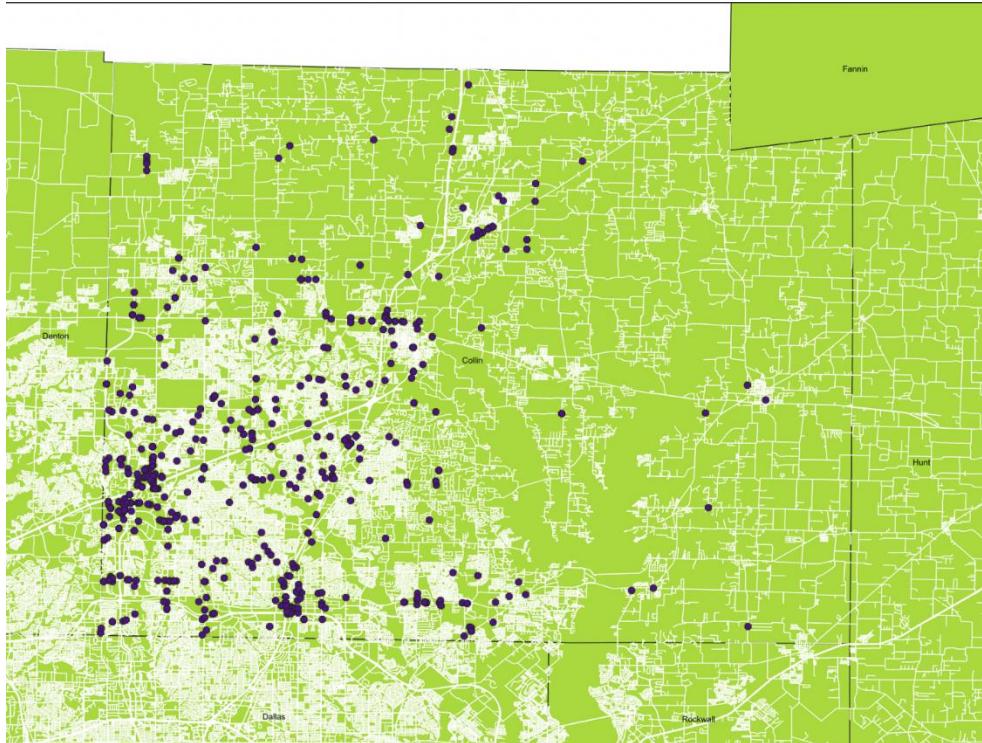
xii. Right click on QueryLayer → Click on Properties



xiii. Select Symbology → Select Single Symbol as shown below and select color as purple.



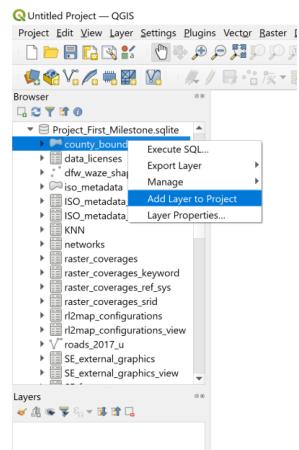
xiv. Click on Apply and then click on Ok



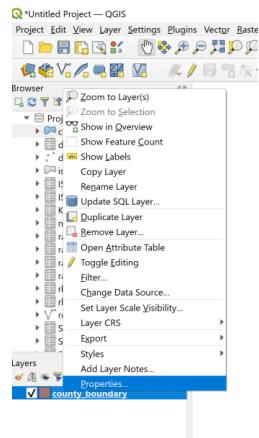
8. For each county, display the event type ‘traffic jam’ on 12/24/2018. Each county with different color.

**Steps:**

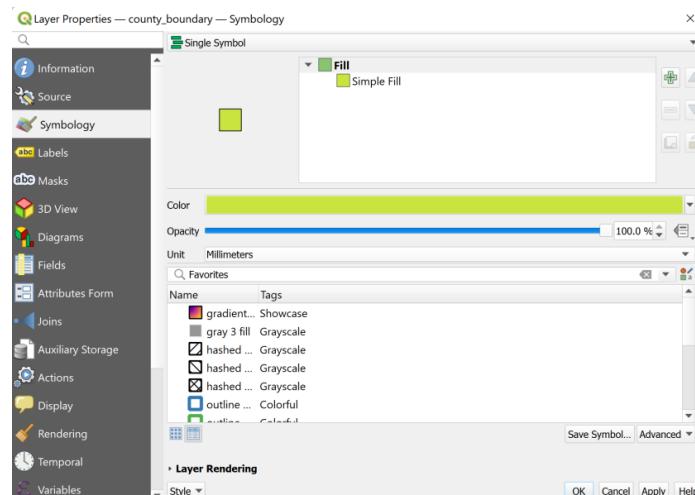
- i. Add county\_boundary layer



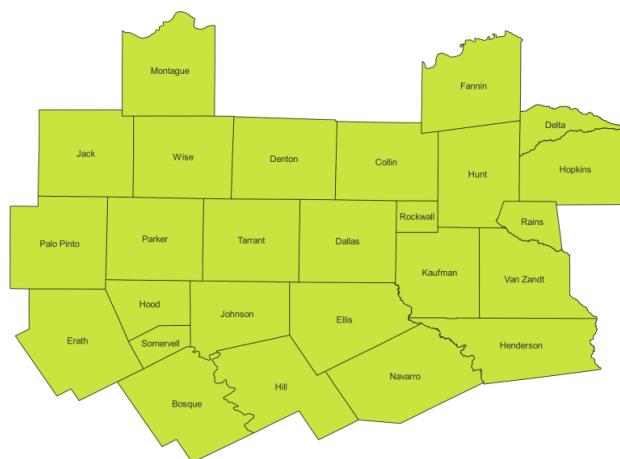
ii. Right click on county\_boundary layer and select properties



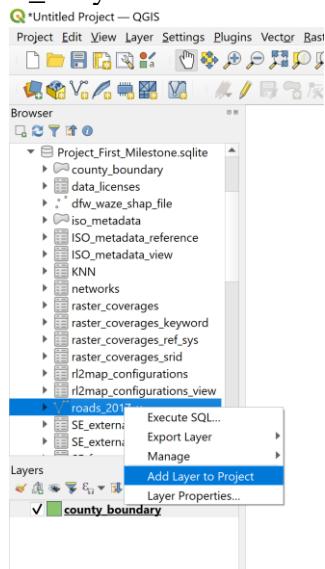
iii. Choose Symbology and select color option as light green



iv. Click on Apply and then click on Ok

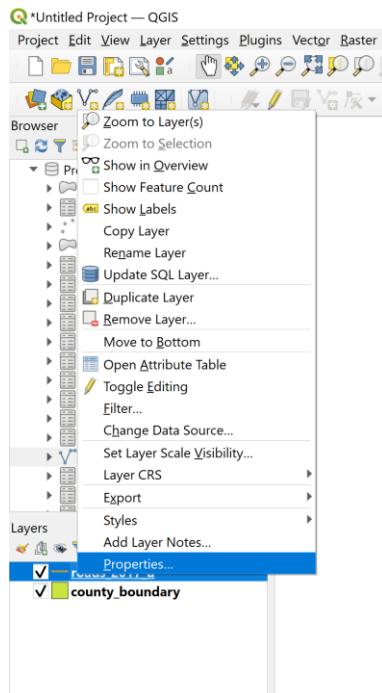


v. Add roads\_2017\_u layer

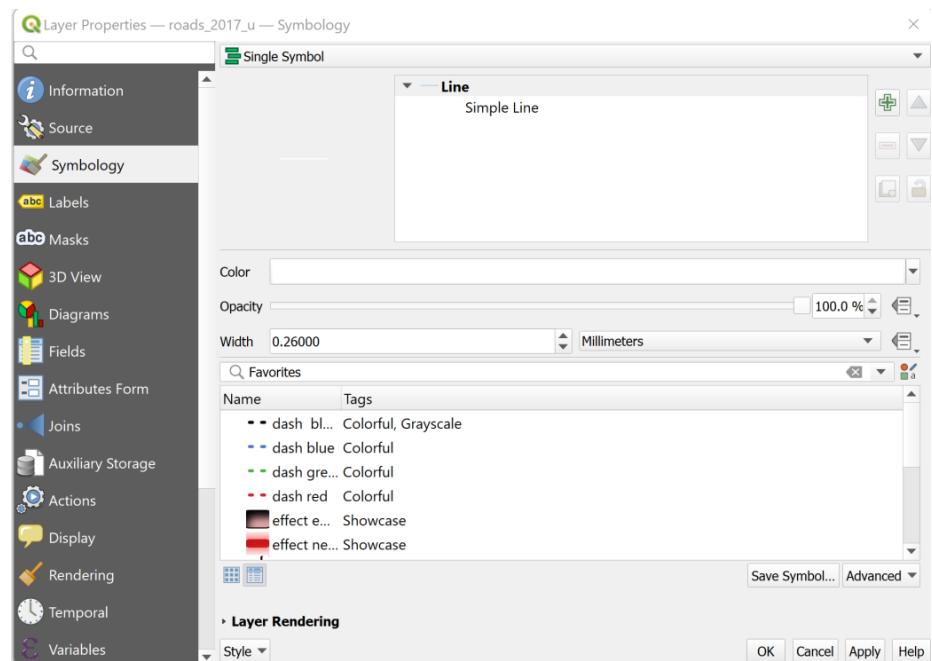


i.

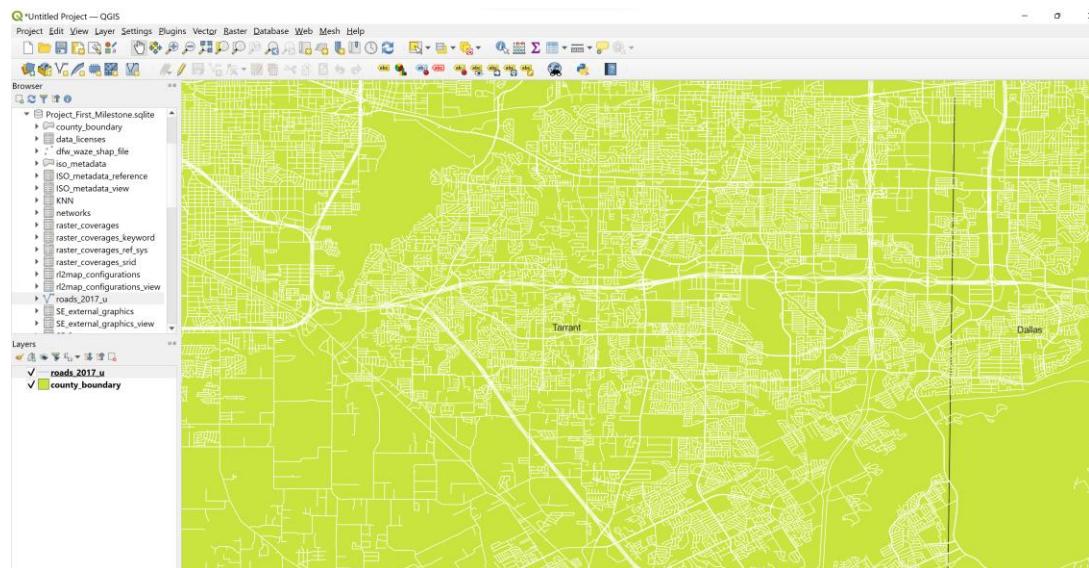
vi. Right click on roads\_2017\_u layer and select properties



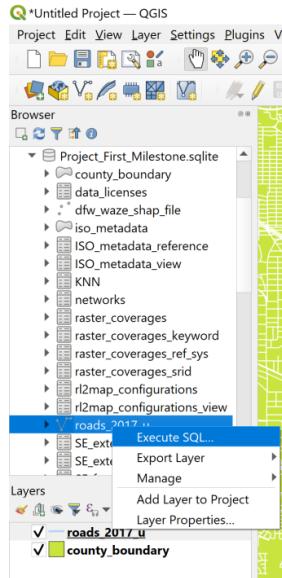
vii. Choose Symbology and select color option as white



viii. Click on Apply and then click on Ok



ix. Right click on roads\_2017\_u and select Execute SQL



x. Execute the query below:

```
SELECT * from DFW_WAZE_shap_file WHERE event_type ="traffic jam"
AND create_tim BETWEEN '2018-12-24 00:00:00' AND '2018-12-24 23:59:59'
AND close_time BETWEEN '2018-12-24 00:00:00' AND '2018-12-24 23:59:59'
```

pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1 2216705	traffic jam	Eagle Dr	nan	nan	nan	Myrtle
2 2216706	traffic jam	W Hickory St	nan	nan	nan	S Ave
3 2216707	traffic jam	Spencer Rd	nan	nan	nan	Bridge
4 2216710	traffic jam	John W. Elliott Dr	nan	nan	nan	Main
5 2216720	traffic jam	John W. Elliott Dr	nan	nan	nan	Bridge

xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’

roads\_2017\_u — Execute SQL

```
SELECT * from DFW_WAZE_shape_file WHERE event_type = "traffic jam"
AND create_time BETWEEN '2018-12-24 00:00:00' AND '2018-12-24 23:59:59'
AND close_time BETWEEN '2018-12-24 00:00:00' AND '2018-12-24 23:59:59'
```

Clear Fetched rows: 400/9444 459 ms Execute Stop

pk_uid	event_type	facility_n	direction	article_co	from_loc_p	tc
1 2216705	traffic jam	Eagle Dr	nan	nan	nan	Myrtle
2 2216706	traffic jam	W Hickory St	nan	nan	nan	S Ave

Load as new layer

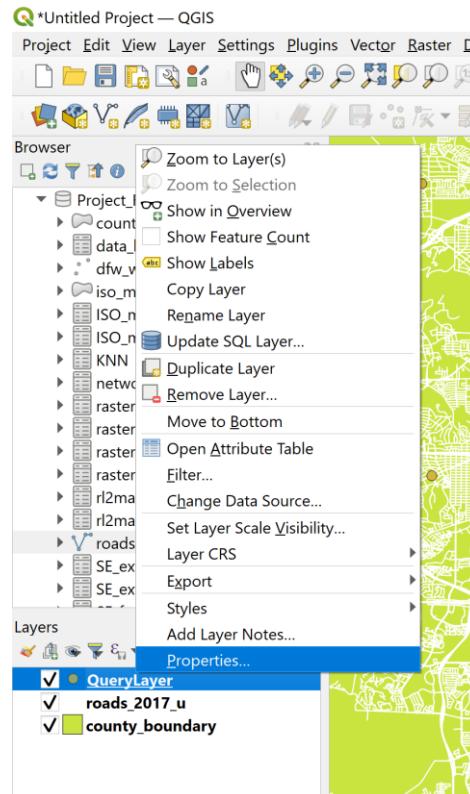
Geometry column geometry

Subset filter Enter the optional SQL filter or click on the button to open the query builder tool

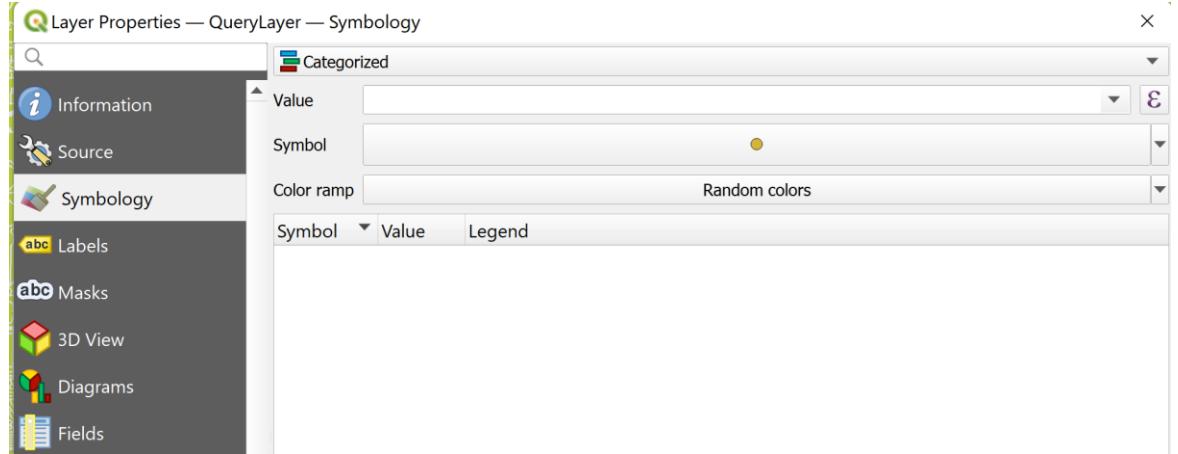
Layer name QueryLayer

Load layer Close

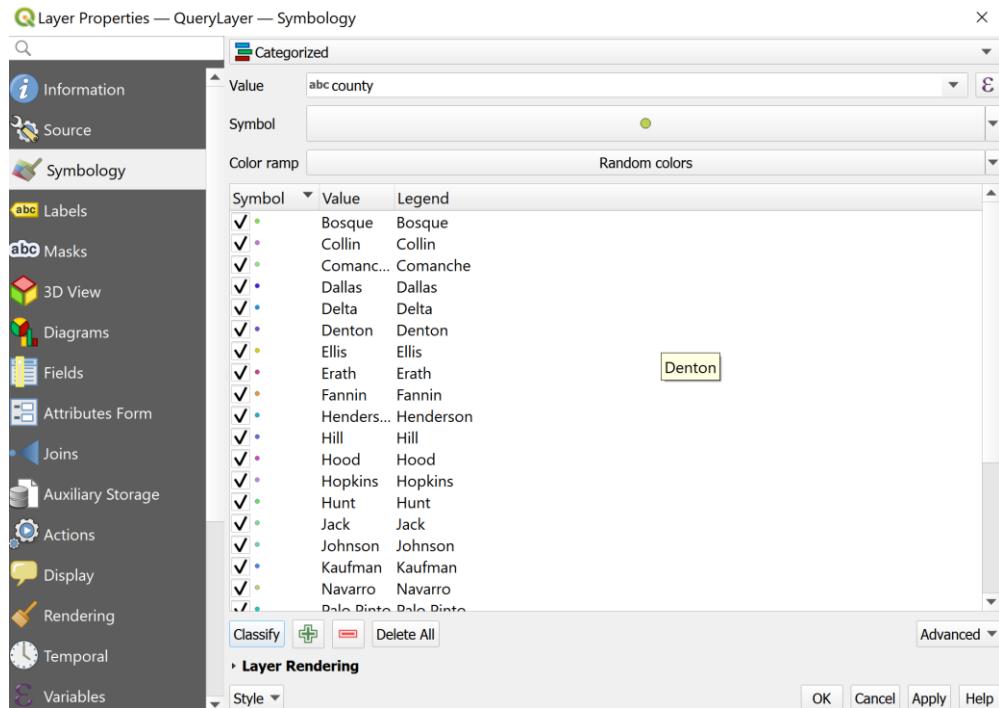
xii. Right click on QueryLayer → Click on Properties



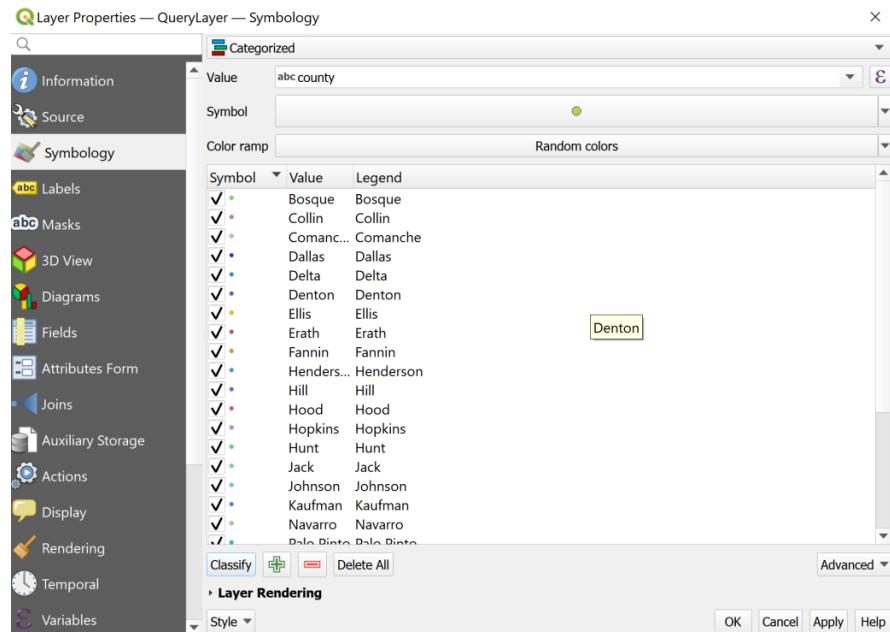
xiii. Select Symbology → Select Categorized as shown below



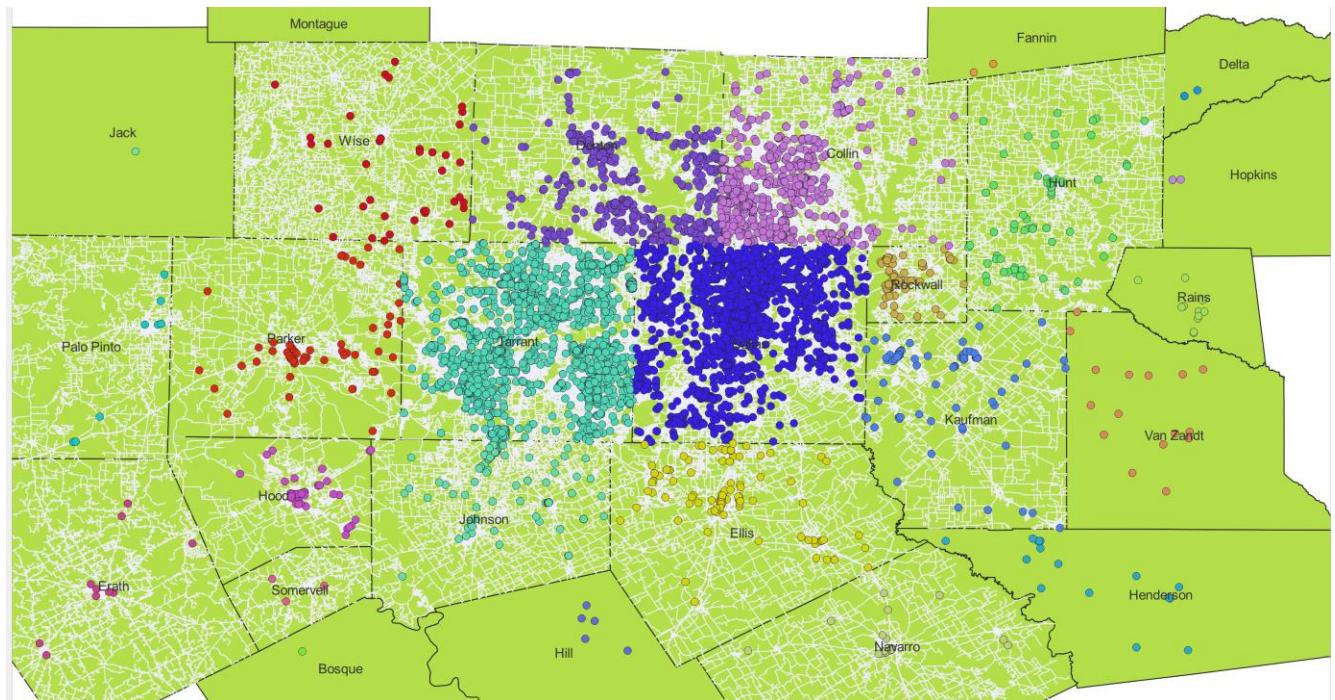
xiv. Select Value as County → click on Classify in left bottom of the panel



xv. Select different color for every county



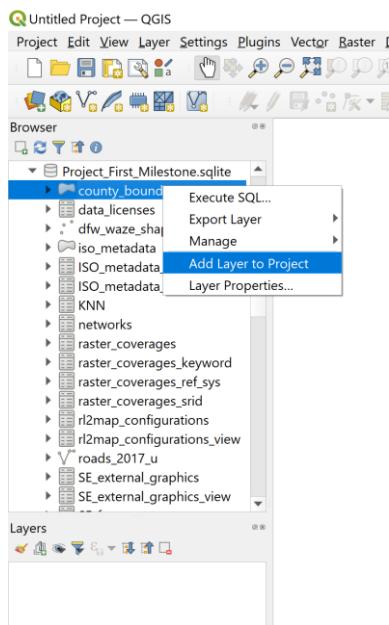
xvi. Click on Apply and then click on Ok



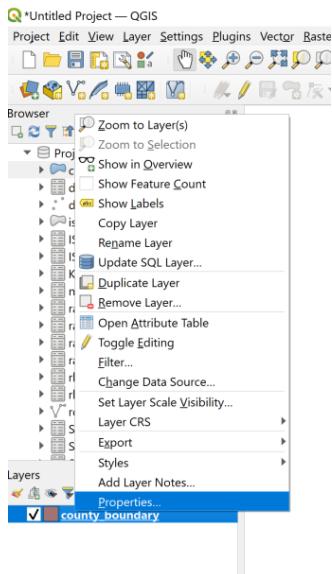
9. Display all the events on the road ‘I-20 E’ and ‘I-30 E’ on 12/9/2018 from 9 am to 12 pm. Events on ‘I-20 E’ should be in different color than event in ‘I-30 E’.

## Steps:

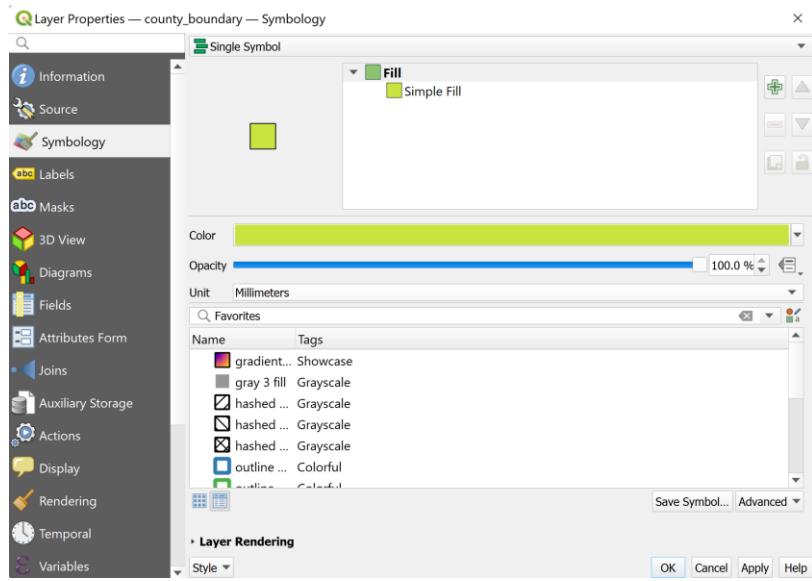
- i. Add county\_boundary layer



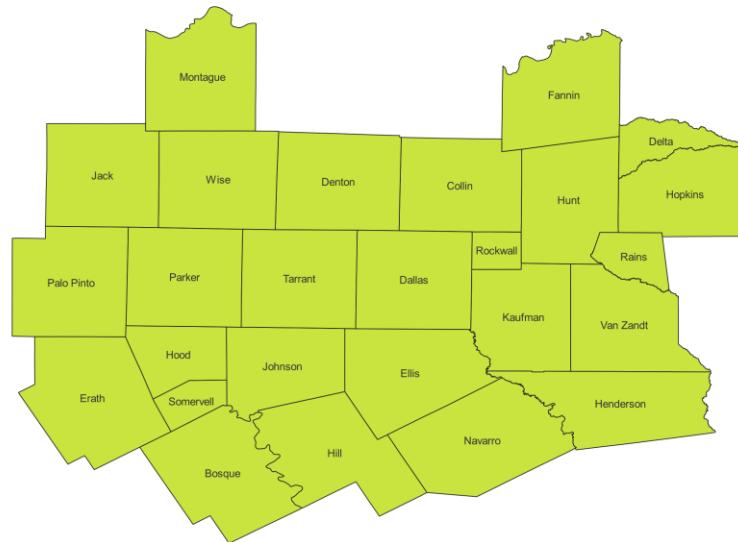
- ii. Right click on county\_boundary layer and select properties



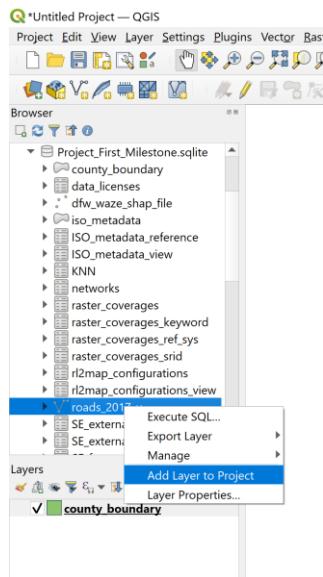
iii. Choose Symbology and select color option as light green



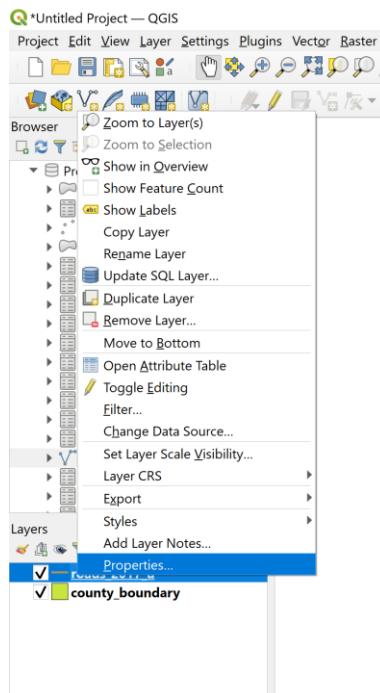
iv. Click on Apply and then click on Ok



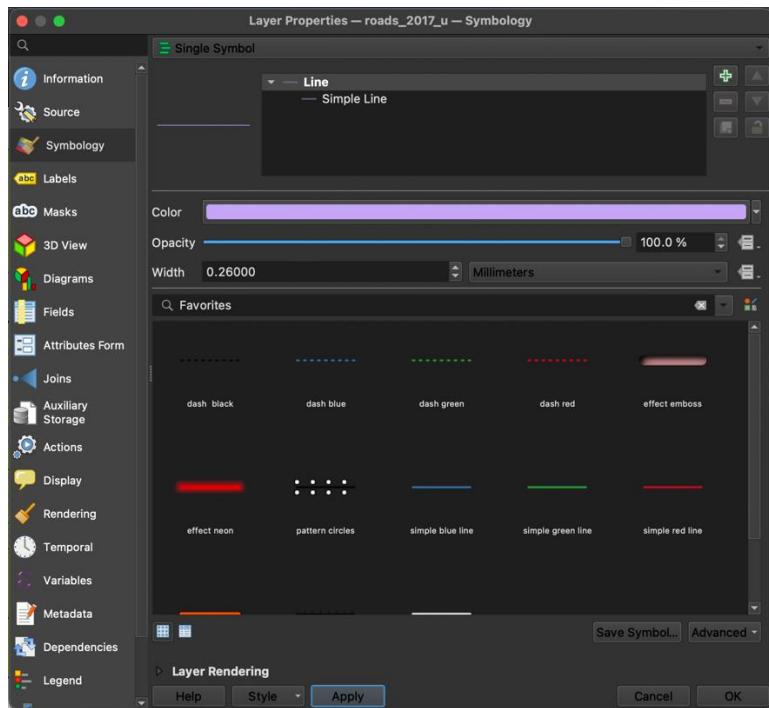
v. Add roads\_2017\_u layer



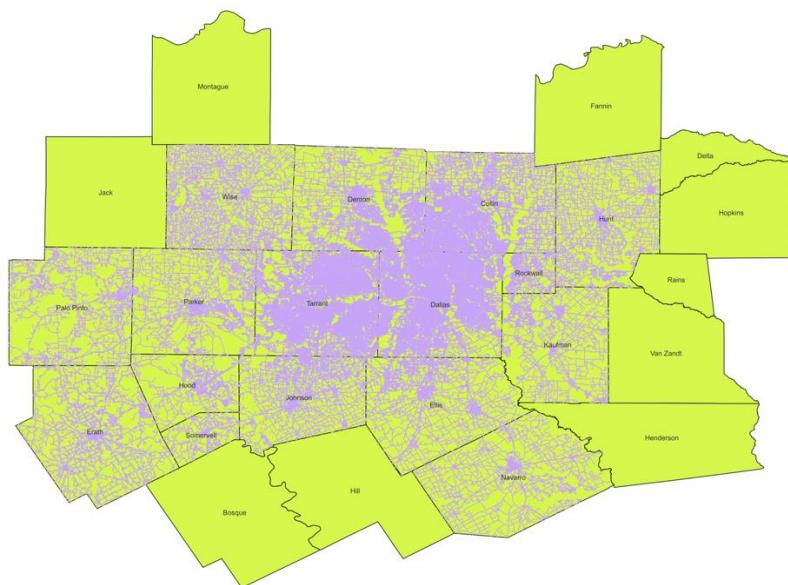
vi. Right click on roads\_2017\_u layer and select properties



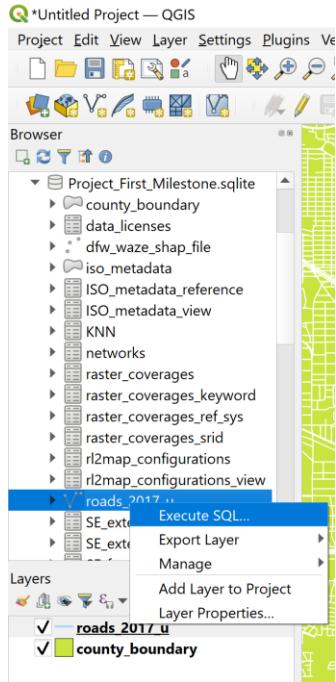
vii. Choose Symbology and select color option as purple



viii. Click on Apply and then click on Ok



- ix. Right click on roads\_2017\_u and select Execute SQL



- x. Execute the query below:

```
SELECT * FROM "dfw_waze_shap_file" WHERE facility_n in ('I-20 E','I-30 E') AND
create_tim BETWEEN '2018-12-09 09:00:00' AND '2018-12-09 12:00:00' AND
close_time BETWEEN '2018-12-09 09:00:00' AND '2018-12-09 12:00:00'
```

QueryLayer — Update SQL

```
SELECT * FROM "dfw_waze_shap_file" WHERE facility_n in ('I-20 E','I-30 E') AND
create_tim BETWEEN '2018-12-09 09:00:00' AND '2018-12-09 12:00:00' AND
close_time BETWEEN '2018-12-09 09:00:00' AND '2018-12-09 12:00:00'
```

Fetched rows: 116/116 152 ms

pk_uid	event_type	facility_n	direction	article_co	from_loc_p	to_loc_p
1	stopped car ...	I-20 E	Eastbound	nan	nan	nan
2	stopped car ...	I-30 E	Eastbound	nan	nan	nan
3	stopped car ...	I-30 E	Eastbound	nan	nan	nan

Update Query Layer

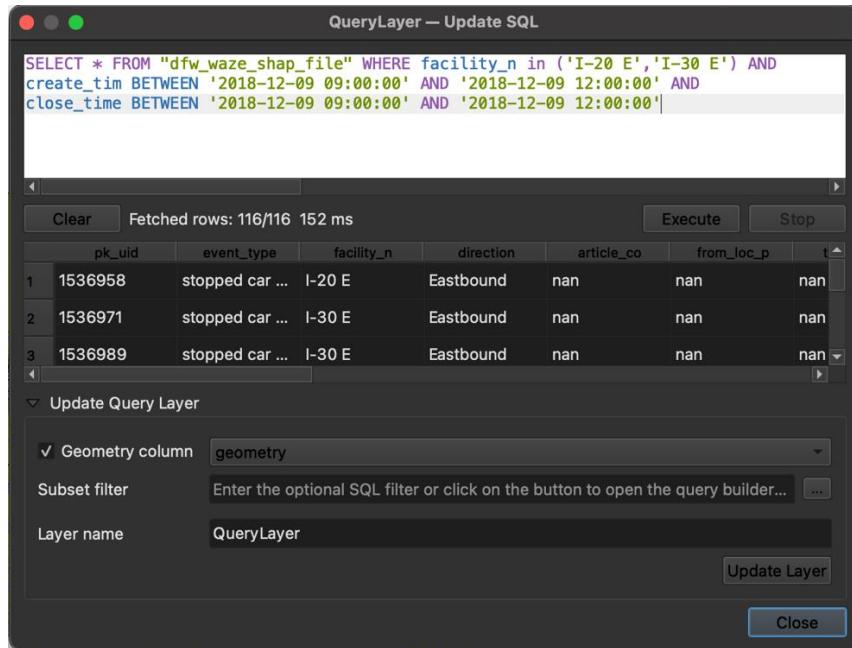
Geometry column geometry

Subset filter Enter the optional SQL filter or click on the button to open the query builder...

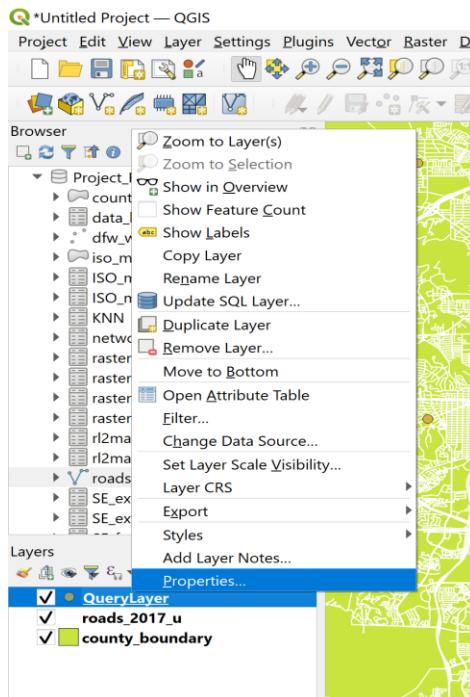
Layer name QueryLayer

Update Layer Close

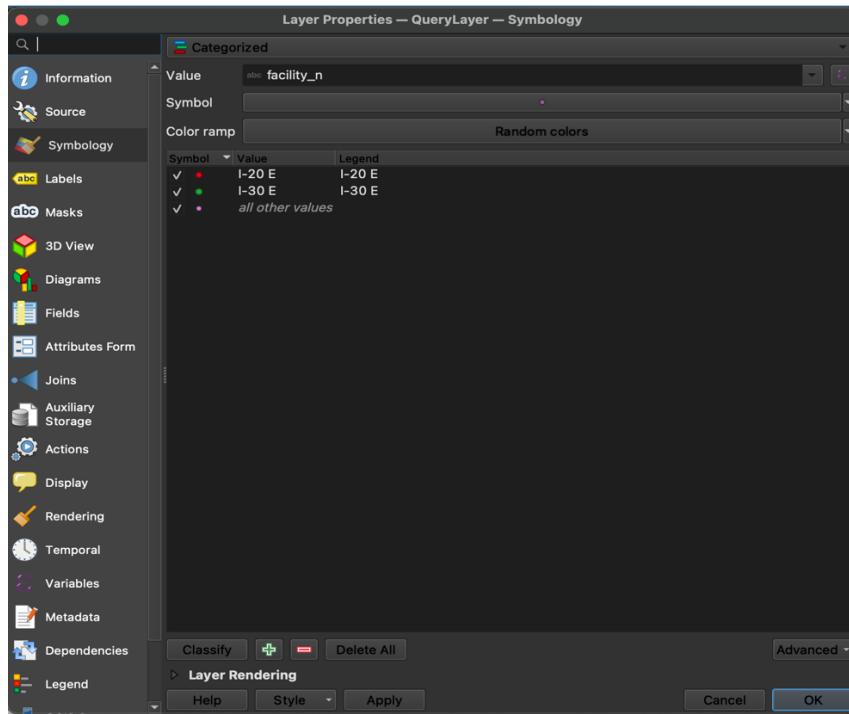
- xi. Click on Load as new layer and select ‘Geometry column’ check box and enter Layer name as ‘QueryLayer’



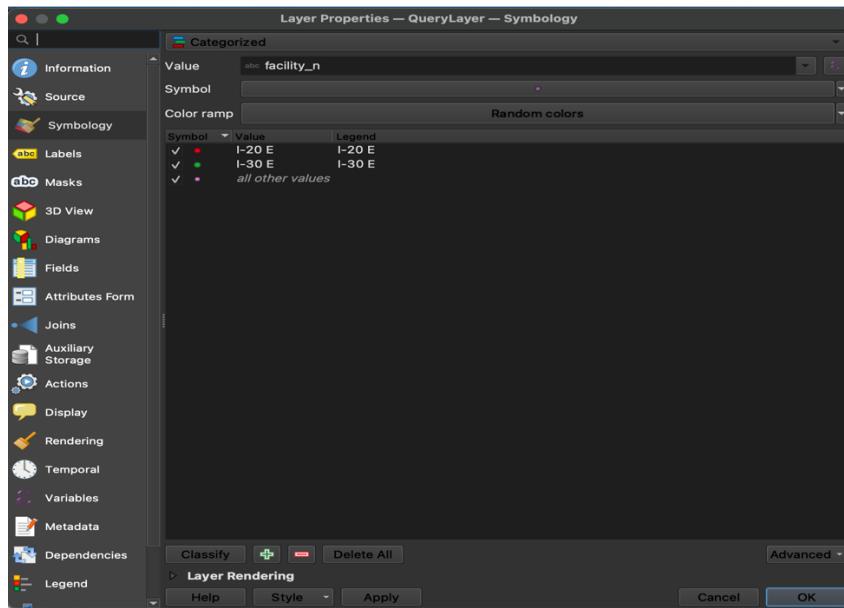
- xii. Right click on QueryLayer → Click on Properties



xiii. Select Symbology → Select categorized as shown below.



xiv. Select Value as city → click on Classify in left bottom of the panel



xv. Click on Apply and then click on Ok

