

ADVANCED DATABASE SYSTEMS

CSE -6331-002

PROJECT – MILESTONE 2

TEAM 2:

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Query 1: Display the roads that are located in Tarrant county in Red color and in Dallas county in Black color and the rest of the counties in Yellow color.

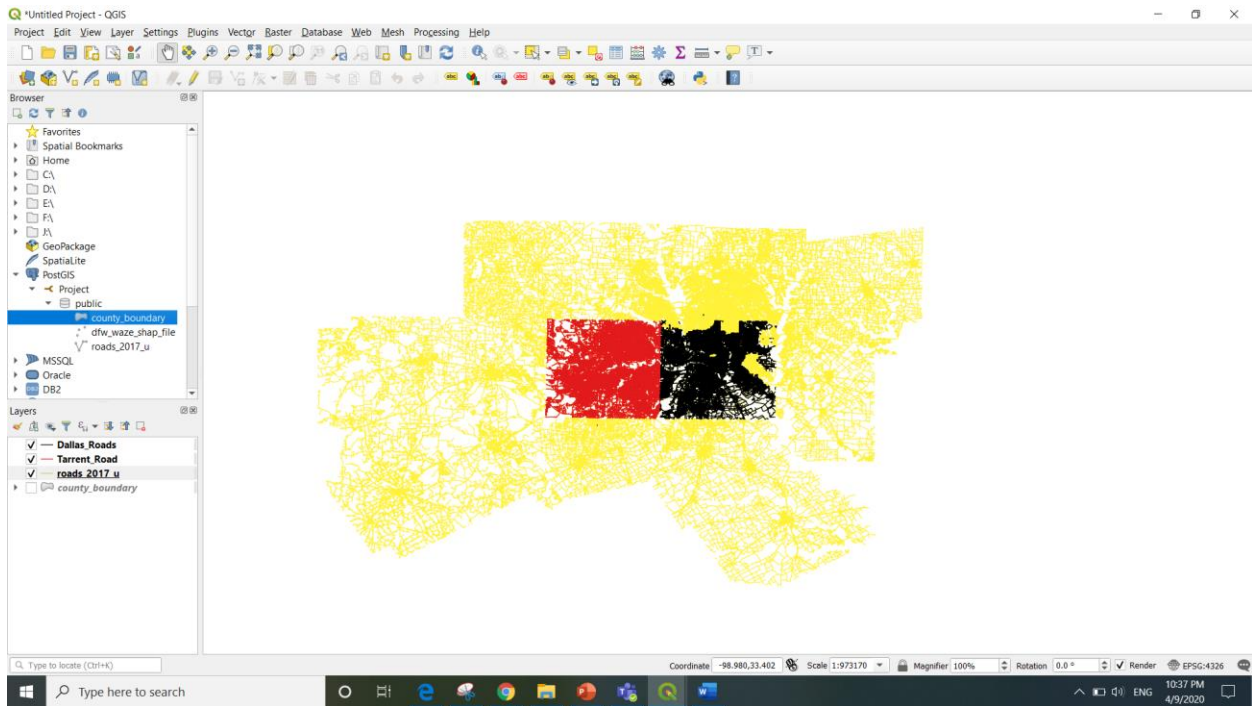


Fig1: Solution for Query 1

Steps followed to display the above Map in PostGIS:

- Firstly, create a layer in POSTGIS by querying it in DB Manager as below:

Query Used: `select * from roads_2017_u where county_1 = 'TARRANT'`

Saved query: Name: Save Delete Load File Save As File

```
1 select * from roads_2017_u where county_j = 'TARRANT'
```

Execute 119253 rows, 3.637 seconds Create a view Clear Query History

	gid	class	objectid	prefix	name	type	suffix	full_name	road_class	city_j	county_j	state	pos
1	522419	ACCESS RAMP	522419	S	REMOTE PUBLIC	LOOP	NULL	S REMOTE PUBL...	102	GRAPEVINE	TARRANT	TX	NULL
2	522420	ACCESS RAMP	522420	NULL	TD RECIRC	RY	NULL	TD RECIRC RY	102	GRAPEVINE	TARRANT	TX	NULL
3	522421	ACCESS RAMP	522421	NULL	EXPRESS S PUB...	LOOP	NULL	EXPRESS S PUB...	102	GRAPEVINE	TARRANT	TX	NULL
4	522422	ACCESS RAMP	522422	NULL	TD DEPART	RD	NULL	TD DEPART RD	102	GRAPEVINE	TARRANT	TX	NULL
5	522423	ACCESS RAMP	522423	NULL	EXPRESS N PUB...	LOOP	NULL	EXPRESS N PUB...	102	GRAPEVINE	TARRANT	TX	NULL
6	522424	ACCESS RAMP	522424	NULL	EXPRESS S PUB...	LOOP	NULL	EXPRESS S PUB...	102	GRAPEVINE	TARRANT	TX	NULL

☒ Load as new layer

☐ Column(s) with unique values: gid ☒ Geometry column: geom Retrieve columns

Layer name (prefix): Tarrant_Road Set filter

☐ Avoid selecting by feature id Load

Cancel

- Then, create a second layer for Dallas as below:

Query Used: select * from roads_2017_u where county_l = 'DALLAS'

Saved query: Name: Save Delete Load File Save As File

```
1 select * from roads_2017_u where county_l = 'DALLAS'
```

Execute 140403 rows, 0.794 seconds Create a view Clear Query History

	gid	class	objectid	prefix	name	type	suffix	full_name	road_class	city_j	county_j	state	pos
1	227807	MINOR ARTERIAL	227807	NULL	RED RIVER	TRL	NULL	RED RIVER TRL	101	IRVING	DALLAS	TX	NULL
2	227813	MINOR ARTERIAL	227813	NULL	CARRINGTON	CT	NULL	CARRINGTON CT	101	IRVING	DALLAS	TX	NULL
3	227817	MINOR ARTERIAL	227817	NULL	PEDERNALES	TRL	NULL	PEDERNALES TRL	101	IRVING	DALLAS	TX	NULL
4	227819	MINOR ARTERIAL	227819	NULL	DONNA	DR	NULL	DONNA DR	101	GRAND PRAIRIE	DALLAS	TX	NULL
5	227826	MINOR ARTERIAL	227826	NULL	MEDINA	ST	NULL	MEDINA ST	101	IRVING	DALLAS	TX	NULL
6	227828	MINOR ARTERIAL	227828	NULL	WINDING FORE...	DR	NULL	WINDING FORE...	102	GRAND PRAIRIE	DALLAS	TX	NULL

☒ Load as new layer

☐ Column(s) with unique values: gid ☒ Geometry column: geom Retrieve columns

Layer name (prefix): Dallas_Road Set filter

☐ Avoid selecting by feature id Load

Cancel

- As you can see in Fig 1, there are 3 layers selected i.e. Dallas_Roads, Tarrant_Road & roads_2017_u (which holds data for all roads)
- Finally, to change the color as per our requirement. We got the properties of the layers

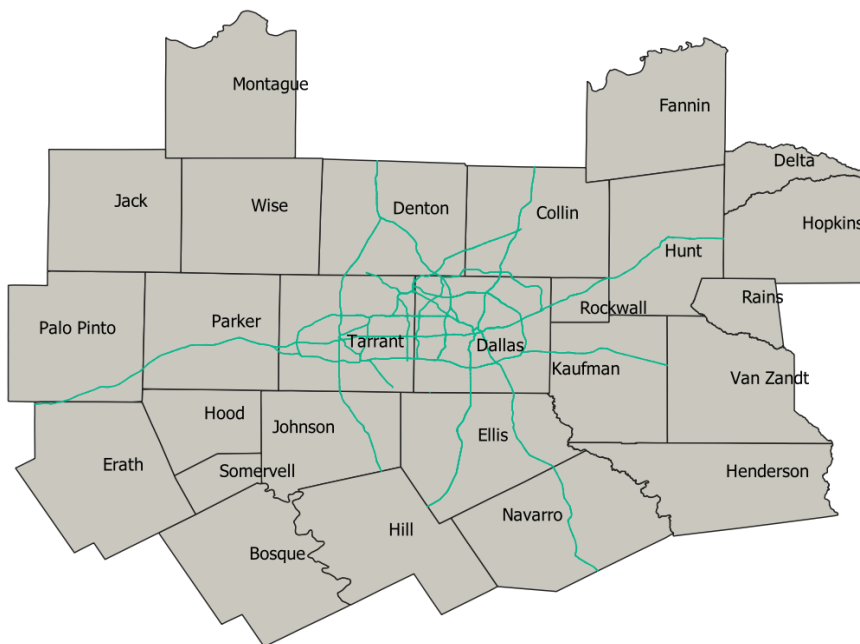
i.e. Properties → Symbology → Color → “We chose our required color”.

In our case it is **Red**, **Black** & **Yellow**.

- Then Apply for the color change.

Query 2: Display the roads that are in the class: 'PRIMARY HIGHWAY' with the county in the

Background.



Steps followed to display the above Map in PostGIS:

- Firstly, we add the County layer and added the county name via Properties->Labels->value: CNTY_NM. (Adjust the font size – appropriately)
- Then we use the following query to get appropriate point location: Query is: `Select * from roads_2017_u where class = 'PRIMARY HIGHWAY'`

Query used: `Select * from roads_2017_u where class = 'PRIMARY HIGHWAY'`

Info Table Preview Query (Project) X

Save query Name Save Delete Load File Save As File

```
1 select * from roads_2017_u where class = 'PRIMARY HIGHWAY'
```

Execute 9486 rows, 5.302 seconds Create a view Clear Query History

	gid	class	objectid	prefix	name	type	suffix	full_name	road_class	city_j	county_j	state	postal
1	20698	PRIMARY HIGH...	20698	N	75	NULL	NULL	N 75 NB	5	MCKINNEY	COLLIN	TX	MCKINNEY
2	22115	PRIMARY HIGH...	22115	NULL	CENTRAL	EXPY	NULL	CENTRAL EXPY S	5	ALLEN	COLLIN	TX	ALLEN
3	22198	PRIMARY HIGH...	22198	NULL	CENTRAL	EXPY	NULL	CENTRAL EXPY N	5	ALLEN	COLLIN	TX	ALLEN
4	22346	PRIMARY HIGH...	22346	NULL	US 75	HWY	NULL	US 75 SB	8	PLANO	COLLIN	TX	PLANO
5	22347	PRIMARY HIGH...	22347	NULL	US 75	HWY	NULL	US 75 SB	8	PLANO	COLLIN	TX	PLANO
6	22348	PRIMARY HIGH...	22348	NULL	US 75	HWY	NULL	US 75 SB	8	PLANO	COLLIN	TX	PLANO

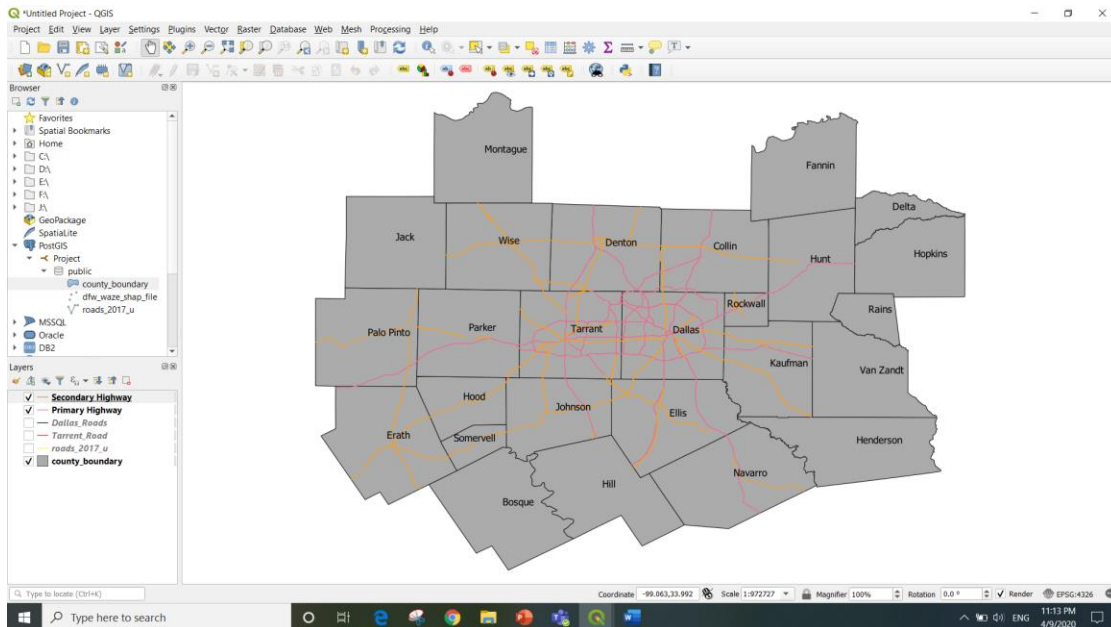
Load as new layer

☐ Column(s) with unique values: gid ☒ Geometry column: geom

Layer name (prefix): Primary highway

☐ Avoid selecting by feature id

Query 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 followed to display the above Map in PostGIS:

- Firstly, we add the County layer and added the county name via Properties->Labels->value: CNTY_NM.

Query used: Select * from roads_2017_u where class = 'PRIMARY HIGHWAY'

The screenshot shows the QGIS Query Builder dialog for the 'roads_2017_u' layer. The SQL query entered is: `select * from roads_2017_u where class = 'PRIMARY HIGHWAY'`. The results table shows 6 rows of data. Below the table, the 'Load as new layer' section is visible, with 'Column(s) with unique values' set to 'gid' and 'Geometry column' set to 'geom'. The layer name is 'Primary Highway'.

	gid	class	objectid	prefix	name	type	suffix	full_name	road_class	city_j	county_j	state	postal
1	20698	PRIMARY HIGH...	20698	N	75	NULL	NULL	N 75 NB	5	MCKINNEY	COLLIN	TX	MCKINNEY
2	22115	PRIMARY HIGH...	22115	NULL	CENTRAL	EXPY	NULL	CENTRAL EXPY S	5	ALLEN	COLLIN	TX	ALLEN
3	22198	PRIMARY HIGH...	22198	NULL	CENTRAL	EXPY	NULL	CENTRAL EXPY N	5	ALLEN	COLLIN	TX	ALLEN
4	22346	PRIMARY HIGH...	22346	NULL	US 75	HWY	NULL	US 75 SB	8	PLANO	COLLIN	TX	PLANO
5	22347	PRIMARY HIGH...	22347	NULL	US 75	HWY	NULL	US 75 SB	8	PLANO	COLLIN	TX	PLANO
6	22348	PRIMARY HIGH...	22348	NULL	US 75	HWY	NULL	US 75 SB	8	PLANO	COLLIN	TX	PLANO

- Then, we create a layer to classify Secondary Highway, which is colored in orange.
- **Query used:** Select * from roads_2017_u where class = 'SECONDARY HIGHWAY'

InfoTablePreviewQuery (Project) X

SQL

Saved query

Name

SaveDeleteLoad FileSave As File

1

select * from roads_2017_u where class = 'SECONDARY HIGHWAY'

Execute7819 rows, 0.205 secondsCreate a viewClear

Query History

	gid	class	objectid	prefix	name	type	suffix	full_name	road_class	city_l	county_l	state	postal
1	20781	SECONDARY HI...	20781	NULL	DALLAS NORTH...	NULL	NULL	DALLAS NORTH...	8	FRISCO	COLLIN	TX	FRISCO
2	20782	SECONDARY HI...	20782	NULL	DALLAS NORTH...	NULL	NULL	DALLAS NORTH...	8	FRISCO	COLLIN	TX	FRISCO
3	20783	SECONDARY HI...	20783	NULL	DALLAS NORTH...	NULL	NULL	DALLAS NORTH...	8	FRISCO	COLLIN	TX	FRISCO
4	20784	SECONDARY HI...	20784	NULL	DALLAS NORTH...	NULL	NULL	DALLAS NORTH...	8	FRISCO	COLLIN	TX	FRISCO
5	20785	SECONDARY HI...	20785	NULL	DALLAS NORTH...	NULL	NULL	DALLAS NORTH...	8	FRISCO	COLLIN	TX	FRISCO
6	21091	SECONDARY HI...	21091	W	UNIVERSITY	DR	NULL	W UNIVERSITY ...	5	PROSPER	COLLIN	TX	NULL

☒ Load as new layer

☐ Column(s) with unique valuesgid

☒ Geometry columngeom

Retrieve columns

Layer name (prefix)Secondary Highway

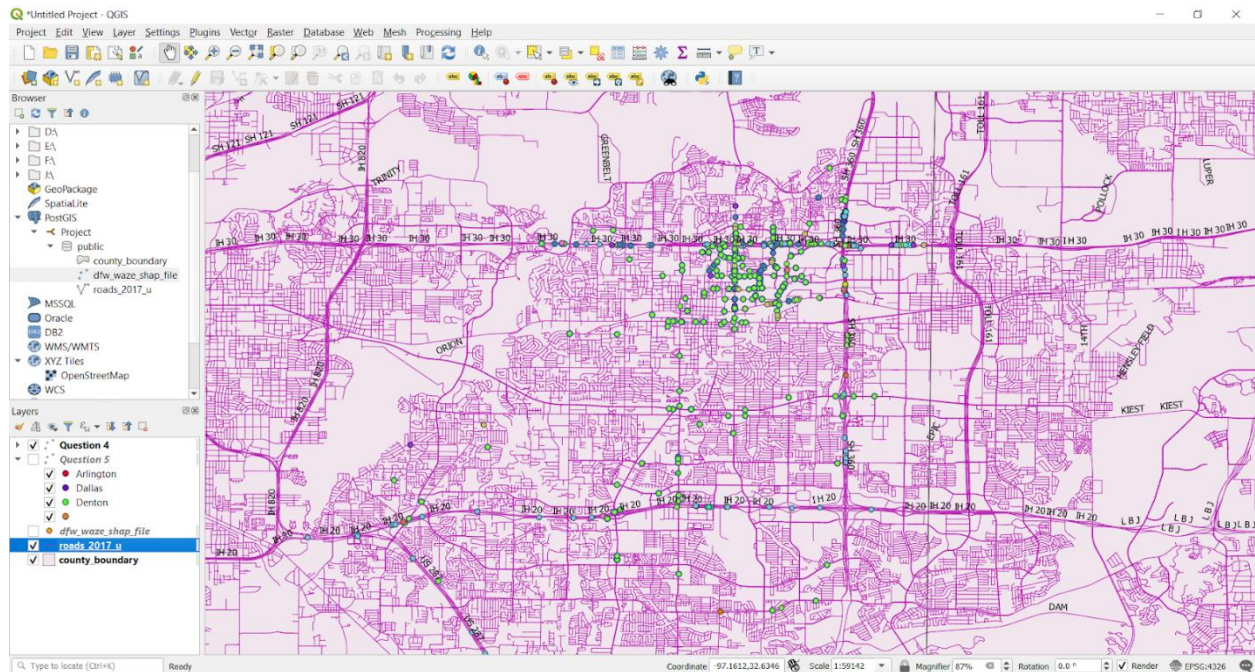
Set filter

☐ Avoid selecting by feature id

Load

Cancel

Query 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.

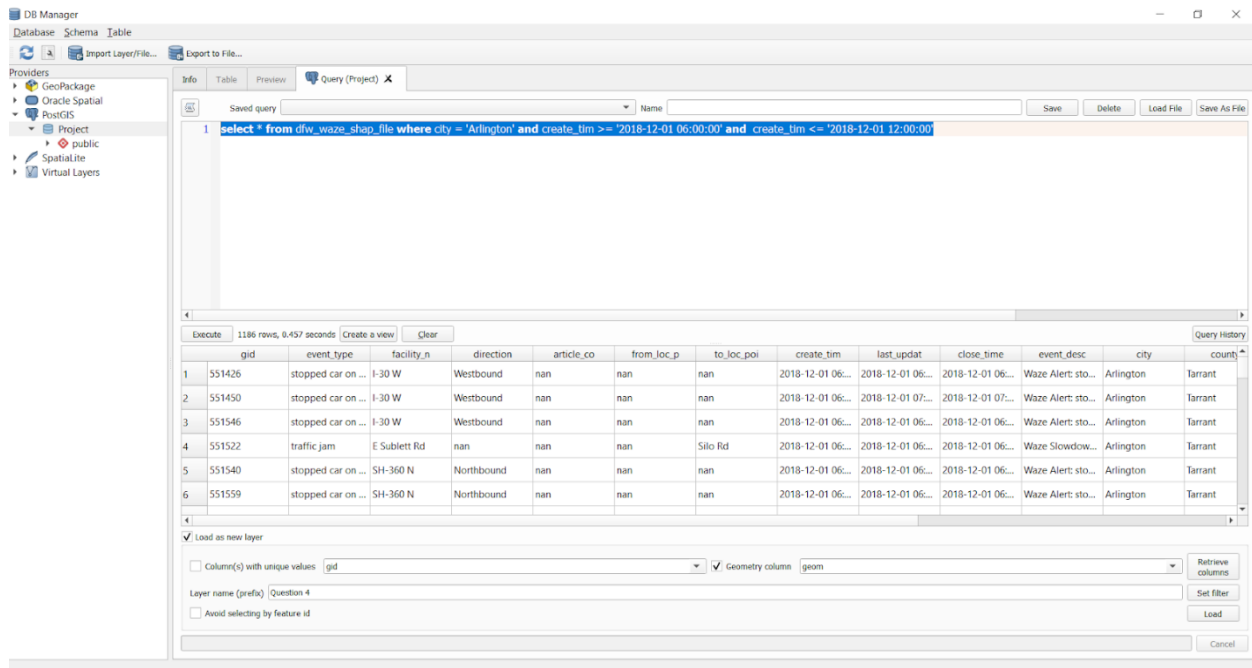


Steps followed to display the above Map in PostGIS:

- Firstly, we add the County layer and add the county name via Properties->Labels->value: CNTY_NM. (Adjust the font size – appropriately)
- Then, add the Road layer on top of it and change the color to white via Properties à Symbology à Color.

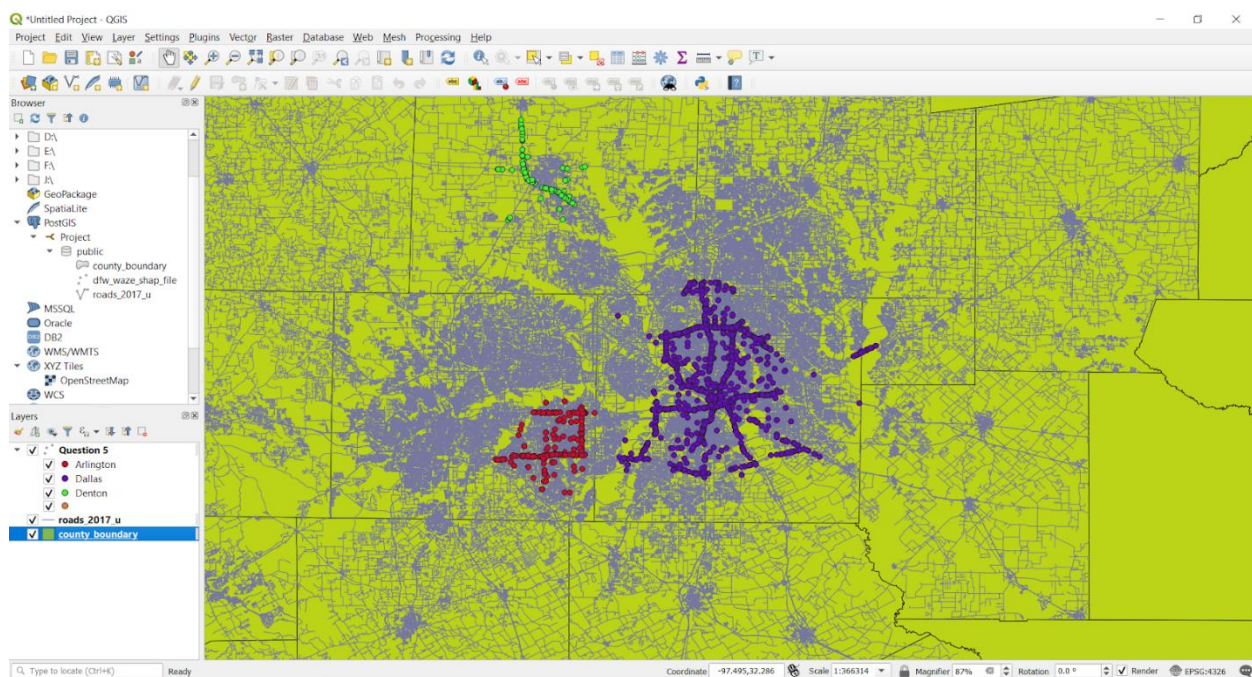
- The we use the following query to get appropriate point location:

```
select * from dfw_waze_shap_file where city = 'Arlington' and
create_tim >= '2018-12-01 06:00:00' and create_tim <= '2018-12-01
12:00:00'
```

Then, for different colors to separate the cities, Layer: Properties --> Symbology → Categorized → Value:event_type → Change the color as per our requirement

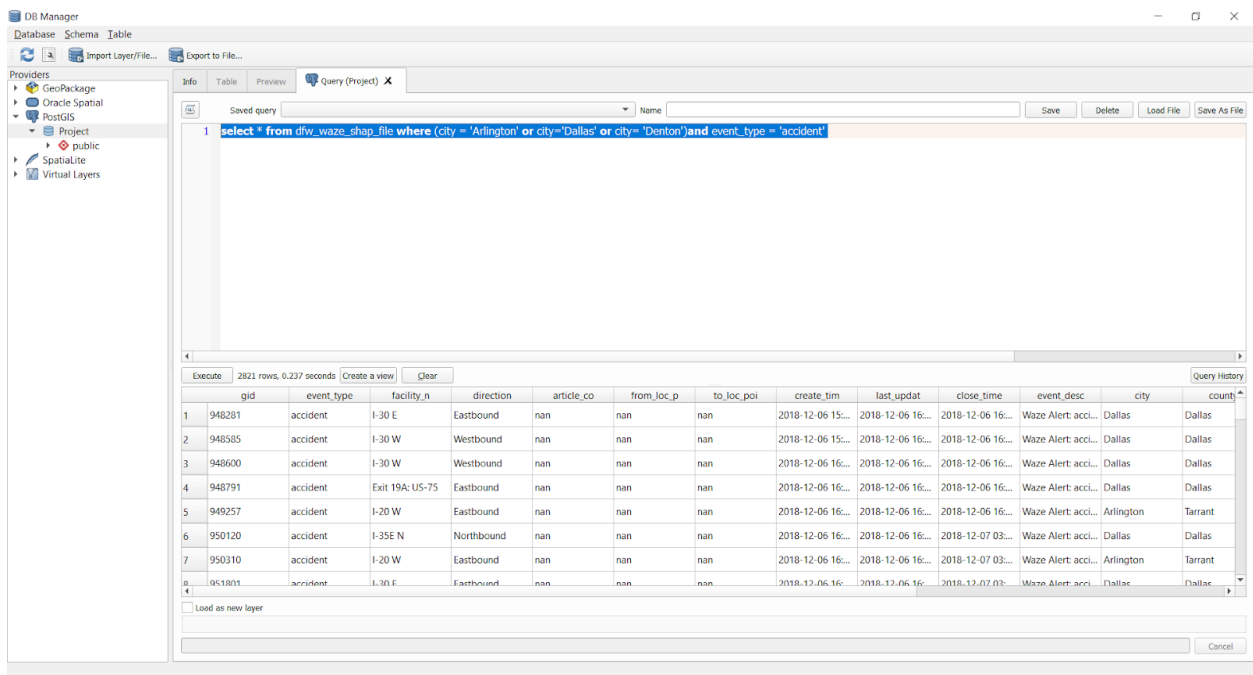
Query 5: Display the accidents that happened in Arlington, Dallas, Denton. Each city event in a different color and the background is the roads and county



Steps followed to display the above Map in PostGIS:

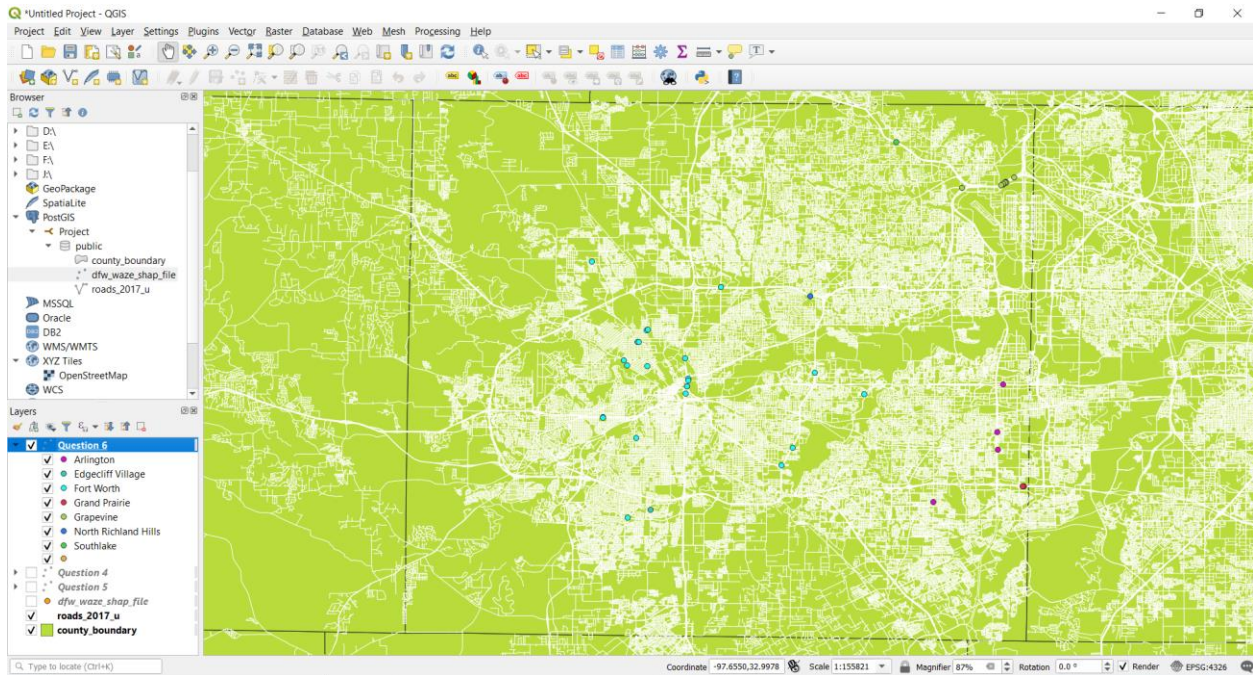
- Firstly, we add the County layer and add the county name via Properties->Labels->value: CNTY_NM. (Adjust the font size – appropriately)
- Then, add the Road layer on top of it and change the color to white via Properties à Symbology à Color.
- The we use the following query to get appropriate point location:

`select * from dfw_waze_shap_file where (city = 'Arlington' or city='Dallas' or city= 'Denton')and event_type = 'accident'`



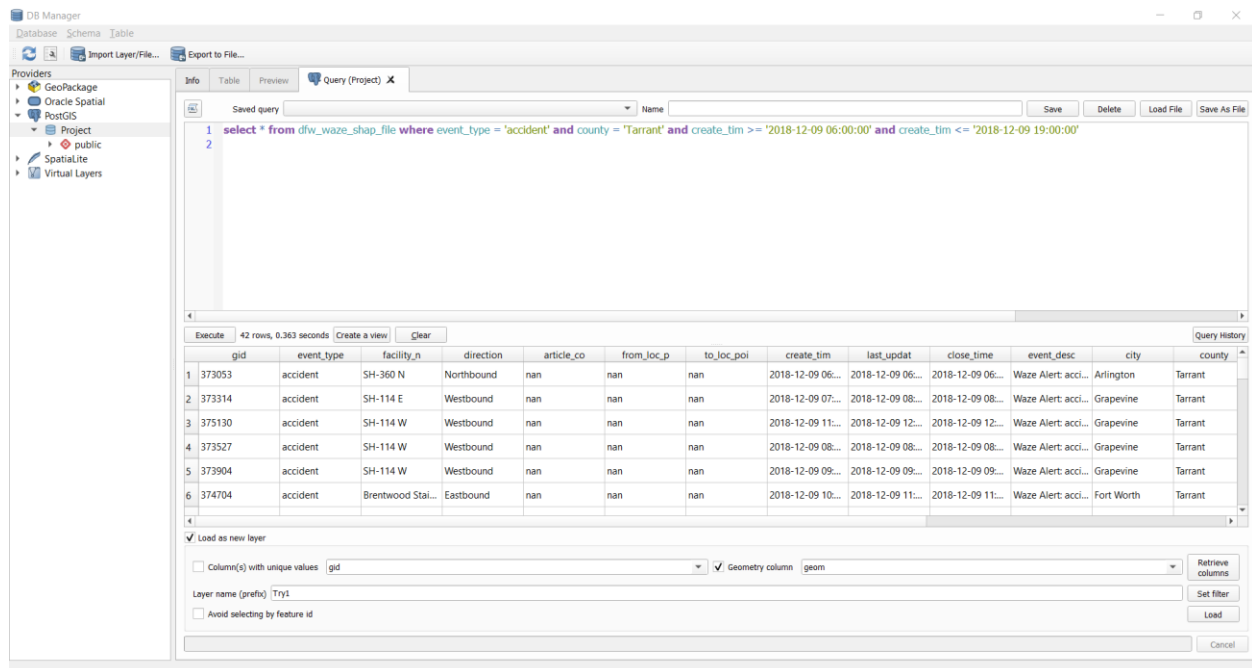
Then, for different colors to separate the cities, Layer: Properties -->Symbology → Categorized → Value:City → Change the color as per our requirement.

Query 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.



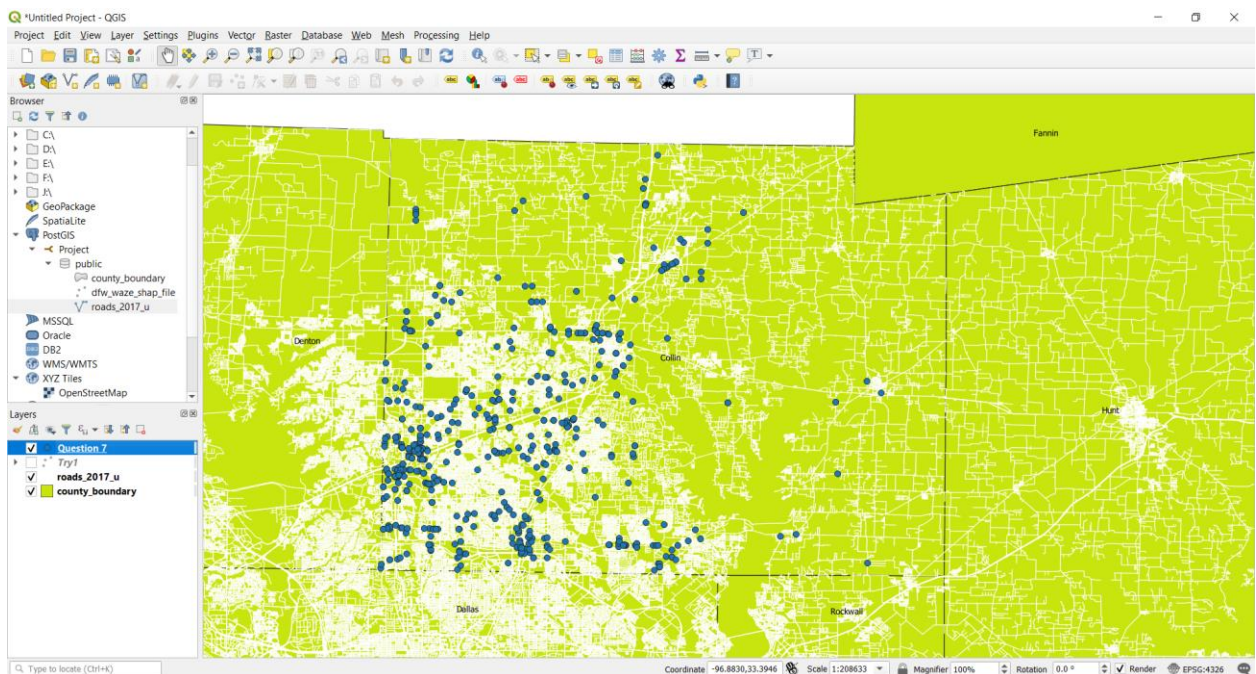
Steps followed to display the above Map in PostGIS:

- Firstly, we add the County layer and added the county name via Properties->Labels->value: CNTY_NM. (Adjust the font size – appropriately)
- Then, add the Road layer on top of it and change the color to white via Properties → Symbology → Color.
- The we use the following query to get appropriate point location:
Query is: `select * from dfw_waze_shap_file where event_type = 'accident' and county = 'Tarrant' and create_tim >= '2018-12-09 06:00:00' and create_tim <= '2018-12-09 19:00:00'.`



- To give different colours to the points:
Layer → Properties → Symbology → Categorized → Classify → Apply.
- We will receive the final output.

Query 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 followed to display the above Map in PostGIS:

- Firstly, we add the County layer and added the county name via Properties->Labels->value: CNTY_NM. (Adjust the font size – appropriately)
- Then, add the Road layer on top of it and change the color to white via Properties → Symbology → Color.
- The we use the following query to get appropriate point location:

```
select * from dfw_waze_shap_file where event_type = 'traffic jam' and  
county = 'Collin' and create_tim >='2018-12-27 07:00:00' and create_tim  
<= '2018-12-27 15:00:00'
```

The screenshot shows the DB Manager interface with a SQL query entered in the 'Query (Project)' tab. The query is: `select * from dfw_waze_shap_file where event_type = 'traffic jam' and county = 'Collin' and create_tim >='2018-12-27 07:00:00' and create_tim <= '2018-12-27 15:00:00'`. The results are displayed in a table with 13 columns: direction, article_co, from_loc_p, to_loc_poi, create_tim, last_updat, close_time, event_desc, city, county, state, update_num, and pk_uid. The table contains 6 rows of data.

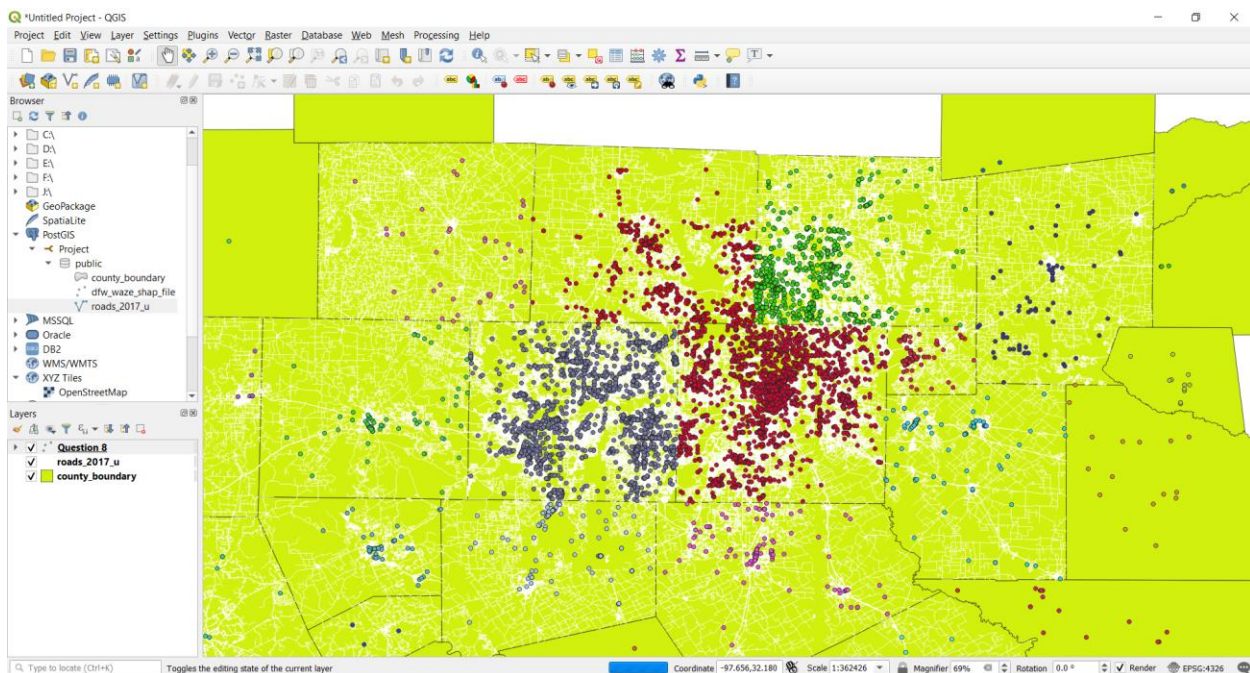
	direction	article_co	from_loc_p	to_loc_poi	create_tim	last_updat	close_time	event_desc	city	county	state	update_num	pk_uid
1	nan	nan	nan	Preston Rd	2018-12-27 07:...	2018-12-27 07:...	2018-12-27 07:...	Waze Slowdown...	Frisco	Collin	TX	1.000000000000...	2264426.0
2	nan	nan	nan	Spurs Way	2018-12-27 07:...	2018-12-27 07:...	2018-12-27 07:...	Waze Slowdown...	Celina	Collin	TX	2.000000000000...	2264428.0
3	nan	nan	nan	Preston Rd	2018-12-27 07:...	2018-12-27 07:...	2018-12-27 07:...	Waze Slowdown...	Plano	Collin	TX	1.000000000000...	2264443.0
4	nan	nan	nan	Dallas Pkwy	2018-12-27 07:...	2018-12-27 07:...	2018-12-27 07:...	Waze Slowdown...	Frisco	Collin	TX	1.000000000000...	2264471.0
5	nan	nan	nan	nan	2018-12-27 07:...	2018-12-27 07:...	2018-12-27 07:...	Waze Slowdown...	Melissa	Collin	TX	3.000000000000...	2264472.0
6	nan	nan	nan	nan	2018-12-27 07:...	2018-12-27 07:...	2018-12-27 07:...	Waze Slowdown...	McKinney	Collin	TX	5.000000000000...	2264485.0

Below the table, there are options to 'Load as new layer'. The 'Column(s) with unique values' is set to 'gid'. The 'Geometry column' is set to 'geom'. The 'Layer name (prefix)' is 'Question 7'. There are buttons for 'Retrieve columns', 'Set filter', 'Load', and 'Cancel'.

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

Steps followed to display the below Map in PostGIS:

- Similar to previous queries follow initial 2 steps to get county and Road layer.
- Then we use the following query to get appropriate point location:
`select * from dfw_waze_shap_file where event_type = 'traffic jam' and create_tim LIKE '2018-12-24%'`
(or)
`select * from dfw_waze_shap_file where event_type = 'traffic jam' and create_tim >='2018-12-24 00:00:00' and create_tim <='2018-12-24 23:59:59'`



- Then, go to properties of the developed Layer, Symbology → Categorized → Value: County
Give Apply. This will help us to produce different color for each county.

The DB SQL is:

- select * from dfw_waze_shap_file where event_type = 'traffic jam' and create_tim LIKE '2018-12-24%'

DB Manager

Database Schema Table

Import Layer/File... Export to File...

Providers

- GeoPackage
- Oracle Spatial
- PostGIS
- Project
 - public
 - Spatialite
 - Virtual Layers

Info Table Preview Query (Project) X

Saved query Name Save Delete Load File Save As File

1 select * from dfw_waze_shap_file where event_type = 'traffic jam' and create_tim LIKE '2018-12-24%'

Execute 9460 rows, 19.499 seconds Create a view Clear Query History

	gid	event_type	facility_n	direction	article_co	from_loc_p	to_loc_poi	create_tim	last_updat	close_time	event_desc	city	count
1	632320	traffic jam	Eagle Dr	nan	nan	nan	Myrtle St	2018-12-24 00:...	2018-12-24 04:...	2018-12-24 04:...	Waze Slowdown...	Denton	Denton
2	632325	traffic jam	John W. Elliott Dr	nan	nan	nan	Main St	2018-12-24 00:...	2018-12-24 01:...	2018-12-24 01:...	Waze Slowdown...	Frisco	Collin
3	632337	traffic jam	Airport Fwy	nan	between	Euless	Euless	2018-12-24 00:...	2018-12-24 01:...	2018-12-24 01:...	Waze Slowdown...	Euless	Tarrant
4	632344	traffic jam	Pinoak Dr	nan	nan	nan	Robinson Rd	2018-12-24 00:...	2018-12-24 01:...	2018-12-24 01:...	Waze Slowdown...	Grand Prairie	Dallas
5	632345	traffic jam	Edgefield Ln	nan	between	Forney	Forney	2018-12-24 00:...	2018-12-24 01:...	2018-12-24 01:...	Waze Slowdown...	nan	Kaufman
6	632348	traffic jam	San Jacinto St	nan	nan	nan	Leonard St	2018-12-24 00:...	2018-12-24 01:...	2018-12-24 01:...	Waze Slowdown...	Dallas	Dallas

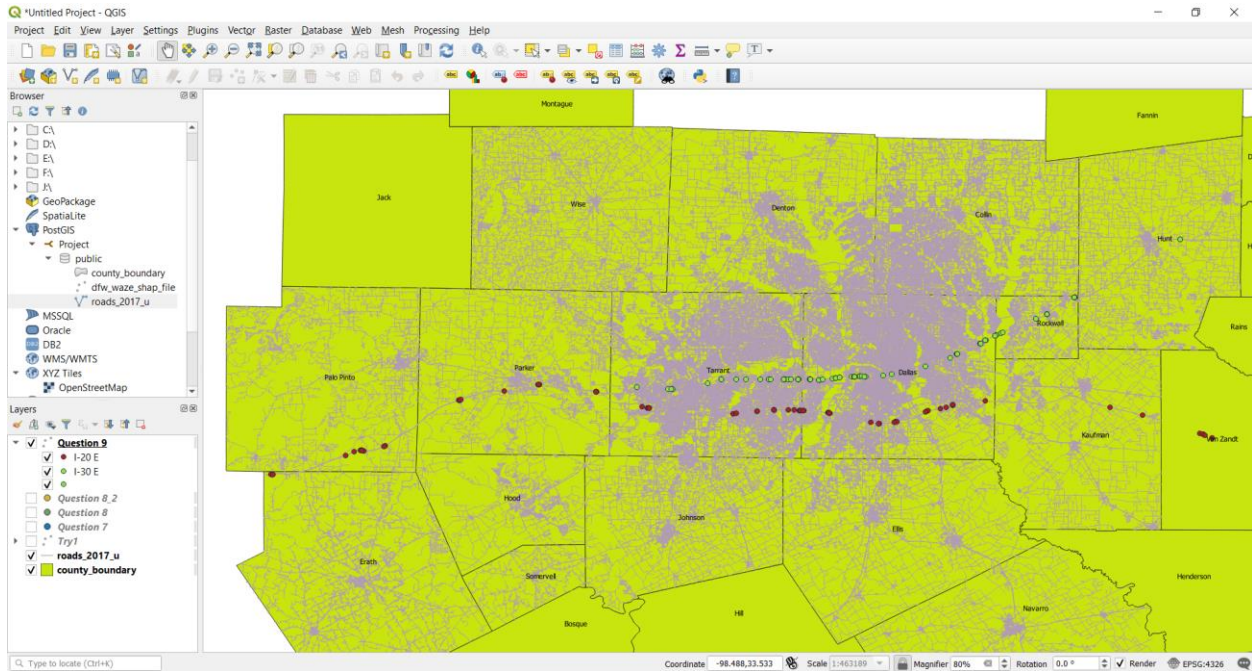
Load as new layer

☐ Column(s) with unique values gid ☒ Geometry column geom Retrieve columns

Layer name (prefix) Question # Set filter

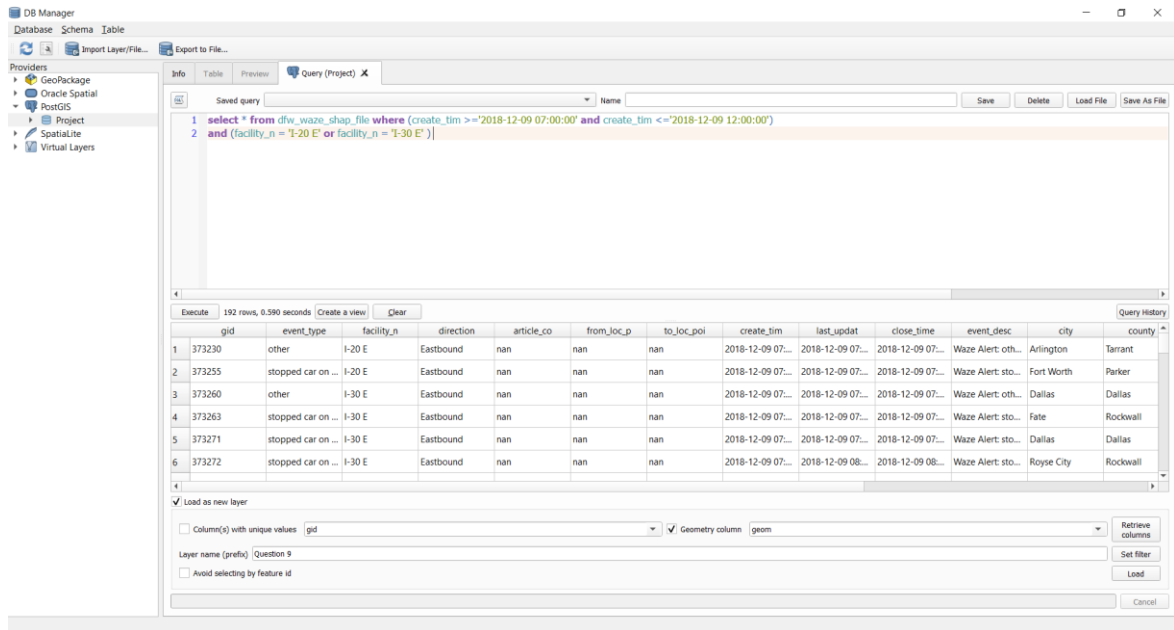
☐ Avoid selecting by feature id Load Cancel

Query 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 followed to display the above Map in PostGIS:

- Similar to previous queries follow initial 2 steps to get county and Road layer.
- Then we use the following query to get appropriate point location:
`select * from dfw_waze_shap_file where (create_tim >='2018-12-09 07:00:00' and create_tim <='2018-12-09 12:00:00') and (facility_n = 'I-20 E' or facility_n = 'I-30 E')`



- Then, go to properties of the developed Layer, Symbology → Categorized → Value: facility_n, Give Apply. This will help us to produce different color for I-20E & I-30 E.