

Calculating Line Lengths and Statistics

QGIS Tutorials and Tips



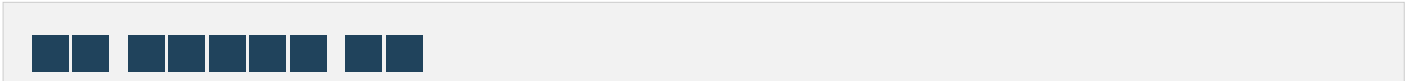
Author

Ujaval Gandhi

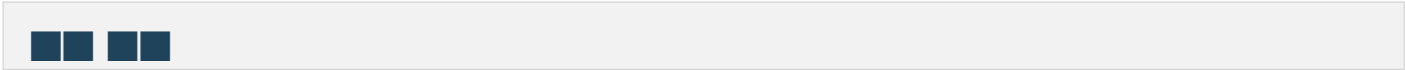
<http://google.com/+UjavalGandhi>

Translations by

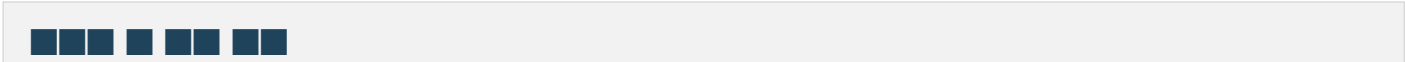
SongHyun Choi



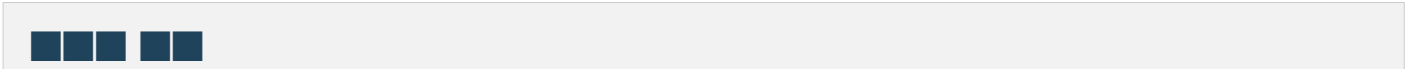
QGIS 3.16.1, 3.16.1, 3.16.1 is a free and open source GIS software. It is a desktop application that runs on Windows, Mac OS, and Linux. It is a powerful tool for creating, editing, and analyzing spatial data. It is a good choice for anyone who needs a GIS software. ****Field Calculator**** is a tool that allows you to calculate values for a field in a vector layer. It is a useful tool for many GIS tasks.



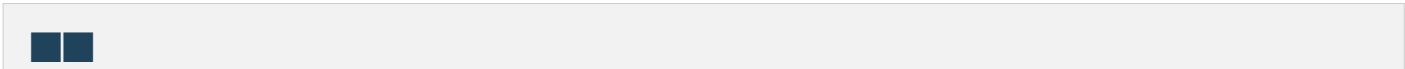
THE UNITED STATES OF AMERICA



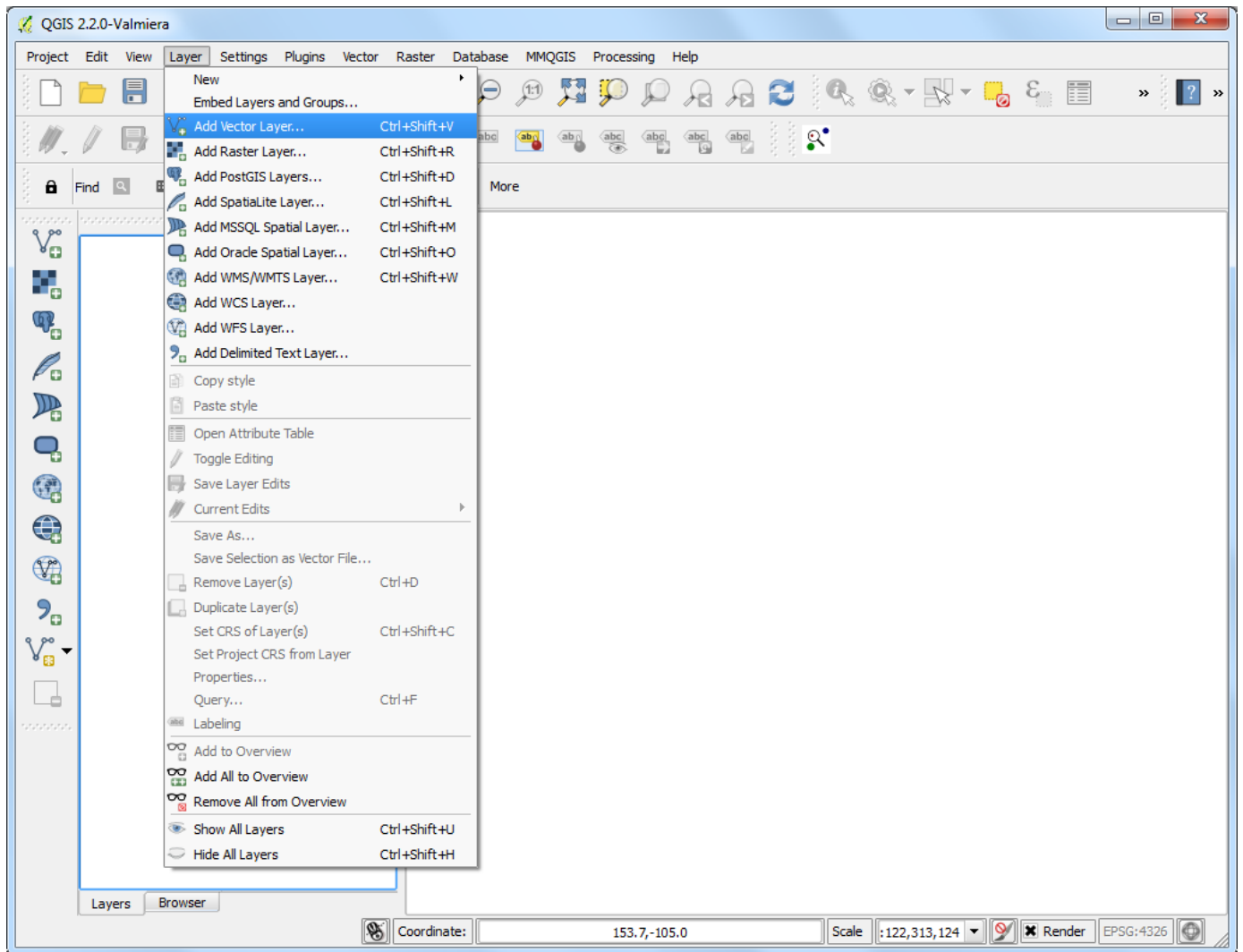
- **■■■■ ■■■■ ■■■ ■■**
- **■■■■■■■ ■■■ ■■■(Projected Coordinate Reference System, CRS)■ ■■■■ ■ ■■.**
- **■■■■■■■ ■■■■ ■■ ■■**



`Natural Earth
 <<http://www.naturalearthdata.com/downloads/10m-cultural-vectors/railroads/>>`_■■■■ ■■■■ ■■■■ ■■■■
 ■■■■■■ ■■■■■■. ■■■■■■ `North America supplement <http://www.naturalearthdata.com/http://www.naturalearthdata.com/download/10m/cultural/ne_10m_railroads_north_america.zip>`_■■■■■■■ ■■■■■■
 ■■■■ ■■ [NATURALEARTH]



1. ■■■■ :menuselection: `Layer --> Add Vector Layer` ■■■■.



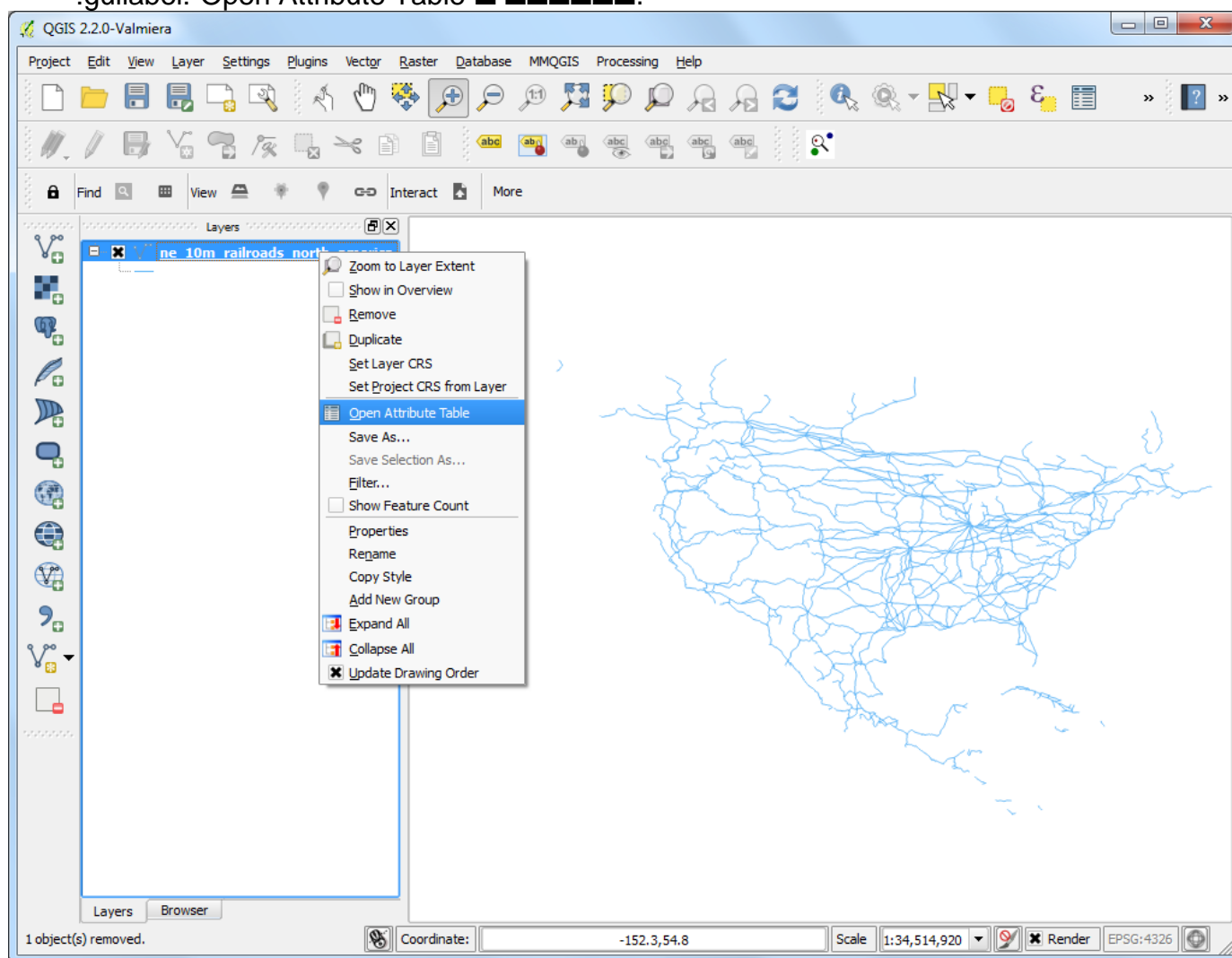
2. ``ne_10m_railroads_north_america.zip`` :guilabel: `OK` .



3. In the *Select layers to add...* dialog, choose ne_10m_railroads_north_america.shp layer.



4. **Click on the 'Open Attribute Table' button in the layer context menu.**



5. **Click on the 'sov_a3' layer in the Layers panel.**


Attribute table - ne_10m_railroads_north_america :: Features total: 1127, filtered: 1127, selected: 0

	scalerank	featurecla	sov_a3	uident	add	natrscale	continent
0	8	Railroad	USA	1506	0	0	North America
1	9	Railroad	USA	1606	1	5	North America
2	8	Railroad	USA	1706	0	0	North America
3	8	Railroad	USA	1806	0	0	North America
4	8	Railroad	USA	1906	0	0	North America
5	8	Railroad	USA	2006	0	0	North America
6	8	Railroad	USA	2106	0	0	North America
7	9	Railroad	USA	2206	1	5	North America
8	8	Railroad	USA	2306	0	0	North America
9	8	Railroad	USA	2406	0	0	North America
10	8	Railroad	USA	2506	0	0	North America
11	8	Railroad	USA	2606	0	0	North America
12	8	Railroad	USA	2706	0	0	North America
13	8	Railroad	USA	2806	0	0	North America
14	9	Railroad	USA	2906	1	5	North America
15	9	Railroad	USA	3006	1	5	North America
16	8	Railroad	USA	3106	0	0	North America
17	8	Railroad	USA	3206	0	0	North America
18	8	Railroad	USA	3306	0	0	North America
19	8	Railroad	USA	3506	0	0	North America
20	8	Railroad	USA	3606	0	0	North America
21	8	Railroad	USA	3706	0	0	North America
22	8	Railroad	USA	3806	0	0	North America
23	9	Railroad	USA	3906	1	5	North America

Show All Features

6. ■■■ ■■■■ Attribute Table■■■■ ■■■■ ■■■■ ■■■■ :guilabel:'Select features using an expression■■■■ ■■■■.

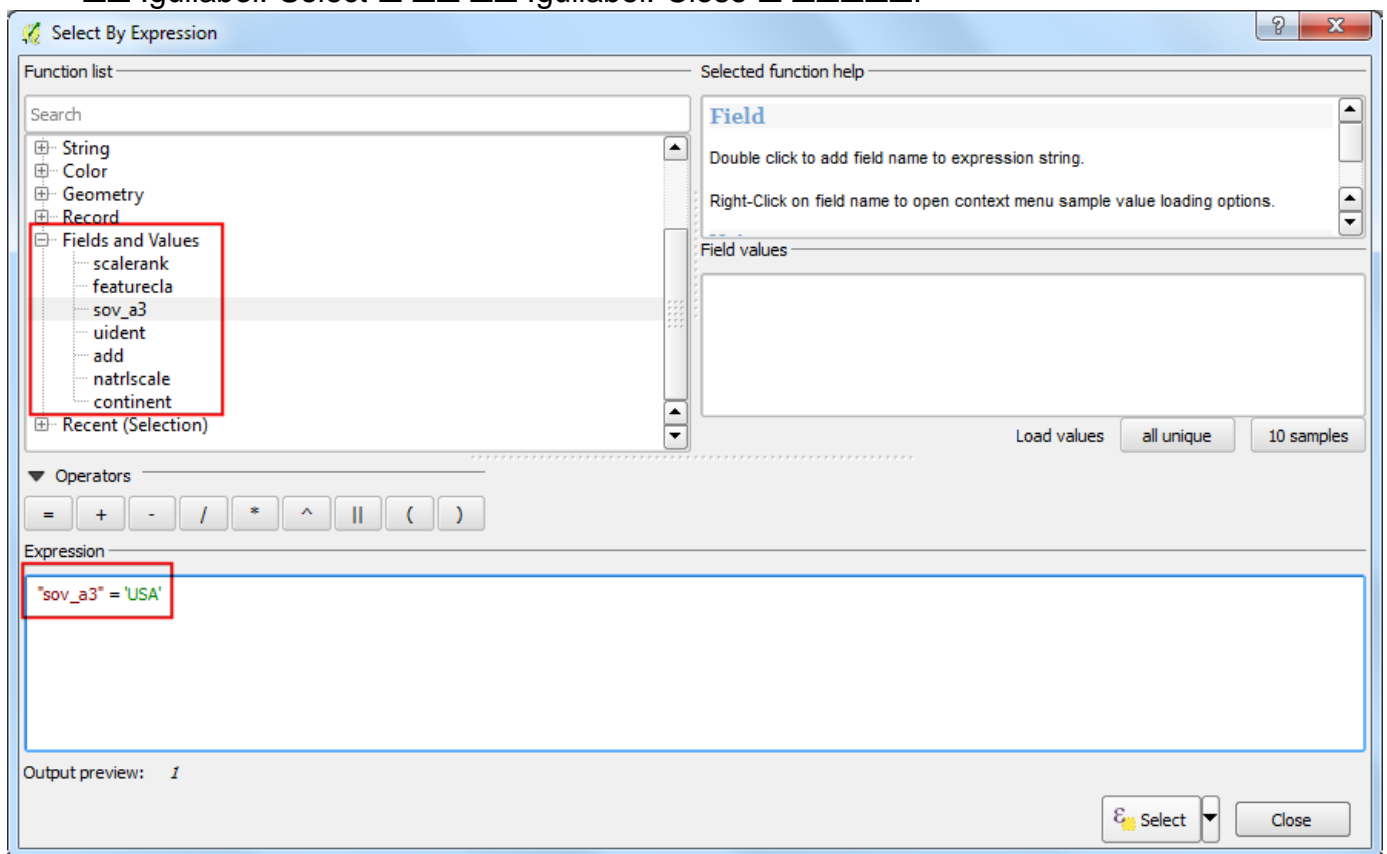
Attribute table - ne_10m_railroads_north_america :: Features total: 1127, filtered: 1127, selected: 0



	scalerank	Select features using an expression	uident	add	natrscale	continent
0	8	Railroad	USA	1506	0	0 North America
1	9	Railroad	USA	1606	1	5 North America
2	8	Railroad	USA	1706	0	0 North America
3	8	Railroad	USA	1806	0	0 North America
4	8	Railroad	USA	1906	0	0 North America
5	8	Railroad	USA	2006	0	0 North America
6	8	Railroad	USA	2106	0	0 North America
7	9	Railroad	USA	2206	1	5 North America
8	8	Railroad	USA	2306	0	0 North America
9	8	Railroad	USA	2406	0	0 North America
10	8	Railroad	USA	2506	0	0 North America
11	8	Railroad	USA	2606	0	0 North America
12	8	Railroad	USA	2706	0	0 North America
13	8	Railroad	USA	2806	0	0 North America
14	9	Railroad	USA	2906	1	5 North America
15	9	Railroad	USA	3006	1	5 North America
16	8	Railroad	USA	3106	0	0 North America
17	8	Railroad	USA	3206	0	0 North America
18	8	Railroad	USA	3306	0	0 North America
19	8	Railroad	USA	3506	0	0 North America
20	8	Railroad	USA	3606	0	0 North America
21	8	Railroad	USA	3706	0	0 North America
22	8	Railroad	USA	3806	0	0 North America
23	9	Railroad	USA	3906	1	5 North America

Show All Features

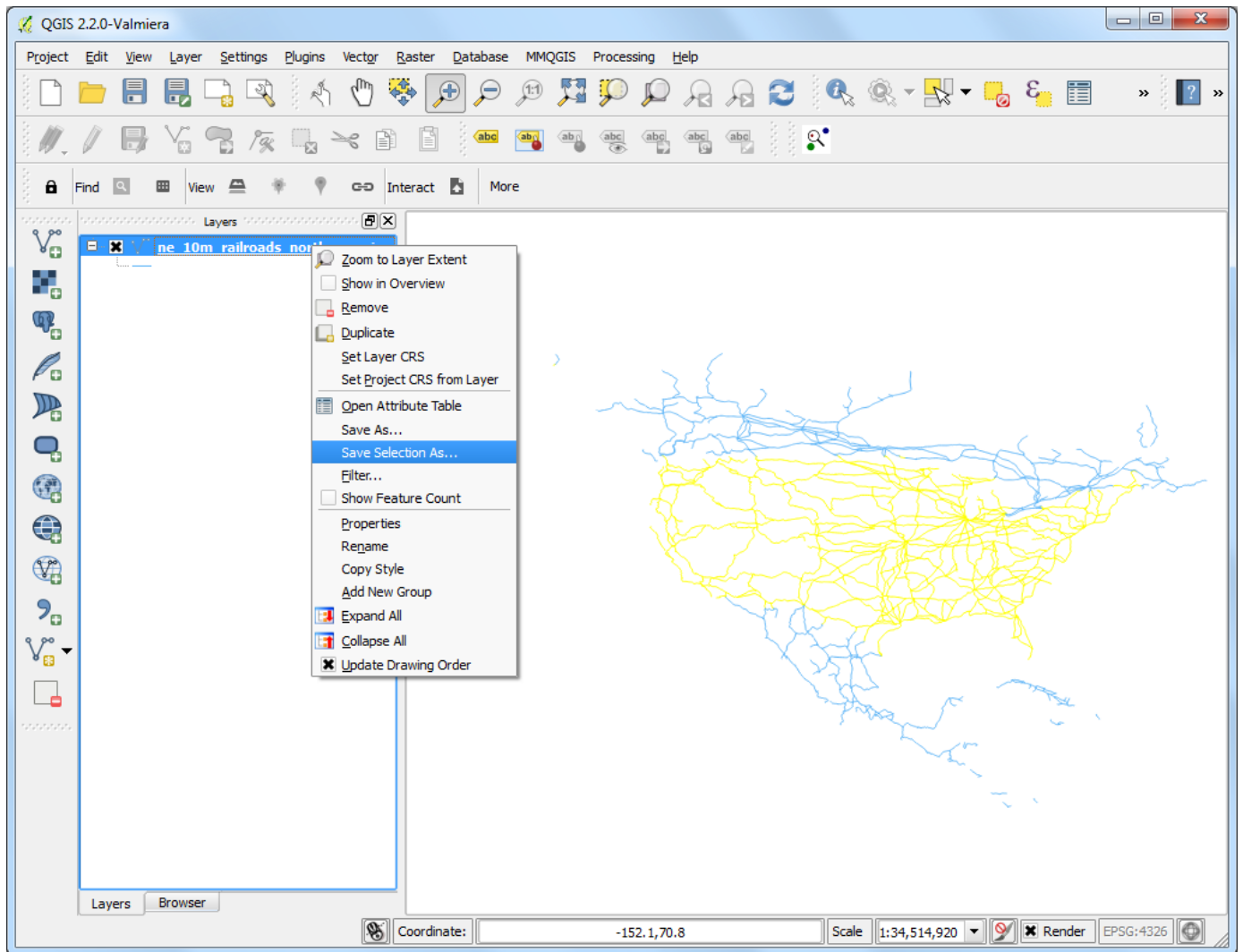
7. ■■■ Select By Expression ■■■■■■■■■■ ■■■■■■■■■■. ■■■■■ Functions list ■■■■■ ■■■■■ ■■■■■ Fields and Values ■■■■■ sov_a3 ■■■■■ ■■■■■. ■■■■■ ■■■■■ ■■■■■ ■■■■■ :guilabel:`Expression` ■■■■■ ■■■■■ ■■■■■. "sov_a3" = 'USA' ■■■■■ ■■■■■. ■■■■■ :guilabel:`Select` ■■■■■ ■■■■■ :guilabel:`Close` ■■■■■■■■■■.



8. Back in the main QGIS window, you will see that all lines that fall in USA are selected and appear in yellow.



9. `ne_10m_railroads_north_america`. ``ne_10m_railroads_north_america``
:guilabel: Save Selection As...



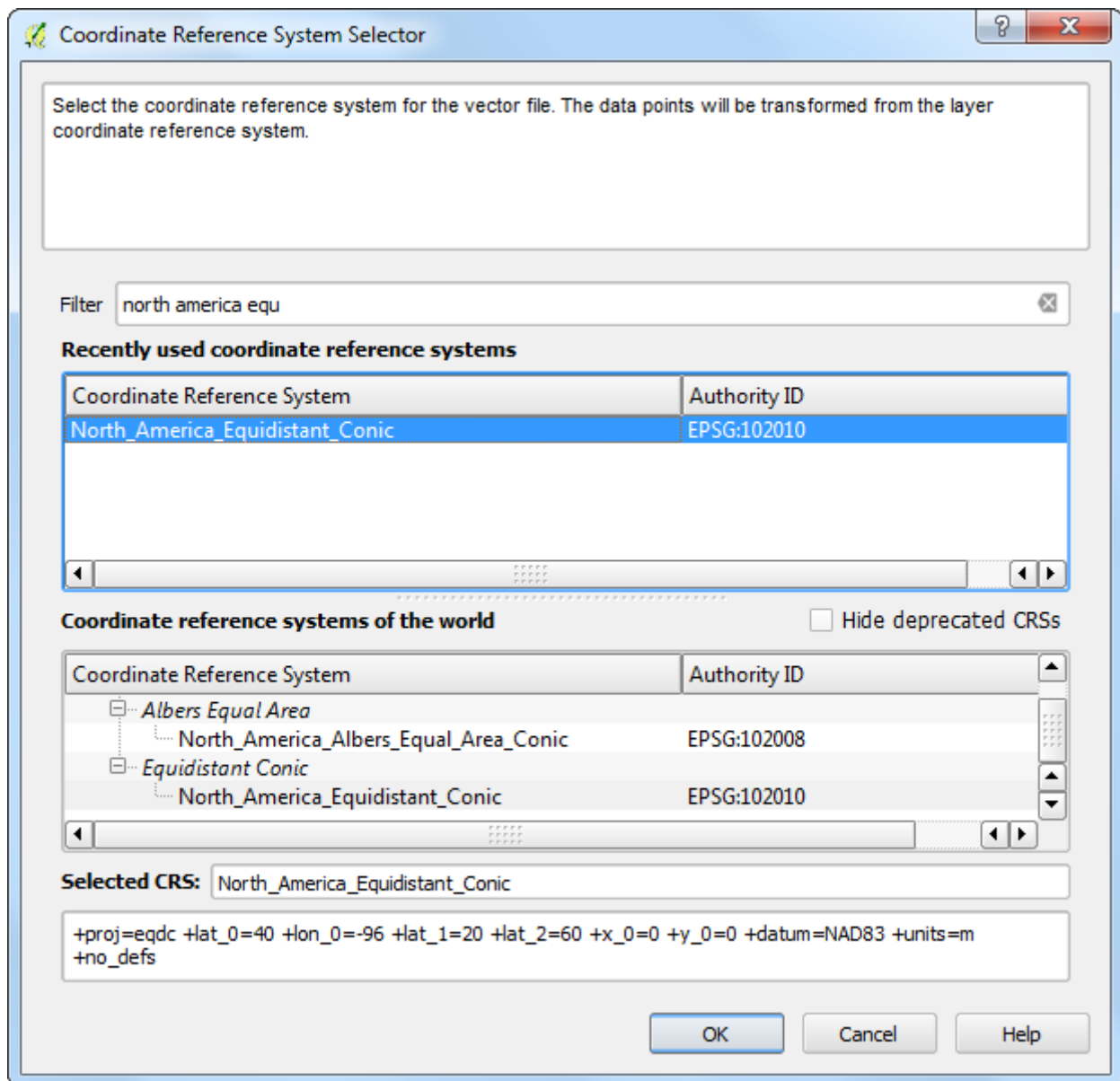
10. `guiabel: Browse`` `usa_railroads.shp``. `CRS`` `guiabel: CRS`` `guiabel: Browse``.

Note

`CRS`` `EPSG:4326`` `(CRS)` `**degrees**`. `**degrees*` `square degrees**` `**meters` `**feet**`.



- ```
11. ■■■■ ■■■■ ■■■■ ■■■■ ■■■■ ■■■■. ■■■ :guilabel:`Filter` ■■■ ■■■■ :guilabel:`north`
america equ` ■■■■ ■■■■. ■■■■ ■■■■ CRS■
:guilabel:`North_America_Equidistant_Conic` EPSG:102010` ■■■■ :guilabel:`OK` ■■■
■■■■.
```



12. ■ ■■■■■ ■■ ■■■ ■■■■ Save vector layer as... ■■■■■■ ■■■ ■■■ ■■■ ■■  
 :guilabel:`Add saved file to map` ■ ■■■■■ :guilabel:`OK` ■ ■■■■■.



```
13. ■■■ ■■■■ ■■■ ■■■■ ■■■■ ■■■■
 usa_railroads``■■■■ QGIS ■■■■. ■■■ ``ne_10m_railroads_north_america
 ■■■■ ■■■■ ■■■■ ■■■ ■■■ ■■■ ■■■■ ■■■ ■■■ ■■■.
```



14. ``usa\_railroads`` ■■■■ ■■■■ ■■■■ ■■■■ ■■ ■■■■ ■■ :guilabel: Open Attribute Table`■  
■■■■■.



15. ■■■ ■ ■■■■ ■■ ■■ ■■■■ ■■■■■. ■■■■■■ :guilabel: 'Toggle editing' ■■■■ ■■■■  
 ■■■■ ■■■■■ ■■■■. ■■ ■■■■■■ ■■■■■■■■ :guilabel: 'Open field calculator' ■■■■  
 ■■■■■■.

Attribute table - usa\_railroads :: Features total: 752, filtered: 752, selected: 0

|    | scalerank | featuredata | sov_a3 | uident |   | continent     |
|----|-----------|-------------|--------|--------|---|---------------|
| 0  | 8         | Railroad    | USA    | 1506   | 0 | North America |
| 1  | 9         | Railroad    | USA    | 1606   | 1 | North America |
| 2  | 8         | Railroad    | USA    | 1706   | 0 | North America |
| 3  | 8         | Railroad    | USA    | 1806   | 0 | North America |
| 4  | 8         | Railroad    | USA    | 1906   | 0 | North America |
| 5  | 8         | Railroad    | USA    | 2006   | 0 | North America |
| 6  | 8         | Railroad    | USA    | 2106   | 0 | North America |
| 7  | 9         | Railroad    | USA    | 2206   | 1 | North America |
| 8  | 8         | Railroad    | USA    | 2306   | 0 | North America |
| 9  | 8         | Railroad    | USA    | 2406   | 0 | North America |
| 10 | 8         | Railroad    | USA    | 2506   | 0 | North America |
| 11 | 8         | Railroad    | USA    | 2606   | 0 | North America |
| 12 | 8         | Railroad    | USA    | 2706   | 0 | North America |
| 13 | 8         | Railroad    | USA    | 2806   | 0 | North America |
| 14 | 9         | Railroad    | USA    | 2906   | 1 | North America |
| 15 | 9         | Railroad    | USA    | 3006   | 1 | North America |
| 16 | 8         | Railroad    | USA    | 3106   | 0 | North America |
| 17 | 8         | Railroad    | USA    | 3206   | 0 | North America |
| 18 | 8         | Railroad    | USA    | 3306   | 0 | North America |
| 19 | 8         | Railroad    | USA    | 3506   | 0 | North America |
| 20 | 8         | Railroad    | USA    | 3606   | 0 | North America |
| 21 | 8         | Railroad    | USA    | 3706   | 0 | North America |
| 22 | 8         | Railroad    | USA    | 3806   | 0 | North America |
| 23 | 9         | Railroad    | USA    | 3906   | 1 | North America |

Show All Features

16. **Field Calculator** **Create a new field**. **Output field name** **length\_km**. **Output field type** **Decimal number (real)**. **Precision** **2**. **Function list**, **Geometry** **\$length**. **Expression** **length / 1000**. **CRS** **meters** **km** **length / 1000**. **OK**.



17. ■■■■■ Attribute Table` ■■■■■ ■■■■ ■■■ :guilabel:`length\_km` ■■■■ ■■■■.  
 ■■■■■■ :guilabel:`Toggle editing` ■■■■ ■■■■ ■■■■ ■■■■ ■■■■.







19. `guiabel:'Input Vector layer'` `usa_railroads`. `guiabel:'Target field'` `length_km`. `guiabel:'OK'`. `guiabel:'Sum'`.

## Note

The 'Sum line lengths' tool calculates the total length of all lines in the input layer. The result is a scalar value representing the sum of all line lengths in the input layer.

Basics statistics

Input Vector Layer  
usa\_railroads

☐ Use only selected features

Target field  
length\_km

Statistics output

| Parameter               | Value          |
|-------------------------|----------------|
| Mean                    | 127.751569149  |
| StdDev                  | 125.80562595   |
| Sum                     | 96069.18       |
| Min                     | 0.01           |
| Max                     | 936.6          |
| N                       | 752.0          |
| CV                      | 0.984767755... |
| Number of unique values | 743            |

Press Ctrl+C to copy results to the clipboard

0% OK Close