

Calculating Line Lengths and Statistics

QGIS Tutorials and Tips



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- □□□□□□ □□□ □□□(Projected Coordinate Reference System, CRS)□ □□□ □ □□.
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`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>`_□□□□□ □□□□ □□□□.

For convenience, you may directly download a copy of the dataset from the link below:

[ne_10m_railroads_north_america..zip](#)

□□□ □□ [NATURALEARTH]

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



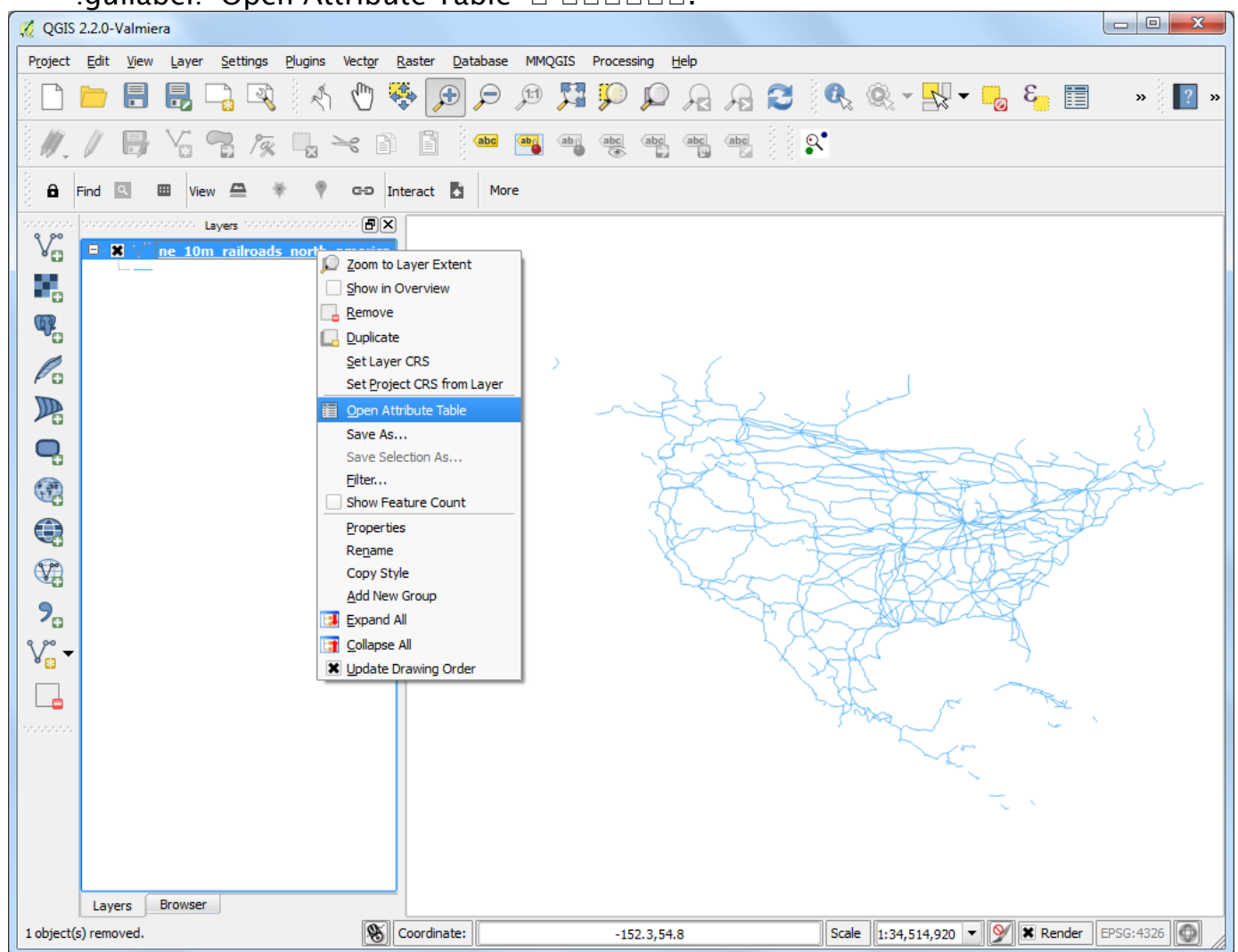
2. ``ne_10m_railroads_north_america.zip`` □□□ □□□ :guilabel: `OK` □ □□□□□.



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



4. 00 0000 0000 000000 00 00 0000 0000 00 00 0000 0000. 0 000000 0000 00 0000 0000 0000, 000000 00 0000 0000 0000. 000000 0000 0000 0000 0000 :guilabel: `Open Attribute Table` 0 0000000.



- [illegible]


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

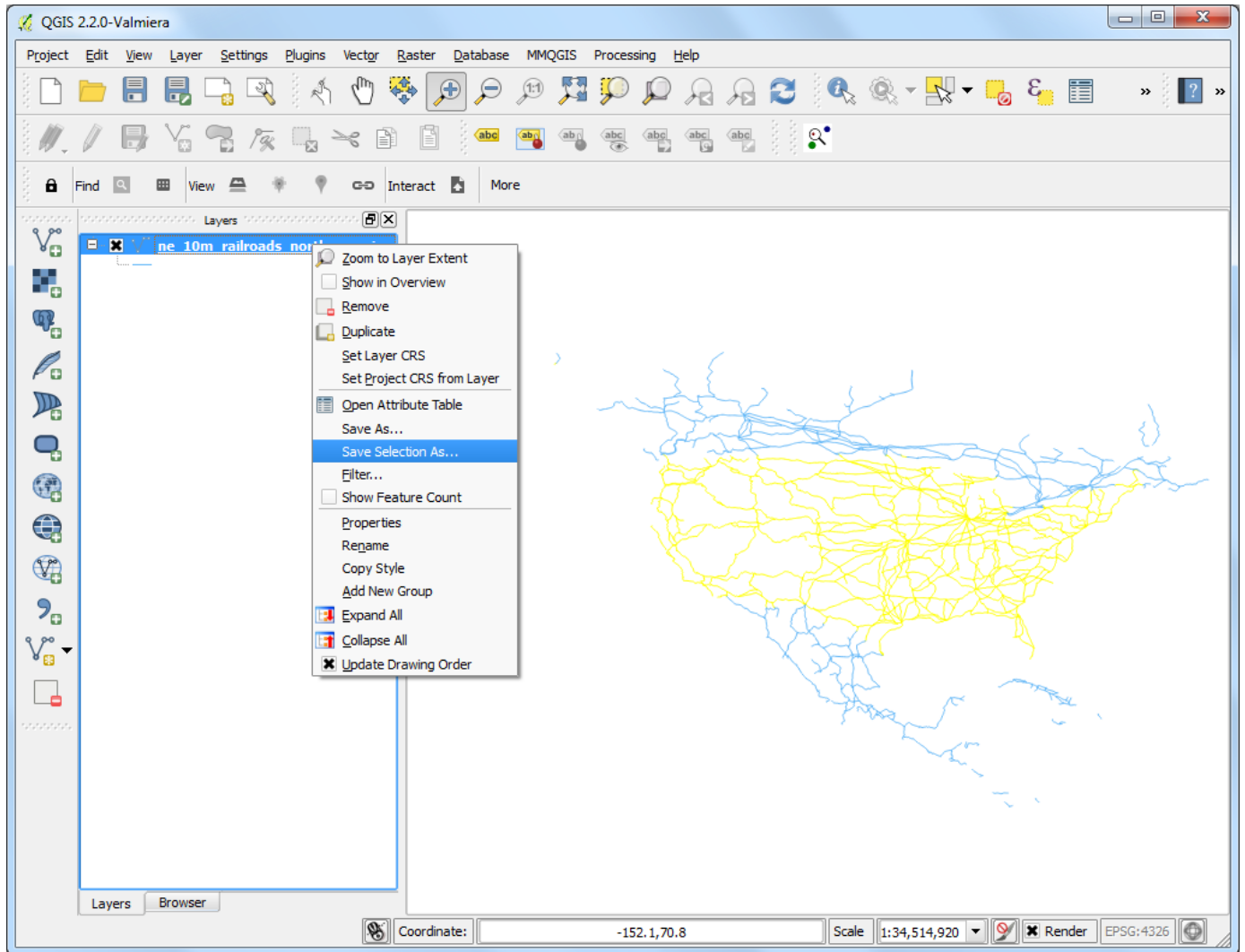
7. Select By Expression dialog box. Functions list Fields and Values sov_a3, Expression: "sov_a3" = 'USA', Select, Close.



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`, `:guilabel: Save Selection As...`



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

Note

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



11. :guilabel: Filter` :guilabel: north america equ` :guilabel: 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` : Open Attribute Table



15. `Toggle editing` `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**` `OK`



17. 在 Attribute Table 中 单击 编辑 按钮 :guilabel:`length_km` 单击 编辑 按钮。
 单击 :guilabel:`Toggle editing` 按钮 单击 编辑 按钮 单击 编辑 按钮。

Attribute table - usa_railroads :: Features total: 752, filtered: 752, selected: 0

| | scalerank | featuredca | sov_a3 | uident | add | natrscale | continent | length_km |
|----|-----------|------------|--------|--------|-----|-----------|---------------|-----------|
| 0 | 8 | Railroad | USA | 1506 | 0 | 0 | North America | 637.07 |
| 1 | 9 | Railroad | USA | 1606 | 1 | 5 | North America | 16.27 |
| 2 | 8 | Railroad | USA | 1706 | 0 | 0 | North America | 96.22 |
| 3 | 8 | Railroad | USA | 1806 | 0 | 0 | North America | 20.15 |
| 4 | 8 | Railroad | USA | 1906 | 0 | 0 | North America | 0.01 |
| 5 | 8 | Railroad | USA | 2006 | 0 | 0 | North America | 79.95 |
| 6 | 8 | Railroad | USA | 2106 | 0 | 0 | North America | 67.00 |
| 7 | 9 | Railroad | USA | 2206 | 1 | 5 | North America | 196.45 |
| 8 | 8 | Railroad | USA | 2306 | 0 | 0 | North America | 60.61 |
| 9 | 8 | Railroad | USA | 2406 | 0 | 0 | North America | 20.03 |
| 10 | 8 | Railroad | USA | 2506 | 0 | 0 | North America | 147.21 |
| 11 | 8 | Railroad | USA | 2606 | 0 | 0 | North America | 68.33 |
| 12 | 8 | Railroad | USA | 2706 | 0 | 0 | North America | 1.62 |
| 13 | 8 | Railroad | USA | 2806 | 0 | 0 | North America | 4.34 |
| 14 | 9 | Railroad | USA | 2906 | 1 | 5 | North America | 60.92 |
| 15 | 9 | Railroad | USA | 3006 | 1 | 5 | North America | 157.26 |
| 16 | 8 | Railroad | USA | 3106 | 0 | 0 | North America | 131.39 |
| 17 | 8 | Railroad | USA | 3206 | 0 | 0 | North America | 58.84 |
| 18 | 8 | Railroad | USA | 3306 | 0 | 0 | North America | 432.74 |
| 19 | 8 | Railroad | USA | 3506 | 0 | 0 | North America | 29.55 |
| 20 | 8 | Railroad | USA | 3606 | 0 | 0 | North America | 94.90 |
| 21 | 8 | Railroad | USA | 3706 | 0 | 0 | North America | 577.78 |
| 22 | 8 | Railroad | USA | 3806 | 0 | 0 | North America | 223.04 |
| 23 | 9 | Railroad | USA | 3906 | 1 | 5 | North America | 143.94 |

Show All Features

18. `## Summary of the data frame. # # # # # Total # # # # #.`
`## # --> # --> # :menuselection: `Vector --> Analysis Tools -->`
`Basic Statistics` # # #.`

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