QGIS Application - Bug report #19746
Disappearing -180 / 180 longitude grid lines on certain zoom levels

2018-09-01 11:24 AM - Andreas Neumann

Status:	Open		
Priority:	Normal		
Assignee:	Even Rouault		
Category:	Projection Support		
Affected QGIS version:	3.3(master)	**Regression?:**	No
Operating System:		**Easy fix?:**	No
Pull Request or Patch supplied:	No	**Resolution:**	
Crashes QGIS or corrupts data:	No	**Copied to github as #:**	27571

Description

Depending on the zoom level, the -180 / 180 degree grid lines appear / disappear in QGIS.

This is not depending on a certain projection, but seems to be a spatial filter accuracy issues.

Quote from Even Rouault:

This seems to be an issue with the spatial filter issued to OGR

At the zooms where the lines disappear, there are requests like:

Thread 23 "Thread (pooled)" hit Breakpoint 2, OGR_L_SetSpatialFilterRect
(hLayer=0x7f81180c90a0, dfMinX=-179.79163612932865,
dfMinY=-69.446164378986353, dfMaxX=179.90530755284408,
dfMaxY=78.959077253477474) at ogrlayer.cpp:1223

At the zooms where that work (even when zoomed in), there are like:

Thread 29 "Thread (pooled)" hit Breakpoint 2, OGR_L_SetSpatialFilterRect
(hLayer=0x7f81180c90a0, dfMinX=-180, dfMinY=-90, dfMaxX=180, dfMaxY=90) at
ogrlayer.cpp:1223

I haven't looked at the QGIS code that computes this bounding box, but from my
experience with gdalwarp which has similar challenges, it is tricky to compute
a source bounding box from a target bounding box, because sometimes the
coordinates in the target bounding box do not correspond to a physical point
on Eath, and hence inverse projection fails. So you have to resort to a grid
sampling approach, but that makes you miss the exact boundaries. So probably
that a band-aid fix would be to add some ad-hoc logic, like "if the source SRS
is long/lat, and the computed extent is almost worldwide, then extend it to
full worlwide (or do not emit a spatial filter at all)"

Attached is a Geopackage file with grid lines for testing.

Related issues:

Related to QGIS Application - Bug report # 13380: reprojection of lat/long li...	**Closed**	**2015-09-18**
Related to QGIS Application - Bug report # 19626: World map incorrectly drawn...	**Reopened**	**2018-08-15**
Related to QGIS Application - Bug report # 597: lat/lon maps should wrap arou...	**Closed**	

History

#1 - 2018-09-01 11:27 AM - Andreas Neumann

- Related to Bug report #13380: reprojection of lat/long lines across 180 in mercator map fails added

#2 - 2018-09-01 11:27 AM - Andreas Neumann

- Related to Bug report #19626: World map incorrectly drawn when using a different projection than the data source added

#3 - 2018-09-01 11:28 AM - Andreas Neumann

- Related to Bug report #597: lat/lon maps should wrap around 180 longitude added

#4 - 2018-09-01 12:29 PM - Johannes Kroeger

Another easy test case:

- Load ne_110m_coastline and ne_110m_graticules_20.
- Set projection to EPSG:3995 or EPSG:3031 ((ant)arctic stereographic)
- Zoom to ne_110m_coastline
- Rotate the map canvas
- The antimeridian as well as some high latitudes will disappear every now and then (eg at 20° rotation).

Files

gridlines.gpkg	1.31 MB	2018-09-01	Andreas Neumann