

# GIS Methodology

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During the creation of this report's maps and infographics, I used several different techniques and processes within QGIS. This is a description of those techniques.

To begin with, I wanted to make sure that the files I used within my project were organized and easy to access. I used QGIS' group feature to create several top-level groups, including Oil Wells, Schools, and Base Layers. Many other groups and layers are nested within each group. Notably, the "Schools" group contains 35 buffers in total. "school buffers," which includes a group for each level of schooling I have designated in this report. This contains 35 buffers in total. Creating the infographics required the use of many different buffers, meaning the layers can easily become overwhelming when not organized properly.

I also used several geoprocessing and spatial analysis techniques. To create buffers, I used the QGIS "Buffer" tool and dissolved results. I then used SQL filtering operations in order to filter layers by type, including a dot layer for each level of schools designated in this report. I also created specific layers for wells which use fracking, new / active wells, and idle / plugged wells. I then used the "Join attributes by location (summary)" tool to obtain statistics on the amount of schools which fall within oil well buffers, and the amount of oil wells which fall within school buffers. Finally, I used the "Select by location" research operation to obtain a list of schools near fracking sites.

For the visuals of my map, I used the ESRI Standard Basemap as a base for Los Angeles county. I think that this provides nice context without being too visually cluttered. I also obtained shapefiles for all California counties from TIGER/LINE, and used them to provide additional visuals and context. I also found a custom oil well SVG icon online to use for my Oil & Gas well map. Finally, I applied the standard techniques of print layout creation to make a visually

appealing legend and context for the map. To create the infographics and tables, I exported the data to Google Sheets. I then used their customization tools to make the data visually appealing.

#### Map Notes:

For visual clarity, I have excluded the Catalina and San Clemente Islands from my maps. No oil wells are found on them. Additionally, for the “Active Oil & Gas Wells” map, I only displayed the section of LA county which contains active oil or gas wells.

# Sources

## Maps

### [TIGER 2016 County Shapefiles](#)

Provided Shapefiles containing LA county, Oil & Gas wells, and Public Schools

ESRI Standard Basemap

## Analysis

(Stand-LA)

<https://www.stand.la/history-of-oil-in-los-angeles.html>

<https://www.stand.la/health-and-safety.html>

(LA Department of Public Health)

[http://publichealth.lacounty.gov/eh/docs/ph\\_oilgasfacilitiesphsafetyrisks.pdf](http://publichealth.lacounty.gov/eh/docs/ph_oilgasfacilitiesphsafetyrisks.pdf)

(NDRC) <https://www.nrdc.org/issues/reduce-fracking-health-hazards>

<https://www.latimes.com/california/story/2020-03-06/state-orders-allenco-energy-site-shutdown-south-l-a>

<https://www.osha.gov/SLTC/oilgaswelldrilling/healthhazards.html>

<https://blogs.cdc.gov/niosh-science-blog/2018/08/24/oil-and-gas-vapors/>