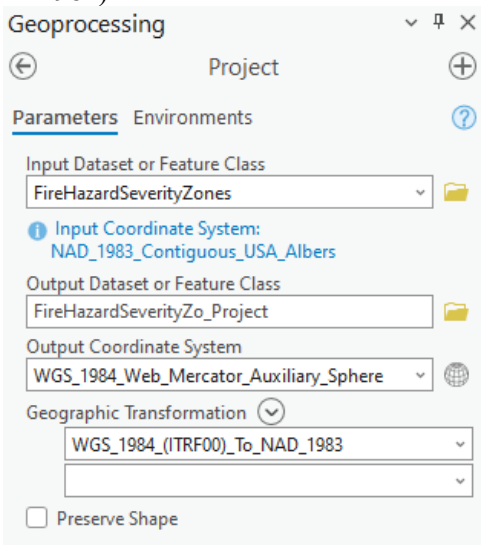
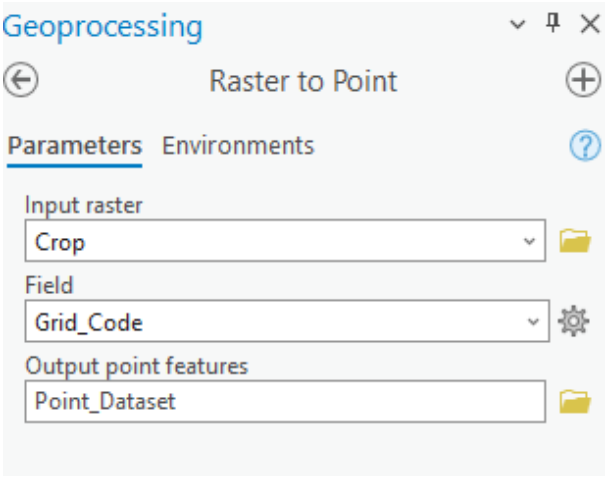
Data Wrangling:

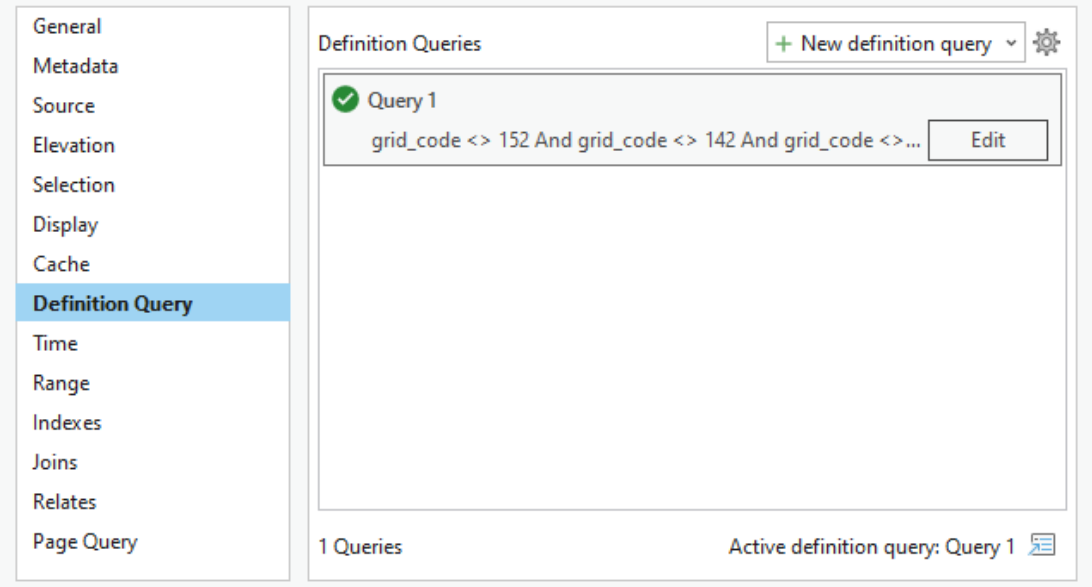
1. Import all datasets and ArcGIS Soil Development Toolkit into ArcGIS. Start by aligning the extents of all layers.
2. Align coordinate systems from all layers using Project Tool, using the Wildfire Data coordinate system as the baseline (WGS 1984).



3. Use the "Raster to Point" tool to create a new layer of points, constrained by the locations of the raster squares in the Crop Data. The center of the raster square is taken to be the new location of the point.

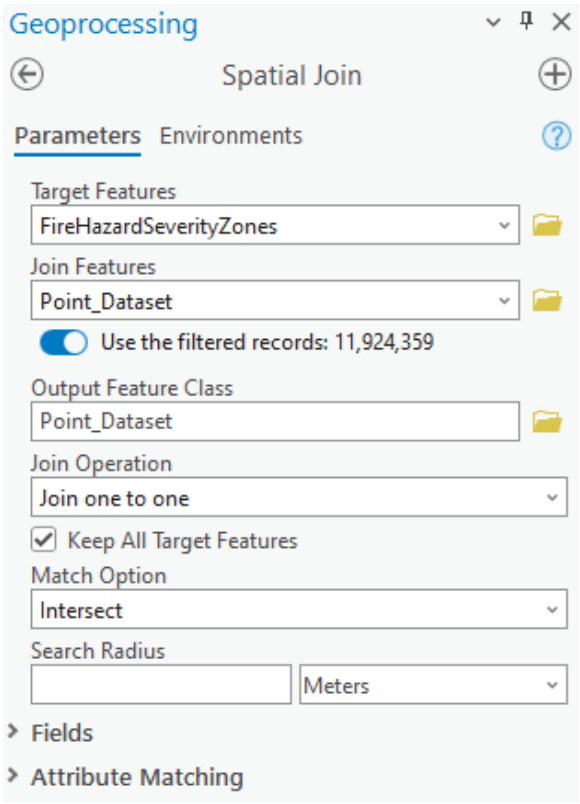


4. Filter non-agricultural pixels using a definition query (within layer properties) on the Crop Data.

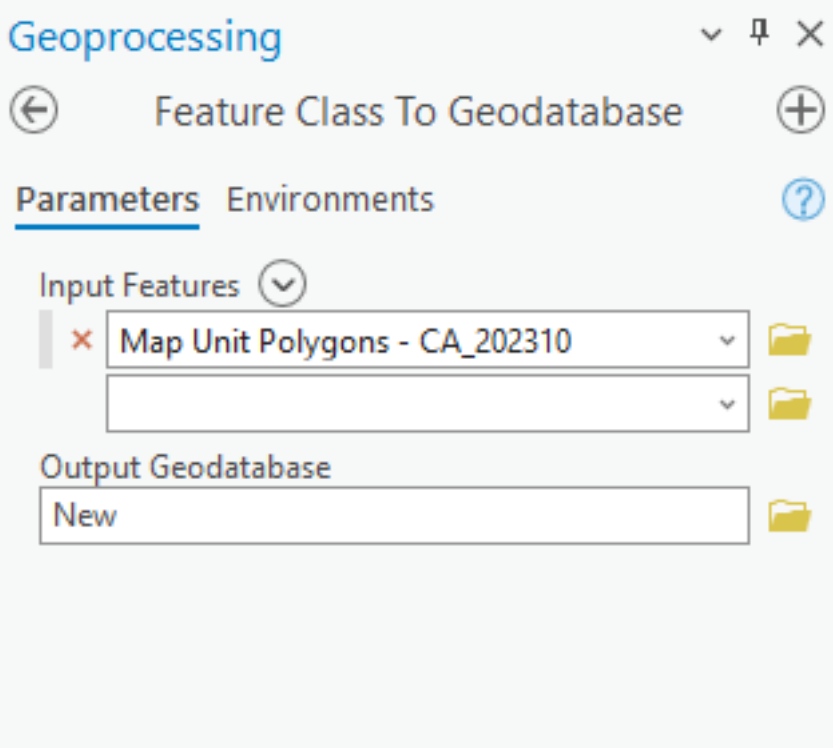


SQL- Definition Query: "grid_code <> 152 And grid_code <> 142 And grid_code <> 131 And grid_code <> 111 And grid_code <> 0 And grid_code <> 121 And grid_code <> 195 And grid_code <> 122 And grid_code <> 123 And grid_code <> 190 And grid_code <> 112 And grid_code <> 141 And grid_code <> 142 And grid_code <> 143 And grid_code <> 37 And grid_code <> 61 And grid_code <> 47 And grid_code <> 58 And grid_code <> 59 And grid_code <> 61 And grid_code <> 92 And grid_code <> 124"

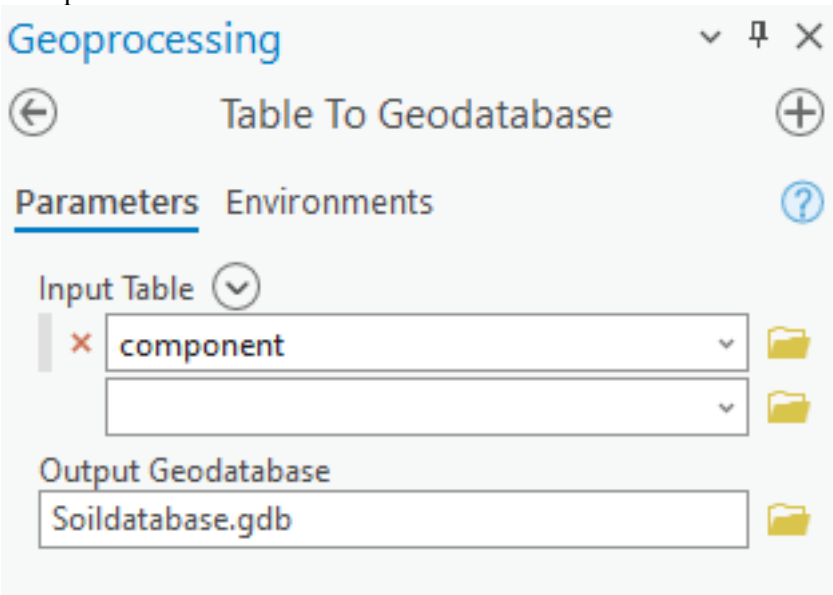
5. Complete a spatial join between Hazard Class Data and Crop Data to pull the Hazard Class for each observation.



6. Next, the soil data needs to be wrangled. Start by adding the “MU Polygon” layer from the California gSSURGO database, accessing through “Catalog View” > Folders. Then, within the “Catalog View” create a new file geodatabase. From within the newly created database, right-click and select New > Feature Dataset. Then, right-click on the new feature dataset and select Import > Feature Class(es).

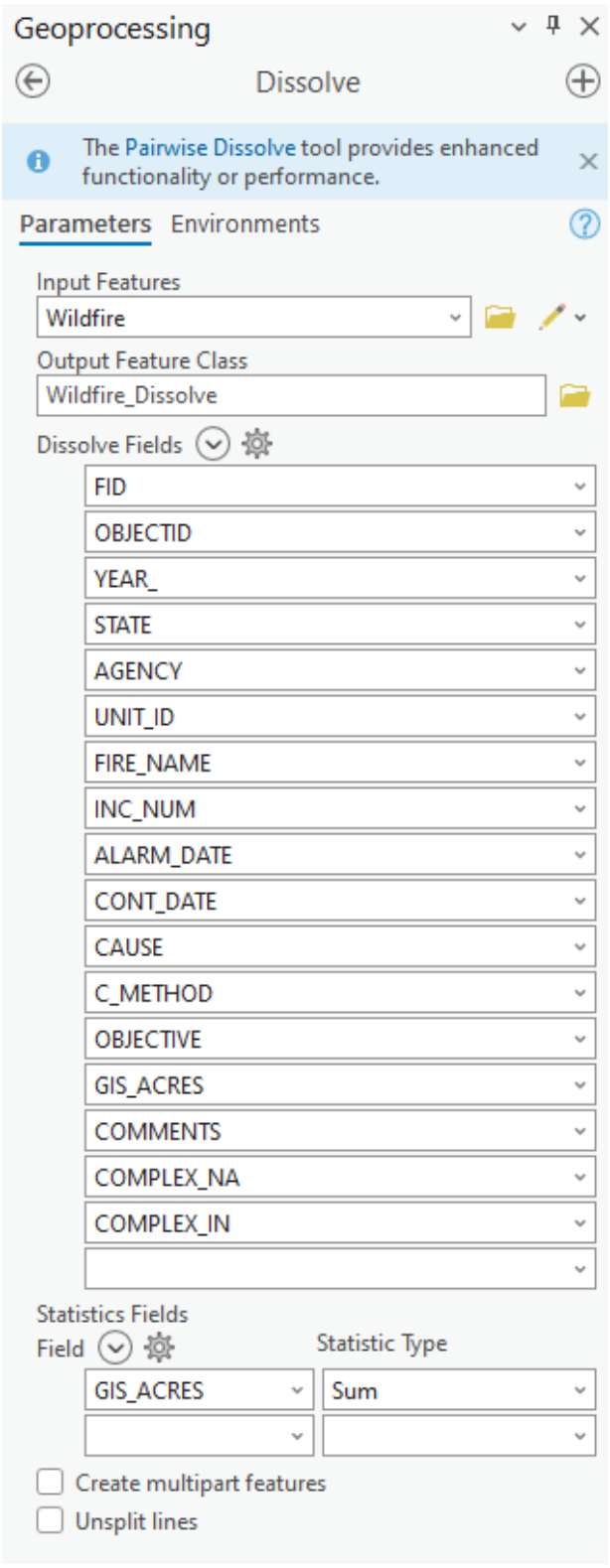


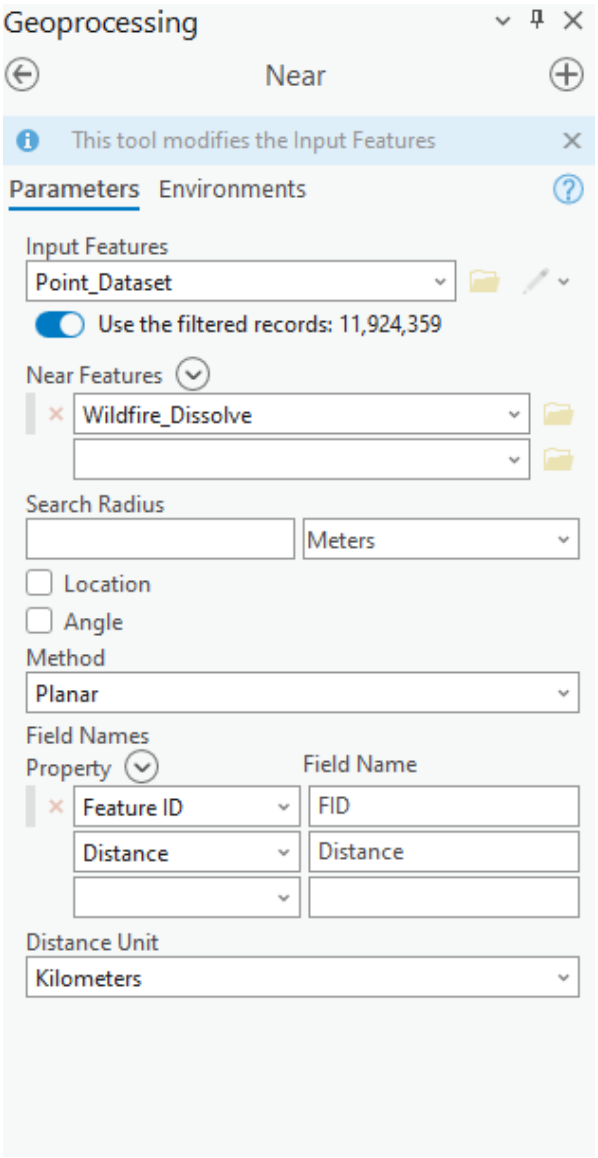
7. Next, right-click on the geodatabase and click Import > Table. Ensure the “component” table is selected as the input.



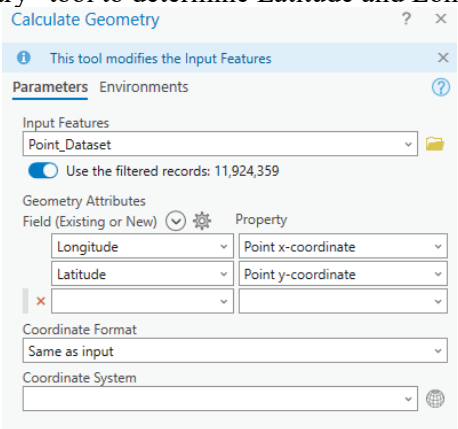
8. Complete a join between the “MU Polygon” layer and the “component” table using “MUKEY” field as the join field.

9. Next, dissolve overlapping wildfire perimeters using the “Dissolve Polygon Boundaries” tool. Then, use the “Near” tool to calculate the planar distance between a plot of land and the boundary of the nearest wildfire polygon, creating the “Distance” variable.


Geoprocessing
Dissolve
The Pairwise Dissolve tool provides enhanced functionality or performance.
Parameters
Environments
Input Features
Wildfire
Output Feature Class
Wildfire_Dissolve
Dissolve Fields
FID
OBJECTID
YEAR_
STATE
AGENCY
UNIT_ID
FIRE_NAME
INC_NUM
ALARM_DATE
CONT_DATE
CAUSE
C_METHOD
OBJECTIVE
GIS_ACRES
COMMENTS
COMPLEX_NA
COMPLEX_IN
Statistics Fields
Field
Statistic Type
GIS_ACRES
Sum
Create multipart features
Unsplit lines

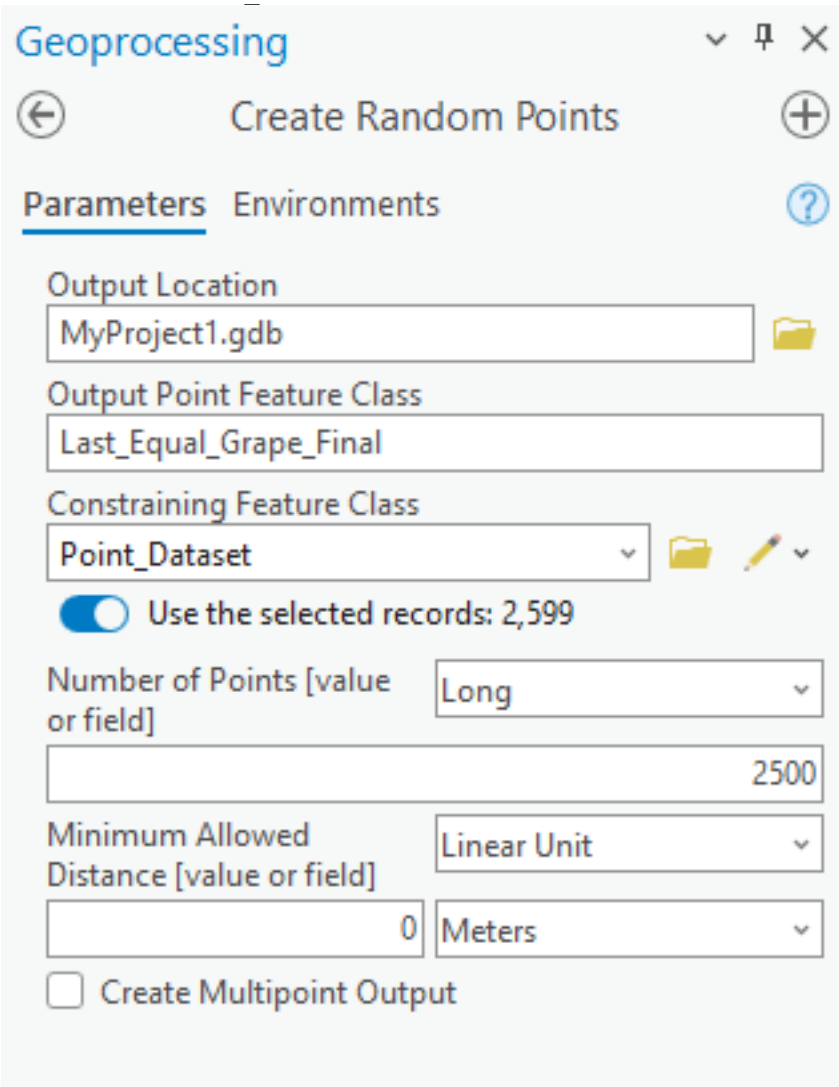


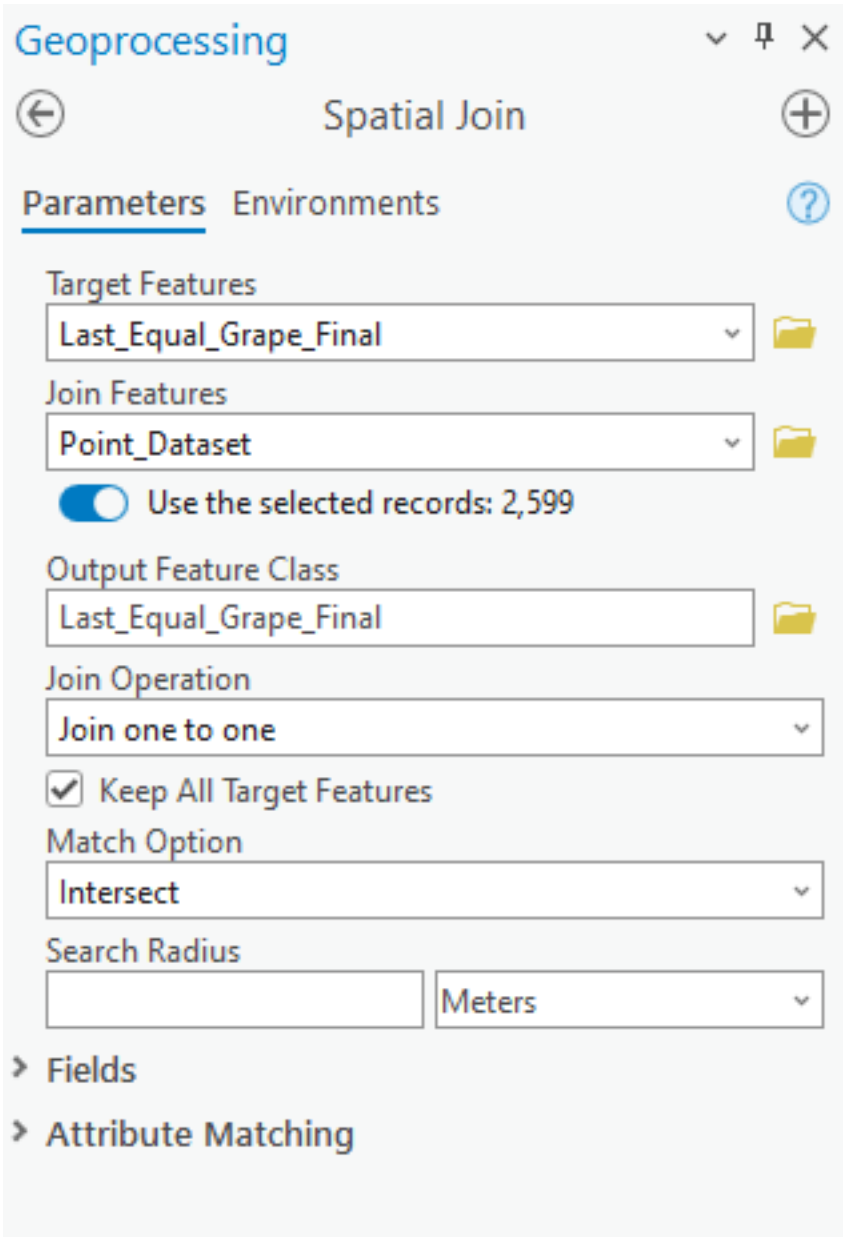
10. Use the "Calculate Geometry" tool to determine Latitude and Longitude of each observation.



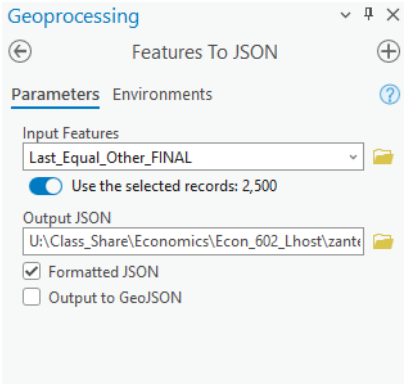
11. From within the attribute table, use the "Select by Attribute" tool to select all grape observations with non-null values. Then, use the "Create Random Points" tool (with the selected observations only) to

randomly select 2,500 complete grape observations. Finally, complete a spatial join between the newly resampled grape points and the Crop Data to pull over all necessary attributes. Completed similar steps for pastureland and “other” farms.
SQL- Selection: grid_code = 69 And HAZ_CLASS IS NOT NULL And comppct_r IS NOT NULL And hydgrp IS NOT NULL And ffd_r IS NOT NULL





12. Use the “Features to JSON” tool to export all three complete datasets for further wrangling in Posit.


Geoprocessing
Features To JSON
Parameters
Environments
Input Features
Last_Equal_Other_FINAL
Use the selected records: 2,500
Output JSON
U:\Class_Share\Economics\Econ_602_Lhost\zant
Formatted JSON
Output to GeoJSON