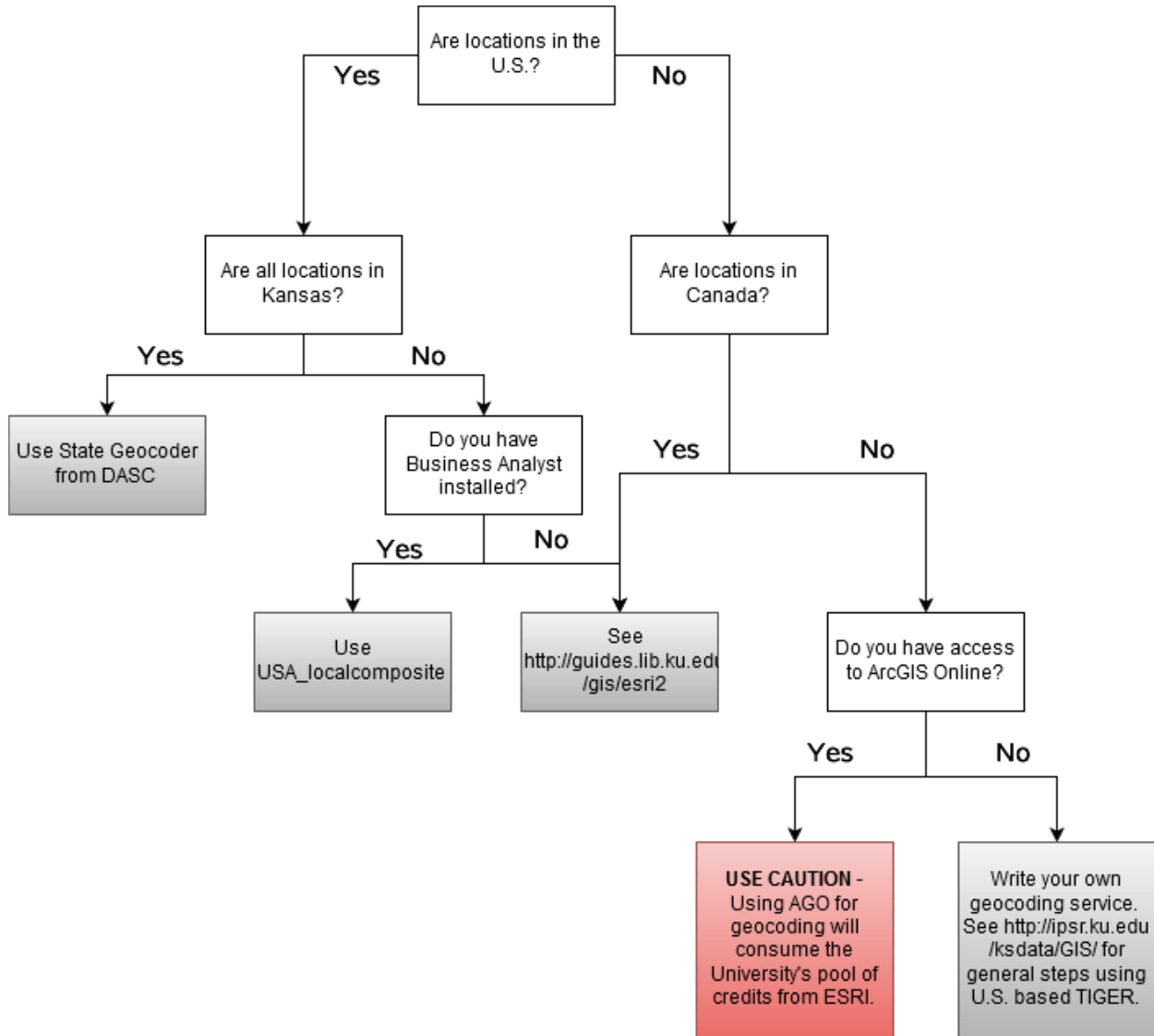# General Guide to Geocoding using ArcGIS at The University of Kansas

Getting Started

The first step is to choose a geocoding service or locate reference data and write your own. See the flowchart below to help you select a locator.

Geocoding services for the U.S. are built-in with the Business Analyst installation. The KU Libraries have posted U.S. and Canadian street locators from ESRI that accompany ArcGIS at: http://guides.lib.ku.edu/gis/esri2/. If you are trying to geocode locations elsewhere in the world, you have to locate reference data and write your own service. For more information, please see the white paper titled *Step-by-Step Guide to Geocoding Using U.S. Census TIGER* available at: http://ipsr.ku.edu/ksdata/GIS/. This paper uses U.S. based locations, but the steps in writing the service will be the same.

If all of your locations are in Kansas, the Kansas Data Access & Support Center (DASC) offers a good geocoding service. Follow the directions at: http://kansasgis.org/services/online.cfm. Under "How to Connect using ArcMap", use:

http://services.kansasgis.org/arcgis4/services

instead of the URL in the directions. Once connected you should see a folder called "Geocoders". The most complete service is one titled KS_Geocoder. This service is a cascading geocoder which utilizes 911 address points first, then 911 road centerlines, followed by other county-provided address points, and finally TIGER 2010 roads.

Steps to Geocoding

Once you have a determined which service to use, follow the general steps below to geocode your locations.

1. Format Excel spreadsheet such that header row has variable (field) names with NO spaces or special symbols (%&- etc.) and data start in row 2. It is helpful to have street address, city, state, and zip in 4 separate columns. *P.O. boxes are not street addresses and cannot be geolocated.*
2. Open ArcMap
3. Add the spreadsheet containing street addresses
4. Right-click on the data table from the Table of Contents window and select **Geocode Addresses**
5. Select a geocoding service be that one you have created, one you downloaded, or a built-in service. The names of the built-in services change with each version of Business Analyst. Version 10.3.1 has a service called **USA_LocalComposite** which should work well for U.S. addresses and does not require credits. Locators such as the World Geocode Service that indicates ArcGIS Online will require credits (40 credits per 1,000 addresses – please talk to your ESRI license administrator (https://kars.ku.edu/licenses/esri/) before undertaking large geocoding jobs that require credits.)
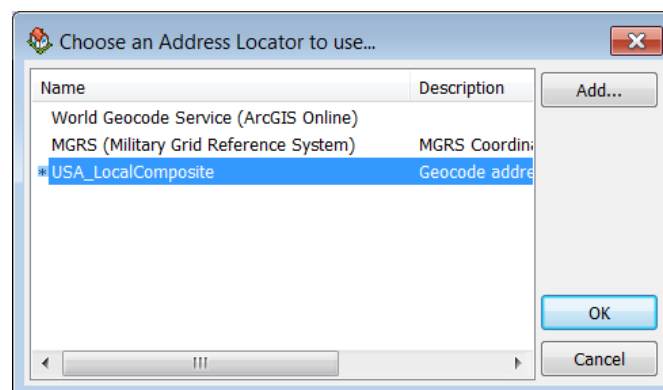
6. ArcMap will scan the variable names and try to pick the appropriate address fields. Confirm or select the correct fields for street address, city, state, and zip.
7. Select a location and file name to save the output.
8. Click OK
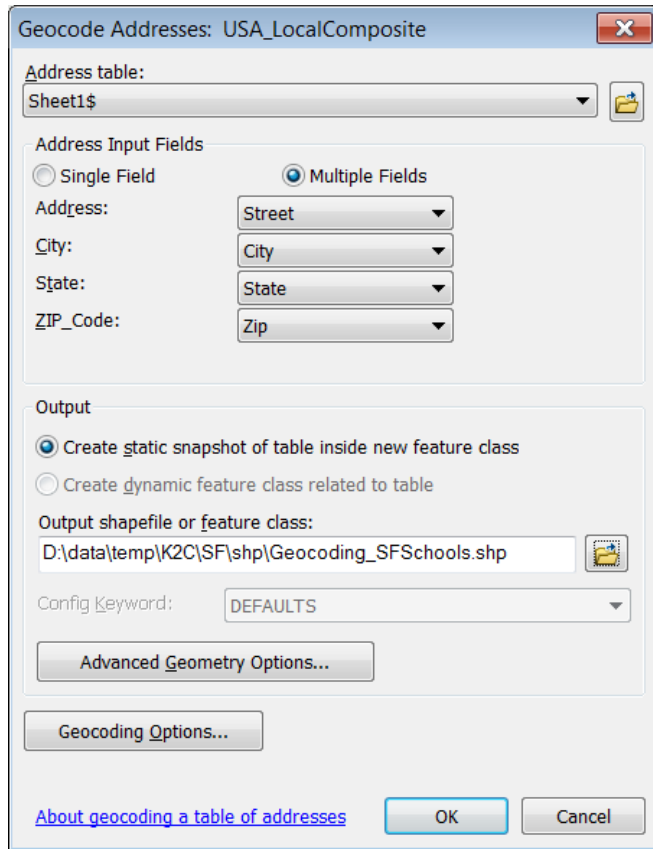
In a perfect world, you will see results like this:
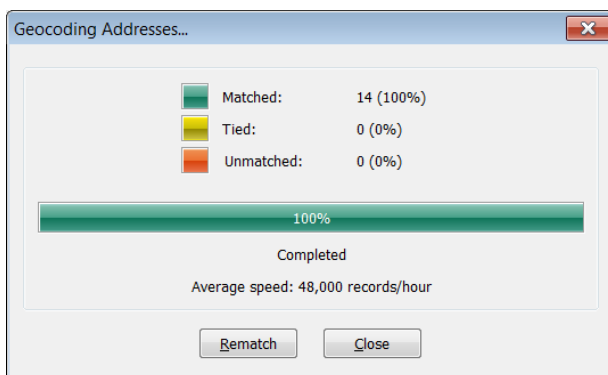
However, you should **ALWAYS** select Rematch to review how the addresses were located and match any tied or unmatched points. Most importantly, check the locator name used to locate the point. Some cascading geocoders will default to the centroid of the zip code or city if the address is not found. The field labeled *Loc_name* indicates the locator used for each location. In the USA_localcomposite service, 'AddressPoint' is typically the most accurate. The 'Zipcode' or 'CityState' locators use the centroids of

these polygons. If you need a more accurate location than the center of the zipcode or city, you will need to review/rematch and manually select the correct location - either from the list of possible locations or by pin-pointing the correct location on the map.
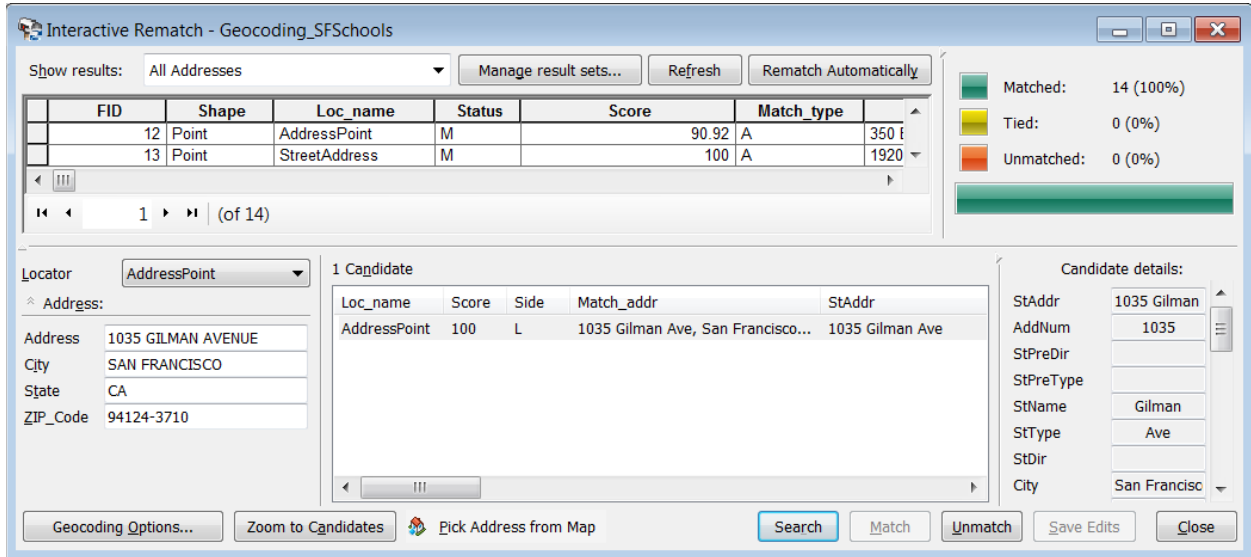
Credits

Thanks to Rhonda Houser (KU Libraries) for reviewing and suggesting content to this guide and for hosting the locator services that ESRI provides but are not automatically installed with ArcGIS!

Thanks to Kristen Jordan-Koenig (DASC) for the instructions on connecting to their service, as well as, building and maintaining this service!

Questions

Feel free to contact me with questions.

Xan Wedel
Sr. Research Data Engineer
Institute for Policy & Social Research
The University of Kansas
1541 Lilac Lane, 607 Blake Hall
Lawrence, KS 66044
xan@ku.edu