

If you have a list of street addresses that you would like to put on a map in ArcGIS, you can do so using a process called geocoding. This help guide will focus on geocoding using street addresses, but it is also possible to geocode based on place names, postal codes, and other reference systems. If you want to know more other kinds of geocoding, check out the [Geocoding Guidebook in the ArcGIS 10.1 help files](#).

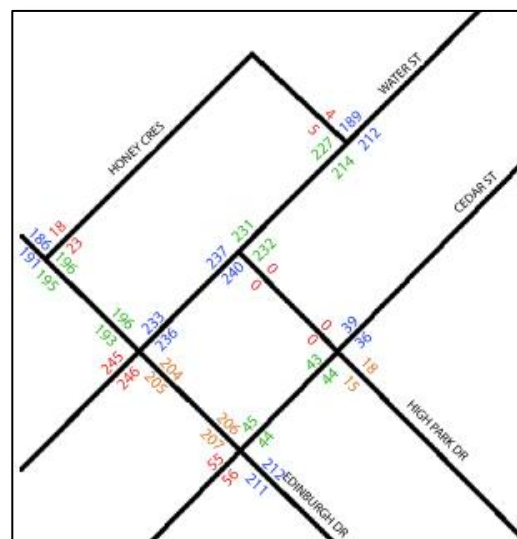
The geocoding process

1. Obtain and format (if necessary):
 - a. a reference layer
 - b. input address data
2. Build an address locator
3. Locate addresses

Step 1: Obtain and format data

1. Obtain a reference layer. If you are geocoding in Ontario, the Route File by DMTI (available from [Scholars GeoPortal](#)) is a good reference layer. The ideal reference layer for street address geocoding is a detailed street network shapefile for the appropriate geographical area. The shapefile should have the following attributes for each street segment:

Example Attribute Name	Description
FROMLEFT	From address and to address information for each side of the street. Ex.: on Honey Cres. (see map), house numbers on one side of the street range from 5 to 23 and from 4 to 18 on the other side of the street. These ranges are reflected in the attribute table shown below.
TOLEFT	
FROMRIGHT	
TORIGHT	
PREDIR	For streets where the direction and/or type come before the street name (optional)
PRETYPE	
STREETNAME	Street name without direction or type prefixes or suffixes
SUFTYPE	For streets where the direction and/or type come after the street name (optional)
SUFDIR	
LEFT_MUN	City name (normally optional, but required in ArcGIS 10.1 due to a bug)
RIGHT_MUN	
LEFT_PRV	
RIGHT_PRV	



FID	Shape *	FROMLEFT	TOLEFT	FROMRIGHT	TORIGHT	PREDIR	PRETYPE	STREETNAME	SUFTYPE	SUFDIR	LEFT_MUN	RIGHT_MUN
112	Polyline	4	36	3	39			CEDAR	ST		GUELPH	GUELPH
301	Polyline	44	44	43	45			CEDAR	ST		GUELPH	GUELPH
534	Polyline	56	90	55	91			CEDAR	ST		GUELPH	GUELPH
108	Polyline	186	186	185	191			EDINBURGH	RD	S	GUELPH	GUELPH
109	Polyline	196	196	193	195			EDINBURGH	RD	S	GUELPH	GUELPH
110	Polyline	204	206	205	207			EDINBURGH	RD	S	GUELPH	GUELPH
531	Polyline	212	230	211	225			EDINBURGH	RD	S	GUELPH	GUELPH
480	Polyline	0	0	0	0			HIGH PARK	DR		GUELPH	GUELPH
485	Polyline	18	30	15	27			HIGH PARK	DR		GUELPH	GUELPH
106	Polyline	5	23	4	18			HONEY	CRES		GUELPH	GUELPH
482	Polyline	188	212	189	189			WATER	ST		GUELPH	GUELPH
483	Polyline	214	232	227	231			WATER	ST		GUELPH	GUELPH
484	Polyline	236	240	233	237			WATER	ST		GUELPH	GUELPH
3140	Polyline	246	268	245	261			WATER	ST		GUELPH	GUELPH

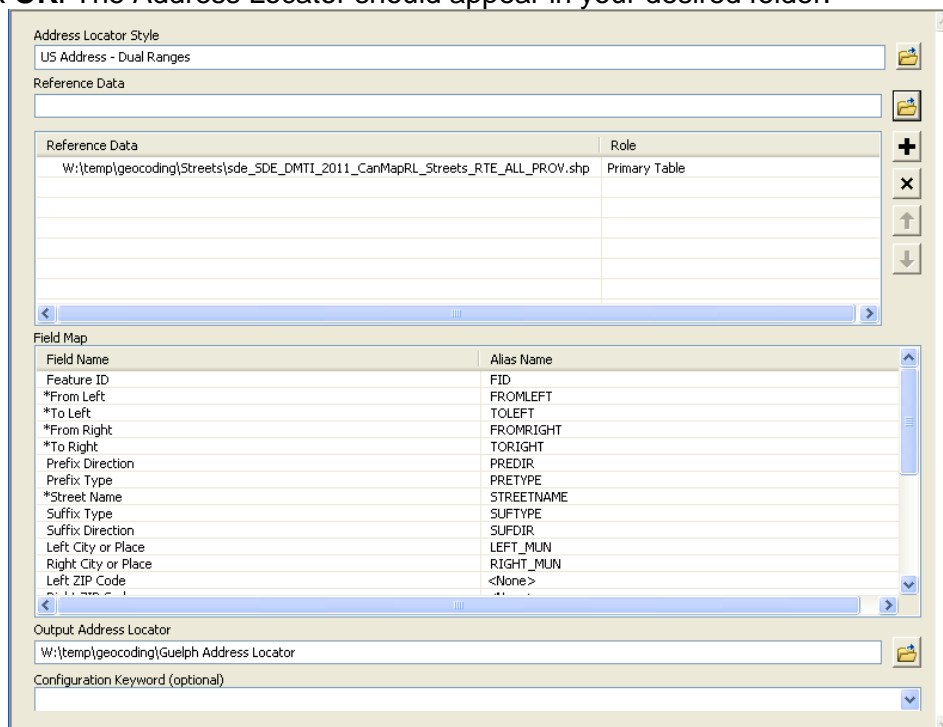
- Obtain input address data, which is the list of addresses you want to locate on the map. These must be in an Excel (.xls) or Comma Separated Value (.csv) spreadsheet. The following information must be available for each address:

Example Column Name	Description
ADDRESS	Including house number, street name, and any direction and type prefixes or suffixes. All of this information must be in the same column, e.g. 186 Edinburgh St S
CITY	City name (optional)
PROV	Province (optional)
POSTAL_CODE	Postal code (optional)



Step 2: Build an Address Locator

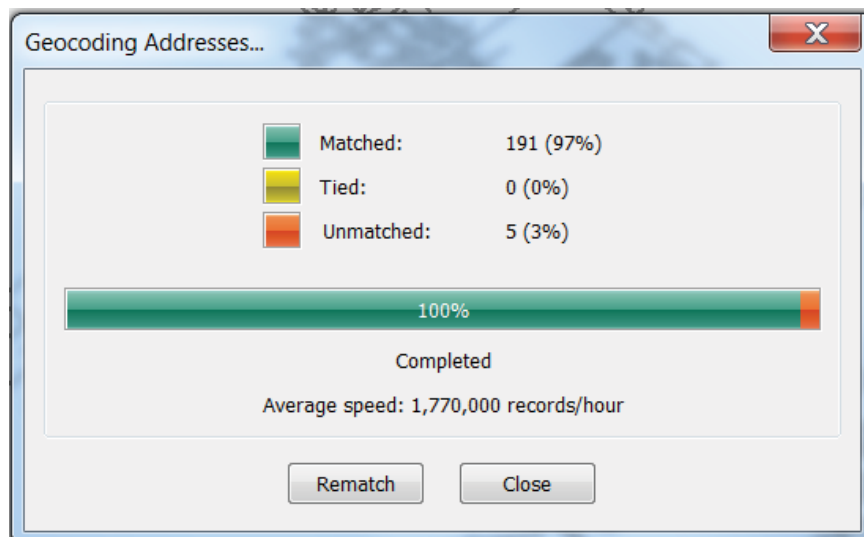
An address locator is created using the reference layer. Once created, it can be reused over and over to geocode addresses of the same style (i.e. containing the same kind of information).

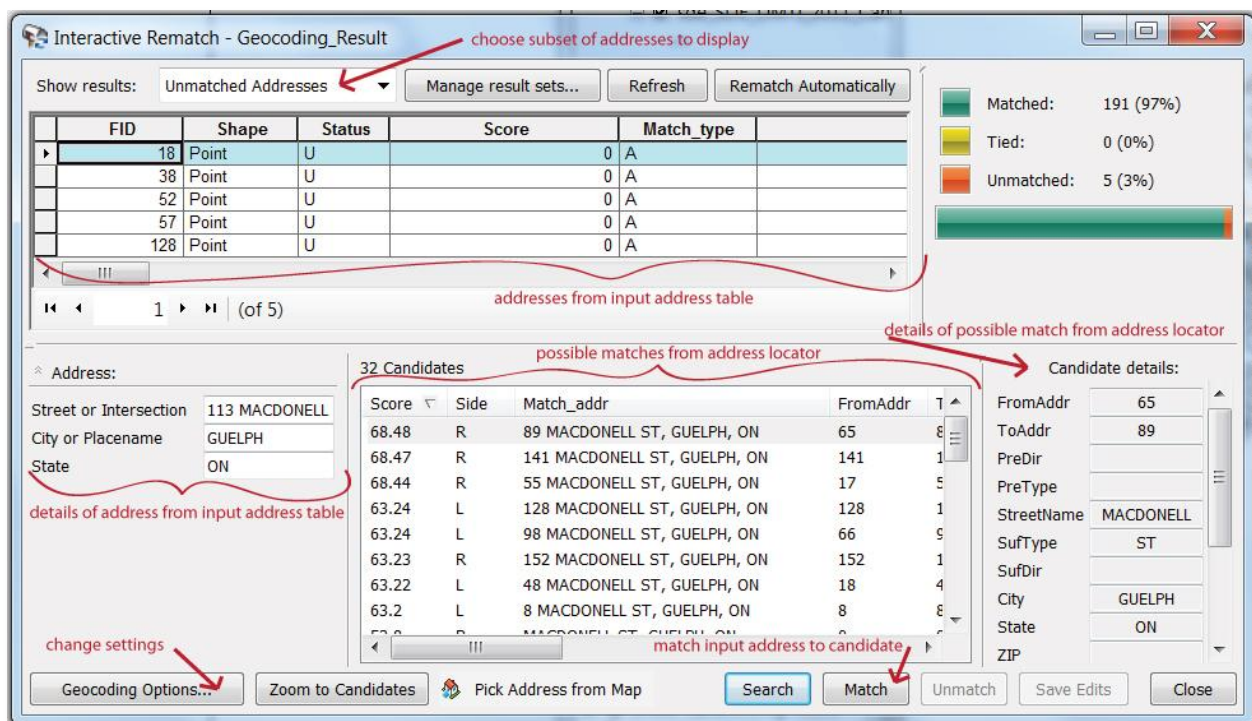
- Open **ArcCatalog**.
- In the **Catalog Tree**, right-click on the folder in which you would like to store the address locator > **New** > **Address Locator**.
- In the **Create Address Locator** dialog box, enter the following:
 - Address Locator Style:** Browse to **US-Address – Dual Ranges**
 - Reference Data:** Browse to your reference layer shapefile
 - Field Map:** ensure that **Field Names** are mapped correctly to **Alias Names** (your reference layer's attribute name.). Note that **Field Names** with asterisks are required; however, due to a bug in ArcGIS 10.1, the **Field Names** *Left/Right City or Place* and *Left/Right State* are also required.
 - Output Address Locator:** Ensure that the path is where you would like to store the address locator. Change the default name to something descriptive.
- Click **OK**. The Address Locator should appear in your desired folder.



Step 3: Locate Addresses

1. Open **ArcMap**.
2. Add the input address table you want to geocode (**Add Data**  > browse to the spreadsheet > **Add**).
3. Add the reference layer [optional – it can be helpful for visualizing the data] (**Add Data**  > browse to the reference layer shapefile > **Add**).
4. Right-click on the address table in the **Table of Contents** > **Geocode Addresses**.
5. In the **Choose an Address Locator to use** dialog box, click **Add**.
6. Browse to the address locator > **Open**.
7. Click on the address locator > **OK**.
8. In the **Geocode Addresses** dialog box, enter the following:
 - a. **Address Table:** Ensure the correct table is selected
 - b. **Address Input Fields:**
 - i. **Street or Intersection:** From the drop-down box, choose the column from the input address table that contains the **address** information
 - ii. **City or Placename:** From the drop-down box, choose the column from the input address table that contains the **city** information
 - iii. **State:** From the drop-down box, choose the column from the input address table that contains the **province** information
 - c. **Output shapefile or feature class:**
 - i. Browse to the folder in which you want to save the output.
 - ii. Type a descriptive name for the file.
 - iii. From the **Save as Type** drop-down box, choose **Shapefile**.
9. Click **OK**.
10. When geocoding is complete, inspect the **Geocoding Addresses** dialog box. If 100% of addresses have been matched, click **Close**. Otherwise, click **Rematch**.





11. If you have unmatched addresses, you will need to do interactive rematching to match them. Unmatched addresses can have a variety of causes. There may be a spelling error or typo in the input address, or the address may be on a new street that has not yet been added to the reference layer. You will have to do some sleuthing to figure out why the address is unmatched. To match unmatched addresses:

- Select Unmatched Addresses from the **Show Results** drop-down box in the **Interactive Rematch** dialog box. This will display only the unmatched input addresses in the top left window.
 - Click on the first unmatched address to select it. Its details will appear in the bottom left window, and possible match candidates from the address locator will appear in the middle bottom window.
 - Click on a candidate to view its details in the bottom right window.
 - When you have found the correct candidate, click on **Match**.
 - Repeat for all unmatched addresses.
 - If you can't find a match for an input address, it's ok to leave it unmatched, but this means that it will not appear on the map.
 - There are other possible ways of using the **Interactive Rematch** dialog box to match addresses – explore the dialog box or check out the [Geocoding Guidebook in the ArcGIS 10.1 help files](#) to learn more.
 - When you are done, click **Close**.
12. The geocoded addresses have been added to the map as a vector point shapefile.