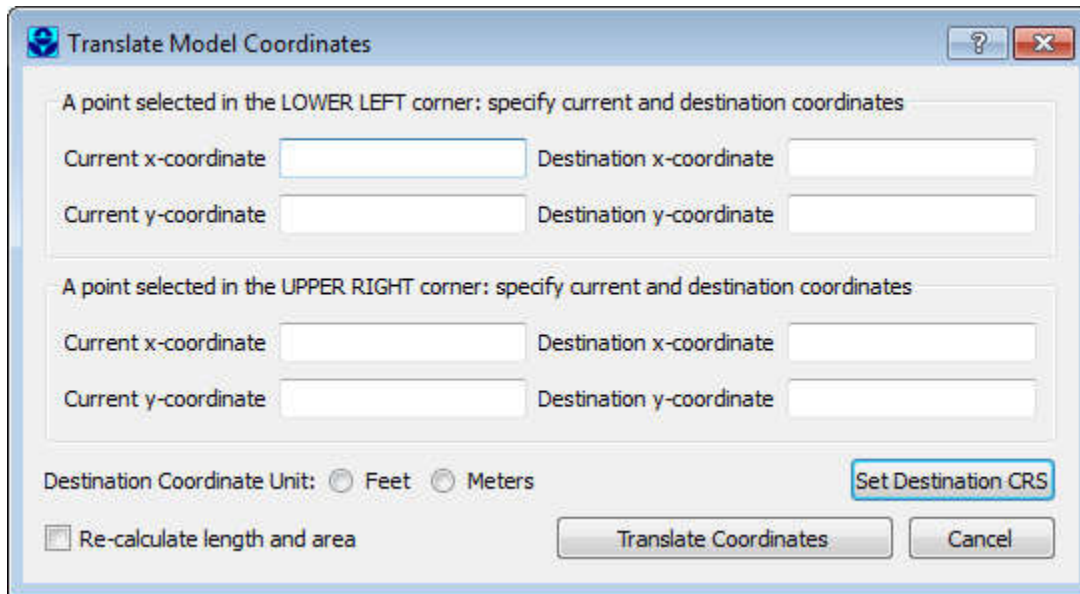


## Tutorial: Translate Coordinates

Often, the user has an existing model that was constructed in graphic coordinates without a valid geospatial coordinate system. With these unprojected coordinates, model objects and their geometries are not to scale. As its name implies, the 'Translate Coordinates' feature is designed to translate existing coordinates into another coordinate system by using only two reference points.

After opening an existing model (SWMM Example1.inp), to start the translate process, choose the 'View'→'Translate Coordinates' option to open its main form as shown below:

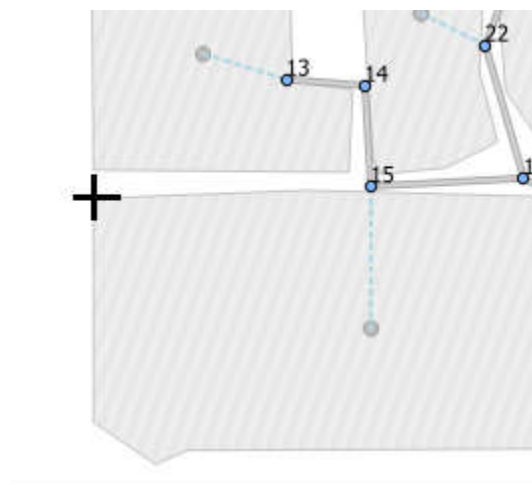


The dialog box is titled "Translate Model Coordinates". It contains two sections for point selection. The first section is titled "A point selected in the LOWER LEFT corner: specify current and destination coordinates" and has input fields for "Current x-coordinate", "Current y-coordinate", "Destination x-coordinate", and "Destination y-coordinate". The second section is titled "A point selected in the UPPER RIGHT corner: specify current and destination coordinates" and also has input fields for "Current x-coordinate", "Current y-coordinate", "Destination x-coordinate", and "Destination y-coordinate". At the bottom, there is a "Destination Coordinate Unit" section with radio buttons for "Feet" and "Meters", a "Set Destination CRS" button, a checkbox for "Re-calculate length and area", and "Translate Coordinates" and "Cancel" buttons.

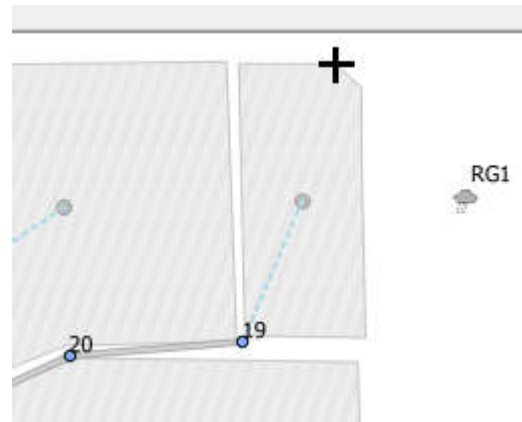
The rationale is for the user to select two points, one on the lower left corner and the other on the upper right corner, and provide their corresponding map coordinates in the current and destination coordinate systems. The tool will utilize this pairing of the current and target coordinates to translate all other geometries' coordinates.

The reason to select the two points on the lower left and upper right corners is to cover the full range of coordinates of the shapes on the map.

After clicking the 'View'→'Translate Coordinates' menu option, the program enters into the point selection mode, the user can click anywhere on the map twice to select the two points of his choice as shown below:



Select lower-left corner point



Select upper-right corner point

Once the user clicks twice on the map, the program will exit the point selection mode and transfer the current coordinates of the two selected points into the main form as shown below:

**Translate Model Coordinates**

A point selected in the LOWER LEFT corner: specify current and destination coordinates

Current x-coordinate	311.629516949	Destination x-coordinate	
Current y-coordinate	792.297769068	Destination y-coordinate	

A point selected in the UPPER RIGHT corner: specify current and destination coordinates

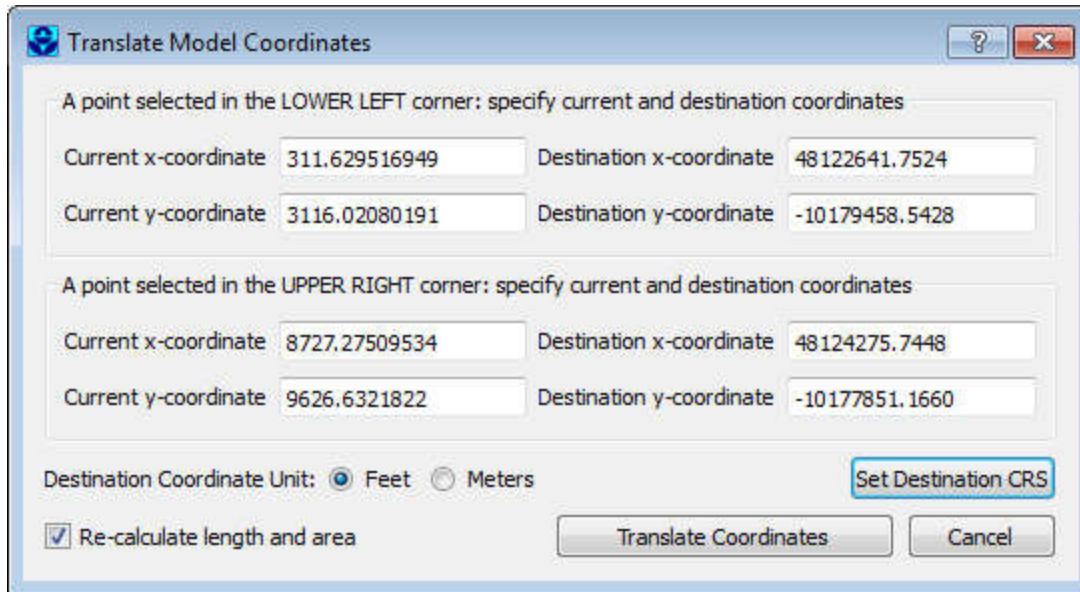
Current x-coordinate	8727.27509534	Destination x-coordinate	
Current y-coordinate	9647.56662394	Destination y-coordinate	

Destination Coordinate Unit: ☐ Feet ☐ Meters

☐ Re-calculate length and area

Please note that the point selection process as described above can be done repeatedly until the user is satisfied with his choices. To start a new point selection process, simply click the 'View' → 'Translate Coordinates' menu option again and proceed to click twice on the map.

At this point, the user needs to type in the coordinates for the two points in the destination coordinate system. In this example, the destination coordinate system was chosen to be 'NAD\_1983\_StatePlane\_Georgia\_East\_FIPS\_1001\_Feet' or EPSG:102666 and the corresponding coordinates in this projected coordinate system are entered into the form as shown below:



**Translate Model Coordinates**

A point selected in the LOWER LEFT corner: specify current and destination coordinates

Current x-coordinate	311.629516949	Destination x-coordinate	48122641.7524
Current y-coordinate	3116.02080191	Destination y-coordinate	-10179458.5428

A point selected in the UPPER RIGHT corner: specify current and destination coordinates

Current x-coordinate	8727.27509534	Destination x-coordinate	48124275.7448
Current y-coordinate	9626.6321822	Destination y-coordinate	-10177851.1660

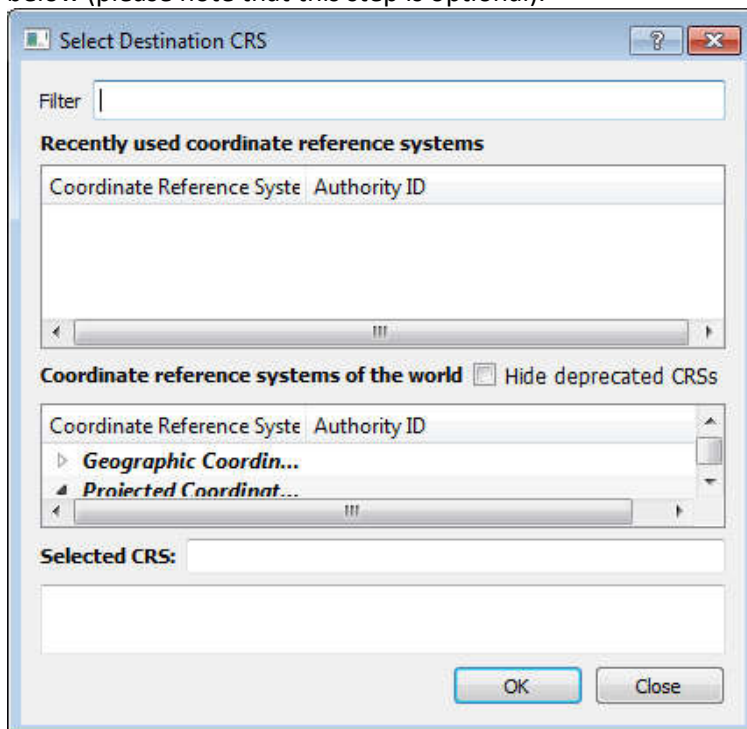
Destination Coordinate Unit: ☒ Feet ☐ Meters **Set Destination CRS**

☒ Re-calculate length and area Translate Coordinates Cancel

The user should also specify the linear unit of the destination coordinates. In this exercise, we know our chosen destination coordinate system has the linear unit of feet, hence, the choice above.

Also, checking the 'Re-calculate length and area' checkbox will tell the program to automatically recalculate all linear dimensions and areas of the subcatchments. If the linear unit is specified as 'feet', then the subcatchment area is calculated in acres. If the linear unit is specified as 'meters', then the area is calculated in hectares.

Clicking the 'Set Destination CRS' button will display the destination coordinate system dialog as shown below (please note that this step is optional):



**Select Destination CRS**

Filter

**Recently used coordinate reference systems**

Coordinate Reference System	Authority ID

**Coordinate reference systems of the world** ☐ Hide deprecated CRSs

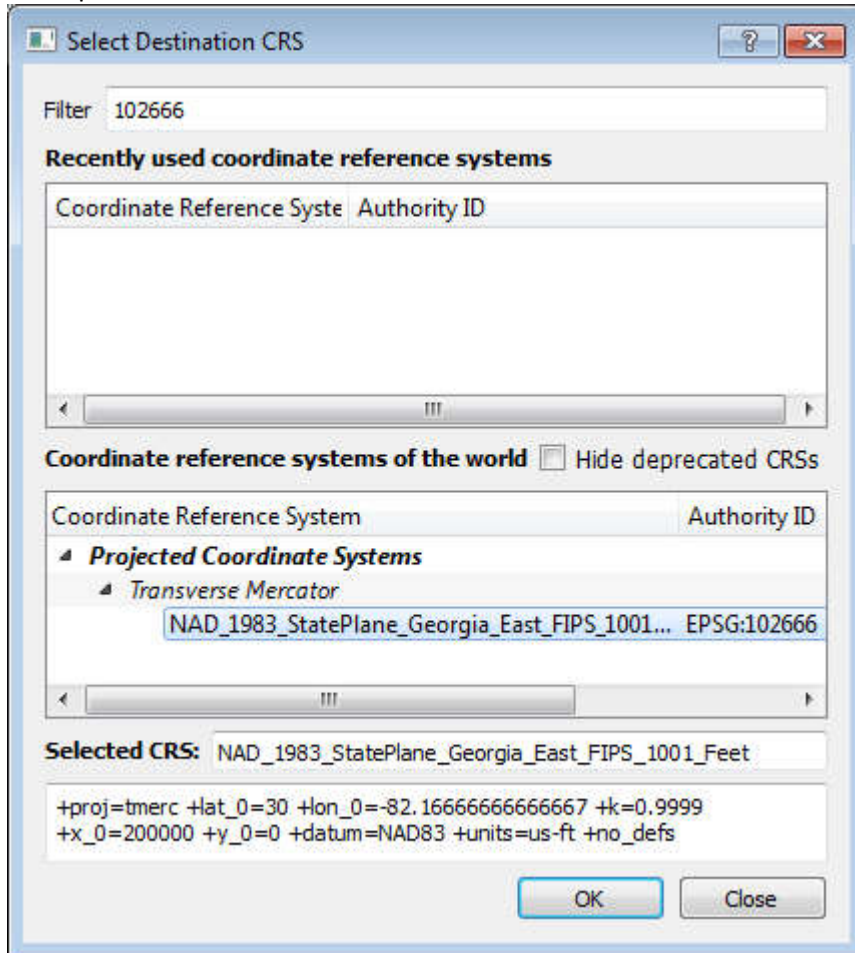
Coordinate Reference System	Authority ID
Geographic Coordin...	
Projected Coordinat...	

**Selected CRS:**

OK Close

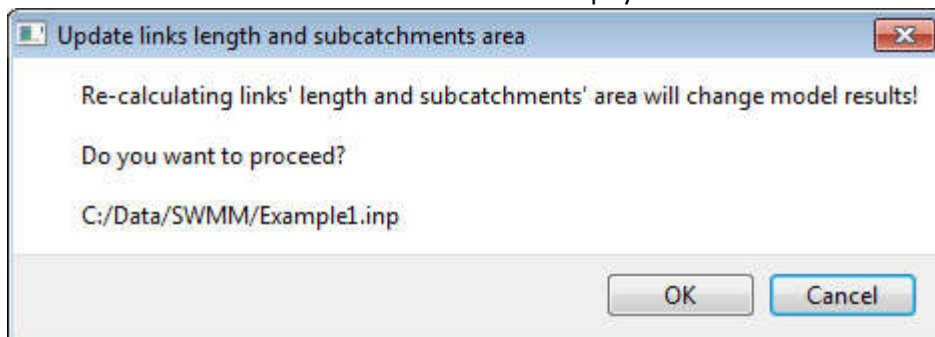
This dialog is for the user to select the exact coordinate system description to be included in the [COORDINATES] section of the input file as comments.

The user can type in the EPSG code in the 'Filter' field to let the dialog search for the matching description as shown below:

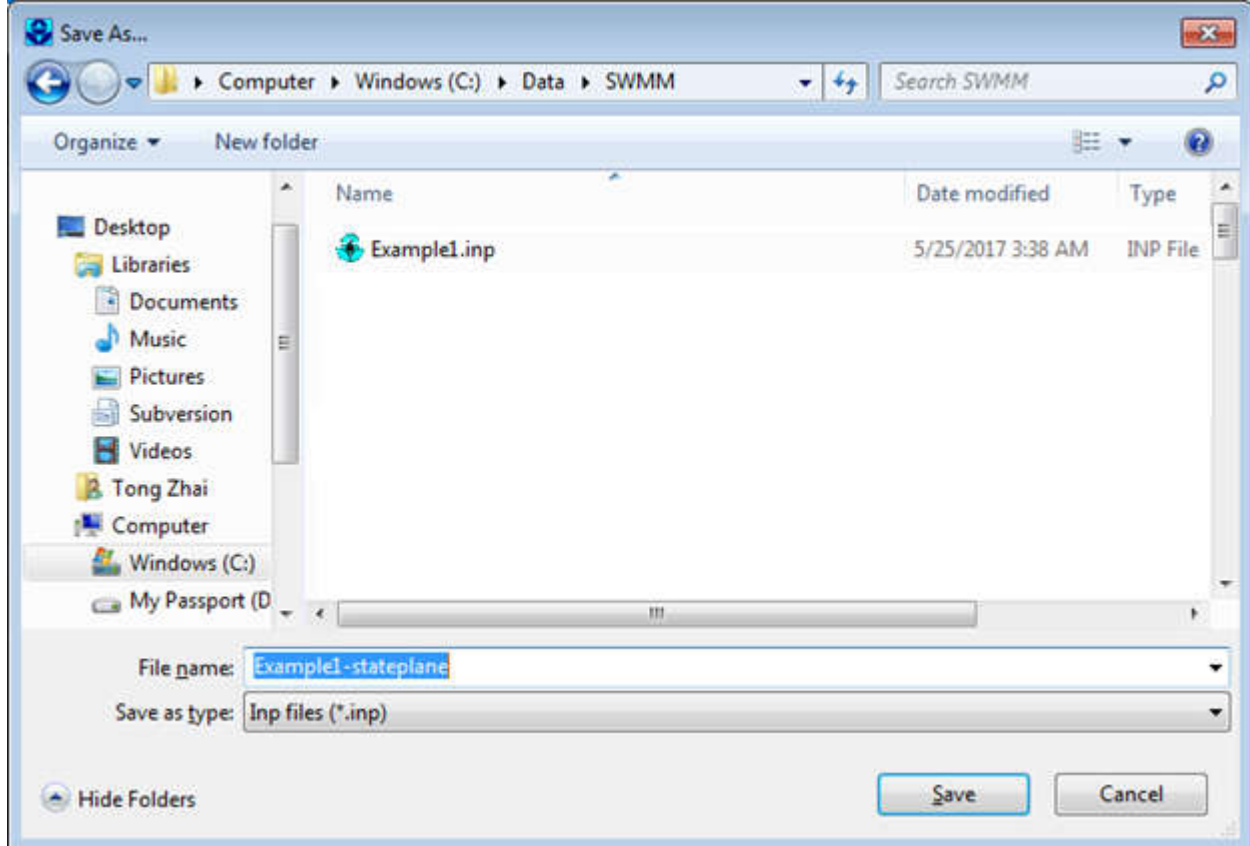


Click the 'OK' button to dismiss the dialog, the program will remember the chosen description and write it into the input file as comment of the [COORDINATES] section.

Now, the user can click the 'Translate Coordinates' button to start the process. A message will display to ask the user to confirm the auto-recalculation of physical dimensions of all features as shown below:

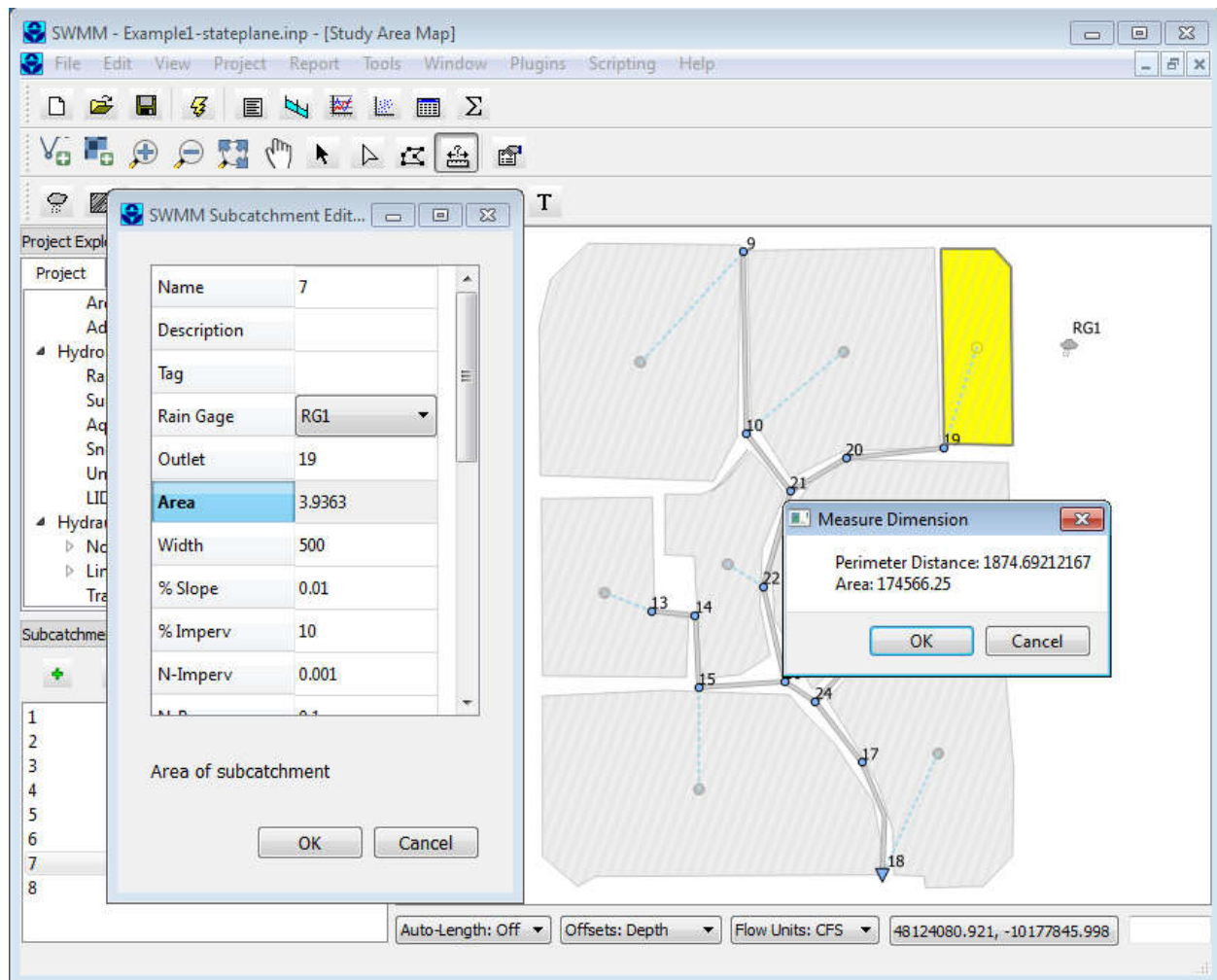


Click 'OK' to confirm and start the translation process. Momentarily, the program will prompt the user to save the newly translated model into a different input file so as to preserve the original input file:



Simply provide a different input file name to save the new model input file and click 'Save' to finish.

Finally, the user is to close the current model from 'File'→'New' menu option. Then, the user can open the newly translated model input file as shown below.



Now, the re-projected model has adopted the State Plane coordinate system and dimensions are to scale. In the example above, using the measure tool, it is shown that the subcatchment on the upper right corner is 174566.25 square feet or around 4 acres in area.