

Coordinate Tools

The NRCS-MI Coordinate Tools utility can be used to convert coordinates between Degrees-Minutes-Seconds (DMS), Decimal Degrees (DD), and the current map projection.

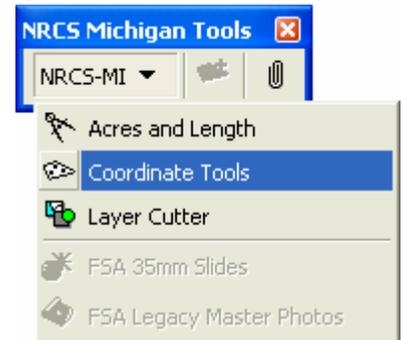
Users may either enter coordinates by hand, or capture coordinates from the current map via a point graphic, point feature, or mouse position.

Coordinates of interest may be saved in a point feature layer or displayed as point graphics.

Starting the Coordinate Tools Utility

On the NRCS Michigan toolbar, choose **Coordinate Tools**.

For information on activating the NRCS-Michigan Toolbar, please refer to the GIS Skill Builder “The NRCS-MI Toolbar”.



Overview

There are several options available while using Coordinate Tools. Some of the options will be “grayed out” until all of the necessary selections have been made.

When first started, the Coordinate Tools window will appear similar to this...

The screenshot shows the 'NRCS-MI Coordinate Tools' dialog box. It is divided into several sections:

- Enter Coordinates:**
 - DMS (Degrees-Minutes-Seconds):** Includes input fields for Latitude and Longitude, each with degrees, minutes, seconds, and hemisphere (N/S, E/W) indicators.
 - DD (Decimal Degrees):** Includes input fields for Latitude and Longitude with degree and hemisphere indicators.
 - Projected Coordinates:** Includes input fields for Easting and Northing.
- Get From Map:**
 - Radio buttons for 'Mouse', 'Graphic', and 'Feature'.
 - A 'Save' checkbox.
- Buttons:** 'Add Point', 'Clear', and 'Quit'.
- Save Points:**
 - 'Add to Layer:' dropdown menu.
 - 'New' button.

Annotations with red arrows point to these sections:

- Left side:
 - 'Enter/display coordinates in DMS' points to the DMS section.
 - 'Enter/display coordinates in DD' points to the DD section.
 - 'Enter/display coordinates in current map projection (if any)' points to the Projected Coordinates section.
 - 'Save current point in a shapefile' points to the 'Add to Layer:' dropdown.
- Right side:
 - 'Get coordinates at cursor' points to the 'Mouse' radio button.
 - 'Save “click” location' points to the 'Save' checkbox.
 - 'Get coordinates of a graphic' points to the 'Graphic' radio button.
 - 'Get coordinates of a feature' points to the 'Feature' radio button.
 - 'Add current point as a graphic or feature' points to the 'Add Point' button.
 - 'Clear current point' points to the 'Clear' button.
 - 'Quit Coordinate Tools' points to the 'Quit' button.
 - 'Create a new shapefile' points to the 'New' button.

Entering Coordinates by Hand

You may type in a known set of coordinates in DMS, DD, or projected format to display the same coordinate location in the other two formats.

1. Type in a Coordinate Pair

This example uses DMS coordinates, but you may also choose to enter coordinates in DD or projected formats instead.

To switch between text boxes, click the next box with the mouse or hit the <Tab> key on your keyboard.

Notice that the other two coordinate formats do not display until a full, valid coordinate pair is entered.

The screenshot shows the 'NRCS-MI Coordinate Tools' dialog box. The 'Enter Coordinates' section is active, with 'Degrees-Minutes-Seconds (DMS)' selected. The Latitude field contains '43 ° 0 ' 31.91 " N' and the Longitude field contains '84 ° 27 ' ' W'. The 'Decimal Degrees (DD)' and 'Projected Coordinates' sections are currently blank. The 'Get From Map' section has 'Mouse' selected. The 'Save Points' section has 'Add to Layer:' set to a dropdown menu and a 'New' button.

2. Automatic Coordinate Conversion

Entered coordinates are converted “on-the-fly”. (The coordinates in the other two formats change as you type.)

You may alter the coordinates for any of the formats and the other two will update automatically.

The coordinate text boxes are all “editable”, so you may copy and paste coordinate values to and from other applications.

The screenshot shows the 'NRCS-MI Coordinate Tools' dialog box with the same DMS coordinates as the previous image. However, the 'Decimal Degrees (DD)' section now displays 'Latitude 43.00886389 ° N' and 'Longitude 84.46335278 ° W'. The 'Projected Coordinates' section now displays 'Easting 706,733.01' and 'Northing 4,764,921.75'. The 'Get From Map' and 'Save Points' sections remain the same.

Getting Coordinates from the Map

Coordinates can be captured from the active data frame, either by mouse location, point graphic location, or point feature location.



1. Get from Mouse Location

- Coordinates update as the mouse cursor moves across the map's data view

- Left clicking on the map will deactivate the mouse tool and “freeze” the currently reported coordinate pair to allow manual revision.

- If the **Save** box is checked “on”, left clicking on the map will store the current mouse location in either a graphic (+) on the map, or as a feature in a layer. Please refer to “Save as a Feature” in the “Saving Points” section for more information on saving points as features.

- Checking **Save** also allows the mouse tool to remain active when a left-click occurs, so that multiple point graphics/features may be placed.



2. Get from Point Graphic

- Activates the ArcMap  **Select Elements** tool

- Click a point graphic to select

- Coordinates are reported for any one selected point



3. Get from Point Feature

- Activates the ArcMap  **Select Features** tool

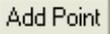
- Click a point feature in a selectable layer

- Coordinates are reported for any one selected point

Saving Points

The currently displayed coordinates can be saved as a graphic or as a feature in a point layer.

1. Save as a Graphic

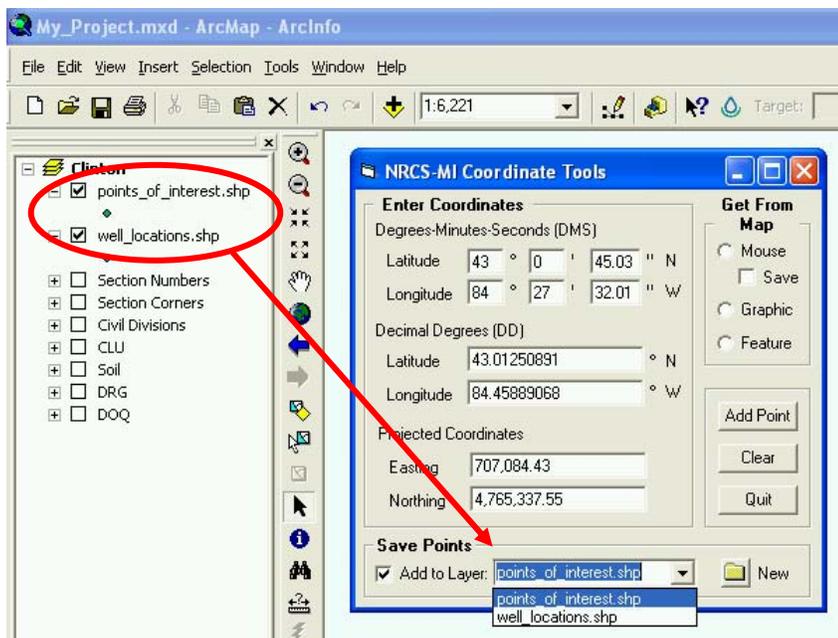
When a valid set of coordinates is displayed, and **Add to Layer** is not checked, clicking the  button will save the current coordinates as a graphic (+) on the map.

Note: The **Add Point** button will appear disabled under certain conditions. For instance, if the **Graphic** option is selected and **Add to Layer** is not checked, **Add Point** is disabled to prevent “stacking” multiple graphic points in one location.

2. Save as a Feature

The currently displayed coordinates may also be saved as a point feature in a point feature layer.

Warning: Coordinate Tools does not ask for verification prior to adding features to a layer, nor does it offer a method for deleting point features once they are added. Users are advised to use discretion when adding point features with Coordinate Tools.



- Check  **Add to Layer**.

- Drill down on the available layers list and select a layer.

(The list of available layers is based on the editable point layers in the Table of Contents.)

- Click the  button to save the current coordinates as a new feature in the selected layer.

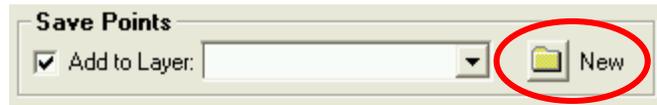
OR



If the **Mouse/Save** options are both active, features are added to the selected layer by left clicking on the data view. In this way, multiple features may be added on after another.

- Uncheck  **Add to Layer** to stop adding point features to the selected layer.

Creating a New Layer



Users may choose to create a new layer in which to store points. A new shapefile can be created with the Coordinate Tools **New Layer** function.

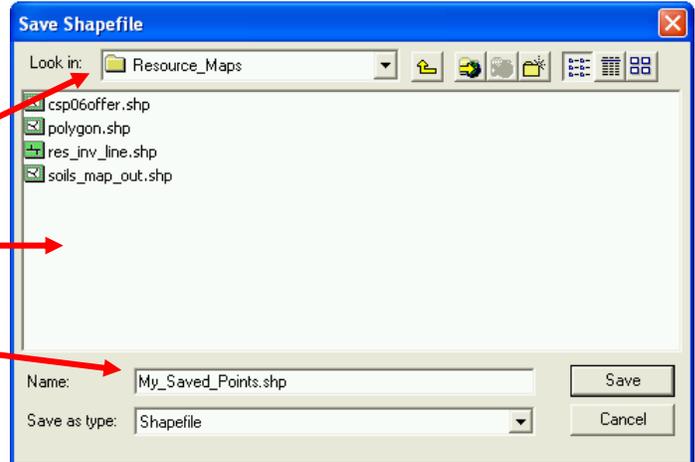
- Check Add to Layer:

- Click the  browse button

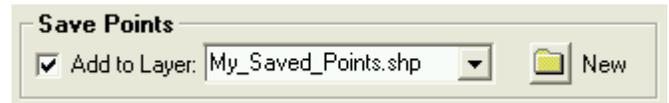
- Navigate to your “save” location 

- Enter a name for the new shapefile. (or choose a shapefile to replace) 

- Click **Save**



A feature layer based on the new shapefile is added in the TOC and the new layer appears in the “available layers” list.



Attributes of Saved Points

1. Coordinate Tools Feature Layers

If a layer was originally created via the **New Layer** function, as explained above, adding new features with Coordinate Tools will populate the following attributes automatically:

Attribute Field	Description
LAT_DMS	Latitude in Degrees-Minutes-Seconds format
LON_DMS	Longitude in Degrees-Minutes-Seconds format
LAT_DD	Latitude in Decimal Degrees format
LON_DD	Longitude in Decimal Degrees format
PROJ_X	Easting of projected coordinates
PROJ_Y	Northing of projected coordinates
PROJ_NAME	Name of map projection
NRCSMI_CT	Coordinate Tools flag

2. Other Feature Layers

If the target layer was NOT created with Coordinate Tools, the attributes of the added features will be left blank. The user must manually populate the attributes of the new features; for example, with ArcMap’s Edit functions or the Customer Service Toolkit Attribute Tool.