DOT GIS ArcMap Tools User Manual

A. The DOT GIS ArcMap Tools

After you install the DOT GIS ArcMap Tools I onto your computer, a toolbar, named "DOT Tools," will appear whenever you open an ArcMap project (.mxd) or template (.mxt). The toolbar is located to the right of the map view area and will contain all available custom tools. You may move them during your ArcMap session, however, they will be located to the right of the map view area every time you open a project or template.
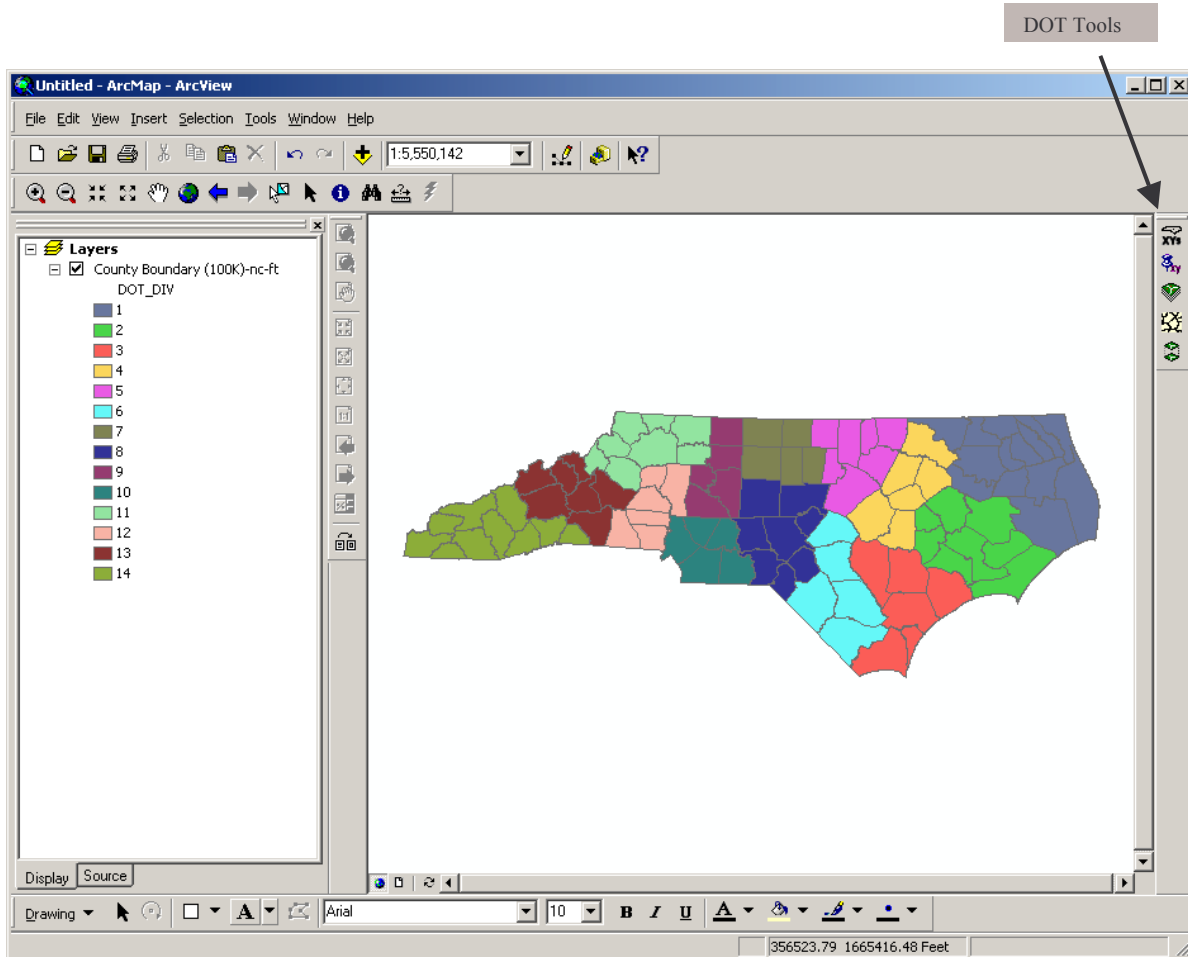
Currently, five tools are available in ArcMap. To activate a tool, just click on it.

Identify Coordinates Tool – Allows you to obtain the coordinates of a map point

Zoom To Coordinate Tool – Allows you to enter a map coordinate and zoom to it

Layer Loader Tool (Add Corporate/Restricted Layers Tool) – Allows you to easily add DOT data

Zoom to County/Division Tool – Allows you to zoom to a specified division or county

Clip and Overlay Analysis Tool - Allows you to use a polygon overlay layer to clip multiple input layers

DOT GIS ArcMap Tools User Manual

B. Identify Coordinates Tool

Use this tool to get the coordinates of a location on the map. To activate this tool click on the "Get Coordinates Tool" button.
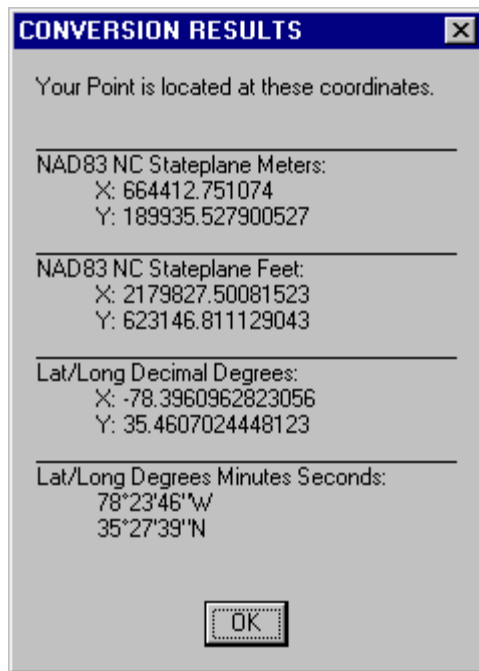
←———— Identify Coordinates Tool
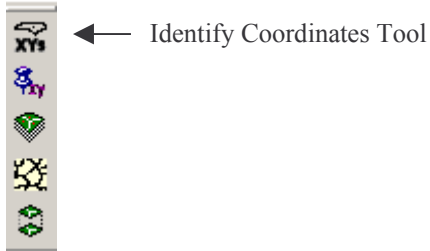
The tool button must be pressed in before it will work.

Once the button is "pressed," anytime you click in the map view a window will pop up (shown below) listing the coordinates at the location you clicked.

CONVERSION RESULTS

Your Point is located at these coordinates.

NAD83 NC Stateplane Meters:
    X: 664412.751074
    Y: 189935.527900527

NAD83 NC Stateplane Feet:
    X: 2179827.50081523
    Y: 623146.811129043

Lat/Long Decimal Degrees:
    X: -78.3960962823056
    Y: 35.4607024448123

Lat/Long Degrees Minutes Seconds:
    78°23'46"W
    35°27'39"N

OK

DOT GIS ArcMap Tools User Manual

C. Zoom To Coordinate Tool

Use this tool to zoom to a specified coordinate in either state plane feet, state plane meters, or decimal degrees. To activate this tool click on the "Zoom To Coordinate Tool" button.
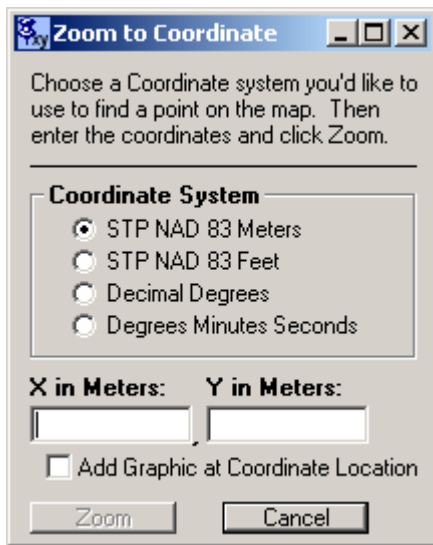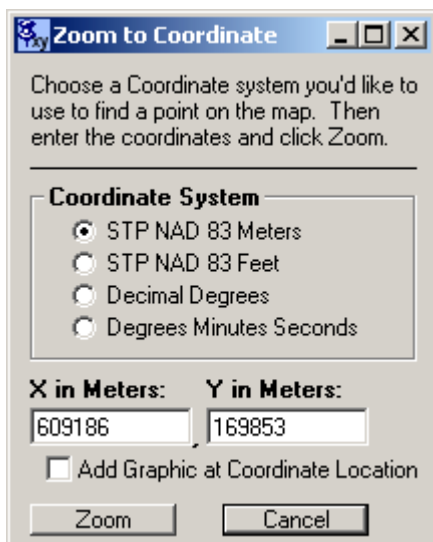

Zoom To Coordinate Tool
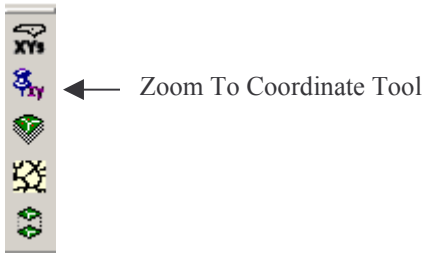
When you click on the button, a form will pop up as follows:

To use the form to zoom to specified coordinates, first select which coordinate system of your coordinates. Then, enter the coordinates as indicated. Place a check mark beside "Add Graphic at Coordinate Location" to display a graphic as indication of the location you intend to zoom to. Once data is entered in the form the "Zoom" button will be available.

Also if you wish to enter coordinates in Degrees/Minutes/Seconds, the display will change so that you will be able to enter each part of the coordinate into separate textboxes clearly labeled as thus:
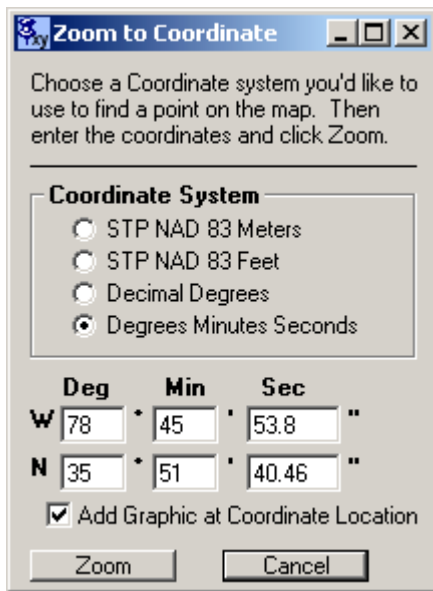
Click on the "Zoom" button to go to the entered coordinates. The map view will be centered on the entered coordinates. The scale of the map will remain unchanged.

DOT GIS ArcMap Tools User Manual

D. Layer Loader Tool

To use the Layer Loader Tool you must have at least one set of the DOT or non-DOT unrestricted or restricted layers installed on your computer. You can download the data from:

http://www.ncdot.org/planning/statewide/gis/DataDist/DataDist.html

You may download data by county, division or statewide.   It is recommended that if you download multiple sets (e.g. several counties) you store them in the same directory on your computer. However, that is not necessary.

To activate the tool, click on the "Layer Loader Tool" button.

←——— Layer Loader Tool (Add Corporate/Restricted Layers Tool)

A window will pop up to assist in loading DOT or non-DOT unrestricted/restricted layers. The window looks like:
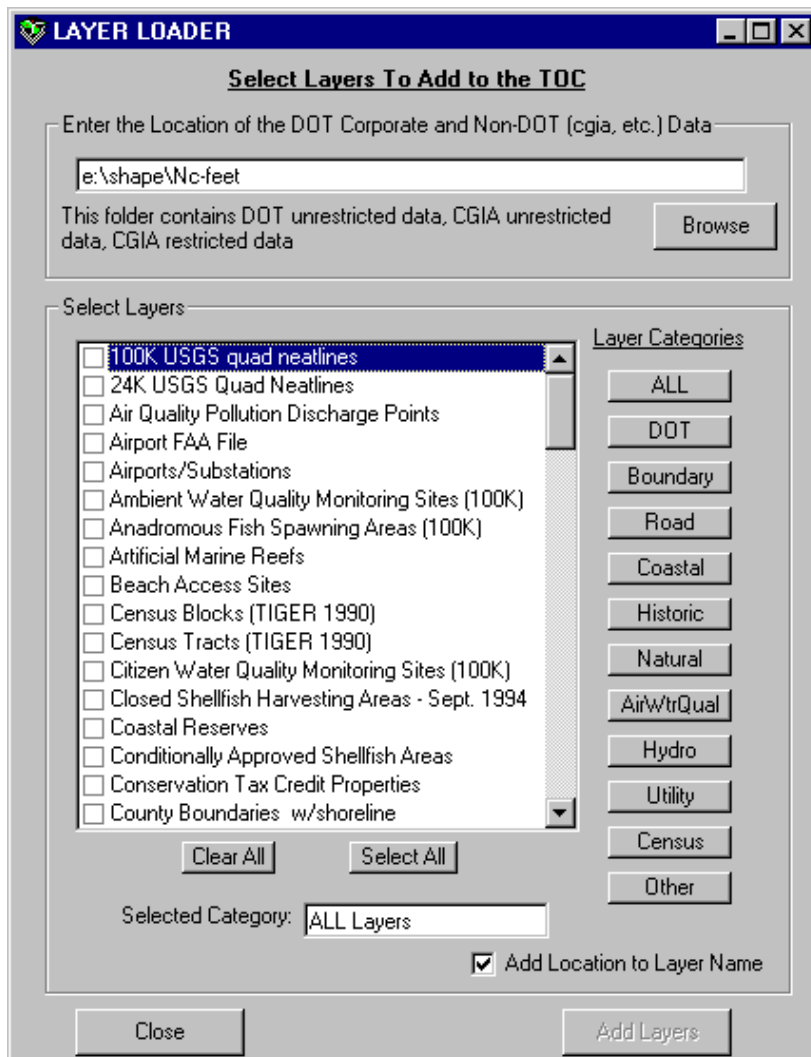
DOT GIS ArcMap Tools User Manual

1. Enter Location of DOT Corporate and Non-DOT Data

Important

Enter (or Browse) to a folder using the data entry field and/or the BROWSE button

When a valid folder is entered, the text below the field will describe which data sets the tool found in the folder. The data sets the tool looks for are DOT unrestricted data, DOT restricted data, CGIA unrestricted data, and CGIA restricted data. Depending on what you have downloaded you should see at least one of the data sets. Also, the layer list in the form will remain empty until a valid folder is entered.

Text describing contents of the directory →
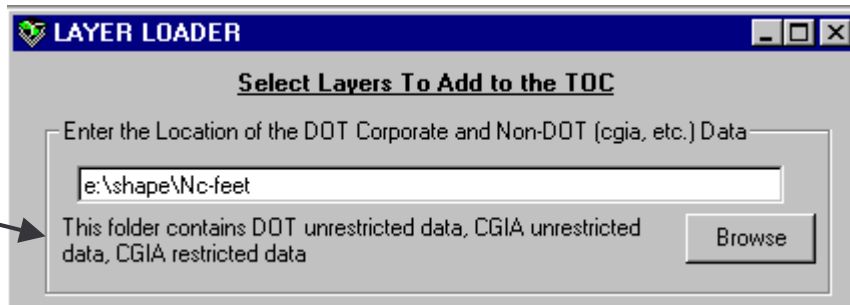
Important

It is important to note that previous downloads of DOT and non-DOT unrestricted/restricted data will only work a partially. Since both DOT and Non-DOT data has changed February 2002, it is highly recommended that you obtain a new download.

The "Browse" button allows you to navigate through the computer directory structures to locate the directory containing the corporate and restricted data set(s). The window that pops up when you click on the Browse button is:
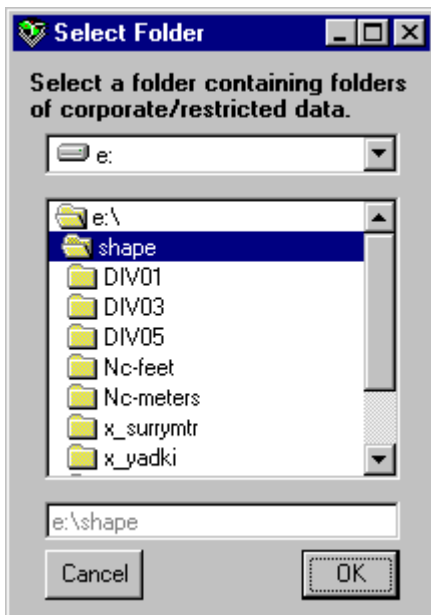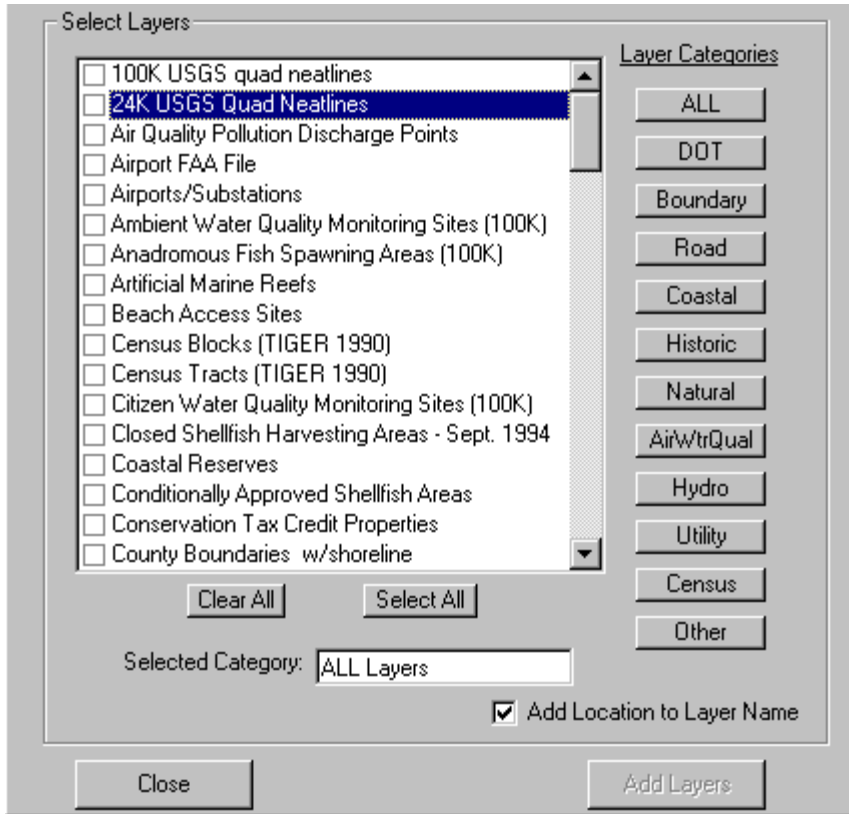

Important

When you've found the directory containing the DOT and non-DOT data set(s) **double click** on it so the directory name is displayed in the field above the "Cancel" and "OK" buttons. This ensures the tool knows which directory it should use. Then press the "OK" button.

2. Select Layers

When the Layer Loader window first appears, all layers included in the DOT and non-DOT data sets installed on your computer are listed. However, it is important to note that just because the layer is listed does not mean it is available in the particular data set you selected. There are several reasons why some layers may not be available. For example, some layers are not included because features of the particular layer do not appear in that portion of the state, such as, "Artificial Marine Reefs" in the mountains.


It is highly recommended that you consult the documentation describing the DOT and non-DOT data layers. The documentation is included with the installation of these tools or can be downloaded from our website at:

http://www.ncdot.org/planning/statewide/gis/DataDist/DataDist.html.

At this point in the application window, you may select layers to add by placing a checkmark next to the layer. Use the "Select All" button to select all layers in the list. Use the "Clear All" to remove the checkmarks next to all layers in the list.

Use the buttons to the right of the list of layers to display only those layers that fall within the category indicated by the button. The last category selected will appear in the "Selected Category" field at the bottom of the form. For example, click on the button labeled "Coastal" and get a list of all layers relating to coastal areas.

DOT GIS ArcMap Tools User Manual
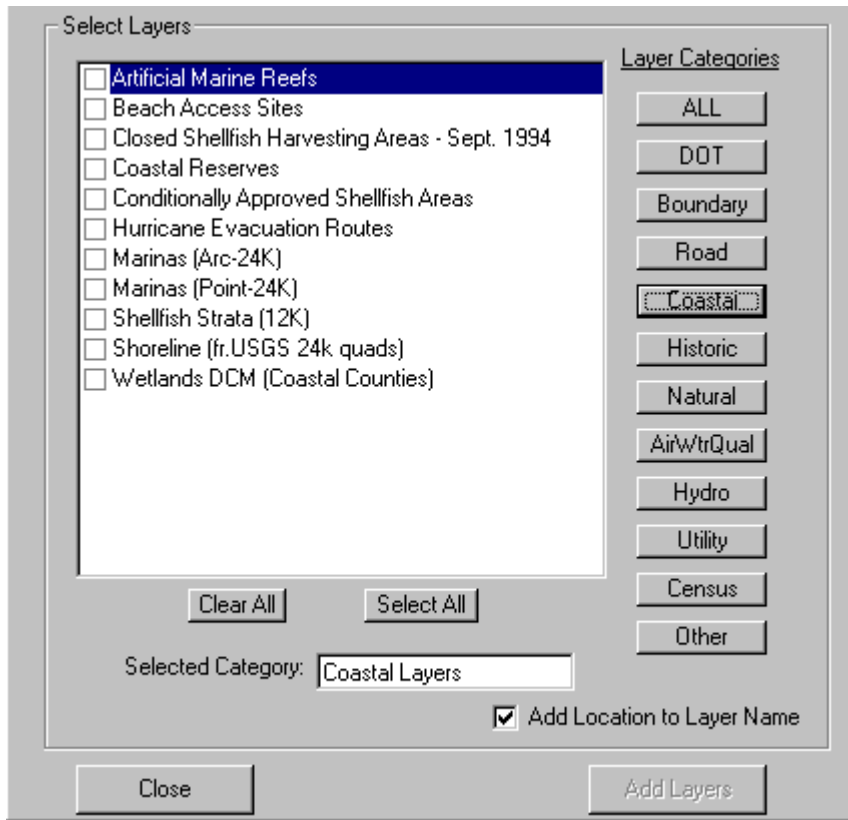
Once you select at least one layer, the "Add Layers" button (shown inactive above) becomes active.

Before you press the "Add Layers" button, decide if you want the tool to append the data set's lowest level directory name to the layer name listed in ArcMap. This is handy if you load data from various downloads. For example, if you load "DOT Roads" for Anson County from e:\shape\Anson, you may want the application to label the layer, "DOT Roads–Anson" to distinguish it from , say, "DOT Roads–Durham."   To automatically add the lowest level directory name to the layer name, place a checkmark in the checkbox labeled "Add Location to Layer Name." If no checkmark is in the checkbox, all layers will be added with their generic name, for example, "DOT Roads."
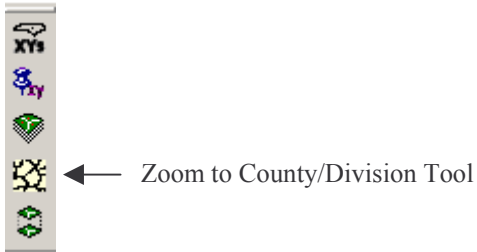
Pressing the "Add layers" button will add all layers with checkmarks into the project's table of contents.

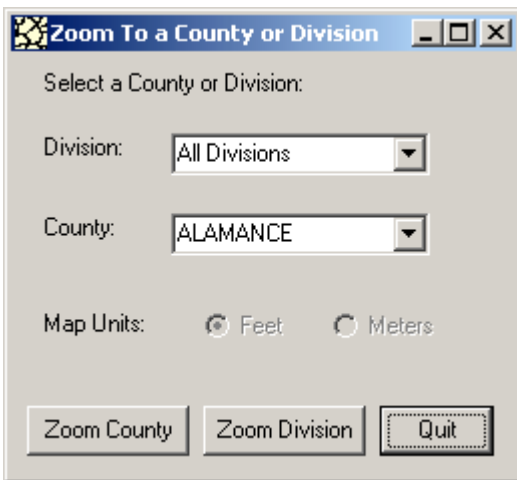The window stays open until you press the "Close" button.
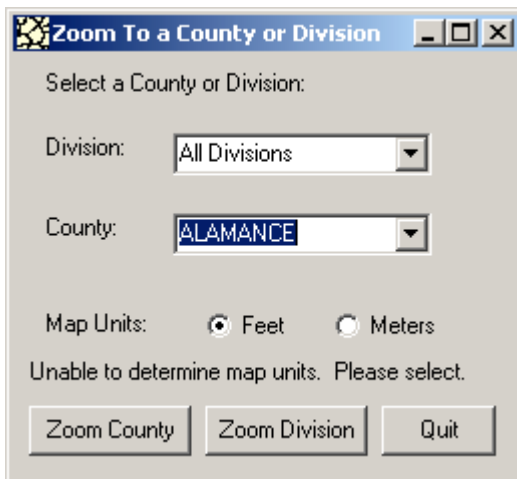
E. Zoom To County/Division Tool

Use this tool to zoom to the extent of a selected county or division. To activate the tool, click on the "Zoom to County/Division" button.

← Zoom to County/Division Tool

The window that pops up looks like:

Or:

The difference is one requires that you specify the map units of the data layers you want to zoom through and the other does not. Whenever possible, the tool will obtain the map units from the currently active data frame.   If map units have been defined you will not be asked to specify the map units and you need not worry about it.   You will see the first window showing feet or meters selected but no way to change it.

However, if the map units have not been defined, you'll see the second window and you must specify which the tool should use.   The default is "feet."

Important

Note, too, that the tool does not work unless the map units of the active data frame are feet or meters. The coordinates used to define the extents of the counties and divisions are North Carolina Stateplane meters or feet. This tool will not zoom to the correct location if another coordinate system is used. Usually, the data you use in ArcMap will be in NC Stateplane meters or feet.

To zoom to a county or division, select a division and/or county from the dropdown boxes and press either the "Zoom County" or "Zoom Division" buttons. If you select a division, only those counties falling within the division are available in the "County:" dropdown box.

The window stays open until you press the "Quit" button.

F. Clip and Overlay Analysis Tool

Use this tool when you want to clip one or more layers using all or selected features from a polygon layer. The result is a new GIS layer (shapefile) and attributes containing the features which intersect the polygon overlay features. Additionally, this tool can provide statistics on the features in the resulting clipped layers. Statistics include the number of clipped point features, total length of clipped line features, and total area of clipped polygon features for each layer clipped.

To activate the tool, click on the "Overlay Analysis Tool" button.
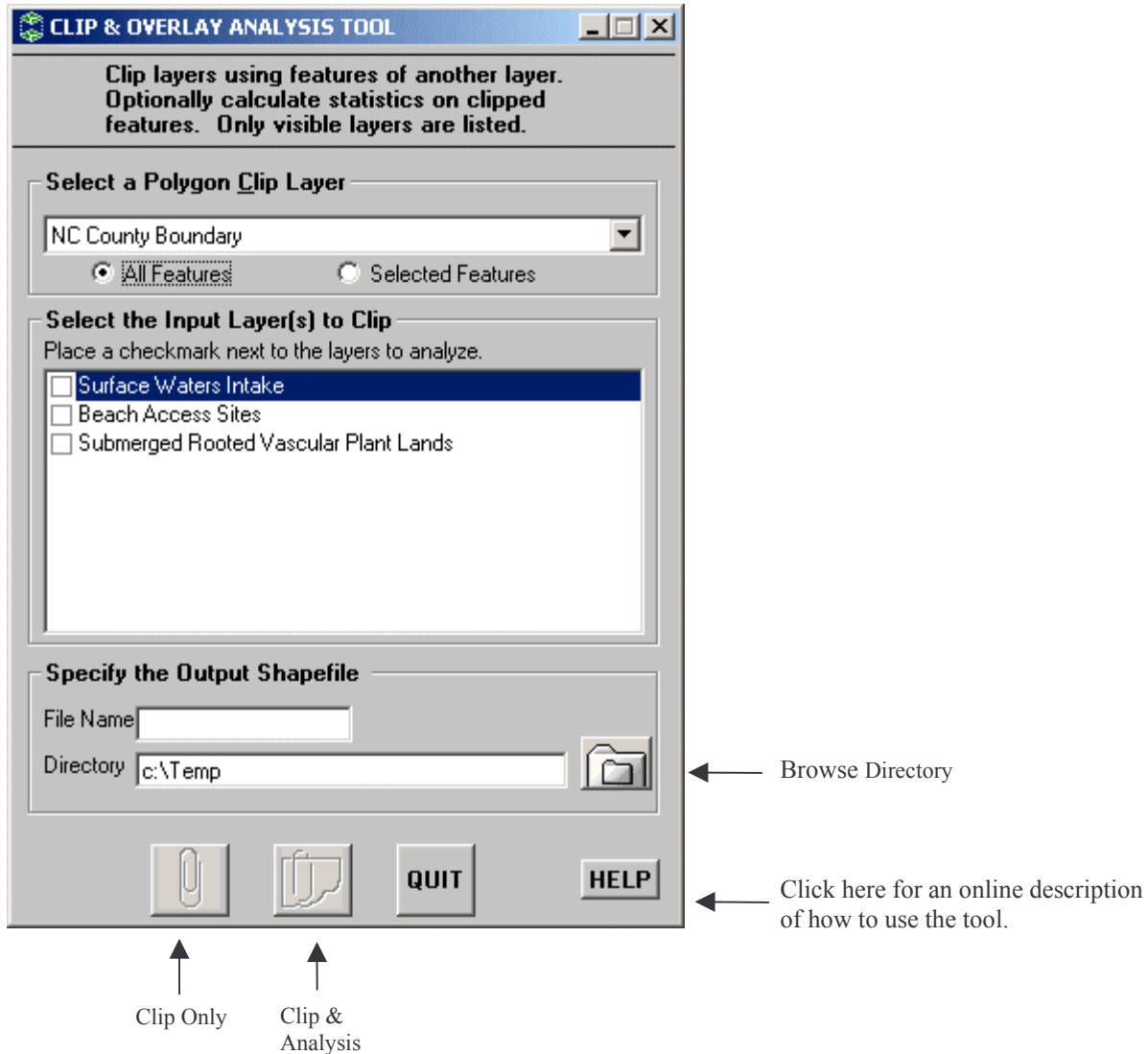

Clip and Overlay Analysis Tool
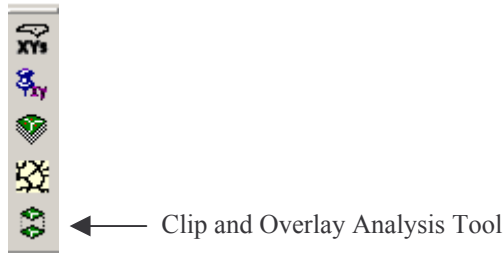
Click the button to start the application. Because this tool will not work on layers without a defined coordinate system, the following warning box will appear if any layers in the project are missing a defined coordinate system.
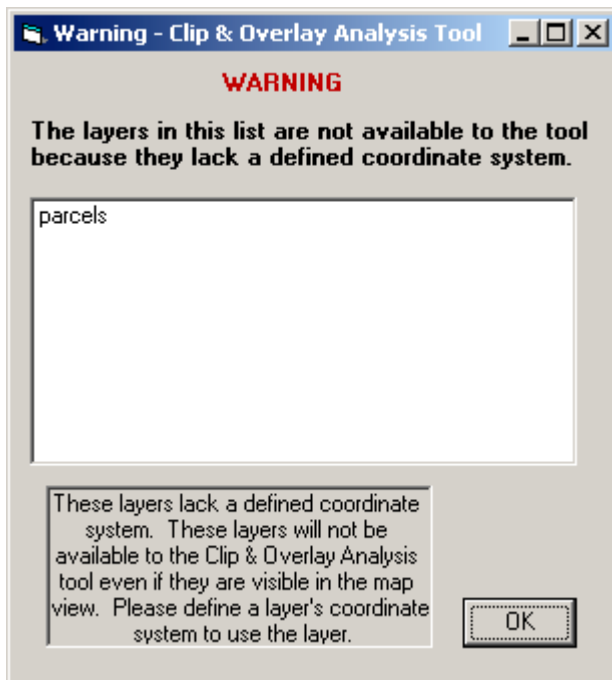
This form is a warning only. Press the "OK" button to proceed. However, the application will stop if none of the selected layers have a defined coordinate system.

DOT GIS ArcMap Tools User Manual

The following form is the main tool form. It appears when there are at least two visible layers with defined coordinate systems and at least one visible layer is a polygon layer.


Browse Directory

Clip Only   Clip & Analysis

Click here for an online description of how to use the tool.

Steps to clip layers and obtain statistics

1. Select a layer in the "Select a Polygon Clip Layer" dropdown box. This is the layer that will be used to clip all the other layers you select. Only polygon layers currently loaded and visible in the ArcMap project are listed. This is your "clip layer."

2. Select whether or not you want to clip the other layers using all the features in the "clip layer" or only selected features in the "clip layer."

3. Select at least one layer to clip in the "Input Layer(s) to Clip" list. The "Input Layer(s) to Clip" list will contain all visible map layers except for the polygon layer you selected in the "Select a Polygon Clip Layer" dropdown box. Be sure there is a checkmark inside the box next to the layer(s) you want to clip.

4. Specify a file name to identify the resulting layers and analysis results files. This name will prefix all of the resulting output files. For example, if you set the filename to "MyProject" and clip a layer named "Beach Access Sites" the resulting shapefile will be called "MyProject_Beach Access Sites_Clip."

5. Specify a valid directory. You may type directly into the field or click on the "Browse" button to use a form to select a valid directory. Make sure the selected directory appears in the field above the "Cancel" and "OK" buttons before pressing the "OK" button.
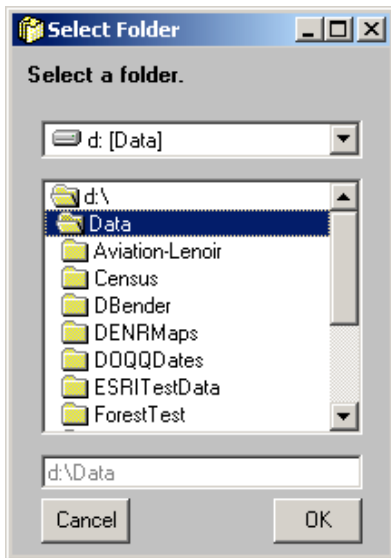
6. Decide if you want to only clip layers or if you want to clip layers and produce a file containing feature statistics from the clipped layers. Click the appropriate button.

Clip Only   Clip &
              Analysis
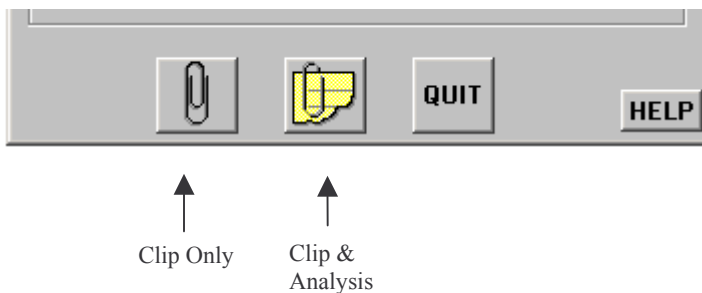
7. When the process is complete you will receive this message:
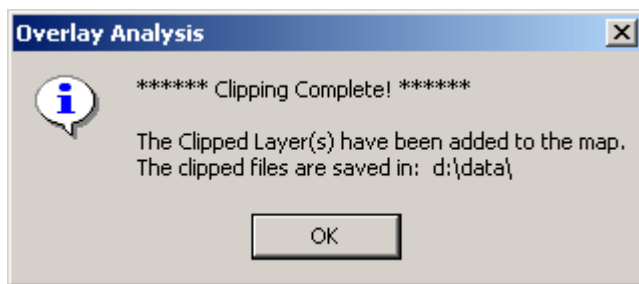
The new clipped shapefiles will be stored in the folder you specified and they will be added to the current map project. The name of the new shapefiles will follow the format: [filename-you-specified]_[Layer-Name]_Clip.

If you opted to create statistics, a textfile containing the statistics will be stored in the same directory and will be named [filename-you-specified]_ClipResults.txt. The statistics consist of the total area, length and/or number of features analyzed.

DOT GIS ArcMap Tools User Manual

Example

You want a layer of beach access sites in Brunswick county. Additionally, you want to know the total number of beach access sites in Brunswick county. Use the tool to quickly clip the layers and produce the statistics. To do so:

1. Add the beach access sites and county boundaries to an ArcMap project.
2. Select only Brunswick county in the county boundary layer.
3. Click the "Clip and Overlay Analysis" tool button
4. Fill out the form so it looks like this:
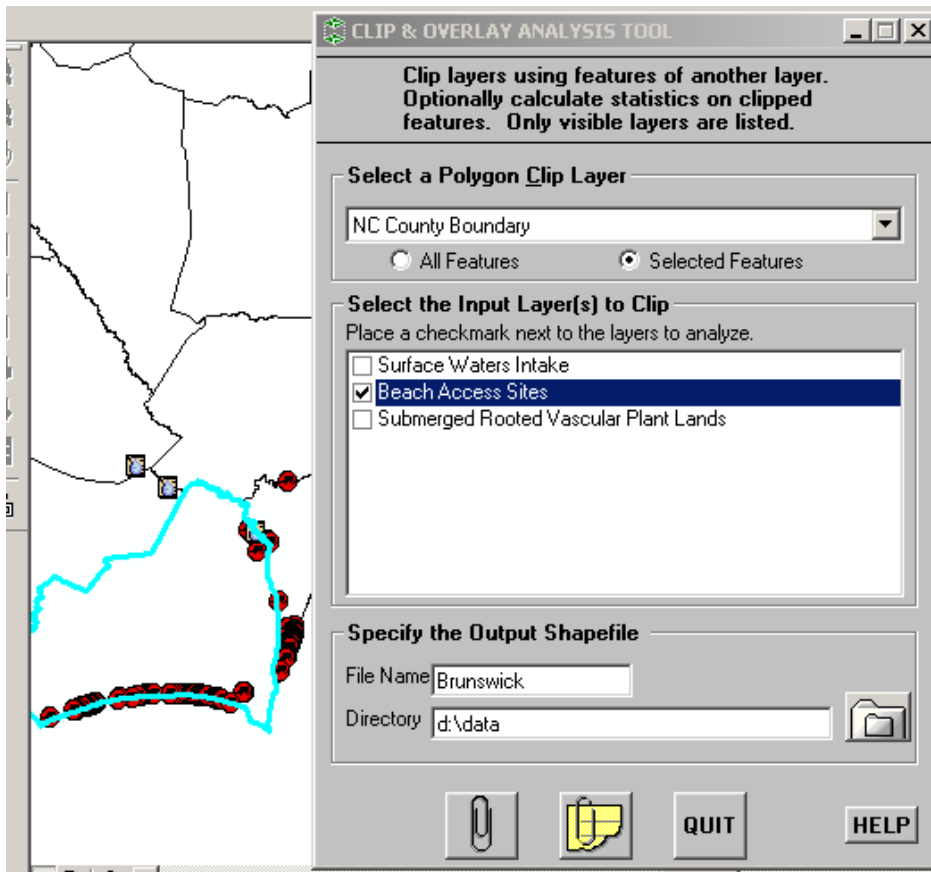
5. Press the "Clip & Analysis" button and wait for the message that the clip process completed.

6. Look in the d:\data directory for the results.

   The new files would be called:

   - Brunswick_Beach Access Sites_Clip.*
   - Brunswick_ClipResults.txt

Possible Error Messages

1. <u>Layers Missing a Defined Coordinate System</u>

   This tool cannot work if any of the layers you've selected to use in the clipping process are missing a map projection (defined coordinate system). If you have selected layers without a known projection/coordinate system, you will see the following error message. You must define the layer's project/coordinate (using ArcCatalog) before you may use this tool with the layer.
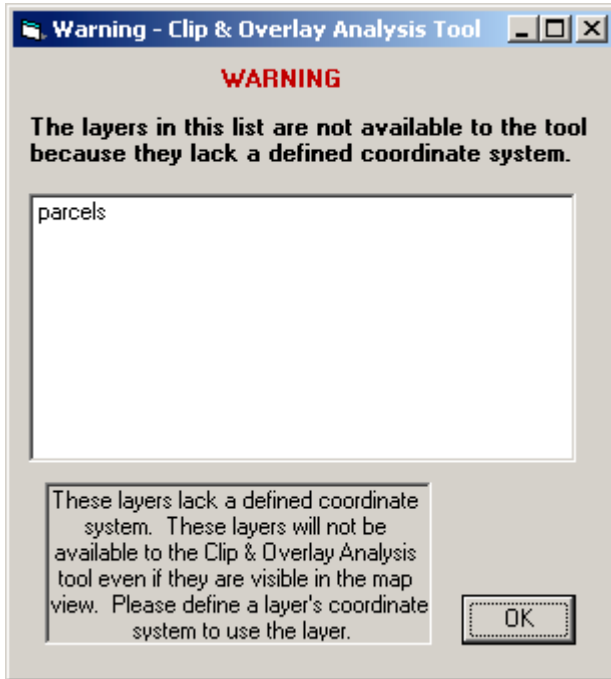
2. <u>ArcMap Error</u>

   Some data layers produce the following ArcMap generated error. We have been unable to determine why this error is generated nor can we identify particular layers where it occurs consistently. When this occurs, we suggest you manually clip the features into a smaller data set (obviously through techniques other than this tool) and use the tool on the smaller dataset.
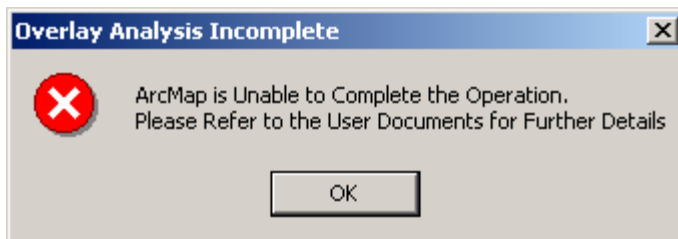
3.   Clipping using ArcMap 8.1

If you are using ArcMap version 8.1, the following message will appear. There is a documented bug in ArcMap version 8.1 that causes the clip function to generate errors on some machines. It does not occur on all machines. If you proceed and you receive an error, you must upgrade to version 8.2 before you can successfully use this tool. Please contact your Computer Consultant (or gishelp@dot.state.nc.us) if you need the upgrade