

# *Introduction of mapwindow*

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# *What is mapwindow?*

*MapWindow is a "Programmable Geographic Information System" that supports manipulation, analysis, and viewing of geospatial data and associated attribute data in several standard GIS data formats. Developed by Dr. Daniel P. Ames and a team of outstanding student programmers at Utah State University.*

# *The history of mapwindow*

- 2000 – TMDL Toolkit
- 2001 – MapWindow 1.0
- 2002 – MapWindow 2.0
- 2003 – MapWindow 3.0
- 2004 – source code to the public domain
- 2005 – MapWindow 4.0 + BASSINS
- 2006 – MapWindow 4.0
- 2007 - MapWindow 4.3
- 2008 – 200k downloads, MW 4.4 + 4.5
- 2009 – 200k downloads, MW 4.6 + 4.7
- 2010 - MapWindow 4.8 RC1 + Orlando
- 2011 – 400k Downloads, MW 4.8RC2 + San Diego
- 2012 – moved to CodePlex: 21k downloads. MW 4.8R (v4.8.6). Velp
- 2013 – MapWindow v4.9??

# *MapWindow Features:*

- *As an open-source tool, MapWindow is free to use and redistribute to the users.*
- *MapWindow is more than just a data viewer. It is an extensible geographic information system*
- *MapWindow includes standard GIS data visualization features as well as DBF attribute table editing, shape file editing, and data converters.*

# *MapWindow Features:*

- *MapWindow also includes a complete ActiveX component which may be used to instantly add GIS capabilities to the user's existing software product.*

# *MapWindow Overview*

*MapWindow was written to satisfy a need for a robust and powerful GIS programming tool that be used for GIS software applications.*

*MapWindow consists of the*

- *main MapWindow application*
- *Core Components*
  - . Mapwindow GIS*
  - .Mapwindow Interfaces*
  - . MapWindow Geo proccessing*
- *plug-ins*



# *MapWindow consists of the main MapWindow application, Core Components, and plug-ins :*

- *Main MapWindow Application*

*This is the central interface for MapWindow. From here, you may view data elements such as Shape files and Grids.*

- ***Core Components***

- ***MapWindow GIS***

*this is the main map component if you want to write a program that displayed shape data.*

- ***MapWindow Interfaces***

*Also called the plugs-in Interface*

- ***MapWindow Geo processing***

*set of tools for common geo processing*



# *Mapwindow Geo processing*

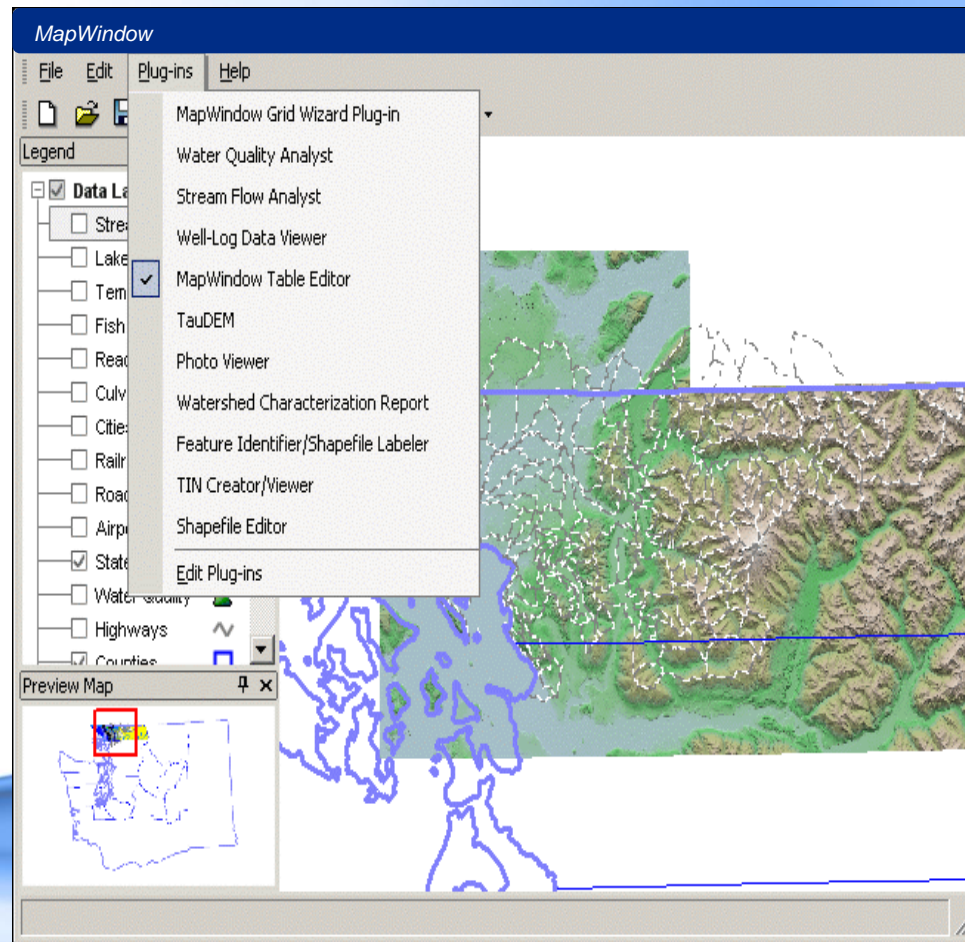
- *MapWindow includes a set of tools for common geo processing tasks. The main suite of tools is found in the GIS 'Toolbox', which is a tab under the legend. A few others exist as independent plug-ins .*
- *Buffer shapes*
- *Vector overlays, including intersection and union*
- *Various clipping operations, including clip using shapefile or polygon mask*
- *Dissolve shapes by attribute*
- *Calculate polygon areas*
- *Various projection functions*
- *Several raster operations, including clip by polygon, merge grids, and reclassify*

# • *Plug-ins*

*These are specialized tools written to interact with the main MapWindow application. Where MapWindow is mainly a data viewing tool, the real power of MapWindow comes in the form of plug-ins.*

- *The **MapWindow** installer includes plug-ins for hyperlinking from geographic features, editing attribute tables, editing shape files, labeling shape files, identifying features and cells, and performing some geo processing.*
- *Other plug-ins are available via the **MapWindow** website and are under development by the **MapWindow** team as well as by third parties for various custom applications.*

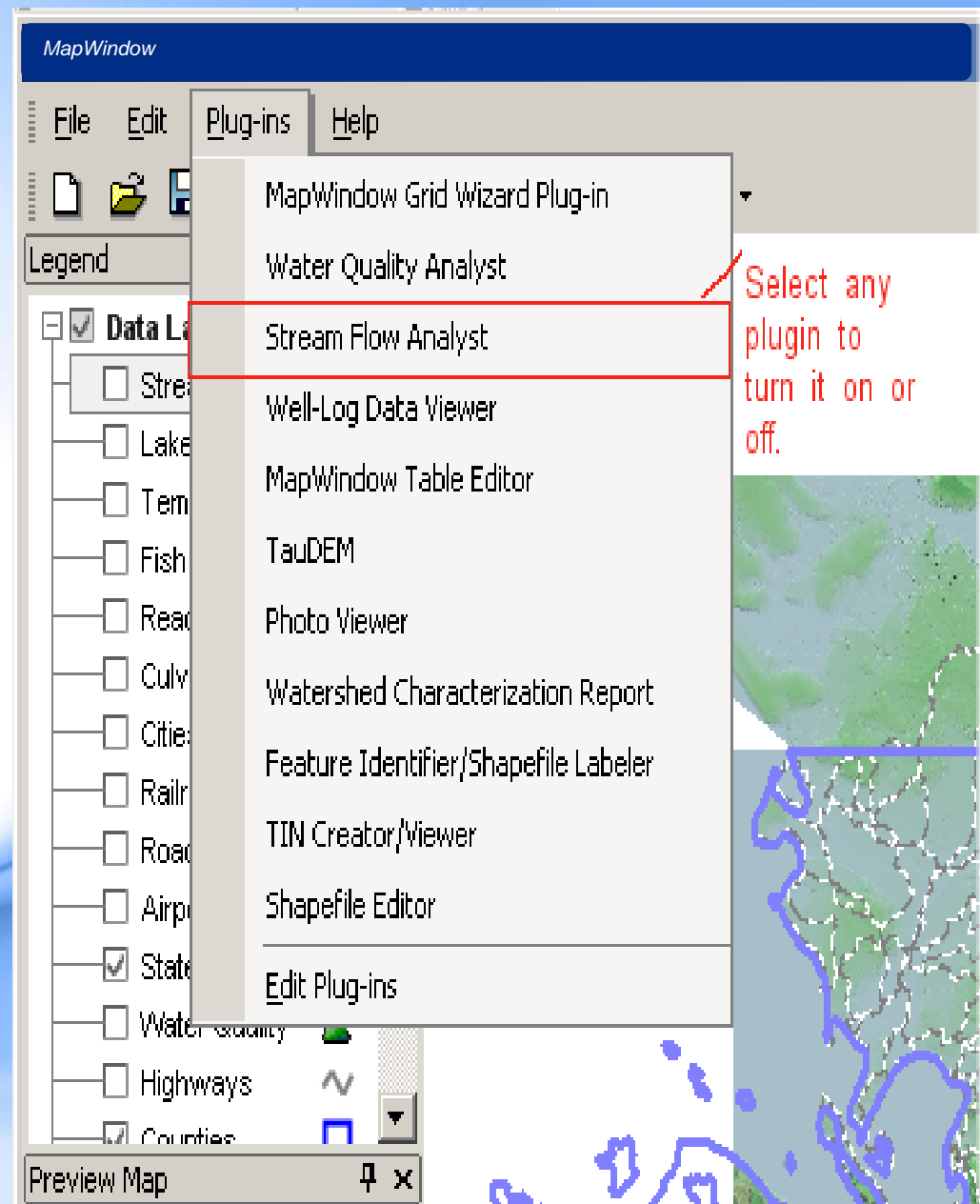
***Four main plug-ins come with the main MapWindow application;  
these are the Table Editor, Shape file Editor, Grid Wizard, and  
Feature Identifier/Labeler.***



***picture of the main MapWindow screen with the Plug-in Menu open***

*To turn a plug-in on or off, first display the Plug-in list by clicking on the menu item labeled Plug-ins.*

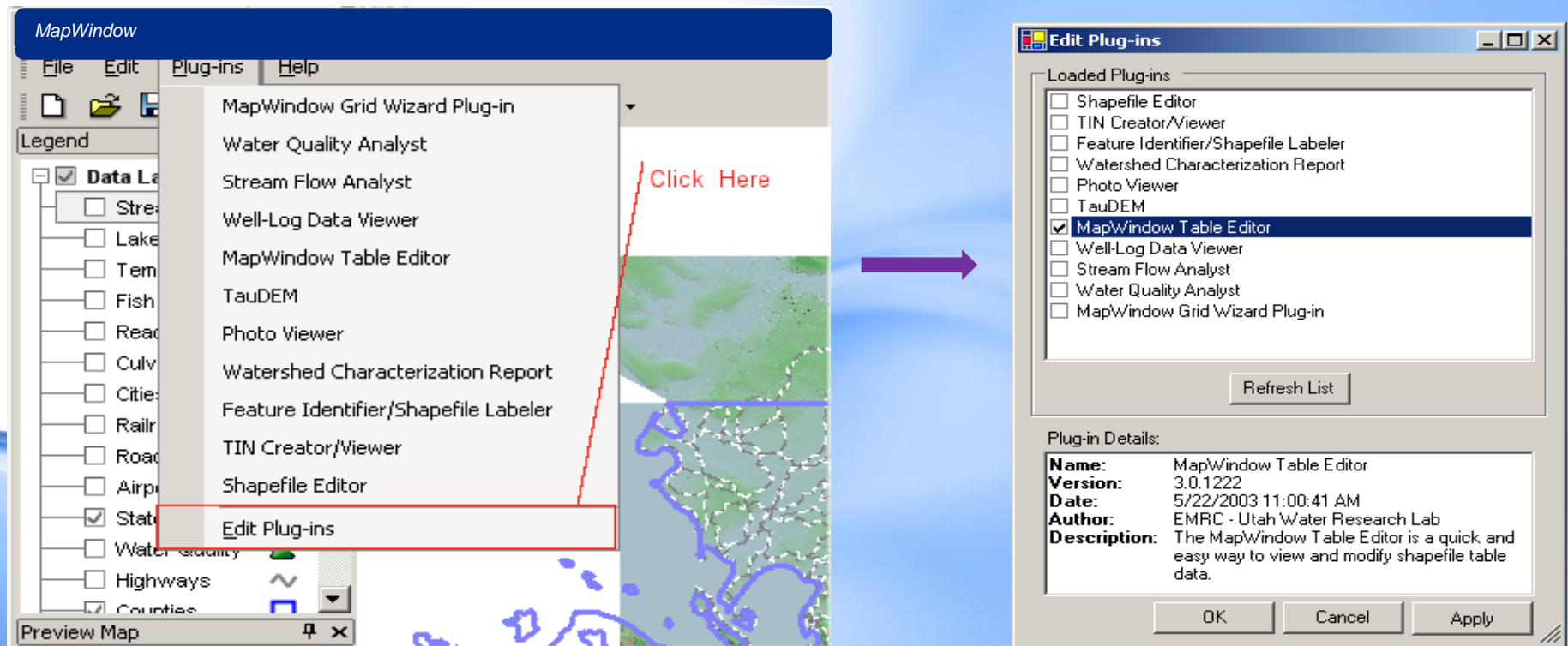
*Click the desired plug-in to turn it on or off. If there is a check next to the plug-in in the list, it means the plug-in is turned on and enabled; if there is no check, it is not currently turned on.*





# *How to View Details About a Plug-in*

*To view the details about a plug-in such as the author name or a description, first select the Plug-ins menu, then select "Edit Plug-ins", as shown below.*



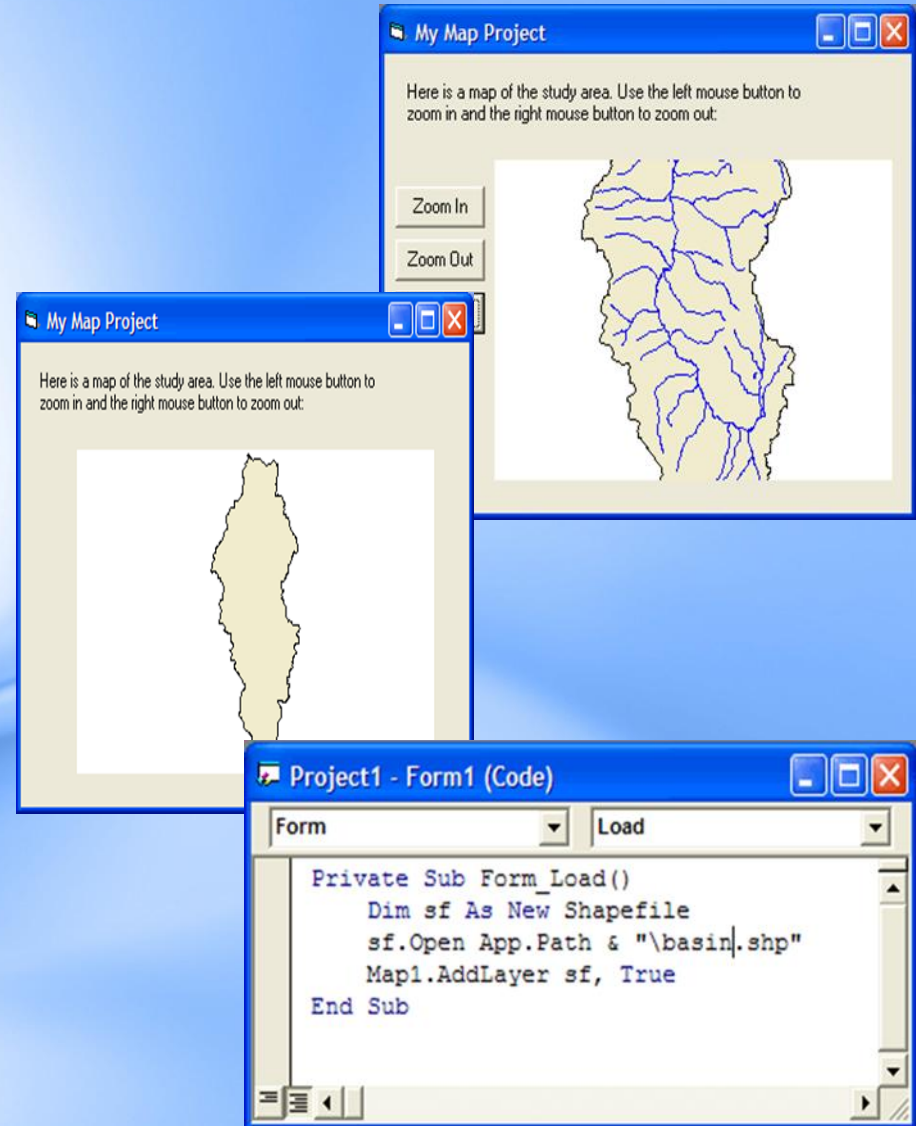
# *Adding Custom Functionality to MapWindow by Writing Plug-Ins*

*MapWindow is based on an extensible software that allows developers or users to produce plug-ins that add functionality to the core product. Several plug-ins are under development at USU that provide graphical user interfaces for shape file and attribute table editing and querying, as well as plug-ins with specific hydrologic and environmental modelling applications such as watershed delineation.*



# Using the MapWindow ActiveX Control

*The core MapWindow component is the ActiveX control. This is an programming object that can be added to a form in Visual Basic, or other languages that support ActiveX, providing a built-in GIS data map.*



# *Additional functions of the core component ActiveX control include:*

- *Open, create, edit, and save geo-referenced image, grid, shapefile, triangulated irregular network (TIN), and dbf (shape attribute) data directly;*
- *View, label, color, highlight, shape file data in the map;*
- *Perform spatial queries on the data;*
- *Search for features with specific attributes;*
- *Dynamically edit the spatial data and immediately see the changes in the map;*
- *Interact with the data through the map;*
- *Build TINs from Grids, Images from Grids, Shape files from TINs and Grids, Grids from Shape files, etc.*
- *Much, much, more...*

# *MapWindow License Information*

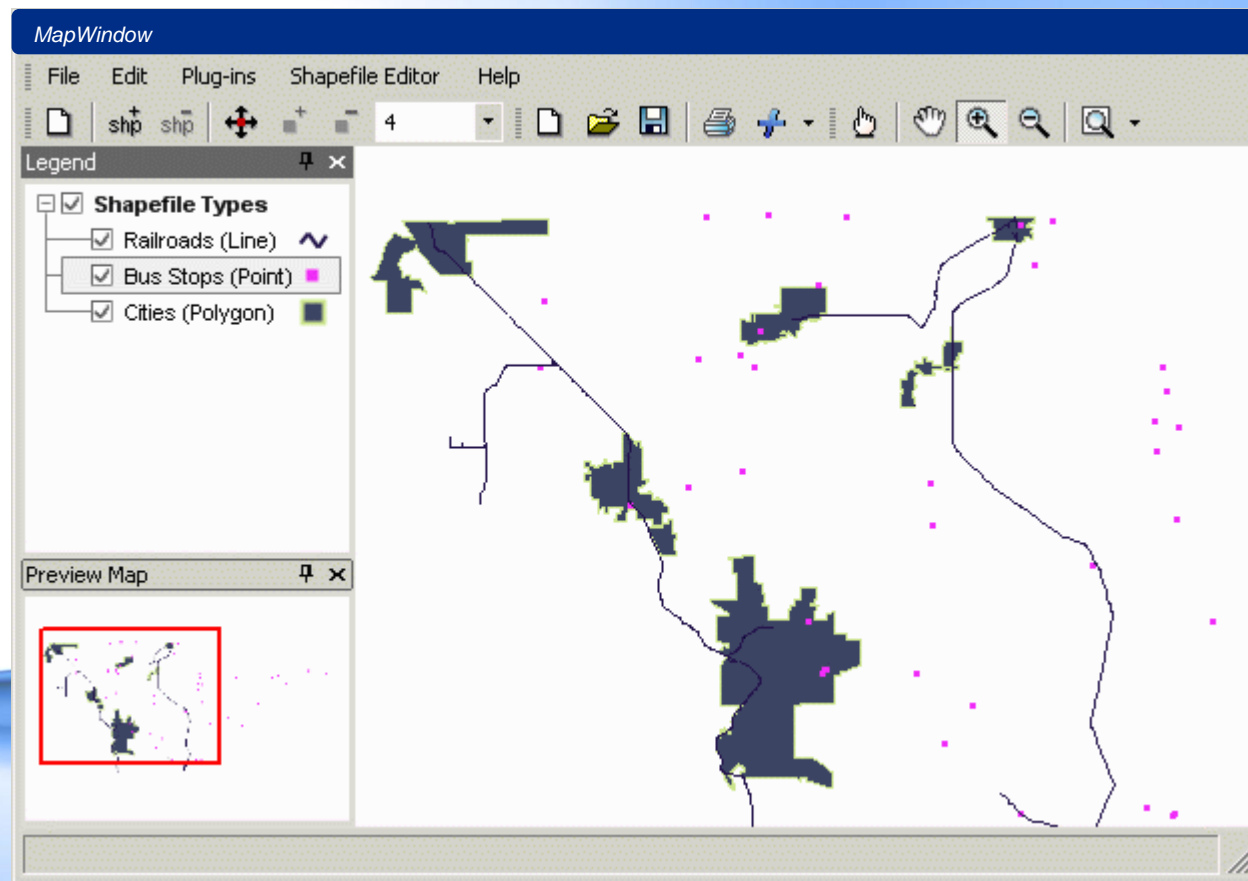
- *The MapWindow Application is free to use as a GIS data visualization and analysis tool. You are free to redistribute MapWindow with your GIS data for others to view it according to the MapWindow application [license agreement](#). Additionally, the MapWindow default plug-ins are free to use and redistribute as needed. Other plug-in use and redistribution licenses are determined by plug-in authors and may differ.*

# *MapWindow Shape file Types*

*MapWindow uses three different types of Shape files:*

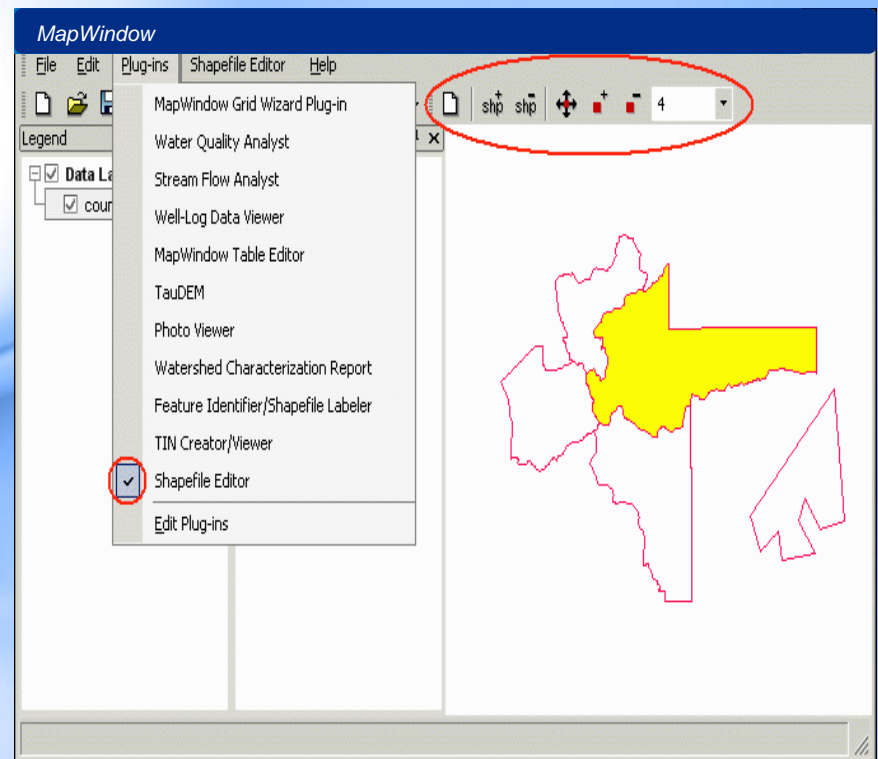
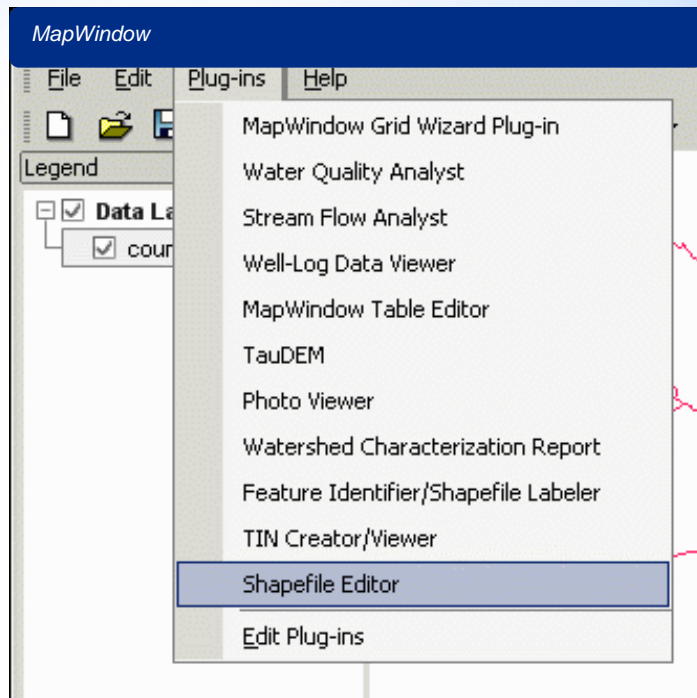
- ***Line Shape file:** Composed of line segments that may be interconnected but don't have to be.*
- ***Point Shape file:** Composed of individual points. Cannot have vertices, as the point itself is the shape.*
- ***Polygon Shape file:** Composed of solid shapes composed of interconnected vertices.*

*In addition to Shapefiles, MapWindow may display grids, images, and other data.*





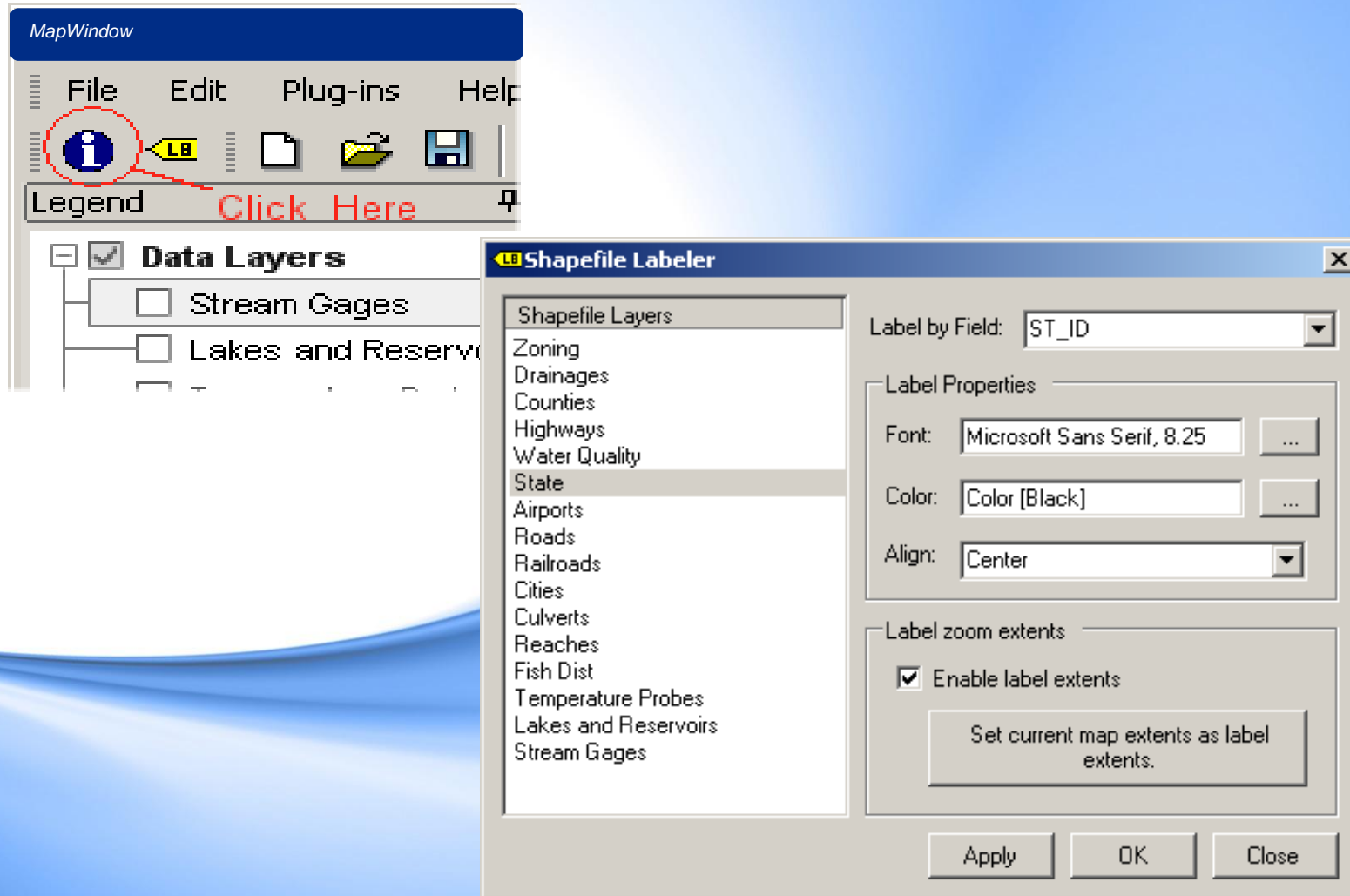
# Shape file editor





# Shape file editor

## How to Label a Shape



# Getting the data

- *From national Atlas*

<http://www.nationalatlas.gov/atlasftp.html>

Raw Data Download by Chapter		
➤ Agriculture	➤ Environment	➤ People
➤ Biology	➤ Geology	➤ Transportation
➤ Boundaries	➤ History	➤ Water
➤ Climate	➤ Map Reference	
▶ <b>Agriculture:</b> Agriculture Census 2002 - Crops, Expenses, Farmland...		
▶ <b>Biology:</b> Bat Ranges, Butterflies, Forests, Invasive Species, Land Cover...		
▶ <b>Boundaries:</b> Congressional Districts, Counties, Federal lands, States...		
▶ <b>Climate:</b> Precipitation, Hazard Events, Hurricanes, Sea Temperature...		
▶ <b>Environment:</b> Air Releases, Hazardous Waste, Toxics Release...		
▶ <b>Geology:</b> Earthquakes, Landslides, Shaded Relief, Volcanoes...		
▶ <b>History:</b> Presidential General Election 2000 County and State Results.		
▶ <b>Map Reference:</b> Cities and Towns, Urban Areas...		
▶ <b>People:</b> Census, Crimes, Energy Consumption, Mortality...		
▶ <b>Transportation:</b> Airports, Parkways and Scenic Rivers, Railroads, Roads...		
▶ <b>Water:</b> Aquifers, Dams, Watersheds, Streams and Waterbodies...		

# *Getting the Software*

- *The MapWindow GIS software is freely available to download from the MapWindow website [www.mapwindow.org](http://www.mapwindow.org).*
- *In addition, there are further Plug Ins to add capability to the base software for download from the site.*

# References

- *Adapted from Introduction to MapWindow Tutorial Version 4.3 – Original Document Authors, Gary Watry, Daniel P. Ames, Ph.D, Christopher Michaelis*
- *Introduction to Custom GIS Application, Development for Windows, Brian Marchionni, Idaho State University, geo Spatial Software Lab.*