MARPLOT 3.2

User's Guide

Developed by

Hazardous Materials Response and Assessment Division, NOAA
and
Chemical Emergency Preparedness and Prevention Office, EPA

in cooperation with

Bureau of the Census, U.S. Department of Commerce
and
U.S. Coast Guard

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1 Welcome to MARPLOT

1.1 About this manual

Welcome to MARPLOT 3.2 for Windows and Macintosh.

This manual contains some information with which all users of MARPLOT should be familiar, and some information that is directed only to the administrator (system manager) of a MARPLOT system and other advanced MARPLOT users.

All users should read section 1.2 to learn the basic MARPLOT concepts. New users will want to read through Chapter 3 to learn how to start MARPLOT and to get an overview of its basic functions. Chapter 4 is a detailed reference to all MARPLOT functions. You may want to skim this chapter now to get a feel for the range of MARPLOT functions, and return to it as you need specific information about individual functions. Once you have worked through Chapter 3 and are familiar with the basics, you can look at the more detailed examples in Chapter 5. Chapter 6 contains a visual guide to MARPLOT, showing the different parts of MARPLOT's various displays and dialog boxes. Some typical pitfalls and their solutions are given in Chapter 7.

If you are the administrator (system manager) of your MARPLOT system, you should read Chapter 2 to learn how to install MARPLOT and update your data from an earlier version of MARPLOT. This chapter also gives important information about adding maps to your system and setting up a multi-user system.

Other sources of MARPLOT information

This manual is one of three important sources of information about MARPLOT. The other sources are the on-line documentation and the MARPLOT Technical Documentation.

You can access the on-line documentation directly on the computer screen as you use MARPLOT. By using the "Help" buttons on many of MARPLOT's dialog boxes, you can get immediate information about the function you are currently performing.

The Technical Documentation gives details about the formats of the various files used by MARPLOT, including the MARPLOT Import/Export (MIE) format. It also contains a list of IAC messages MARPLOT sends and receives.

1.2 About MARPLOT

MARPLOT (Mapping Application for Response, Planning, and Local Operational Tasks) is a general-purpose mapping application program. It allows you to create, view, and modify maps quickly and easily. It also allows you to link objects on your computer maps to data in other programs.

Below is a description of each of the key MARPLOT concepts.

1.2.1 Objects

Objects are the basic map elements that MARPLOT draws and lets you manipulate. There are seven different types of objects: points (symbols), rectangles, circles, polygons, polylines, text labels, and picture objects. You might use a point object to mark the location of a facility or accident site. Polylines are used to represent things like roads and streams. Polygons are used to represent things like parks or water bodies. MARPLOT provides functions for creating, examining, and modifying each type of object. The objects are organized into layers and maps.

1.2.2 Layers

A layer is a category of objects. For instance, a layer called “Roads” might contain a large number of polyline objects representing roads. A layer called “Facilities” might contain point objects representing the locations of facilities. Although a given layer often contains only one type of object, this is not necessarily the case. For instance, a layer called “Water” might contain some polyline objects representing streams and some polygon objects representing larger water bodies. It is useful to organize objects into layers because then you can operate on the objects in a given layer as a group. For instance, you might choose to hide or show all of the “Roads.” Or you might want to select all or some of the “Facilities” to get information about them. It is possible to move an object from one layer to another, but an object can be on only one layer at a time.

1.2.3 Maps

A map is a folder (directory) on your disk that contains several files. These files contain the objects on the map. A map folder (directory) is often located in the same folder (directory) as the MARPLOT application program, but can be located anywhere on any of your disk drives. Often, a map covers the area of a single U.S. county, but maps can be much smaller or much larger than that. It is possible to expand maps by adding new objects to them, or shrink them by removing objects.

You can have any number of maps in use at a given time. If you use MARPLOT to view an area that intersects with more than one map, all maps in the displayed

area are drawn simultaneously on the screen. In fact, it is possible for the geographical areas covered by two or more different maps to overlap. All of the maps that MARPLOT is aware of are always "present," and there is no need to "close" one map before opening another to view it. However, it is possible to put a map "out of use" so that it is not drawn on the screen.

In most cases, you do not need to be concerned with the fact that the image shown on the screen is actually a composite of two or more MARPLOT maps. For convenience, when the distinction between maps is not important, we often refer to the collection of maps shown on the screen simply as "the map."

1.2.4 Relationship between maps and layers

We have said that layers contain objects, but also that maps contain objects. The truth is that each MARPLOT object is on a certain layer *and* on a certain map. For instance, you can have a road object on the "Roads" layer of the "LA County" map; or you can have a river object on the "Water" layer of the "Orange County" map; or again, you can have a park object on the "Miscellaneous" layer of the "Orange County" map.

In most cases, you will think primarily in terms of layers and secondarily in terms of maps. For instance, suppose you are using MARPLOT's search function to find "Park Ave." You know that Park Ave. will be found on the Roads layer, so you would choose to limit the search to that layer. As for the map(s) to be searched, however, you can generally specify simply the "Map(s) in View." Even if you have more than one map, it is most common to search for an object on the map that you are currently looking at.

The main point to remember is that, while it's true that each object is on a certain layer which in turn is part of a certain map, for the most part when using MARPLOT you can think in terms of layers (in terms of the "type" of object) and not worry about the fact that there is more than one map. However, for certain operations, such as when searching for a road when several maps are in view, you can greatly increase efficiency by specifying a particular map whenever possible.

1.2.5 Views

MARPLOT provides a number of tools for navigating around your maps. You can zoom in and out, shift the view in any direction, or change the view to show a particular object or group of objects.

You can also save the area you are looking at, along with a miniature image of the map window. The saved view can be used in a number of different ways. You can return to it at a later time. You can use it as a reference view to help with future navigation. You can choose a saved view to be the entry view, the view

MARPLOT automatically shows when it starts. Also, if your MARPLOT system is multi-user, you can choose whether a given view that you save is for your use only, or is meant to be shared with other users of the system.

1.2.6 The Search Collection and the selected objects

MARPLOT provides a flexible mechanism for searching for objects (described more fully in section 4.5.1). You can search for objects by name or by their position relative to other objects. You can also limit the search to certain layers and/or certain maps. When a search is performed, the objects matching the criteria you have specified are put into a list called the *Search Collection*. From the Search Collection, you can choose an object and display it on the map, or look for address ranges and intersections of certain types of objects. This Search Collection list is saved until you explicitly change it. This allows you to return to the list, to show another object, for instance. You can also save a Search Collection to the disk for use at a later time.

In addition to those in the Search Collection, another important set of objects is those that are currently selected. Every time you click on an object on the screen, MARPLOT selects that object by drawing small red squares around it and displays its name and other information about it in the bottom of the window. It is possible to select more than one object at a time. The functions in the Objects menu apply to the selected object or objects. For instance, when you choose an item from the Color submenu, you change the color of all of the selected objects.

You can copy the objects that are currently selected into the Search Collection. Going the other way, you can select all of the objects in the Search Collection. Between the Search Collection and the selected objects you have a number of mechanisms for dealing with groups of objects.

1.2.7 Linking objects to data in other programs

MARPLOT contains limited information about each object: the color and other graphical attributes, the name, the address ranges of most roads, and a few other pieces of information. Most users are interested in associating MARPLOT objects with data records in other programs, usually databases. The basic procedure is to establish a link between an object in MARPLOT and a record in the database, either through a manual procedure, or by an automated procedure. Once links have been established, you can select objects in MARPLOT and choose to go to the associated records in the database. Going the other way, you can select records in the database and choose to view the associated objects on the map.

The specific mechanism for establishing links depends on the particular database application you are using with MARPLOT, and the nature of the associated map data. There are also some differences in this area between the Windows and Macintosh versions of MARPLOT. However in most cases creating and using

links involves using the Sharing menu in MARPLOT and/or the database application. Further information about links and the Sharing menu can be found in section 4.7 and in the documentation for your database application.

1.2.8 Object identification

For the most part, you will identify objects on the map by their name, their layer and their map. For instance, you may find "Fairfax Ave" on the "Roads" layer of the "LA County" map. Internally, MARPLOT has a slightly different mechanism for keeping track of objects: it uses the layer and map name, but, instead of using the object name, MARPLOT assigns to each object a unique identification number. For the most part, you need not be aware of this identification number. However, it does come into play when importing and exporting objects (see sections 4.2.2 and 4.2.3) and when linking objects to databases (see section 1.2.7).

When MARPLOT imports an object, and already contains an object with the given identification number, layer, and map, it (usually) replaces the existing object with the newly imported one, the idea being that the new one is an "update" of the old one.

When a link is established between a MARPLOT object and a record in a database program, the database program keeps track of the link by storing the layer name, map name, and identification number of the given object.

1.2.9 Administration and user permission

Your MARPLOT system can be set up in either "single-user" or "multi-user" mode.

In multi-user mode, there is a system administrator who has the ability to give other users access to the system by giving them a password. The administrator also chooses whether each user will access MARPLOT with browse-level or edit-level permission. Users who have browse-level permission can perform most MARPLOT functions, but cannot access certain functions that have the potential to damage or delete important map data. Users who have edit-level permission can access all MARPLOT functions, including those that are potentially dangerous.

In single-user mode, there are no passwords, and anybody who starts MARPLOT is given edit-level permission.

In a multi-user system, each user is given a folder (directory) within the USERS folder, which itself is within the MARPLOT folder. The user's folder contains information about the user, the user's MARPLOT preferences and layer order, any views the user has saved, and a special "user's map" that the user can edit, even if the user does not have edit-level permission.

1.2.10 Some mapping concepts

Scale

Among other obvious differences, computer maps like those in MARPLOT differ from regular maps on paper in that you can zoom in or out; that is, you can view them at different scales. When we talk about the scale of a map, we mean the size of objects on the map relative to the size of those objects in the actual world. For instance, suppose a certain road is one mile long. If the line representing the road on the computer monitor is 1 inch long, we say that the scale is "1 inch = 1 mile." If we zoom out (show more map area on the screen) such that the line on the monitor is now half an inch long, we say that the scale is "0.5 inch = 1 mile" or "1 inch = 2 miles."

When we talk about one scale being larger than another scale, we mean that the first scale is "more zoomed in" than the second. For instance, the scale "1 inch = 1 mile" is larger than the scale "1 inch = 2 miles."

Consider the scale "1 inch = 1 mile." We can express this scale without reference to units such as inches or miles. To do this we note that 1 mile is equal to 5,280 feet and a foot is 12 inches, so there are 5,280 x 12 = 63,360 inches in a mile. We can write our scale as "1 : 63360" meaning that one inch (or one centimeter or one whatever) on the map is equal to 63,360 inches (or 63,360 centimeters or 63,360 whatevers) in the actual world.

This gives us two ways to write scales: the "1 inch = 1 mile" format or the "1 : 63360" format. Another way of indicating scale is to specify how much area is covered by the entire map being viewed. For instance, we can write "7 mi x 6 mi" to indicate that our computer map is displaying 7 miles across by 6 miles up and down. If we happen to know that the computer window is 7 inches wide and 6 inches high, then we know our scale is "1 inch = 1 mile." Unfortunately, we don't usually know the width and height of the window on the screen, especially since you can change the size of the window whenever you want.

MARPLOT allows you to display the scale in any of the three formats: "1 inch = 1 mile," "1 : 63360," or "7 mi x 6 mi." You can use whichever you feel most comfortable with, but remember that the last is not an actual scale unless the exact size of the window is also specified.

When to show? When to label?

Certain types of map data are appropriate to display only at certain scales. For instance, consider the network of roads in a city. When you are viewing the map at "1 inch = 0.1 mile" or even "1 inch = 3 miles," it may be useful to see the roads, although at the latter scale the roads will probably be drawn very close together.

When you change to a scale such as “1 inch = 10 miles,” it doesn’t make sense to draw the city roads, since they will be so close together on the screen that they will appear as a solid black mass.

On the other hand, if you have a map of the outlines of the 50 U.S. states, it is reasonable to view this data at “1 inch = 100 miles” or even at a smaller scale. However, a much larger scale such as “1 inch = 1 mile” would not be useful for viewing this data, since, being so far zoomed in, you would only be able to see a tiny section of state boundary on the screen.

In addition to the question of whether to display certain data at all at certain scales, there is the question of when certain data should be labeled on the screen; that is, when should we attempt to draw the names of the roads or the states? Even at scales such as “1 inch = 1 mile,” when the roads themselves will be distinguishable, we probably do not want to label the roads, since the names will crowd each other on the screen and will be illegible. We’ll generally only want to label roads at scales larger than “1 inch = 0.1 mile.” On the other hand, states could be labeled at much smaller scales.

MARPLOT allows you to specify scale ranges within which each layer should display. You can also specify the scale at which labels for each layer appear. These and other scale options are explained in section 4.5.4.

Latitude and Longitude

In everyday conversation, we usually refer to locations by reference to other known locations. For instance, we say “My house is on the corner of 4th and Main.” MARPLOT allows you to find locations similarly by specifying street intersections or street addresses. However, a more universal method of specifying locations is to use latitude/longitude coordinates. Latitude is a value in the range of 90 degrees south (the South Pole) to 90 degrees north (the North Pole). The equator is at zero degrees latitude. The line of 40 degrees latitude cuts across the USA from Northern California to New Jersey. Longitude is a value in the range of 180 degrees west to 180 degrees east. Zero degrees longitude is the semi-circle that runs from South Pole to the North Pole through Greenwich, England. The 48 contiguous U.S. states are framed roughly between 67 degrees west and 125 degrees west.

Any point on the globe can be specified by giving its latitude (how far north or south) and longitude (how far east or west). For instance, the corner shared by the U.S. states Utah, Colorado, Arizona, and New Mexico is approximately at 37 degrees north, 109 degrees west.

If more precise measurements are needed, we divide each degree (latitude or longitude) into 60 minutes, and each minute into 60 seconds. (One minute

latitude ≈ 2,000 yds; one minute longitude varies from about 2,000 yds at the equator to 0 yds at each Pole.)

MARPLOT can display latitude/longitude values in three different ways.

1) As a degree value followed by a decimal degree fraction. For example, 40.250000° represents 40 and 1/4 degrees, which is the same as 40 degrees and 15 minutes.
2) As a degree-minute-second triplet. For example, 40°25'00'' represents 40 degrees, 25 minutes and zero seconds. Note that is NOT the same value as given in (1). 25 minutes is almost half a degree, not a quarter.
3) As a degree-minute pair, where the minutes have a decimal fraction. For example 40°25.50' represents 40 degrees and 25.50 (25 and a half) minutes.

1.2.11 The TIGER/Line database and LandView

Most MARPLOT users in the United States will work with one or more MARPLOT maps that are based on data from the TIGER/Line™ geographical database, which is maintained by the Bureau of the Census. Each of these maps covers a single U.S. county or territory.

LandView is a database application for DOS/Windows-compatible computers, developed by the U.S. Environmental Protection Agency. It uses map files in the MARPLOT format, with other data from EPA and Census databases. LandView is distributed on 11 compact discs, each of which contains the LandView software, database information, and TIGER-derived maps for several U.S. states. Because the maps are in the MARPLOT format, MARPLOT users can use the maps on the LandView compact dics. See section 2.4.2 for more information about obtaining MARPLOT maps.

Accuracy of the TIGER/Line database

Map features based on data from the TIGER/Line database contain any errors or incompleteness present in the version of the TIGER/Line database from which they were derived. These inaccuracies include things like misspelled street names, missing or incorrect address ranges, missing or added segments of streets and other features, and positional (latitude/longitude) inaccuracies.

The geographical data in the TIGER/Line files is derived from various sources, which themselves have various degrees of positional accuracy. In general, you should not count on TIGER-derived map features to have better accuracy than the established National Map Accuracy standards for 1:100,000-scale maps from the US Geological Survey (approximately +/- 167 feet). You can, however, count on map features being in the correct location relative to one another (e.g., if a stream appears to run along the north side of a road, it really is to the north of the road).

The accuracy of any geographical database depends on several factors. One of these is the mathematical model of the shape of the earth used when determining the latitude/longitude coordinates of features within the database. The coordinates in the current TIGER/Line database are based on the North American Datum of 1983 (NAD83). A "Datum" includes a mathematical model of the earth along with a set of measured or calculated control points. Until 1995 TIGER/Line coordinates were based on the North American Datum of 1927 (NAD27), which was defined in terms of modeling and surveying techniques used in the 1800s. If you have created maps for use with previous versions of MARPLOT, those maps are also based on NAD27. Coordinates in the NAD83 database can differ from those of the NAD27 database by about 600 meters (656 yards) in certain places. Bear this difference in mind, especially if you choose to use maps based on one datum along with coordinates based on a different datum; in such cases, expect that the locations of features may be "off" by up to several hundred meters (yards).

More information about the TIGER/Line database is available on the TIGER/Line compact discs.

For more information on NAD27 and NAD83, see *The North American Datum of 1983, A Collection of Papers Describing the Planning and Implementation of the Readjustment of the North American Horizontal Network.* American Association for Geodetic Surveying, Monograph No. 2. ACSM, Falls Church, VA. 49pp.

Reporting changes to TIGER/Line information

MARPLOT 3.2 allows you to make changes to objects derived from TIGER data, such as adding missing streets or street segments, or fixing address numbers. Section 5.4 gives a detailed example of this type of editing.

The Bureau of the Census is interested to learn about such changes, so that they can be evaluated for inclusion in future versions of the TIGER/Line database.

The best way to report these changes is to send to Census MARPLOT export (MIE) files containing the objects you have modified or added. To do this, select any modified or added objects on the map, and use the Export item from the File menu. Choose to export the selected objects in the MIE format. MARPLOT writes an MIE file that contains a complete text description of each selected object. Because an ID number is included with each object, Census can compare objects in this file to the originals in the TIGER/Line database.

You will most likely make these modifications and additions sporadically instead of all at once. It will be most convenient to export individual objects as you change or add them, instead of trying to go back, weeks or months later, and find all of the objects you have modified. This will result in a number of small MIE

files. Using any text editor, you can simply append the text of these files together to make a single MIE file containing all of your edits. Then you have just one file to send to Census.

You can send your MIE files to the Bureau of the Census by floppy disk, fax, or e-mail.

Floppy disks: Charles Dingman
Geography Division
Bureau of the Census
Washington, DC 20233-7400

Fax: (301) 457-4710

e-mail: cdingman@census.gov or TIGER@census.gov

If you have any questions call the Geography Division at (301) 457-1100.

Thanks for your help.

2 Installing and Managing Your MARPLOT System

2.1 System requirements

MARPLOT uses about 1.5 megabytes (MB) of internal memory (RAM) for itself, but will take advantage of more memory if it is available. The program and associated files take about 1.5MB on disk, not including the map files. The amount of disk space required for maps varies according to the number and size of maps you use. The maps for United States counties take anywhere from about 0.5MB to about 20MB of disk space. A typical county takes from 5 to 10MB.

For Windows...

> MARPLOT requires Windows 3.1 or later. When used with Windows 3.1, it requires the Win32s system extension, which is included with MARPLOT and installed as part of the standard installation procedure.

For Macintosh...

> MARPLOT requires System 7.0 or later.

2.2 Installation

Step-by-step instructions for installing MARPLOT, on either the Windows or the Macintosh platform, can be found in Appendix 1 and 2. Please look there for installation instructions.

2.3 Updating from an older version of MARPLOT

MARPLOT 3.2 is completely compatible with MARPLOT 3.0 or 3.1. To update from MARPLOT 3.0 or 3.1 to MARPLOT 3.2, you can simply copy the MARPLOT 3.2 application file into your existing MARPLOT folder. (It's a good idea to first move your previous version of MARPLOT to a backup location.) The rest of this section is for users updating from a version previous to MARPLOT 3.0.

The overlays and objects that you plotted on your MARPLOT DOS 2.0 or MARPLOT Macintosh 1.0.1 (or 1.0) maps can all be brought into MARPLOT 3.2. This is accomplished with the use of a utility program included with your MARPLOT system.

Step-by-step instructions for using this utility to update your existing objects can be found in Appendix 1 and 2. Please look there for updating instructions.

Note: The database-format (DBF) base maps that you used with a version of MARPLOT previous to version 3.0 cannot be converted for use in MARPLOT 3.2. You need to acquire new TIGER-derived maps for MARPLOT 3.2. See section 2.4.2 for more information.

2.4 Administration (system management)

2.4.1 Keeping backups

It is very important to keep backups of MARPLOT map information, especially for maps that are edited by you or other users of your MARPLOT system. Windows users can make these backups with the File Manager or Windows Explorer, Macintosh users with the Finder. Following is a list of the types of files you will want to back up:

Maps that are edited:

> It is crucial that you make regular backups of those maps on which you regularly add or modify objects. MARPLOT automatically saves all changes to maps as they are made. Mistakes can easily mean lost or corrupted data if you do not have backups.
>
> To make a backup of a map, simply copy the map folder (directory) to a backup disk, and change its name to include the backup date. If at some time you need to restore from a backed-up copy, simply replace the map folder (directory) with one from a backup disk (you will probably want to make an extra backup of the map before restoring it).
>
> Sometimes the map to be backed up will be in the MARPLOT folder (directory), but remember that MARPLOT can use maps situated anywhere on any of your disks. Thus, it is important for you to know where all of your maps are in order to back them up. MARPLOT's Map List dialog box provides this information.
>
> Usually, the maps you'll want to back up are relatively small compared to other maps, such as those derived from TIGER files. However, some users will want to modify TIGER-derived county maps, and in some cases non-TIGER maps can become quite large. If you are making only periodic edits to these large maps, you should back them up in their entirety, as with other maps. However, if the maps are very large, or if you are making frequent edits, the backup procedure can be cumbersome and consume too much disk space. In this case, you may only want to back up certain layer files from a given map folder. As a simple example, suppose you are making changes only to the "Water" layer of a certain TIGER-derived map. Instead of backing up the entire map folder (directory) you can back up only those files that start with "WATER." These files are

WATER.LYR, WATER.SUM, WATER.OBJ, WATER.SM2, and WATER.NNX (the latter two files may not be present). You can copy these WATER files to your backup disk. To restore from a backup, just copy the saved WATER files back into the map folder (directory).

Maps that are not edited:

Many users will not make changes to TIGER-derived county maps. And there may be other maps on your system that are never modified. You should keep at least one backup of these maps, just in case of disk error.

USERS folder (directory):

If your MARPLOT system is "multi-user," there is a USERS folder (directory) inside the MARPLOT folder (directory). The USERS folder contains map files and other data such as saved views and search collections created by each user. In most cases, the total size of this folder will be fairly small, and you can back it up in its entirety. If a given user needs to be restored from a backup, you can copy just that user's folder from the backup into the MARPLOT USERS folder.

Views and search collections:

The folders (directories) in the MARPLOT folder (directory) named VIEWS and SEARCHES contain saved views and search collections. These folders are usually relatively small, and can be backed up by copying the entire folders to a backup disk.

Note: In a multi-user MARPLOT system, the VIEWS and SEARCHES folders in the MARPLOT folder contain views and search collections shared by all users of the system. Personal views and search collections for each user are kept in that user's folder within the USERS folder. These are backed up along with the rest of the USERS folder.

MARPLOT settings files:

The files SETTING2.PLT, USER.PLT, LAYERS.PLT, GROUPS.PLT, and XTRAMAPS.PLT, which are kept in the MARPLOT folder (directory) should be backed up occasionally. They are all small.

Note: In a multi-user MARPLOT system, each user has his or her own copy of SETTING2.PLT, USER.PLT, LAYERS.PLT, and GROUPS.PLT. These are backed up along with the rest of the USERS folder.

MARPLOT application file:

> You should keep your MARPLOT installation disks in case the application file itself becomes lost or damaged on your hard disk.

2.4.2 Obtaining MARPLOT maps

If you have access to TIGER/Line compact discs for your area, you can generate maps for MARPLOT using the TIGER Translator program that is included in your MARPLOT package. Instructions for using the TIGER Translator can be found in Appendix 3 of this manual.

2.4.3 Adding maps to your MARPLOT system

See section 5.1 for step-by-step examples of adding maps.

Adding maps from floppy disks:

> A map is a folder (directory) containing a number of layer files. Most maps will not fit on a single floppy disk in an uncompressed format. Follow the instructions that come with your map disks to copy them or decompress them onto your hard disk. Often, you will copy the new map folder (directory) into your MARPLOT folder (directory), in which case the map is automatically recognized the next time you run MARPLOT. If you want to copy the map to some other location, you will need to use the Find New Map button in MARPLOT's Map List dialog box in order to point out the new map to MARPLOT (see the note below on infrequently used maps).

Adding maps from LandView CDs:

> MARPLOT and LandView (a DOS/Windows database application, discussed in section 1.2.11) use the same map file format. Maps for all United States counties and territories are available on a total of 11 compact discs (each of these compact discs also contains the LandView software). You can use these compact discs with MARPLOT.
>
> When MARPLOT detects a compact disc in your CD drive, it looks in the CDMAPS folder in your MARPLOT folder. In the case of the LandView CDs, it looks for files with names of the form "LV2CDMxx.TXT," where "xx" represents two digits corresponding to the particular LandView CD number you are using (01 – 11). If such a file is found, MARPLOT uses the information in the file to automatically add all of the maps on the CD to your Map List. This allows you to work with any map on the CD as you do with any other map, except you cannot make changes to maps on a CD,

and map operations are significantly slower for CD maps than for maps on a hard disk.

To speed up mapping operations, you can copy ("download") individual maps from a CD to your hard disk. To do this, go to the Map List dialog box and click Find New Map. MARPLOT recognizes the LandView CD and gives you the option of finding a map on the CD. Click CD. Highlight the desired state and county and click Select. You have the option of downloading the map to the MARPLOT folder or to some other folder on one of your hard disks (see the note below on infrequently used maps). Once the map has been downloaded, MARPLOT will use the downloaded copy in preference to the copy of the same map on the CD. (Note: Clicking Use on CD instead of one of the Download buttons has no effect since the map is already in use on the CD.)

If you do not have the appropriate files in your CDMAPS folder, the LandView CDs will not be loaded automatically, but you can still use Find New Map in the Map List dialog box to access these CD maps. After clicking Find New Map, highlight the desired state and county and click Select. You can download the map for fastest operation or, if you do not have sufficient hard disk space, you can use the selected map directly on the CD.

Note: Infrequently used maps

Some users may have one or more maps that they plan to use only infrequently. For example, a county might have a mutual aid agreement with other counties. It would be nice to have maps for these other counties available, but since you use them only rarely, it would also be nice if they didn't appear in MARPLOT until they were needed. For maps that you plan to use infrequently, there is an advantage to keeping them somewhere other than the folder (directory) containing the MARPLOT application: when maps are not in the MARPLOT directory, you can use the Remove button in the Map List to remove them from the list of maps. When they are removed, MARPLOT will not draw these maps, or refer to them in places such as the Search Criteria dialog box. When you want to use a map again after it has been removed, you can use Find New Map in the Map List dialog box.

Thus, we have a procedure for turning infrequently used maps off and on: keep these maps in a directory other than the directory containing the MARPLOT application. Turn them off by removing them from the Map List. Turn them back on by re-finding them in the Map List.

As to the question of where to keep these maps, if you are trying to conserve space on the disk drive on which MARPLOT is located, you might want to put them on an external disk drive, or on a removable disk. However, if you are

going to keep them on the same drive as MARPLOT, you should put them in the XTRAMAPS folder (directory) within the MARPLOT directory (folder). This is what the XTRAMAPS directory is for. (Note that there is also a file in the MARPLOT directory called XTRAMAPS.PLT. This is related to, but different from, the XTRAMAPS directory. You should not try to copy or edit this file. It contains references to all maps in use by MARPLOT that are not in the MARPLOT directory, including the maps in the XTRAMAPS directory.)

2.4.4 Exchanging data with other MARPLOT systems

There are two basic methods of exchanging map data: copying maps and map files, or using MARPLOT's import/export functions.

The simpler method is to copy entire map folders (directories) or individual map files from one system to another. In cooperation with the people with whom you are sharing map information, you may be able to set up your MARPLOT system in order to use this simple copy method. For example, suppose a state with twenty counties wants to keep a state-wide map of chemical facilities. Individual MARPLOT installations in each county are responsible for mapping the facilities for their county, and sending the data to the state. This state might design a system where a different map is used to keep the facilities for each county. Each county would plot its facilities and then send to the state the three map files containing the data: FACILITY.OBJ, FACILITY.SUM, and FACILITY.LYR. When the state receives these three files from a county, it copies them into that county's map folder (directory). From the point of view of the state's MARPLOT system, there is still just a single FACILITY layer; it's just distributed among several maps.

In some cases, it may not be possible to transfer data simply by copying files. For example, consider the situation where the state enters data for the facilities in all counties onto a single FACILITY layer of a single map. The state sends this entire map folder (directory) to each county. The counties are supposed to correct any errors in the facilities in their area, and send only the corrected objects back to the state. In this case, each county cannot send back the entire map, since the state would have no way to combine the local parts from each county. Instead, each county would select those objects it had modified and use Export from MARPLOT's File menu to export the objects into a text file using the MIE format. Each county would send this text file to the state. The state would import each of these text files as it received them. During the import, each updated object sent from a county would replace the old object on the state's map (MARPLOT knows the objects correspond because their MARPLOT ID numbers are the same). In general, this method of updating is slower and more error-prone than simply copying maps or map files, when that option is available.

A step-by-step demonstration of both of these methods is given in section 5.7.

2.4.5 Administrating a multi-user MARPLOT system

If several people will be accessing the same map files with MARPLOT (either because they all use the same computer at different times, or because you are sharing map files among different computers with a network file server), you may want to set up a multi-user system. The advantages of going to a multi-user system are: (a) you can restrict certain users from making potentially destructive map edits, (b) you can assign codes to each user to help track who adds and modifies map objects, and (c) you can give each user separate program preferences and a separate space for storing personal views, search collections, and map objects.

MARPLOT is installed in single-user mode by default. To change to multi-user mode, the person who is going to be the administrator of the system should choose the Administrator item from MARPLOT's File menu. After a warning, you are asked to enter the administrator password, which initially is set to be nimda. After entering this password and clicking OK, the system is converted to a multi-user system and you are presented with the MARPLOT Administrator dialog box.

The MARPLOT Administrator dialog box allows the administrator to add users to the system and set their passwords, permission level (edit or browse), and user codes (four-character codes that are attached to map objects when users add or modify them). The administrator can also modify his or her own password, and should do so as soon as possible. You can read more about the MARPLOT Administrator dialog box in its on-line help topic.

When your MARPLOT system is in multi-user mode, users must log in to MARPLOT with a password each time they start it (an exception is the "guest" user, which is automatically added to the system, and which has browse level permission and no password). Only the administrator has access to the Administrator menu item, which brings up the MARPLOT Administrator dialog box again.

In multi-user mode, users with browse-level permission can only modify objects on their personal user map, which, along with their preferences, is stored in their user folder (directory) within the USERS folder (directory). Other users, including the administrator, also have a personal user's map, but they can add and modify objects on other maps as well, including TIGER-derived county maps. All users must unlock layers before performing any edits.

The administrator automatically has all the other users' maps added to his or her map list. Among other things, this allows the administrator to check objects that browse-level users have created on their maps before moving them to a shared map.

Any maps that the administrator adds to the system using the Find New Map button in the Map List dialog box are automatically added to the map lists of all users of the system.

Any views that are stored in the VIEWS folder (directory) within the MARPLOT folder (directory) are available for use by all users of the system. Users with edit-level permission can choose to save views into this directory to be shared with other users. Any views saved by the administrator are automatically saved into this directory and are therefore shared.

Once your system has been put into multi-user mode, it can be put back into single user mode with the Stop Administration button in the MARPLOT Administrator dialog box.

2.4.6 Using MARPLOT maps on a network

Since MARPLOT maps can consume a good deal of disk space, installations with several computers connected via a local area network may want to share maps using a network file server. In this way, it is possible for two or more users to be working with the same map at the same time; that is, all users are drawing from the same map files, which are stored on the network file server. This situation presents no problems, so long as no user is attempting to make changes to the shared map files while other users are viewing the shared maps. When a user does make such changes, two problems are possible.

First, either the user performing the edits or other users of the shared maps may be temporarily unable to access the map files. The editing user may get an error alert saying that the map files could not be accessed to perform the given edits. Other users may get an error alert saying that the map files are temporarily unavailable for reading/drawing because they are being edited.

Second, even if the editing user is able to make the changes without running into error alerts, the other users of the map may not see the new edits immediately. If it is important for those users to stay “up to date” with the edits as they are made, they can simply quit MARPLOT and restart it. This will cause all new edits to be shown when maps are drawn.

If possible, it is best to wait until you are the only one person using MARPLOT before making edits to shared maps.

2.4.7 Creating new maps

Most MARPLOT users will never need to create a new map. Generally, you will have one or more “base maps,” such as the U.S. county maps derived from TIGER data. Then you may have one or more maps, each of which is associated

with a database program that shares information with MARPLOT. In all of these cases, the map folders (directories) are provided for you; you do not need to create them. If you need to add data to these maps (most commonly, you will be adding to the maps associated with database programs), you can add to the existing layers, or create your own layers on the existing maps.

Some users, however, may want to create new maps. If you are creating a map based on a large amount of geographical information from some other data source, you will want to automate the map creation process using MARPLOT Import/Export (MIE) files (see section 2.4.8). There may be cases, however, when you want to create a new "blank" map, and manually add objects to it in MARPLOT.

Because creating maps in this way is not common, MARPLOT does not provide a special function for it, such as a "New" button in the Map List dialog box. However, there is a trick you can use to create new "blank" maps.

When you insert a picture object (see section 5.5), you are given the option of using the picture as the first object on a new map. The idea is that the picture might represent a new "base map" upon which you want to place other objects. The trick for making a "blank" map is to create any picture in a painting or drawing program, insert the picture, choose the option to create a new map, and then delete the picture object from that map, leaving yourself with a new map with no objects on it. You can then rename the map as you like using the Map List dialog box.

2.4.8 Creating custom MARPLOT maps from other data sources

MARPLOT maps are created in a two-step procedure. First, the source data (which may come from TIGER/Line files, data files from previous MARPLOT versions, database files, or any source that includes latitude/longitude information) is translated into a text file in the MARPLOT Import/Export (MIE) format. Then this text file is converted into some number of MARPLOT 3.2 binary map files (files ending with .LYR, .SUM and .OBJ) using the Import item in MARPLOT's File menu.

The two steps of this procedure can be carried out by hand, or can be automated using MARPLOT's IAC messages.

If you want to write your own translator, you will need the MARPLOT Technical Documentation, which describes the MIE format in detail. The complexity of the programming involved in creating such a translator varies depending on the complexity of the source data.

3 Getting Started with MARPLOT

This section provides a hands-on guide to the most common MARPLOT functions. It uses the sample Prince William County, VA map that was distributed with your MARPLOT system. This guide is meant to be used interactively while you work at the computer with MARPLOT. You will get the most out of it if you perform each step on your MARPLOT system, and try all of the suggested tasks.

Further examples of various MARPLOT functions are given in Chapter 5.

3.1 Starting and exiting MARPLOT

On Windows...

> To start MARPLOT, double-click its icon in the Program Manager or select MARPLOT from the taskbar Start menu. Click OK on the greeting screen. To exit MARPLOT, choose Exit from the File menu in the upper-left corner of the MARPLOT map window.

On Macintosh...

> To start MARPLOT, double-click its icon in the Finder. Click on the greeting screen. To exit MARPLOT, choose Quit from the File menu.

3.2 Guided tour of basic MARPLOT functions

IMPORTANT NOTE:

For CAMEO users...

> This guided tour makes use of objects on the CAMEO Map. The CAMEO Map is a folder (directory) stored in the same place as your CAMEO database or stack files. You must *run MARPLOT and CAMEO simultaneously* on your computer at least one time before going through this tour. To do this, start both programs and enter any necessary passwords. Make sure you see the CAMEO Map objects in MARPLOT. Then quit both programs. After having done this, the CAMEO Map objects will continue to appear in MARPLOT, even when CAMEO is not running.

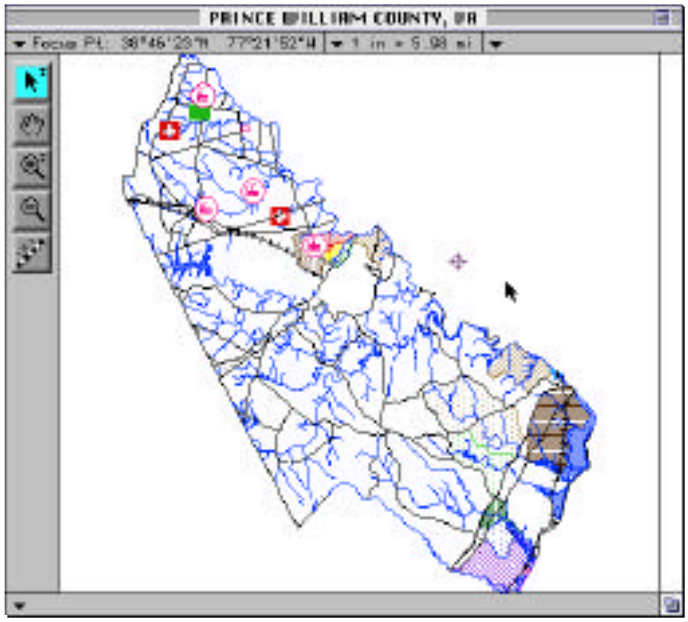
For non-CAMEO users...

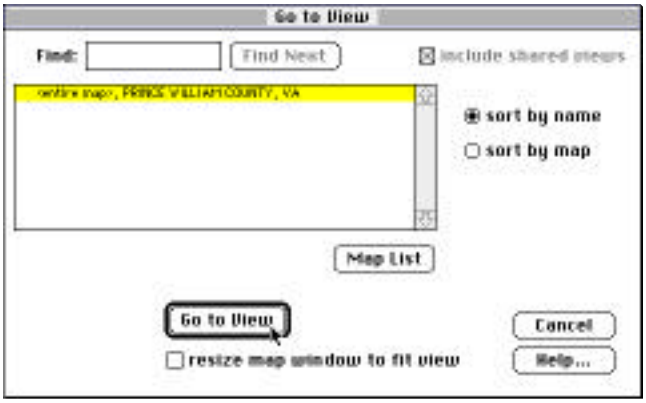
This guided tour makes use of objects on a map called CAMEO Map. Even if you do not have this map, you should be able to follow along with most steps of the tour. If you do have it, *but you are not a CAMEO user*, you should put it into your MARPLOT folder (directory) before going through the tour.

Showing Different Layers

1. Start MARPLOT.

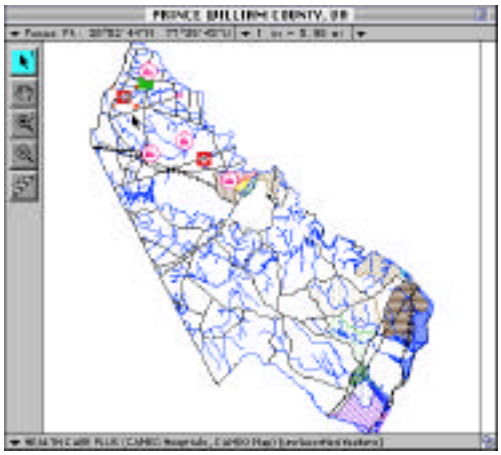
2. After you click on the title screen, MARPLOT opens the map window. The sample map, Prince William County, is shown. (If, for some reason, your MARPLOT does not open to this view, use the Go to View item in the View menu, highlight the <entire map> view for Prince William County, and click Go to View.)





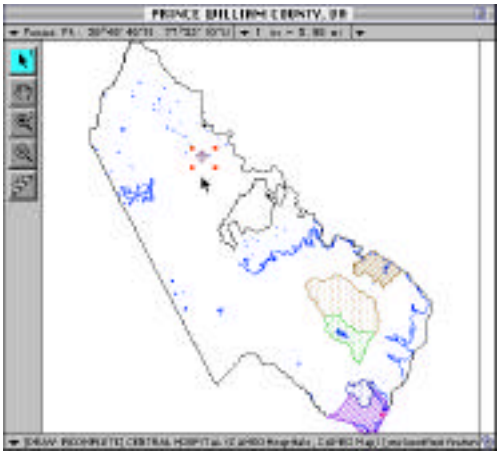
Note: Your map window may not look exactly the same as the one shown in the picture above. The scale value shown at the top of the window will probably be different.

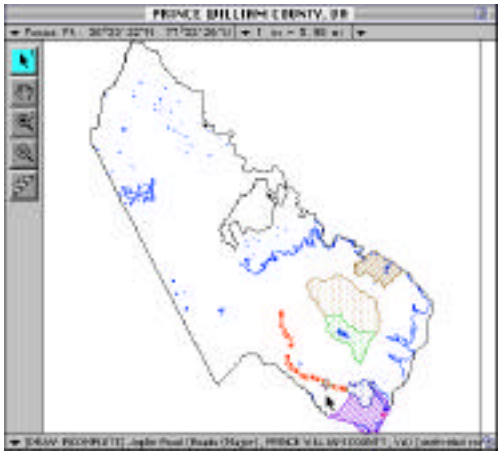
3. A number of different layers are shown, including the Places layer showing the various towns in Prince William County, the water layer, and several CAMEO objects, which are all clustered in the northern part of the county. With the arrow tool, click several times on the map. As you select objects, they become highlighted with red dots, and MARPLOT displays their name at the bottom of the map window. Also, the location of your click is marked with a flashing icon called the Focus Point. The latitude/longitude coordinates of the Focus Point are shown in the upper-left corner of the map window.



4. From the View menu, select the Redraw item. Watch the bottom of the map window as MARPLOT draws. It shows which layer is being drawn. Use the Redraw item a couple more times to get a feel for how long it takes MARPLOT to draw the different layers on your computer.

5. Use Redraw one more time, but this time, try to press the ESC (escape) key as soon as MARPLOT starts drawing the Water layer. Pressing the ESC key causes MARPLOT to stop drawing. It displays the message [DRAW INCOMPLETE] at the bottom of the map window to remind you that all of the layers to be drawn were not drawn. Even when the drawing is incomplete, however, you can still click on the map with the arrow tool to select any object that would have been drawn. With the map partially drawn, try clicking on some of the CAMEO objects in the northern area of the county.

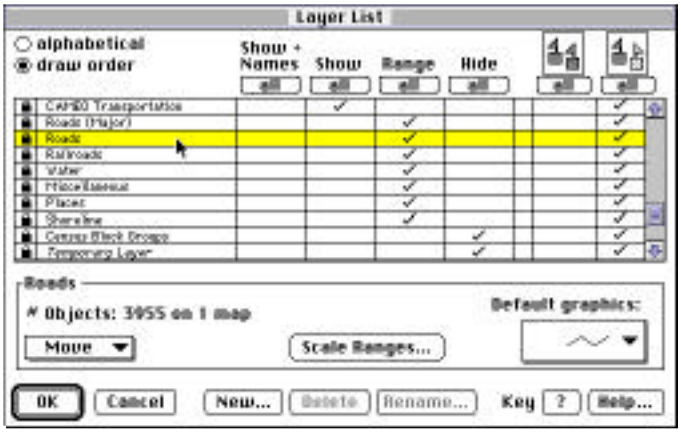




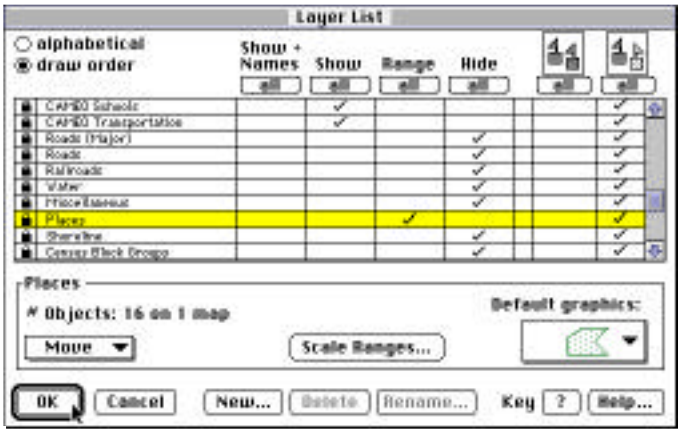
6. Use Redraw one more time to display all of the shown layers.

7. From the list menu, select the Layer List item. This brings up MARPLOT's list of layers. The layers can be sorted alphabetically or from top to bottom according to the order in which they are drawn. Currently the layers are sorted in draw order. Scroll up and down in the list of layers. Notice that the TIGER-derived layers such as Places and Roads are lower in the list than the CAMEO layers such as Facilities and Hospitals. Since the layers are shown according to the draw order, this means that the TIGER-derived objects will draw first, on the "bottom," and then the CAMEO objects draw after, on the "top." That's why, when we stopped the drawing, we saw some of the TIGER layers (the shoreline, the places, and some of the water) but the CAMEO objects still hadn't been drawn.

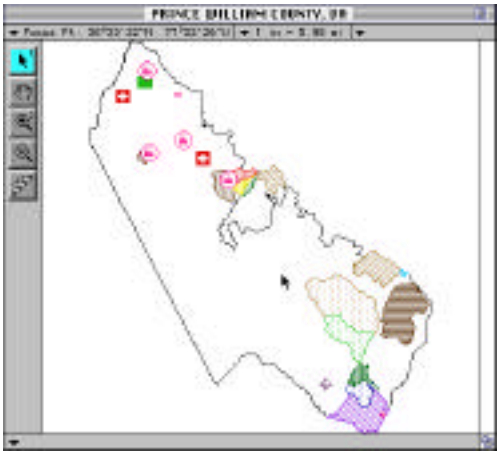
8. In the Layer List, click on the names of different layers. Notice that, in the bottom part of the window, MARPLOT displays the number of objects on that layer, and also some graphical information about the layer.



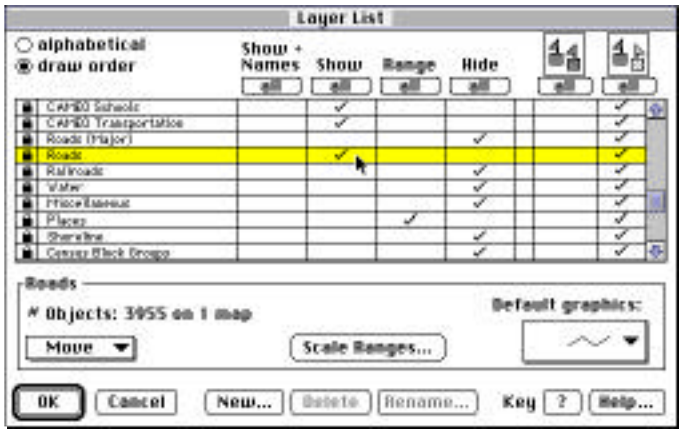
9. As can been seen in the columns in the center of the Layer List, all of the CAMEO layers are currently in “Show” mode, and most of the TIGER-derived layers (roads, railroads, etc.) are currently in “Range” mode. When a layer is in Show mode, it displays no matter what the map scale. When a layer is in Hide mode, it does not display. When a layer is in Range mode, it displays only within a certain range of map scales. For now, let’s put all of the non-CAMEO layers except for the Places layer into Hide mode. To do this, click on each layer’s line in the Hide column.



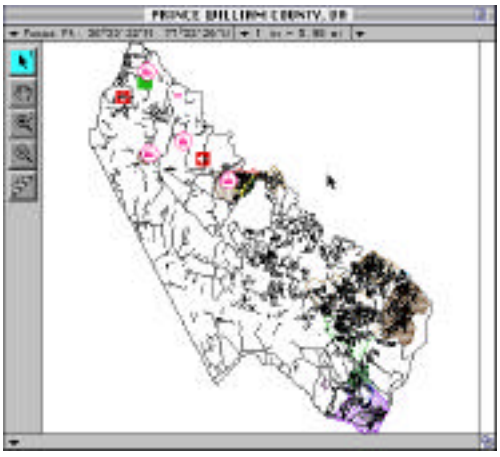
10. Click OK. The map is redrawn with just the Places and CAMEO layers shown.



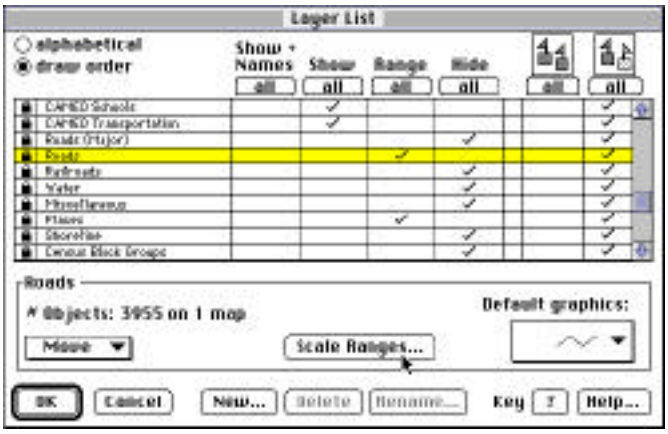
11. Return to the Layer List dialog box using the Layer List menu item again. This time, set the Roads layer to Show mode by clicking in the Show column of the Roads layer's line.



12. Click OK. The map is redrawn with the Roads layer shown.

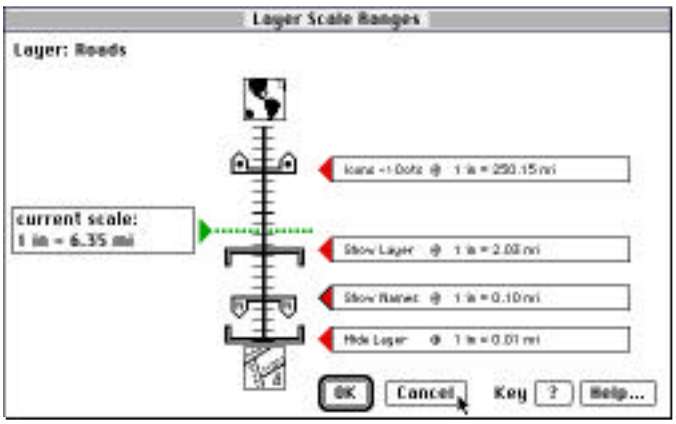


13. It takes a significant amount of time to draw all of the roads at this zoomed-out view of the entire county. It would be better to draw the roads only when we are zoomed in closer. That way, we wouldn't have so much to draw at one time. This is just what the Range setting in the Layer List dialog box is for. Return to the Layer List and set the Roads layer to Range mode. In order to see what range of scales the roads will show in, make sure the Roads layer is highlighted in the list and then click on the Scale Ranges button.

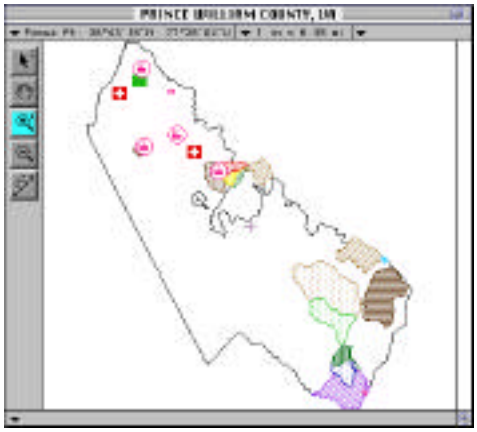


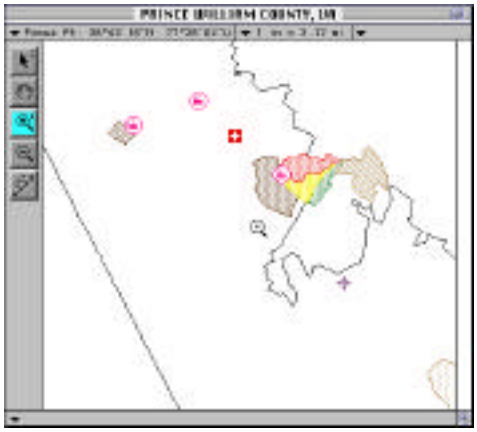
14. The Layer Scale Ranges dialog box displays and lets you modify four scale values: the most zoomed-out scale the layer will display at, the most zoomed in scale the layer will display at, the scale you have to zoom in to before objects on the layer are labeled with their names on the map, and the scale you have to zoom out to before symbol objects on the layer are displayed as dots instead of as their usual icons.

15. Note that, in the case of the Roads, the layer is set to show when the scale is about 1 inch = 2 miles. Note that our current scale is more zoomed out than that. Thus, if we leave these scale values, and leave the Roads layer in Range mode, we'll have to zoom in a bit close for the roads to appear.



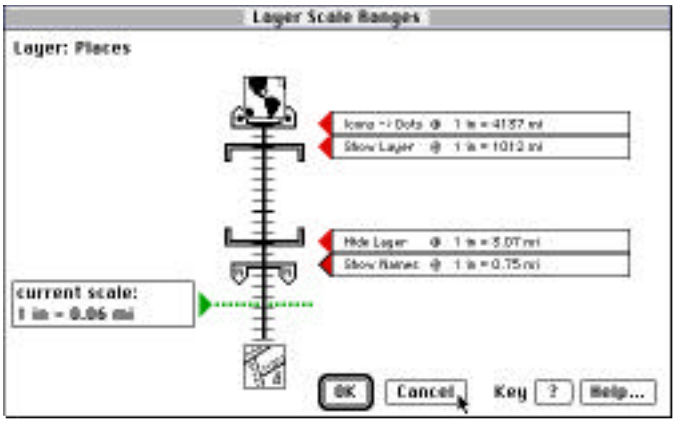
16. Click OK to exit the Layer Scale Ranges dialog box, and then click OK to exit the Layer List dialog box. Notice that the roads are no longer displayed. Let's zoom in closer using the magnifying glass tool, . Click on this tool and then, with the magnifying glass, click about in the center of the county. This causes the view to zoom in by a factor of 2, centered on the point of your click. Note that the number of miles per inch has been cut in half. (Note: You may find that after zooming the Places layer containing the county and cities is hidden.)





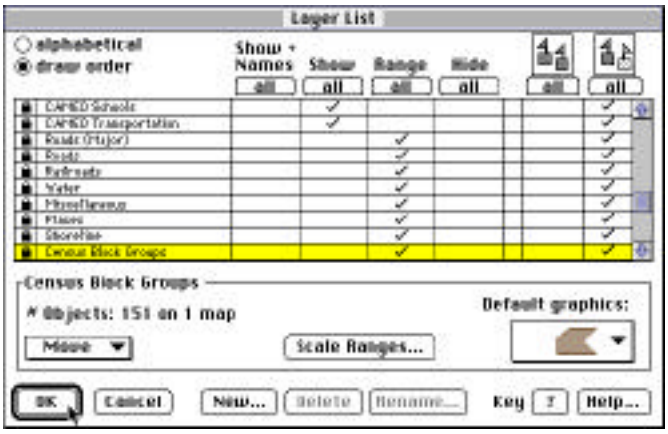
17. The roads still do not display because, as we saw in the Layer Scale Ranges dialog box, they are set to show only when we are zoomed in to at least 1 inch = 2 miles. Click one more time with the magnifying glass, again around the center of the map window. Now the roads appear because we have zoomed in past the threshold scale. If we continue to zoom in with the magnifying glass tool, we can reach the scale at which the names of the roads appear. (Note: Depending on the settings in your copy of MARPLOT, you may have to zoom in a bit father to see the road names.)

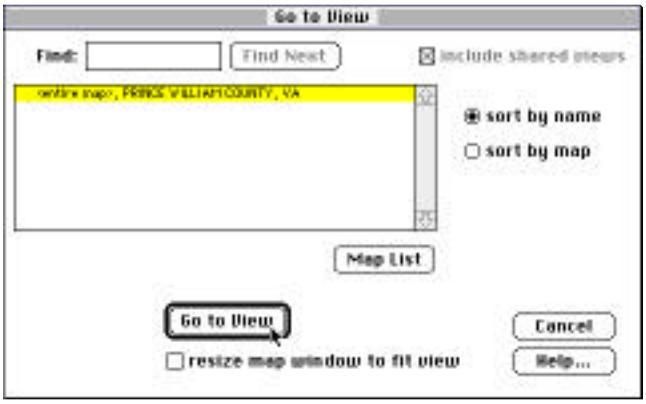
18. You may also have noticed that, as we were zooming in, the cities and towns disappeared. That is because the Places layer, like the Roads layer, is currently in Range mode, and the Places are set to turn off when we zoom in past a certain scale. To see this, return to the Layer List dialog box, highlight the Places layer and click on the Scale Ranges button.



19. Since it's true for most layers that you'll only want to see them within a certain range of scales, it is common for most of the layers to be set to Range mode. There are some exceptions. For instance, there may be relatively few objects on certain layers, such as the CAMEO layers. Since these layers draw very quickly, you might want to leave them always in Show mode. On the other hand, consider the Census Block Groups layer. This layer contains a large number of polygons that take a while to draw. It's not that you want them to show only when you are zoomed in close. Rather, you will probably want to keep them in Hide mode until you need them, set them to Show mode while you work with them, and then set them back to Hide mode.

20. For now, let's set all of the TIGER-derived layers except for the Census Block Groups layer back to Range mode. As you do so, you may want to click on the Scale Ranges button to see the range setting for some of the other layers. Then use the Go to View dialog box to return to the <entire map> view for Prince William County.

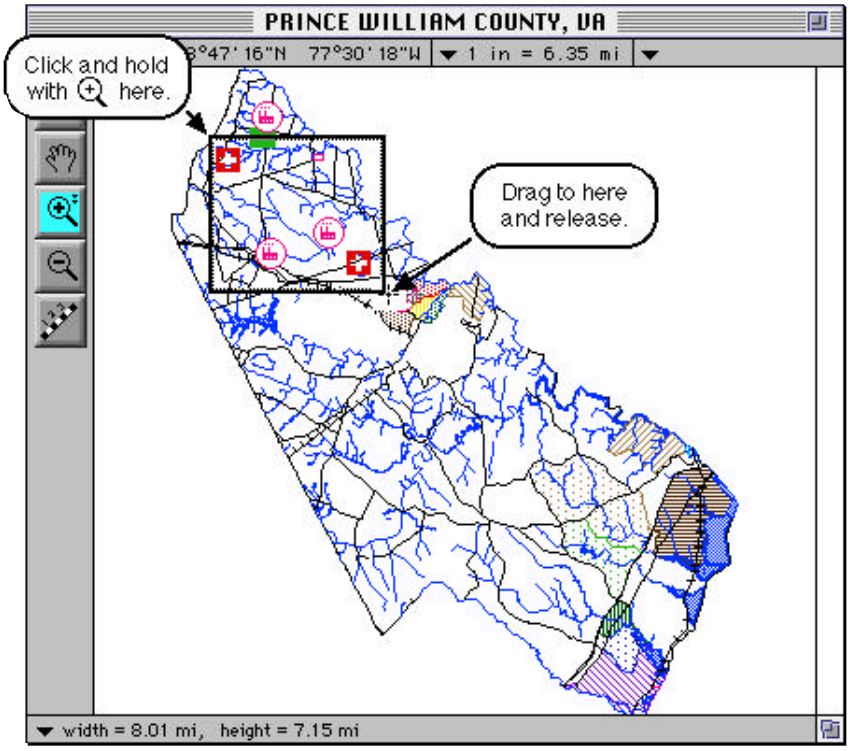




Navigation and Views

21. In the preceding steps, we've already seen two ways to navigate around the map: the Go to View dialog box, and the plus magnifying glass tool. You may have guessed that the minus magnifying glass tool is used to zoom out, also by a factor of 2. Two other tools along the left edge of the map window are also used for changing the view. The hand tool is used to shift the map view without changing the scale. The plus magnifying glass tool can also be used to zoom into a particular rectangular area. Select the plus magnifying glass tool now by clicking on it. With the entire Prince William County map in view, notice the two hospitals objects (red crosses) among the CAMEO objects. Let's zoom into an area just big enough to show both hospitals. Click with the magnifying glass above and to the left of the top hospital. With the mouse button still down,

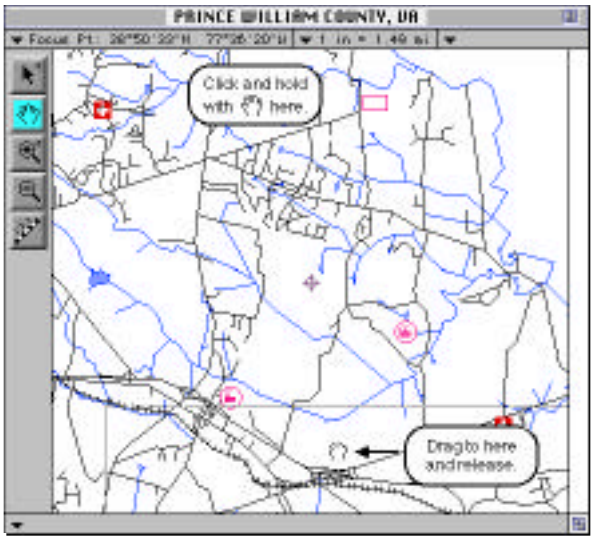
drag below and to the right of the bottom hospital. A gray box defines the region as you drag. When you have just surrounded both hospitals, release the mouse button. MARPLOT changes the view to show the area defined by the rectangle.

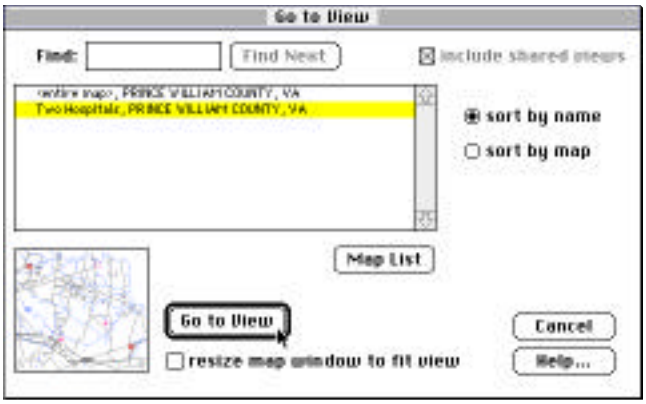


Note: If you make a mistake using the magnifying tool, you can always return to the last view using the Go to Previous View item in the View menu. Also, if you start defining the rectangle and then decide you don't want to zoom after all, you can press the ESC key while the mouse is still down to abort the zoom.

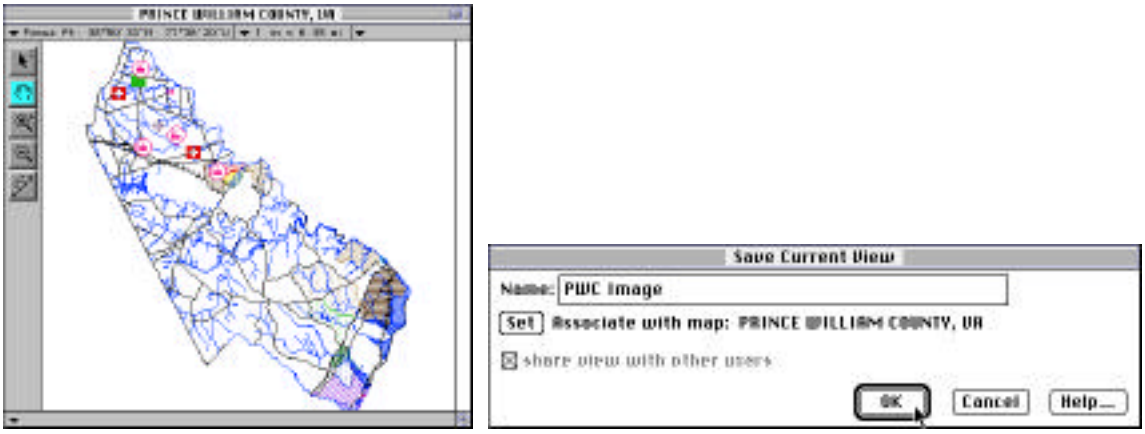
22. The new map window now displays the selected area. We can save this view for future reference. Select the Save Current View item from the View menu. Name the view "Two Hospitals" and click OK.

23. To show how the view is used, use the hand tool to shift the map view. To do this, click with the hand tool near the top of the view, drag down to the bottom of the window and then release the mouse button. This shifts the view to the north. Now select the Go to View item in the View menu, highlight the Two Hospitals view, and click Go to View. You are returned to the saved view.

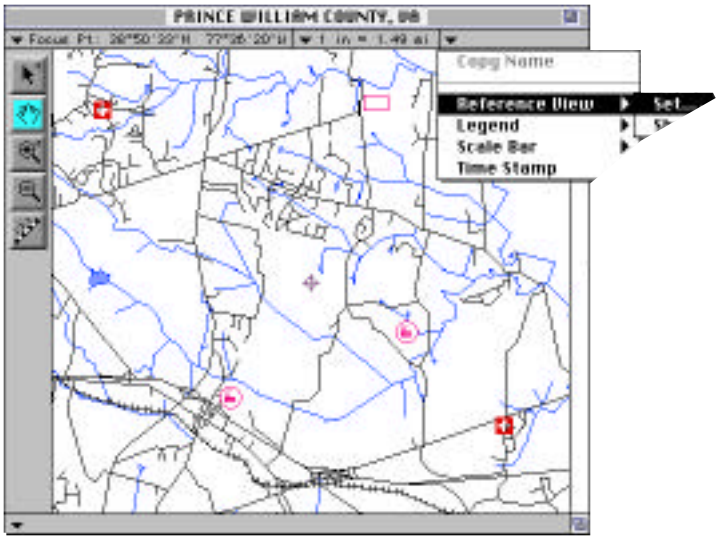


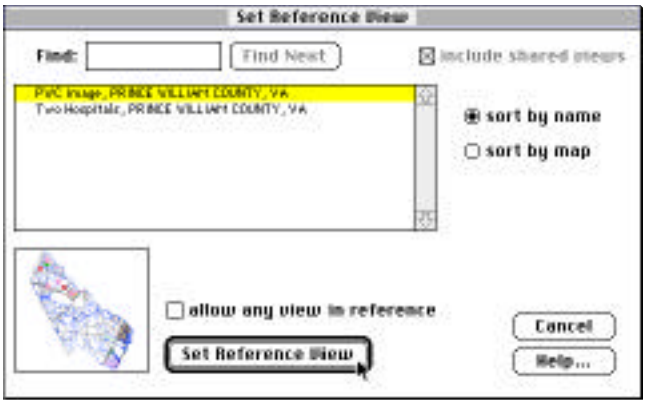


24. Use the Go to View dialog box again to return to the <entire map> view of Prince William County. Let's save this view also, using Save Current View. Let's name it PWC Image.



25. Another use for saved views is as a reference view. To see how reference views work, return to the Two Hospitals view again using Go to View. Then click on the triangle in the upper-right corner of the map window, go to the Reference View submenu, and choose Set. Select the PWC Image view, leave the "allow any view in reference" box unchecked, and click Set Reference View.

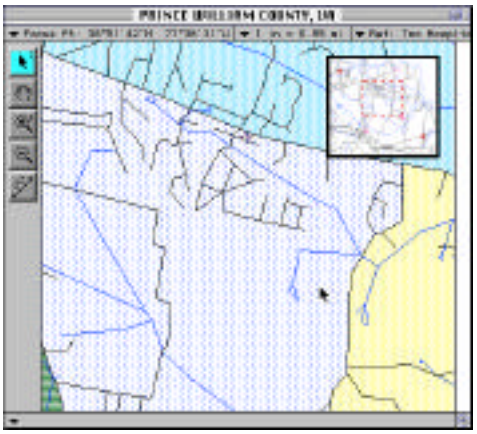




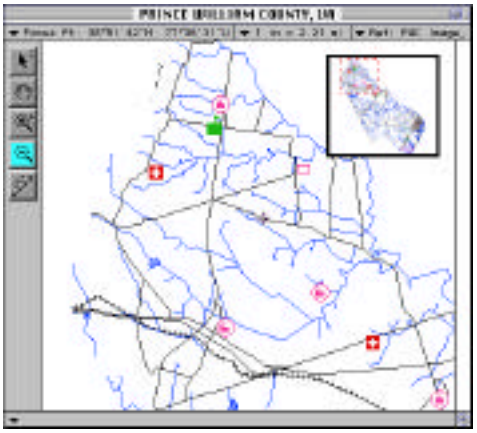
26. The reference view, showing the PWC Image, appears in the upper-right corner of the map window. The reference view shows the location of the current view in the map window relative to some other view. In this case, we see the area of the Two Hospitals view relative to the entire area of Prince William County. The flashing red box indicates the shown area.

27. Use hand and magnifying glass tools to move all around the map. Notice how the flashing rectangle in the reference view follows you. Zoom in as far as you can go. Notice that, when the flashing rectangle gets too small, it is replaced by a cross-hairs, pinpointing your location. You can double-click at a point on the reference view to view that area. Try double-clicking a few times on the reference view. Also, by clicking once and dragging on the reference view rectangle, you can reposition it in the map window.

28. Let's try one more experiment with the reference view. Return to the Two Hospitals view using Go to View. Click once with the plus magnifying glass in the center of the map window. Now set the reference view again, this time choose the Two Hospitals view as the reference view (again, leave the "allow any view in reference" box unchecked). As we saw before when using PWC Image as the reference view, here the Two Hospitals is serving as a reference view and the flashing rectangle shows the area of the current map window relative to it.

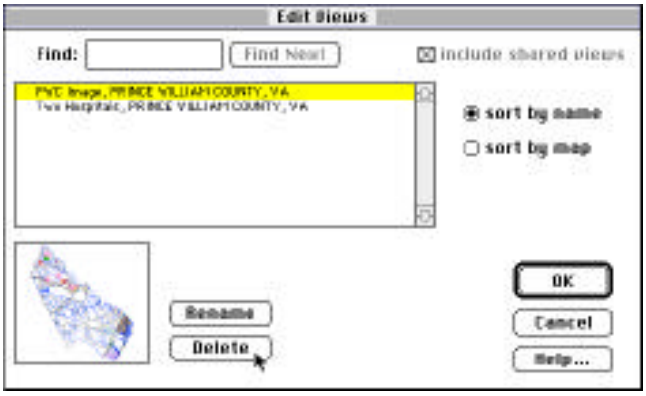


29. This time, however, notice what happens when you use the minus magnifying glass to zoom out two times. As soon as the view in the map window no longer fits within the Two Hospitals reference, MARPLOT automatically changes the reference view to the PWC Image. If you then zoom back into an area within the Two Hospitals view, MARPLOT automatically changes the reference view back to the Two Hospitals view. These automatic changes happen because we had the "allow any view in reference" box unchecked when we set the reference view. When this box is checked, MARPLOT allows a view to stay in the reference view, even when the current map view does not fall completely inside of it.



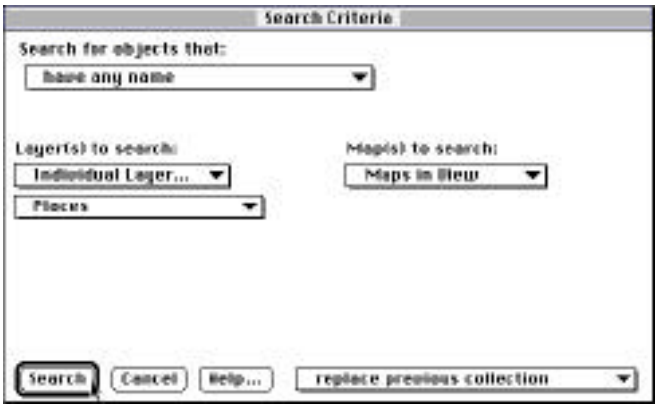
30. When you have saved a view and are sure you no longer want to work with it, you can delete it using the Edit Views item in the View menu. Select Edit

Views now and delete both the Two Hospitals view and the PWC Image view. Click OK. Notice that the reference view is closed automatically because we deleted the view it was using.



Searching for Cities and Roads

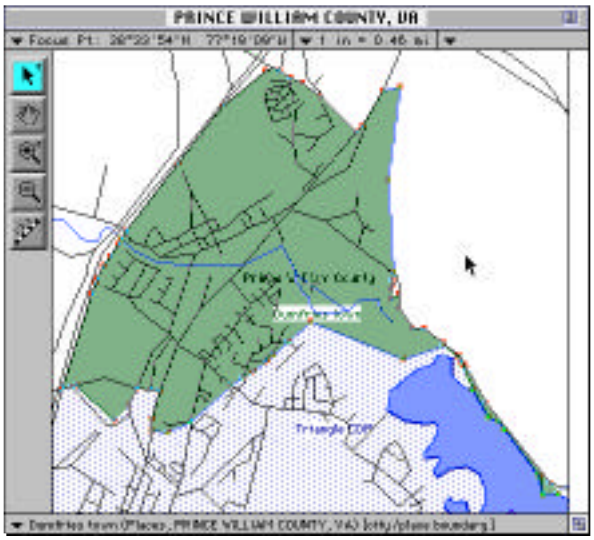
31. One of the most common operations you will perform in MARPLOT is searching for an object, often for an address range or intersection of a certain road. Another common search, if you are working in a large county, is to find a certain city or town within the county. Let's search for a town within Prince William County. Bring up the Search Criteria dialog box by selecting Search from the List menu.



32. Click on the pop-up box after the label “Search for objects that:” and select “have any name.” After “Layer(s) to search:” choose “Individual Layer...” in the first pop-up box and “Places” in the second pop-up box. After “Map(s) to search:” choose “Maps in View” and leave the final pop-up box set to “replace previous collection.” Then click the Search button.

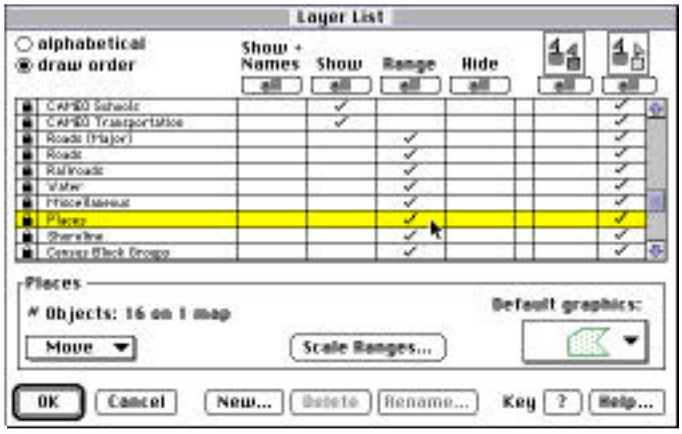
33. MARPLOT performs the search, and puts all of the objects that match the specified criteria into the Search Collection. In this case, we found all of the objects on the Places layer of the Prince William County map. The Places layer contains one polygon object representing each city or town in the county, plus a single polygon object representing the boundary of the entire county.

34. Find “Dumfries town” in the list and click on its name to highlight it. Click the Show on Map & Zoom button. This causes MARPLOT to change the view so that Dumfries town just fits into the map window.

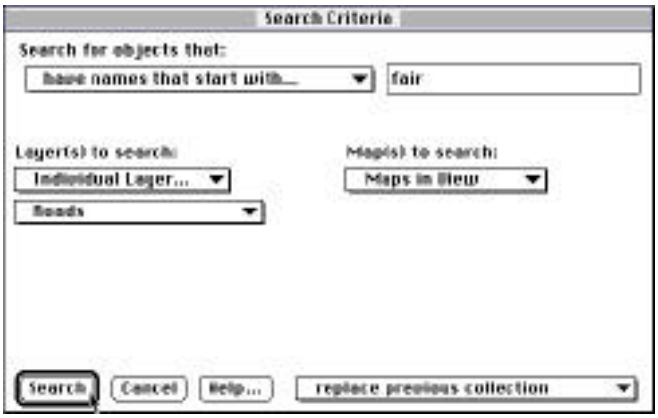


35. You may recall from earlier in this guided tour that the Places layer was set to Range mode, and normally the Places would not be visible at this new scale where Dumfries town fills the map window. However, since we asked

MARPLOT to show Dumfries town on the map, it automatically changed the Places layer to Show mode. Let's go back to the Layer List and set the Places layer back to Range mode.



36. Now we see the same area without the Places polygons cluttering the view. There is a street in Dumfries town named "Fairfax St." Let's use the Search function to find this street. In the Search Criteria dialog box, search for objects that "have names that start with." Type the letters "fair" in the box that appears in the upper-right. Search on the "Individual Layer" named "Roads." Again, search on "Maps in View" and choose "replace previous collection." Click Search.



37. Again, the Search Collection dialog box comes up with the results of the search. Highlight “Fairfax St” and click Show on Map (we do not use Show on Map & Zoom this time because we don’t want to change the viewing scale; if we had used Show on Map & Zoom, MARPLOT would have changed the view to show just the area covered by Fairfax St in the map window).

38. MARPLOT highlights Fairfax St on the map with red dots and shows its name at the bottom of the map window. It also puts the Focus Point at the center of the street.

39. Use the plus magnifying glass tool to zoom into an area that shows just Fairfax St, plus a little extra space for borders.

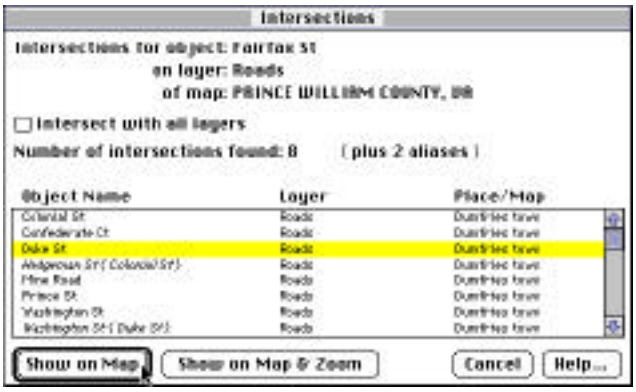
40. Suppose we want to know where the address 250 Fairfax can be found. Go back to the Search Collection using the Show Search Collection item in the List menu. With “Fairfax St” highlighted, click on the Addresses button.

41. MARPLOT displays the list of address ranges for Fairfax St. In this case, we see that there is an error in the TIGER data: the bogus address range 0-109. The example in section 5.1 shows how you can correct this type of data error. For now, we are looking for address 250, which falls within the range 210-299. Highlight this range in the list and click Show on Map.

42. MARPLOT shows the location of the address range by positioning the Focus Point at the center of the segment that corresponds to the selected range.

43. Now suppose we want to find the intersection of Fairfax St and Duke St. Again, bring up the Search Collection using the Show Search Collection item in the List menu. With Fairfax St highlighted, click on the Intersections button.

44. MARPLOT lists all of the streets with which Fairfax St intersects. Highlight Duke St in the list and click Show on Map (Show on Map & Zoom would change the scale to an appropriate scale for viewing the intersection, but in this case we are already at such a scale).



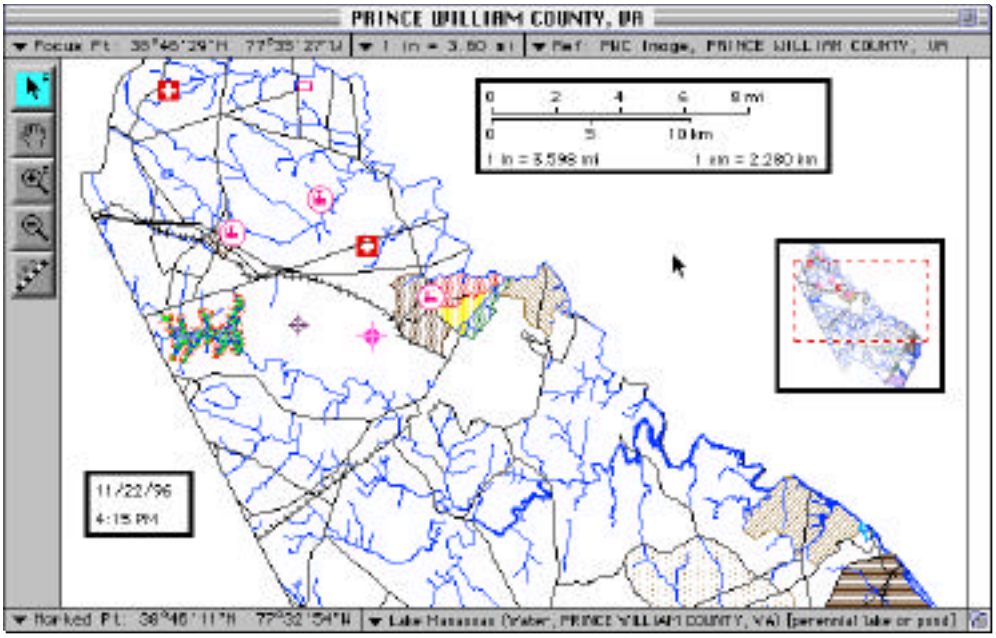
45. MARPLOT selects both Fairfax St and Duke St, and puts the Focus Point at their intersection.

46. This concludes the MARPLOT guided tour. If other people will be taking this tour using this MARPLOT system, please use the Go to View dialog box now to return to the <entire map> view for Prince William County. Then exit from MARPLOT. You can find more step-by-step examples of using MARPLOT in Chapter 5.

4 Reference

4.1 The MARPLOT display window

The MARPLOT window contains many components.



The title of the window displays the name of the map currently shown in the window, or simply “MARPLOT” if more than one map is shown.

Just below the title is a line containing three pieces of information:

First, the latitude/longitude coordinates of the Focus Point are given. The Focus Point is the flashing target-shaped icon that marks the location of the most recent point of interest. You can change the format of the latitude/longitude values using the Preferences item in the File menu.

Second, the current map scale is given, in one of three different formats, as chosen using the Preferences item in the File menu.

Third, the name of the reference view is given, if a reference view is currently being shown (see the View menu).

The various tools are along the left side of the map window. The currently selected tool is shown highlighted. The function of each tool is described in

section 4.8. When you have unlocked one or more layers (see section 4.5.4), additional tools, used for creating new objects, appear.

Along the bottom of the map window is a status line that is used to display various messages. Among other things, it gives the name, layer, map, and Census classification of the most recently selected object. If you pressed ESC to cancel a time-consuming map draw (see section 4.4.13) this bottom line will display the words “[DRAW INCOMPLETE]” to remind you that you are looking at an incomplete picture.

When you select objects on the map (usually by clicking them with the arrow tool) MARPLOT indicates that they are selected by drawing small red squares along their borders.

Finally, if you are using the Marked Point (see section 4.4.13), it appears as a pink, target-shaped icon.

Remember that what you see in the map window depends upon (a) the area you are looking at, (b) the current scale (remember that layers can be set to show only at certain scales), (c) the order of the layers (layers can draw over one another), and (d) the maps that are currently in use. If you are not seeing what you expect, consider each of these factors.

4.1.1 Pop-up menus on the map window

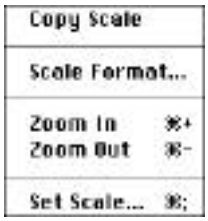
The status lines at the top and bottom of the map window show small black triangles indicating that you can click in the given area to activate a menu that lets you perform functions related to the item displayed. For instance, clicking in the “Focus Pt” area brings up a menu of functions related to the focus point, while clicking on the map scale area brings up a menu of functions related to map scale. The function of each of these pop-up menu items is explained below.

Clicking in the “Focus Pt” area at the top of the map window brings up the following menu:

• Copy Coordinates copies the displayed Focus Pt coordinates to the clipboard.

• Coordinate Format... brings up the Preferences dialog box so that you can change the format in which coordinates are displayed.
• The remaining items in this menu perform the same function as the identically named items in MARPLOT's regular View, Marked Point and Vertex menus.

Clicking in the map scale area at the top of the map window brings up the following menu:



• Copy Scale copies the displayed map scale to the clipboard.
• Scale Format... brings up the Preferences dialog box so that you can change the format in which map scales are displayed.
• Zoom In and Zoom Out change the map scale by a factor of two, centered at the focus point (note that Zoom In and Zoom Out are not included in the View menu).
• Set Scale... performs the same function as the identically named item in the View menu.

Clicking in the reference view name area at the top of the map window (the rectangle just to the right of the map scale area) brings up the following menu:

• Copy Name copies the displayed reference view name to the clipboard (if a reference view is currently shown).
• Reference View allows you to show or hide the reference view, and choose the view to be used as a reference view.
• Legend allows you to show or hide the legend, and set legend options.
• Scale Bar allows you to show or hide the scale bar, and set scale bar options.
• Time Stamp allows you to show or hide the time stamp, and choose time stamp options.

Clicking in the message area at the bottom of the map window brings up the following menu:

• Object Settings... and Segment Settings... perform the same function as the identically named items in the Objects menu.
• Copy Object Record copies to the clipboard the MIE (MARPLOT Import/Export) record for the selected object.
• Copy Object Coordinates copies to the clipboard the list of latitude/longitude coordinates for the selected object.
• Copy Text copies whatever text is in the message area to the clipboard.

4.1.2 Map insets

The reference view is just one of four insets that you can display in the map window. Each of the four insets is discussed in this section.

You can show and hide the various insets, and set a number of options related to their display using the **Preferences** dialog box (see the File menu) and the pop-up menu in the reference view name area of the map window. To position any of the insets, click on them with the mouse and drag to the desired location. MARPLOT remembers this as the position of the inset until you move it again.

When you print or save the contents on the map window, any displayed insets are included in the output.

Reference view

Double-click anywhere on the reference view to center the map view about the clicked location.

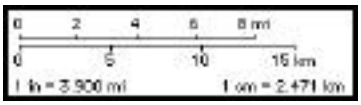
Legend

The legend displays a map key in one of two formats. You can either display one line for each of the shown layers (with an option to exclude specific shown layers

from the legend), or you can display an arbitrary picture/bitmap, which is usually a legend image that has been prepared using another program.

Double-click the legend to bring up the Preferences dialog box where you can set options for the display of the legend.

Scale bar



The scale bar inset shows the current map scale in a number of available formats including a number line marked with English units, a number line marked with metric units, a equation with “1 in = ...”, and an equation with “1 cm = ...”.

Double-click the scale bar to bring up the Preferences dialog box where you can set options for the display of the scale bar.

Time stamp

The time stamp displays the current date and time in any of a number of available formats. You can also include an arbitrary one-line comment in the time stamp.

Double-click the time stamp to bring up the Preferences dialog box where you can choose date and time formats, and enter the one-line comment.

4.2 File menu

The items in the File menu allow you to perform a variety of input/output functions, and to accomplish miscellaneous system-level tasks.

Note that there is no “Save” item in the File menu. When you make changes to objects on maps, the changes are immediately written to disk. This means that there is no need for you to explicitly save any changes you make. The price of this convenience, however, is that you need to be that much more careful to keep backup copies of any maps you will be editing, so that you can revert to a saved version if you make invalid changes (see Chapter 2).

4.2.1 Save as Picture

The Save as Picture menu item is used to save an image of what is currently drawn in the map window to a picture file. Such a file can be opened with a standard draw/paint program. The procedure for saving a picture differs slightly between Windows and Macintosh.

Save as Picture on Windows...

When you choose Save as Picture, you are presented with a standard file-saving dialog box to specify the file to be saved. You can choose to save a bitmap file (type ".bmp") or a metafile (type ".wmf"). Metafiles are often smaller than bitmap files, and have the advantage that certain programs will allow you to edit them on an object-by-object basis. However, bitmap files are more common and can be opened with standard programs such as PaintBrush.

A check box, which only applies when you are saving a metafile (type ".wmf"), gives you the option of saving into the picture only the currently selected objects. This is useful if you want to save into the picture a less "cluttered" view of a certain set of objects.

Save as Picture on Macintosh...

When you choose Save as Picture, you are presented with a dialog box that lets you specify the size of the picture to be saved. By default, the saved picture is the same size as the screen display. If you want to expand or shrink the image when saving, you can specify the desired size either by giving its dimensions (width and height), or by specifying the map scale that you want the picture to have.

A check box gives you the option of saving into the picture only the currently selected objects. This is useful if you want to save into the picture a less "cluttered" view of a certain set of objects.

When you click OK to confirm the size, you are presented with a standard file-saving dialog box to specify the file to be saved.

4.2.2 Print

The Print menu item is used to print what is currently drawn in the map window to your printer. Before printing you may want to use the Print Setup (Page Setup on Macintosh) menu item to alter general printing settings.

When you choose the Print item, you are presented with a dialog box that lets you specify the size of the printed output. By default, the printed output is the same size as the screen display. If you want to expand or shrink the image when printing, you can specify the desired size either by giving its dimensions (width and height), or by specifying the map scale that you want the output to have.

IMPORTANT NOTE: Do not attempt to change the size of the printed output by using the Reduce/Enlarge or Scaling fields in the Print Setup/Page Setup dialog

box; leave it at 100%. If you want an output that is reduced or enlarged, you can achieve this by modifying the width, height or scale fields in the Print dialog box. For instance, to reduce the image by 50%, change the width (or height) field to 1/2 its original value.

The Print dialog box displays the size of a printed page as well as the number of pages that will be printed, according to the dimensions or scale you have specified.

A check box gives you the option of printing only the currently selected objects. This is useful if you want to print a less "cluttered" view of a certain set of objects.

4.2.3 Import

WARNING: Use this menu item with caution. Incorrect use can result in lost data. It is safest to back up your map files before importing. The Import menu item is only available to users who have edit-level permission.

NOTE: If your MARPLOT system uses map files shared over a network file server, make sure that no other users are currently using the shared map files before you use Import.

The Import menu item is used to read in a list of objects from a text file. This file can be in one of four different formats:

- the MARPLOT Import/Export (MIE) format

  This is that standard format for exchanging MARPLOT information. These files contain complete MARPLOT information about each object.

- the MARPLOT Simple Point format

  In this format, the objects appear one-per-line. Each object is specified as a single point. Besides the coordinates, the following attributes may be included: name, layer, map, symbol, color, ID.

- the ArcInfo™ GENERATE format

  This format is provided to allow MARPLOT to exchange data with ArcInfo. Besides the coordinates, the following attributes may be included: name, layer, map, symbol, color, ID.

- the MARPLOT 1.0.1 (for Macintosh) export format

This format is used only to bring objects from MARPLOT 1.0.1 into MARPLOT 3.2.

For more information about any of these formats, see the MARPLOT Technical Documentation.

When you import a file, the objects specified in the file are added to your map(s). If the objects in the file are from maps that are not currently available on your MARPLOT system, new maps will be created to accommodate the objects. Similarly, if the objects are from layers that are not in the current system, new layers will be created. Any maps created during import are put in the same folder (directory) as the MARPLOT application itself.

As explained in section 1.2.8, when you import an object with a given ID number, layer name, and map name, MARPLOT will use this object to replace an existing object with the same ID, layer name and map name. This occurs even if the layer in question is currently locked. However, you have the option of modifying this default behavior using the Options button in the Import dialog box. In the event of ID conflicts, you have the alternatives of skipping the conflicting object, or adding the conflicting object without deleting the original (resulting in duplicate ID numbers on the same map/layer).

The most common use of Import is to share data with another MARPLOT system. A user of that system can export certain objects to an MIE file. You can then import the MIE file in your system. Any new objects (i.e., objects that were created in the other system but don't yet exist in your system) will be added to your system. Any objects that match existing objects in your system (i.e., that have the same ID number, layer name, and map name) will replace those existing objects (unless you have used the Options button to change this behavior). The net effect is that your system will be "updated" to match the objects in the other system. Keep in mind, however, that if you import bad data, you may lose important data that you have entered in your system.

4.2.4 Export

The Export menu item is used to write a list of objects to a text file. The objects to be written can be either those objects currently selected on the map, or those objects currently in the search collection. You can export in one of three formats:

- the MARPLOT Import/Export (MIE) format
- the MARPLOT Simple Point format
- the ArcInfo™ GENERATE format

In the case of the two latter formats, you can output the coordinates along with any subset of the following attributes: name, layer, map, symbol, color, ID.

These formats are described above and in the MARPLOT Technical Documentation.

4.2.5 Compact Map Files

NOTE: If your MARPLOT system uses map files shared over a network file server, make sure that no other users are currently using the shared map files before you use Compact Map Files.

The Compact Map Files menu item, which is mostly for use by MARPLOT system administrators, performs a number of optimizations on your maps to make them draw more quickly and use less disk space. You will only need to use Compact Map Files after importing or after making a large number of changes to your maps. There is no harm in using Compact Map Files at other times, but you should not expect any improvement in efficiency.

Compacting your map files can take less than a minute if your maps are small and/or are already mostly compacted. However, for large, uncompacted map files, the process can take up to an hour or more (you can stop the process at any point if it is taking too long).

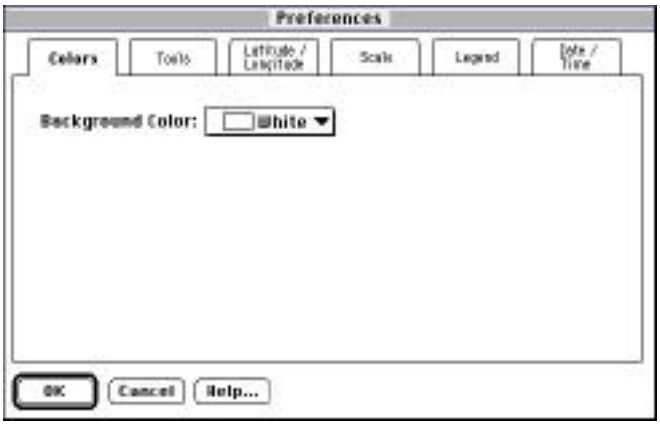
Before choosing the Compact Map Files function, you should make sure you have sufficient free disk space. A rule of thumb is to make sure you have free on each disk containing a map folder at least twice the space of the single largest ".OBJ" layer file on that disk. If MARPLOT is unable to complete the compaction process because of low disk space, it will tell you.

Compact Map Files performs two main functions to improve map file efficiency. First, it removes the space occupied by deleted objects from the map files. Second, it sorts the objects in each map file geographically, for improved speed during drawing. Compact Map Files also does some other cleanup work on your map files. If you think your map files have been corrupted somehow, you might try compacting them to fix the problems.

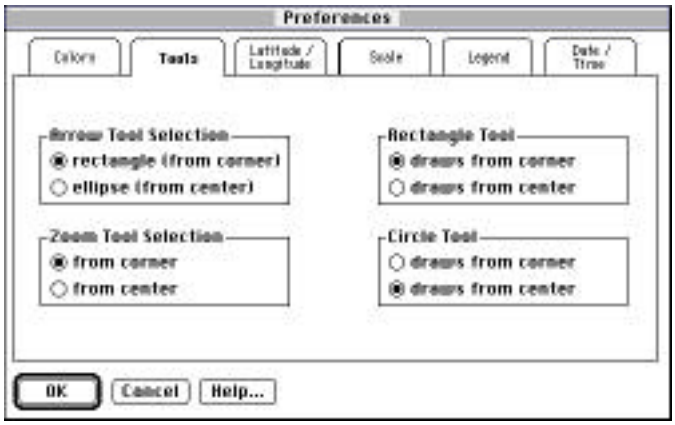
When you use Compact Map Files, even those files belonging to locked layers are checked and compacted. However, files belonging to maps that are not currently in use will not be touched (use the Map List menu item to see which, if any, of your maps are not in use).

4.2.6 Preferences

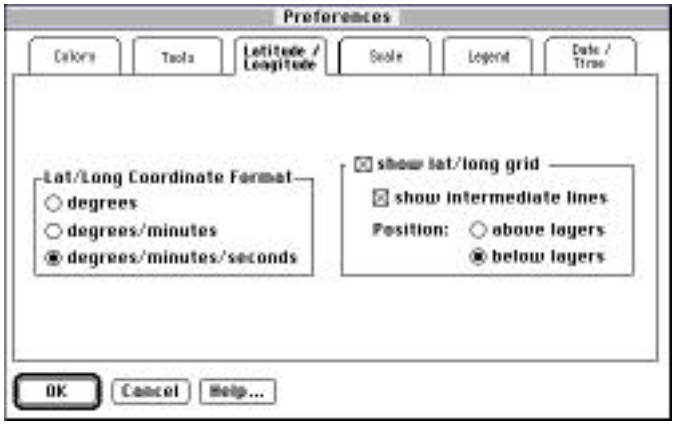
Because of the large number of preferences that you can set in MARPLOT 3.2, the Preferences dialog box is broken up into five tabbed panels. Move between the panels by clicking the tabs at the top of the window.



The Colors panel lets you set the background color for the map window.

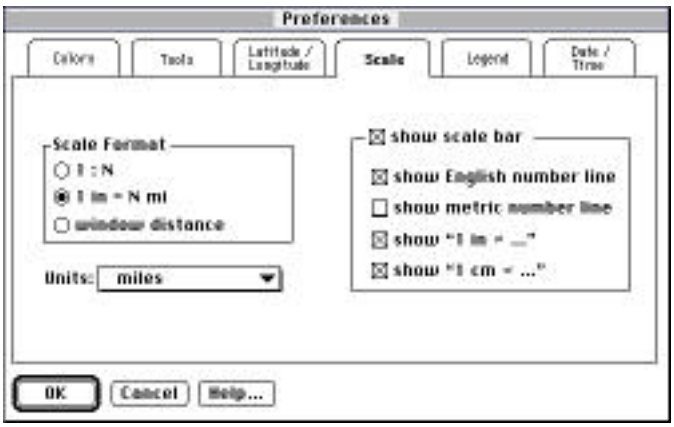


The Tools panel lets you set preferences for various tools. (These choices are also available by double-clicking the tool icons on the left edge of the map window.)

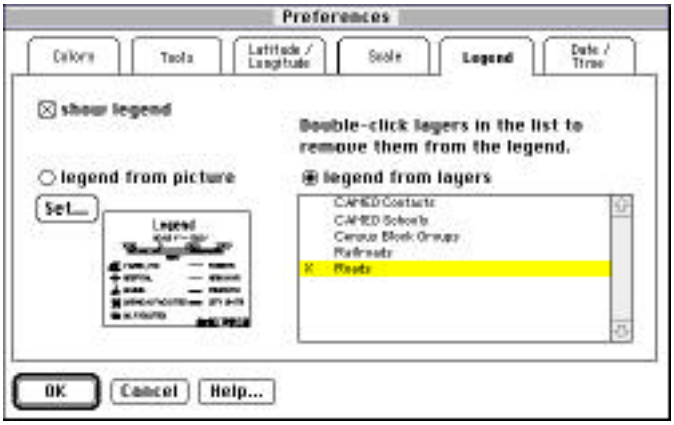


The Latitude/Longitude panel lets you choose the format in which coordinates are displayed, and control the lat/long grid in the map window. You can choose whether latitude/longitude values are displayed as degrees with a six-place decimal (e.g., 40.250000°), as degrees followed by minutes (e.g., 40°25.10’), or as a

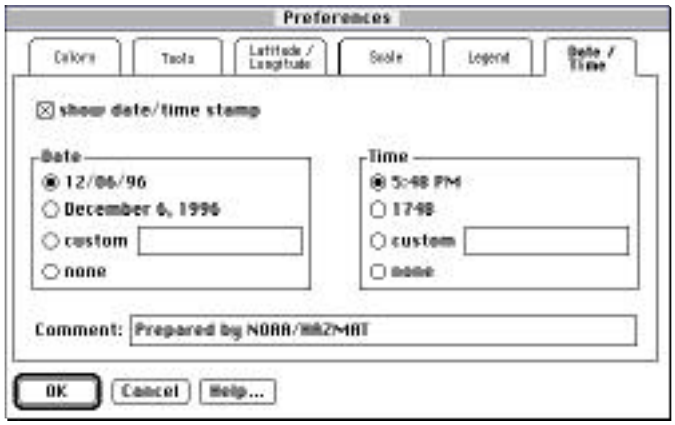
triplet of degrees, minutes, and seconds (e.g., 40°25’00’’). Notice that you can display the grid above or below the map, and you have the option of including unlabeled intermediate lines, when a dense grid is desired.



The Scale panel lets you choose the format in which the scale is displayed at the top of the map window, and in the scale bar inset. You can view the scale as a ratio (such as “1:50000”), in terms of units (such as “1 in = 10 mi”), or in terms of window dimensions (such as “5 x 3 mi”).



The Legend panel lets you choose which type of legend to display, a picture or a list of the shown layers. For a picture legend, you can choose any picture from a bitmap or PICT file on your disk using the Set button. For a layers legend, you can choose to exclude specific shown layers from the legend by double-clicking them.



The Date/Time panel lets you choose formats in which the date and time are displayed in the time stamp inset. The one-line comment you enter here is included in the time stamp.

4.2.7 Administrator

See section 2.4 for more information about MARPLOT administration.

The first time this menu item is used, it puts MARPLOT into “multi-user” mode (as opposed to “single-user” mode). In “multi-user” mode, one person (usually the one who first uses the Administrator menu item) is the system administrator. The administrator has the ability to add other users to the system, giving them passwords and user codes.

After the first use of the Administrator menu item, the item is only available to the MARPLOT system administrator. It brings up a dialog box in which the administrator can add new users and modify user settings. For each user, the administrator can set the user’s name, password, and permission level (edit or browse). Each user is also assigned a four-character code that is attached to each object the user creates and/or modifies. Using the Object Settings dialog box for a given object, you can see the code of the creator and last modifier of the object.

Note that the administrator can change his or her own password. The administrator should do this as soon as the Administrator menu item is chosen for the first time.

Once MARPLOT is in multi-user mode, it is possible to return to single-user mode. The administrator does this using the Stop Administration button in the MARPLOT Administrator dialog box. This renames the USERS folder as USERSX. If the Administrator menu item is chosen again, USERSX is renamed USERS, and the previously established administration is reinstated.

4.3 Edit menu

The Cut, Copy, and Paste items in the Edit menu are *not* used to cut, copy, and paste MARPLOT objects. While you cannot use the Edit menu to perform these functions, MARPLOT provides a number of mechanisms to accomplish the desired goals. To move objects, select one or more and drag them with the arrow tool. To change an object's layer or map, use the Object Settings dialog box. To change several objects at once, use the Move items in the Objects menu.

4.3.1 Undo

You can undo the last change you made to the objects on the map. For instance, if you accidentally delete an object, you can use Undo to get it back. Similarly, if you accidentally move an object, you can return it to its original position. Some complex operations, such as importing a group of objects, cannot be undone.

4.3.2 Cut

Cut has no function in MARPLOT. It cannot be used to cut MARPLOT objects to the clipboard.

4.3.3 Copy

Copy has no function in MARPLOT. It cannot be used to copy MARPLOT objects to the clipboard.

4.3.4 Paste

Paste has no function in MARPLOT. It cannot be used to paste MARPLOT objects from the clipboard.

4.3.5 Clear

Clear deletes the currently selected map objects. You can get the objects back right after the clear using Undo.

4.3.6 Insert Picture Object

The Insert Picture Object menu item is used to create a new picture object.

What is a picture object?

A picture object is like a rectangle object that is filled with an image, instead of with a standard pattern. Picture objects are like other objects in that they can be

named, moved, deleted, etc. You can have as many picture objects as you want, on any layers.

The most common use for a picture objects is as a "base map" onto which you place other map objects. The idea is to place a picture object, which covers a fairly large geographical area, onto a layer that is near or at the bottom of the layer list. You can then place other objects, such as icons representing facilities, on other layers that are on top of the picture object's layer. While the picture object is technically an object just like those that are placed on top of it, by leaving the picture on a low layer, and by leaving that layer locked, you can achieve the effect of having the picture represent the "background" or "base map."

However, picture objects may also be used as "small" objects in their own right. For instance, you might have a logo or other design that you want to place directly on your map. You can do so using a picture object.

Inserting the picture object

When you choose the Insert Picture Object menu item, MARPLOT asks if you want the picture object you are about to add to be the first object on a new map (i.e., the "base map" for the new map) or an object on an already-existing map. If you choose to make a new map, the name of the map will be the same as the name of the picture file you select.

The image for the picture object can come from either a picture file (i.e., a file, usually made by a painting or drawing program, that contains a picture) or from the clipboard (when you have just copied a picture to the clipboard using the Copy menu item in some other program). If you have copied a picture from another application before choosing the Insert Picture Object menu item, MARPLOT asks if you would like to use that picture, or choose another from a picture file. However, when you are creating a new map, the image must come from a picture file, not the clipboard.

If you choose to insert a picture from a picture file, MARPLOT then lets you locate the picture file on the disk.

MARPLOT reads the picture (either from the clipboard or the file) and creates a new picture object. It then brings up the Object Settings dialog box for the new picture object, to allow you to change any of its settings. As with other objects, you should be careful to make sure the picture has been placed on the correct layer and map.

Geo-referencing the picture object

Especially important at the time you create a picture object is the Geo-Reference button in the Object Settings dialog box. The point of the Geo-Reference button is to let you specify exactly where on the earth the new picture object belongs. In some cases, such as when you are using picture objects as "designs" instead of as "base maps," you will probably not need to geo-reference your picture objects at all; it will be sufficient to drag and stretch them, like other objects. But for large "base map" picture objects that are supposed to represent a precise area, you will usually want to geo-reference them to indicate exactly where they go.

If you do not geo-reference the new picture object as it is being created, it will be placed initially so that it is centered about the Focus Point and scaled to its standard size. No harm is done, since you can always geo-reference the object at a later time.

Note to Macintosh users: some picture files, such as those output by previous versions of MARPLOT, already have lat/long information about the picture they contain stored in a resource. When you insert one of these picture files, MARPLOT will automatically use the provided lat/long values, and no geo-referencing is necessary, unless you want to place the picture object in a different location.

You can read more about geo-referencing in section 4.6.1.

Finishing up

From the Object Settings dialog box, click OK when you are happy with the settings for the new picture object, or Cancel if you decide not to create the object after all.

When you click OK, MARPLOT creates a file within the folder (directory) of the picture object's map to keep a copy of the picture.

4.3.7 Make New Polygon

This menu item performs different functions depending on which objects are currently selected.

If a single polyline object is selected, it creates a new polygon object that forms an "envelope" around the selected polyline. An envelope is a complex polygon object that is constructed to cover the map area within a given distance from any point on the polyline. You use the Make Envelope Polygon dialog box to specify this distance. For instance, if the polyline represents a road, and you want to see the area that is within 100 yards of any point on the road, you would specify 100 yards in the Make Envelope Polygon dialog box, and the resulting polygon

would cover the desired area. Once the envelope is created, you can use it, for instance, to see what other objects fall within it.

If two or more polygon objects are selected, it creates a new polygon object that is the intersection, union, or difference of the selected polygons, depending on your choice in the Make New Polygon dialog box. The intersection is the area that all of the selected polygons have in common. The union is the area that all of the selected polygons cover in total. The difference is the area of the first-selected polygon (the one you clicked first in the map window), excluding the area of the other selected polygon(s). As a simple example, suppose you have several polygons and want to calculate their total area. Instead of finding the area of each and adding up the total manually, you could select all of the polygons, use Make New Polygon to create their union, and use the Object Settings dialog box to find the area of the union object.

For the purposes of Make New Polygon, rectangle and circle objects are treated like polygons.

The object created by Make New Polygon (the envelope, the union, the intersection, or the difference) is placed on the Temporary Layer of your user's map. *Objects on the Temporary Layer are deleted when you quit MARPLOT*. If you want to save them, move them to another layer before quitting.

There are some technical problems related to polygon unions and "buffer" zone polygons (which are really just a type of polygon union). Descriptions of these problems, and how they are solved by MARPLOT 3.0, 3.1 and MARPLOT 3.2, can be found in the MARPLOT Technical Documentation.

Related to polygon unions is the issue of how MARPLOT computes polygon areas. This topic is also covered in the Technical Documentation.

4.3.8 Make New Polyline

Make New Polyline is used after you have selected two or more polyline objects. It creates a new polyline object on the Temporary Layer that contains all of the segments of the selected polyline objects. It can be thought of as a "union" operation for polylines. Note, however, that attributes of the component polylines, such as street addresses, are *not* included in the combined polyline.

4.3.9 Polyline <-> Polygon

Polyline <-> Polygon converts the selected object from one type to the other. This is useful, for instance, to "close off" and fill a polyline boundary.

4.4 View menu

The items in the View menu are used for navigating around the map, for saving and using views, and for using the map insets and other map window displays.

A view is a rectangular window onto a certain area of the world. When you save a view, MARPLOT records the rectangle, along with a miniature image of what is shown in the map window at the time the view is saved. Depending on the set-up of your MARPLOT system, there may be a number of views available for your use beyond those that you have saved yourself. Also, if your MARPLOT system is multi-user, you can choose whether the saved view is for your use only, or is to be shared with other users.

Any saved view can be used as a "reference view." When a view is used as a reference view, the miniature image of the view is placed in an inset on the map window. MARPLOT indicates where on the reference view the current map view is situated. For instance, if the reference view shows the entire state of California, and the Los Angeles area is currently shown in the map window, a flashing box appears on the reference view outlining the Los Angeles area within the image of California.

You can designate one of the saved views to be your "entry view." When an entry view is set, MARPLOT will go to that view automatically upon starting up.

In the view dialog boxes, you have options as to which views you want to list, and how you want to order them. If your MARPLOT system is multi-user you have the choice of listing only those views saved by you, or including also the views shared among all users of the system. Use the "include shared views" box to make this choice. You can sort the listed views either alphabetically by the name of the view, or alphabetically by the name of the map the view is associated with. Use the "sort by name" and "sort by map" buttons to make this choice. Also, if the list of views is long, you can type the first few letters of a view name in the box at the top of the window and use the Find Next button to locate the desired view in the list.

4.4.1 Go to View

Go to View is used to return to a previously saved view.

The Go to View dialog box appears when you the choose the Go to View menu item and also when you start MARPLOT if you have not set an entry view.

The views listed include all the views that have been saved using Save Current View, plus one <entire map> view for each map that has a Places layer (these are usually the county maps derived from TIGER data). Unlike other views, the <entire map> views do not have miniature images associated with them.

Select a view by clicking its name in the list. The miniature image of the view is displayed in the lower-left part of the dialog box. Double-click the view name or click the Go To View button to go to the view.

When the "Resize map window to fit view" box is checked, MARPLOT will change the size of the map window on the screen to match the aspect ratio (width to height) of the window at the time the view was saved. This is useful if you want to be sure that what is in the window when you return to the view is exactly what was in the window when you saved the view (actually, such a guarantee is impossible, since the object or layers might have changed since the view was saved). On the other hand, sometimes this extra precision might not be worth the cost of having the map window change size automatically, and you will want to leave this box unchecked.

The Map List button brings you to the Map List dialog box. From the Map List dialog box, you can determine exactly which maps MARPLOT is aware of, and which are in use. From the Map List, you can go to the "view" of a map; that is, the rectangle that encompasses the map.

4.4.2 Go to Previous View

When you change your view by any means (e.g., zooming in or out, or going to a view with the Go to View menu item) you can return to what you were looking at before by using this menu item.

4.4.3 Set Scale

This menu item and dialog box are used to set the viewing scale by entering the scale value by hand.

You can enter the scale in any of the three formats presented. The two other formats change to match the one you modify.

NOTE: There are other ways to change the viewing scale, without having to type in numbers. For instance, the zoom tools and some of the other items in the View menu change the viewing scale.

4.4.4 Go to Lat/Long

This menu item allows you to enter a latitude/longitude point by hand, and then centers the map about that point. The default lat/long values presented when the dialog box comes up are the coordinates of the Focus Point.

4.4.5 Center on Focus Point

This menu item changes the view, without changing the scale, so that the Focus Point is in the center of the screen.

The Focus Point is the small, flashing target-shaped icon, , that marks the location of the most recent point of interest on the map. Every time you click on the map with the arrow tool, the Focus Point moves to the location of your click. The Focus Point also changes in response to other operations, such as when you show an object from the Search Collection on the map.

4.4.6 Save Current View

This menu item is used to add the view that is currently in the map window to the list of saved views.

You are asked to name the view, and to pick the map with which the view is associated. You can only associate a view with a map that intersects at least part of that view. It is not crucial that you associate the view with the "correct" map since the map name is used for reference purposes only and can be changed at any time using the Edit Views menu item.

If you have edit-level permission, you have the option of allowing the saved view to be shared with other users of your system. If you want to do so, click the "shared view with other users" box.

4.4.7 Edit Views

This menu item and dialog box allow you to make changes to the list of saved views.

If you have edit-level permission, you can delete or rename views that you have saved.

Renaming a view also gives you a chance to associate it with a different map.

4.4.8 Entry View

This menu item and dialog box let you pick a saved view as your entry view.

There are actually three options regarding the entry view.

1) You can choose to have no entry view (click the No Entry View button), in which case each time MARPLOT starts up it will present you with the Go to View dialog box to choose a starting view.

2) You can choose a particular saved view as the entry view (highlight the desired view and click the Set Entry View button), in which case MARPLOT will go to the designated view when it starts up. The entry view is displayed in the list of views with a small "E" to the left of its name. Note that the list of possible entry views includes those views that have been saved with Save Current View, plus one <entire map> view for each map with a Places layer.

3) You can click the "enter to last view from previous MARPLOT session" box, in which case MARPLOT will always start at the last view you were looking at the last time you were using MARPLOT.

4.4.9 Reference View

Use this menu item to show and hide the reference view inset, and to pick the view to be shown as a reference view.

Select the view you want to use as a reference view and click Set Reference View.

In most cases, you will want to restrict your choice of reference views to those views that encompass the current map view. The idea is that a reference view is generally supposed to cover an area that contains the area of the main view, since the point of the reference view is to show you where the main view is in relation to a larger area. It isn't helpful, for instance, if the reference view is showing County A but in the main view you are zoomed in somewhere in County B.

However, there may be times when you want to set a reference view to a view that does not quite encompass the main view. For instance, your main view might be showing the very edge of your map, and you may want to use a reference view that ends at the edge of the map. In this case, you can check the "allow any view in reference" button.

Normally, you will want to keep this button unchecked to avoid the mistake of having a reference view that does not contain the main view. When the button is unchecked, MARPLOT will only allow you to choose a reference view that contains the current main view. Furthermore, as you zoom out, MARPLOT will automatically enlarge the reference view, if possible, to keep the main view enclosed within it.

4.4.10 Legend

Use this menu item to show and hide the legend inset, and to activate the legend panel of the Preferences dialog box to change the legend settings.

4.4.11 Scale Bar

Use this menu item to show and hide the scale bar inset, and to activate the scale bar panel of the Preferences dialog box to change the scale bar settings.

4.4.12 Time Stamp

Use this menu item to show and hide the time stamp inset, and to activate the time stamp panel of the Preferences dialog box to change the time stamp settings.

4.4.13 Lat/Long Grid

Use this menu item to show and hide the latitude/longitude grid on the map window, and to activate the latitude/longitude panel of the Preferences dialog box to change the grid settings.

4.4.14 Marked Point

The Marked Point, , serves as a reference location. It is useful for measuring distances when the endpoints of the segment measured are not both visible in the map window. It is also sometimes used when editing polyline objects such as roads.

You can position the Marked Point either by using the Mark Focus Point item in the Marked Point submenu of the View menu, or by using the Mark Vertex item in the Vertex submenu of the Objects menu. You can only mark a vertex after you have clicked with the arrow tool to select a polyline or polygon object.

When you choose Mark Focus Point, the Marked Point is positioned at the current location of the Focus Point. When the Focus Point subsequently moves, the Marked Point retains the position at which it was set and only moves when you explicitly set it to a different location.

When you choose Mark Vertex, the Marked Point is positioned at the vertex of the selected polyline or polygon object that is closest to the Focus Point.

When the Marked Point is set, its latitude/longitude coordinates appear at the bottom of the window.

Once you have positioned the Marked Point, there are four operations you can perform with it. Three of these operations are in the Marked Point submenu of the View menu. Center on Marked Point changes the view, without changing the scale, so that the Marked Point is at the center of the map window. Distance to Focus Point displays the distance from the Marked Point to the Focus Point in the current units (see the Preferences menu item). Rescale to Marked & Focus Pts

shifts the map and sets the scale such that the Marked Point and the Focus Point are both just visible at the edges of the window.

The second item in the Vertex submenu, Move Vertex to Marked Point, is used when you want to position a particular vertex point of a given polyline or polygon at an exact latitude/longitude point. This operation, in conjunction with Mark Vertex, is especially important when editing intersecting road segments in MARPLOT, since MARPLOT only considers roads to intersect when they have a common vertex. For example, suppose you have created two roads called A and B. You intend for them to intersect, but as you use the polyline tool to create them in MARPLOT, you do not have the accuracy to ensure that a vertex of A is in the exact same location as a vertex of B. To force the vertices to line up, you can click near the desired vertex of road A and choose Mark Vertex. Then click near the matching vertex of road B and choose Move Vertex to Marked Point. That vertex of B is shifted so that it exactly coincides with the marked vertex of A. Now MARPLOT considers the two roads to intersect. See section 5.4 for a step-by-step example of this technique.

When you use Clear Marked Point in the Marked Point submenu, the Marked Point disappears from the screen and its latitude/longitude coordinates are no longer displayed.

4.4.15 Redraw

The drawing of a large view can be time-consuming. You can interrupt the drawing by pressing the ESC key or by clicking anywhere on the map with the mouse. This causes the drawing to stop and allows you to perform operations on a partially drawn view. You can then use the Redraw menu item to force the same view to be redrawn completely.

NOTE: When you cancel the drawing of a view, MARPLOT behaves as if all of the objects are there on the screen. For instance, you can click on the “invisible” objects to select them. Similarly, any objects that were selected before the view was drawn will be remain selected when you cancel the drawing, even if they didn’t actually get drawn.

HINT: If you find you are frequently having to stop the drawing of a map, consider using the Layer List dialog box to set the viewing scale of certain layers to keep them from drawing when you are zoomed out too far.

4.5 List menu

This menu contains items for searching and using the resulting Search Collection (the list of found objects).

It is also used to access the list of layers and the list of maps.

4.5.1 Search

The Search Criteria dialog box, which comes up when you select the Search menu item, is used to find objects according to various criteria you specify.

There are three types of criteria that you must specify to do a search:

1) What type of search do you want to do? In the pop-up box following the words "Search for objects that:" there are seven choices for the type of search:

a) "have any name" This choice indicates that you want all objects on the specified maps and layers. Use this option with some caution since you can easily specify several thousand objects — perhaps more than MARPLOT will be able to list on your system.

b) "have names that start with..." In this case, you type the first few letters of the name of the object(s) you are looking for in the box to the right of the pop-up. DO NOT type a directional prefix in the box. For instance, if you are looking for "E Cedar St.", just enter "Cedar."

c) "have names that contain..." In this case, you type letters that are to be found somewhere within the name of the object(s) you are looking for. This type of search is usually more time-consuming that using the "with names that start with..." option. As with the "names that start with..." option, DO NOT type a directional prefix in the box.

d) "are within..." Here you want to find all objects that are within a specified distance from the Focus Point, from the Marked Point (if it is set), or from another set of objects. In this case, you enter the desired distance, including the units, and choose as the reference the Focus Point, the Marked Point, the set of currently selected objects, or the set of objects in the previous search collection (i.e., those found in the previous search or the previous Copy to Search Collection operation). This type of search can be time-consuming, so you will want to use it carefully, and be as specific as possible about the layers and maps to be searched.

e) "are not within..." This is similar to the "are within..." option, except it finds objects that are NOT within the given distance from the given reference.

f) "are inside of or touched by..." Here you want to find all objects that are touched by the Focus Point, the Marked Point (if it is set), or another set of objects, where for polygon, rectangle, or circle objects, touching can mean being completely or partially inside the borders.

For example, finding all objects that “are inside of or touched by...” a given polygon object will find objects completely or partially inside the polygon. This search is the same as finding all objects “are within...” 0 miles of the given reference.

g) “are outside of and not touched by...” This is similar to the “are inside of or touched by...” option, except it finds objects that are NOT inside of or touched by the given reference.

2) Which layers do you want to search? In the pop-up box following the words “Layer(s) to search:” there are three choices:

a) “All Layers” This indicates that you want to search all layers. You would use this when you are unsure which layers the desired objects might be found on.

b) “Multiple Layers...” Here you want to search on more than one layer, but instead of simply choosing “All Layers,” you want to explicitly check each layer to be searched. In this case, a small scrolling box appears in which you can click on the names of the layers you want to search. A check appears to the left of the names of the clicked layers. Clicking a checked layer removes the check. Clicking in the “all layers” box checks or unchecks all layers. Note that you must check at least one layer to perform a search.

c) “Individual Layer...” Here you know that the desired object is to be found on a given layer. In this case, a second pop-up box appears in which you can select the layer to be searched.

You may note that in the list of layers presented in the pop-up box, layers with names such as “Roads (Major)” are not included. Instead, just the layer “Roads” appears. For the purposes of searching, it is assumed that when you want to search “Roads,” you also want to search “Roads (Major).” The same holds true for any layers whose names are the same except for a word in parentheses.

3) Which maps do you want to search? In the pop-up box following the words “Map(s) to search:” you have three choices:

a) “All Maps” This indicates that you want to search all maps that are currently available. You would use this when you don’t know (or don’t want to spend time thinking about) which maps the desired objects are to be found on. In many cases, there is no noticeable loss of efficiency when using this option. However, if you are searching on a layer such as “Roads” and have a number of maps with many roads,

the search is much more efficient if you can specify the map(s) to be searched.

b) "Maps in View" This is the most common setting. Here you want to search only the maps that are shown (at least partially) in the current view. The idea is that if you are currently looking at the map of, say, LA County, it is likely that you want to search for an object on that map. An important note about the "Maps in View" option is that many maps are always considered to be "in view." In fact, only those maps that have a "Places" layer (which in most cases means those maps derived from Census TIGER files) are ever considered to be not in view. All other maps, such as your user's map, are always in view, even when no objects on these maps are visible on the screen. Thus, the "Maps in View" option can be thought of as "all maps, except those maps with a Places layer that are not in view."

c) "Selected Maps..." Here you know exactly which map(s) you want to search. In this case, a small scrolling box appears in which you can click on the names of the maps to be searched. A check appears to the left of the names of the clicked maps. Clicking a checked map removes the check. Clicking in the "all maps" box checks or unchecks all maps. Note that you must check at least one map to perform a search.

Once you have specified all the necessary criteria, click the Search button to execute the search. While MARPLOT performs the search, it displays messages at the bottom of the map window. If the search is taking too long, you can press the ESC key to stop it, in which case the incomplete results of the search are displayed.

When the search is complete, the objects found to match the specified criteria are put into the Search Collection, and the Search Collection dialog box is shown.

In most cases, you will want to replace any previous contents of the Search Collection (i.e., the results of the previous search) with the new list of found objects. This is reflected by the "replace previous collection" choice at the bottom of the Search Criteria dialog box. However, sometimes you may want to keep the contents of the previous Search Collection, but add the newly found objects to the list. In this case you would choose the "add to previous collection" option. Finally, there may be times when you want to search based on the given criteria, but only include objects that were already in the previous search collection (i.e., you want to find a subset of the previous search collection). In this case, you would choose the "subsearch of previous collection" option.

Search Collection dialog box

This dialog box displays the list of objects that resulted from the most recent search, or from the most recent use of the Copy to Search Collection menu item.

The objects are listed in alphabetical order. You can move quickly to a certain part of the list by typing the first few letters of the name you want.

Each object in the list is displayed with its name, the name of its layer, and its place or map name. If the object is in a particular place that is included on the "Places" layer of its map, that name will be used. For instance, the place might be "Seattle city." If the object is not classified as being in a place on the "Places" layer, the name of its map will be used. If the object is classified as being in a place, but is also in other places, the name of the place will end with "..." as in "Seattle city, ..."

When an object in the list appears in italic type and its name is followed by another name in braces, it means the name is an alternative name for the object whose name is in braces. For instance, if you see "*Main St. { State Hwy 1 }*" in italics, it means that the object named "State Hwy 1," or at least some section of it, is also called "Main St." Thus, the "Main St." object is not actually an object in its own right, but just a reference to the true object, "State Hwy 1." Such references are called *aliases* in MARPLOT. The Search Collection dialog box shows the total number of aliases, along with the total number of real objects, at the top.

When you have highlighted an object in the list, you can show the object on the map by clicking the Show on Map button. The map is redrawn and shifted if necessary to show the selected object. If you click the Show on Map & Zoom button, when the object is shown the scale of the map will change so as just to encompass the object in the map window. This is especially useful when the object to be shown is a boundary-type object such as a city or county boundary.

Alternatively, you can click the Show All on Map button, in which case all objects in the Search Collection will be selected and shown on the map. The view is rescaled if necessary to include all of the objects.

For certain objects, you can also click the Addresses or Intersections buttons to get a list of the address ranges or intersections for the selected object.

In some cases, you may want to save the list of objects in the Search Collection to disk, so that you can use them again any time in the future. You can do this using the Save Collection button. You are prompted for a file name to save the Search Collection into. This file has an extension of "MSC" for MARPLOT Search Collection. Note that MARPLOT provides a folder (directory) called SEARCHES as a convenient place to store your saved search collections. If your

MARPLOT system is multi-user, each user has his or her own SEARCHES folder (directory).

To retrieve a previously saved Search Collection, use the Load Collection button.

Click Close when you are done working with the Search Collection.

Intersections dialog box

This dialog box lists the objects that intersect the object highlighted in the Search Collection.

NOTE: For the purposes of this dialog box, MARPLOT only considers two polyline objects to intersect if they share a vertex exactly. Thus, if you simply draw two polylines that cross one another, they will most likely not intersect according to this dialog box, even though they cross each other on the screen. This dialog box is intended for finding intersections in polyline data that has been imported from an external source, such as the TIGER/Line database, where intersecting polylines always share a vertex. If you want to find intersections with arbitrary data, you can do so using MARPLOT's Search function with a "within" or "touching" option. Searching in this way is more flexible, but significantly slower than, this intersection function.

As with objects in the Search Collection dialog box, the intersections are listed with their names, the names of their layers and the names of their place or map.

When you have highlighted an intersecting object in the list, you can show the intersection on the map by clicking the Show on Map button. The map is redrawn and shifted if necessary to show the point of intersection. The Show on Map & Zoom button shows the intersection at a scale that is appropriate for viewing typical road intersections.

The check box labeled "Intersect with all layers" is used when you want to find intersections between objects on different layers. For instance, suppose you want to find the places where a road intersects with various rivers. You would select an objects on the "Roads" layer in the Search Collection dialog box and click the Intersections button. By default, only the intersecting objects from the "Roads" and "Roads (Major)" layers will be included in the list of intersections. But if you check the "Intersect with all layers" button, intersecting objects from all layers will be included. Thus, any river objects on the "Water" layer that intersect the road will be in the list.

NOTE: As mentioned above, MARPLOT treats the "Roads" and "Roads (Major)" layers as being the "same" layer as far as intersections are concerned, so you do not have to check the "Intersect with all layers" box to find the intersection between a road and a major road. Whenever two layers have names that differ

only by a suffix in parentheses, MARPLOT intersects them with each other automatically.

Addresses dialog box

This dialog box lists the address ranges for a street.

When you have highlighted an address range in the list, you can show the segment of the street that corresponds to that address range by clicking the Show on Map button. The map is redrawn and shifted if necessary to show the chosen segment. The Focus Point is placed on the center of the chosen segment, so that you can identify it.

The Show on Map & Zoom button shows the address range at a scale that is appropriate for viewing typical road segments.

4.5.2 Show Search Collection

This menu item returns you to the Search Collection dialog box, which displays the list of objects that resulted from the most recent search, or from the most recent use of the Copy to Search Collection menu item.

The Search Collection dialog box is described further in section 4.5.1.

4.5.3 Copy to Search Collection

Often the set of objects that is currently selected on the map is meaningful to you. For instance, suppose you have selected the 20 objects on your “Schools” layer that fall within a certain circle. You can easily find the names of the selected objects by copying them to the Search Collection using this menu item. The new Search Collection is then displayed, listing the schools by name.

Once the selected objects are in the search collection, they will stay there, even after they are no longer selected, until the next time you explicitly modify the Search Collection by doing a search or another Copy To Search Collection.

4.5.4 Layer List

This dialog box presents a list of all the layers. The layers can be listed either in alphabetical order or in their top-to-bottom order, with the top-most layer at the top of the list. The top-to-bottom order of the layers is important because the layers are drawn in order from bottom to top. Thus, objects on higher layers can be drawn over objects on lower layers. Similarly, when you click on the map at a location with objects from more than one layer, the object from the highest layer will be selected.

For each layer, the list gives several columns of information. You can click on any of these columns to change the settings for the given layer. The columns, from left to right, are as follows:

1) The layer's lock status. At the start of each MARPLOT session, every layer is locked, indicated by a closed padlock icon, . When a layer is locked, you cannot make any changes to the objects on that layer, such as moving the objects, renaming them, or changing their color. To unlock a layer, click its lock icon, . When you have unlocked one or more layers, the list of tool icons on the left edge of the map window is extended to offer tools for creating new objects. Although all users can unlock layers, users without browse-level permission are restricted to editing those layers on their personal user's map only. You must have edit-level permission to edit other maps. NOTE: When the lock icon for a layer is gray instead of black, , it indicates that the given layer has been locked by another application sharing information with MARPLOT. In effect, the layer is "owned" by that application. You can unlock such a layer, , but the changes you can make to objects on that layer are restricted to those made by the use of the graphical menu items in the Objects menu.

2) The layer's name. Clicking on a layer's name simply highlights the layer in the list. If a layer's name appears in italics, it indicates that the layer is temporary, meaning that all objects on the layer will be deleted when the current MARPLOT session is terminated.

3) "Show + Names" Clicking in this column means that you want to turn the layer on (i.e., show the objects on the layer), regardless of the map scale. Further, you want the objects to be labeled with their names, regardless of the map scale.

4) "Show" Clicking in this column means that you want to turn the layer on (i.e., show the objects on the layer), regardless of the map scale. The objects will only be labeled with their names at certain scales, as set by the Layer Scale Ranges dialog box.

5) "Range" Clicking in this column means that you want to turn the layer on (i.e., show the objects on the layer) only within the range of scales set by the Layer Scale Ranges dialog box. Similarly, the objects will only be labeled with their names at certain scales, as set by the Layer Scale Ranges dialog box.

6) "Hide" Clicking in this column means that you want to turn the layer off (i.e., not show the objects on the layer), regardless of the map scale.

7) "Default Graphics" Clicking in this column, , represented at the top by a pair of identical symbol icons, means that you want all objects on the layer to be drawn using the default graphical settings for the layer, as set using the "Default graphics" control in the boxed area below the list of layers. This gives the objects on the layer a uniform look, and also allows you to change the look of all objects on the layer simply by changing the default graphics for the layer. Note that in this column, instead of a check mark, a small sample of the default graphics for the layer is displayed.

8) "Individual Graphics" Clicking in this column, , represented at the top by a pair of icons that are not identical, means that you want the objects on the layer to be drawn using their individual graphical attributes, as set by the Object Settings dialog box. In this case, the "Default graphics" for the layer are not used, and the objects on the layer may look very different from one another (although typically most or all of the objects on a layer will have identical individual graphical attributes and will look the same).

There is a small button at the top of each of the last six columns. Clicking this button is the same as clicking in the given column for all layers. For instance, if you wanted to quickly hide all layers except one, you would click the small button at the top of the "Hide" column to hide all layers, then click in the "Show" column of the desired layer.

The boxed area just below the list of layers gives information specific to the layer that is currently highlighted in the list. You can use this area to:

1) View how many objects are on the layer, and how many maps the layer is represented on.

2) Use the "Rename" button to give the layer a different name. WARNING: Renaming a layer can cause trouble when you have previously linked objects on that layer to database programs since the database program's link to the object involves the name of the object's layer. As a rule, you should only rename layers that you have created by hand yourself.

3) Use the "Move Layer..." button to move the layer up or down in the list of layers. This option is only available when the layers are listed in top-to-bottom order (i.e., when the "alphabetical" box is not checked).

4) Use the “Scale Ranges...” button to set the scale ranges for the layer. See the description of the Layer Scale Ranges dialog box below.

5) Use the “Set” button to set the default graphical attributes for the layer.

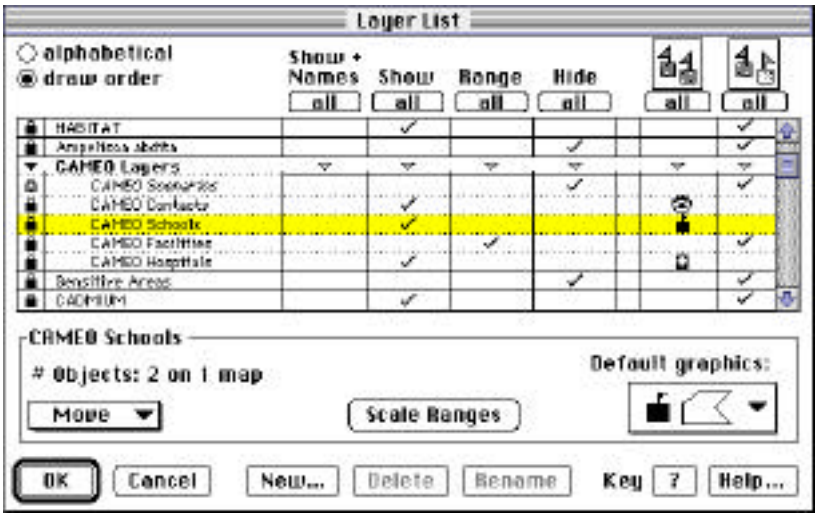
   NOTE: The line width setting is also used as the setting for the size of the dots, when symbol objects on the layer are shown as dots, according to the Layer Scale Ranges dialog box.

   NOTE: By default, in the “Default Graphics” column of the list of layers, a small symbol icon is displayed to show a sample of the look of objects on that layer. However, some layers contain predominantly objects that are not symbols (points) but polylines or polygons. For instance, a “Roads” layer would contain only polylines and a “Counties” layer would contain only polygons. With such a layer, you can choose as the “default symbol” either the polyline or polygon symbol that appear near the start of the table of symbols. When one of these is chosen as the default layer symbol, MARPLOT draws a small polyline or polygon instead of a small symbol in the layer’s “Default Graphics” column in the layer list. Similarly, when the default line pattern is chosen to be the railroad pattern, MARPLOT draws the railroad pattern instead of a symbol in the “Default Graphics” column.

You can use the New and Delete buttons to create or delete layers. You must unlock a layer before attempting to delete it. Usually, you will only create and delete layers that you intend to use on your personal user’s map.

WARNING: Deleting a layer deletes all objects on that layer. This can cause trouble when you have previously linked objects on the layer to database programs, since the database program might consider a linked object to exist even though it has actually been deleted.

Layer List groups



Layer groups give you a way to group layers in the Layer List in order to view and operate on them more conveniently.

A layer group is just a collection of layers. You create a layer group by clicking the New... button in the Layer List (you are given the choice of creating a new layer or a new group). Move a layer into a group by highlighting the layer and selecting Into Group... from the Move pop-up menu. Move a layer out of a group by highlighting the layer and selecting Out of Group from the Move pop-up menu.

A layer group can be opened or closed. Close the group by clicking on the black triangle to the left of its name. Click on the triangle again to re-open the group. The layers in a closed group are treated just like other layers; they are just hidden from view in the Layer List. The downward-pointing triangles at the tops of columns of an open group can be used to set all of the layers in the group with a single action. For instance, clicking in the triangle in the Show column puts all layers in the group into show mode.

To set the scale ranges or default graphics for all layers in a group simultaneously, highlight the group name and use the Scale Ranges… button or default graphics pop-up menu.

Layer Scale Ranges dialog box

The purpose of this dialog box is to allow you to set four scale values related to the display of the given layer (or group). The dialog box presents a scale “ruler” that ranges from a largest (most zoomed-in) scale of “1 inch = 0.01 mi” to a smallest (most zoomed-out) scale of “1 inch = 4137 mi”. To visualize the scale ruler, you might imagine that you are in a helicopter. At the bottom of the scale

ruler, you are very close to the earth and can only see a small amount of land. As you rise higher and higher you see more and more land, until you reach a height, at the top of the scale ruler, where the entire earth is within view.

The four scale values that you can set for the given layer are:

1) The "Show Layer" scale value, . This value applies only when the layer is in "Range" mode, as set in the Layer List dialog box. It specifies the smallest (most zoomed-out) scale at which the given layer is to be shown (turned on). At all smaller (more zoomed-out) scales, the layer will be hidden (turned off).

2) The "Hide Layer" scale value, . This value applies only when the layer is in "Range" mode, as set in the Layer List dialog box. It specifies the largest (most zoomed-in) scale at which the given layer is to be shown (turned on). At all larger (more zoomed-in) scales, the layer will be hidden (turned off).

3) The "Show Names" scale value, . The value applies only when the layer is in "Show" or "Range" mode, as set in the Layer List dialog box. (When the layer is in "Show + Names" mode, the names are shown regardless of the scale.) It specifies the scale at which name labels for objects on the layer are to be drawn on the map. The names appear at the given scale and at all larger (more zoomed-in) scales. The purpose of this scale setting is to allow you to show names of objects only at scales where they do not crowd each other out on the screen.

4) The "Icons -> Dots" scale value, . This value specifies the scale at which symbol (point) objects on the layer are to be drawn as small dots instead of as their usual symbol icons. Symbols will be drawn as dots at the given scale and at all smaller (more zoomed-out) scales. The purpose of this scale setting is to allow you to show symbols as dots at scales when the symbols icons would crowd each other out on the screen.

The four scale values are represented as lines to the right of the scale ruler. Each line has a small arrow pointing at a mark on the scale ruler, the name of the scale value to be set, and the current setting for that scale value.

You can change any of the four layer scale values by clicking on the name of the desired scale value and dragging up or down. The scale value follows the movement of the mouse until you release the button.

The scale of the map's current view in the map window is indicated to the left of the scale ruler. This is a useful reference point when setting scale values. For instance, you might be looking at the map and think, "At this scale, it takes too long to draw all of the objects on my Roads layer." You could then use the Layer Scale Ranges dialog box to change the scale ranges for the Roads layer. You would know to drag the "Show Layer" scale value somewhere below the current scale marker on the scale ruler.

When you are satisfied with the scale values for the layer, click OK.

4.5.5 Map List

This dialog box lists all of the maps known to MARPLOT. It allows you to modify the status of existing maps, add maps to the system, or remove maps from the system. More information on the management of maps can be found in section 2.4.

The Map List shows, for each map, the name of the map, the map's folder (directory) on the disk, the "status" of the map, and the number of layers the map contains.

Maps can be in one of three states: In Use, Not In Use, or Not Found. Maps that are In Use are drawn on the screen and can be operated on using all of the MARPLOT functions. Maps that are Not In Use are not drawn on the screen. Maps are Not Found when you have renamed or deleted a map folder that MARPLOT had used during a previous session. A map might also be Not Found because it is on a removable disk that is not currently mounted. NOTE: If a map is Not Found because its disk is not mounted, you must quit MARPLOT, insert the disk, and then restart MARPLOT in order for the map to be found. MARPLOT will not find a map on a disk that is inserted while MARPLOT is running.

You can sort the maps either by name or by path. Sorting by path is useful when you have many maps that are organized hierarchically in folders (directories). Click the small circles to the left of the "Name" and "Path" labels to change the sort order.

When there are many maps, you can find a map in the list by typing a few characters of its name into the "Find" text box and clicking Find Next. Repeatedly clicking on Find Next finds all maps containing the given string of characters.

You can get more specific information about the selected map using the Map Info button, which brings up the Map Info dialog box.

You can use the Go to Map button to change the view in order to encompass the area of the selected map (the area encompassing all objects on the map).

You can rename the selected map using the Rename button. WARNING: Renaming a map can cause trouble when you have previously linked objects on that map to database programs since the database program's link to the object involves the name of the object's map. You will rarely want to rename a map.

The Find New Map button is used when you have a map folder (directory) that you want to add to the list of maps. You can find a map on one of your hard disks or on a LandView compact disc. Maps on CDs can be used directly on the CD or downloaded to a hard disk for faster operation. It is often unnecessary to use Find New Map to access LandView CDs because they are detected and used automatically by MARPLOT, provided you have the appropriate files in your CDMAPS folder. See section 2.4.3 for information on using CD maps.

In a multi-user MARPLOT system, the Find New Map operation is usually performed by the system administrator.

Once you have added a map to the list using Find New Map, MARPLOT will remember it and look for that map each time it starts up. If at some later time you no longer want the map in the list, use the Remove button to remove the map from the list.

MARPLOT automatically looks for maps within its own folder (directory) when it starts up. Thus, you can add a map without using Find New Map by putting the map folder into the MARPLOT folder and restarting MARPLOT. You cannot use the Remove button to remove maps in the MARPLOT folder; you must move the map directory outside of the MARPLOT folder in order to remove the map from the list. Also, you cannot remove a map that is "owned" by another application while that application is running.

The Remove button does not delete the map's files on disk but simply erases MARPLOT's "knowledge" of the map. NOTE: In a multi-user MARPLOT system, any maps added by the system administrator using the Find New Map button are automatically added to the map lists of all users. If the system administrator has added certain maps in this way, only he or she can remove them permanently; other users can remove them for the current MARPLOT session only.

SHORT CUT: You can toggle a map between In Use and Not In Use by clicking on the map's row in the Status column while holding down the control key (the option key on the Macintosh).

Map Info dialog box

This dialog box shows the name and folder (directory) of an individual map, and lets you change certain settings for that map.

You can click the “use this map” box to put the map In Use or Not In Use.

Each map has a five-digit “default location code.” When you create an object on a map, the object inherits its location code from the map. The location code is not used by this version of MARPLOT, but it may be used in a future version. For now, you will probably want to leave the “default location code” field untouched.

The list in the center of the dialog box shows you which layers are included in this map, and how many objects from this map are on those layers.

4.6 Objects menu

The items in the Objects menu are used when you have one or more objects selected and want to get MARPLOT information about them or modify them in some way. You can get detailed information about a single object, including information specific to a single segment of a polygon or polygon object. You can modify the selected objects by changing their graphical attributes, or by moving them to a different layer or map.

NOTE: The Objects menu only affects the objects that are currently selected, and does not apply to other objects, including those created in the future. For instance, if you create an object whose color defaults to red (because red is the default color for its layer) and then change that object to green using the Objects menu, future objects created on that layer will still default to red (until you change the layer’s default color).

4.6.1 Object Settings

This dialog box allows you to change the settings of an individual object. It appears automatically to let you check / modify the settings for a newly created object. It also appears when you select a single object on the map and use the Object Settings menu item, or when you double-click on an object on the map.

The top portion of the dialog box is the same for all types of objects. The lower portion differs depending on the type of object.

In order to modify information about an object, the object’s layer must be unlocked. Users with browse-level permission can only modify objects on their private user’s map.

The first field lets you view / modify the name of the object.

The next two lines let you change the object's map and layer. Changing an object's map is uncommon, and is done only when an object has mistakenly ended up on the wrong map. Changing an object's map does not change its location, but may extend map boundaries. You can change the object's layer if it has been "misclassified" on the wrong layer. Note that to move the object from one layer to another, both layers must be unlocked. WARNING: Changing an object's map or layer can cause problems if the object has been linked to a database program.

The next box presents four pieces of information that are used to help track the object:

1) Each object has a four-character owner code. This code is used to keep track of who originally created the object. In a multi-user MARPLOT system, the administrator can assign to each user a unique code. Otherwise, objects created by users have the default code "USER." Objects that are derived from Census Bureau TIGER files have the owner code "CENS."

2) Each object has a five-digit location code. This is used to keep track of where the object is situated. Generally, this location code matches the default location code of the map the object is on.

3) When an object is modified, the date of the modification is recorded. This date is shown in the Modified field.

5) When an object is modified, the four-character code of the modifier is recorded. This is the code assigned to each user in a multi-user MARPLOT system, or the default value "USER."

Each object is classified according to the Census Bureau's feature classification system. This system uses three-character codes and includes many categories ranging from various types of roads to various types of institutions such as hospitals and schools. In MARPLOT, this classification is used only for display purposes. You can change the classification of the object by using the Set button next to the Class field.

Each object has a place, which is either the name of an object on the "Places" layer, such as a city, or the name of the map that the object is part of. The place of the object is used by MARPLOT for display purposes only. You can set the object's city or town with the Set button next to the Place field.

The Position / Size button brings up the Position / Size dialog box, which lets you view / modify the latitude / longitude location of the object.

The remaining lower part of the dialog box varies for the different types of objects, as follows.

For polygon, polyline, rectangle, and circle objects...

You can view / modify the color, line style, and fill pattern. Filling an object with white means not filling it (i.e., leaving its interior clear). You cannot set the fill pattern of polyline objects, since they have no interior. The white or "Ø" line style only applies to polygon edges.

For symbol (point) objects...

You can view / modify the color, dot width, and symbol. The symbol is the icon used to represent the object on the map. The dot width is the size of the dot to be used for this object when the objects on the given layer are shown as dots, according to the Layer Scale Ranges dialog box. Note that setting the dot size here is the same as setting the object's Line Width in the Draw menu.

For text objects...

Click the Edit Text button to edit the text of the object. The text does not "wrap" when displayed on the map, so you should use <enter> (<return> on Macintosh) to create multiple lines, if desired. You can also view / modify the color, font, and style of the text. When the "frame" box is checked, the text is drawn surrounded by a frame and against a white background. When the "frame" box is not checked, the text appears unframed, and there is no white background.

For picture objects...

A miniature image of the picture is shown on the right. The name of the file in the map folder (directory) in which the picture is stored is displayed. When the "frame" box is checked, the picture is drawn surrounded by a frame and against a white background. When the "frame" box is not checked, the picture appears unframed, and there is no white background.

The Geo-Reference button is used to position the picture on the earth by specifying the latitude / longitude coordinates of one or two points on the picture. This is useful when you have a large picture object that serves as "base maps" upon which other objects are placed. You will usually geo-reference a picture object just once, right after you insert it, but you can correct its location by geo-referencing it any time. Keep in mind, however, that if you have placed objects "on" the picture object, and then shift the picture object, the objects will retain their old position, which will be incorrect in relation to the new location of the picture.

Geo-Referencing a picture object

The purpose of this dialog box is for you to specify two latitude/longitude points on the picture object so that MARPLOT knows where it is situated on the earth. You can either specify both points explicitly, or one point explicitly and the other by giving its direction and distance from the first.

The four items in the upper-right corner of this dialog box serve as a miniature tool palette. Click on the palette to choose one of these four tools. Use the plus and minus magnifying glass tools (along with the scroll bars surrounding the picture) to zoom in and out as you search for the two points you want to use. Also, you can click on the miniature copy of your picture on the right side of the dialog box to quickly move to any part of the picture. The moving rectangle in the miniature view shows the area of the picture being displayed in the larger view area.

When you find the location of your first point, choose the “1” tool and click its point on the desired picture point (you might want to zoom in close to increase your accuracy).

When you have clicked the point, it will be marked with a “1” on the picture and you will be asked to enter the latitude/longitude values for the point.

Do the same for the second point using the “2” tool. With the second point, you have the option of specifying the distance from point 1, instead of giving its latitude/longitude coordinates directly.

If you are unhappy with one or both of your points, you can reposition them by using the “1” and “2” tools again, or you can modify only the latitude/longitude values by clicking the Reset buttons.

When you are happy with the points and the latitude/longitude values you have entered, click the OK button. MARPLOT will change the position of the picture object to fit the coordinates you have specified.

NOTE: In some cases, you might not need to geo-reference a picture object. You may be able to achieve the desired accuracy simply by dragging and stretching the object directly in the map window with the arrow tool.

4.6.2 Segment Settings

This menu item and dialog box allow you to view and modify information specific to an individual segment of a polyline or polygon object. To use the dialog box, select a single polyline or polygon object on the map by clicking it with the arrow tool along the desired segment. Then choose the Segment Settings menu item.

The segment's number is given, along with the total number of segments in the object. Some segments, in objects derived from TIGER/Line data, are "shape" segments of other segments. This means that the segment usually does not have settings of its own but shares settings with some of its neighbors. In most cases, you do not have to be concerned with whether a segment is a shape segment.

For segments that have address information, the address ranges on one or both sides of the segment are displayed. You can modify the segment's address ranges if the selected object's layer is unlocked.

For segments that have ZIP code information, the ZIP codes on one or both sides of the segment are displayed. You can modify the segment's ZIP codes if the selected object's layer is unlocked.

For segments that are derived from TIGER/Line data, the classification code of the segment is displayed. This classification usually matches the classification of the entire object to which the segment belongs, but this is not always the case. You can modify the segment's classification code if the selected object's layer is unlocked.

For segments that are derived from TIGER/Line data, the original TIGER/Line identification number for the segment is displayed, along with the version of the TIGER database the segment was derived from. This information is useful for tracking changes you make to TIGER-derived objects.

When you are finished working with a given segment, you can exit the Segment Settings dialog box with the OK or Cancel buttons, or you can use the Previous and Next buttons as a quick way to browse through other segments of the selected object.

4.6.3 Vertex Menu

The Vertex submenu contains four items that are used to move, insert, and delete vertex points of polyline and polygon objects. All of these items apply only when you have used the arrow tool to select a polyline or polygon object. They all expect the Focus Point to be on or near the desired vertex point of the selected object.

When you choose Mark Vertex, the Marked Point is positioned at the vertex of the selected polyline or polygon object that is closest to the Focus Point. (For more information about the Marked Point, see section 4.4.13.)

Move Vertex to Marked Point is used when you want to position a particular vertex point of a given polyline or polygon (the one currently closest to the Focus Point) at an exact latitude/longitude point. This operation, in conjunction with

Mark Vertex, is especially important when editing intersecting road segments in MARPLOT, since MARPLOT only considers roads to intersect when they have a common vertex. For example, suppose you have created two roads called A and B. You intend for them to intersect, but as you use the polyline tool to create them in MARPLOT, you do not have the accuracy to ensure that a vertex of A is in the exact same location as a vertex of B. To force the vertices to line up, you can click near the desired vertex of road A and choose Mark Vertex. Then click near the matching vertex of road B and choose Move Vertex to Marked Point. That vertex of B is shifted so that it exactly coincides with the marked vertex of A. Now MARPLOT considers the two roads to intersect. See section 5.4 for a step-by-step example of this technique.

Insert Vertex at Focus Point is used to create a new Vertex in the selected object. You can think of this operation as breaking the given segment into two pieces. Each piece has the settings (address range, ZIP code, etc.) of the original.

Delete Vertex deletes the vertex of the selected object that is closest to the Focus Point.

4.6.4 Move Objects to Layer

This menu item moves the selected object(s) from their current layer(s) to the layer you select.

It is most commonly used when you want to change the layer of several objects at once, such as when you are moving all objects from one layer to another layer.

To move an object from one layer to another, both layers must be unlocked. Users with browse-level permission can only move objects between layers on their private user's map.

Note that you can also change the layer of an individual object using the Object Settings dialog box.

WARNING: Changing an object's layer can cause problems if the object has been linked to a database program.

4.6.5 Move Objects to Map

This menu item moves the selected object(s) from their current map(s) to the map you select.

It is most commonly used when you want to change the map of several objects at once, such as when you are moving all objects from one map to another map.

To move an object from one map to another, the object's layer must be unlocked.

Users with browse-level permission cannot move objects from one map to another.

Note that you can also change the map of an individual object using the Object Settings dialog box.

WARNING: Changing an object's map can cause problems if the object has been linked to a database program.

4.6.6 Color

This menu item changes the color of the selected object(s) to the color you select.

The layer(s) of the selected object(s) must be unlocked. Users with browse-level permission can only change objects on their private user's map.

Note that you can also change the color of an individual object using the Object Settings dialog box.

4.6.7 Line Width/Pattern/Style

These items change the line style of the selected object(s) to the style you select.

On Windows, the Line Style menu item is present. On Macintosh systems, there are two menu items relating to line styles: Line Width and Line Pattern. The Line Style items lets you pick from among several thicknesses or patterns. The Line Width and Line Pattern items allow you to combine any chosen thickness with any chosen pattern.

The white or "Ø" line style only applies to polygon edges. If you set the line style of a polyline to white or "Ø", MARPLOT uses a solid pattern instead.

The layer(s) of the selected object(s) must be unlocked. Users with browse-level permission can only change objects on their private user's map.

Note that you can also change the line style of an individual object using the Object Settings dialog box.

For symbol (point) objects, the width of the chosen line style determines the size of the dot when symbol objects on the given layer are shown as dots, as set by the Layer Scales Ranges dialog box.

4.6.8 Fill Pattern

This menu item changes the fill pattern of the selected object(s) to the pattern you select.

The layer(s) of the selected object(s) must be unlocked. Users with browse-level permission can only change objects on their private user's map.

Note that you can also change the fill pattern of an individual object using the Object Settings dialog box.

4.6.9 Symbol

This menu item changes the symbol of the selected symbol (point) object(s) to the symbol you select.

The layer(s) of the selected object(s) must be unlocked. Users with browse-level permission can only change objects on their private user's map.

Note that you can also change the symbol of an individual symbol object using the Object Settings dialog box.

4.7 Sharing menu

As described in section 1.2.7, MARPLOT has the capability to share information with other application programs, especially database programs that store information about MARPLOT objects.

The programs work together by means of the Sharing menu. The Sharing menu has a submenu for each application that MARPLOT communicates with directly. For information about the items in the Sharing submenus, see the documentation for the applications that "own" the submenus.

4.8 Tools

The MARPLOT tools appear as a list of icons along the left edge of the map window. When you have unlocked one or more layers, the list of tools extends to include tools for creating new objects on the map.

When you click on a tool icon, it becomes highlighted and your mouse cursor changes to the corresponding tool when it is in the map window.

You can double-click on some of the tool icons (those marked with two small arrows) to alter the behavior of the tools. For instance, if you double-click on the

arrow tool icon, you can choose whether dragging with the arrow selects using a rectangular or circular area.

4.8.1 Arrow tool

Whenever you click on the map with the arrow tool, a small, flashing, target-shaped icon called the "Focus Point," , is placed at the location of the click. The latitude/longitude coordinates of the Focus Point are displayed in the upper-left corner of the map window.

The arrow tool is used to select, move, and resize objects on the map. You can also double-click on an object with the arrow tool to get the Object Settings dialog box for the object.

SELECTING OBJECTS: You select an object by clicking on it. To select a non-filled rectangle, circle, polygon, or polyline you must click directly on one of its edges. When an object is selected, it is surrounded by small red markers (handles), and its name, layer, and map are displayed at the bottom of the window. Hold down the shift key when selecting objects to select more than one at a time. If you click on an already-selected object while holding down the shift key, that object will become deselected.

You can select several objects in a given area by clicking with the arrow tool and holding the mouse button down as you drag. The movement of the mouse defines a region with a gray border. When you release the mouse button, you are asked which layer(s) you want to select. All objects in the region and on the chosen layer(s) then become selected.

MOVING OBJECTS: When you have selected one or more objects, you can move them simply by clicking on any one and dragging the mouse with the button down. Gray outlines of the objects follow your mouse movements. When you release the button, the objects will move to the indicated location. You can only move objects that are on unlocked layers. Users with browse-level permission can only move objects on their private user's map.

RESIZING OBJECTS: When you have one object selected, you can resize it by clicking on one of its handles (the dots that surround the object to indicate that it is selected) and dragging with the mouse. Symbol objects cannot be resized. Picture and Text objects retain their shape as they are resized. You can only resize objects that are on unlocked layers. Users with browse-level permission can only resize objects on their private user's map.

OPTIONS

When selecting a group of objects by defining a drag region with the arrow tool, you have the option of using either a rectangular or a circular region. The rectangular region follows the mouse starting at the corner of the rectangle while the circular region follows the mouse from the center of the circle. You can choose which shape will be used by double-clicking on the arrow tool icon.

If you hold down the control key (option key on Macintosh) when clicking on the map, MARPLOT will ask you which layers you want to select on and then select all objects on the chosen layers that are touched by the point at which you clicked. This allows you to select several objects at the same location, regardless of which ones are "on top" of the others, according to the top-to-bottom order of the layers.

If the right mouse button (control key on Macintosh) is down at the time MARPLOT displays an object's name at the bottom of the window, the object's ID number is also displayed.

4.8.2 Hand tool

The hand tool is used to scroll the map in the window. Click and drag with the hand. When you release the button, the map shifts in the direction of your drag.

4.8.3 Zoom-in tool

The zoom-in tool is used to zoom into the map by a factor of two or to zoom into an area of the map by selecting that area as a rectangular region. When you click with the zoom-in tool, the map is rescaled and centered about the location of the click.

When you drag to select an area and release the mouse button, the view is changed to show just the selected area. Note that, as you drag, the rectangular selection region is constrained to match the dimensions of the map window.

OPTIONS: Double-click in the zoom-in tool in the tool palette to choose whether the rectangle is defined by following the mouse from the top-left corner or from the center of the rectangle. Hold down the control key (option key on Macintosh) when using the tool to toggle between the two behaviors.

4.8.4 Zoom-out tool

The zoom-out tool is used to zoom out from the map by a factor of two. When you click with the zoom-out tool, the map is rescaled and centered about the location of the click.

4.8.5 Distance tool

The distance tool (whose icon is a small ruler) is used to measure distances on the map with the mouse. To use this tool, click on the map and drag while holding the button down. The mouse movement defines a circle, with a radius drawn from the mouse to the location of the initial click. The radius of the circle is displayed at the bottom of the map window, in the current units (use the Preferences menu item to change the current units).

MARPLOT also displays the angle of the radius line, where 0° is true north, and the angle increases clockwise.

If you are measuring very large distances with the distance tool, MARPLOT will stop drawing the circle (but continue to draw the length) at the point that the curvature of the earth makes the circle unrealistic.

4.8.6 Symbol tool

The symbol tool is only available when one or more layers are unlocked.

The symbol tool is used for creating symbol (also called “point”) objects.

As soon as you click to place the symbol, the Object Settings dialog box for the new object pops up to allow you to change any of its settings. You should be especially careful to make sure the object has been placed on the correct layer and map. Click OK when you are happy with the settings for the new object, or Cancel if you decide not to create the object after all.

4.8.7 Rectangle tool

The rectangle tool is only available when one or more layers are unlocked.

The rectangle tool is used for creating rectangle objects. Note that a rectangle object is always oriented so that its sides are vertical and horizontal. To create a

four-sided object that is rotated, you must use the polygon tool to create a polygon object.

You create the rectangle by clicking with the rectangle tool on the map and dragging. As soon as you let up on the mouse button, the Object Settings dialog box for the new object pops up to allow you to change any of its settings. You should be especially careful to make sure the object has been placed on the correct layer and map. Click OK when you are happy with the settings for the new object, or Cancel if you decide not to create the object after all.

OPTIONS: When drawing the rectangle, you can treat the initial mouse click either as the top-left corner or the center. You can use the control key (option key on Macintosh) to toggle between the two, and you can set one or the other as a default preference by double-clicking on the rectangle tool icon. Also, if you hold down the shift key when drawing the rectangle, it is constrained to a square.

4.8.8 Circle tool

The circle tool is only available when one or more layers are unlocked.

The circle tool is used for creating circle objects.

You create the circle by clicking with the circle tool on the map and dragging. As soon as you let up on the mouse button, the Object Settings dialog box for the new object pops up to allow you to change any of its settings. You should be especially careful to make sure the object has been placed on the correct layer and map. Click OK when you are happy with the settings for the new object, or Cancel if you decide not to create the object after all.

OPTIONS: When drawing the circle, you can treat the initial mouse click either as the top-left corner or the center. You can use the control key (option key on Macintosh) to toggle between the two, and you can set one or the other as a default preference by double-clicking on the circle icon.

4.8.9 Polyline tool

The polyline tool is only available when one or more layers are unlocked.

The polyline tool is used for creating polyline objects, which are strings of connected line segments used to represent things such as roads or rivers.

You define the polyline segment by segment, clicking at the end point of each segment. Double-click on the final endpoint to finish creating the polyline. The polyline terminates at the location of your double-click.

As soon as you double-click, the Object Settings dialog box for the new object pops up to allow you to change any of its settings. You should be especially careful to make sure the object has been placed on the correct layer and map. Click OK when you are happy with the settings for the new object, or Cancel if you decide not to create the object after all.

Use the arrow tool, not the polyline tool, to move the vertex points of an existing polyline object.

HINT: If you forget to double-click on the last point of your polyline, you can finish the polyline without defining a new point by clicking once on the polyline tool icon. (You can only do this after you have defined at least two real endpoints.)

4.8.10 Polygon tool

The polygon tool is only available when one or more layers are unlocked.

The polygon tool is used for creating polygon objects (multi-sided, closed figures).

You define the polygon segment by segment, clicking at the end point of each segment. Double-click on the final endpoint to finish creating the polygon. The final segment connecting the final endpoint to the polygon's starting point is automatically filled in.

As soon as you double-click, the Object Settings dialog box for the new object pops up to allow you to change any of its settings. You should be especially careful to make sure the object has been placed on the correct layer and map. Click OK when you are happy with the settings for the new object, or Cancel if you decide not to create the object after all.

Use the arrow tool, not the polygon tool, to move the vertex points of an existing polygon object.

HINT: If you forget to double-click on the last point of your polygon, you can finish the polygon without defining a new point by clicking once on the polygon tool icon. (You can only do this after you have defined at least three real endpoints.)

4.8.11 Text tool

The text tool is only available when one or more layers are unlocked.

The text tool is used for creating text objects to label your maps.

Click on the map with the text tool to specify the center of the new text object.

As soon as you click, the Object Settings dialog box for the new object pops up to allow you to change any of its settings. For new text objects, MARPLOT brings up the Edit Text dialog box immediately to let you enter the text.

You should be especially careful to make sure the object has been placed on the correct layer and map. Click OK when you are happy with the settings for the new object, or Cancel if you decide not to create the object after all.

5 Examples

5.1 Adding maps

Introduction

A MARPLOT map is a folder (directory) containing layer files. Layer files have names that end with ".LYR," ".SUM," and ".OBJ" (in some cases there are also files with names ending in ".SM2" and ".NNX").

MARPLOT automatically adds to its map list any map folder (directory) that is inside the MARPLOT folder (directory) at the time a MARPLOT session begins.

MARPLOT keeps a list of maps stored in locations other than the MARPLOT directory in the file XTRAMAPS.PLT. When a MARPLOT session begins, MARPLOT adds to its map list any map in this file that is still valid (maps in the XTRAMAPS.PLT file are invalid, for example, if they are on a removable disk that is not currently mounted, or if you have renamed a directory or folder that is part of the path to the map).

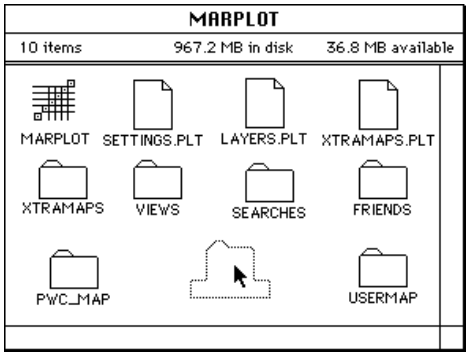
Also, if you have a CDMAPS folder containing the appropriate files, MARPLOT will automatically add maps from a LandView compact disc as soon as it recognizes that such a CD has been inserted.

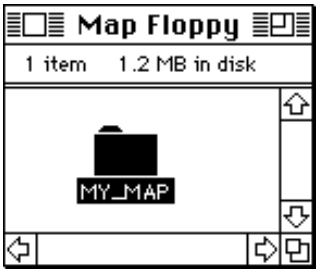
Thus, you have a number of options for adding MARPLOT maps to your system. This example explores these options in four sections. The first two sections apply to using maps taken from a source other than a CD. Later sections discuss using maps from CDs.

Note: See section 2.4.3 for more information about adding maps to your system.

Copying a map into the MARPLOT folder (directory)

If you have space on the hard disk where you keep MARPLOT itself, and if the map is one you want to use regularly, it makes sense to keep the map right in the MARPLOT folder. It's a simple matter of copying the map folder into the MARPLOT folder. Macintosh users can do this by dragging the map folder into the MARPLOT folder using the Finder. Windows users can drag the map directory (usually on drive A) into the MARPLOT directory (usually on drive C) using the Explorer or Desktop.





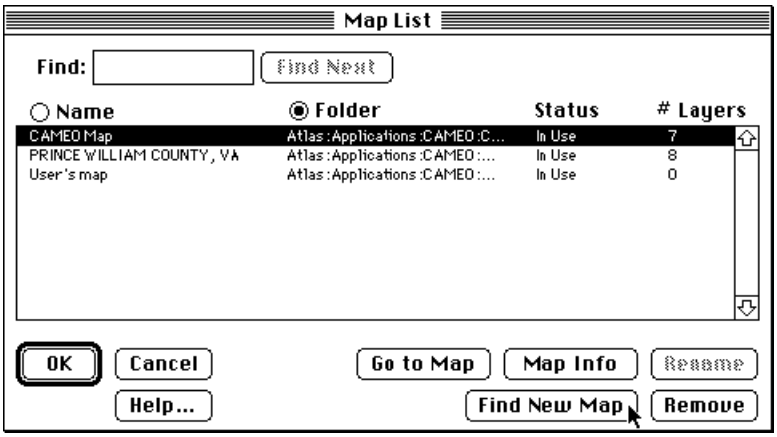
You have to restart MARPLOT for it to see the new map.

Using Find New Map to find a map on a hard disk

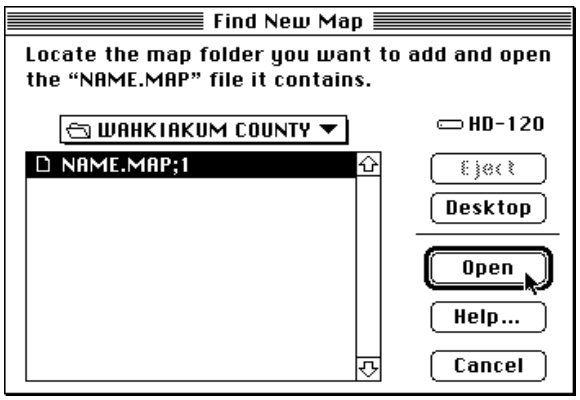
Suppose the map is too big to put on the same hard disk as MARPLOT, and you've copied it to another hard disk and want to keep it there. Or perhaps you want it on the same disk as MARPLOT, but not in the same folder (you might want to use the provided XTRAMAPS folder to "hide" it). Perhaps you want to keep the map on a removable disk, and insert the disk before a MARPLOT session where that map will be used. In all of these cases, you need to use MARPLOT's Find New Map function to show MARPLOT where the map is located.

First, copy the map to the place you want it. Then start MARPLOT.

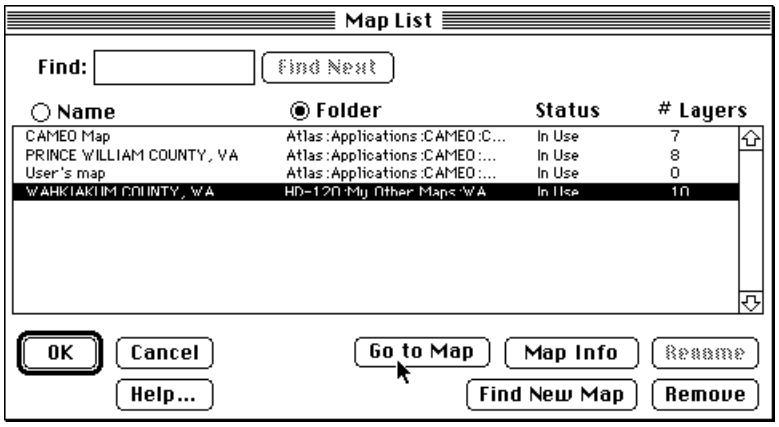
From the Map List dialog box, click Find New Map.



MARPLOT brings up a standard file dialog box. (If a LandView II CD is inserted, MARPLOT asks if you want to find a map on the CD or in another location. In this case, we're looking for a map in another location.)



Use the standard file dialog box to locate the new map folder (directory). Highlight the NAME.MAP file it contains (on the Macintosh this name may be suffixed with ";1"). Then click Open (Windows users, click OK).



Back in the Map List dialog box, the new map has been added to the list. At this point, you can click OK, or click Go to Map to view the added map right away.

MARPLOT keeps the path to the new map in its XTRAMAPS.PLT file. It will remember the map until you use the Remove button in the Map List dialog box to remove it.

Using maps on a LandView CD

LandView is a database program for Windows computers that uses MARPLOT maps. If you have a CD drive, you can use LandView CDs as a source for your MARPLOT maps. (To read these DOS-formatted CDs, Macintosh users will need the Foreign File Access system extension and the ISO 9660 File Access file for that

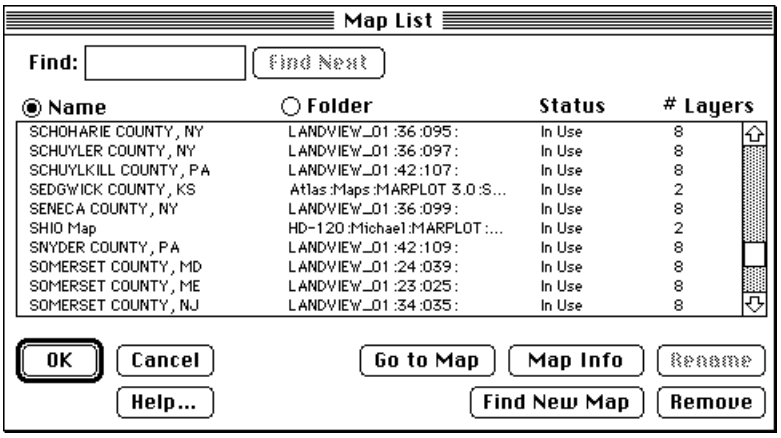
extension. These either came with your computer or are available from Apple Computer, Inc.)

Note: In order to take full advantage of MARPLOT's specialized functions for LandView CDs, you must have the files COUNTIES.TXT and STATES.TXT in your MARPLOT folder (directory). These files are distributed with MARPLOT. Also, you should have in your MARPLOT folder a CDMAPS folder containing 11 files with names of the form "LV2CDM01.TXT." Again, these are distributed with MARPLOT.

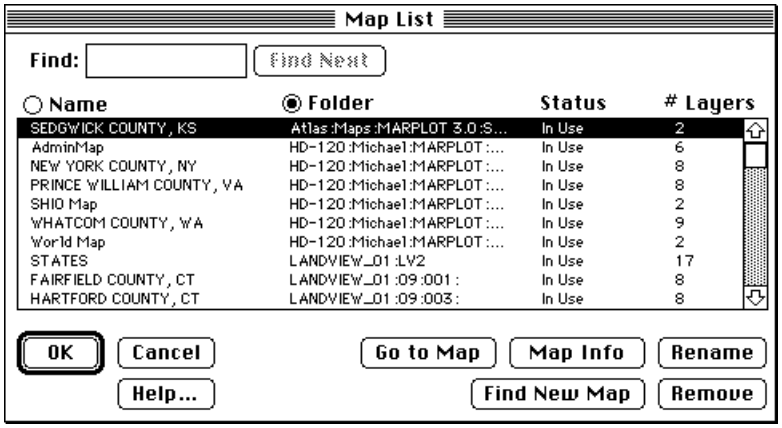
When you insert a LandView CD into your CD drive, and if you have the necessary files in your CDMAPS folder, MARPLOT automatically "loads" all maps on the CD. (Note: If you insert the CD in the middle of a MARPLOT session, you have to make MARPLOT redraw its view before it will recognize the CD.)

The loaded maps draw directly from the CD. Depending on the speed of your computer and your CD drive, and the size of the area you are viewing, the maps may or may not draw at an acceptable speed. If accessing maps directly from the CD is too slow for your purposes, you can download one or more maps to your hard disk to increase performance, as explained in the next section.

When you bring up the Map List dialog box, you can see all of the CD maps listed, along with the maps in your MARPLOT folder and the maps referenced in XTRAMAPS.PLT.



When the maps from a CD have been loaded, it is often preferable to view the map list sorted by map folder location instead of by map name. To do this, click the circle next to the "Folder" label. You can see the maps in your MARPLOT folder grouped together. Since the LandView II CD is organized hierarchically by state, maps from the same state also group together.



Once you have inserted a LandView CD and the maps have been loaded, the maps are ready to use. As you navigate around the map, the various county maps from the CD will draw (as long as the given TIGER layers are shown).

The map called "STATES" is special. It contains a number of miscellaneous layers including selected EPA-regulated sites and key geographic features of the United States such as congressional districts, census tracts and zip code locations. Each layer on the STATES map covers the area of all the states included on the given CD. You can see the full list of layers from the STATES map by looking at the Layer List dialog box. The STATES layers have names in capital letters. See the documentation that came with your LandView CD for more information about these layers.

Note: It is best not to download the STATES map to your hard disk because it contains so many layers, and because each LandView CD has a STATES map, which can lead to confusion if you try to download more than one.

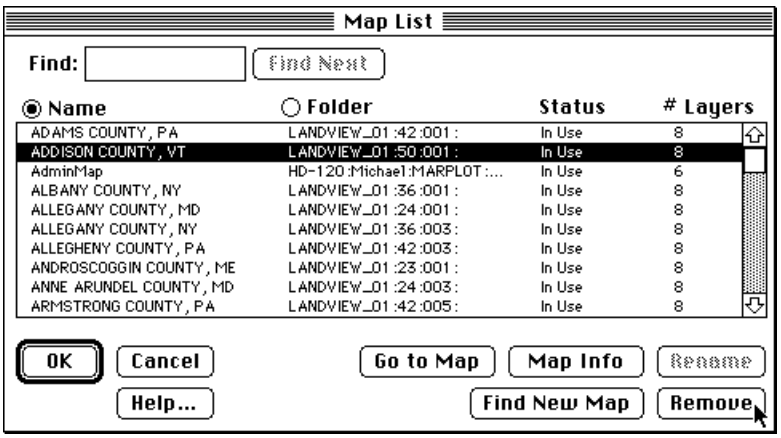
Using Find New Map to download a map from a LandView CD

For a number of reasons, you may want to copy maps from a CD onto your hard disk:

- Most map operations such as drawing, clicking, and searching are faster when maps are on your hard disk.
- You want to edit the maps to correct errors or add missing features (you cannot edit maps on a CD).
- You only want to use a few maps from the CD, and don't want to bother with the delay when MARPLOT loads the entire CD on startup.
- You have borrowed the LandView CD and want to copy certain maps before returning it.

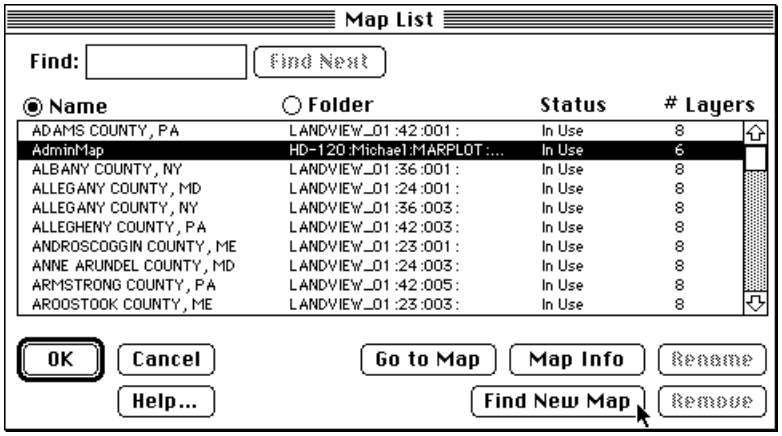
Copying or "downloading" maps from a LandView CD involves the use of two buttons in the Map List dialog box.

Recall that when you insert a LandView CD (and provided you have the appropriate files in your CDMAPS folder) MARPLOT automatically loads all maps from the CD into the Map List.



Suppose you want to download the map for Addison County, VT (which is highlighted in the list above) from the CD to your hard disk.

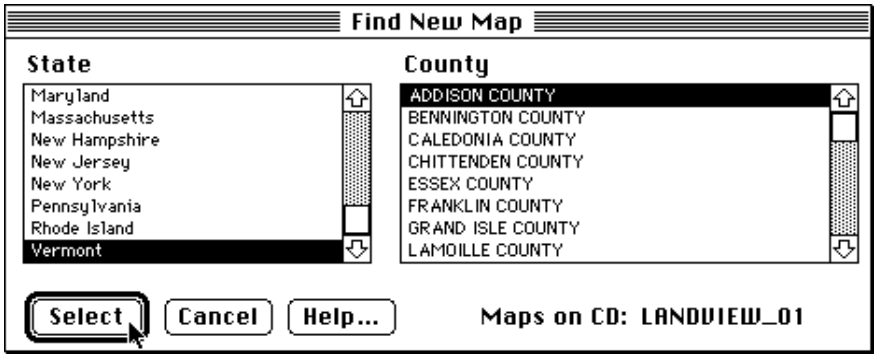
First you need to remove Addison County from the Map List, since the Map List has that county located on the CD and you want to copy it to the hard disk. To do this, highlight the county and click Remove in the Map List. After answering "OK" to MARPLOT's warning, we see that the map has been removed from the list.



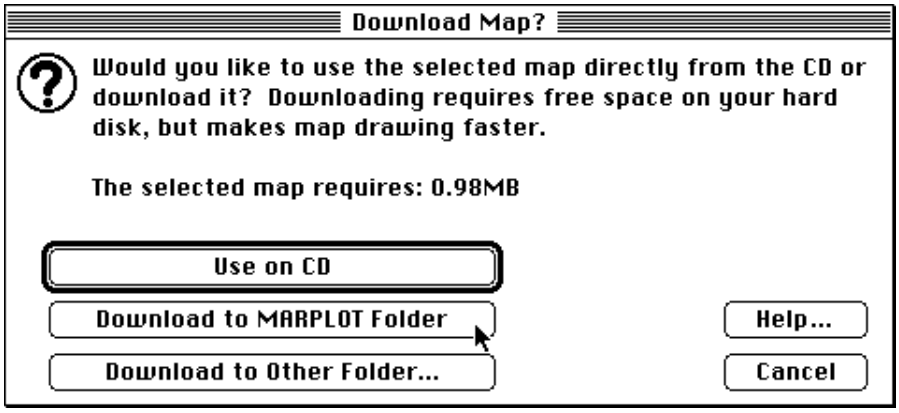
Next, click Find New Map.

MARPLOT recognizes that a LandView CD is present and asks whether you want to use it or search in another location. Click CD.

MARPLOT then presents you with a list of the states and counties on the CD. Highlight the name of the state you want in the lefthand list. Then highlight the name of the county you want in the righthand list. Click Select.

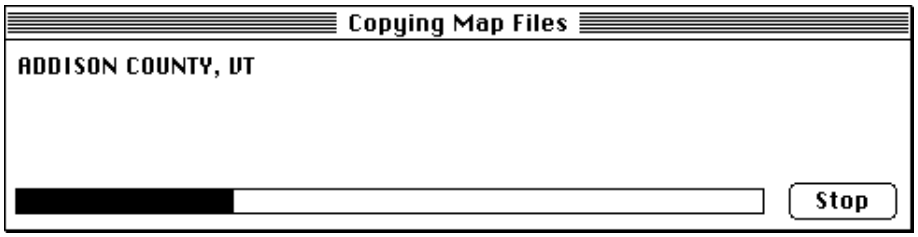


MARPLOT asks whether you would like to use the map on the CD or download it. Note that MARPLOT displays the size of the map to help you decide where to download it.

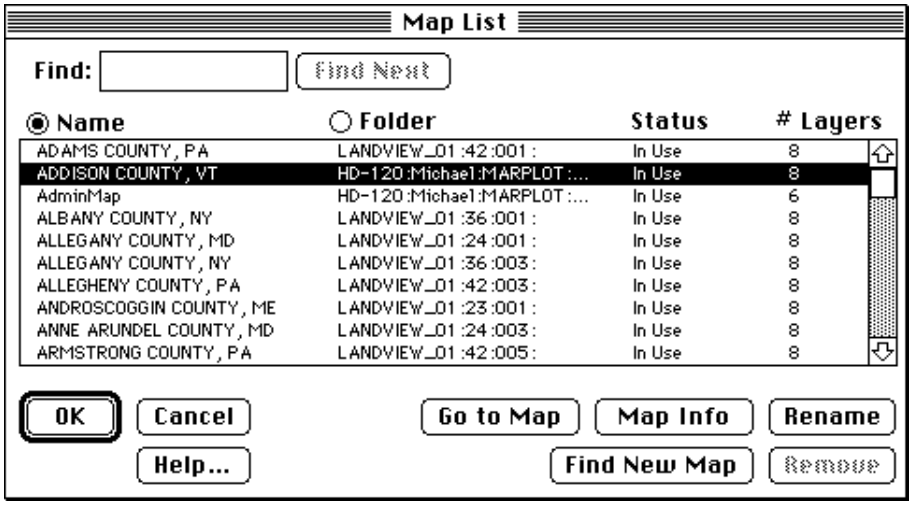


Generally, it is most straightforward to download the map to your MARPLOT folder, although if you do not have the space on your MARPLOT disk drive you'll have to download it to another drive. Also, if you only want to use the map periodically, you may want to put it somewhere other than the MARPLOT folder such as the XTRAMAPS folder.

When you click one of the Download buttons, MARPLOT copies the map files.



Back in the Map List dialog box, the new map is back in the list, but this time it is located on your hard disk. When the CD is removed, the downloaded map will still be part of your system. Also, in future MARPLOT sessions using this CD, the copy of Addison County, VT that you downloaded will be used in preference to the copy of Addison County on the CD.



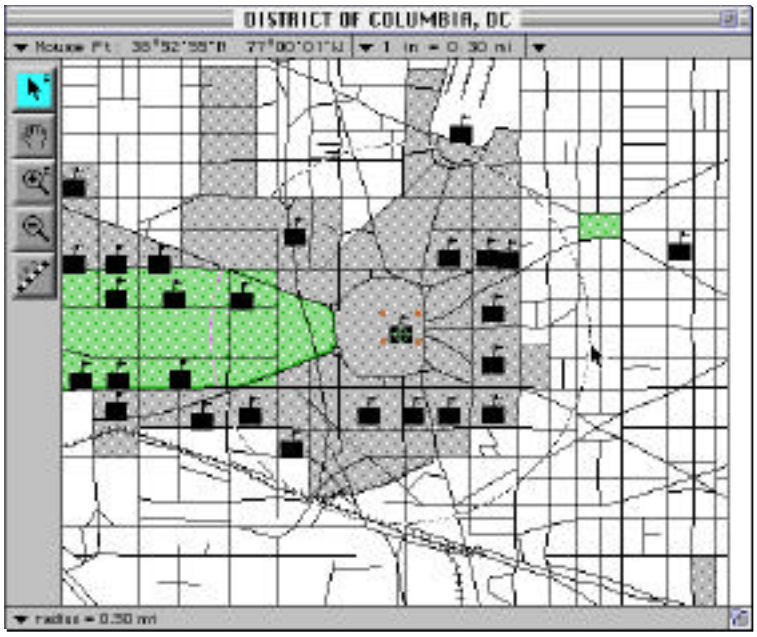
5.2 Searching and the Search Collection

In the guided tour in Chapter 3, you saw how to search for cities, roads, intersections, and address ranges. In these cases, we were finding map objects by name. You can use the same techniques to find other objects by name. For instance, to find the University of Washington in King County, you could search for objects with names starting with "univ" on the Miscellaneous layer of the King County map (or simply the "Maps in View" if you are currently looking at King County).

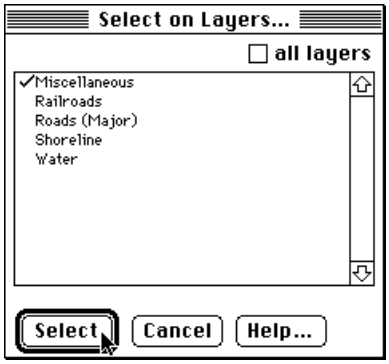
In this example, instead of searching primarily by name, we will explore the different mechanisms MARPLOT provides for searching by geographical distance. We can ask questions like, "How many objects on layer A are within one mile of this point?" or "Among the objects found in the last search, which ones fall within this threat-zone?"

The simplest way to search within a certain area or distance in MARPLOT is simply to drag on the map with the arrow tool. As you drag, you define a region, either rectangular or circular (you can choose the shape in the Preferences dialog box). When you release the mouse button, MARPLOT asks which layers you want to select on (only layers that are currently shown are offered). It then selects all of the objects from the chosen layers that fall within the defined region. It includes objects that are partially inside and partially outside of the region.

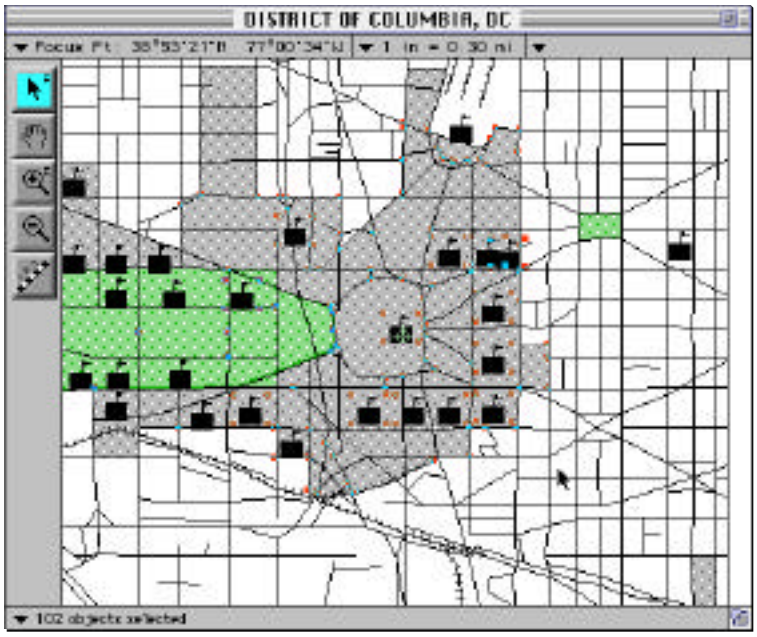
For instance, the Washington, DC map includes symbol objects on the Miscellaneous layer representing many of the Federal buildings and national museums in the area. Suppose we want to find which of these buildings and museums are within half a mile of the Capitol. We use the Preferences dialog box to set the arrow selection shape to circle. Then we click on the Capitol and drag away until the radius of the circle is 0.5 miles, as indicated in the status line at the bottom of the map window.



When we release the mouse button, MARPLOT asks which of the visible layers we want to select on. We check only Miscellaneous and click Select.

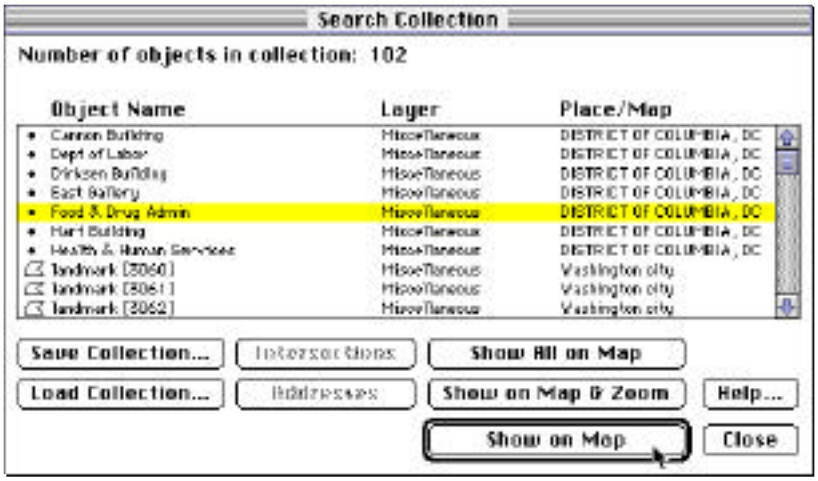


MARPLOT selects all of the Miscellaneous objects that fall within the defined circle, and tells us that 102 objects in all were selected.



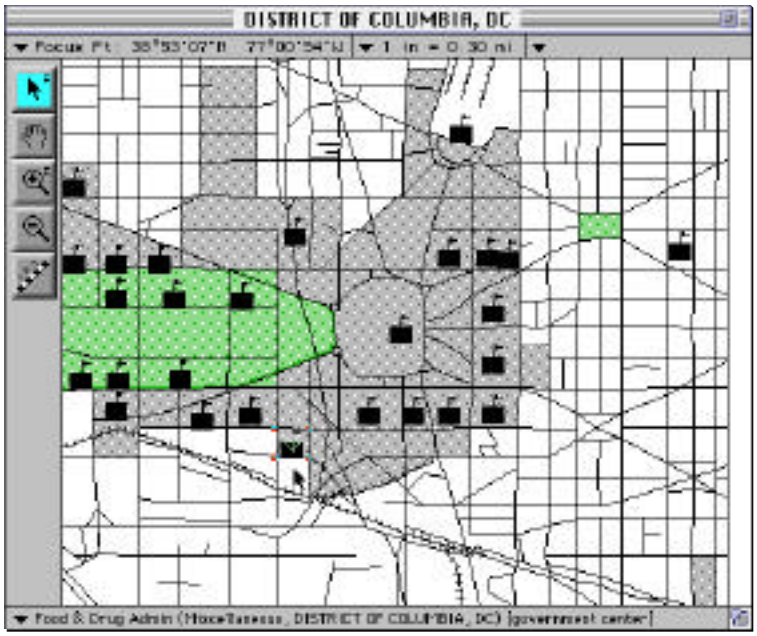
MARPLOT found not only the point (symbol) objects, but the other objects on the Miscellaneous layer that were within the given radius. In this case, the grounds around the Capitol are represented as many small polygon objects, all named "landmark," and one larger polygon object called The Mall.

We can see exactly which objects were selected using the Copy to Search Collection function in the List menu. This copies all of the objects that are currently selected on the map into the Search Collection, replacing any previous Search Collection. As soon as the objects are copied, MARPLOT displays the Search Collection dialog box.



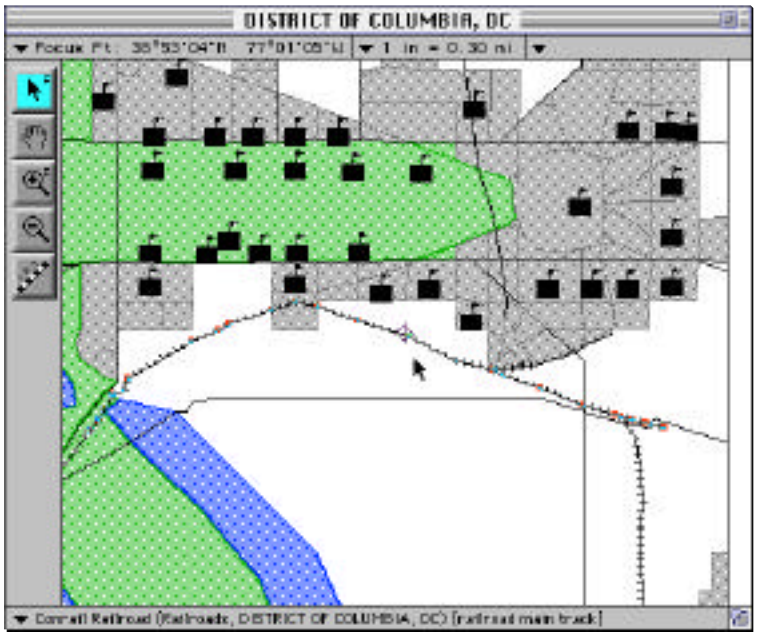
To find the location of one of the objects in the Search Collection, we highlight it in the list and click Show on Map. MARPLOT displays the map with only that

object selected. Although only one object is selected now, the Search Collection is unchanged; it still contains the 102 found objects.

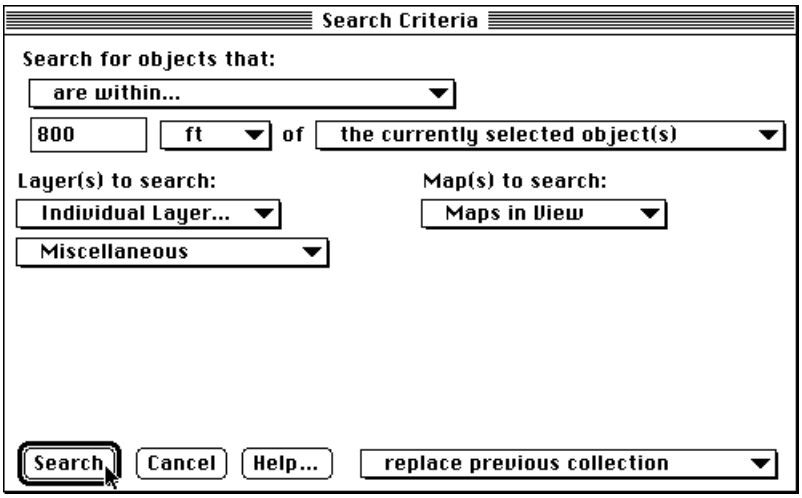


Now let's look at some examples of searching by geographic distance using the Search Criteria dialog box.

The Conrail Railroad passes along the south edge of the Mall. Suppose we want to identify the government buildings on our map that fall within 800 feet of any point along this stretch of railroad.

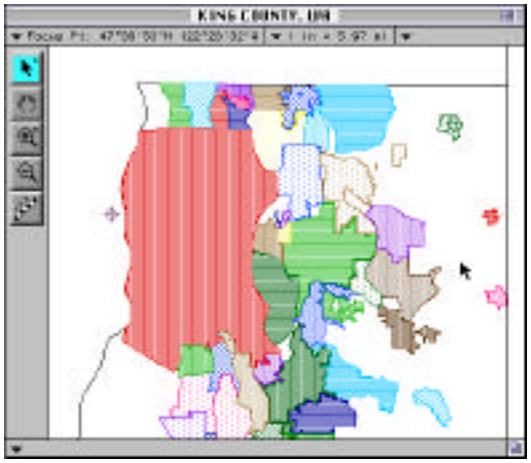


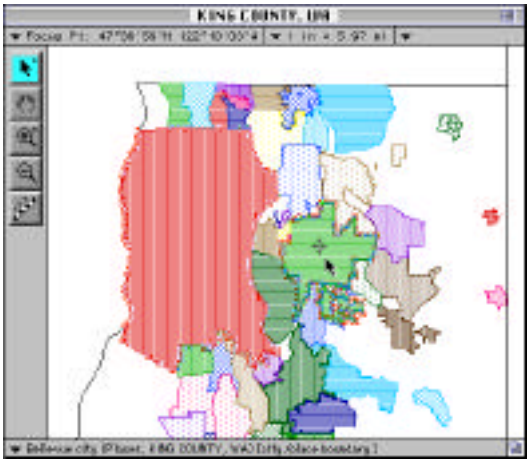
We can do this by selecting the “Conrail Railroad” object and selecting the Search item from the List menu. We search for objects that “are within” 800 feet of the currently selected object (i.e., the railroad object we just selected on the map). We choose to search on the Miscellaneous layer.



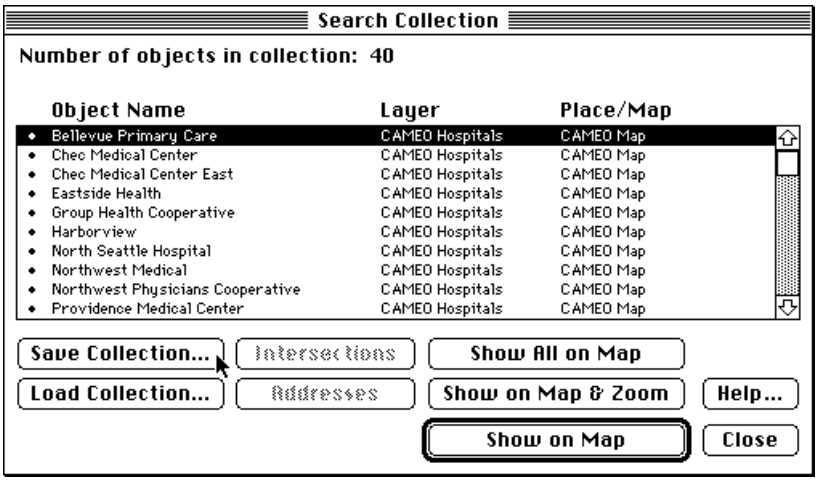
After a few seconds of computation, MARPLOT displays the results of the search in the Search Collection. Again, we see several polygons, along with the point objects we are interested in.

As a final example of searching, suppose we have a database of hospitals in King County, WA. We want a list of the hospitals that are either in the city of Seattle or the city of Bellevue, which is just across Lake Washington from Seattle. To find these hospitals, we can show only the Places layer of the King County map, and then select both Seattle and Bellevue by clicking on them while holding down the shift key.

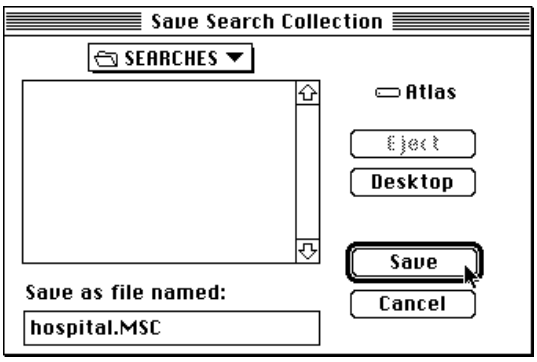




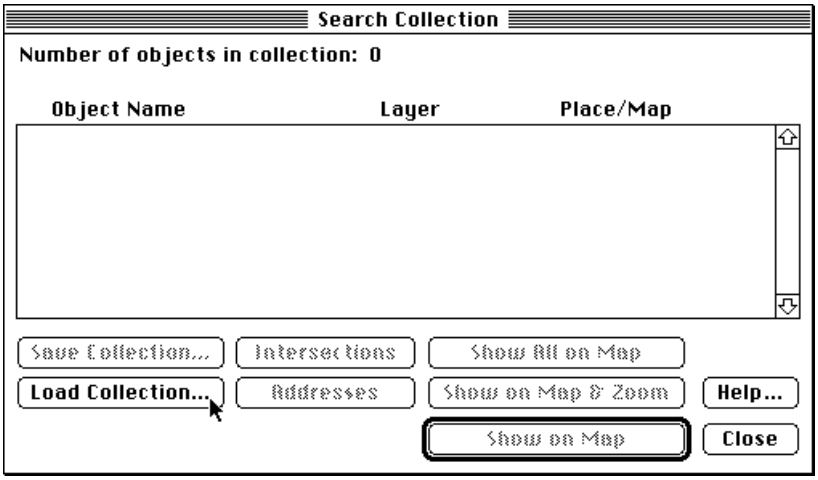
We can then search for all objects (objects with any name) on the Hospitals layer that are inside the objects currently selected on the map (i.e., the two city polygons).

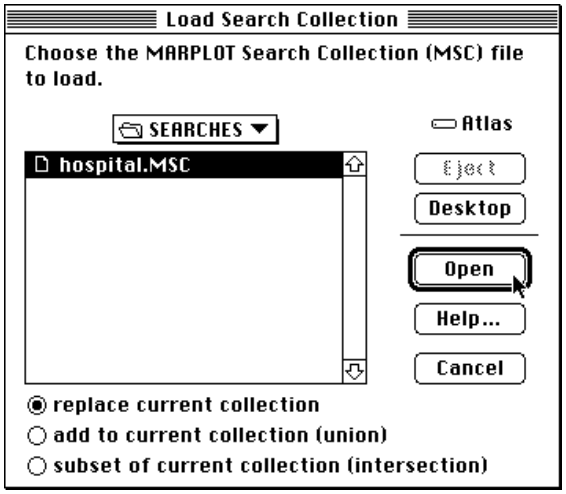


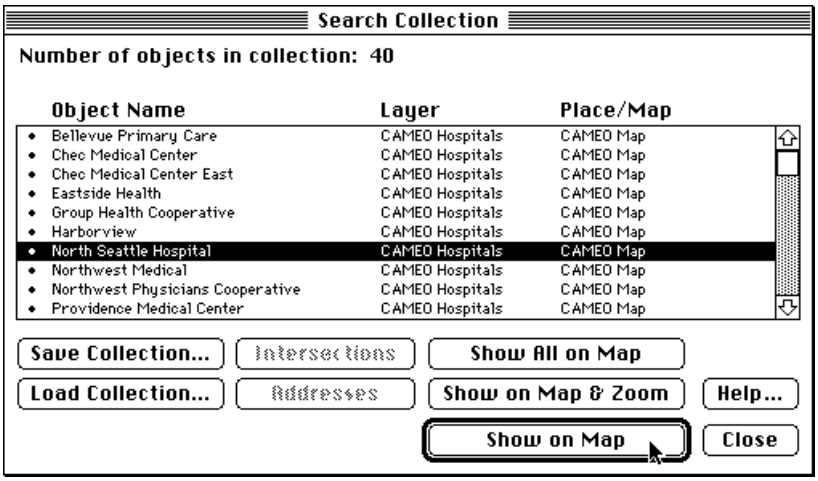
MARPLOT lists the found hospitals in the Search Collection. If we are planning to use this particular set of hospitals repeatedly, we can avoid having to redo the search by saving the Search Collection to disk. MARPLOT lets us specify the file to save into. It is a good idea to keep our saved Search Collections in the "Searches" folder (directory) that MARPLOT provides explicitly for this purpose (each user in a multi-user MARPLOT system has his or her own Searches folder).



During a future MARPLOT session, we can retrieve the saved Search Collection by selecting Show Search Collection from the List menu, clicking the Load Collection button, and selecting the saved hospitals file.







Keep in mind that saving a Search Collection does not save the actual objects themselves, but only references to the objects. Thus, if you save an object as part of a Search Collection, and then delete the object from the map, you cannot recreate the object by loading it from the Search Collection. If you load a Search Collection containing references to deleted objects, MARPLOT displays a warning that those references are now invalid.

5.3 Adding and modifying objects

While some users of MARPLOT will primarily use their maps as is, for viewing and searching only, many users will want to make modifications and additions. These can range from minor graphical modifications of pre-existing objects to the entry of entire databases of geographical information.

This section gives examples of creating and modifying six of the seven types of MARPLOT objects: points, rectangles, circles, polylines, polygons, and text labels. Working with the picture objects is demonstrated in section 5.5. Section 5.4 shows how to perform detailed edits on roads, which are a type of polyline object.

Layer locking and user permission

Any time you are going to be modifying or adding objects, you need to unlock the layer or layers you will be editing. MARPLOT starts each session with all layers locked. It is a good practice for you to unlock only one layer at a time, except in certain cases when two or more layers must be unlocked at the same time, such as when you are moving objects from one layer to another. You should relock a layer as soon as you are finished making changes to it. This will reduce the chance of edit mistakes, such as dragging an object when you intended only to click on it to select it.

If your MARPLOT system is multi-user, your system administrator has set you up either with browse-level or edit-level permission. If you have edit-level permission, you can unlock any layer, and modify any object on that layer on any of the maps on your system. (Actually, certain layers and certain maps can be "owned" by another application. All users are restricted in the edits they can perform on these maps.) If you have browse-level permission, you can still unlock any layer, but you can only make modifications and additions to your personal user's map. For example, you can unlock the Roads layer, but you will only be able to add and modify "roads" on your personal map, not on the TIGER-derived county map(s) that you share with other users of your MARPLOT system.

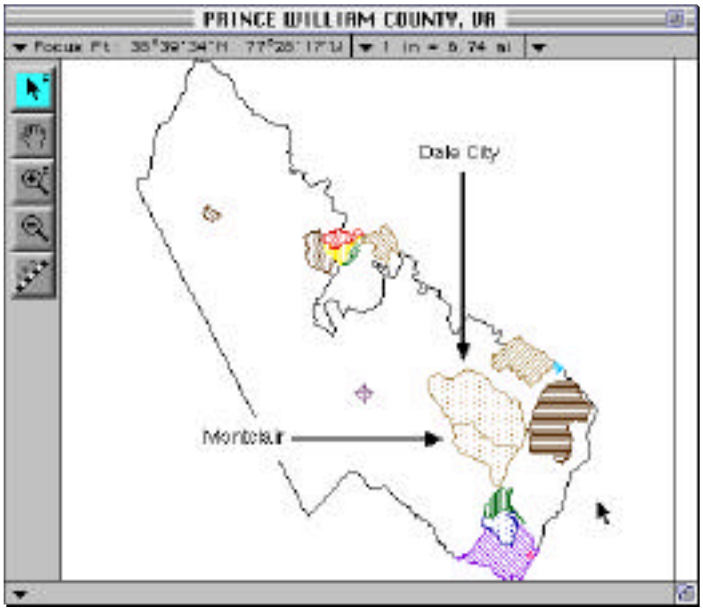
If your MARPLOT system is not multi-user, anyone who uses the system has edit-level permission.

Changing the fill pattern of city polygons

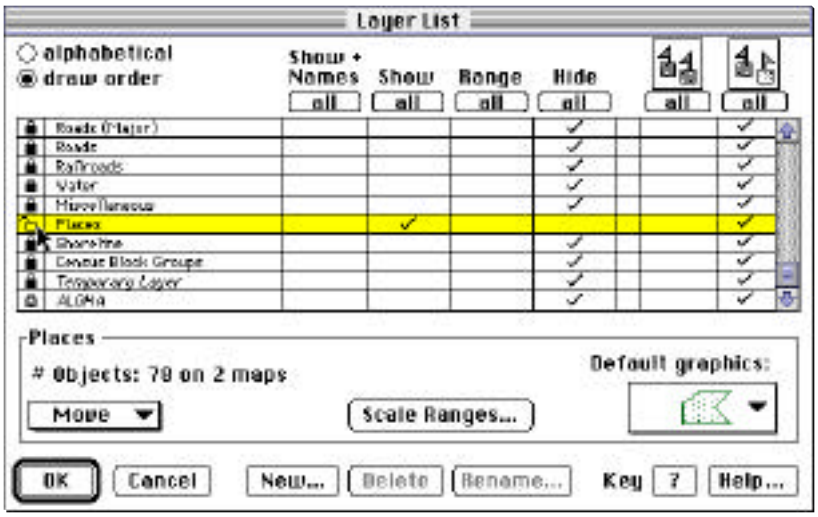
Suppose we want to generate a printout of Prince William County that shows just the Places layer — the various cities and towns, plus the boundary of the county itself. When MARPLOT maps are generated from TIGER data, the translator program assigns a random color and fill pattern to each city/town polygon. Occasionally, two adjacent towns may be assigned the same color and

fill pattern, making it hard to distinguish them visually. The problem is worse when dealing with printed maps, since only the fill pattern can distinguish the polygons if you do not have a color printer.

Looking at the picture below, we see that the adjacent towns Montclair and Dale City have both been assigned the same fill pattern.



Let's change the fill pattern for Dale City to distinguish it more clearly from Montclair. To do this, we must first unlock the Places layer. We bring up the Layer List dialog box using the Layer List item in the List menu.

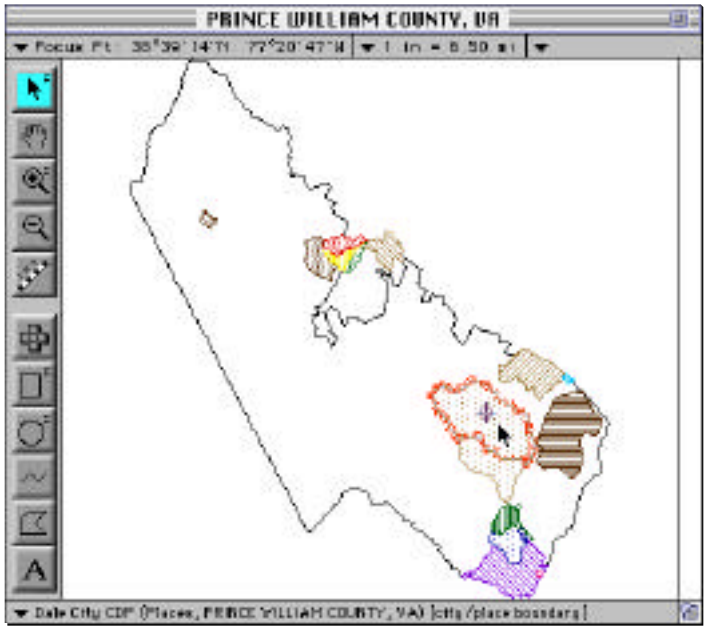


We click on the lock icon for the Places layer to unlock it, and then click OK. If we did not have edit-level permission, MARPLOT would still unlock the layer, but would present a note reminding us that we would only be able to make

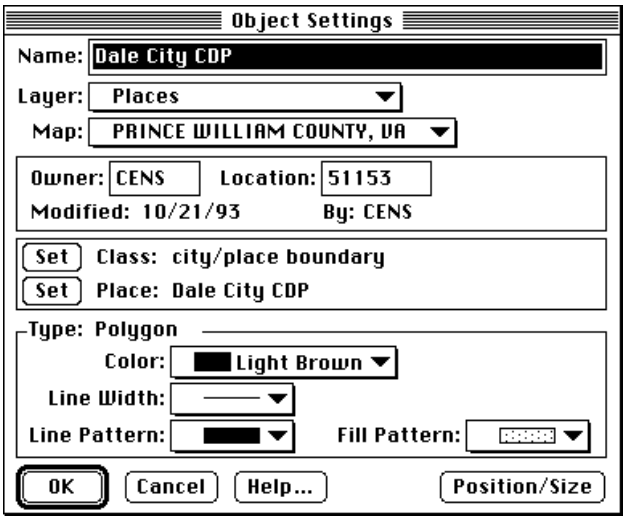
changes on the Places layer of our personal user's map, not shared maps like Prince William County.

Back in the map window, we see that the list of tools along the left edge of the window has been extended to offer tools for creating objects. Whenever one or more layer is unlocked, MARPLOT offers these tools. In this case, however, we are interested in modifying existing objects, not creating new ones.

We click on the Dale City polygon to select it.

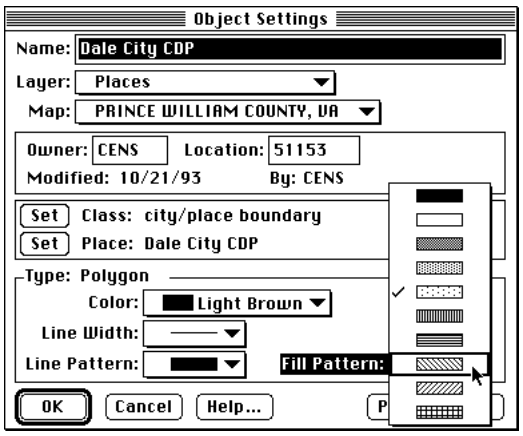


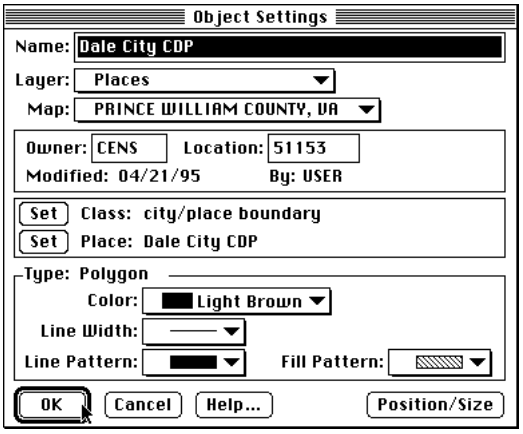
We then select the Object Settings item from the Objects menu. We are presented with the Object Settings dialog box for Dale City.



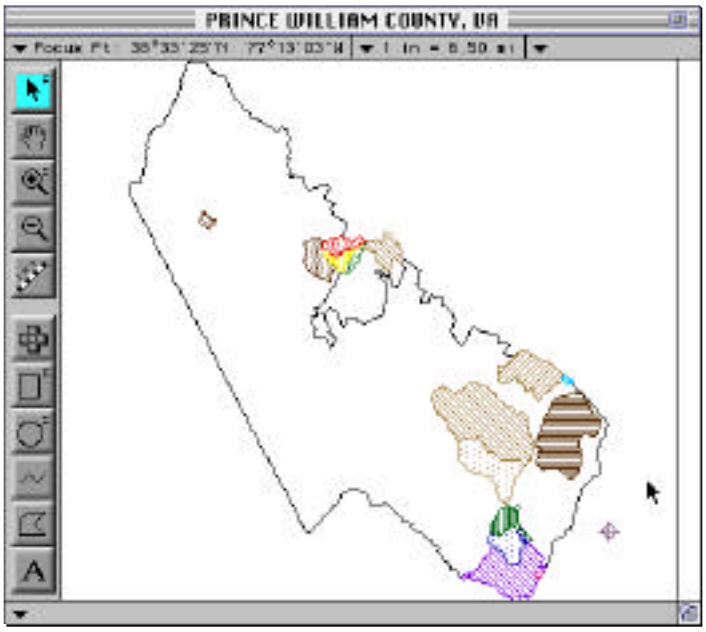
Because the Places layer is unlocked, all of the items in this dialog box are "active," meaning that we can click on them to set the various attributes of the object: its name, map and layer, its classifications, its graphical settings, etc. If the Places layer was not unlocked, or if we only had browse-level permission, this dialog box would display the same information, but all of the items would be grayed-out, indicating that we could not change them.

To change the fill pattern for Dale City, we click on the Fill Pattern pop-up, and choose one of the striped patterns. We then click OK.

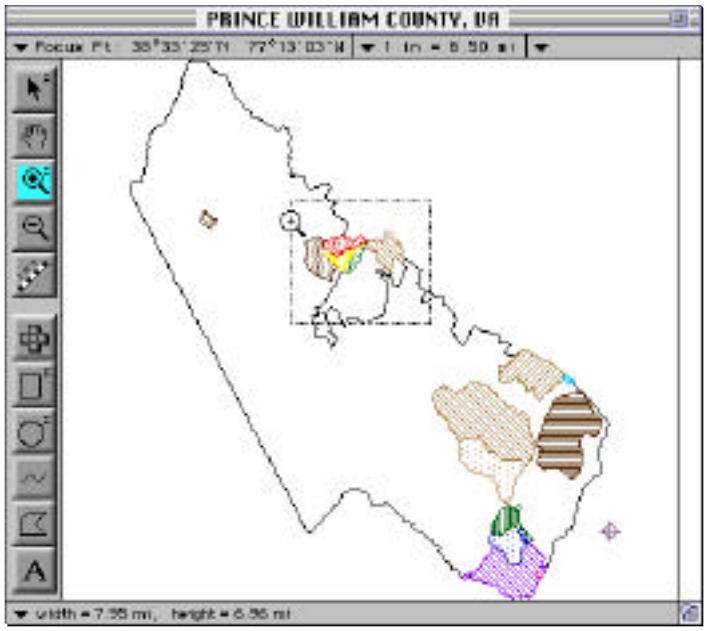


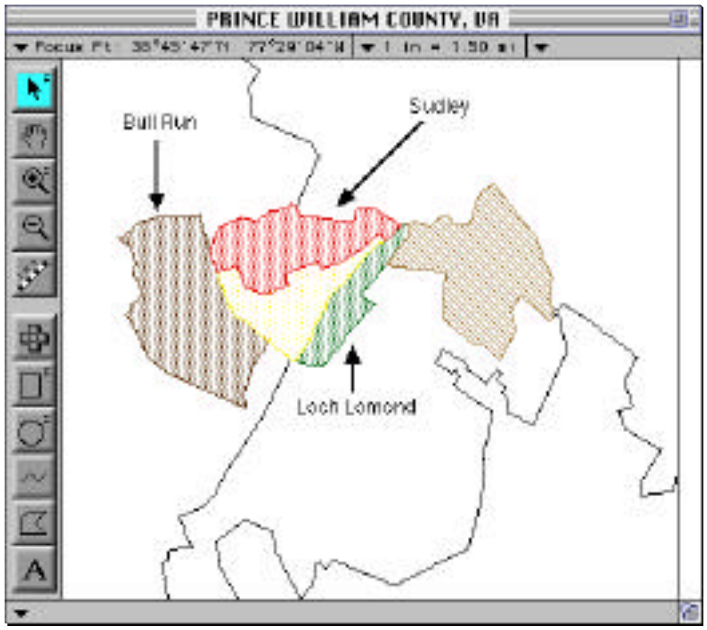


The map is redrawn, and we see that Dale City has the new pattern.

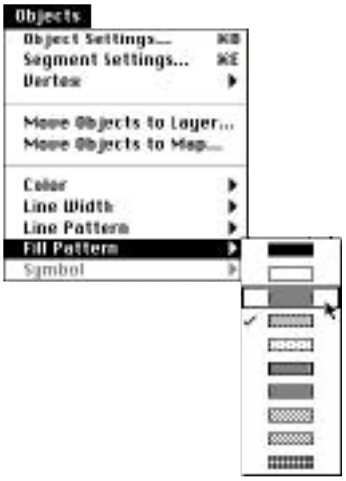


If we zoom into the clump of towns near the center of the county, we find that there are three adjacent towns that all have the same fill pattern.

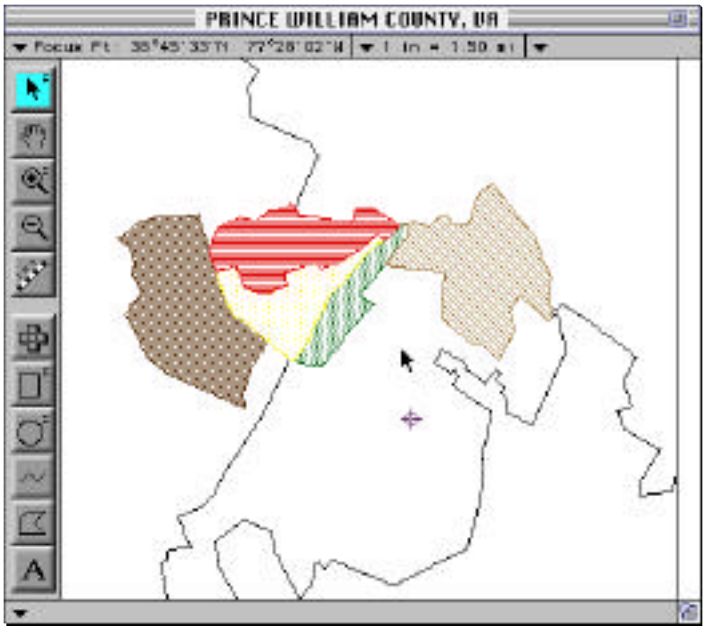




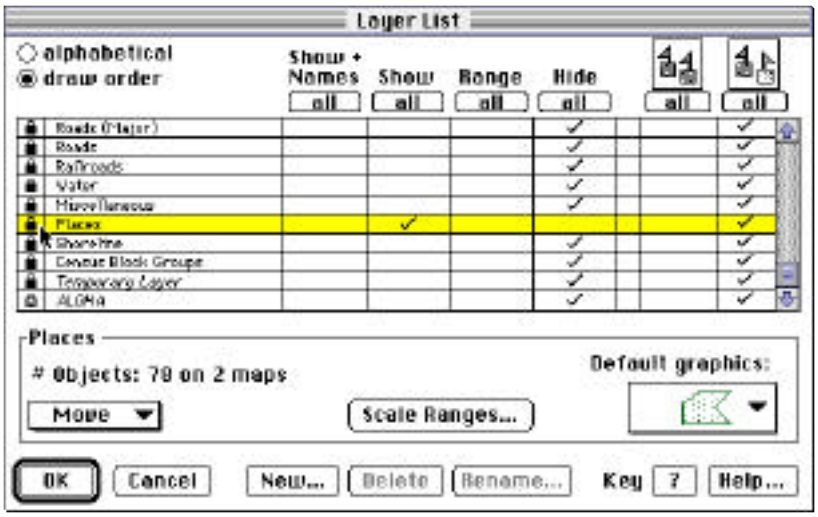
We could use the same method as above to change the pattern of two of the towns. A short cut is to use the graphical items in the Objects menu. We select Bull Run, and then select a new pattern for it from the Fill Pattern submenu.



The map is redrawn and the new fill pattern shows. We can do the same thing for Sudley, picking a different pattern this time.



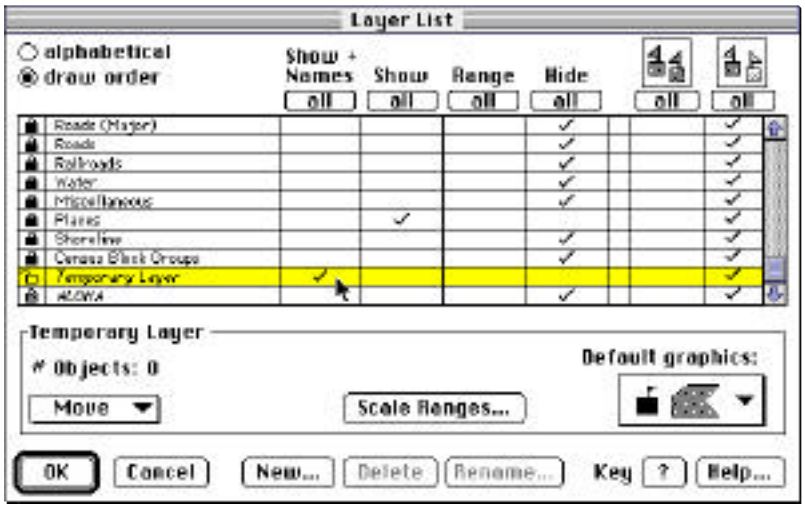
When we are done editing the Places layer, we should lock it.



Creating different types of objects

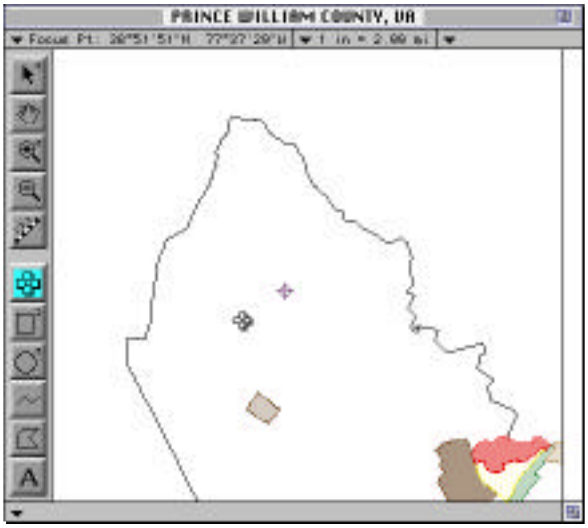
Using the Layer List, let's unlock the Temporary Layer. We are going to be making some objects just for demonstration purposes, so the Temporary Layer is a good place to put them, since they will be deleted automatically when we quit MARPLOT (we do get a warning and a chance to move the objects to another layer before quitting, in case we want to keep them after all).

Also, let's put the Temporary Layer in Show + Names mode, so we can see the names of the objects we create.

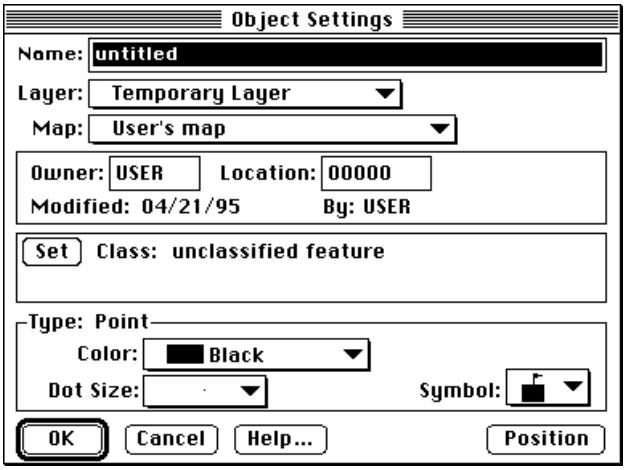


We'll zoom in to the northern part of Prince William County. Only the Places layer is shown, so we have a lot of white space to use as our scratch area.

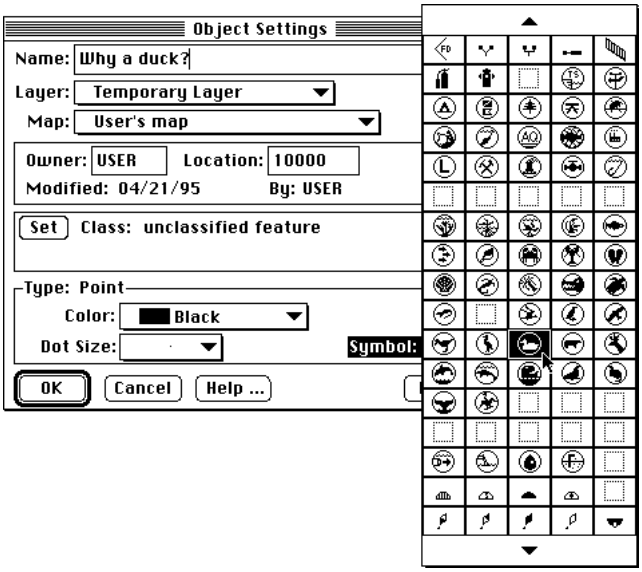
Let's start by making a symbol (point) object. We select the symbol tool by clicking on it. To create a new symbol object, we simply click at the desired location on the map with this tool.



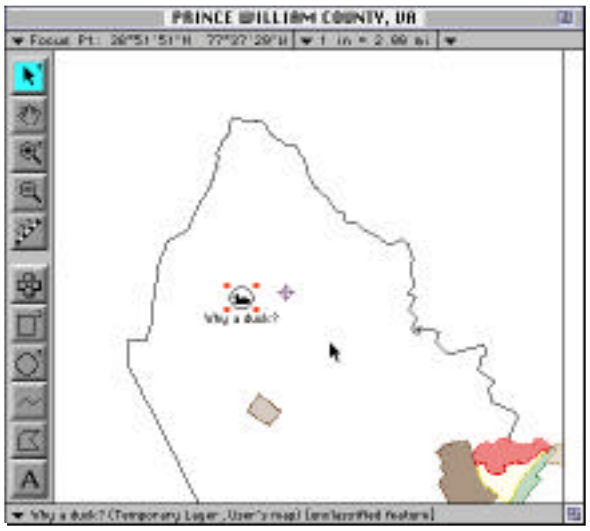
MARPLOT immediately brings up the Object Settings dialog box for the new point object. It assigns the point the default name "untitled." It puts the point on the Temporary Layer, since that is the only unlocked layer. Also, it chooses the user's map as the default map for the object. The default graphical settings for the object are the defaults for the Temporary Layer.



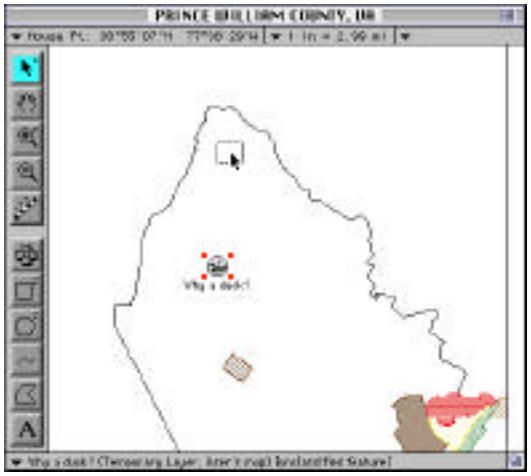
We set the name of the object by typing in the top item. Let's also change the symbol by clicking on the symbol pop-up and dragging to the symbol we want.

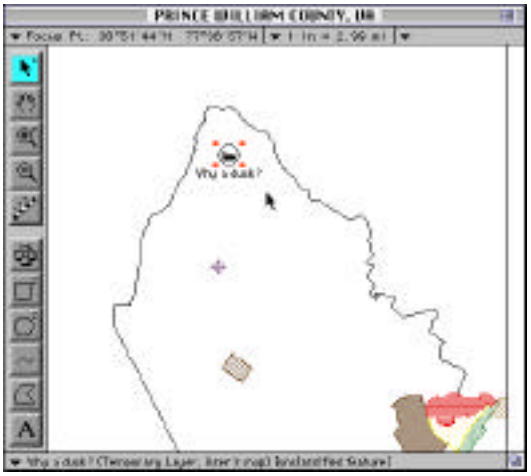


We click OK, and we see the new symbol object on the map.



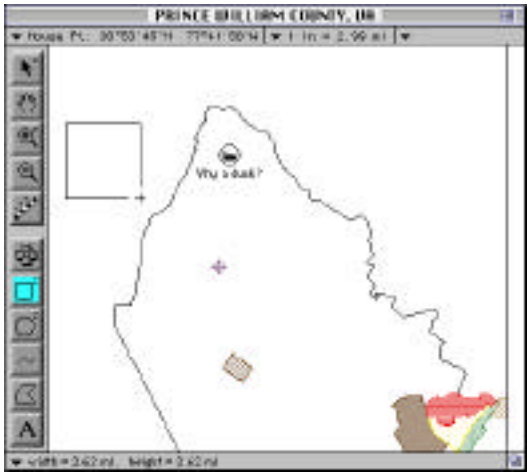
If we decide the object is not in the correct position, we can move it in one of two ways. If we know the exact latitude/longitude position of the object, we can set it using the Position button in the Object Settings dialog box. If we are not concerned with that degree of precision, however, we can move the object simply by dragging it with the arrow tool.

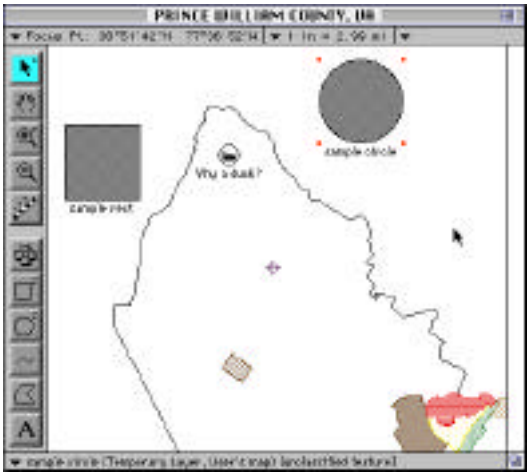




Creating rectangle and circle objects is straightforward. Remember that rectangle objects always have horizontal and vertical edges. If you need a rotated rectangle, you have to use a polygon.

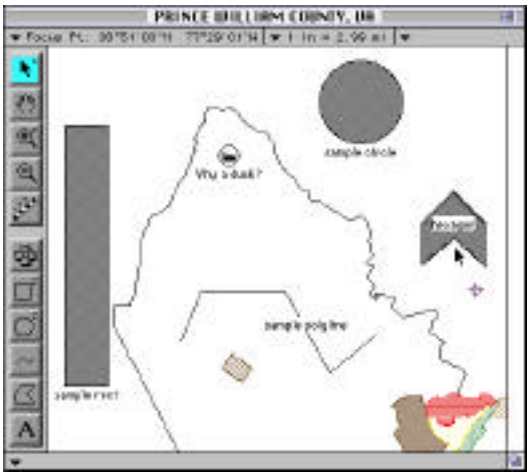
To create a rectangle or circle, drag on the map to define the shape. As with any object, the Object Settings dialog box pops up to let you set the name, layer, map, and other attributes. We'll stick with the Temporary Layer of the User's map.





Polylines and polygons are created by clicking at each vertex point. A double-click indicates the final point.

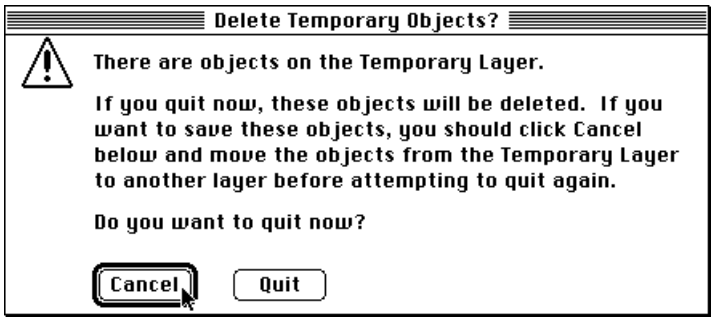
As we saw with the symbol object above, any object can be moved by dragging it with the arrow tool, or by entering latitude/longitude values in the Object Settings dialog box. With non-symbol objects, you can also reshape using the arrow tool. For instance, we can change the shape of the rectangle by dragging its corner. And we can change the shape of the polygon by dragging one of its vertex points.



The final item in the list of tools, **A**, is used to make text label objects. These are for labeling areas on maps, when the shown names of the individual objects do not provide sufficient information. When we click with the **A** tool, we get the Object Settings dialog box, as usual, but for text objects we are immediately asked to enter the text.

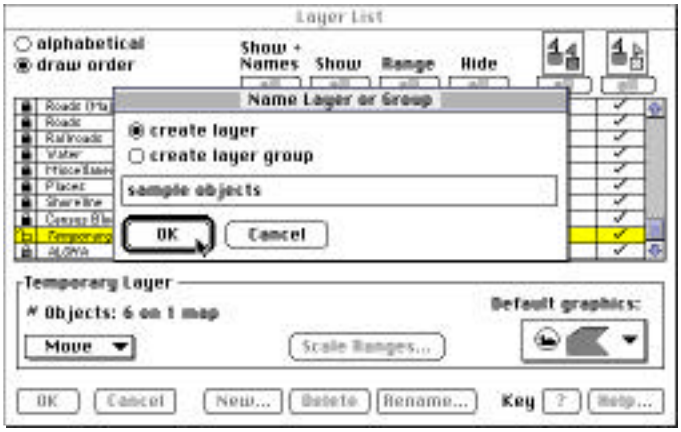
Keep in mind that text label objects scale along with the rest of the map as you zoom in and out. For instance, if we zoom in closer to the sample text object, the letters get larger.

As mentioned above, if we try to exit from MARPLOT after having created objects on the Temporary Layer, we get a warning that those objects will be lost.



Creating a new layer

Suppose we decide to save some of the objects that we created. We need to move them to a different layer. In most cases, we would probably already have an appropriate layer. But in this case, suppose we do not have such a layer and we want to create a new layer for the objects. Using the Layer List, we click New and enter a name for the new layer.



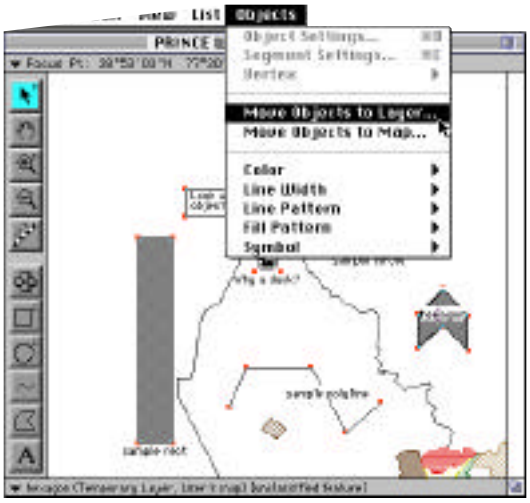
The new layer is added to the top of the Layer List, and is unlocked by default. At this point, we have a new layer, but there are no objects on it on any of our maps.

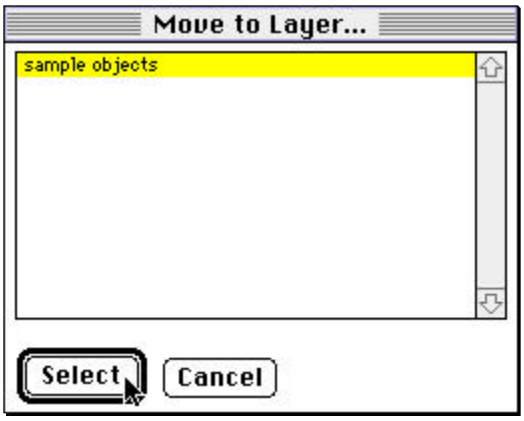
Moving objects between layers and maps

You should always think twice before moving objects from one layer to another, and especially before moving objects from one map to another. The reason for this is that, when MARPLOT shares information with other programs, objects are referred to using their layer and map names. For example, a database program might have a record linked to a MARPLOT object. The database keeps the link, including the fact that it thinks the linked object is on a certain map and a certain layer. If the object gets moved to a different layer, and especially if it gets moved to a different map, there might be trouble later when the database program refers to the object using its old recorded layer and map.

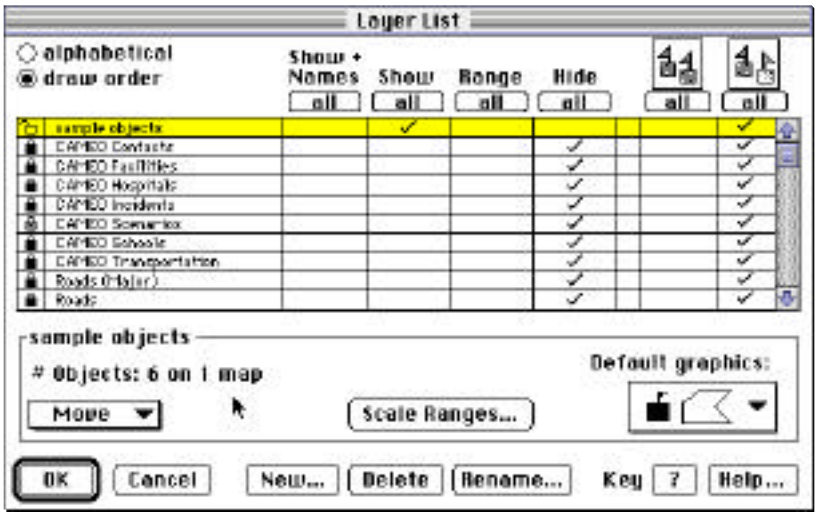
Therefore, before moving objects between layers and maps, make sure the objects are not linked. If they are linked but you must move them anyway, you may have to reestablish the links after they are moved (the work involved depends on the particular database you are working with).

In our case, we know the objects are not linked, since we just created them. Let's move our objects to the new "sample layer". We could do this one object at a time using the Object Settings dialog box. But it is much easier to move them all at the same time using the Move Objects to Layer item in the Objects menu. First we select all of the new objects (using shift-click with the arrow tool is one way to do this). Then we select Move Objects to Layer.





We highlight the "sample layer" and click Move. We can confirm the objects have been moved to the "sample layer" using the Layer List.



5.4 Editing road segments

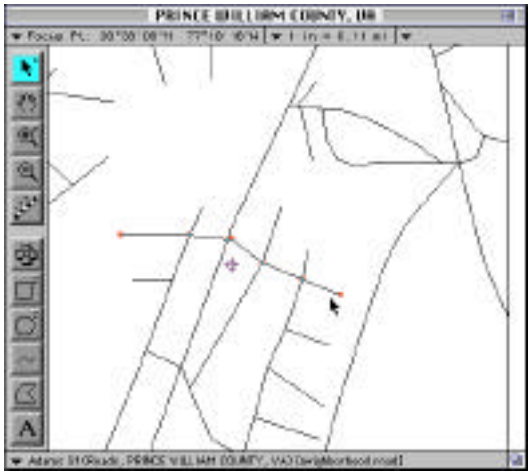
MARPLOT maps derived from TIGER data sometimes have features that are inaccurate, out of date, or missing. In particular, it is not uncommon to find some problems with objects on the roads layer. These might include missing road segments, misnamed roads or pieces of roads, or incorrect address or ZIP code information. For some MARPLOT users, especially those working regularly within a relatively small region, it is worth the time and effort spent to correct all or some of these errors.

MARPLOT allows you to edit road objects, just like any other objects. Functions are provided for performing many types of edits to roads and other polyline objects: inserting and deleting vertex points, moving vertex points, and setting attributes on a segment-by-segment basis. There are certain types of edits, however, that cannot be performed directly in MARPLOT. Instead, it is necessary to use MARPLOT's Export and Import functions, along with a text editor. An example of this advanced type of editing is given in the MARPLOT Technical Documentation.

Note: If you are making edits to TIGER-derived objects such as roads, please read about reporting these edits to the Bureau of the Census in section 1.2.11.

Extending a street and making an intersection

The picture below shows Adams St, which can be found in Dale City on the sample Prince William County map.



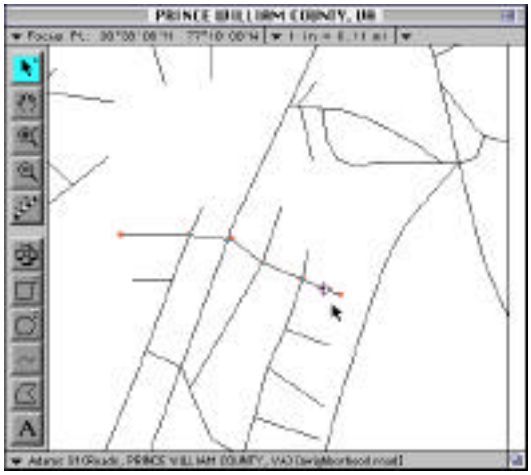
Suppose that since the time the TIGER data on which this map is based was recorded, Adams St has been extended to the south-east. It now intersects with Gideon Dr, and continues on to the southeast for 500 feet. We would like to modify Adams St on our map to show this extension, making sure that the intersection with Gideon Dr works properly. We would also like the address

ranges of the extension to be set correctly. In particular, the small piece of the extension that is west of Gideon Dr is the new 2800 block of Adams St. The larger piece of the extension that is east of Gideon Dr is the new 2700 block of Adams St.

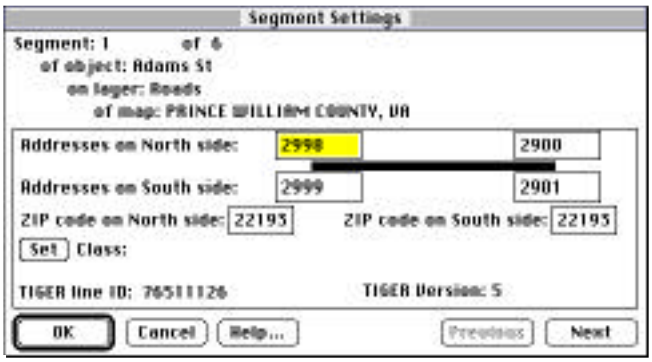
The work to be done, then, is to add two segments to the Adams St object. The vertex connecting these two segments should coincide with a vertex of Gideon St, causing the two streets to intersect.

To start, we unlock the Roads layer using the Layer List dialog box. Whenever the Roads layer is unlocked, we should be especially careful not to make careless edits. And we should lock the Roads layer again as soon as we are finished editing it, as a further safeguard against mistakenly corrupting road data.

Before we begin making changes, we should take a detailed look at the objects we will be working with. We click along the east-most segment of Adams St.



We then select the Segment Settings item the Objects menu.



We see that this is the first of the six segments of the street. Thus, in terms of the segment order, this street goes from east to west. We are going to be adding two segments to Adams St, so there will be eight segments in the object when we are done. Since we will be adding segments to the east, our two segments will be segments 1 and 2 of the new Adams St. The six old segments will be segments 3 through 8.

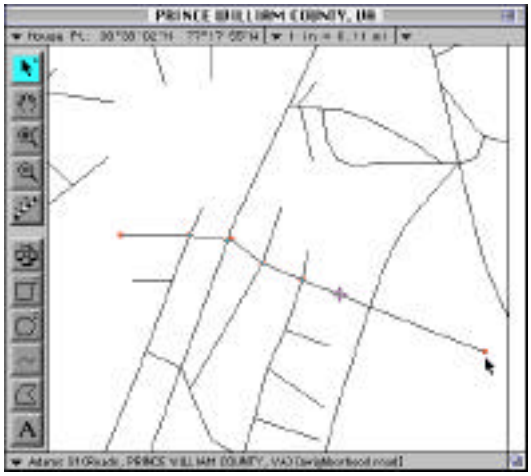
The Segment Settings dialog box also shows that the addresses on the selected segment increase from east to west. This makes sense in terms of our planned extensions, in which addresses decrease as we move farther east.

As a final preparation step, we should click on Gideon Dr to see where its vertex points lie. In the picture below, we see that Gideon Dr has a vertex pretty much right in line with the desired extension of Adams St. (If there wasn't such a vertex, we could either drag a vertex of Gideon Dr to the desired position, or use the Insert Vertex at Focus Point menu item to insert a vertex in Gideon Dr exactly where we want.)

Now we are ready to extend Adams St. The way to create new segments in MARPLOT is to use the Insert Vertex at Focus Point item in the Vertex submenu

of the Objects menu. But we can only insert a vertex in a pre-existing segment. How can we create the vertex points of our extension?

The solution is first to drag the existing endpoint of Adams St to the final endpoint of the extension.



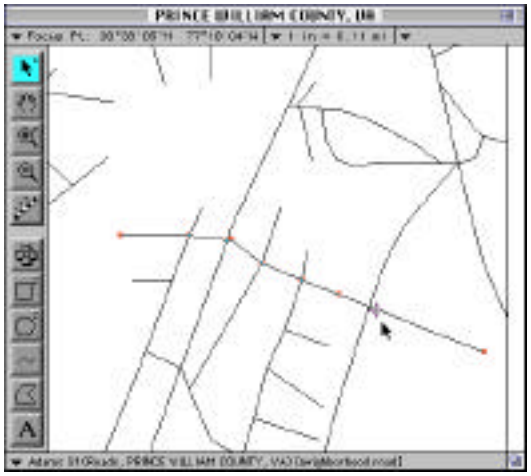
We have, in effect, just made the 2900 block much longer.

Now we can insert two vertex points to make the two new segments. As shown in the picture above, the Focus Point has been left sitting at the old endpoint of Adams St. We use the Insert Vertex at Focus Point item from the Vertex menu.

As shown in the picture below, this inserts a vertex at the location of the old endpoint. (In the picture, the Focus Point has been moved to the side to show the new point more clearly.)

Now we insert another vertex point, this one very close to where Adams St crosses Gideon Rd. We click at the desired location to place the Focus Point, and

then use Insert Vertex at Focus Point (again, the Focus Point has been shifted in the final picture to show the new vertex).



You'll notice that we didn't put the second vertex point right on the intersection with Gideon Rd, but a little to the southeast. The reason for this is that, even if we tried to click exactly at the right location, we don't have the precision at our computer-screen resolution to place the point so that it coincides exactly with a vertex point of Gideon Rd. As explained in section 4.6.3, MARPLOT only considers two roads to intersect if they share a vertex exactly in terms of latitude/longitude coordinates. If we were to search for intersections of Adams St at this point, Gideon Rd would not be found.

We need to use the two other items in the Vertex menu to create a true intersection between Adams St and Gideon Rd (again, see section 4.6.3 for more information). We click on Gideon Rd to select it, placing the Focus Point close to the vertex with which Adams St is to intersect.

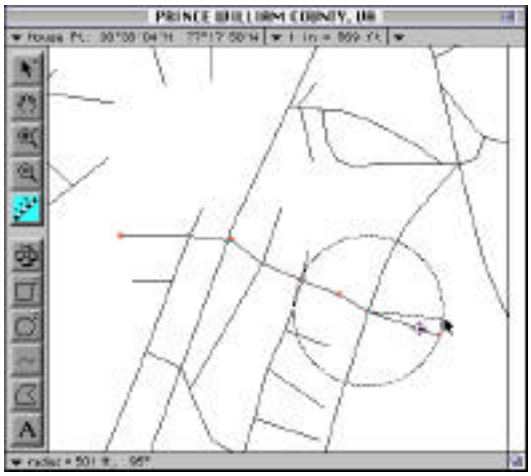
Then we select Mark Vertex from the Vertex Menu. This sets the Marked Point at the vertex of Gideon Dr that was close to the Focus Point (i.e., the point for our intersection).

Now that we've marked the desired point, we click on Adams Rd again, placing the Focus Point near the vertex point that is supposed to coincide with the Marked Point.

Finally, we choose Move Vertex to Marked Point. This causes the vertex of Adams St that is close to the Focus Point to be shifted so that it coincides exactly with the Marked Point (which has been set to be equal to the desired point on Gideon Rd). We can then choose Clear Marked Point from the Marked Point submenu in the Edit menu.

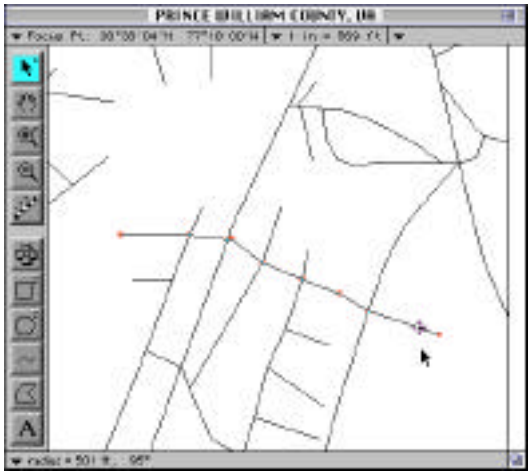
Now the roads intersect. When we search for intersections of Adams St, Gideon Dr is found, and vice versa.

It was specified that the extension of Adams St should go 500 feet beyond Gideon Dr. We can use MARPLOT's distance tool to measure the distance and adjust the endpoint as necessary.

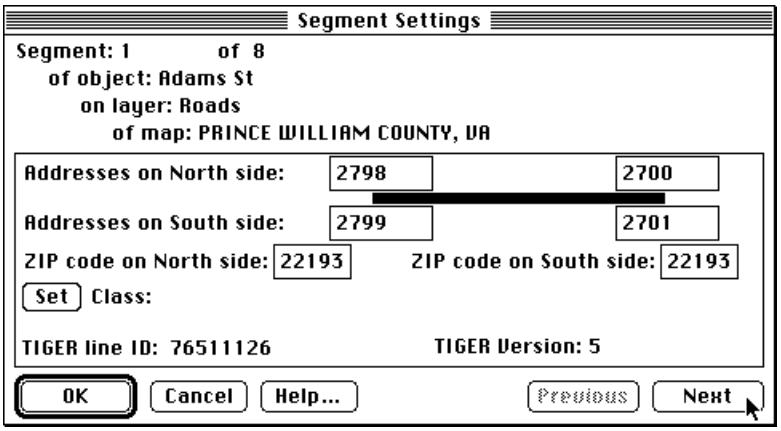


Our segments are now complete, except for the address ranges. Recall that we made these two new segments by inserting points into the (stretched) existing 2900 block of Adams St. By default, MARPLOT assigns the new segments the same address range as the original segment that was split (this is true for the other segment attributes as well, such as ZIP code). So we currently have three segments of Adams St that all have the address range 2900 – 2999.

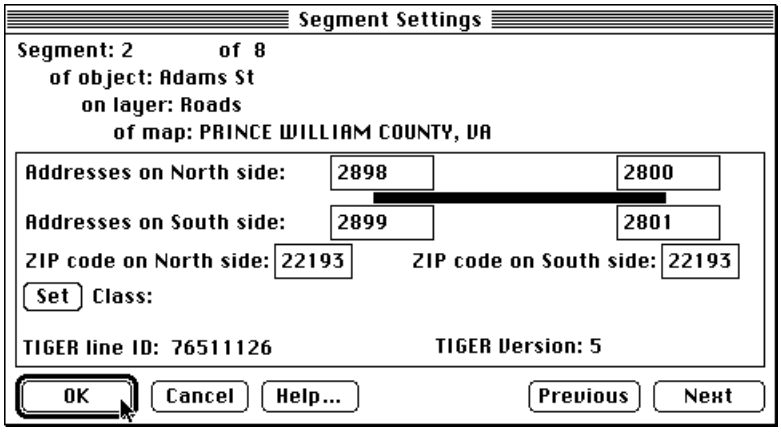
To modify the address ranges for the two new segments, we click along the first segment.



We then choose Segment Settings from the Objects menu and set the address values for the 2700 block.



Clicking Next brings us to the second segment, where we set the address values for the 2800 block.


Segment Settings
Segment: 2 of 8
of object: Adams St
on layer: Roads
of map: PRINCE WILLIAM COUNTY, VA
Addresses on North side:
2898
2800
Addresses on South side:
2899
2801
ZIP code on North side:
22193
ZIP code on South side:
22193
Set
Class:
TIGER line ID: 76511126
TIGER Version: 5
OK
Cancel
Help...
Previous
Next

5.5 Using picture objects

Picture objects are like rectangle objects except, instead of being filled with a pattern, they are filled with a graphical image. The source for this image is usually a picture file (PICT file on Macintosh; bitmap or metafile on Windows). The image can also come from the clipboard, after you copy it from another application (usually a painting or drawing application).

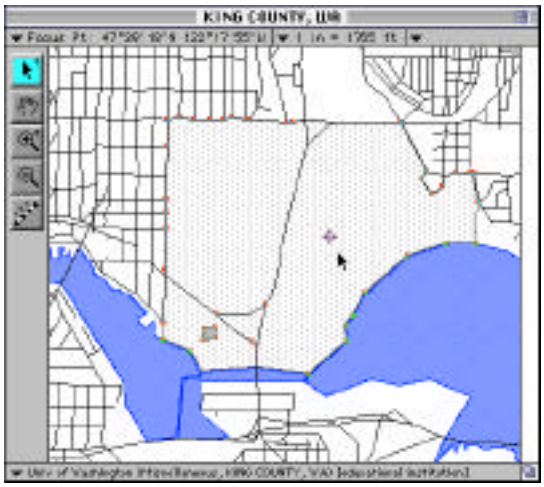
In some cases, you want the picture to be "geo-referenced"; that is, located in a position meant to be (or to be very close to) its actual position in the real world. For instance, the picture might be a detailed drawing of a university campus. Here, you want to place the picture object so that points on the drawing correspond as closely as possible to the correct points on the earth. To help you with this, MARPLOT has a special mechanism for geo-referencing picture objects.

In other cases, the exact latitude/longitude placement of the picture object is not as important. For instance, if you want to add a logo or other design to your map, it is sufficient to drag and stretch the object directly on the map in order to position it.

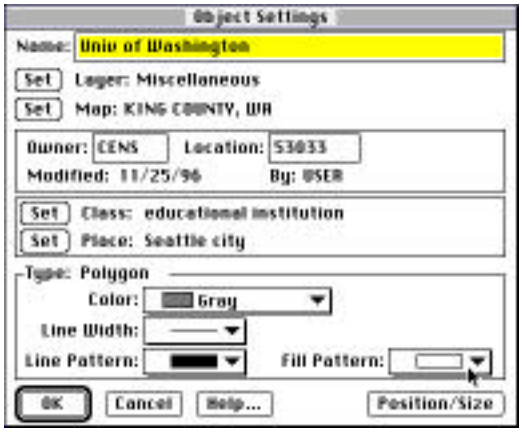
Adding a picture object with geo-referencing

Suppose we are working in Seattle. We have the TIGER-derived MARPLOT map for King County, in which Seattle is located. The University of Washington has provided us with a detailed picture file of the UW campus. We want to use this diagram as a MARPLOT picture object, to flesh out the campus details that are lacking on the given TIGER-derived map.

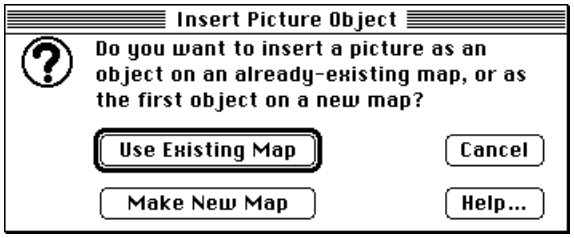
Looking at the given map, we see that UW is present as a single polygon object on the Miscellaneous layer.



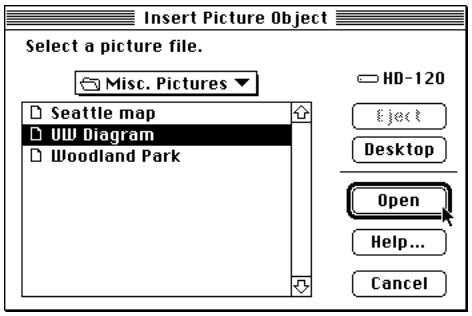
As a first step, we can unlock the Miscellaneous layer, and then use the Object Settings dialog box to set the fill pattern of this polygon to white (i.e., no fill). Now the polygon appears blank and we are ready to insert the picture object.



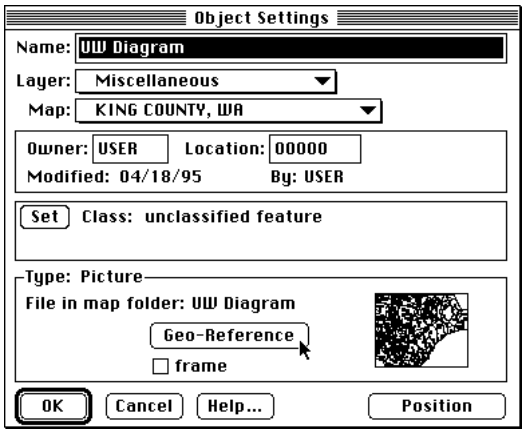
It makes sense to insert the UW picture object on the Miscellaneous layer. We've already unlocked that layer to alter the UW TIGER polygon. So we can immediately choose Insert Picture Object from the Edit menu.



We are asked if we want to use an existing map, or make a new map. You will almost always choose Use Existing Map here. Making New Map would be used only if the picture to be inserted couldn't really be called "part" of an already existing map. In our case, the UW picture is clearly part of the King County map, so we'll choose Use Existing Map.



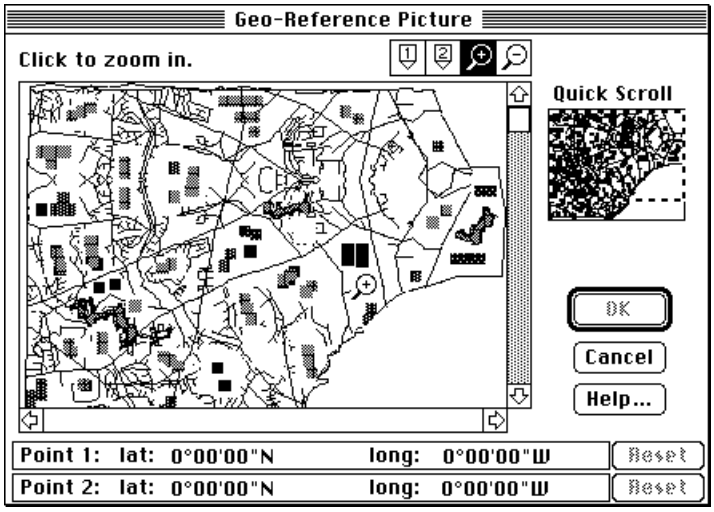
MARPLOT asks us to select the picture file containing the image for the new picture object. We find the picture and click Open (OK on Windows).



We are immediately presented with the Object Settings dialog box for the new picture object. We see the picture displayed in the lower part of the window. Note that MARPLOT puts the object on the Miscellaneous layer by default, since that is the only unlocked layer. By default, MARPLOT guesses that we want the object on the User's map. In this case, it probably makes more sense to put the object on the King County map itself (as we have done in the graphic above), although keeping it on the User's map may also be a reasonable decision.

At this point, we have the object on the right layer and map, but its size and position are undefined. If we were to click OK, MARPLOT would guess at the size and position. We could then drag and stretch the object directly on the map to get the right size and position. A more precise method, if we know at least one exact latitude/longitude point on the picture, is to use the Geo-Reference button. (Note: Even if you do not use the Geo-Reference button when you first insert the picture, you can use it at any time in the future by simply bringing up the Object Settings for the picture object.)

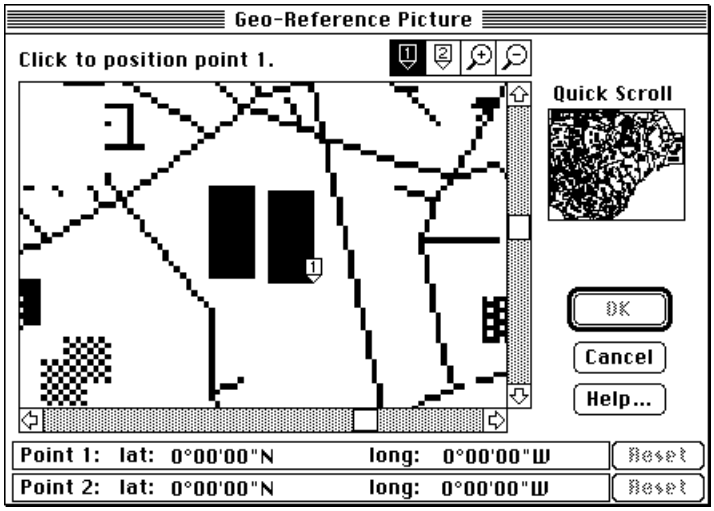
When we click Geo-Reference, we are presented with a special dialog box used for geo-referencing pictures.



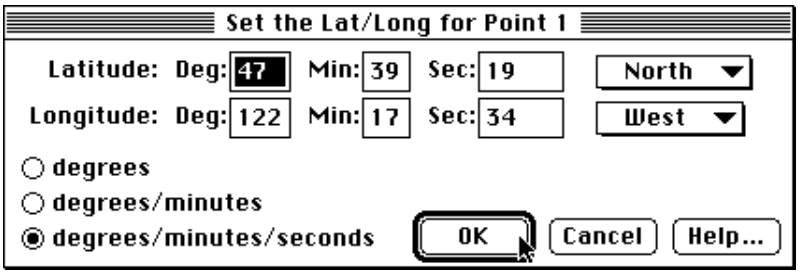
The idea here is to specify the exact size and location of the picture. We do this by marking two points on the picture. We have to give an exact latitude/longitude position for the first point. For the second point, we can give either an exact latitude/longitude position, or the exact distance from the first point.

Suppose that in our case, the Geography Department at the University, which is located in the building just to the north of the magnifying glass cursor in the diagram above, has informed us that the southeast corner of their building is at longitude 122°17'34'' west and latitude 47°39'18'' north. Suppose they also inform us that the building is 300 feet long, from the north end to the south end.

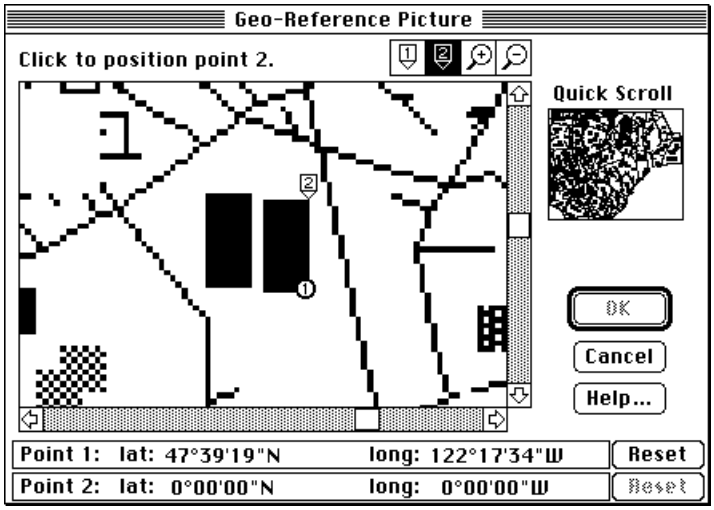
First, we use the tool to zoom in on this point and increase our accuracy. Then, using the tool, we click on the southeast corner of the Geography building.



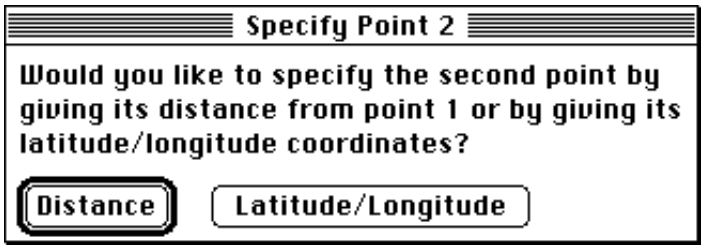
We are asked to enter the lat/long values corresponding to the point we clicked.



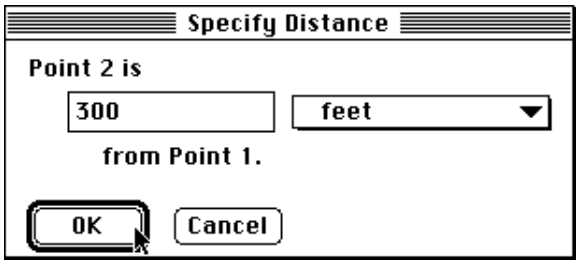
Next, using the tool we click on the northeast corner of the building.



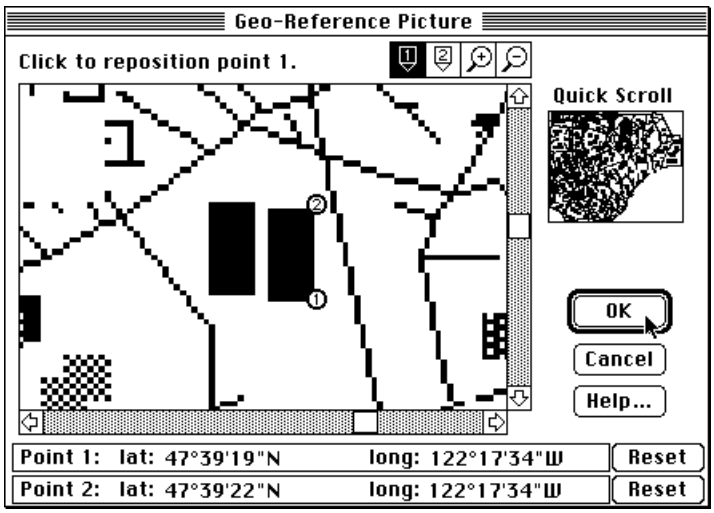
We don't know the lat/long of the second point, but we do know the distance between the two points since we know the length of the building is 300 feet.



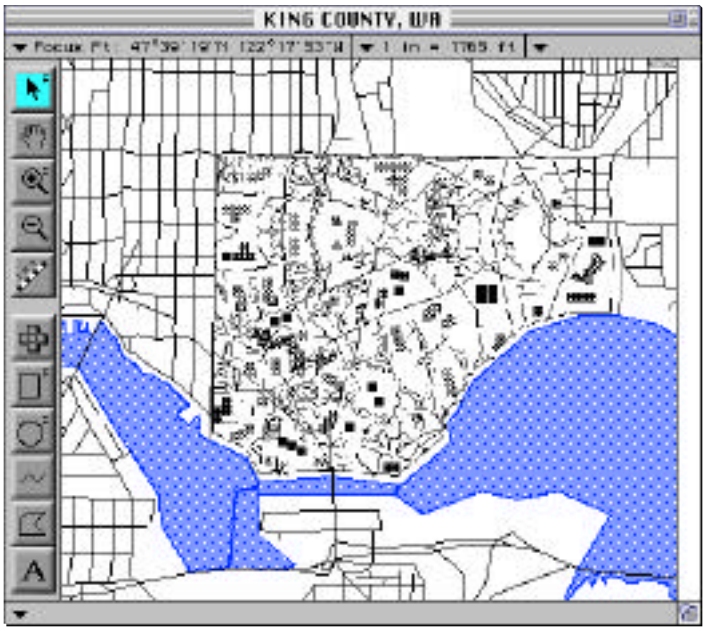
We click Distance and enter 300 feet.



MARPLOT computes the lat/long of the second point based on the distance. Since we have now specified both points, we click OK to exit the Geo-Reference Picture dialog box, and OK to exit the Object Setting dialog box.



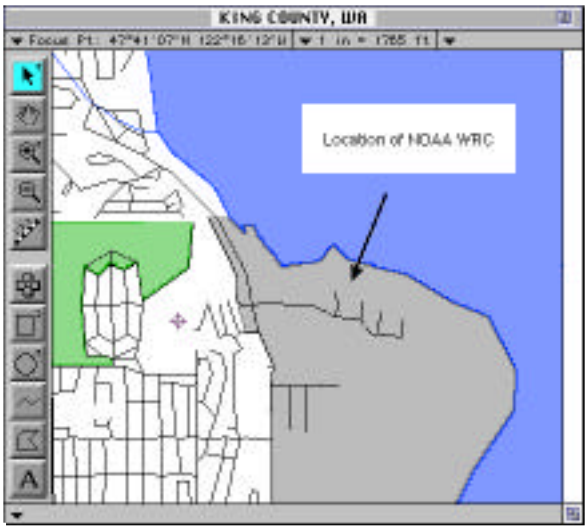
On the map, we see that the picture has been added to the Miscellaneous layer, and is in the correct location. If the picture were not in the correct location, it could be because the lat/long value or distance provided was inaccurate, or because the picture was not drawn properly to scale. It is also possible the lat/long value provided was *more* accurate than the TIGER lat/long values of the King County map, because it was based on a more accurate model of the shape of the earth (see section 1.2.11). In this case, we might try to drag and stretch the object to get it as close as possible to the right size and position.



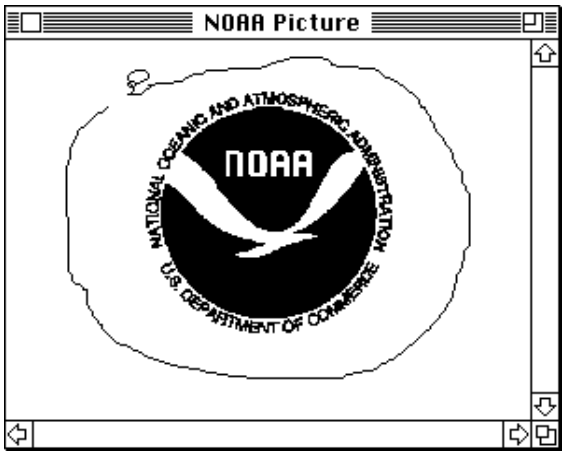
Now that the picture is in place, we can lock the Miscellaneous layer. We can treat the picture as if it's part of the King County "base map." We can zoom in on it and place other objects on top of it, to mark chemical locations on campus, for example. It's important to keep in mind that any objects we place "on" the university diagram should be on layers that are above the Miscellaneous layer. Otherwise, the diagram will draw over the objects.

Adding a picture object without geo-referencing

The Western Regional Center (WRC) of the National Oceanic and Atmospheric Administration (NOAA) is also located in Seattle, on the northwest shore of Lake Washington. On the TIGER-derived MARPLOT map for King County, the WRC is not specifically indicated.

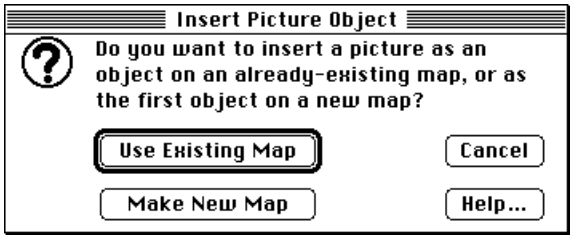


Suppose we want to add the NOAA logo to our map to flag this NOAA location. We have the NOAA logo in a paint file. We can open the file in our paint/draw application, and copy the image to the clipboard.

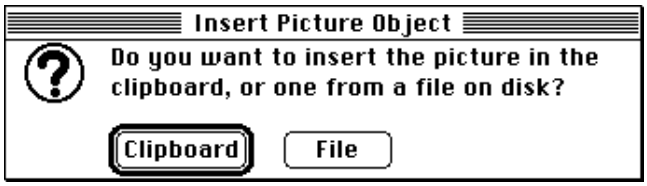


In MARPLOT, we unlock the Miscellaneous layer. As with the university diagram in the previous example, here we'll place the logo on the Miscellaneous layer of the King County map, although it would be reasonable to put it elsewhere, say on a "Logos" layer of the user's map.

We choose Insert Picture Object from the Edit menu. Again, we add the picture to an existing map.

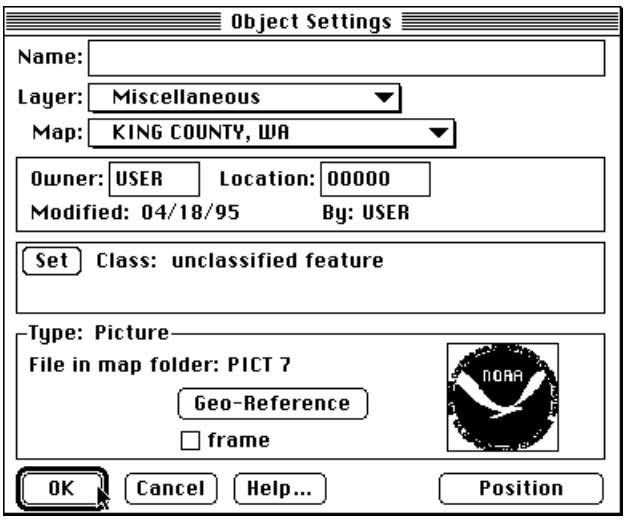


At this point MARPLOT notices the picture on the clipboard and asks if we want to use that one. We click Clipboard to use the copied picture.

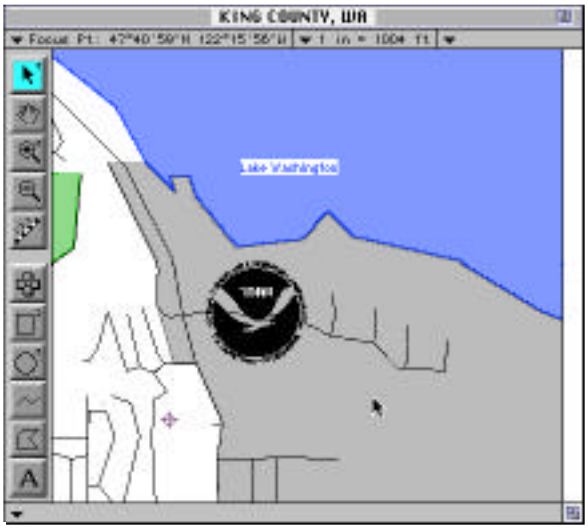


MARPLOT takes the image from the clipboard and brings up the Object Settings dialog box for the new picture object. MARPLOT assigns a default name to the object, in this case "PICT 7." We'll clear the name field, so that MARPLOT won't display "PICT 7" below the image when it shows names of Miscellaneous objects.

Also, we move the object to the King County map from the User's map, which was MARPLOT's default guess. Then we click OK.



MARPLOT adds the picture to the map. We did not geo-reference this picture object, so MARPLOT can only guess at its size and location. By clicking on the picture to select it, then dragging it and stretching it at its corners, we can position and size it as we desire.



The NOAA logo is now an annotation to our King County map.

5.6 Generating output

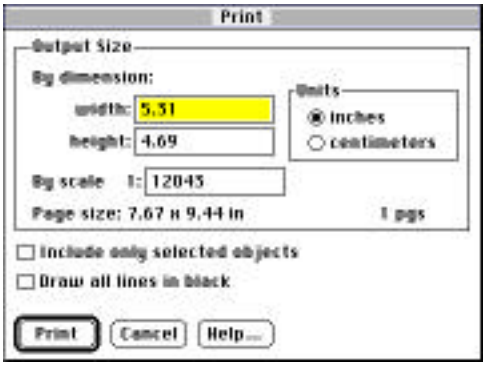
The contents of the map window can be printed to your printer or saved as a standard picture file that can be opened by a painting or drawing application.

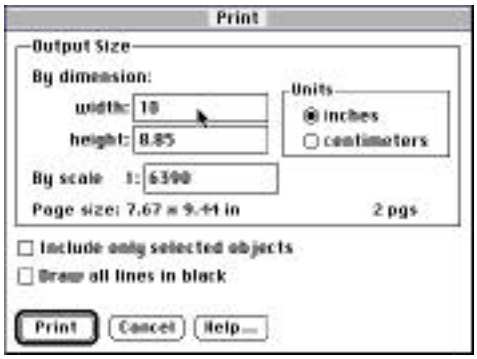
Printing

Before you print, you may want to choose Print Setup (Page Setup on Macintosh) from the File menu, especially if you are printing from MARPLOT for the first time. Among the standard printing options is the ability to scale the printed output to something other than 100%. MARPLOT provides its own mechanism for scaling your output. So, as a rule when printing from MARPLOT, you should have the system print scaling, the one shown via Print/Page Setup, set to 100%.

When you have the desired image in the map window (keep in mind that any insets in the map window such as the reference view or scale bar will be included in the output), choose Print from the File menu. MARPLOT presents a dialog box where you can specify the size of the printed image.

When the Print dialog box comes up, the values in the “width” and “height” fields are set to correspond to the current size of the map window. Thus, if you leave the numeric settings as they are, the printed output will have the same scale (i.e., will be the same size) as the image on your screen. If you change the width, height, or scale value, MARPLOT adjusts the other values accordingly, and recalculates the total number of pages to be printed, shown in the bottom-right corner of the “Output Size” box.





When printing the image, MARPLOT makes full use of each page that is printed. For instance, in the second picture above the output width is set to 10 inches. This means that the image that is shown in the map window will be 10 inches wide, taking up all of the first page and a couple of inches of the second page. However, MARPLOT will continue to fill out the second page, extending the printed image both to the east and to the south. Thus, you typically get a bit more of your map on the printed output than what is shown in the map window.

Checking the first of the two check boxes causes MARPLOT to print only the objects that are currently selected on the map.

The lower check box is useful if you have a black & white printer and are printing colored lines. In some cases, when the printer attempt to simulate a colored line by drawing it in a gray pattern, it ends up leaving certain segments of the line blank. Choosing to draw all lines in black corrects this problem.

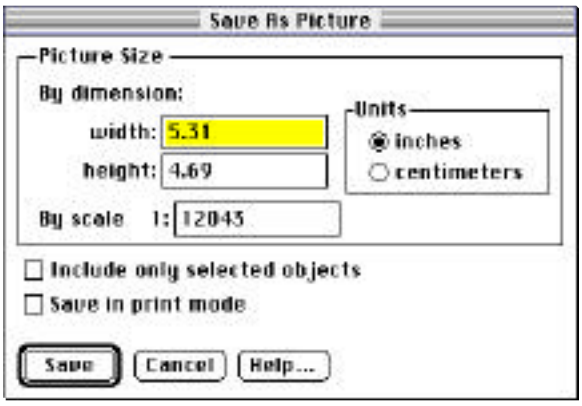
Saving a picture

The Save As Picture item in the File menu is used to save the image in the map window to a file. On the Macintosh, this is a standard "PICT" file, which can be used by many types of applications. On Windows, you can save the image to a bitmap (BMP) file or a metafile (WMF). Metafiles are often smaller than BMP files, and have the advantage that certain programs will allow you to edit them on an object-by-object basis. However, bitmap files are more common and can be opened with standard programs such as PaintBrush.

When you have the desired image in the map window (keep in mind that any insets in the map window such as the reference view or scale bar will be included in the output), choose Save as Picture from the File menu.

On the Macintosh...

MARPLOT gives you the option of changing the size of the saved picture.



As with printing you can choose to save only the selected objects.

The lower check box is used to embed within the picture "comments" that cause the lines in the picture to be drawn in a hairline pen width. Also, checking this box draws all filled objects to the picture, followed by all non-filled objects, regardless of their layer order. Together, these two factors cause the saved picture to print as it would if the same area were printed directly by MARPLOT.

When you click Save, you are presented with a standard file dialog box asking you for the name and folder location of the saved picture file.

On Windows...

You are presented with a standard file dialog box asking you for the name and directory location of the saved picture file. Choose the type of file to be saved from the “Save File of Type:” pop-up.

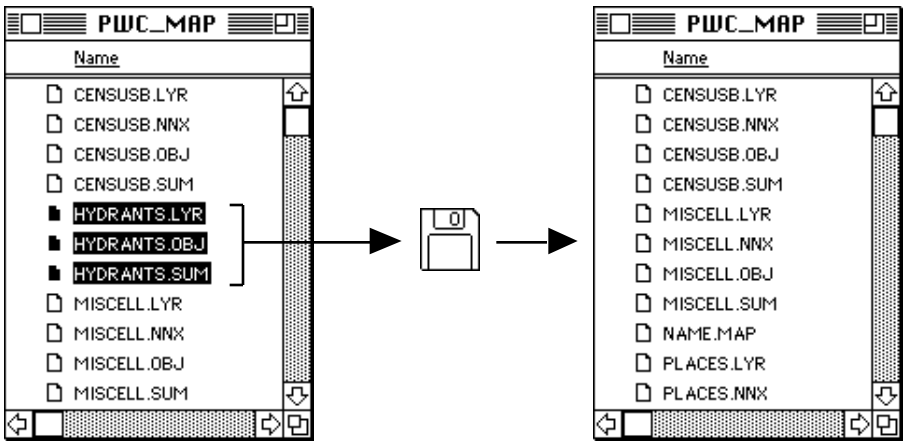
As with printing you can choose to save only the selected objects.

5.7 Transferring map data

Section 2.4.4 discusses the two methods that are used to exchange MARPLOT data between two MARPLOT installations: copying maps and map files, or using MARPLOT's import/export functions.

Copying maps and map files

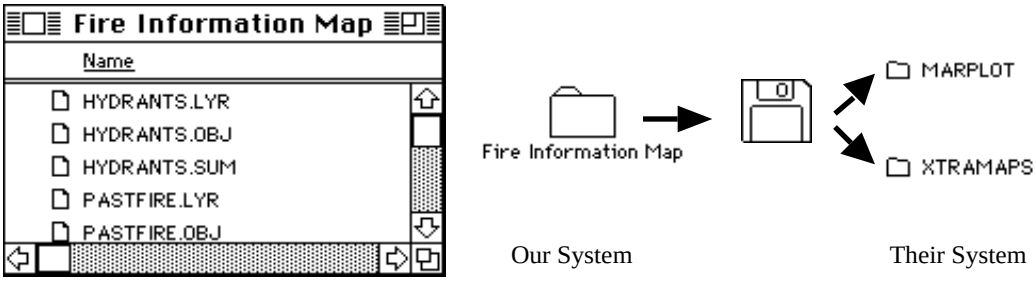
Suppose we have been adding symbols representing the locations of fire hydrants in Prince William County. Suppose we have been adding the objects to a layer called Hydrants. And suppose, first, that we have been putting them on the Prince William county map itself. In this case, when we open the Prince William County map folder (directory), we find three files that store the fire hydrant data: HYDRANTS.LYR, HYDRANTS.SUM, and HYDRANTS.OBJ (a file named HYDRANTS.NNX may also be present if we have used Compact Map Files recently). If we want to give this fire hydrant data to another MARPLOT installation that already has the Prince William County map, we need only give them these three files. They simply drop the three files into their Prince William County map folder (directory) and, when they start MARPLOT, the new layer is automatically added to their system and the fire hydrant objects appear.



Our System Their System

Suppose, on the other hand, that we have not been adding the hydrants to the Prince William County map itself (and it might well be a better idea not to, since we might not like to have our data so closely mixed in with the TIGER-derived map layers). Suppose we have a separate map called Fire Information Map (see section 2.4.7 for information about creating maps). In addition to the Hydrants layer, we might have a Past Fires layer, along with some other fire-related layers. Transferring this data to another MARPLOT installation is very easy. We simply give them the entire Fire Information Map folder (directory). They can put this folder directly in their MARPLOT folder, in which case it's recognized automatically when they start MARPLOT, or in some other folder, in which case they have to use Find New Map in the Map List dialog box to identify the new

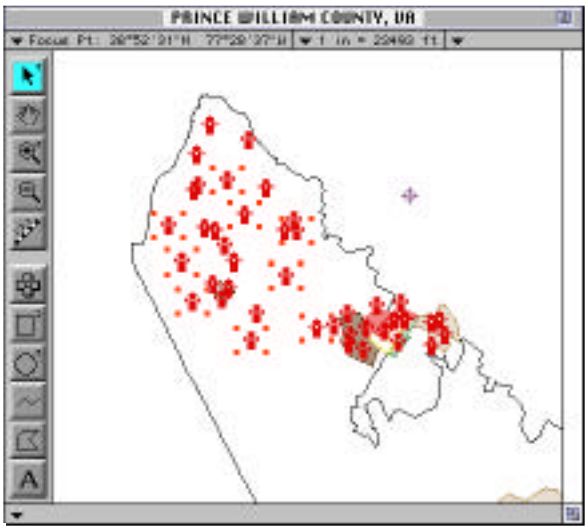
map. (They would only have to use Find New Map once; they could replace the entire Fire Information Map with future updates without having to use Find New Map again.)



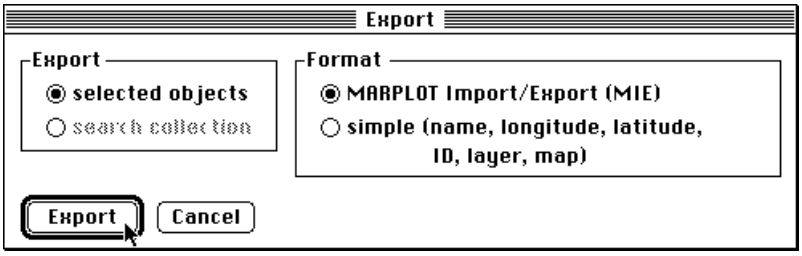
Using Export and Import

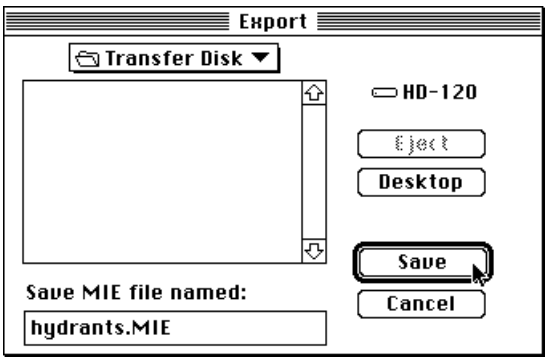
As explained in section 2.4.4, there may be cases where you cannot transfer entire maps or groups of map files, but must instead explicitly select the objects to be transferred and export them to an MIE file. The recipient of the data then imports the MIE file into his or her system.

First, we select the objects on the map that we want to transfer. There are a number of ways the selection process can take place. If there are only a few objects, we may just shift-click them with the arrow tool. If there are many, we might select them in some automated way, such as using MARPLOT's Search function, or a search operation in the database to which the objects are linked, if there is such a database.

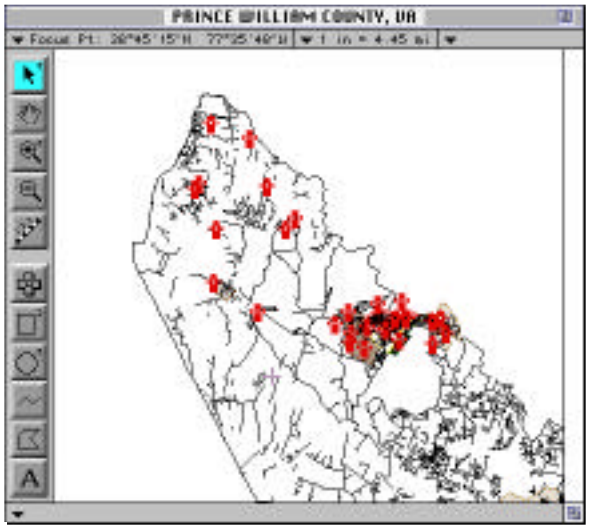


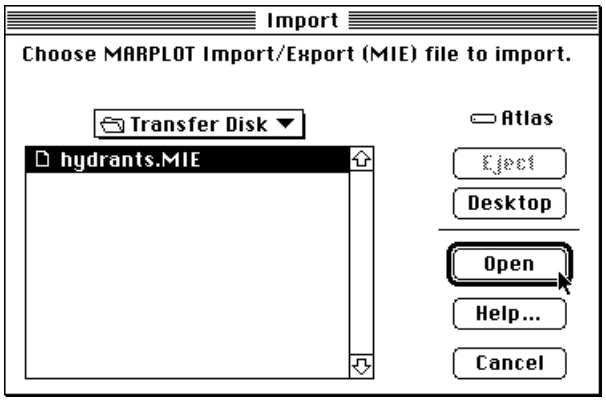
When the objects are selected we choose Export from the File menu and specify a name for the MIE file.

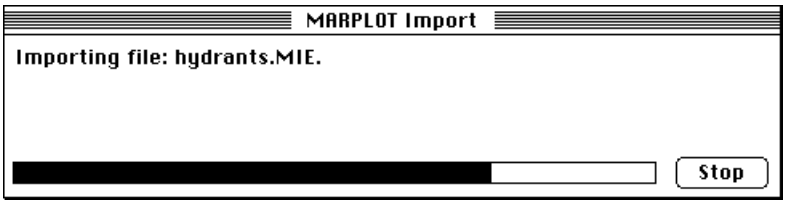


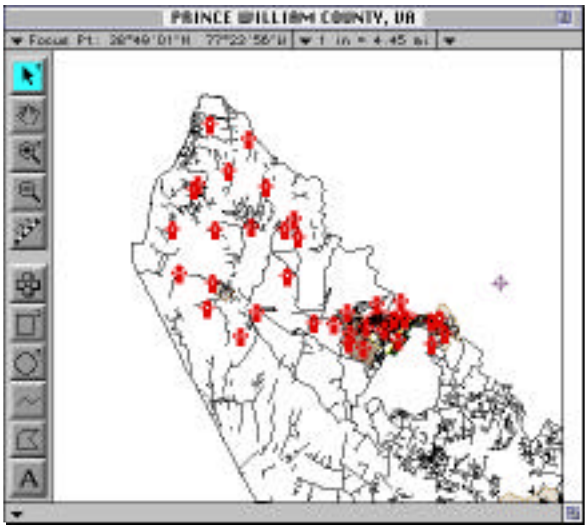


The recipient of the data opens Prince William County map, chooses Import from the File menu, and selects the MIE file you created.



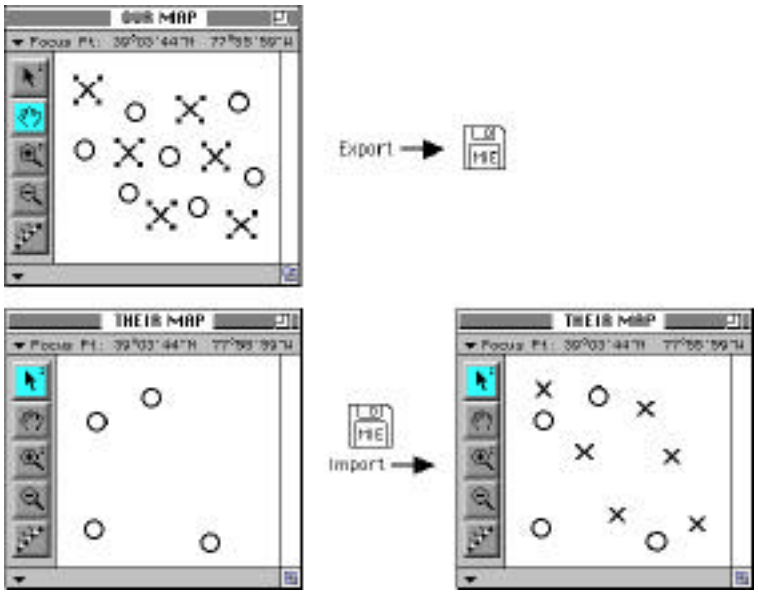






You can see that some fire hydrants (the ones from the MIE file) have been added, but the pre-existing fire hydrants on the recipient's map are still intact.

The following diagram summarizes this export/import data transfer. In the diagram, the X's and O's are meant to represent objects on the same layer. The X's are being transferred from one system to another.

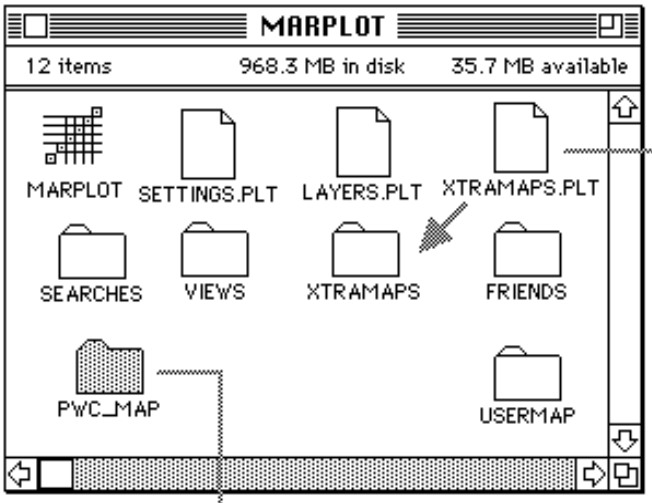


6 Quick-help Diagrams

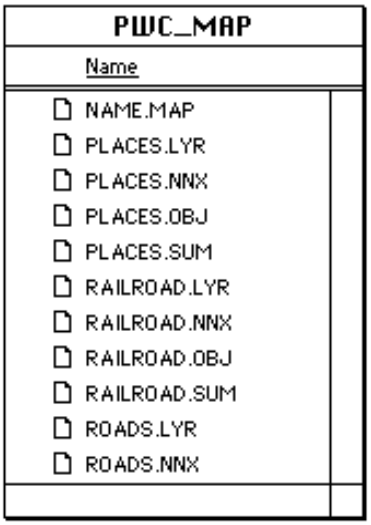
This section contains a number of diagrams that point out the key parts of MARPLOT's main displays and dialog boxes.

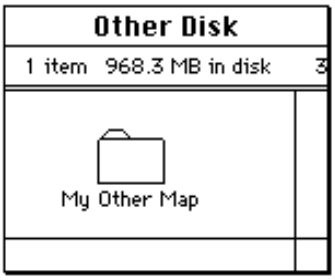
MARPLOT Folders and Files

The MARPLOT folder (directory) contains the MARPLOT application, map folders, several ".PLT" files that MARPLOT accesses, and other miscellaneous files that MARPLOT uses.



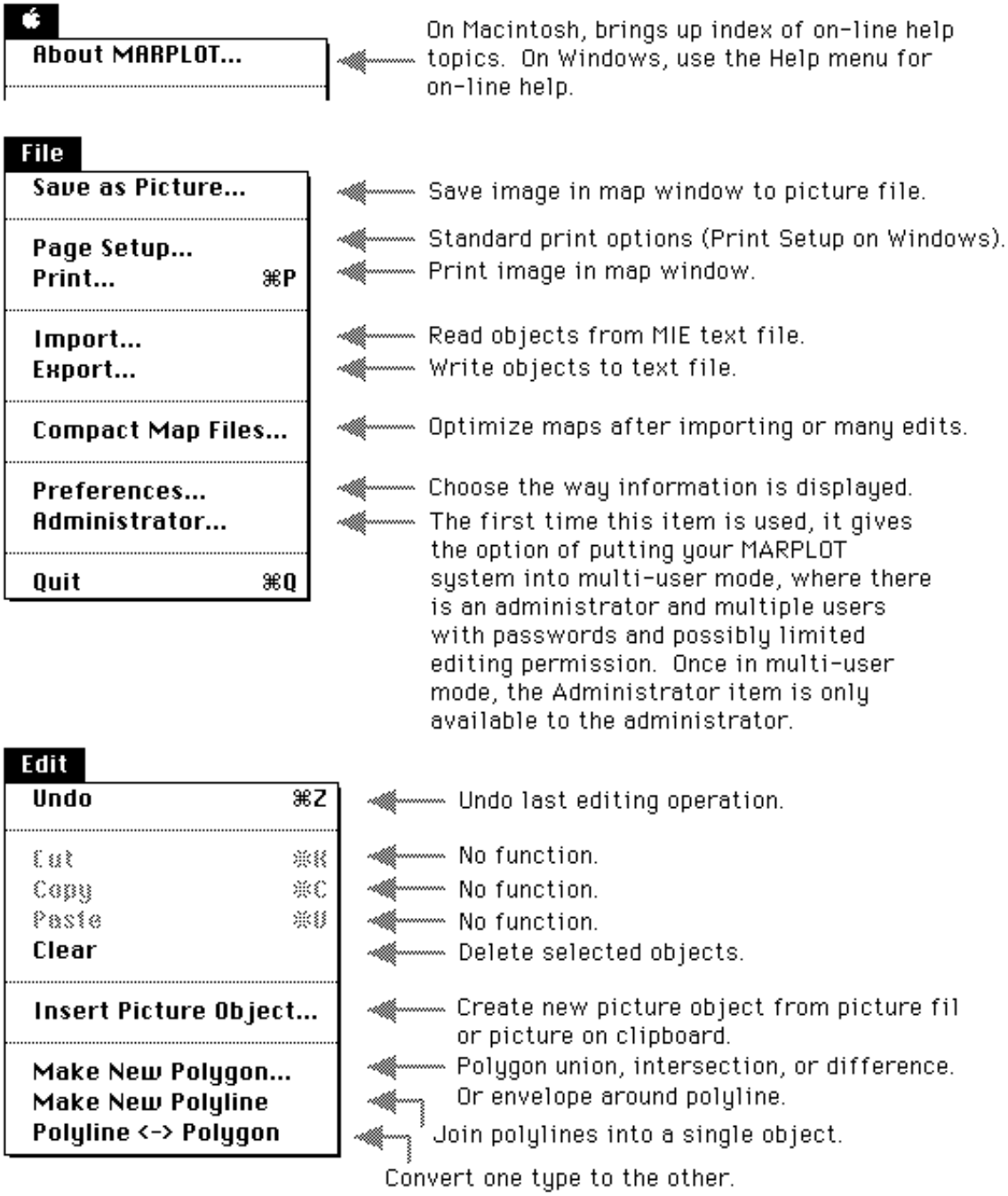
Map folders need not be in the MARPLOT folder; they can be in any folder (directory) on any of your disks. (The XTRAMAPS folder is a convenient place to store maps that you do not want to keep directly in the MARPLOT folder.) The locations of maps that are not stored in the MARPLOT folder are kept in the XTRAMAPS.PLT file.





Each map folder contains a NAME.MAP file. This flags the folder as being a map folder. For each layer on a map, there are up to five map files, ending with ".LYR," ".SUM," ".OBJ," ".NNX," and ".SM2." The last two file types are not always present for a given layer on a given map. If a map contains picture objects, there will also be a picture file in the map folder for each picture object.

Menus


About MARPLOT...
On Macintosh, brings up index of on-line help topics. On Windows, use the Help menu for on-line help.
File
Save as Picture...
Save image in map window to picture file.
Page Setup...
Standard print options (Print Setup on Windows).
Print... ⌘P
Print image in map window.
Import...
Read objects from MIE text file.
Export...
Write objects to text file.
Compact Map Files...
Optimize maps after importing or many edits.
Preferences...
Choose the way information is displayed.
Administrator...
The first time this item is used, it gives the option of putting your MARPLOT system into multi-user mode, where there is an administrator and multiple users with passwords and possibly limited editing permission. Once in multi-user mode, the Administrator item is only available to the administrator.
Quit ⌘Q
Edit
Undo ⌘Z
Undo last editing operation.
Cut ⌘X
No function.
Copy ⌘C
No function.
Paste ⌘V
No function.
Clear
Delete selected objects.
Insert Picture Object...
Create new picture object from picture fil or picture on clipboard.
Make New Polygon...
Polygon union, intersection, or difference.
Make New Polyline
Or envelope around polyline.
Polyline <-> Polygon
Join polylines into a single object.
Convert one type to the other.

Menus (continued)

View

Go to View...	⌘R	Return to saved view or <entire map> view.
Go to Previous View		"Undo" any change of view.
Set Scale...	⌘;	Set the viewing scale by numeric value.
Go to Lat/Long...	⌘A	Set the map position by exact coordinates.
Center On Focus Point	⌘T	Center on Focus Point, retaining scale.
Save Current View...	⌘U	Save view in map window for later use.
Edit Views...		Rename or delete saved views.
Entry View...		Choose initial view for MARPLOT sessions.
Reference View	▶	Set, show, hide the reference view.
Legend	▶	Set, show, hide the legend.
Scale Bar	▶	Set, show, hide the scale bar.
Time Stamp	▶	Set, show, hide the time stamp.
Lat/Long Grid	▶	Set, show, hide the lat/long grid.
Marked Point	▶	
Redraw	⌘D	When you have stopped drawing with the ESC key, use this to redraw.

Mark Focus Point
Center on Marked Point
Distance to Focus Point
Rescale to Marked & Focus Pts
Clear Marked Point

The Marked Point serves as a reference location for the functions in this submenu and also for functions in the Vertex submenu. You set the Marked Point either at the location of the Focus Point (this menu) or the location of the closest vertex (Vertex menu). With this menu, you can center the view on the Marked Point, find the distance from the Marked Point to the Focus Point, change the view so that the Marked Point and the Focus Point are just visible, or clear the Marked Point. With the Vertex menu you can move a vertex to the Marked Point.

Menus (continued)

List

Search...	⌘F	Search for objects (various criteria).
Show Search Collection	⌘G	Show list of found or copied objects.
Copy to Search Collection	⌘Y	Copy selected objects to search collection (replace previous collection).
Layer List...	⌘L	View/modify list of layers.
Map List...	⌘M	View/modify list of maps.

Objects

Object Settings...	⌘B	View/modify settings for the selected object.
Segment Settings...	⌘E	View/modify settings for the segment of the selected object at the Focus Point.
Vertex ▶		
Move Objects to Layer...		Move selected object(s) to chosen layer.
Move Objects to Map...		Move selected object(s) to chosen map.
Color ▶		Set color of selected object(s).
Line Width ▶		Set line width of selected object(s).
Line Pattern ▶		Set line pattern of selected object(s).
Fill Pattern ▶		Set fill pattern of selected object(s).
Symbol ▶		Set symbol (icon) of selected object(s).

NOTE: On Windows, Line Width and Line Pattern are combined into a single Line Style item.

- Mark Vertex
- Move Vertex to Marked Point
- Insert Vertex at Focus Point
- Delete Vertex

The Vertex submenu allows you to edit polyline and polygon objects at the vertex level. You can insert or delete vertex points, and move vertex points to an exact latitude/longitude location, that of the Marked Point. This latter operation is important when editing road intersections.

Sharing

- About Sharing...

⋮

The Sharing menu is the connection between MARPLOT and various applications that create objects on MARPLOT maps and/or store database information that is linked to map objects. For more information, see the documentation for the applications that share information with MARPLOT on your system.

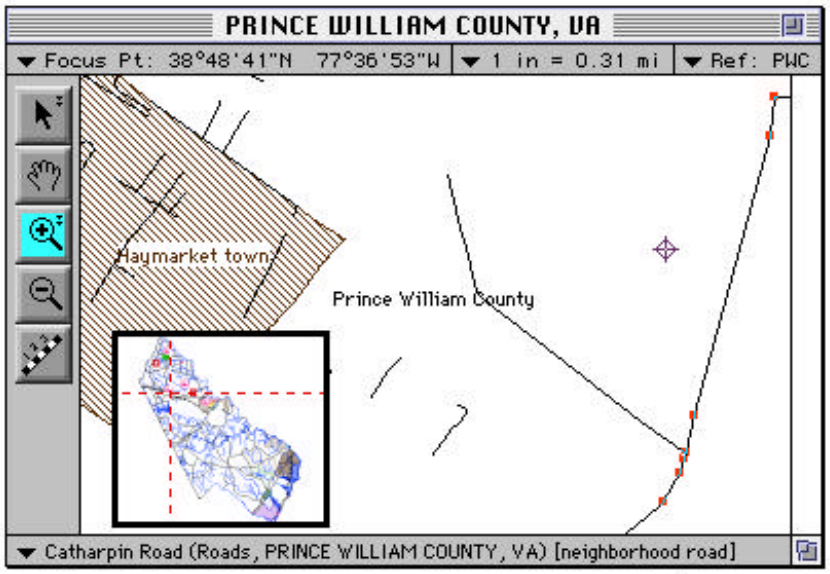
The Map Window

Latitude/longitude of Focus Point. Change format in Preferences.

Scale of current view. Change format in Preferences.

Name of reference view, if one is shown.

Name of displayed map, or "MARPLOT" if multiple maps are shown.



The reference view shows the location of the view in the map window relative to a larger view.

When an object is selected, its name, layer, map, and classification are displayed.

The Focus Point marks the most recent point of interest. It flashes to make it easy to find.

One or more objects may be selected. Selected objects are marked with dots at their vertex points. Many MARPLOT functions apply to the selected object(s).

Click to select objects. Drag to select several. Drag to edit selected object.

Drag to shift view.

Click to zoom in. Drag to zoom to rectangle.

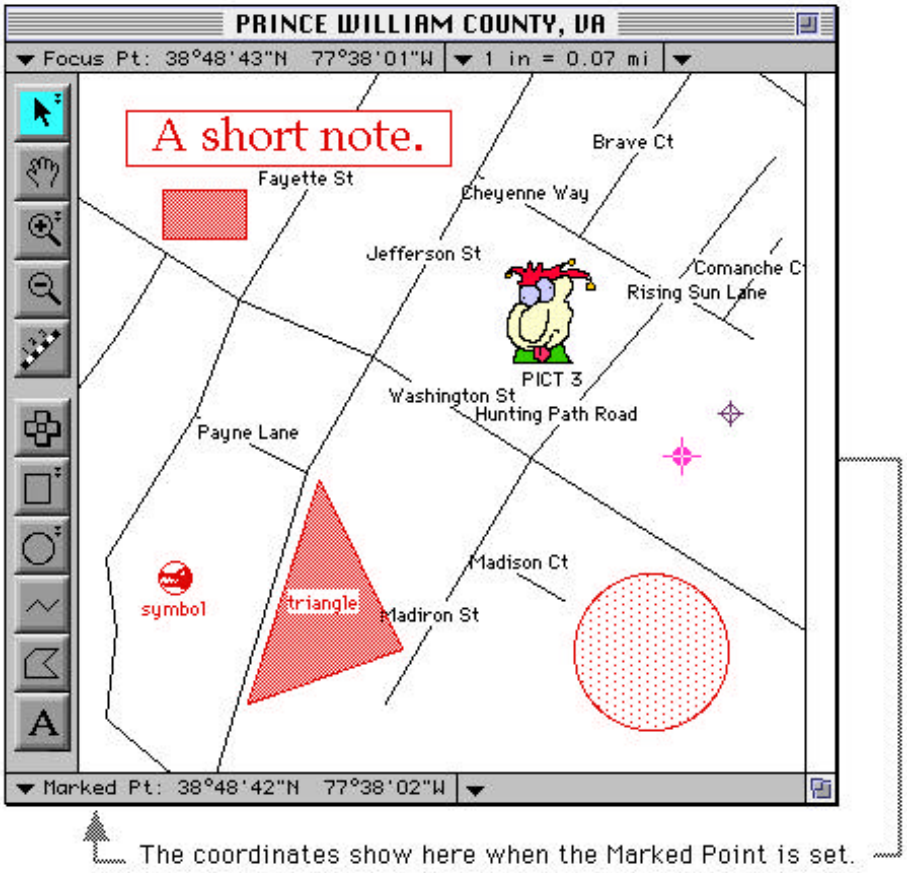
Drag to measure distances.

Click to zoom out.

The Map Window with an Unlocked Layer

When one or more layers have been unlocked (using the Layer List dialog box), the list of tools on the left edge of the map window extends to offer tools for creating new objects.

This view shows all seven types of MARPLOT objects: polylines (the roads), a polygon, a symbol, a rectangle, a circle, a text label ("A short note."), and a picture (the clown).



Click to make symbol (point).

Click to make a text label.

Drag to make rectangle.

Drag to make circle.

Click at each vertex to make polyline. Double-click to finish.

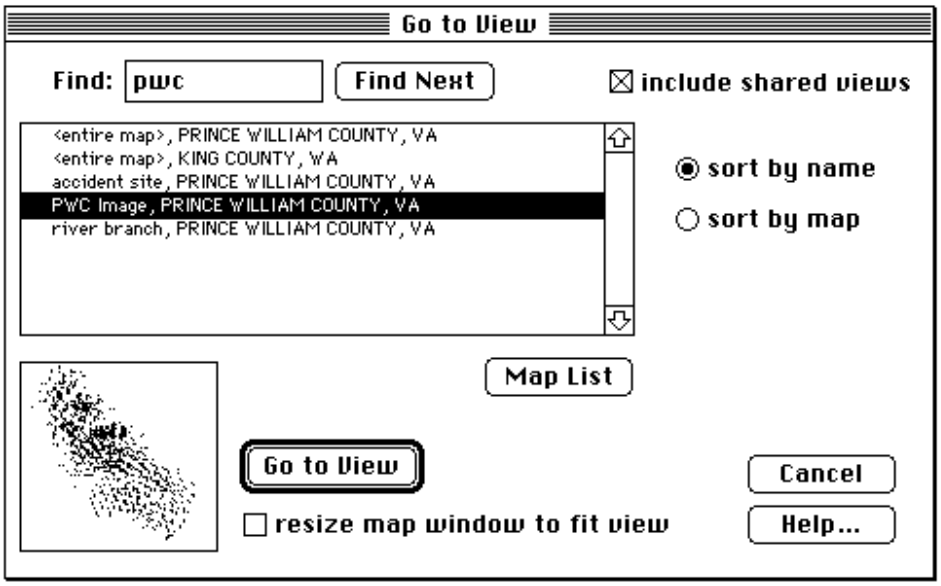
Click at each vertex to make polygon. Double-click to finish.

Picture objects are created using the Insert Picture Object item in the Edit menu.

View Dialog Boxes

The four view dialog boxes, Go to View, Entry View, Set Reference View, and Edit Views have a similar design. In each case, the views can be ordered alphabetically by view name or by map name. If there are many views, you can type a few characters of the name you are looking for and click Find Next. Except in the case of <entire map> views, the view's miniature image appears in the lower-right.

When the "Include shared views" box is active, you can click it to decide whether views saved by other users of your MAPRLOT system appear in the list.



In the Go to View dialog box, click Go to View to go to the highlighted view. Check the box "resize map window to fit view" if you want the map window to be automatically resized to match the width/height aspect ratio of the view. Sometimes you may want to see the entire map view of a map that is not listed here. You can click the Map List button to go to the map list, from which you can choose to go to the view of any map.

In the Entry View dialog box, you can choose not to have an entry view (in which case the Go to View dialog box comes up at the start of each MARPLOT session), to enter to the last view from the previous MARPLOT session, or to enter to a particular view. In the latter case, the selected entry view appears with a boxed "E" next to its name.

In the Edit Views dialog box, you can rename or delete saved views.

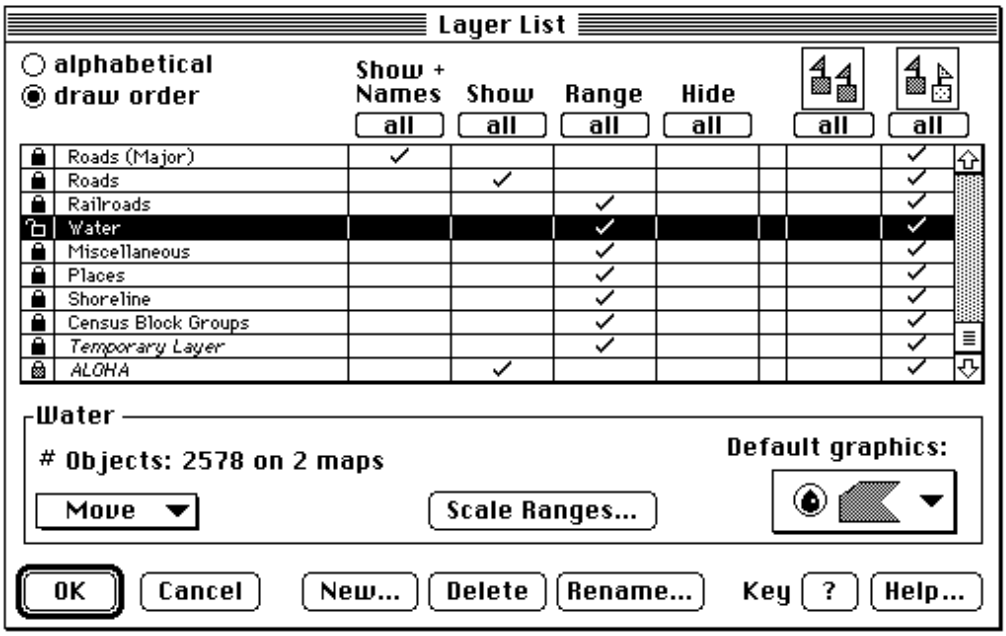
In the Set Reference View dialog box, you can pick a saved view to serve as the reference view. Check the box "allow any view in reference" if you want to allow a reference view that does not necessarily contain the current area of the map window.

Layer List

The layer list shows all of the layers known to your MARPLOT system, sorted either alphabetically or from top-to-bottom layer order (the layer on the bottom is drawn first).

Layers can be in one of four show modes (Show + Names, Show, Range, Hide) and one of two graphics modes (default, individual). They can be locked or unlocked, temporary, permanent, and "owned" by MARPLOT or another application.

Each layer has default graphical settings and settings for four scale values related to when and how the layer is displayed.



Show + Names Show objects, along with their names.
Show Show objects; only show their names within the given range.
Range Show objects when the map scale is within the given range.
Hide Do not show objects.

Use the default graphical settings (as indicated in the graphics box pop-up).

Use the graphical settings of the individual objects.

Locked.

Unlocked.

Owned by application, locked

Owned by application, unlocked (Objects menu graphics edits enabled).

Move Change layer order (when not alphabetical).

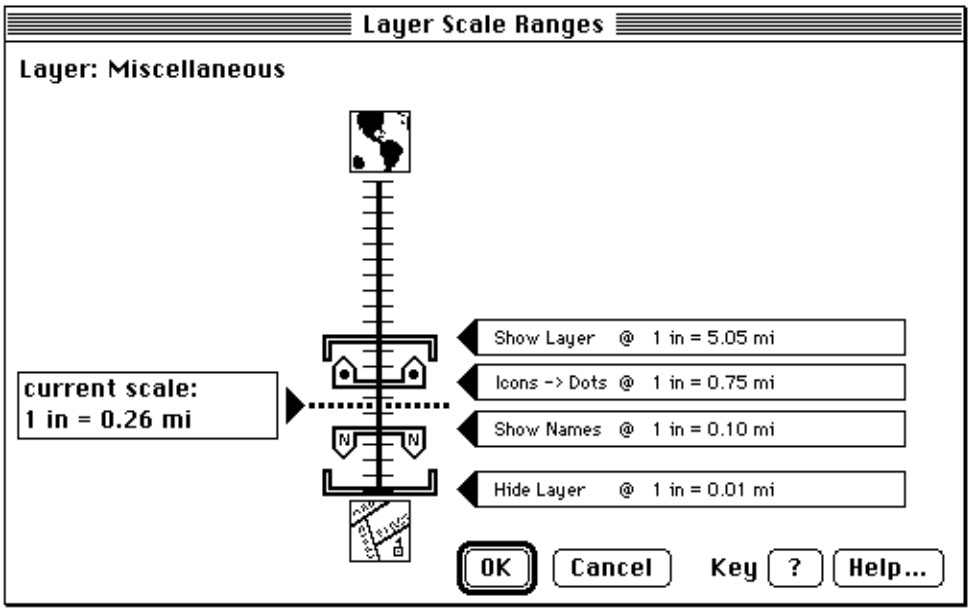
Scale Ranges View/modify layer scale ranges.

Italics indicate temporary layers (objects are deleted at the end of the MARPLOT session).

Layer Scale Ranges

This dialog box lets you set four scale values related to if, when and how the selected layer displays. It presents a "scale ruler" ranging from a very zoomed-in view at the bottom to a view at the top that is so zoomed-out it shows the whole earth.

The current map scale is shown on the ruler with a dotted line.



The "Show Layer" and "Hide Layer" pointers, along with the wide brackets, indicate the range of scales at which the given layer is visible WHEN THE LAYER IS SET TO RANGE MODE.
The layer is not visible when you zoom out past the "Show Layer" value, or when you zoom in in past the "Hide Layer" value.

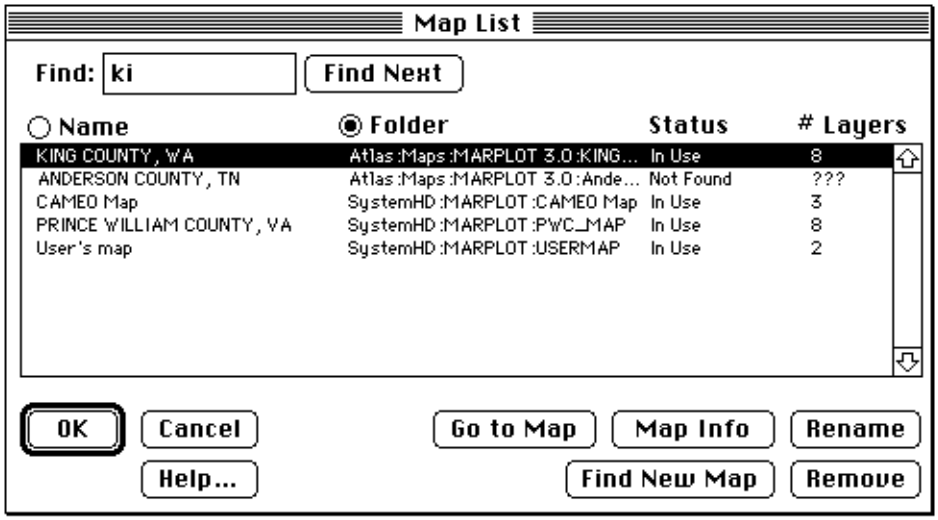
The "Icons -> Dots" pointer, along with the dot bar, indicates the scale at which the objects of the given layer show as small dots, instead of as their usual icons. When you zoom out past this scale, the icons change to dots so that the view is not overcrowded by symbols.

The "Show Names" pointer, along with the "N" bar, indicates the scale at which the names for objects on the given layer appear. When you zoom in past this scale, the names are shown. When you are not zoomed in this far, the names do not show, since they would crowd each other on the screen.

Drag any of these four pointers up or down on the scale ruler to change the setting.

Map List

This dialog box lists all maps known to your MARPLOT system.



The maps in the list are those inside your MARPLOT folder (directory), plus those in locations that are stored in the XTRAMAP.PLT file. You can determine the location of a map's folder (directory) by looking at the "Folder"/"Path" column. If the path is too long to fit in this column, you can use the Map Info button to see the full path.

Maps can be in one of three states. Maps that are "In Use" are active and are drawn to screen. Maps that are "Not In Use" are not drawn on the screen. However, they are automatically brought into use when they are needed; for example, when you show an object from such a map using the Search Collection dialog box. Maps are "Not Found" when the path that MARPLOT has saved for the map is no longer valid. This can happen, for example, when you rename a folder (directory), or if the map is stored on a removeable disk that is not currently mounted.

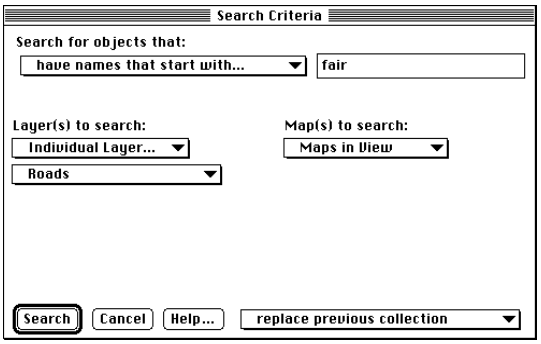
The "# Layers" column gives the number of layers that are represented on the given map. The Map Info button gives a more detailed layer breakdown for a map.

The Go to Map button is most useful for determining the total area covered by a map that does not have a "Places" layer. (Maps with a "Places" layer can be accessed in the Go to View dialog box.)

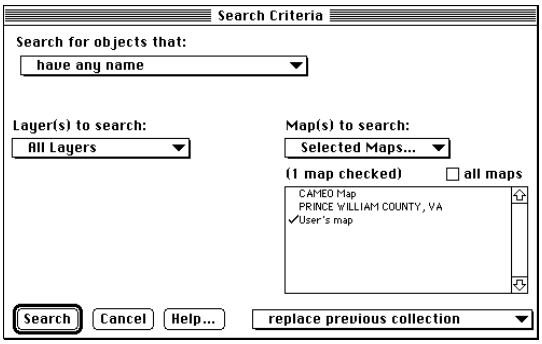
The Find New Map button is used to add a new map to your MARPLOT system. The found map may be on a different disk drive than the MARPLOT application, possibly a compact disc drive.

Search Criteria

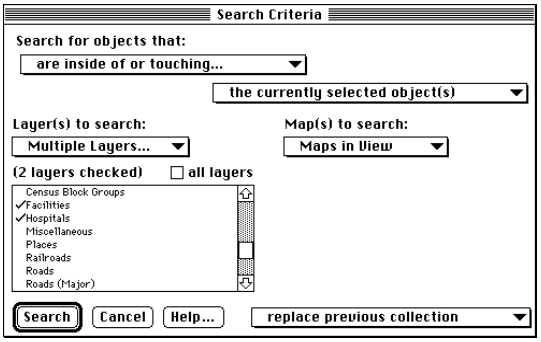
This dialog box is used to find objects according to various criteria. You can use the five pop-up boxes to modify how and where MARPLOT looks for objects. Many combinations are possible. Below, six set-ups are shown, along with descriptions of what each search will find.



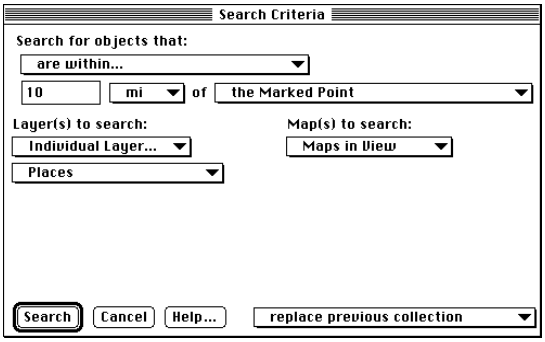
Roads on current map starting with “fair”.



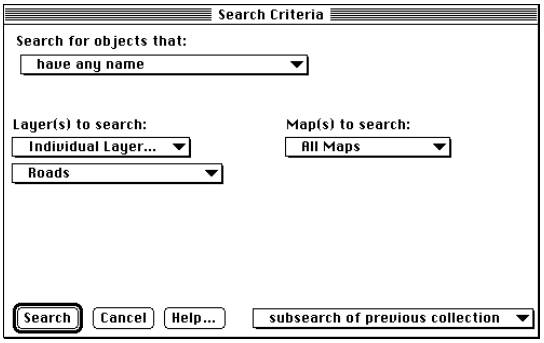
All objects on the User’s map.



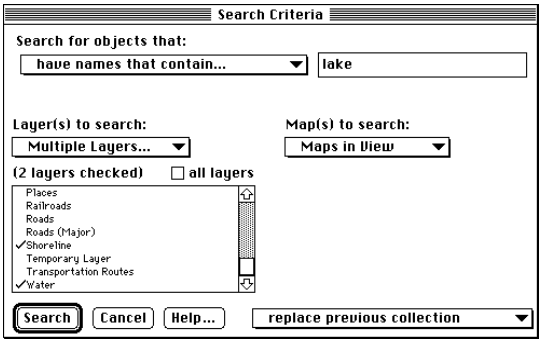
Hospitals and facilities that are inside the objects currently selected on the map (which might, for instance, represent threat zones).



Places (cities and towns) that are within 10 miles of the Marked Point.



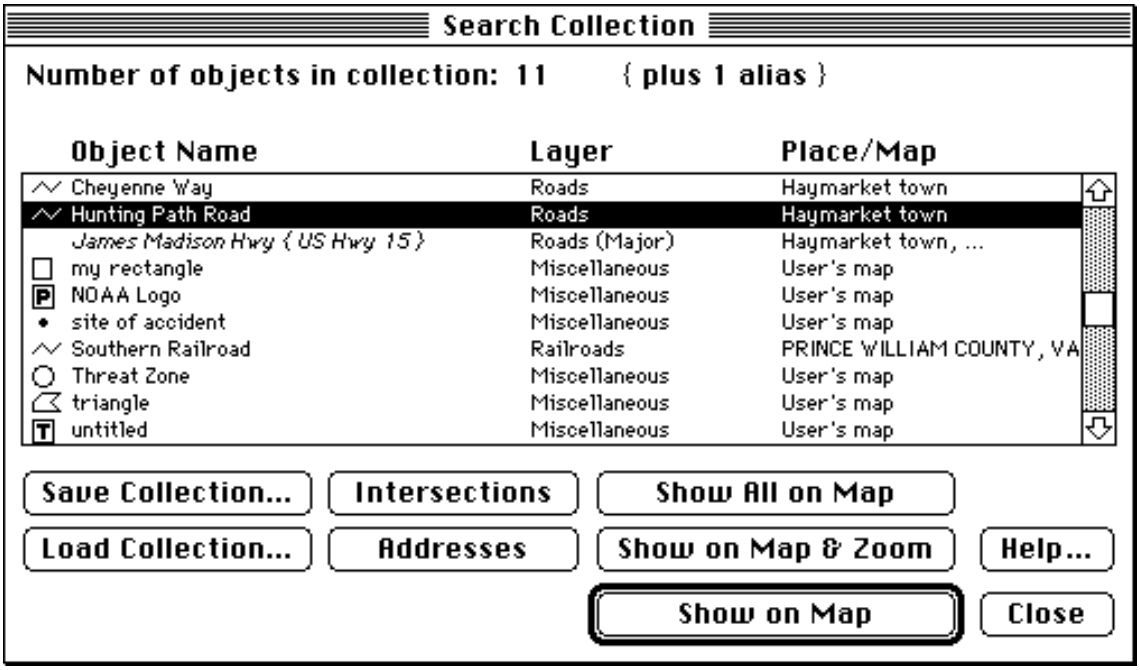
Among the objects found in the previous search, only the roads.



On the Shoreline or Water layers, any object that has “lake” in its name.

Search Collection

The Search Collection is a list of objects. Each time you do a search, the Search Collection is filled with the objects that match the criteria you have specified. You can also fill the Search Collection with the selected objects using the Copy to Search Collection menu item.



An alias is an alternative name for an object. Aliases in the Search Collection are shown in italics. In the example above, James Madison Hwy is an alternative name for US Hwy 15.

Each object in the Search Collection is preceded by an icon indicating its type: polyline, polygon, point (symbol), rectangle, circle, picture, text label

When the place/map ends with "..." it means the object is primarily in the named place, but crosses into other places as well.

Show All on Map — Show and select all listed objects.

Show on Map & Zoom — Show and select highlighted object. Change scale to show only area of object.

Show on Map — Show and select highlighted object. Do not change scale.

Intersections — List intersections of selected object (usually a road).

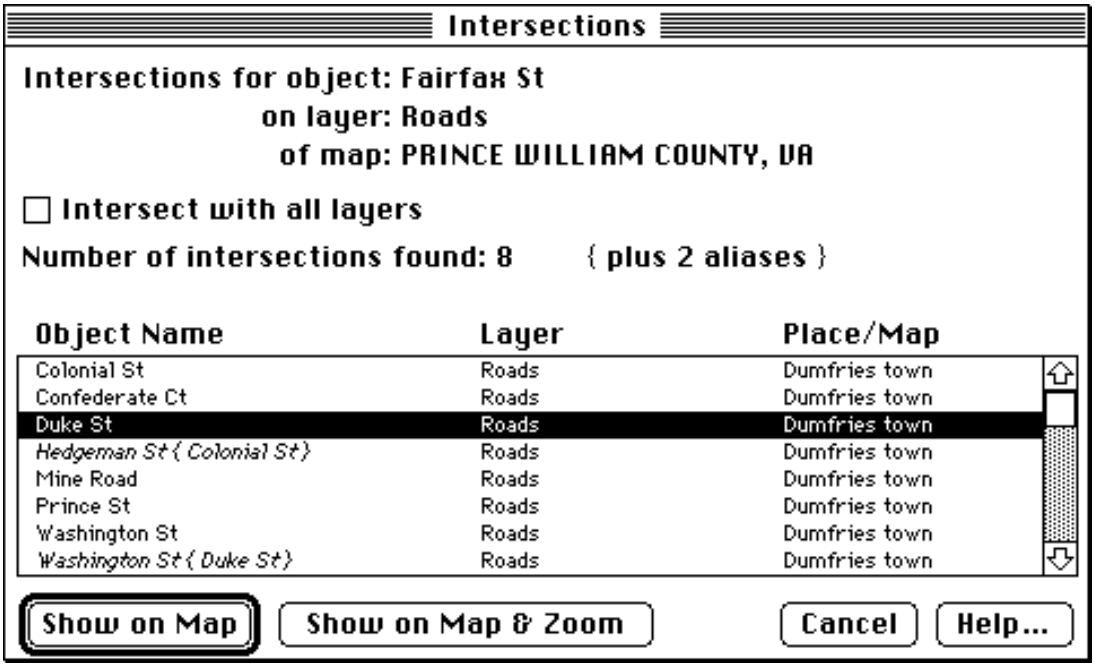
Addresses — List address ranges of selected object (usually a road).

Save Collection... — Save Search Collection list to text file.

Load Collection... — Load Search Collection list from text file.

Intersections

This dialog box comes up when you click the Intersections button in the Search Collection.



Show on Map — Highlight the two intersecting objects and put the Focus Point at the point of intersection. Do not change scale.

Show on Map & Zoom — Also, change the scale to a scale appropriate for viewing typical street intersections.

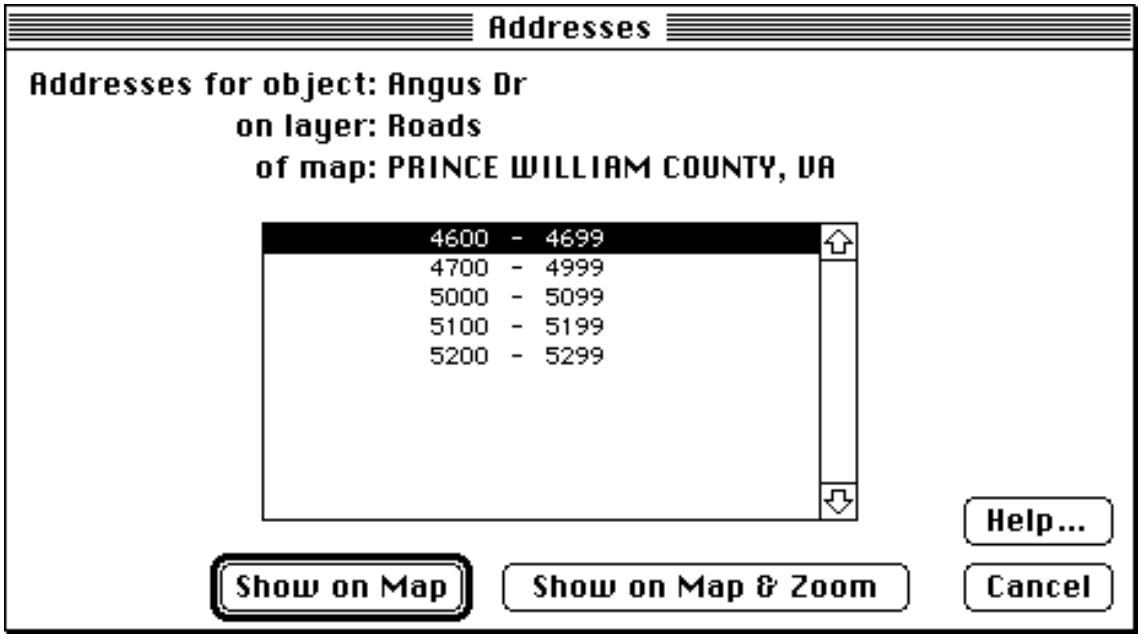
☐ Intersect with all layers

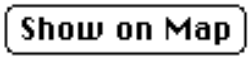
Usually, you are interested in finding the intersections of an object with other objects on its same layer, usually to intersect Roads with other Roads. However, sometimes you may want to intersect with other layers. For instance, you may want to see where a road intersects with rivers on the Water layer. When the “Intersect with all layers” box is checked, the list of intersections is recomputed to include objects from all layers that intersect with the given object.

NOTE: For the purposes of this dialog box, MARPLOT only considers two polyline objects to intersect if they share a vertex exactly.

Addresses

This dialog box comes up when you click the Addresses button in the Search Collection.





Highlight the road and put the Focus Point along the segment corresponding to the selected address range. Do not change scale.

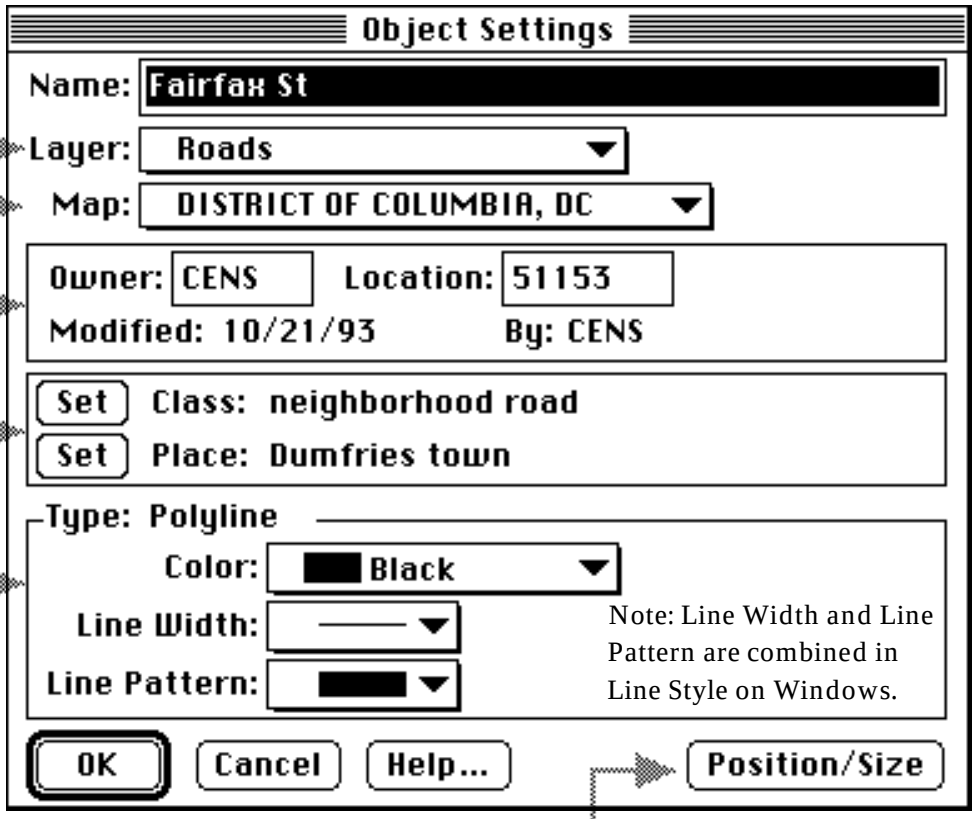
Also, change the scale to a scale appropriate for viewing typical street address ranges.

Object Settings

This dialog box comes up when you use the Object Settings menu item with a single object selected, or when you double-click on an object.

Use to move the object from one map to another. Use with caution. Note that this does not change the position of the object, but may extend map boundaries.

Use to move the object from one layer to another. Use with caution.



Note: Line Width and Line Pattern are combined in Line Style on Windows.

Click to view / modify the position of the object by latitude / longitude coordinates.

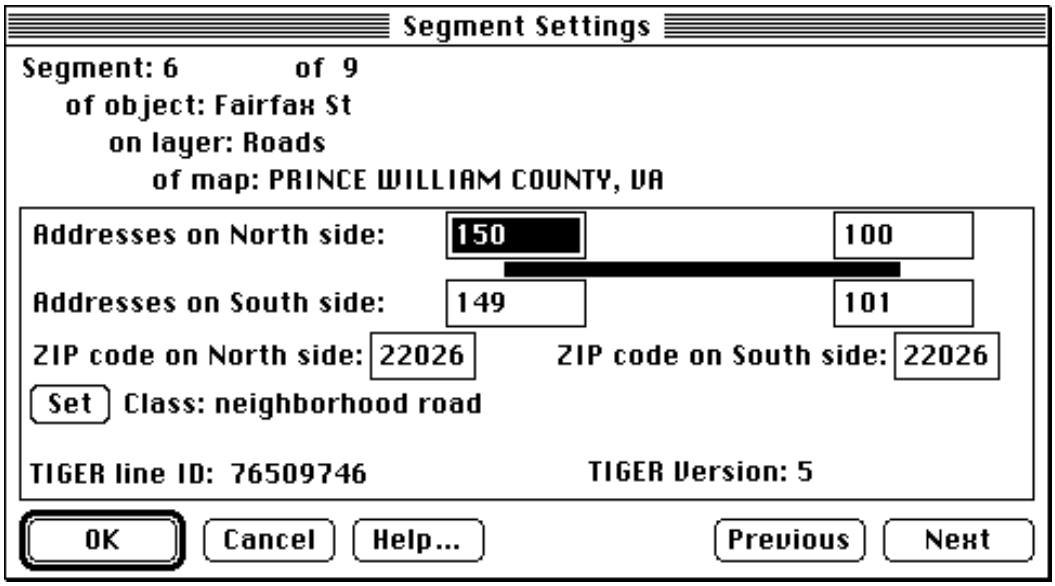
Use items in this box to change type-specific settings for the object. For symbol (point) objects, you can choose the symbol. For polygon objects, you can choose a fill pattern. For text objects, you can edit the text. For picture objects, you can geo-reference the picture.

Click to change the feature classification or place (city or map name). Both of these settings are used for display purposes only.

This area shows the user-code of the original creator of the object, and the user-code of its last modifier, along with the last modification date. The location code of the object, if set, indicates the code number of the object's original location.

Segment Settings

This dialog box comes up when you select an individual polyline object in the map window and use the Segment Settings menu item. It lets you view / modify information specific to the segment of the selected object that is closest to the Focus Point.



The values are editable if the object is on an unlocked layer. Change the address or ZIP code values by typing in the boxes. Use the Set button to change the classification of just this segment (not of the entire object; you can set the object's classification in the Object Settings dialog box).

Use the Previous and Next buttons to scan through the segments of the object.

7 Troubleshooting

MARPLOT does not display the maps/layers I have. I get a blank window or a window that only shows some of my maps/layers.

Remember that what you see in the map window depends upon (a) the area you are looking at, (b) the current scale (remember that layers can be set to show only at certain scales), (c) the order of the layers (layers can draw over one another) and (d) the maps that are currently in use. If you are not seeing what you expect, consider each of these factors.

Here are some suggestions:

(a) Use the Go to View item in the View menu to choose the correct view. If none of the views in the view list are what you want, you can use the Map List button to go to the Map List dialog box, and then use Go to Map to see an entire map.

(b) Use the Layer List item in the List menu. Some of the layers you want may be in Hide mode, or they may be in Range mode and their scale settings might have them hidden at the current scale.

(c) Again in the Layer List, when the "alphabetical" box is not checked, you can see the layers in their top-to-bottom order. Higher layers can draw over lower layers. Use the Move Layer button to change the order.

(d) Use the Map List item in the List menu to see a list of the available maps. If the map you need is not listed, you should use the Find New Map button to locate it, or ask your system administrator to install the map for you. Maps may be unavailable because the disks they are on are not currently on-line. Finally, a map may be available but not in use, in which case you can simply put it in use using the Map List dialog box.

MARPLOT is taking too long to draw my map or to perform some other operation.

You can interrupt most MARPLOT operations by pressing the escape (ESC) key. If your layer scale ranges are not set appropriately, you may find that MARPLOT is taking too long to draw because it is drawing too much detail at zoomed-out scales. If you find that you are pressing ESC too often, you should change the layer scale ranges using the Layer List dialog box.

I'm searching for "E Maple St" in the Search dialog box, but MARPLOT can't find it.

Don't use directional prefixes in the Search dialog box. In this case, you should just type "maple" and click Search.

I want to make a change to an object, but MARPLOT won't seem to let me.

To make a change to any object, that object's layer must be unlocked using the Layer List dialog box. Also, if your MARPLOT system is multi-user and your system administrator has set you up with browse-level permission, you will only be able to make changes to objects on your personal user's map.

A while ago I saved a view of a certain area of my map. When I return to the view, it shows the right "area," but the "contents" look different than when I saved it.

When you save a view, MARPLOT remembers the area you were looking at and what it looked like when it was saved. However, if you save a view with certain layers shown and return to the view at a time when different layers are shown, the view may look different. Similarly, it's possible that an object that used to be in the view has since been deleted, or that new objects have been added. If you are bothered by the discrepancy between the small saved image of the view and its current state, you can always delete the old view and save it again with its new look.

When I save a view, the small image that MARPLOT uses to represent the view looks like a black rectangle, not like what I saved.

When MARPLOT "shrinks" the image of your saved view, patterns in the image may become more dense than they are in the map window. If you save a view that contains a dotted background pattern, those dots may become magnified in the shrunken image, and can in fact totally obliterate it. Thus, when saving a view you should consider first hiding layers (such as the "Places" layer) that contain objects that create background patterns in the map window.

Someone used the Administrator menu item and now MARPLOT asks me to login with a password every time I run it. I want to go back to a single-user system without passwords.

There are two ways to return to single-user mode. First, if you know the administrator's password (see section 2.4.5), you can use that to enter MARPLOT. Then choose the Administrator menu item and click the Stop

Administration button in the MARPLOT Administrator dialog box. Another method is to quit MARPLOT, find the USERS directory (folder) within the MARPLOT directory (folder), and rename it USERSX. Subsequent uses of MARPLOT will not require passwords.

I have a "circle" object that looks like an egg. I can only select the object by clicking at its very top or very bottom.

If desired, you can "fix" a distorted circle by clicking and dragging on one of its four selection tag handles (the circle's layer must be unlocked). As soon as you begin to drag, the object will become a true circle.

One or more of my map files seems to be messed up. I can see certain objects on the screen but can't click on them, I don't see objects that I know are supposed to be there, or I get error messages when MARPLOT is drawing the maps.

Under certain unusual circumstances (perhaps due to a "crash" of your computer), it is possible for MARPLOT's map files to become corrupted to various degrees. The best way to avoid problems with corrupted files is to keep regular backups of your map files. It is sometimes possible to fix corrupted files by using the Compact Maps item in the File menu. In the process of compacting the maps, this function reorganizes the map data, and this reorganization can correct certain errors. However, corrupted map files are not common, so you should consider other possible reasons for your problem before trying Compact Maps.

Glossary

Administrator

MARPLOT can run in either “single-user” or “multi-user” mode. In multi-user mode, one person is designated as the administrator. The administrator has the capability of giving other users access to the system by assigning each user a password.

Focus Point

The small, flashing, target-shaped icon that marks the location of the most recent point of interest on the map. Every time you click on the map with the arrow tool, the Focus Point moves to the location of your click. The Focus Point also changes in response to other operations, such as when you show an object from the Search Collection on the map. The latitude/longitude coordinates of the Focus Point are shown in the upper-left corner of the map window.

Layer

A category of objects. Objects are organized into layers so that you can operate on only certain objects at a given time. For instance, you might want to search for an object named “Walden Pond” only on your “Water” layer. Or you might want to hide your “Roads” layer at a scale when the number of roads becomes so great that drawing the map takes too long.

A given layer can contain objects of different types. For instance, you might have both point and polygon objects on a “Facilities” layer. The layers are drawn in a certain order, allowing you to put certain layers “above” others on the map. You can use the Layer List dialog box to examine and modify the settings of your layers.

Map

A map is a folder (directory) on your disk that contains the objects for a certain geographical area. A map folder is often located in the same folder as the MARPLOT application program, but can be located anywhere on any of your disk drives. Often, a map covers the area of a single county, but maps can be much smaller or much larger than that. You can have any number of maps. It is common for the geographical areas covered by two different maps to overlap. If you use MARPLOT to view an area that

intersects with more than one map, all maps in the displayed area are drawn simultaneously on the screen.

All of the maps that MARPLOT is aware of are always "present," and there is no need to "close" one map before opening another to view it. However, it is possible to put a map "out of use" so that it is not drawn on the screen. Use the Map List dialog box to examine the list of maps.

A map folder (directory) contains a number of layer files. A layer file contains the objects for the given layer on the given map.

Marked Point

The pink, target-shaped icon that marks a location of interest to you. You can set and use the Marked Point with the Marked Point submenu in the View menu, or the Vertex submenu in the Objects menu.

Object

An entity on a map. MARPLOT maps are composed entirely of collections of objects. A typical map contains thousands of objects, distributed among several layers.

There are seven types of objects: **point** (**symbol**) objects mark the location of a point with a symbol or dot; **rectangle** objects and **circle** objects mark rectangular and circular areas; **polyline** objects, which are sequences of connected line segments, represent features such as roads and rivers; **polygon** objects represent bounded features such as water bodies and parks; **text** label objects are used to label maps with text; **picture** objects are like rectangle objects that are filled not with a simple pattern but with the contents of a picture image.

An object is always on a certain layer and a certain map. Each object has a number of attributes that you can examine and change, such as its name, its color, etc. Some attributes, such as "fill pattern," are only present in certain types of objects.

Scale

The ratio of the size of a map to the size of the area it represents. For example, a scale of 1:50000 means one inch on the map is equal to 50000 inches in the real world. MARPLOT can also display scales in terms of units (e.g.,

"1 inch = 3.25 miles") or in terms of the distance represented by the width and height of the map window.

Note on scale terminology: as you zoom into the map, the scale becomes *larger*. As you zoom out, the scale becomes *smaller*.

Search Collection The list of objects resulting from the most recent search operation, or from copying the selected objects to the Search Collection.

Segment Polyline and polygon objects are comprised of connected line segments. Each segment can have a number of attributes, such as the range of addresses contained in a certain segment of a road. When a polyline or polygon object is selected, MARPLOT draws a red dot at each of its vertices. This makes it possible for you to see how the object is broken into segments. If the Focus Point lies along one of the object's segments, you can use the Segment Settings menu item in the Objects menu to see the attributes of that segment. Similarly, when you find an address range from the Search Collection dialog box, and show it on the map, MARPLOT indicates the found segment by centering the Focus Point along it.

In objects derived from TIGER/Line data, some segments are called "shape" segments. This means that the segment "inherits" its attribute settings from a neighboring segment.

Sharing The process of MARPLOT communicating with other applications. Usually these applications are databases that store information about MARPLOT objects.

User's Map Each MARPLOT user has a private map on which he or she can perform any sort of scratch work by creating and editing MARPLOT objects. In a single-user system, the user's map is simply named "User's Map." In a multi-user system, each user has his or her own user's map, with names such as "John's Map" and "Mary's Map." Users who have browse-level permission can only add or modify objects on their user's map.

Vertex A point defining the shape of a polyline or polygon object. Each vertex of a polyline or polygon is highlighted with a red dot when the object is selected.

View The area of the world that is displayed in the map window. You can change the view by using one of MARPLOT's several navigation tools. You can save a view to be returned to at a later time by giving it a name. You can pick a view to be the "entry view," which MARPLOT will go to automatically when it is started. You can pick a view to be a "reference view," which is displayed in an inset on the map window, and which shows the current view in reference to a larger area.