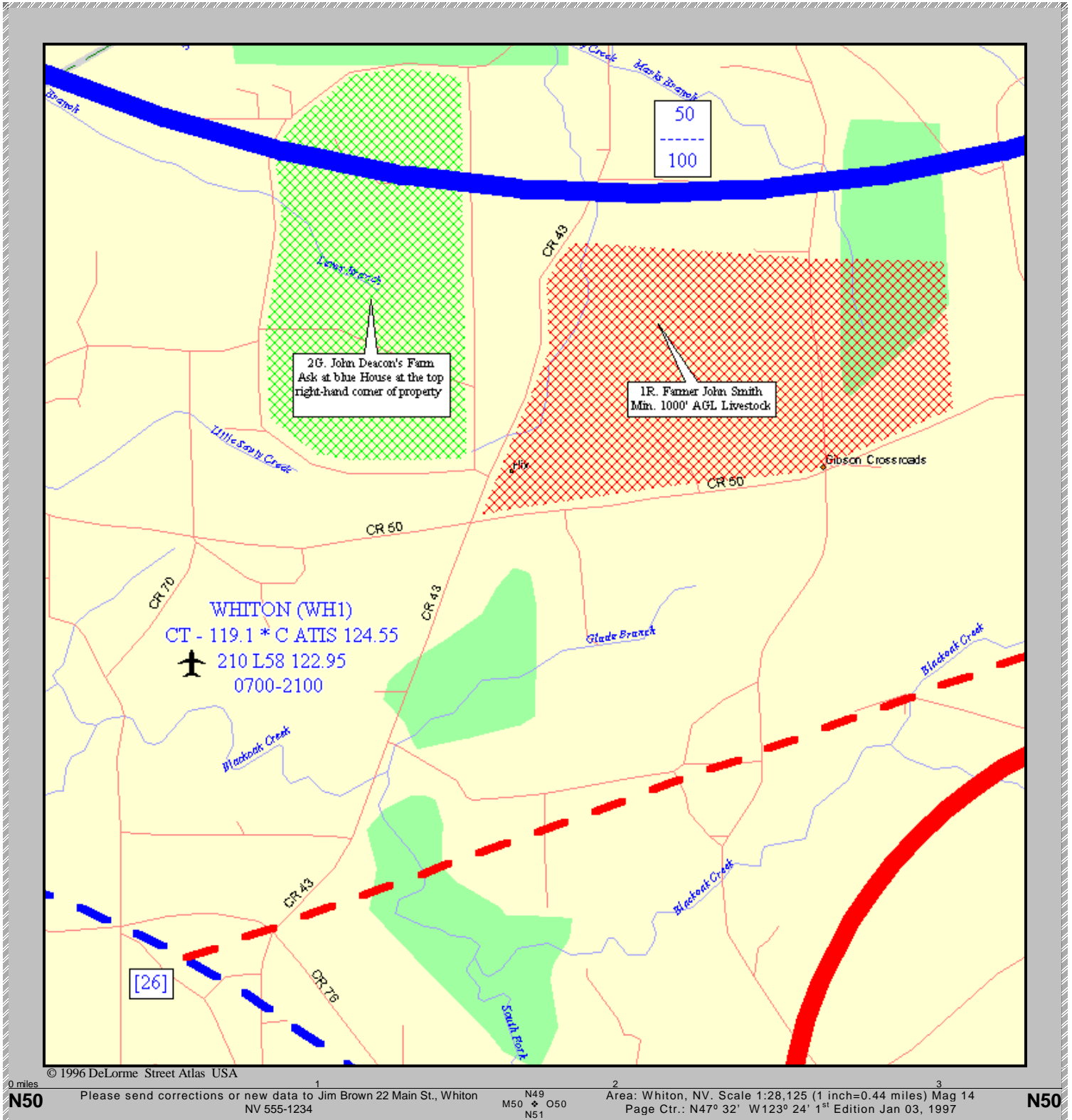


The Balloonist's Marked-up Map System Handbook

1st Edition



By
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All examples including people's names, place names and latitudinal/longitudinal coordinates used in this document are fictitious and should not be used as reference.

The Marked-up Map System is neither complete nor accurate and is prone to error. It is the Marked-up Map System User's responsibility to verify the information contained in the system prior to using it. Information in the system should not form part of the collection of "all available information" required in pre-flight planning as per the FAA FAR's. The system does not override any other source of information including the FAA Sectional Maps. The system should be used as an aid only. Information contained in the system should not be used to the extent that life, limb or property is put at risk. Administrators and contributors accept no liability whatsoever. If you don't agree or don't understand this paragraph, do not use the system.

Revisions

First Edition Apr 30th, 1997

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1. Introduction

1.1 Objective

The purpose of the Marked-up Map System is to proactively assist landowners and balloonists (pilots and crew), by distributing standardized, up-to-date, and highly useable information which will help prevent inconvenience to landowners by balloonists during balloon flight and retrieval.

The Marked-up Map System is neither complete nor accurate and is prone to error. It is the Marked-up Map System User's responsibility to verify the information contained in the system prior to using it. Information in the system should not form part of the collection of "all available information" required in pre-flight planning as per the FAA FAR's. The system does not override any other source of information including the FAA Sectional Maps. The system should be used as an aid only. Information contained in the system should not be used to the extent that life, limb or property is put at risk. Administrators and contributors accept no liability whatsoever. If you don't agree or don't understand this paragraph, do not use the system.

1.2 Who Should Read This Handbook

Anyone interested in understanding how the Marked-up Map system works or what the standards and conventions are with respect to Marked-up Maps should read this handbook. Any balloonist who wants to use Marked-up Maps effectively and understand the notation and symbols on the maps should read this Handbook. Balloon club newsletter editors should read this handbook to see how they can contribute to the system by printing certain Marked-up Map information in local newsletters. Local administrators (explained later) should refer to this handbook when preparing Marked-up Maps to ensure that they are adhering to the national conventions and standards.

1.3 Definition

Balloon Area

The system is comprised of U.S. *Balloon Areas*, each area typically representing an area of about 20 miles radius in which balloon flight is frequent. Anybody can have their local area join the system (permission etc. not required) by (i) defining the center and boundary of their *Balloon Area* and (ii) appointing a local administrator who will prepare Marked-up Maps and distribute them in different formats; paper, floppy diskette, email and the World-Wide-Web. A *Balloon Area* may be simply a valley, or the area between two airports, or an area 100 miles long and 15 miles wide, or 15 miles in every direction from a frequently used launch-site. Any geographical area in the U.S. can establish a *Balloon Area* and join the system by simply following the procedures outlined in this handbook. The system does not contain a landowner information 'central database' nor is there a high-level system administrator. The only 'central' administration required is that of maintaining the Handbook and the WEB site. The responsibility for maintaining landowner information, producing Marked-up Maps and sharing information for a specific *Balloon Area* lies with the local administrator and all other balloonists in that specific *Balloon Area*.

Local Administrator

Each *Balloon Area* has a designated local administrator (usually either self-appointed or appointed by the local balloon club) who is responsible for maintaining landowner information, producing Marked-up Maps for that area and freely distributing the information and maps to all. The local administrator maintains the two files described below using the standards and conventions defined in this handbook and then shares the information with other balloonists and *Balloon Areas* via printed Marked-up Maps, floppy disk, email, and the WEB site. The local administrator charges for materials and expenses only (e.g. paper and photocopying).

Landowner Information List and Street Atlas Overlay Files

The local administrator needs access to Microsoft Word (or equivalent) and DeLorme Street Atlas USA 4.0 software. The local administrator sets up and maintains a Word File and a Street Atlas file for the local *Balloon Area*. The Microsoft Word file contains a *Landowner Information List*. This list contains detailed information on locations or zones where balloon flight is welcome/unwelcome or safe/unsafe. The Street Atlas file contains a *Map Overlay* which allows landowner information to appear directly on maps when viewed or printed via the Street Atlas software. The local administrator distributes these files freely. Users can either use their own versions of Street Atlas (\$40-\$50) to process and print their own Marked-up Maps, or obtain printed paper copies of the list and Marked-up Maps from the local administrator or other users of the system.

How Balloonists Can Obtain Printed Landowner Information Lists and Printed Marked-up Maps

Balloonists can obtain printed copies of the Landowner Information List for a specific *Balloon Area* via the local balloon club newsletter, the local administrator or any other balloonist in that area who uses the system. Balloonists can obtain color photocopies of the Marked-up Maps from the local administrator (or other users). DeLorme's license agreement states "*If you are a registered user, you may reproduce up to 10,000 copies of any Street Atlas USA map for use in paper reports such as appraisals or environmental studies, for distribution to colleagues or clients, provided that no such item includes more than (50) different Street Atlas USA maps and that the distribution does not constitute a general and unrestricted publication for sale or resale or contain paid advertising.*"

How Balloonists Can Obtain Diskette and Email Marked-up Map Overlay Files

Balloonists can obtain the Street Atlas Overlay File from the local administrator (or other users) via floppy diskette or email. DeLorme's license agreement states "*You may use Street Atlas USA to create and transfer DeLorme MapDocs via portable storage media or Email or other network transmission*". Local administrators typically do not distribute the Landowner Information List electronically. The Landowner Information List for each *Balloon Area* typically contains data of a more discretionary nature.

How Balloonists Can Obtain Marked-up Map Overlay files via the WEB

A WEB page for uploading/downloading Overlay Files is being developed (*estimated completion mid-summer 1997*). Local administrators upload the Overlay File to the WEB site. Balloonists then use this WEB location to retrieve Overlay Files to produce Marked-up Maps for any area in the U.S. Balloonists in New York can print marked-up maps for events they are attending on the West Coast the following week. Local administrators do not upload the Landowner Information List File to the WEB site. The Landowner Information List for each *Balloon Area* typically contains data of a more discretionary nature. There is only one "official" WEB site. Use of more than one WEB site should be avoided as this will inevitably result in various versions of the same Overlay File existing and users retrieving out-of-date information.

Sources for Marked-up Map Information

Any balloonist may use the system by simply requesting Marked-up Maps (in any format) from local administrators, other Balloonists or the WEB site. The following figure summarizes sources for printed and electronic information:

	Local Administrator		Other Balloonists		WEB Site
Where do I get a Marked-up Map printed on paper?	✓		✓		
Where do I get a Landowner Information List printed on paper?	✓		✓		
Where do I get a DeLorme Overlay File to produce a printed Marked-up Map on my own computer/printer with my own copy of DeLorme Street Atlas USA 4.0?	Diskette ✓	Email ✓	Diskette ✓	Email ✓	✓

Figure 1-1: Sources for Landowner Information List and Marked-up Maps.

Conclusion

The Marked-up Map System is not a large complex computerized mapping system. The Marked-up Map System is a standardized set of simple procedures, map notation and page printing conventions supported by the principle of 'sharing'.

Using the conventions outlined in this manual fosters a consistent methodology across all *Balloon Areas*. This standardization greatly simplifies the process of obtaining and interpreting landowner information, not only within a single *Balloon Area* but also across the country as balloonists travel to different rallies or just go for a fun-flight somewhere new.

1.4 How does it all work?

Any area in the U.S. where balloon flight is frequent appoints its own *Balloon Area* local administrator. Balloonists assist the local administrator as much as possible by sharing any landowner-related information collected from a flight. The local administrator sets up a Landowner Information List using information retrieved from balloonists and landowners. Landing cards (landowner raffle cards) are an excellent source. The Landowner Information List describes areas where balloons are welcome (Green Zones) and unwelcome (Red Zones). The information may include contacts for permission, minimum AGL over livestock, etc. The local administrator ensures that the information on the Landowner Information List is available to all balloonists in the *Balloon Area*. The local balloon club newsletter is the usual medium.

The local administrator then uses the information on the Landowner Information List to produce a DeLorme Street Atlas USA 4.0 Overlay File. The local administrator distributes this file (via floppy disk or email) and uploads it to the WEB site so that other balloonists can, with their own copy of Street Atlas, produce up-to-date Marked-up Maps which display information about areas where balloons are welcome or unwelcome. The local administrator also prints hard copy Marked-up Maps using Street Atlas and distributes them to balloonists who don't have the Street Atlas software.

The Marked-up Maps are then used during balloon flights by both pilot and chase crew. The pilot refers to the Marked-up Map to determine where low-level balloon flight and landings are welcome/unwelcome or safe/unsafe. The chase crew refers to the Marked-up Map to get an idea of where the balloon is likely to land (or not land). The chase crew can also refer to the Marked-up Map to find instructions for a specific landing site (e.g. landowner name, whether landowner prefers a phone call or a visit etc.).

When pilots do have a choice of flight-level and landing sites, the Marked-up Maps assist them in avoiding airspace where balloons are not welcome and landing in areas where balloons are welcome. The Marked-up Maps also assist the crew in retrieving the balloon as per the landowners specific instructions.

Balloonists provide the local administrator with updates and corrections and the local administrator continues to distribute updated versions of the Landowner Information List, Street Atlas Overlay File and printed Marked-up Maps on an on-going basis.

Visiting balloonists from outside the *Balloon Area* contact the local administrator (or any balloonist in the area using the system) to obtain the information they need whether it be a Street Atlas file or printed Marked-up Map.

In addition, the local administrator assists balloon rallies in the area by preparing tailored Marked-up Maps. These are invaluable to out-of-town pilots and assist in preventing landowner aggravation associated with a sudden increase in ballooning activity due to a rally or event. Normally the Marked-up Maps are sent to the event pilots in advance so that they can be reviewed by both pilot and chase crew before the event. Marked-up Maps for a 20-mile radius are then a mandatory requirement along with logbook, registration and insurance at pilot check-in. No Marked-up Map - no entry!!

Undoubtedly the Marked-up Map System, if used, will meet its objective defined at the beginning of this chapter, that is, proactively assisting landowners and balloonists by helping to prevent inconvenience to landowners by balloonists during balloon flight and retrieval.

The appointment of a responsible local administrator and the willingness of local balloonists to assist that local administrator are the keys to the effectiveness of the Marked-Up Map System in a specific Balloon Area.

Using a standard notation/symbology in each Balloon Area is the key to the Marked-up Map System working on a national level.

The remainder of this handbook outlines the Marked-up Map System standards for the following:

1. The Landowner Information List

The standards outline the type of information that needs to be contained in the Landowner Information List. It is not totally necessary for the layout of Landowner Information Lists to be standard across *Balloon Areas*.

2. The DeLorme Street Atlas USA 4.0 Overlay File

It is imperative that the notation/symbology standards outlined later are followed. This way, balloonists can use Marked-up Maps from other *Balloon Areas* without having to find out what different map features mean.

3. Printing Marked-up Maps

The standards and procedures outlined later are extremely useful and will save time, energy and costs. Using the system standards will make reading the Marked-up Maps easier, not only for local balloonists, but also for balloonists from any other *Balloon Area* using the system.

2. The Landowner Information List

The purpose of the Landowner Information List is to store information which can not be stored on Marked-up Maps due to there being too much information or some of the information being sensitive or confidential. The following is an example:

Zone No.	Red/Green	Status	Location	Date	Contact	Description
1	Red	Active	N 43 23.5 W 120 22.4	01/01/95	Jim Brown	The farmer on this property wants no landings
				06/10/95	John Ryan	Farmer John Smith requests 1000' AGL min. due to livestock.
				08/08/95	Kim Cole	Area was enlarged
2	Green	Active	N 43 21.8 W 121 28.8	02/01/95	Jim Brown	John Deacon's farm (555-1435). Ask at the blue house for permission each time.
3	Red	Deleted	N 43 28.8 W 121 44.8	04/01/95	Sue Sellars	Keep well clear of Ostrich farm near river.
				08/01/96	Dean Nash	Ostrich farm out of business.
4	Green	Active	N 43 26.8 W 121 52.8	08/07/96	Jim Clark	Grant Casey's farm. No need to ask permission but leave note on door of barn if you landed there.

Please send all updates with highlighted copy of map area to Jim Brown 22 Main St., Whiton NV 555-1234

Figure 2-1: Example Standard Landowner Information List.

The following information should be printed clearly on each page:

- Name of the *Balloon Area*
- Date the Landowner Information List was last updated
- Page number and total number of pages
- Local administrator's name, address and phone number for corrections or additions

The following is an explanation of the columns on the Landowner Information List:

Zone No.	This is just a sequential number. It is also printed on the zone on the map so that the map and the list can be cross-referenced.
Red/Green	Indicates whether the zone is red (balloons unwelcome) or green (balloons welcome). The system does not accommodate zones that are almost red (e.g. pink or yellow zones). The zone is either red or not red. A Red Zone may also be an area that presents danger to ballooning activity such as a field containing flammable gas vent pipes.
Status	A zone may be deleted. (Farmer changes his mind). Although the zone will be deleted from the map, it remains on the list with a status of deleted so that the information can be used for historical purposes.
Location	The longitudinal and latitudinal coordinates of the zone.
Date	The date that this information was added to the Landowner Information List.
Contact	This is the balloonist, not the landowner, so that more information can be obtained without contacting the landowner directly.
Description	Any relevant information about the zone. More information will appear here than on the map as there is more room.

IMPORTANT NOTE:

Green Zones should not be abused. Landowner permission should be sought and the usual respect given to crops and livestock.

Landowner Information Lists are usually referenced by the local *Balloon Area* only. Standardization of Landowner Information Lists is therefore, not as important as standardization of map notation/symbology in the Street Atlas Overlay File.

File naming conventions for the Landowner Information Lists are outlined in the section on file naming conventions for DeLorme Street Atlas USA 4.0 Overlay Files at the end of the next chapter.

3. The Map Overlay File

This section outlines the standards for defining the DeLorme Street Atlas USA 4.0 Overlay File for a Marked-up Map. It is imperative that the notation/symbology used in Overlay Files is standard across *Balloon Areas*. Local administrators should use the conventions as closely as possible when setting up Marked-up Maps.

The following is a list of the eight standard features defined by the Marked-up map System:

1. Date Stamp
2. Red Zone
3. Green Zone
4. Airport Information
5. Class B Airspace
6. Class C Airspace
7. Class D Airspace
8. Class E Airspace

A Date Stamp is important as it assists users in comparing Overlay Files and determining which file is more up-to-date.

Red and Green Zones should be added as appropriate. Zones that are almost red (not totally unwelcome) are not supported by this system, this would probably be automatically a Red Zone, giving landowners the benefit.

If you decide to add airport/airspace information to your Overlay File, do this by using the notation defined in this handbook. If the feature you want to add does not have standards defined in this handbook use notation and symbols that resemble as closely as possible those already used on the FAA Sectional Maps. Adding this information is not an onerous task as major airports are not common in most *Balloon Areas*. FAA Sectional Maps are revised very six months and all changes should be immediately reflected on the Marked-up Map.

Sometimes it will be necessary to add new features to a map such as new roads etc. Do this by using notation and symbols that resemble as closely as possible those already used by Street Atlas.

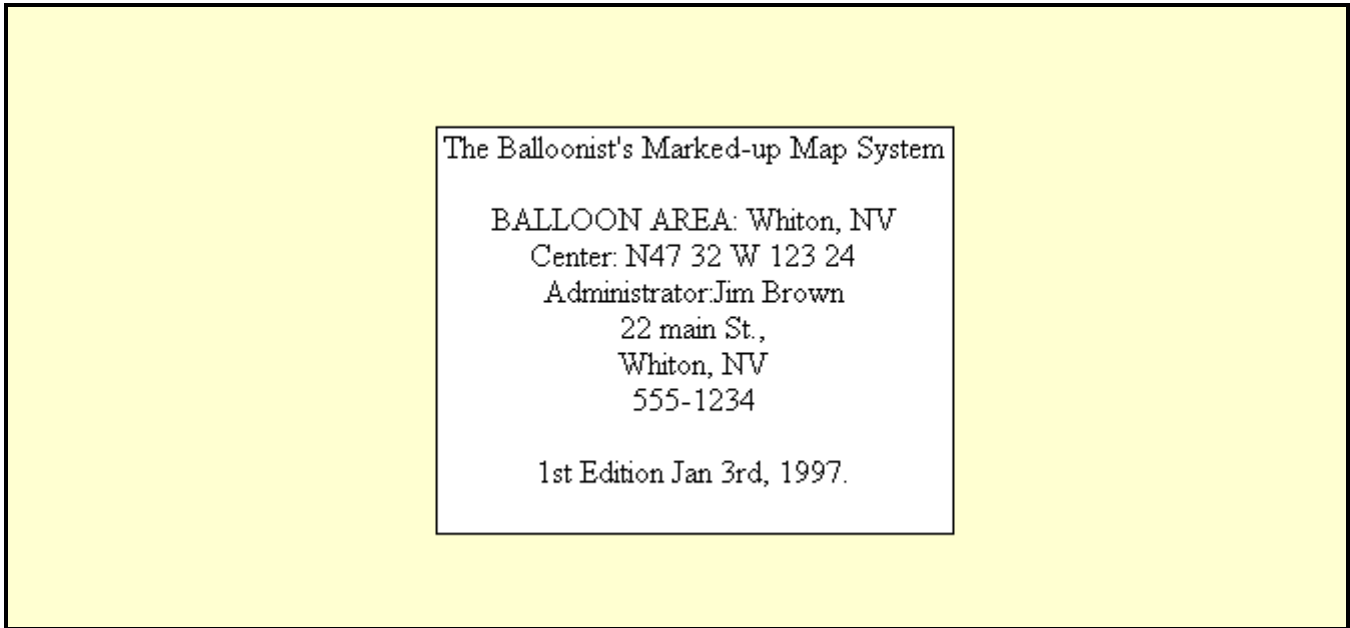
The symbols provided by Street Atlas such as Park (tree symbol) and Building (house symbol) are good features to add if they are useful landmarks. Use symbols as needed.

Mag-14 is the standard magnitude level for the Marked-up Map System. When you add new features, ensure they are exactly where they should be and that they do not hide other map features. Street Atlas will scale your added features in line with its own map features, allowing you to print at any of the Mag 14 scales without causing cluttering or hiding.

The remainder of the chapter outlines the definitions for the eight map features listed above.

3.1 Date Stamp

The following figure shows an example of a Date Stamp on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-1: Example Date Stamp on a Marked-Up Map.

The following figure shows the Date Stamp definition:

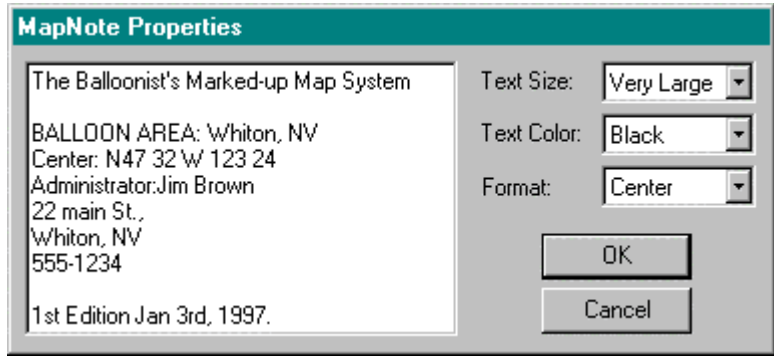


Figure 3-2: Date Stamp MapNote Properties.

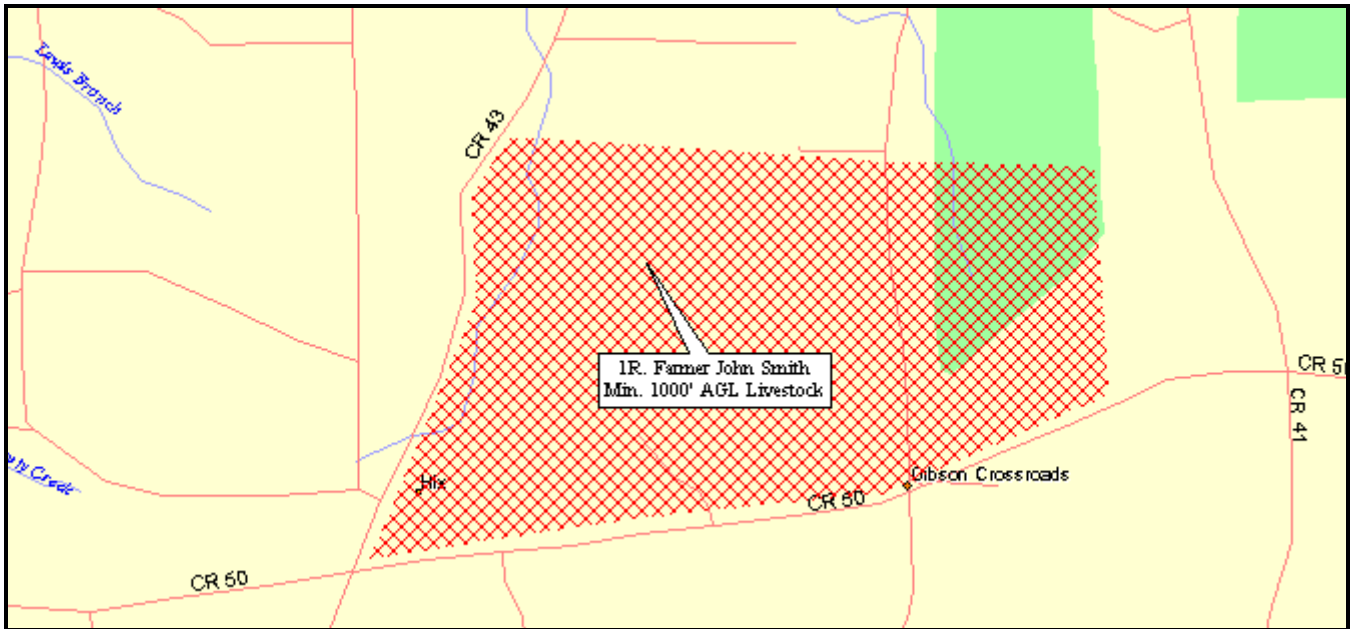
The Date Stamp should be placed at N 0° 00' W 0° 00'. Minimally it contains the name of the *Balloon Area*, the coordinates of the center of the *Balloon Area*, a contact for the local administrator, an edition number indicating the number of times the Overlay File has been revised and a date indicating when the last edition was created. The Date Stamp may contain any other information relevant to the *Balloon Area* such as emergency numbers etc.

The *Balloon Area* center coordinates should be even numbered minutes such as N 47° 32' W123° 24' (not N 47° 31' W123° 23'). Setting the *Balloon Area* center coordinates to even-numbered minutes will greatly simplify printing map pages.

The edition number for a *Balloon Area* is incremented every time the *Balloon Area* is updated. The edition date for the *Balloon Area* is the date of the last update.

3.2 Red Zones

The following figure shows an example of a Red Zone on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-3: Example Red Zone on a Marked-Up Map.

The following figures show Red Zone definitions:

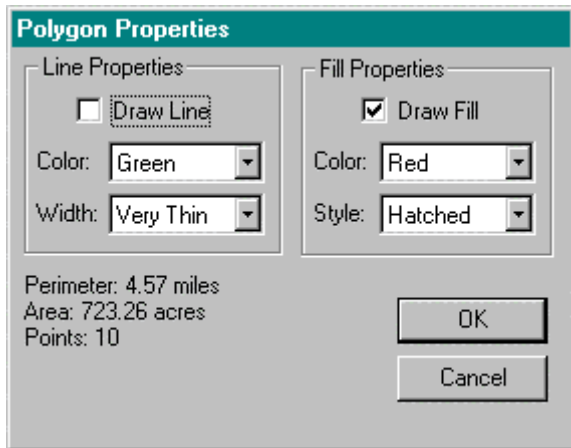


Figure 3-4: Red Zone Polygon Properties.

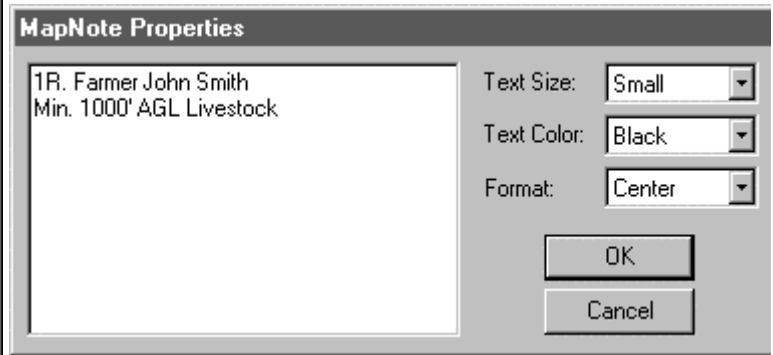
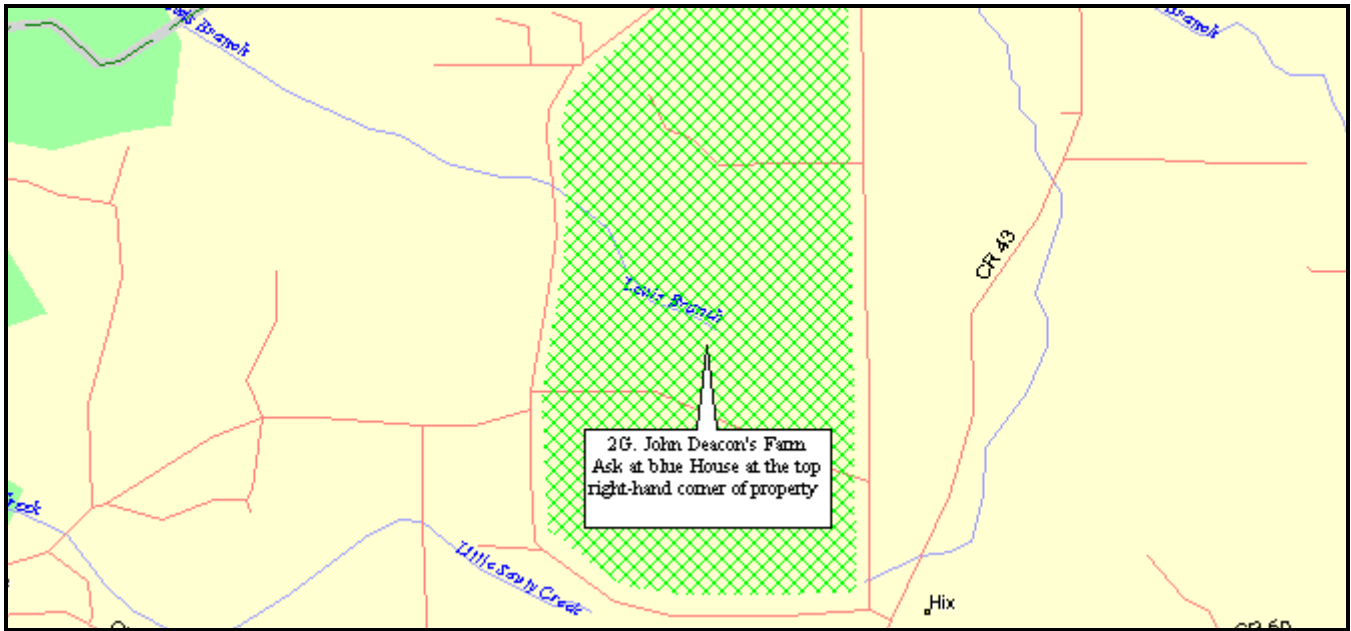


Figure 3-5: Red Zone MapNote Properties.

Use red hatched Polygons or Circles with no surrounding line to define Red Zones (surrounding lines can look like property perimeter roads and are confusing). Use MapNotes to define the Red Zone descriptions. The identifier (e.g. 1R.) is a sequential number that is used as a cross-reference to the Landowner Information List and the letter R to identify the zone as red on black & white photocopies. The remaining text usually contains the landowner's name and any useful additional information that will fit. When creating a Red Zone, temporarily turn on Gridlines (at Mag 14) to ensure that the MapNote is contained inside a Gridline boundary so that it is not split across pages when printed.

3.3 Green Zones

The following figure shows an example of a Green Zone on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-6: Example Green Zone on a Marked-Up Map.

The following figures show Green Zone definitions:

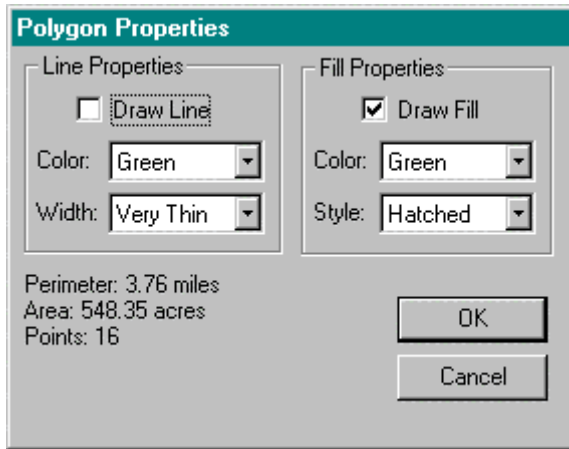


Figure 3-7: Green Zone Polygon Properties.

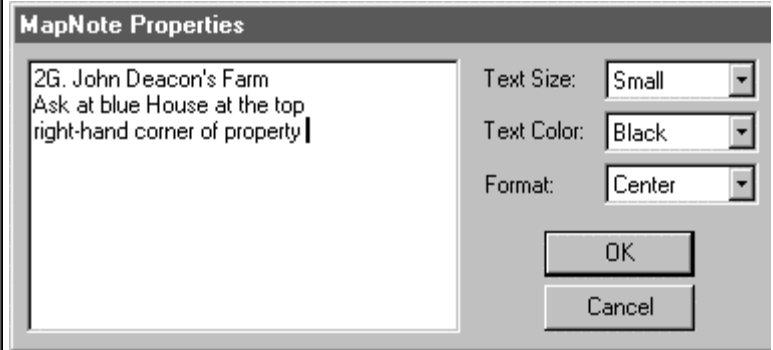
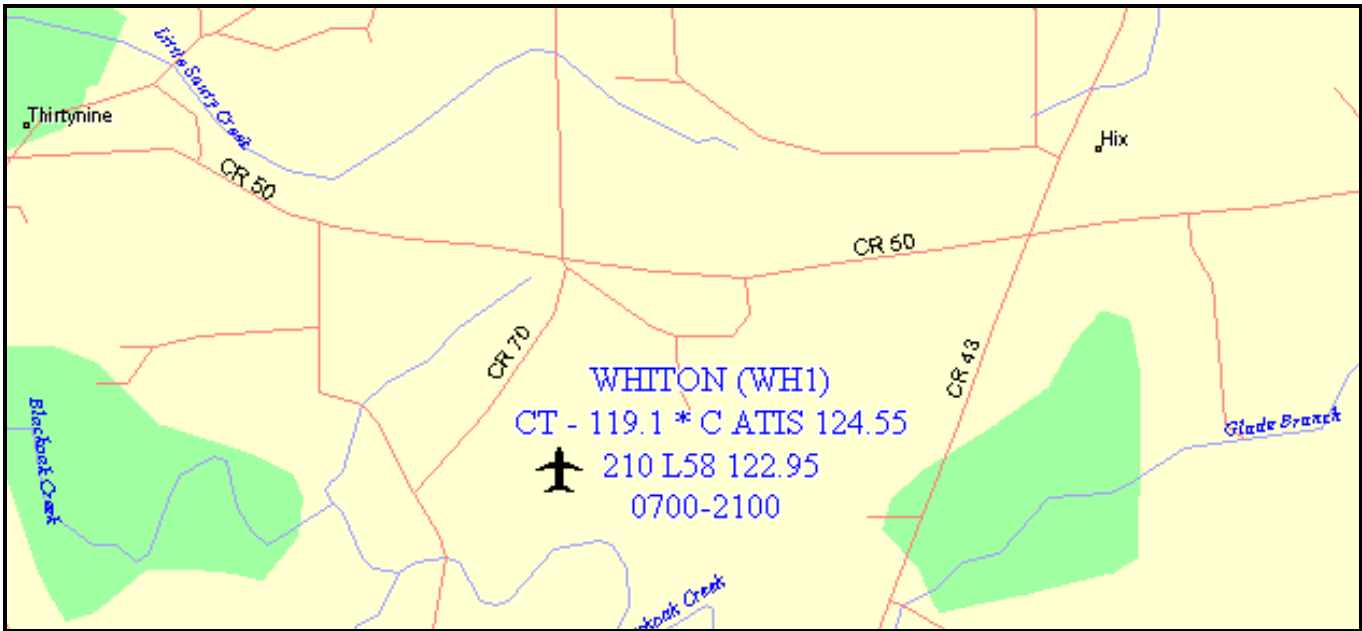


Figure 3-8: Green Zone MapNote Properties.

Use green hatched Polygons or Circles with no surrounding line to define Green Zones (surrounding lines can look like property perimeter roads and are confusing). Use MapNotes to define the Green Zone descriptions. The identifier (e.g. 2G.) is a sequential number which is used as a cross-reference to the Landowner Information List and the letter G to identify the zone as green on black & white photocopies. The remaining text usually contains the landowner's name and any useful additional information that will fit. When creating a Green Zone, temporarily turn on Gridlines (at Mag 14) to ensure that the MapNote is contained inside a Gridline boundary so that it is not split across pages when printed.

3.4 Airport/Airspace Information

The following is an example of airport information on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-9: Example Airport Information on a Marked-up Map.

The following is the definition for airport information:

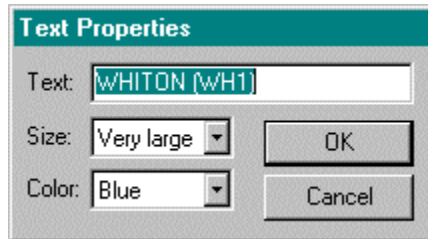
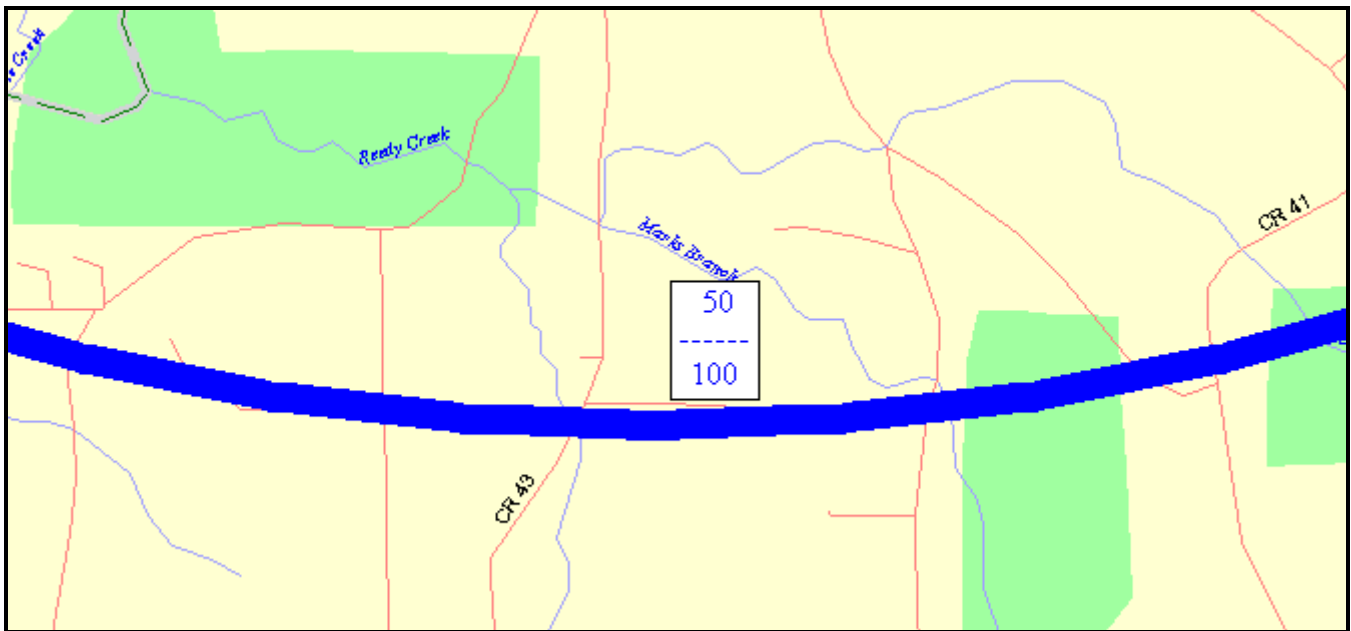


Figure 3-10: Airport Information Text Properties.

Copy the airport information directly from the FAA Sectional Map. Airport opening times can be found on the airport listing on the front of the Sectional. As per the standards in the FAA Sectionals, “**Airports having Control Towers are shown in Blue, all others in Magenta.**” Therefore, set the Text Properties Color to blue for airports having control towers and to red for all other airports. When creating airport information, temporarily turn on Gridlines (at Mag 14) to ensure that the Text is contained inside a Gridline boundary so that it is not split across pages when printed.

3.5 Class B Airspace

The following is an example of Class B Airspace on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-11: Example Class B Airspace Represented on a Marked-up Map.

The following figures show the definitions for Class B airspace:

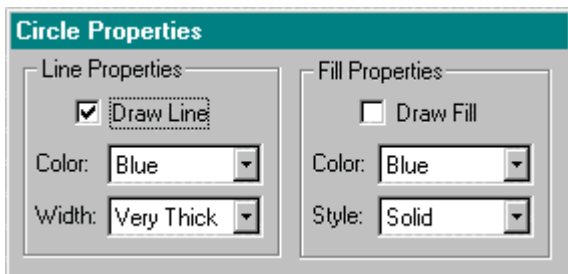


Figure 3-12: Class B Airspace Circle Properties.

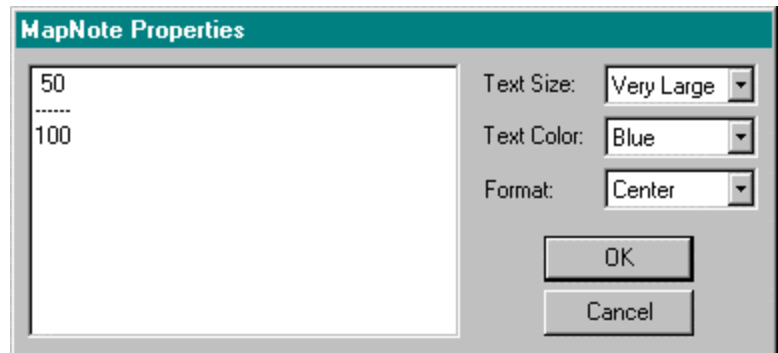
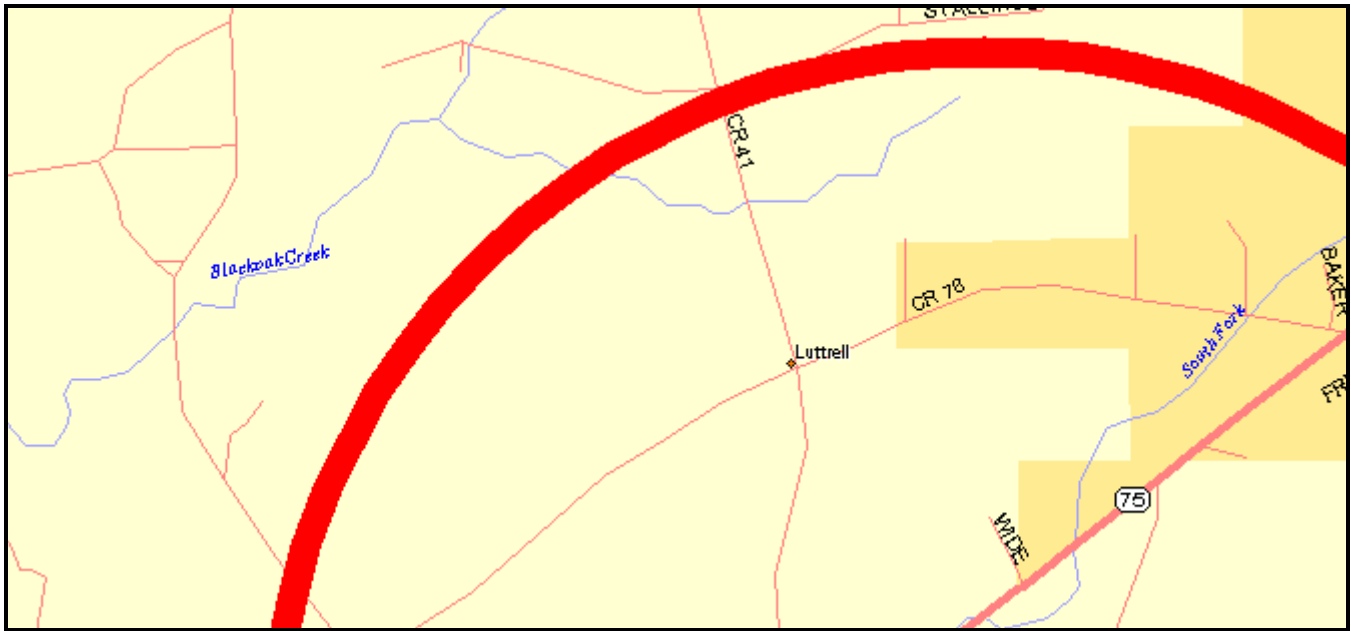


Figure 3-13: Class B Airspace MapNote Properties.

Copy the airspace information directly from the FAA Sectional Map. Use MapNotes to show the ceiling. Temporarily turn on Gridlines (at Mag 14) and enter the MapNotes along the inside edge of the airspace for each longitudinal/latitudinal Grid so that the information appears on every page and is not split across pages when printed.

3.6 Class C Airspace

The following is an example of Class C Airspace on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-14: Example Class C Airspace Represented on a Marked-up Map.

The following figure shows the definition for Class C airspace:

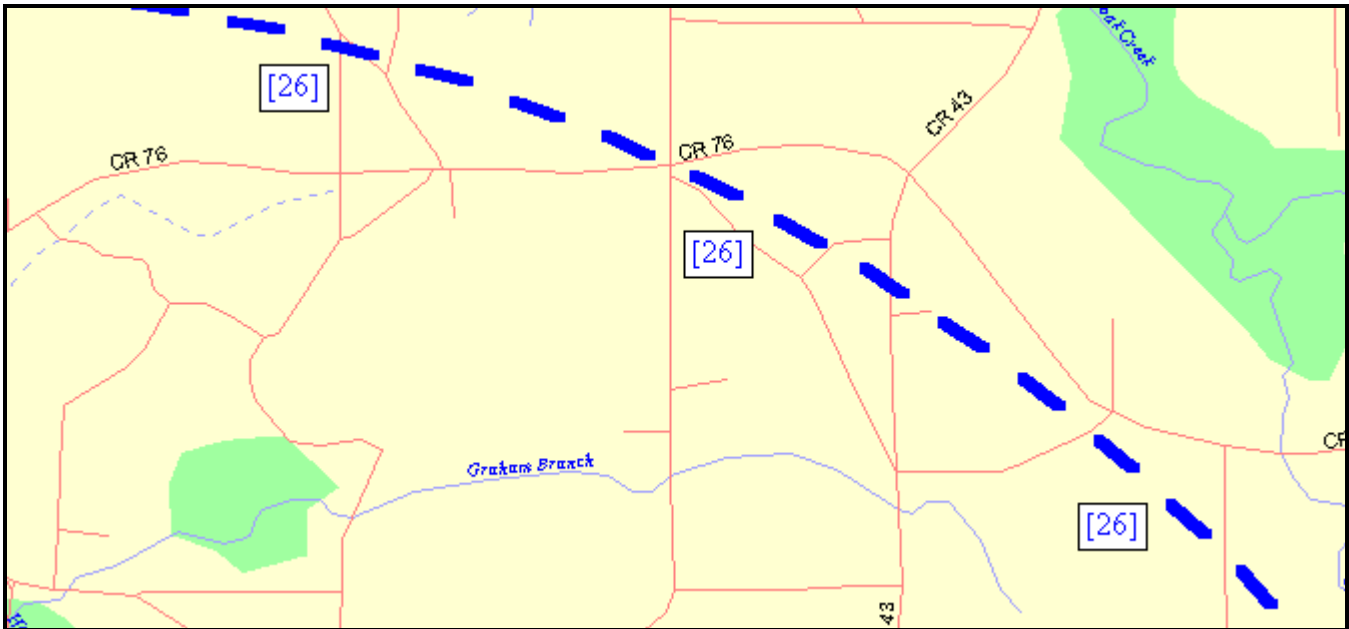


Figure 3-15: Class C Airspace Circle Properties.

Copy the airspace information directly from the FAA Sectional Map. Use MapNotes to show the ceiling. Temporarily turn on Gridlines (at Mag 14) and enter the MapNotes along the inside edge of the airspace for each longitudinal/latitudinal Grid so that the information appears on every page and is not split across pages when printed.

3.7 Class D Airspace

The following is an example of Class D Airspace on a Marked-up Map:



© 1996 DeLorme Street Atlas USA

Figure 3-16: Example Class D Airspace Represented on a Marked-up Map.

The following figures show the definitions for Class D airspace:

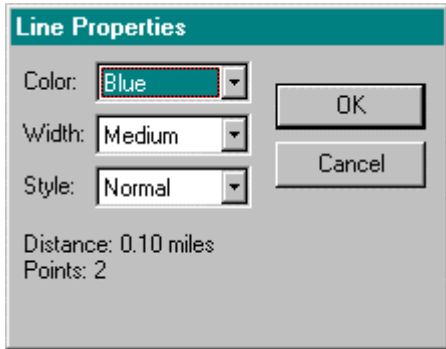


Figure 3-17: Class D Airspace Line Properties.

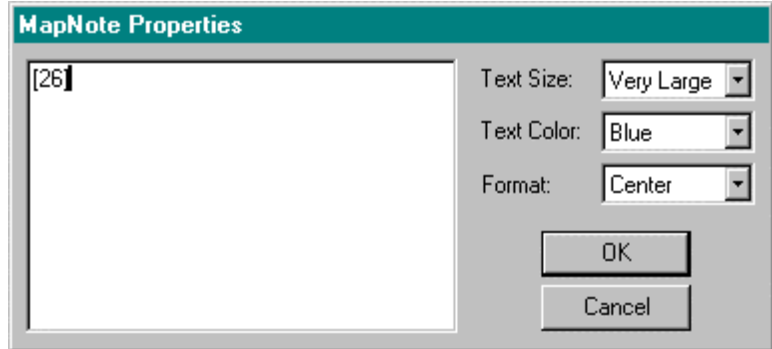


Figure 3-18: Class D Airspace MapNote Properties.

Copy the airspace information directly from the FAA Sectional Map. The blue dashed circle can be drawn easily by first producing a yellow circle as a guide, super impose the blue dashed lines (0.1 miles long and 0.1 miles apart) on the yellow circle and finally removing the yellow guide circle. Use MapNotes to show the ceiling. Temporarily turn on Gridlines (at Mag 14) and enter the MapNotes along the inside edge of the airspace for each longitudinal/latitudinal Grid so that the information appears on every page and is not split across pages when printed.

3.8 Class E Airspace

The following is an example of Class E Airspace on a Marked-up Map:

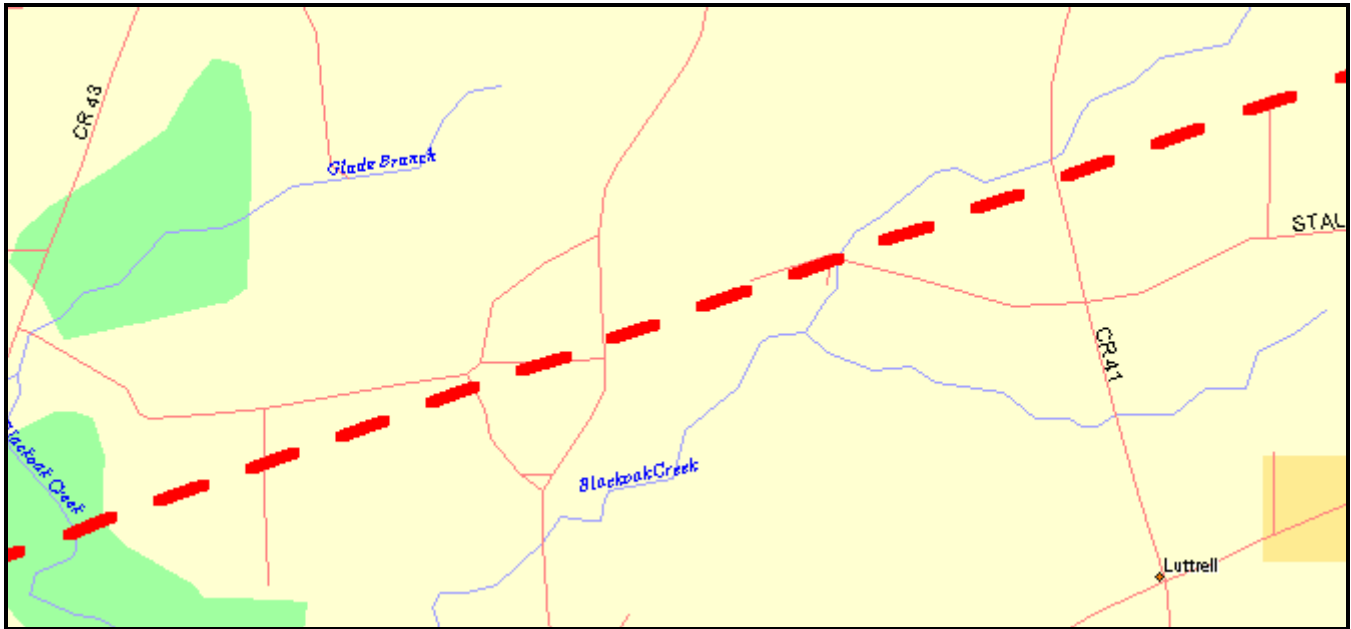


Figure 3-19: Example Class E Airspace Represented on a Marked-up Map.

The following figure shows the definition for Class E airspace:

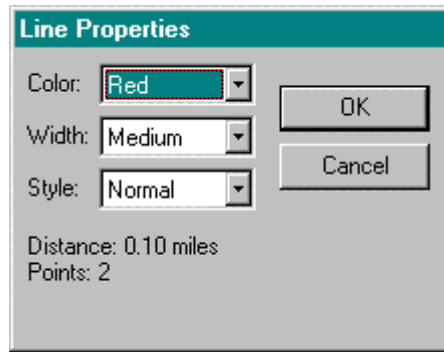


Figure 3-20: Class E Airspace Line Properties.

Copy the airspace information directly from the FAA Sectional Map. The red dashed line can be drawn easily by first producing a straight single yellow line as a guide, super impose the red dashed lines (0.1 miles long and 0.1 miles apart) on the yellow line and finally removing the yellow guide line.

3.9 File Naming Conventions

The local administrator in each *Balloon Area* is responsible for setting up and maintaining one Landowner Information List file (with a 'doc' file extension) and one DeLorme Street Atlas USA 4.0 Overlay File (with an 'sa4' file extension).

It's quite frustrating after someone has given you a DeLorme Street Atlas Overlay File called 'Fred.sa4' and you have no idea what part of the US it relates to. This is why the name of the *Balloon Area* is used in naming the file.

Some PC operating systems have a filename limitation of 8 characters. The naming convention used by the Marked-up Map System is therefore SSAAAAAA where SS is the standard 2-digit State abbreviation and AAAAAA is a 6-digit *Balloon Area* name or abbreviation. For example, the *Balloon Area* Whiton, Nevada would have files with the following names:

	—	📄 nvwhiton.doc	Microsoft Word file
	—	📄 nvwhiton.sa4	DeLorme Street Atlas USA 4.0 File

Figure 3-21: Example Filenames Using Marked-up Map System Naming Conventions.

This naming convention is useful when one stumbles on these types of files in file manager or Windows Explorer. The *Balloon Area* to which the files relate can be identified without actually having to open the files with the word processor or Street Atlas applications.

As a courtesy to other users who may use your Overlay File, always save the file with the screen focused on the Date Stamp (N 0° 00' W 0° 00') at Mag 14 with all map features turned on except for ZIP codes and gridlines.

4. Printing Marked-up Maps

There is some difficulty in defining a map printing standard for all *Balloon Areas* using Street Atlas. The best way to set up pages for printing in Street Atlas is to enter the longitudinal and latitudinal coordinates for the center of the page. Degrees of longitude are further apart (in miles) the further South one goes. Formulas do exist for computing the mileage differential based on latitudinal position. However, formula approximations and local topography still generate error.

Print standards are also subject to many local restrictions such as type of printer being used. (Different printers produce different sized borders and margins). Also, map printing requirements vary from *Balloon Area* to *Balloon Area*. Balloonists flying desert areas have different map scale requirements to balloonists flying metropolitan areas.

The guidelines outlined in this chapter are detailed and heavy going. However, once understood they provide the following advantages:

- Time, energy and money spent will be reduced by following a clear structured approach
- Selective reprints of any page in your *Balloon Area* will be easier to produce
- One page numbering scheme can be used irrespective of map scale
- Balloonists from other *Balloon Areas* will be familiar with the print style, presentation and page numbering scheme

The following have been defined as Marked-up Map System standards:

- Mag 14 is the standard magnitude level
- 8½" X 11" is the standard page size
- The three standard map sizes are:
 - 2 minutes X 2 minutes (2-minute map)
 - 4 minutes X 4 minutes (4-minute map)
 - 8 minutes X 8 minutes (8-minute map)
- All map features are printed except ZIP codes and longitude/latitude gridlines

Once printed, map pages can be inserted into plastic page protectors.

The page protectors can then be inserted in a 3-ring folder (or a presentation book with a dozen or so fixed page protectors) to produce a sturdy map book. Two methods can be employed as follows:

- (i) Insert page 1, insert page 2 on the back of page 1, insert page 3, insert page 4 on the back of page 3 and so on along. This makes a normal book, view page 2 and 3, turn the page, view page 4 and 5 and so on.
- (ii) Insert two page 1's back to back, insert two page 2's back-to-back, insert two page 3's back-to-back and so on along. This duplication of pages means you can view page 2 and 3, turn the page, view page 3 and 4. This eliminates the frustration caused when one has to keep flipping over, to and from, the next page in a book.

Page protectors can be taped together to produce a sheet map. Taping 2X2 or 3X3 page protectors together (avoid taping the openings on one side) provides a slick way of having a tailorable sheet map for each flight. Just store all your pages in your folder and before the flight, select the 4 or 9 pages for your flight path and slip them into the sheet protectors that have been taped together in a 2X2 or 3X3 layout.

Plastic page protectors also allow flights to be 'tracked' with an erasable china-marker pencil or dry erase pen, making it easy to find one's position when picking up the map.

The rest of this chapter explains the procedure for printing maps and establishing a page numbering scheme. First choose a map size (2-minute, 4-minute or 8-minute) then use the standard spreadsheet grid notation to number your pages.

4.1 Printing 2 Minute, 4 Minute and 8 Minute Maps

The coordinates for the center of the *Balloon Area* are defined when the *Balloon Area* is first set up by the local administrator. It is far easier to print maps based on even-numbered minutes, therefore the *Balloon Area* center coordinates are even numbered minutes such as N 47° 32' W 123° 24' (not N 47° 31' W 123° 23').

Decide whether you want to print a 2-minute, 4-minute or 8 minute map as follows. Set the Magnification to Mag14, temporarily turn on the gridlines and use the Print Preview screen to decide what scale you need to use to print a 2-minute, 4-minute or 8-minute map on your 8½" X 11" page. The figures below show Print Preview screens:

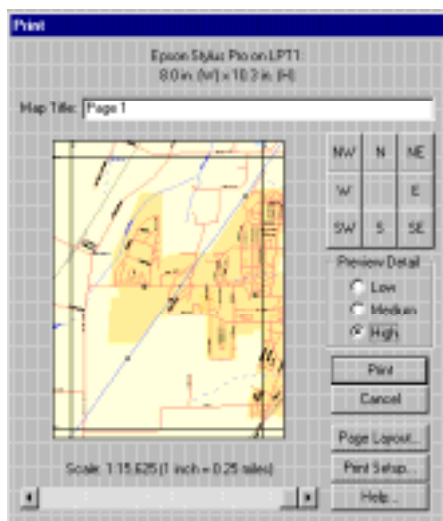


Figure 4-1: Example 2-Minute Map.

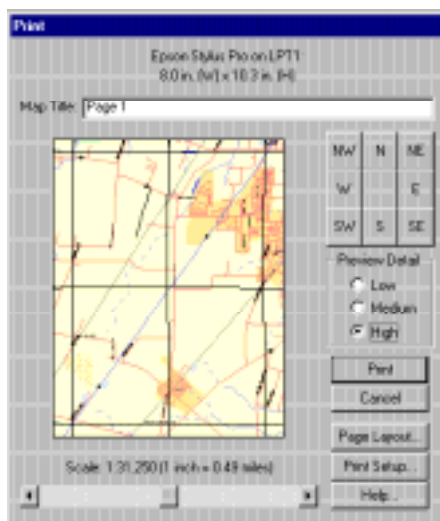


Figure 4-2: Example 4-Minute Map.

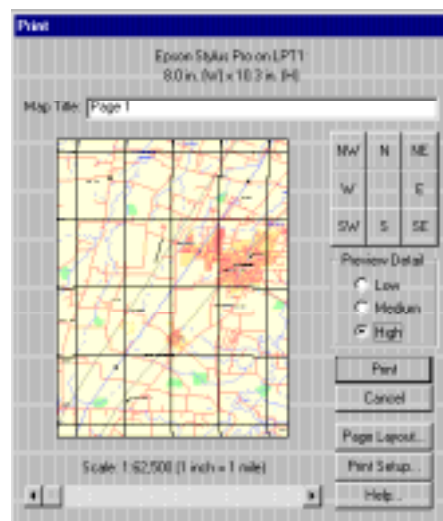


Figure 4-3: Example 8-Minute Map.

Street Atlas gridlines are 2 minutes apart (at Mag14). Adjust the scale in the print preview screen to select the correct value to fit a 2-minute, 4-minute or 8-minute map on a single 8½" X 11" page. There will probably be a small portion of map area around the edge that will overlap with the next page you print. This overlap is advantageous as it makes flipping to and from pages in a map book easier.

The size of the margins produced by your printer and what line of latitude your *Balloon Area* resides on determine how large a scale you can print on a standard 8½" X 11" page. You may get more on a page (reducing the margins) by tricking your printer by telling it your page is slightly larger or by using legal sized paper and trimming the page down to 8½" X 11".

Ensure that gridlines are turned off before actually printing. They look like roads when printed and are confusing.

The page center coordinates for 2-minute, 4-minute and 8-minute maps are 2 minutes, 4 minutes and 8 minutes apart respectively. This means that the center coordinates for all pages are easy to calculate.

4.2 Page Numbering

Page numbering is based on a standard spreadsheet grid (e.g. Microsoft EXCEL or Lotus 1-2-3) with A-Z columns and 1-99 rows. The following figure represents pages A01 thru F07 which are the pages in the top left-hand corner of the entire grid.

	A	B	C	D	E	F
01						
02						
03						
04						
05						
06						
07						

Figure 4-4: Portion of Grid Representing Page Numbers from Page A01 to Page F07.

The midpoint for the letters A-Z is N and for the numbers 1-99 is 50. Therefore, the center of the grid is page N50. Page N50 contains the center of the *Balloon Area*. The page immediately to the left (West) is M50, the page immediately to the right (East) is O50, the page immediately above (North) is N49 and the page immediately below (South) is N51.

	K	L	M	N	O	P	Q
47							
48							
49							
50							
51							
52							
53							

Figure 4-5: Portion of Grid Representing Center Column and Center Row giving the Center page (N50) for the Center of The *Balloon Area*.

The following figure shows page N50 (the center of the *Balloon Area*) and surrounding pages for a 2-minute map:

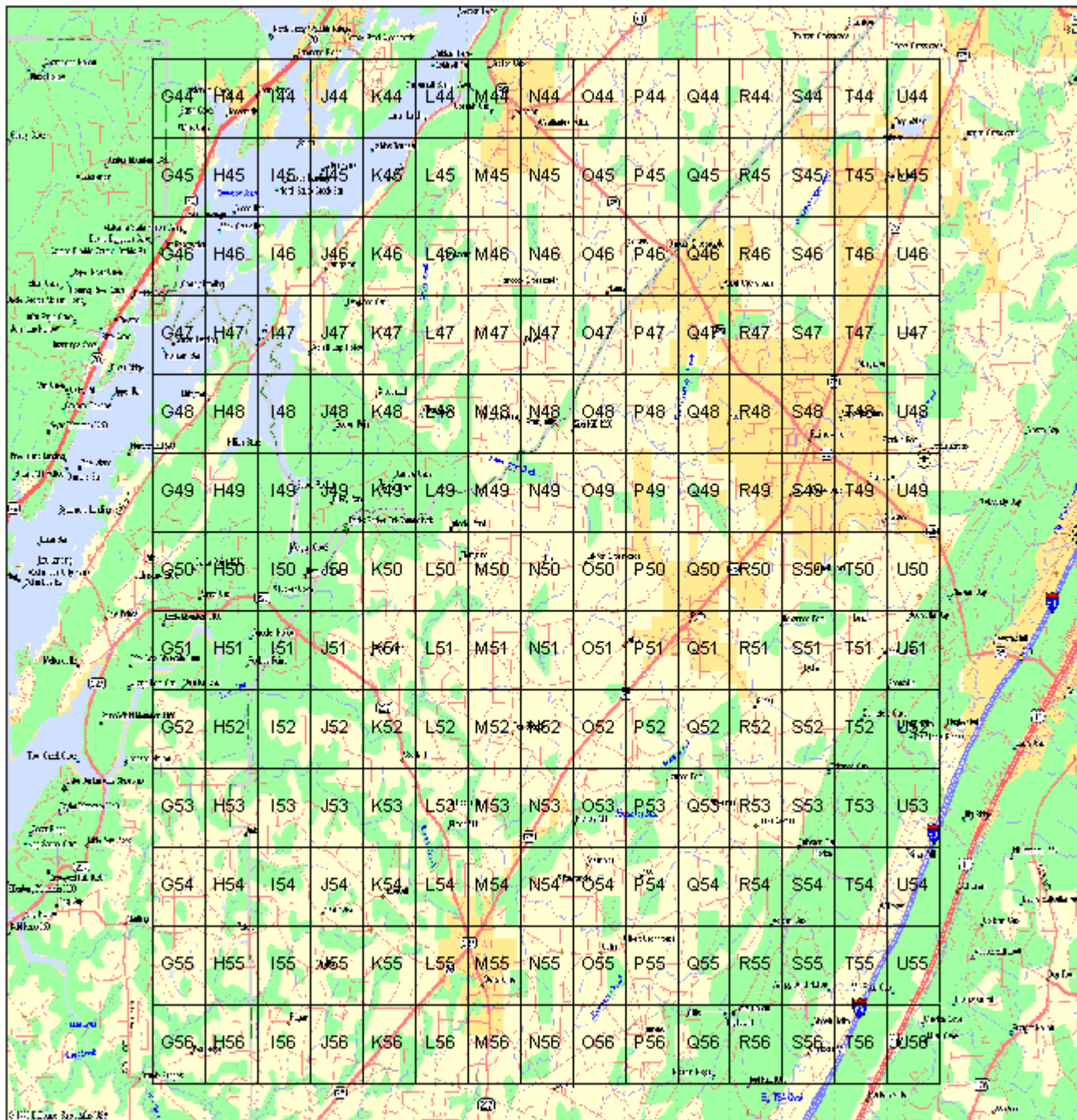


Figure 4-6: Page Numbers Surrounding Center of *Balloon Area* (page N50) for 2-minute Maps.

The coordinates for the center of the *Balloon Area* are used as the coordinates for the center page, page N50. The page center coordinates for the other pages of a 2-minute map are 2 minutes apart longitudinally and latitudinally.

The following figure shows page N50 (the center of the *Balloon Area*) and surrounding pages for a 4-minute map super-imposed on the page numbers for a 2-minute map:

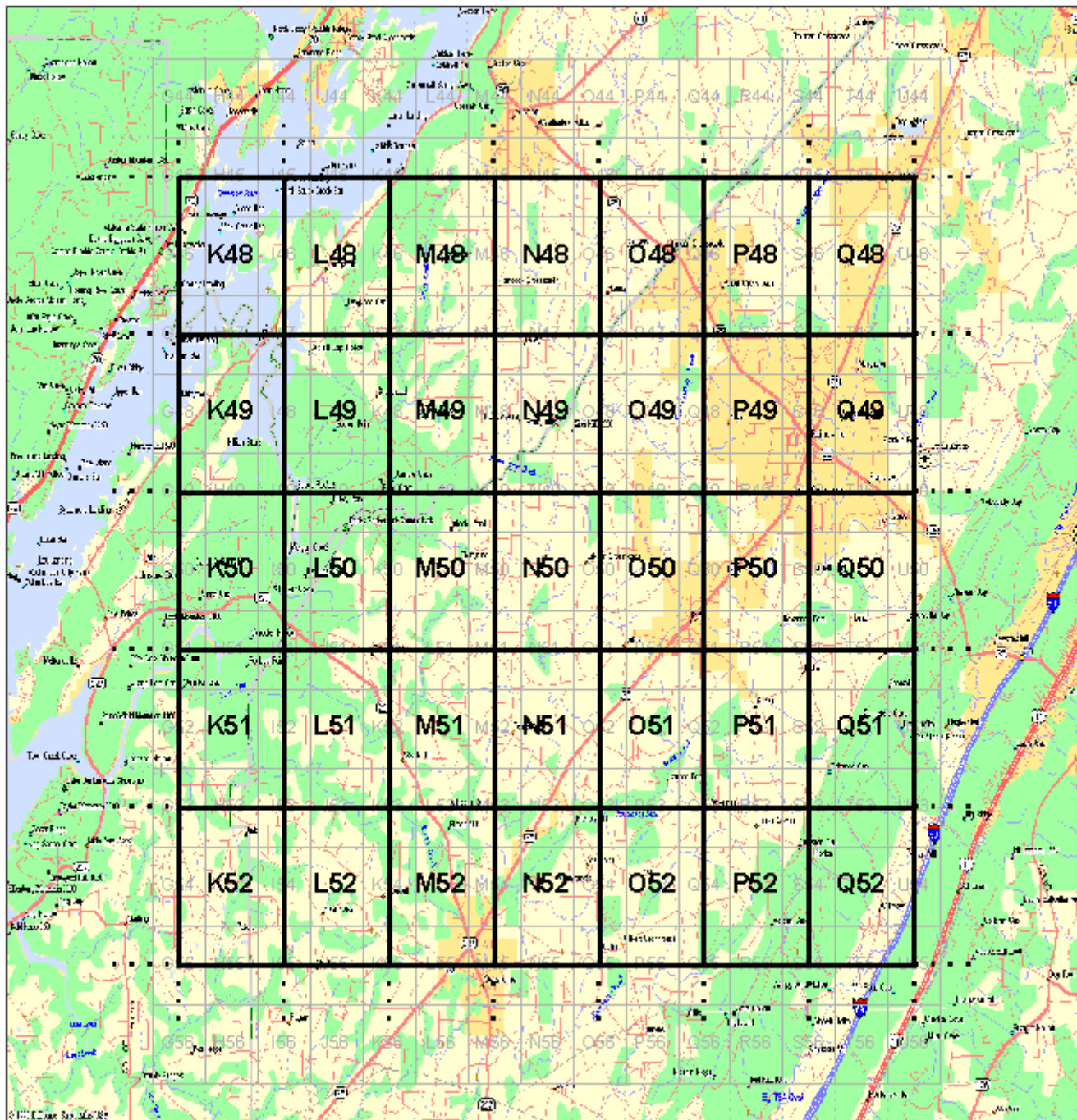


Figure 4-7: Page Numbers Surrounding Center of *Balloon Area* (page N50) for 4-minute Maps Super-Imposed on Page Numbers for 2-minute Maps.

The coordinates for the center of the *Balloon Area* are used as the coordinates for the center page, page N50. The page center coordinates for the other pages of a 4-minute map are 4 minutes apart longitudinally and latitudinally.

The following figure shows page N50 (the center of the *Balloon Area*) and surrounding pages for an 8-minute map super-imposed on the page numbers for a 2-minute map:

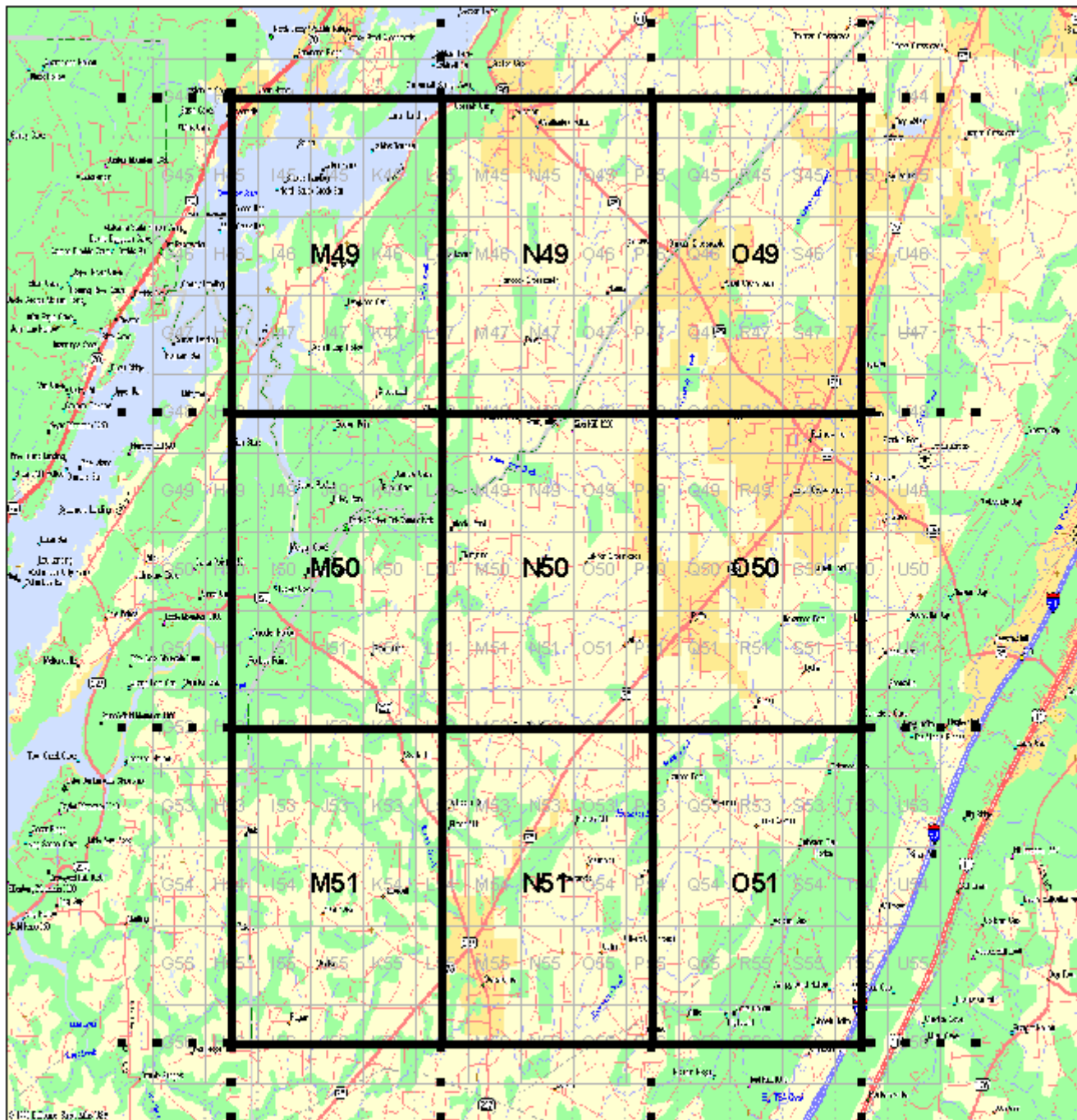


Figure 4-8: Page Numbers Surrounding Center of *Balloon Area* (page N50) for 8-minute Maps Super-Imposed on Page Numbers for 2-minute Maps.

The coordinates for the center of the *Balloon Area* are used as the coordinates for the center page, page N50. The page center coordinates for the other pages of an 8-minute map are 8 minutes apart longitudinally and latitudinally.

Map Coverage (in statute miles)

The following figure shows the approximate area (in statute miles) covered by 2-Minute, 4-minute and 8-minute maps:

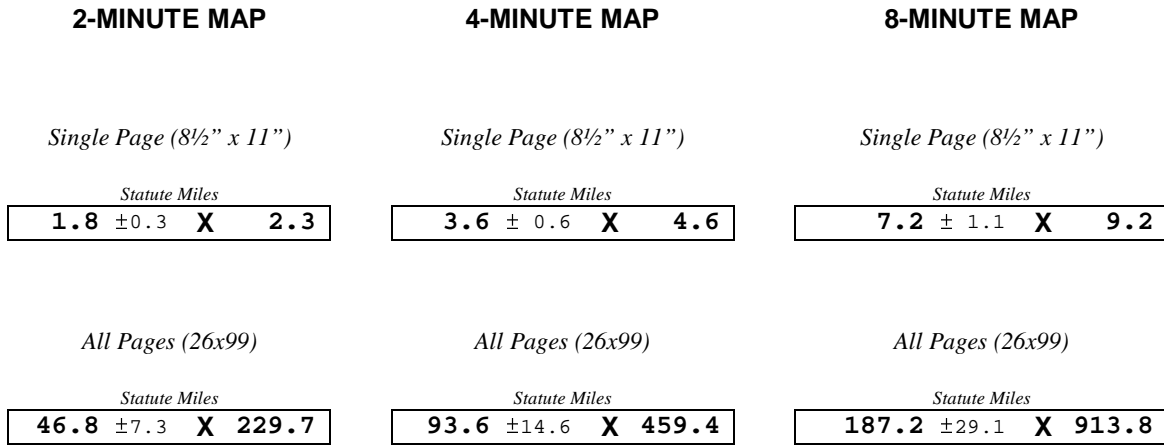


Figure 4-9: Approximate area Covered by 2-Minute, 4-Minute and 8-Minute Maps in statute miles.

The “±” deviation is due to longitudinal degrees being wider apart nearer the equator. The “+” deviation applies to *Balloon Areas* closer to the Southern-most part of continental USA and the “-“ deviation applies to *Balloon Areas* closer to the Northern-most part of the continental USA.

Typically most *Balloon Areas* are only concerned with an area of about 20 miles radius.

Oversized Balloon Areas

If the grid containing 26 pages (A-Z) from East to West and 99 pages (1-99) from North to South does not adequately cover your *Balloon Area*, you should divide your *Balloon Area* into separate *Balloon Areas* and each area should be appointed its own local administrator. An area that can not be covered by the standard grid can not be effectively managed by a single local administrator. This will also keep the page numbering system simple.

If splitting the area is not feasible, then extend the page numbering system using standard spreadsheet notation. Columns A-Z continue on to AA, AB, AC, AD etc. Rows 1-99 continue on to 100, 101, 102, 103 etc. Choose a new page number for the *Balloon Area* center (page N50 will no longer be the center of your grid. Include a note with the Date Stamp indicating the coordinates and page number of the oversized *Balloon Area* center.

4.3 Standard Page Title (Footer)

You can use the page title feature in Street Atlas to print page titles/footers or you can use other software such as MS Word to over-print the map page.

The following is an example of a standard page footer using Microsoft Word (or equivalent):

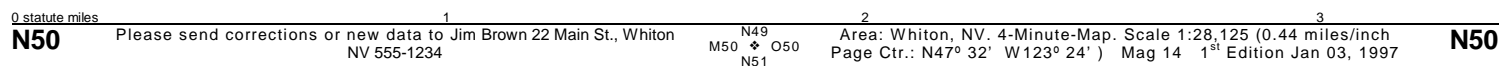


Figure 4-10: Example Standard Page Footer

The following information should be printed clearly on each page footer:

- Visual Scale (statute miles)
- Page number on the left and on the right as the page may be a left-hand page or a right-hand page depending on which way it is inserted into a book containing plastic page protectors
- Local administrator's name and contact number/address for corrections or additions
- The page numbers of the pages immediately above, below, left and right.
- Name of the *Balloon Area*
- Map Ratio and inches/mile
- Type of map (2-minute, 4-minute or 8-minute)
- Coordinates of page center
- Magnitude level (always 14)
- Edition and edition date

Start of Season Preparation (Local)

At the start of the ballooning season, the local administrator publishes a list of map pages (usually in the local balloon club newsletter) complete with edition number and edition date for only those pages that contain Red/Green Zones. Pages with no Red/Green Zone information are not included. The following is an example of such a list:

Whiton Balloon Area 4-Minute Marked-up Map, 12 th Edition Nov 22 nd 1996		
Page Summary		
Last updated : 11/22/96		
Page	Edition	Date
L47	1st	Feb 1, 1995
L48	1st	Feb 1, 1995
L49	2nd	Mar 31, 1995
M48	1st	Feb 1, 1995
M49	2nd	Feb 1, 1995
M51	1st	Feb 1, 1995
M52	1st	Feb 1, 1995
M53	1st	Feb 1, 1995
N47	7th	Nov 22, 1996
N48	1st	Feb 1, 1995
N49	2nd	Feb 1, 1995
N50	1st	Feb 1, 1995
N51	1st	Feb 1, 1995
N53	5th	Jan 3, 1996

Page 1 of 1

Please send all updates with highlighted copy of map area to Jim Brown 22 Main St., Whiton NV 555-1234

Figure 4-11: Example Standard *Balloon Area* Page List

This list allows balloonists in the *Balloon Area* to identify, which pages have been updated and which pages they need to replace. It is then the balloonist's responsibility to keep his or her maps up-to-date throughout the flying season by contacting the local administrator and/or checking the latest Overlay File.

By comparing the edition numbers for each page, only those pages that have been revised need to be replaced, saving time and expense for the balloonist.

Start of Season Preparation (National)

At the start of the ballooning season, national magazine editors publish a list of the *Balloon Area* Map Systems complete with edition number and edition date. The following is an example of such a list:

<i>Filename</i>	<i>State</i>	<i>Balloon Area</i>	<i>Edition</i>	<i>Edition Date</i>	<i>Local Administrator</i>	<i>Contact</i>
GATYNVLL.SA4	GA	Tyneville	3rd	Feb 1, 1995	Peter Dale	(369) 555 7890
IDDERBY.SA4	ID	Derby	12th	Aug 4, 1996	Ann Greaves	ag@ol.com
IDHMPTON.SA4	ID	Hampton	2nd	Mar 31, 1995	Ken Taylor	(123) 555 1111
KYHOPLY.SA4	KY	Hoply	1st	Mar 23, 1995	Brian Arndt	1176 31 st St. Hoply
KYHINTON.SA4	KY	Hinton	12th	Jun 11, 1996	Joe Green	(357) 555 3333
MNHOBBS.SA4	MN	Hobbs	1st	Dec 10, 1995	Bill Fox	(657) 555 4444
MNHIBSON.SA4	MN	Hibson	1st	Jun 12, 1995	Harry Jones	hj@juno.com
ORTIMBER.SA4	OR	Timber	31st	Jan 2, 1995	Mary Trimble	(345) 555 8888
PAPATON.SA4	PA	Paton	1st	Oct 22, 1995	Jack Hinds	(678) 555 5555
PATANNER.SA4	PA	Tanner	2nd	Feb 5, 1995	Larry Hart	(559) 555 8888
PACARSTIN.SA4	PA	Carstin	22nd	Dec 21, 1995	Paul Host	33 Main St. Carstin
TNHIGHBR.SA4	TN	Highridge	11th	Apr 13, 1995	Vic Kelly	(976) 555 8888
TNMORTON.SA4	TN	Morton	3rd	Mar 10, 1995	Mike Sumner	(450) 555 8888

Figure 4-12: Example Standard *Balloon Area* List

The *Balloon Area* edition number is incremented every time the Street Atlas Overlay File is updated. The edition number and date are contained in the Date Stamp on the Street Atlas Overlay File.

4.4 Large Print Volumes

Printing large numbers of map pages with DeLorme Street Atlas USA 4.0 can be time consuming. An alternative is to set your PC screen resolution high and use the 'copy map to clipboard' function to copy a map to another application such as Microsoft Powerpoint or Word where the map page can be scaled/cropped and saved as a GIF (or similar) type file. The advantage of this is that several pages complete with your own page footers and page numbers can be printed any number of times with one submit to the print queue. Although the print resolution is compromised, the quality will probably be adequate for 4-minute maps and this technique can save a considerable amount of time and effort.

5. Appendix A - Map Scale Comparisons

The following table compares DeLorme Street Atlas USA 4.0 (Mag 14) map scales to other generally available maps:

Scale	miles/inch (approx.)	Street Atlas Mag 14	Other Available Maps
1:15,625	0.25	X	
1:18,750	0.30	X	
1:21,875	0.35	X	
1:24,000	0.38		Quadrangle 7.5 minute series
1:25,000	0.39	X	Quadrangle 7.5 X 15 minute series
1:28,125	0.44	X	
1:31,250	0.49	X	Thomas Guide
1:37,500	0.59	X	
1:43,750	0.69	X	
1:50,000	0.79	X	UK Royal Ordnance Survey
1:56,250	0.89	X	
1:62,500	1.00	X	Quadrangle 15 minute series
1:75,000	1.20		
1:87,500	1.40		
1:100,000	1.60		Quadrangle 30 X 60 minute series
1:112,500	1.80		
1:125,000	2.00		
1:150,000	2.40		DeLorme Gazetteer
1:250,000	4.00		Quadrangle 1X2 Degree Series
1:500,000	8.00		U.S. Sectional Chart

Figure A-1: Selection of Map Scales.

Mag14 is the Marked-up Map System standard Street Atlas magnitude level.