

Town of Hanover  
Planning Department



## Quick Guide for ArcReader GIS Installation & Use

*For more information, contact the Town Planner, Andrew Port (781-826-7641) or [port.planning@hanover-ma.gov](mailto:port.planning@hanover-ma.gov)*

### **System Requirements**

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Following are general requirements/recommendations for computers running the Hanover GIS map viewer.

<b>Operating System:</b>	Windows 2000 or XP w/ Service Pack 1&2
<b>CPU Speed:</b>	1.5 GHz recommended or higher
<b>Processor:</b>	Intel Pentium or Intel Xeon Processors
<b>Hard Disk Space:</b>	500 MB for the Program + 1GB for the Hanover Mapping Data
<b>Memory/RAM</b>	512 MB
<b>Disk Drives:</b>	DVD-Rom Drive
<b>Graphics:</b>	24-bit capable graphics accelerator

### **Installing GIS**

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These steps will help you to install the program, copy the most recently compiled Hanover mapping data to your computer, and create a quick shortcut on your desktop to the GIS Viewer (map viewer). You can then open and use the mapping program as described in the next section.

- 1) Insert the DVD into your computer. Navigate to the DVD.
- 2) Copy the folder called "GIS-Viewer-6-27-07" to your computer. *(I recommend that you place this file into your shared documents so that all users can access the GIS data, but you may also copy it to another location on your computer. Keep in mind that this folder contains all the map data for Hanover and therefore takes up a large amount of space - approx 1GB of space - on your hard drive.)*
- 2) Return to the DVD. Open the folder called "ArcReader-v-9-2-Install". Double-click on the application (program) "Setup.exe" to install the ArcReader GIS program which you will use to view the Hanover maps and data.
- 3) Follow the Installation Wizard making sure to select a "Complete" installation.
- 5) When the program installation is complete, return to the newly created folder on your computer called "GIS-Viewer-6-27-07", then the folder inside called "pmf".
- 6) Right-click on the file "Viewer.pmf" and select "Send To..." then select "Desktop (Create Shortcut)".
- 7) Change the title of the newly created desktop icon to "GIS & Mapping" or "Hanover GIS".
- 8) Double-clicking on this desktop icon should open the mapping program you just installed (ArcReader) allowing you to view the Hanover GIS map "Viewer." This is all you will need to do in the future to start the program. You are now done with the DVD.

Note: *You cannot create new map data, but you can view and create maps with the existing data, as described below. In addition, you can query the program to find "features" such as a parcel of land with a certain address or map and lot number.*

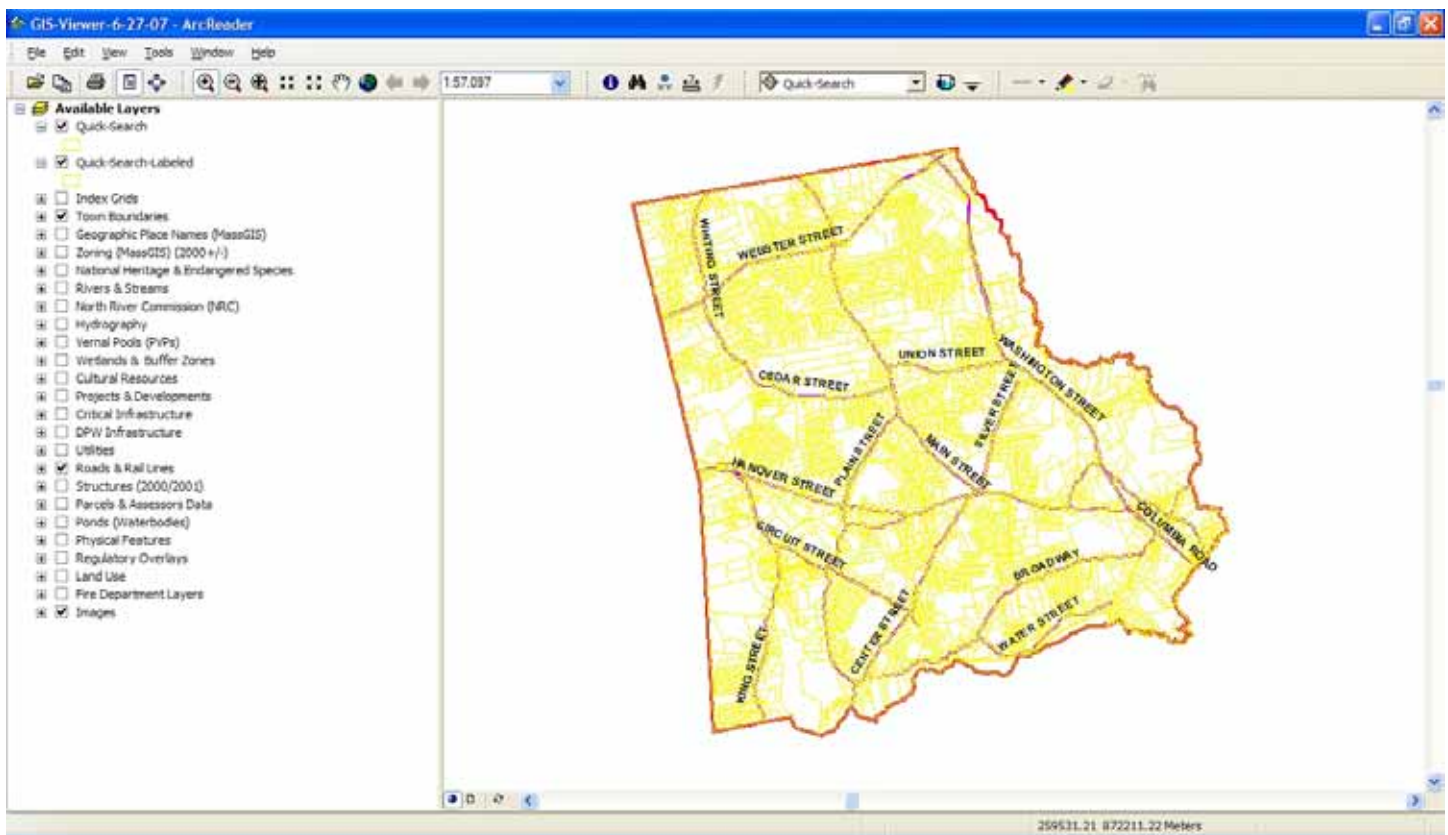
Important Note: *The program takes a few moments to load into your computer upon startup because the mapping program accesses a large amount of mapping data. Be patient. It will run smoothly once startup is complete.*

## Using GIS

In the above steps you installed the mapping program and created a shortcut on your desktop so that you can easily start the program and go right to the Hanover maps. Following is a quick overview of the basic functions of ArcReader GIS for Hanover. Experiment with the program for additional functions.

*Please Note: This program takes a few moments to startup since a significant amount of data is loaded into the computers temporary memory. Once up and running the program is relatively fast. See the images below for illustration.*

Once the program is loaded, you will see (on the right side of the screen) a basic map of the entire town (outlined in red), overlaid with parcel lines (yellow), and with major street names labeled. **[Figure 1]** On the left side of the screen you will see a list of map layers available for viewing. Some of the layers have been grouped by type or subject for simplicity and quick navigation. At the top of the screen you will see a toolbar with various buttons as shown on the attached page entitled “The ArcReader Window.” On the following pages you will find a quick tutorial and summary of some basic tool functions.



**Figure 1: The GIS mapping program (“Viewer”) ArcReader is opened showing a simple map of Hanover.**

You will notice that there is a check box next to each map layer in the table of contents on the left side of the screen. Clicking on this box will “toggle” the selected layers on and off. You will check the box of map layers you want to show when viewing the map on the left side of the screen to create the customized maps you need.

In addition to the check box you will also see boxes with (+) and (-) icons. These icons can also be clicked on to expand and minimize a layer group. You will note that expanding all the layer groups will extend the table of contents well beyond the bottom of the screen (left). As such, you may expand and minimize the layer groups as desired.

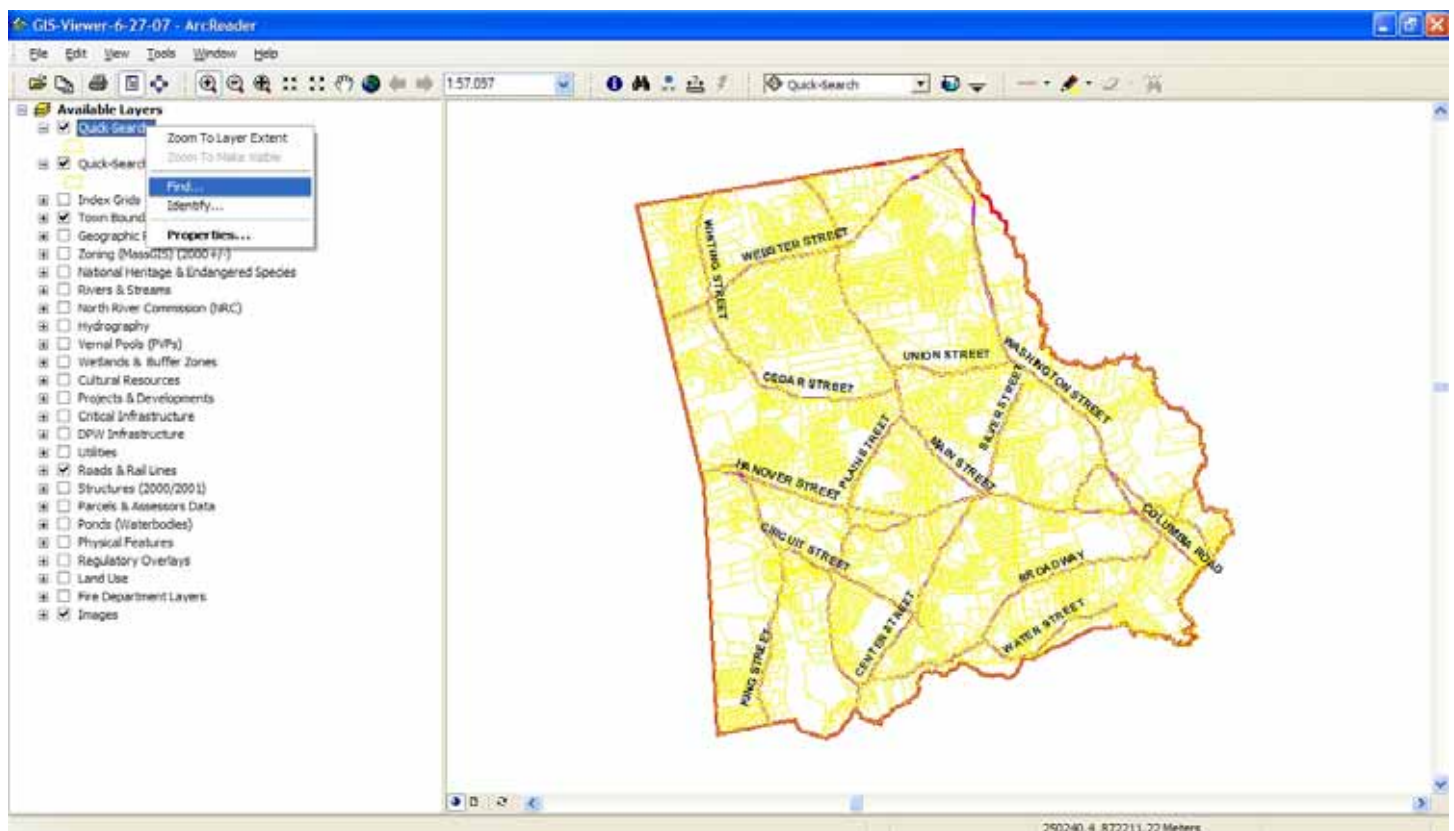
Typically you will see a color-coded legend for each layer indicating the applicable color used on the map so that you can quickly identify and distinguish features as parcel lines, building footprints, street centerlines, and so forth.

Note: Some layers will not display if you are “zoomed” in too close or too far out from the map. For instance, the labels for each parcel (map and lot numbers or addresses) will not show at the town-wide scale, since all that text would clutter the map. If you zoom in to an area of the town or a certain neighborhood the parcels should be labeled with assessors map and lot numbers or addresses for quick identification (see below).

As described in the attached page entitled “The ArcReader Window” you can switch between tools at the top of the screen (by clicking on the buttons) to zoom in, zoom out, pan (shift the map), return to the previous views (forward and backward similar to an internet browser), identify a feature or parcel by listing the attributes associated with it (e.g. parcel address, owner, acreage, assessed value, etc.), find a specific feature (e.g. parcel with a specific address or map-lot number, street with a certain name, school with a certain name, etc.), measure the distance between two points or objects (i.e. feet or miles), and measure the area within a defined area (i.e. square feet or acres).

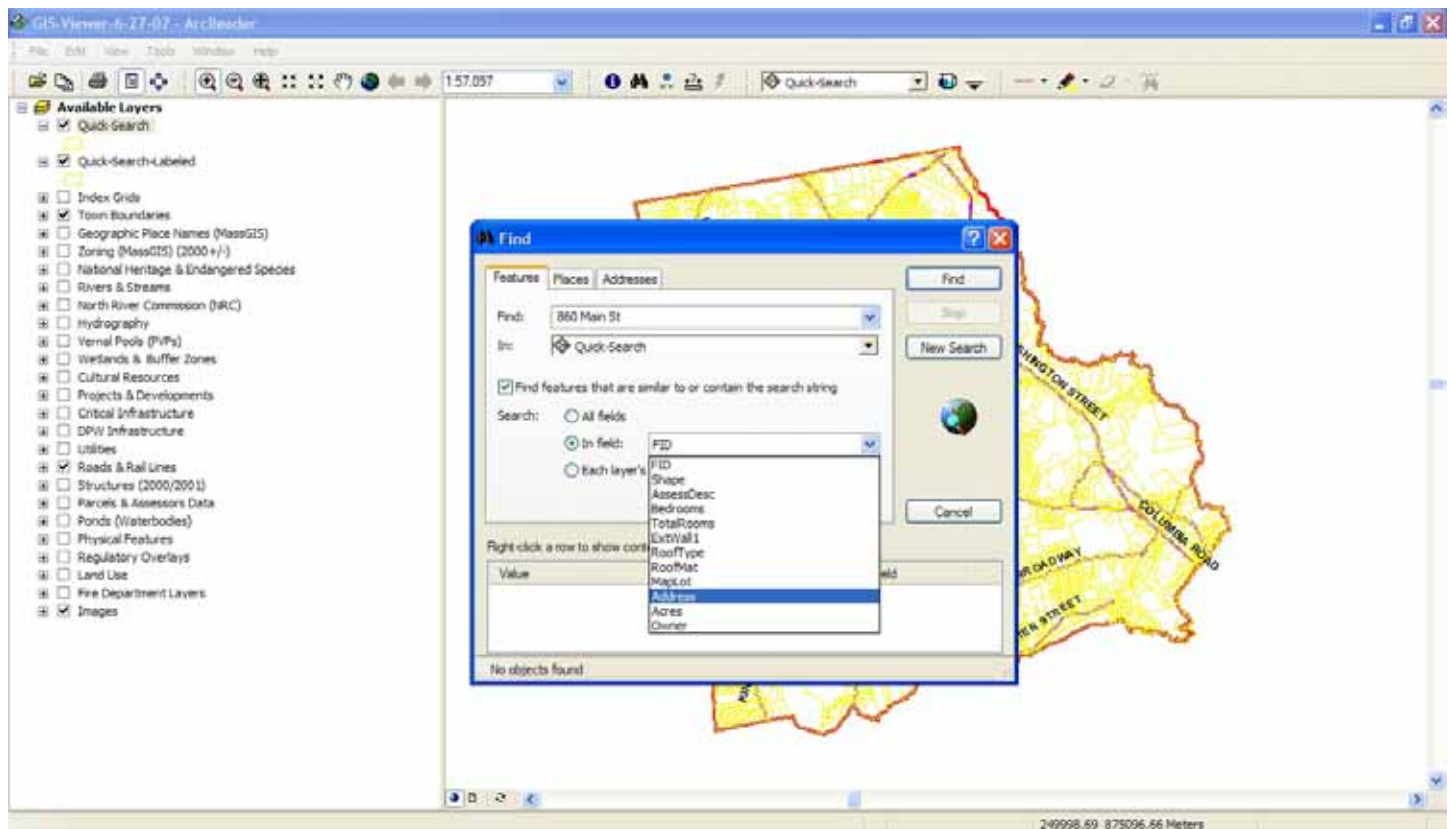
At the bottom you will see two very small buttons which allow you to toggle back and forth between the map view and the print layout view (what the map will look like if you print it on a page with a standard title block, legend, and north arrow). You can print what you see on the right side of the screen from either view, but I recommend printing any maps using the template page layout, which includes a north arrow, source info, and scale bars for reference. You can also click on the “Print” icon to print the map or save the map view as an image (bitmap) for use in other programs by clicking on the File Menu and then selecting “Export Map.”

Most users will want to do simple things with the GIS Viewer. You may simply want to find a certain parcel of land (by address or map and lot number) and see what the GIS can tell you about it, such as assessors information or aerial photographs of the property. As such I have created a “Quick Search” layer in the Table of Contents (at the top of the left side of the screen). This layer contains basic information about each parcel of land in Hanover (stored in tables accessed by the GIS program).



**Figure 2:** Right-click on “Quick Search” and click “Find...” to locate a property by address or map and lot number.

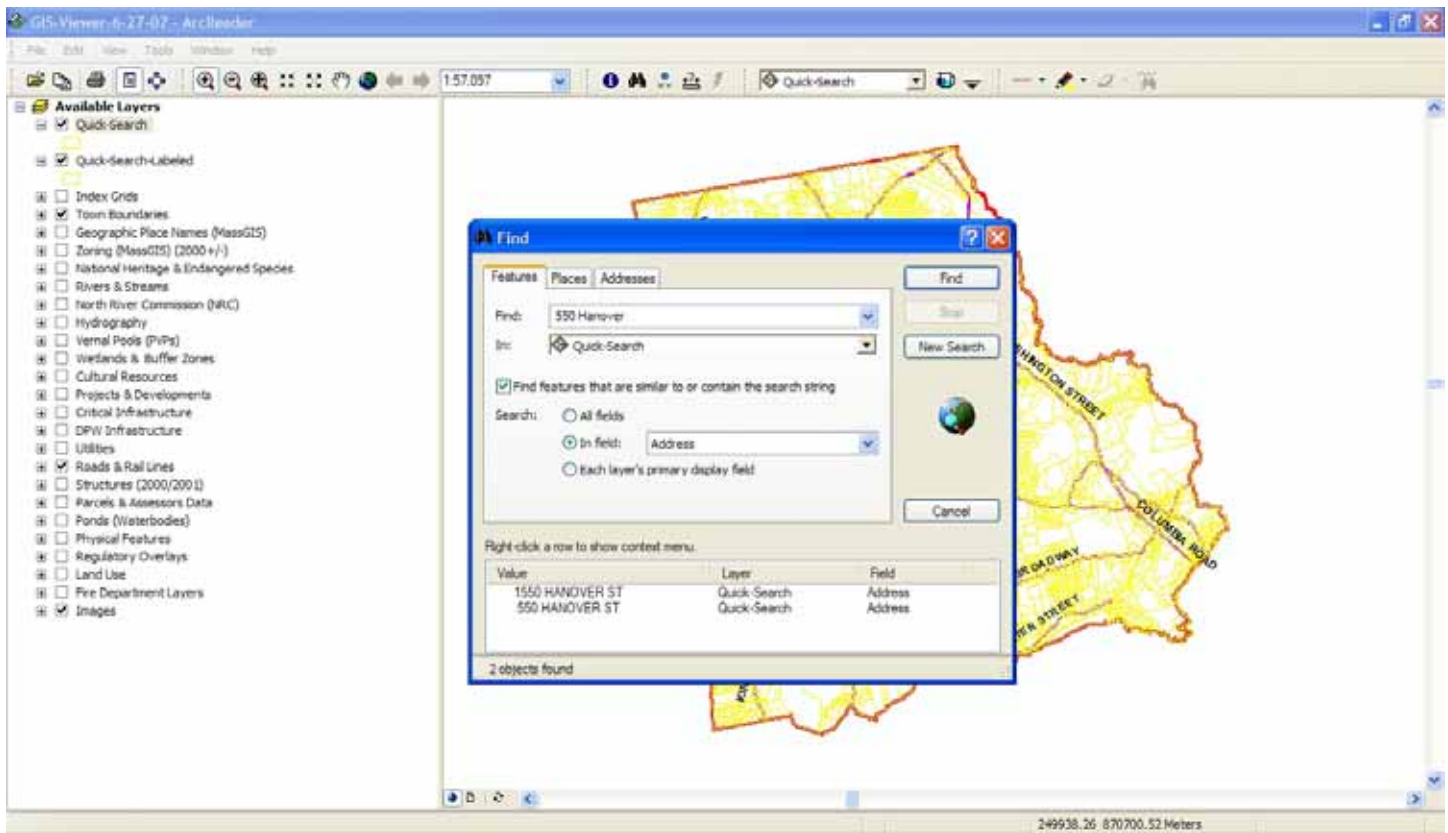
Right-click on “Quick Search” and select “Find ...” **[Figure 2]** You will see a pop-up “Find” query box. This option is available for any layer, but in this case we are searching the “Quick Search” parcel layer to find an address. Type “860 Main St” into the Find box and click Find. **[Figure 3]** (Note: acronyms have been used for street names. As such you will find that “St” should be substituted for “Street” and so forth. When in doubt just type the street number and name. Typing “550 Hanover St” instead **[Figure 4]** will reveal two options at the bottom of the Find box – both 550 Hanover Street and 1550 Hanover Street. This is because both street addresses contain the search string “550 Hanover St.”)



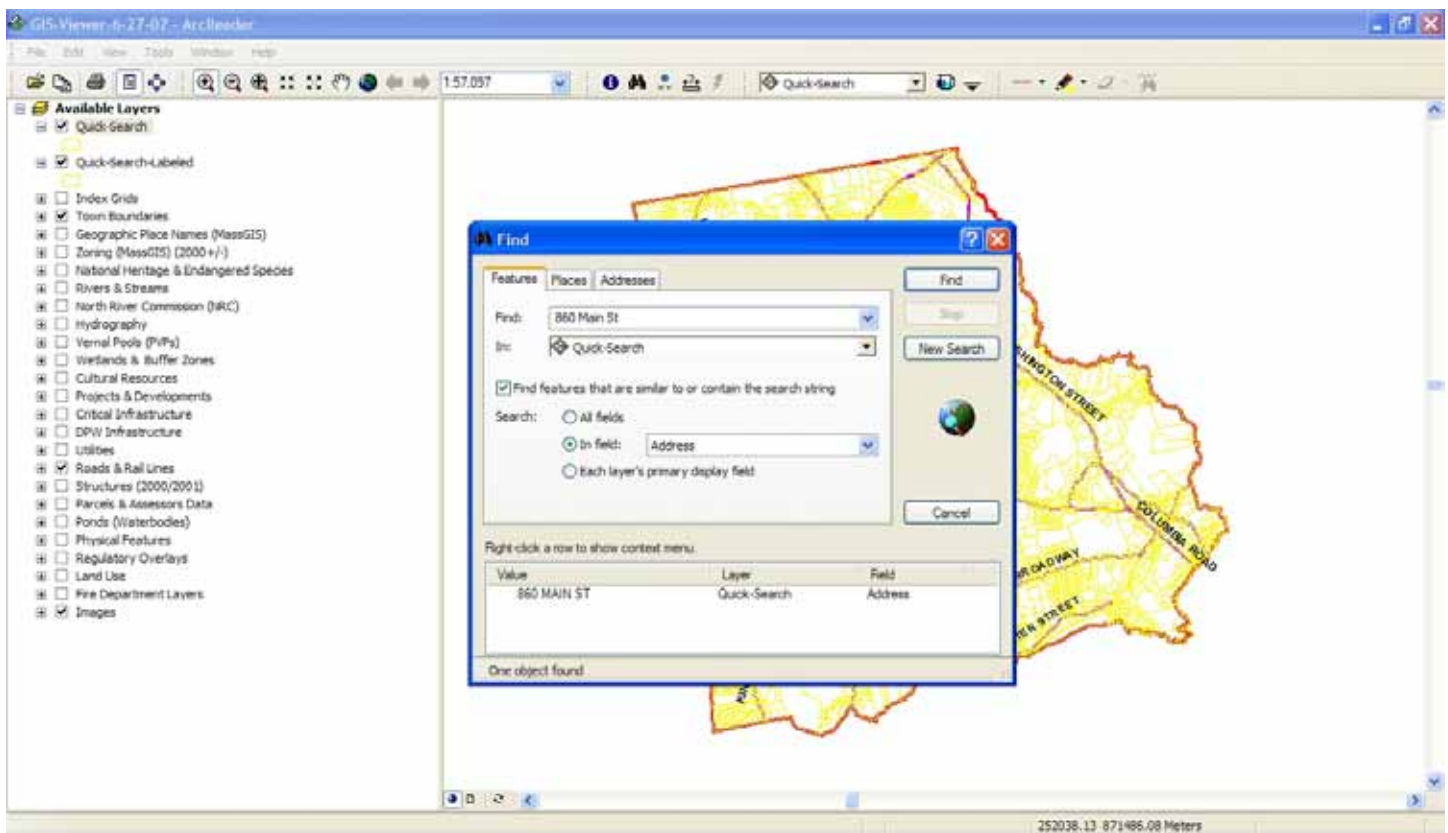
**Figure 3:** Enter a search query, such as an address or map and lot number.

Typing “860 Main St”, choosing “Address” from the Field pull-down options list, and clicking Find **[Figure 5]** reveals one result at the bottom of the Find box. Drag the Find pop-up box to the left side of your screen so that you can see the map at the same time. **[Figure 6]** Right-click on the result and choose “Flash”. **[Figure 6]** You will notice that the parcel you searched for (860 Main St) flashes quickly on the screen with crosshairs so that you can pin-point its exact location in Hanover.

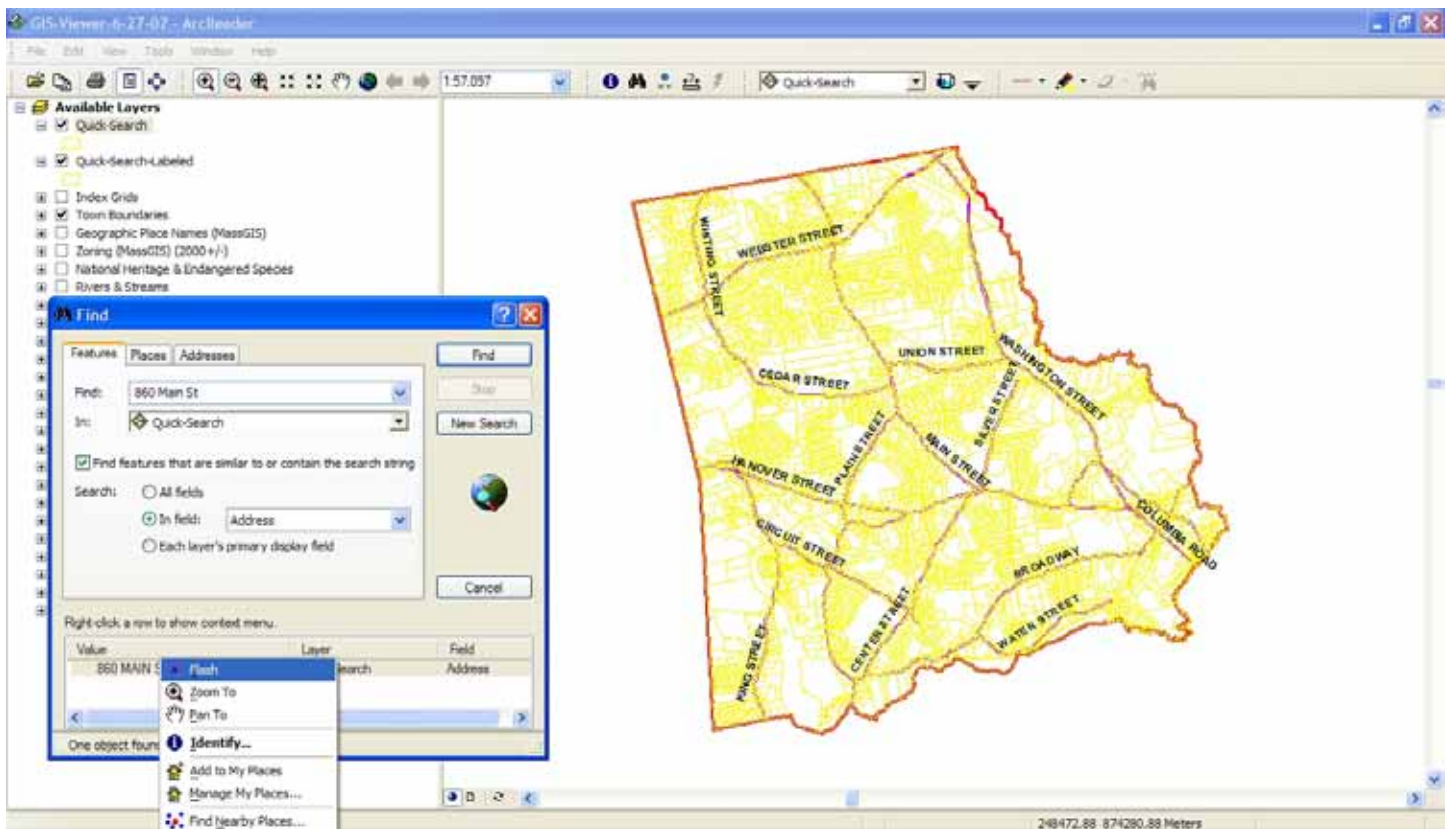




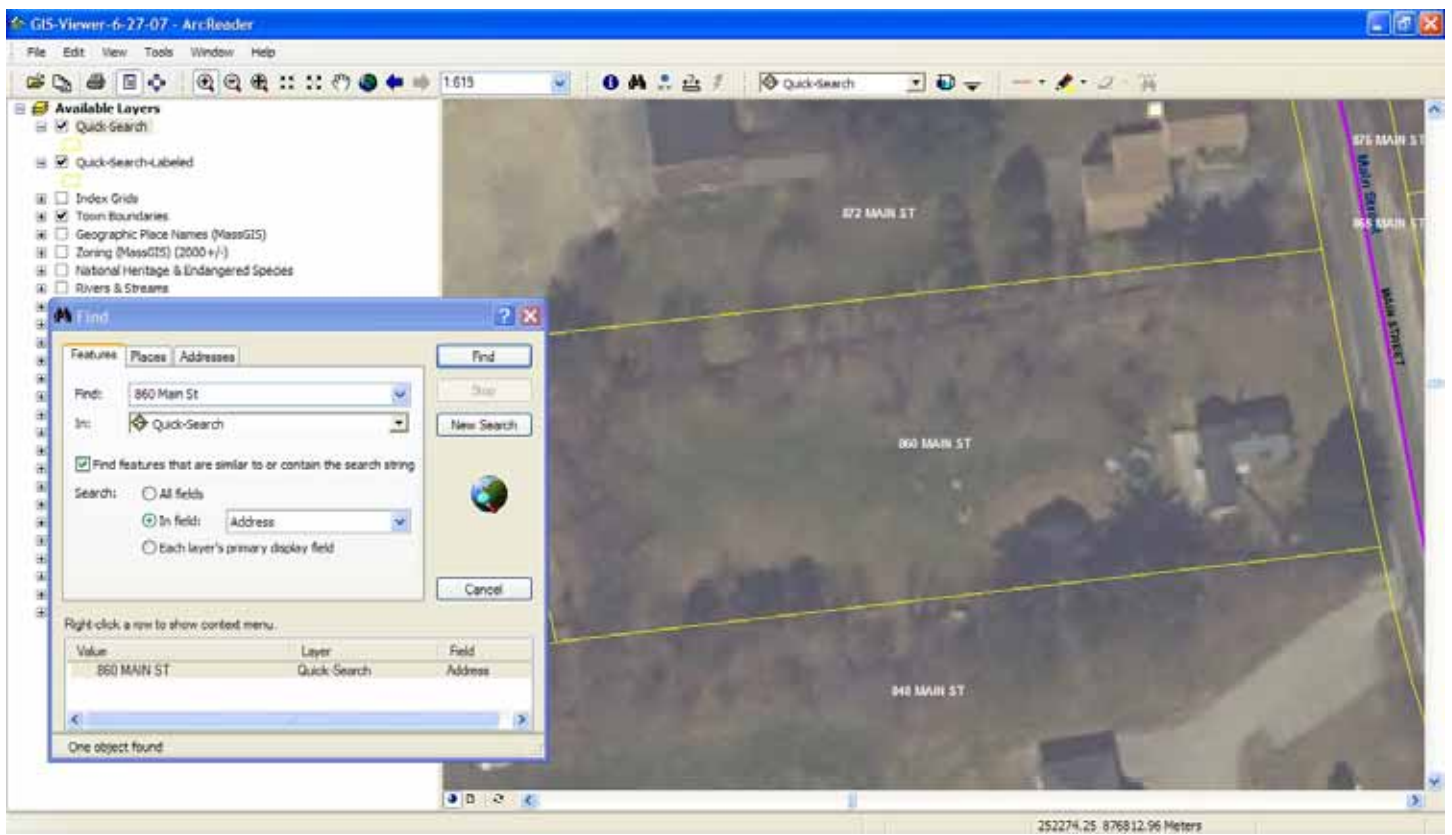
**Figure 4:** Enter a search query, such as an address or map and lot number.



**Figure 5:** The program displays results, based on your query of the selected map layer.



**Figure 6:** Right-click on one of the results and select Flash to see where the map feature is located.



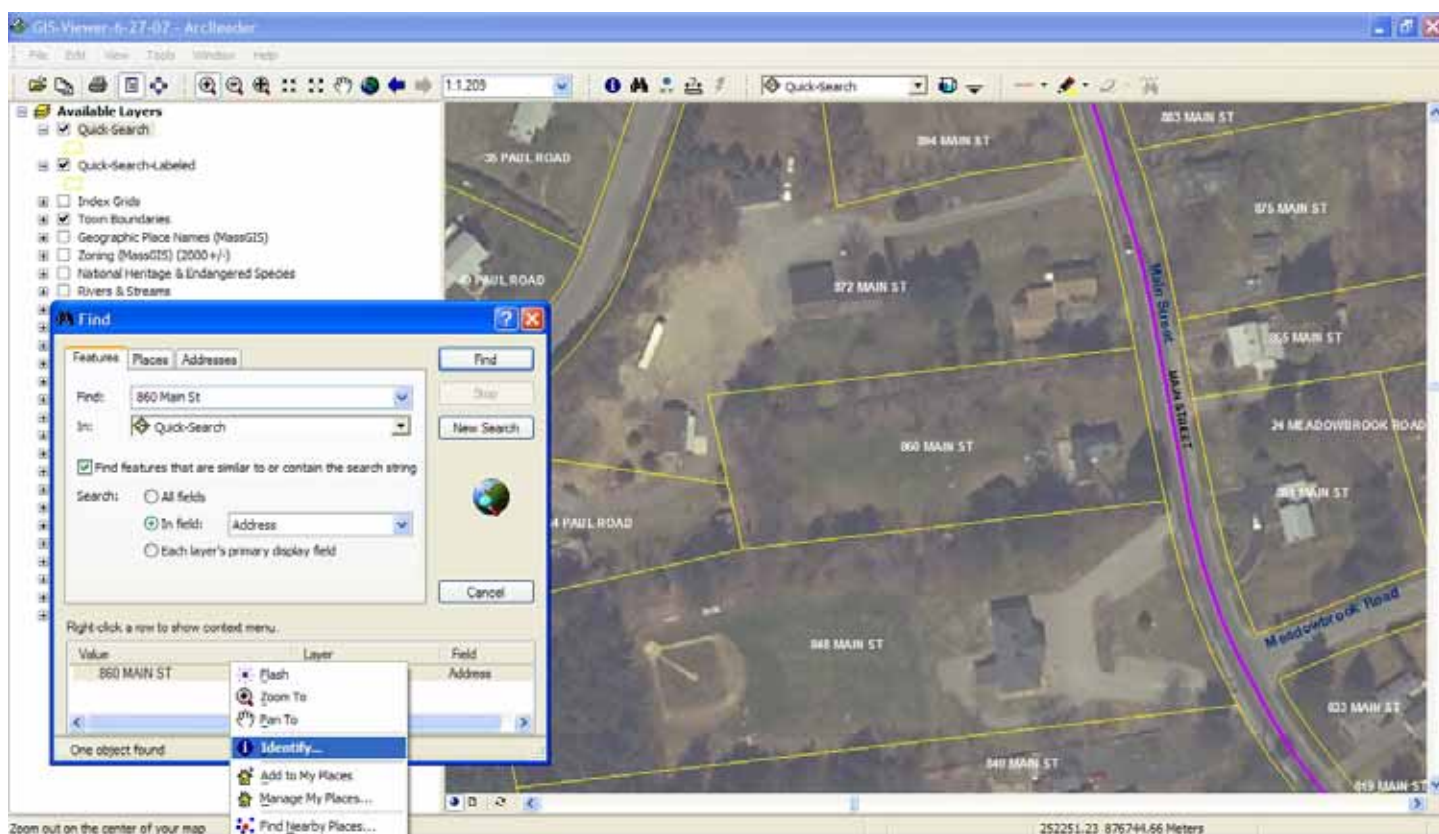
**Figure 7:** ArcReader zooms to the parcel or feature you chose (in this case, the property 860 Main St).

Right-click again and choose “Zoom To.” ArcReader will zoom the map view to the property known as 860 Main St. **[Figure 7]** You will see that the map view zooms to the parcel you searched for and shows an approximate parcel boundary over the aerial photograph. Note that the property address is labeled on the map.

At this scale the aerial photograph doesn’t show very much, so lets zoom out using the toolbar at the top of the screen. Click on the tool “Fixed Zoom Out” or click on the “Zoom Out” tool and then click on the middle of the screen. (See attached page entitled “The ArcReader Window”) Repeat this until you can see Main Street and the abutting parcels. You may notice that the property just south of 860 Main St is 848 Main St (site of the old Curtis School and ballfield).

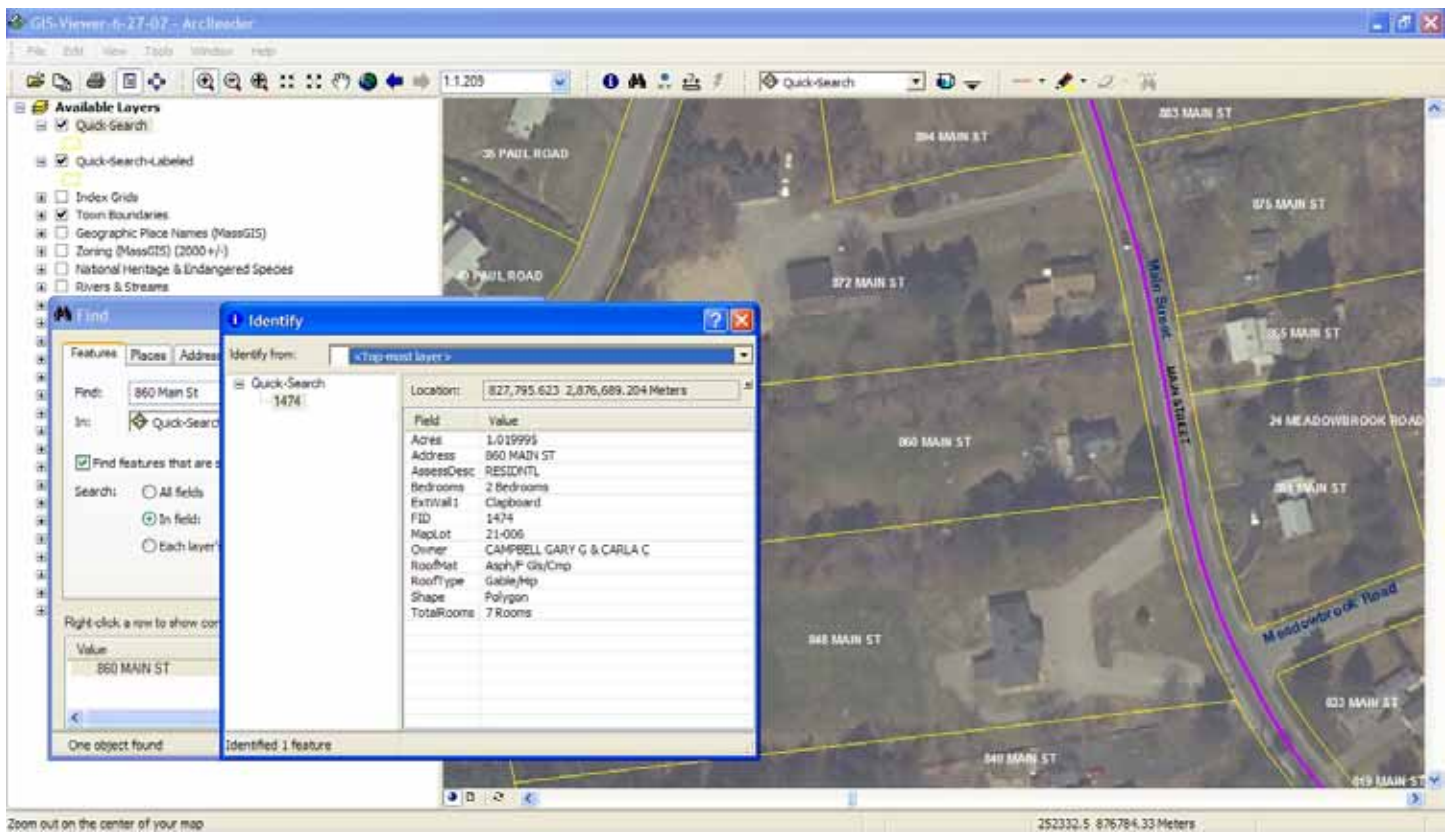
Let’s find out who owns 860 Main St., how many acres it is, how many rooms and how many bedrooms this house has. Right-click on the result again, this time selecting “Identify.” **[Figure 8]** A new pop-up box entitled “Identify” will appear. Tabular information associated with the property 860 Main Street will be shown in the box (e.g. acreage, owner name, address, number of rooms, number of bedrooms, map and lot number, etc.). **[Figure 9]**

Let’s do a similar query for the Curtis School property. Change to the “Identify” tool at the top of the screen. The button for this tool looks like a blue circle with the letter “i” inside. Then click within the parcel on the map labeled as “848 Main St.” Again, the Identify results indicate that the Town of Hanover owns this parcel and that the property has a tax status of “Exempt.” **[Figure 10]** Close the Identify and Find pop-up boxes.



**Figure 8:** Right-click a result and select “Identify” to get information associated with this property.





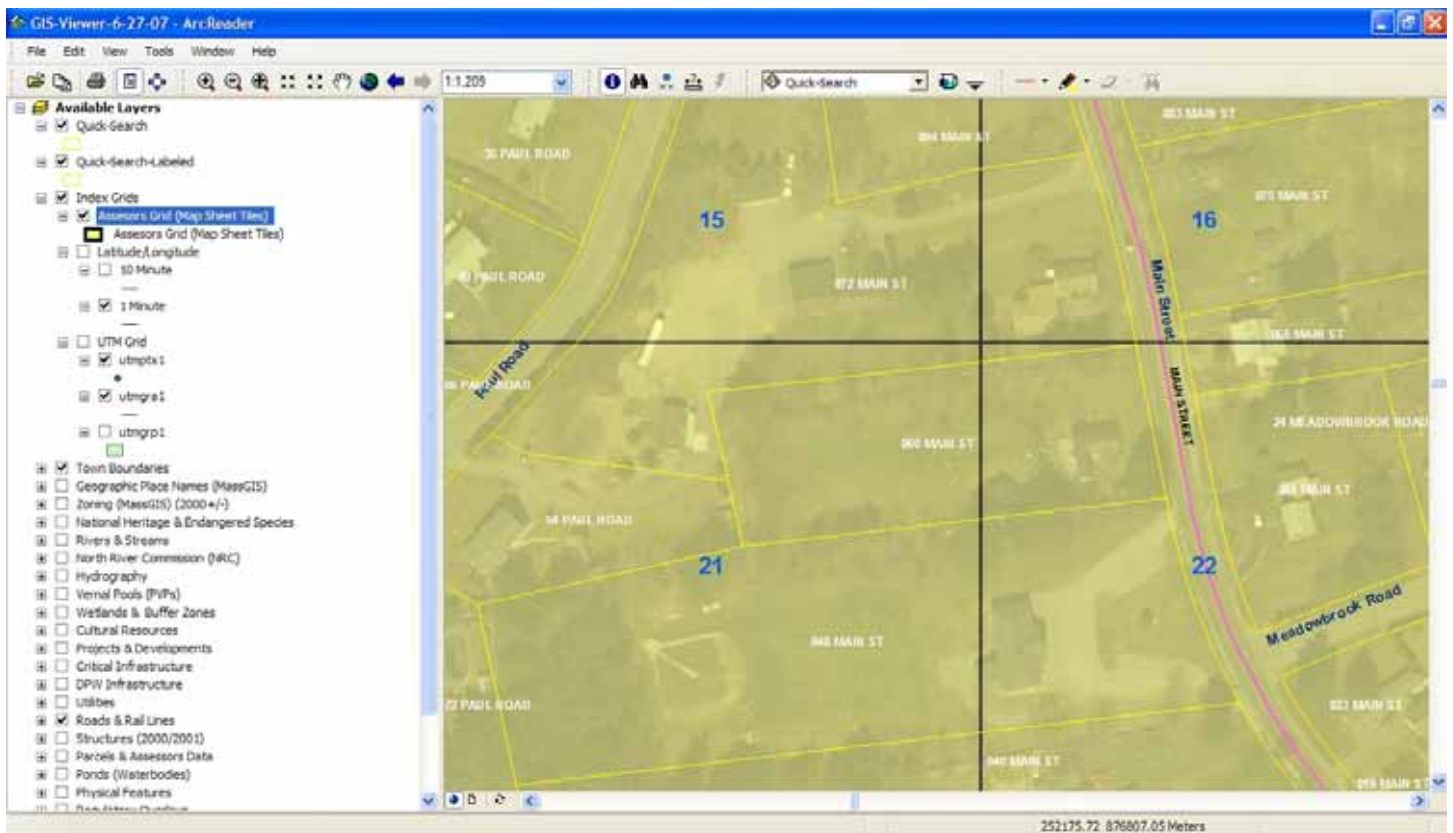
**Figure 9:** The “Identify” information box appears displaying assessors information associated with this property.

Let’s see where the Assessors Map Tiles overlay these parcels. Turn on the Index Grid layer “Assessors Tiles.” **[Figure 10]**. Remember to expand the “Index Grids” layer group to see all of the index grid layers, and then to select **both** the check box for the “Assessors Grid” **layer and** the check box for the Index Grids **layer group**. This will turn on a new map layer - showing Assessors Map boundaries - shaded in yellow. These tiles (rectangles) correspond with the pages of the assessors yearly Map Book. *(Note: The map view on the right side of the screen refreshes whenever you add new layers or change options. You can stop the refresh by hitting your keyboard’s “Esc” key. If you accidentally hit a button causing the view to stop a desired map refresh, click the tiny “refresh” button at the bottom of the screen, located just right of the Data View and Layout View buttons described earlier.)*

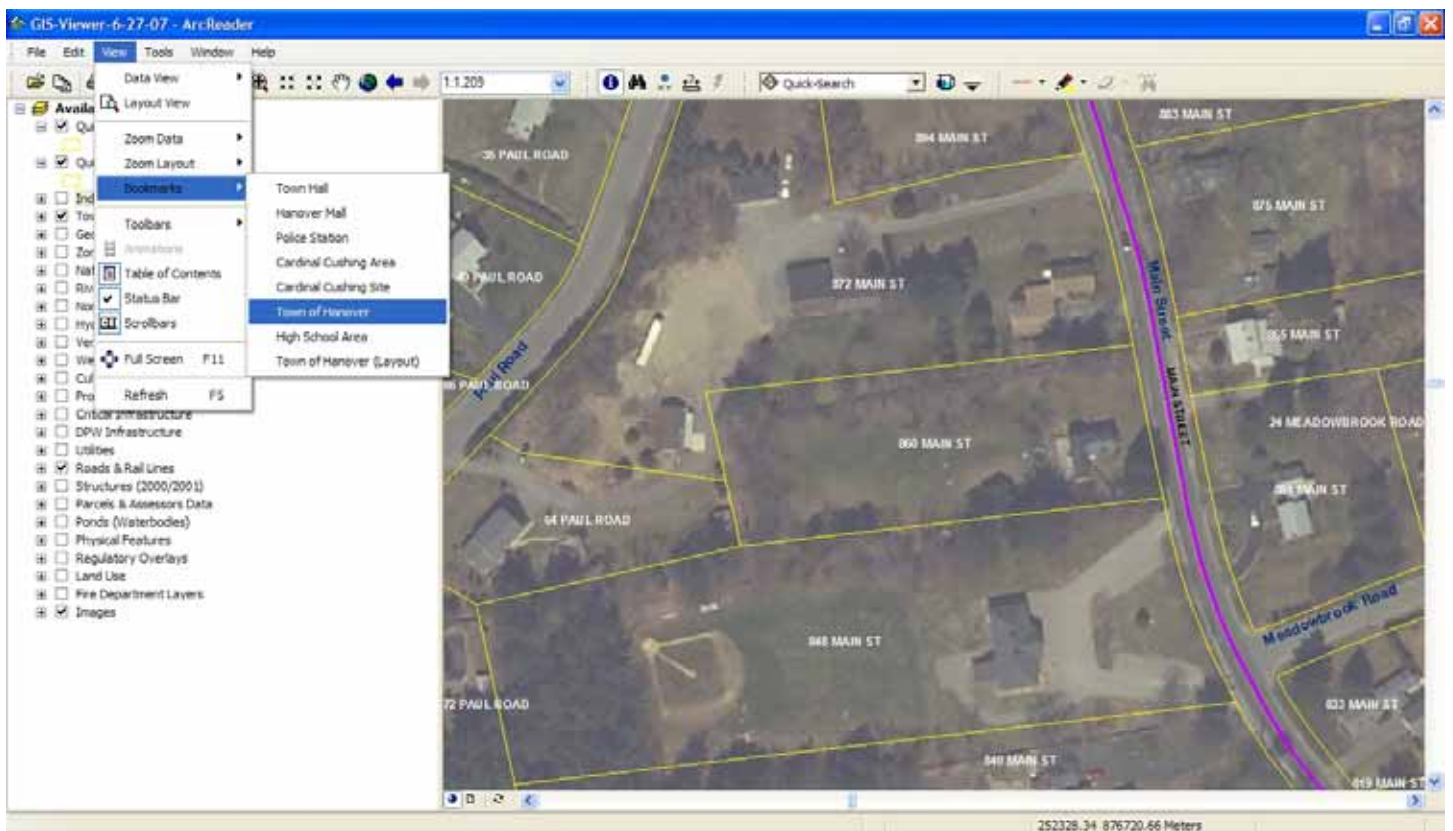
You can now see that the properties 848 and 860 Main Street both cross between Assessors Maps (tiles) 21 and 22, as labeled and shaded on the map. Turn off the Index Grids or “Assessors Grid” layer to shut this layer off. Then collapse the layer group.

Let’s find out where in Hanover the Holly Farms subdivision is. Go to the menu at the top of the screen entitled “View” and select “Bookmarks” then “Town of Hanover.” **[Figure 11]** The map view will quickly return to the full extent of the map (the Town of Hanover). **[Figure 12]**

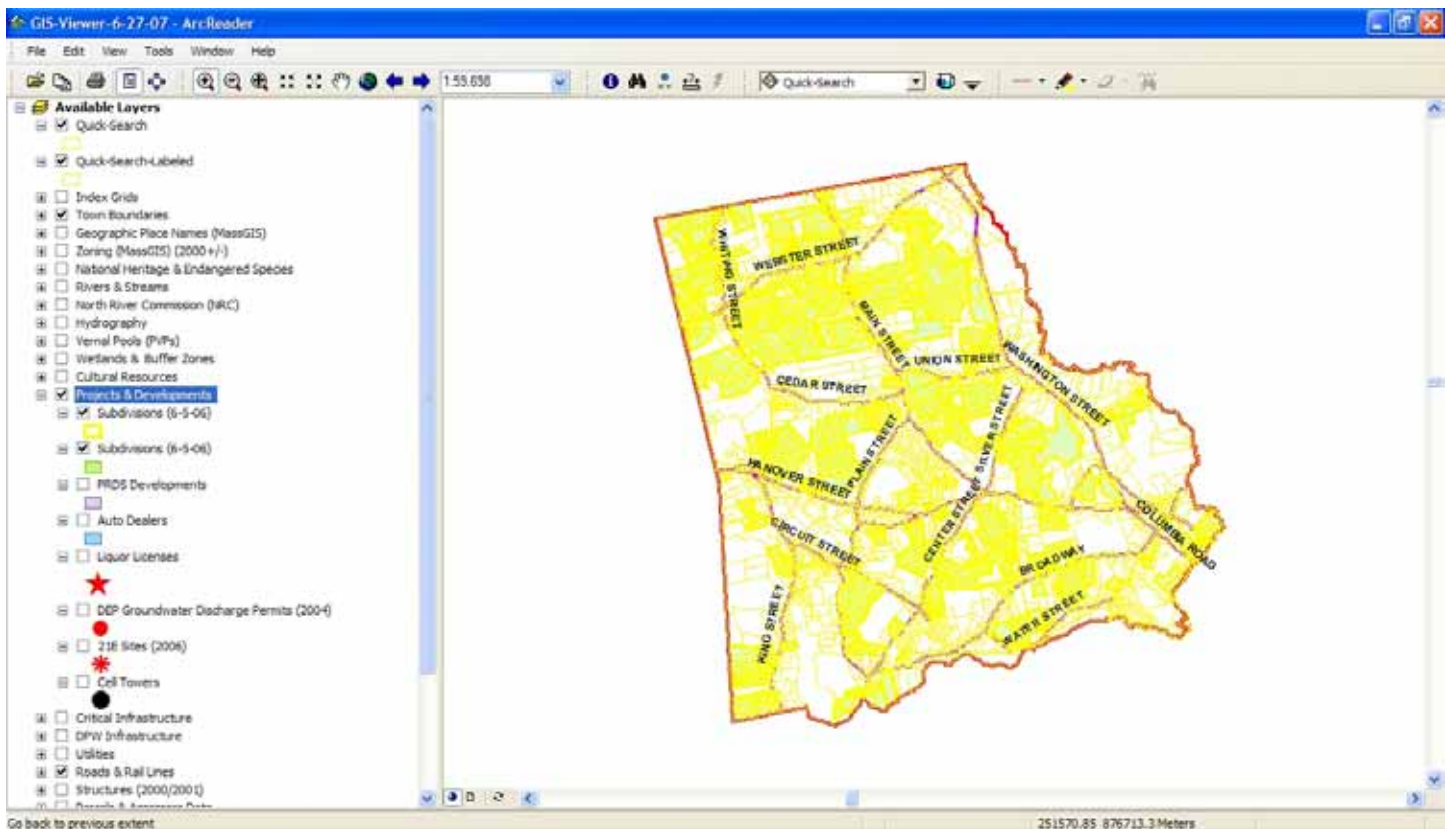




**Figure 10:** Turning on and off the Index Grids and Assessors Grid layers.



**Figure 11:** Zooming out to a pre-defined “bookmark” view such as the whole “Town of Hanover.”



**Figure 12:** Turning on selected layers. In this case the Subdivisions layer (both shaded polygons and boundary lines)

Turn on the Projects and Developments layer group and expand the layer group. Turn on the two layers “Subdivisions” to show mapped residential Subdivision developments in Hanover. **[Figure 12]**

Right-click on “Subdivisions-6-5-06” and select “Find ...” You will see a pop-up “Find” query box. This option is available for any layer, but in this case we are searching the Subdivisions layer to find the Holly Farms subdivision. Type “Holly Farms” into the Find box. **[Figure 13]** (Note: remember to change the search field to “SUBDIVNAME” which stands for Subdivision Name. This search reveals five options at the bottom of the Find box – one for each of the five phases of the Holly Farms development.)

Right-click on the result “Holly Farms Phase V” and select Flash to see where this development was built. Right-click again and select “Zoom To” to zoom into this neighborhood. The map will refresh to show the Phase V portion of the Holly Farms residential subdivision. Right-click again and select “Identify” to see the Planning Board File Number for this Subdivision, the date this project was approved, and the subdivision name. **[Figure 14]** (Note: If you want to copy the table values so that you can paste them into an Excel Spreadsheet or Word Document, drag a box to highlight the text in the table and then right-click to select “Copy” for one field or “Copy Selected Fields” for more than one table cell. You can now paste these values into another program as needed.)

Close the Find and Identify pop-up boxes. Turn off the “Projects and Developments” group layer. Turn on the Wetlands and Buffer Zones group layer as well as the Buildings layer (located under the Structures group layer). You will now see the Holly Farms V neighborhood with a map showing aerial photographs with overlays for parcel lines, building footprints, and wetlands along with their associated buffer zones. **[Figure 15]**

Let’s zoom in to the area around Rose Hill Road and Gardener Way. Change to the Zoom In tool, then drag a box around this area. The map will refresh with a map of this area. (Note: If you need to adjust the view further, do so. You may also want to use the back button to return to your previous view.) The map will refresh with a close-up view of the Rose Hill Road and Gardener Way neighborhood. **[Figure 16]**



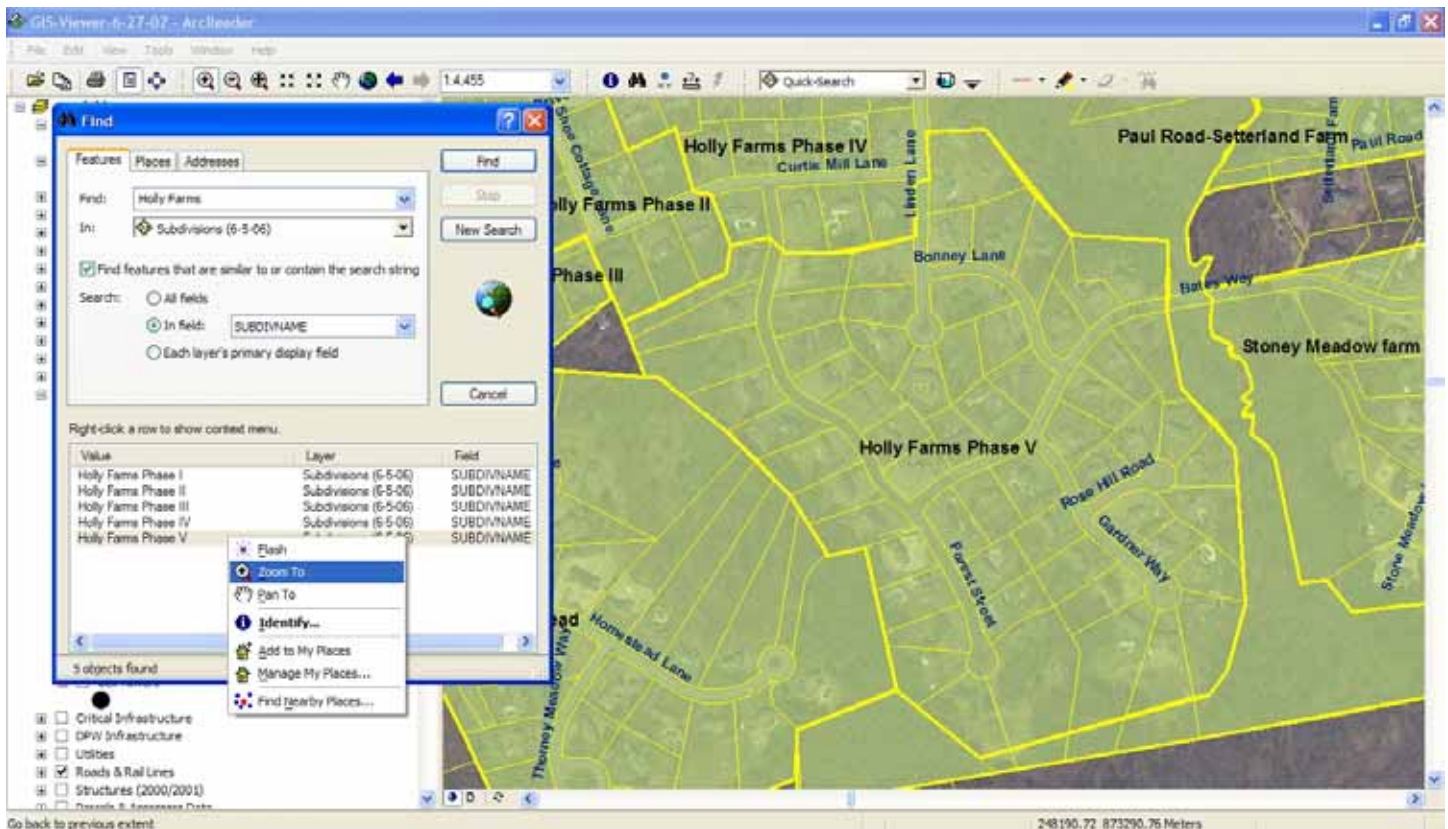


Figure 13: Searching for a specific feature in another layer, in this case the subdivision “Holly Farms”

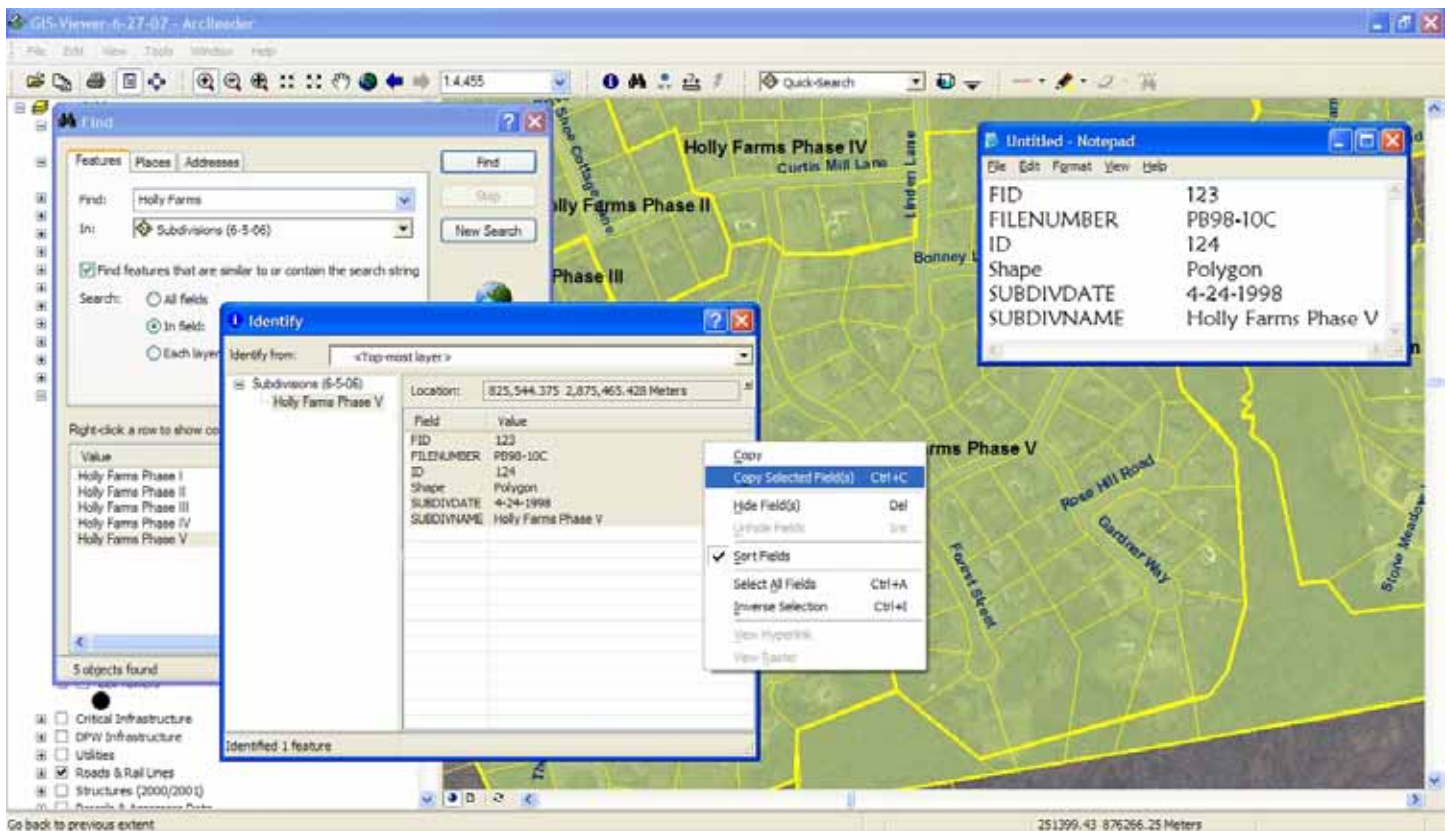
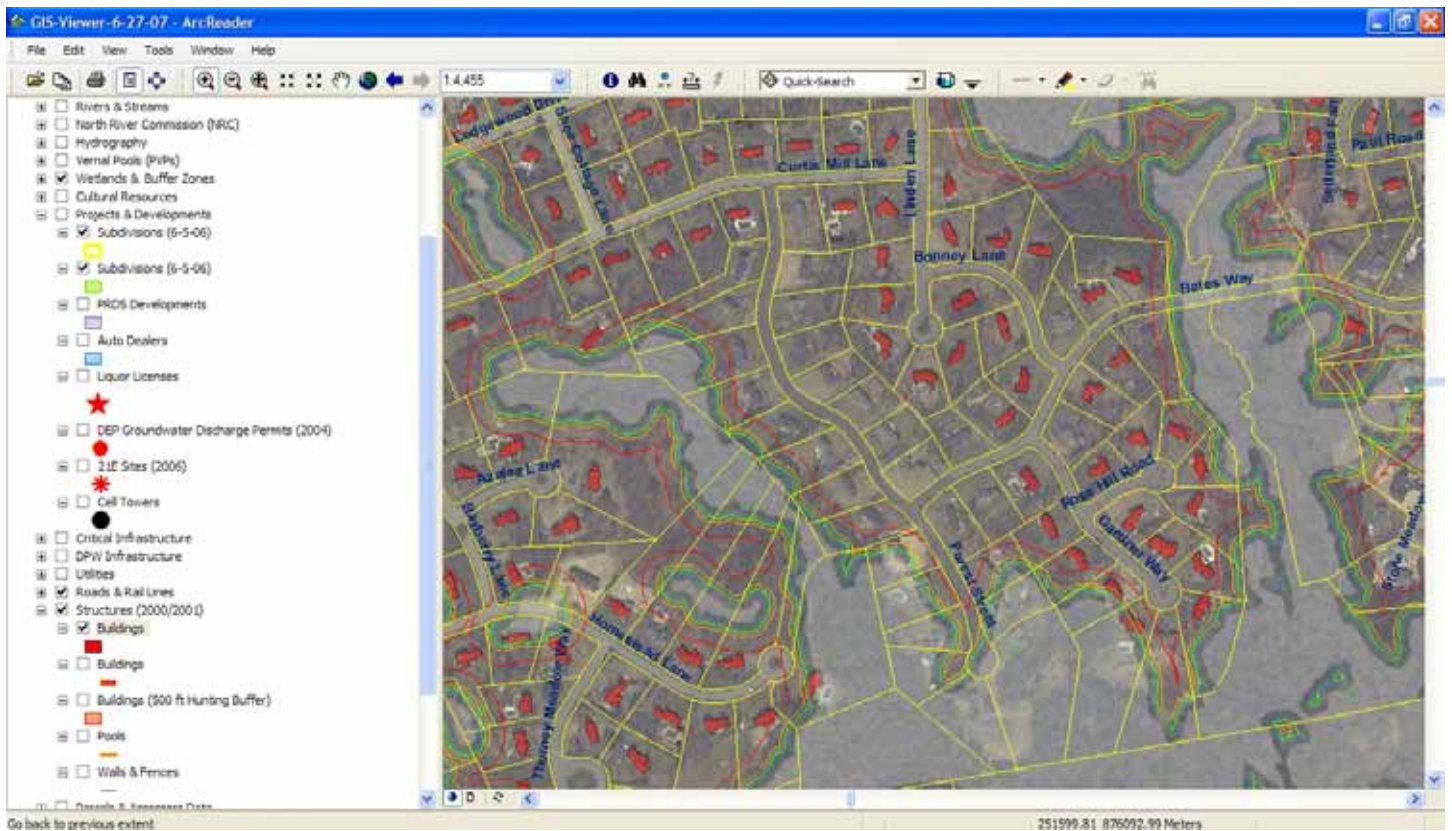
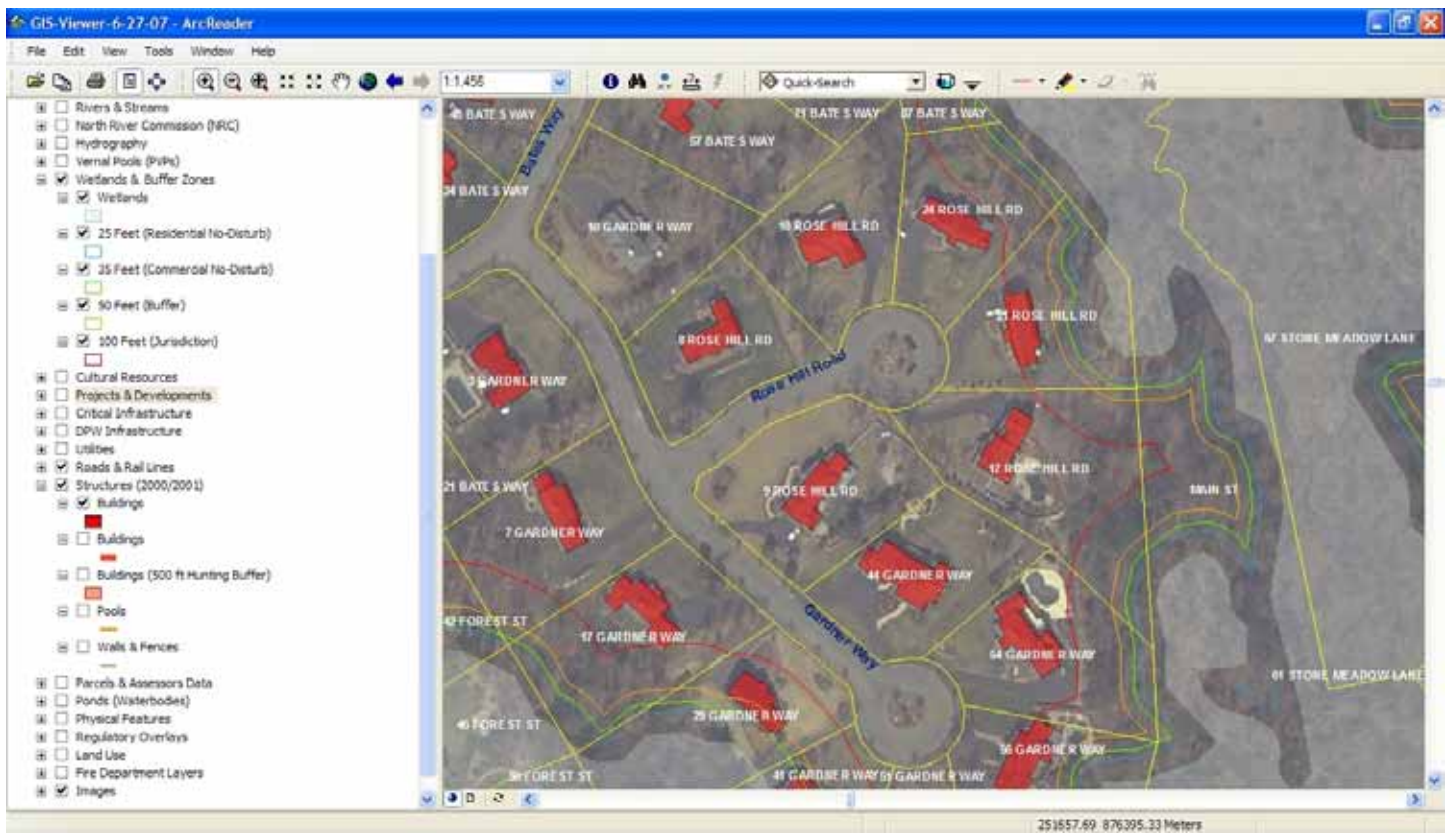


Figure 14: Copying data from the Identify box for use in another program.





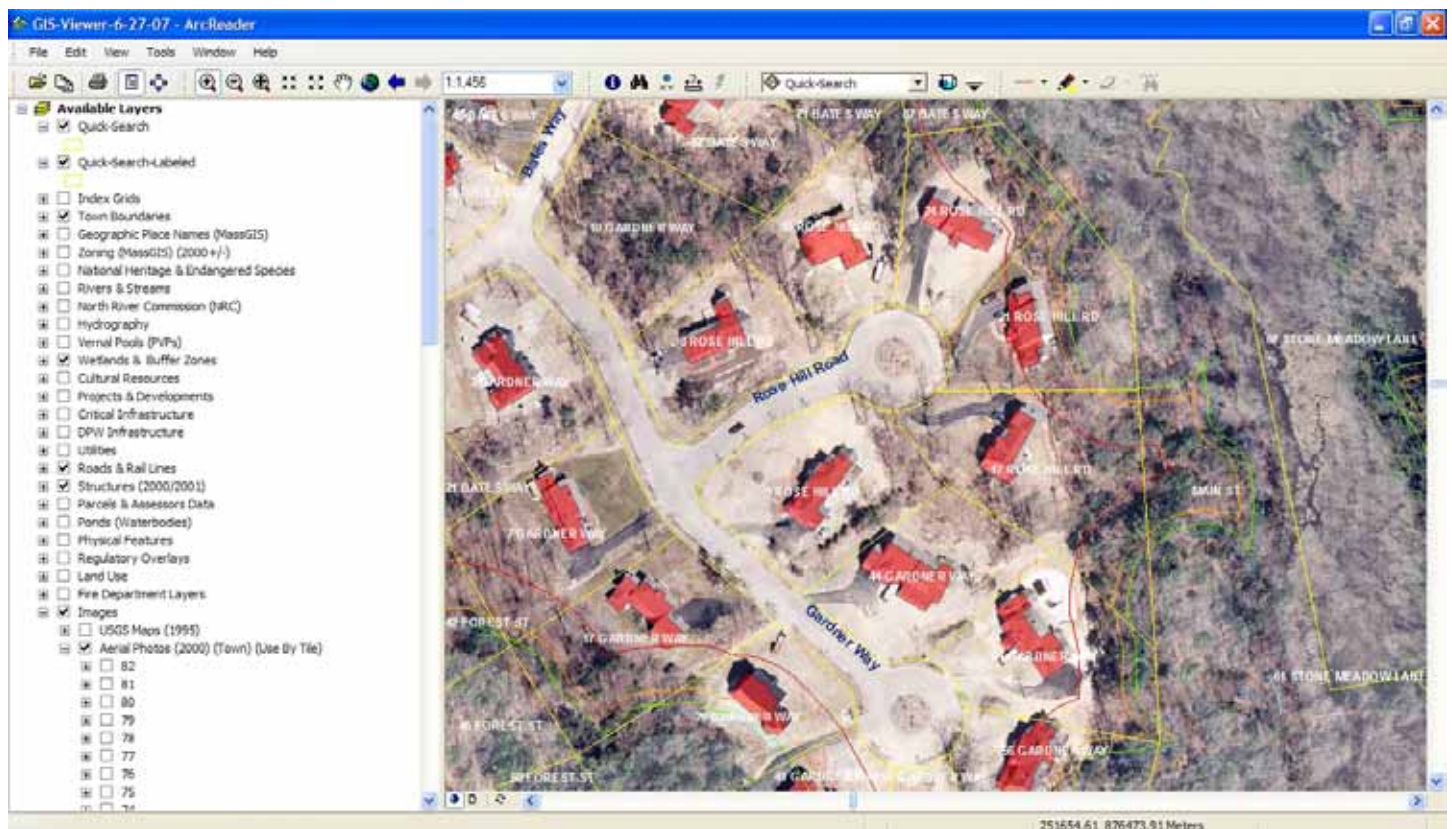
**Figure 15:** Building footprints and wetlands shown with parcels as an overlay to the aerial photographs.



**Figure 16:** A closer view of the Rose Hill Road and Gardener Way neighborhood.

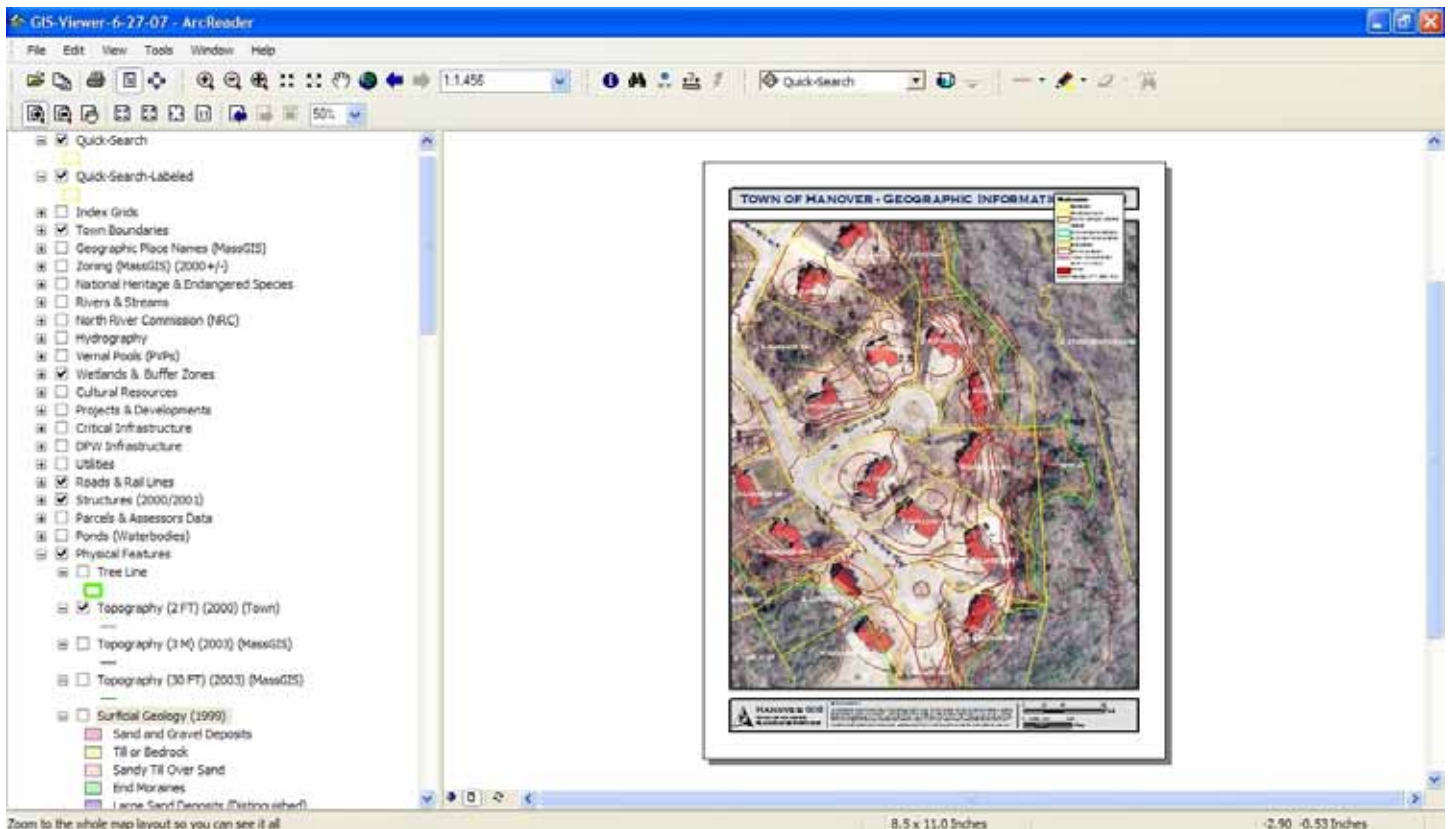
The quality of the aerial photographs is not great at this level. This is because by default the program will use the Massachusetts low-level aerial photographs, which are most recent (2005), but not very high resolution. Let's change that. We'll use the 2000 aerial photographs taken for Hanover. But first we need to know which of the 82 high-resolution aerial photographs we need. There is one image for each of the Assessors map tiles. As such, we know that to see the aerial photographs for this neighborhood we will need to know the number of the Assessors map tile is for this area. Turn on the Index Grids group layer and the Assessors Grid layer. We can now see from the refreshed map that Assessors Tile 21 covers this area of Hanover. As such we will turn on the aerial photograph from 2000 numbered "21."

Turn off the Index Grids group layer. Expand the group layer "Images." (Note: Use the scroll bar if needed to roll up and down the table of contents layer list.) Turn off the 2005 aerial photos and turn on the 2000 aerial photos. Expand the 2000 aerial photos layer to see each of the 82 images by label (each number corresponding to an assessors tile). Click on the check-box next to the image 21. The map will refresh to show this area with a much more detailed photograph, address labels and building footprints. **[Figure 17]** (Note: depending on your interest, the year of the photograph you are using may be important.)

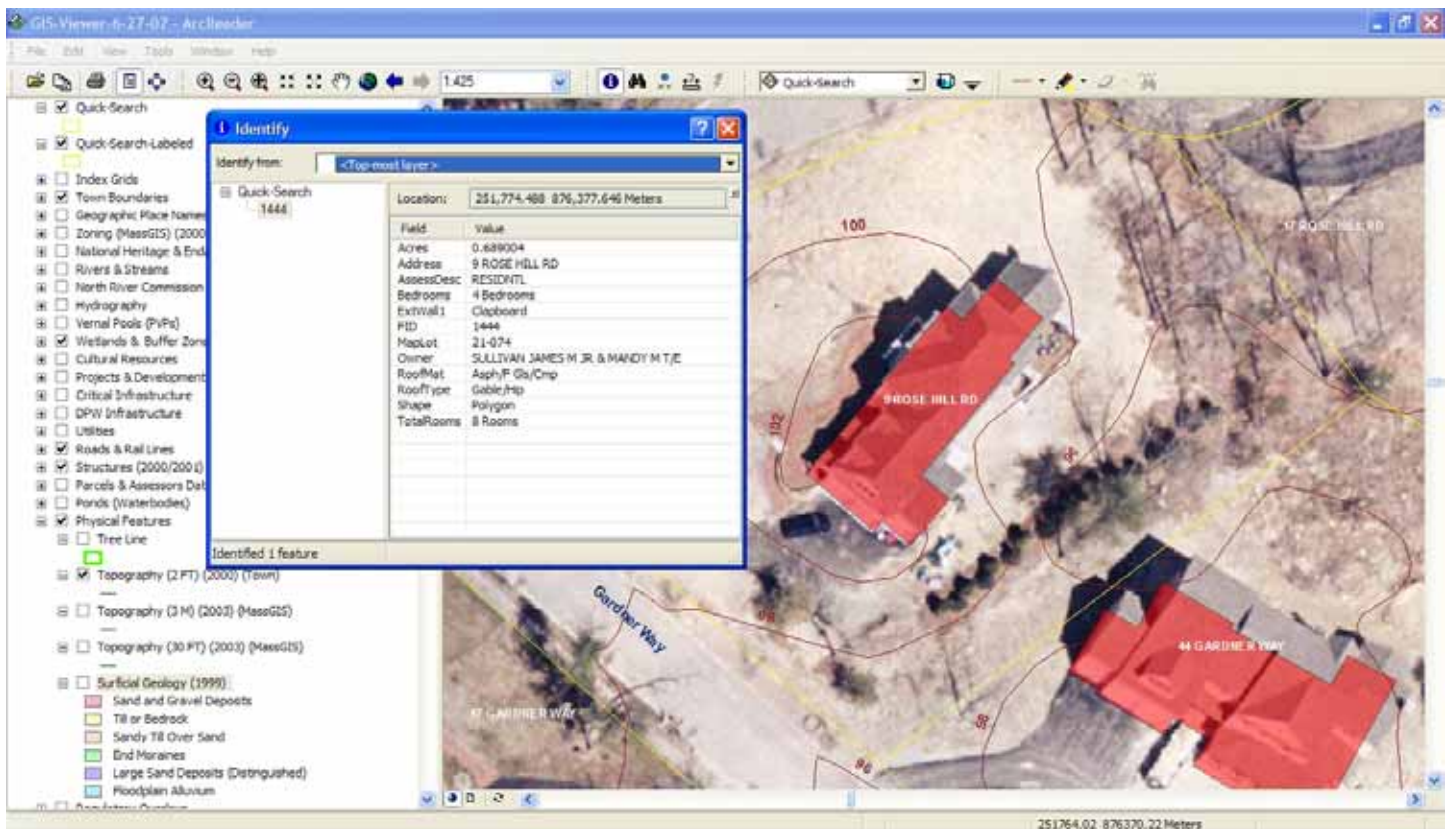


**Figure 17:** A higher quality view of the area/site, but one that is much (five years) earlier.



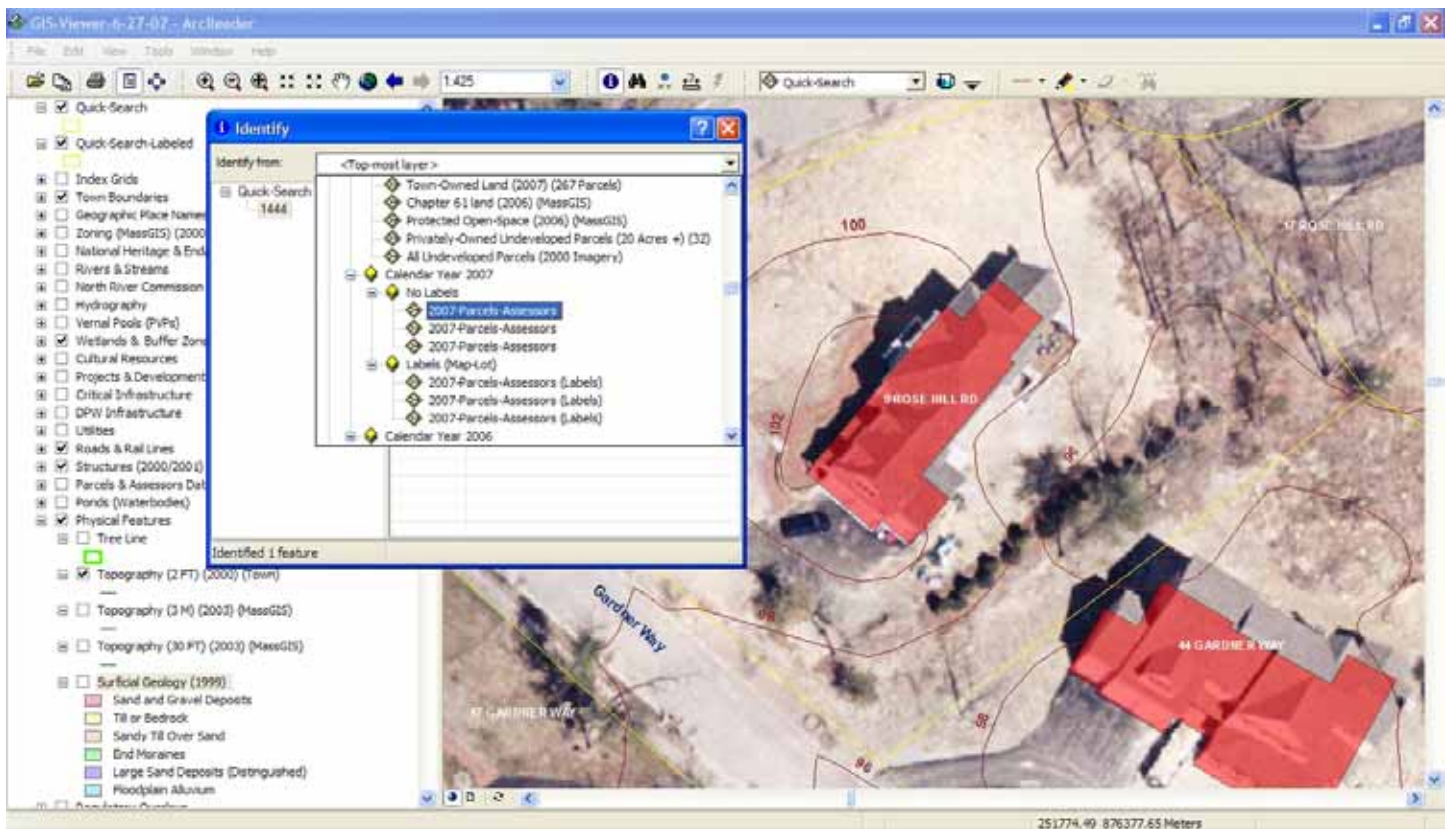


**Figure 18:** The Layout View shows how the map will look on your printer with a standard legend and title block.

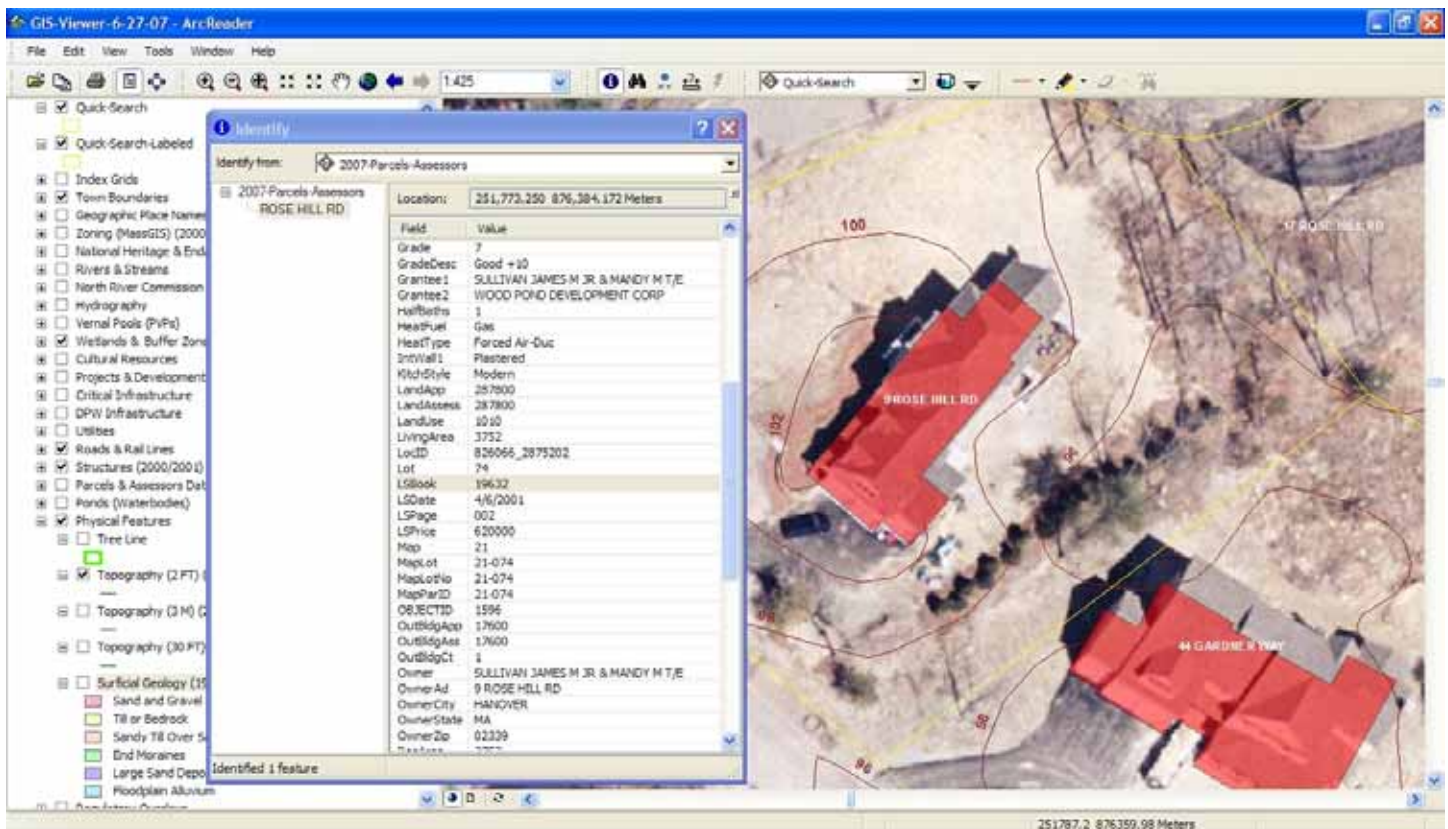


**Figure 19:** Basic Assessor's information from the Quick Search layer and a close-up view of 9 Rose Hill Road.





**Figure 20:** Detailed Assessor's information can be obtained from the 2007 Parcel layer.

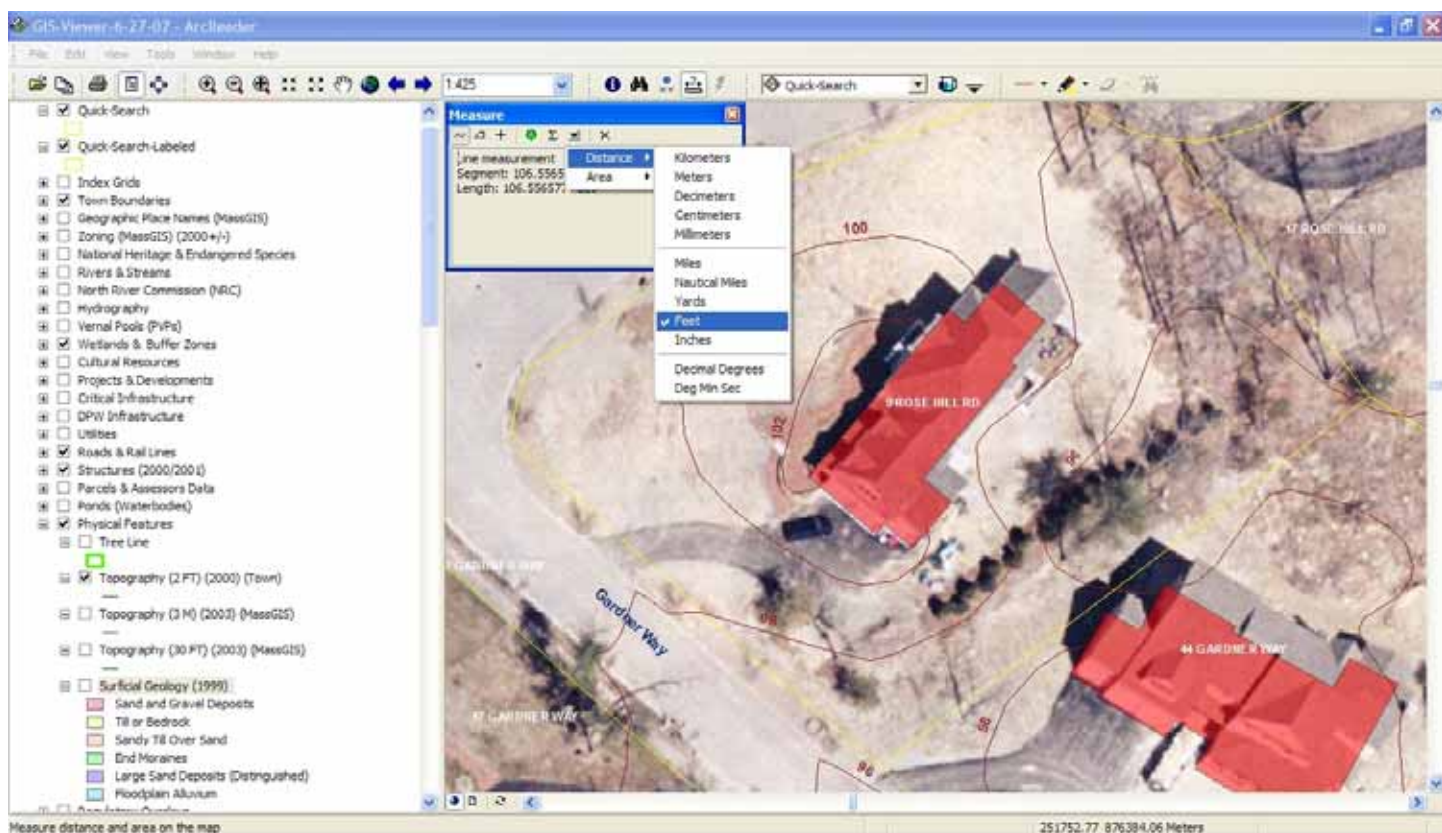


**Figure 21:** Detailed Assessor's information from the 2007 Parcel layer and a close-up view of 9 Rose Hill Road.

Switch to the Layout View to see what your map will look like when printed on an 8.5x11 sheet of paper with standard title block information. **[Figure 18]** Switch back to the Data View to see just the map again. Zoom into 9 Rose Hill Road to get a better look at the parcel. Use the Identify tool to get owner information and other

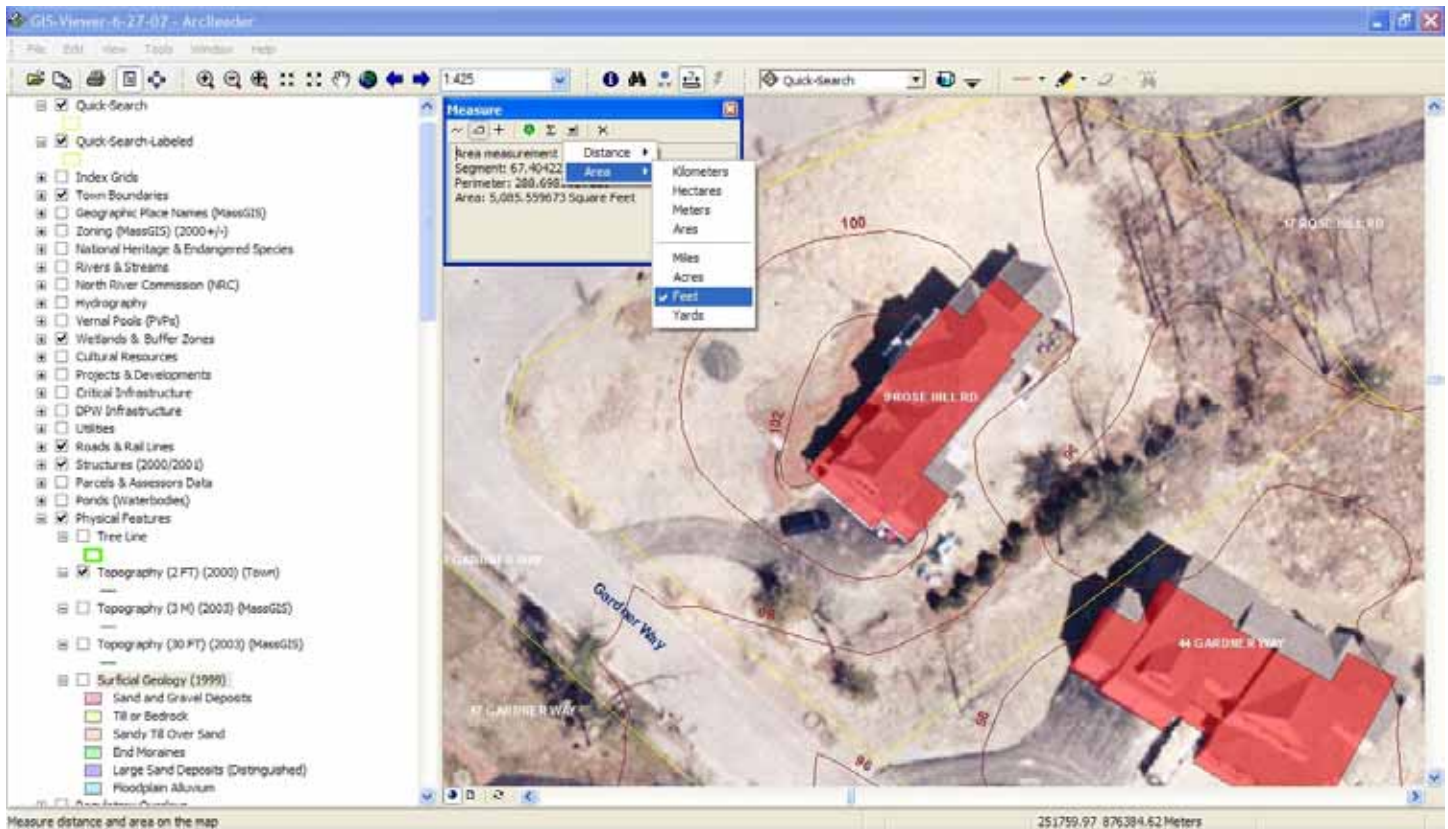
assessor's data by clicking on the parcel (as described above). **[Figure 19]** (Note: By default the viewer will give you (identify) data from the top-most layer. As you can see in the Table of Contents “Quick Search” is the top-most layer. To get additional assessors data, use the pull-down box next to “Identify from” and scroll down to select the layer “2007-Parcels-Assessors.” **[Figure 20]** Click on 9 Rose Hill Road again. This time the program pulls data from the map layer “2007-Parcels-Assessors” which contains all the GIS data we have from the Assessors Office for parcels in the year 2007. **[Figure 21]**

Close the Identify box. Let's take a measurement of the North-East property line for 9 Rose Hill Road. Change to the Measure tool. A new measurement pop-up box will appear. **[Figure 22]** Click on one corner of this lot line and drag a line to the other end of that property line then double click to end the measurement. The measurement pop-up box will indicate this length in meters by default (approx 32 meters). Use the pull-down box “Choose Units” with an icon that looks like a small arrow. Change the distance units to feet. **[Figure 22]** The distance is now converted and measured in feet (approx 106 feet). To measure the area of some portion of the lot, change from the line measurement icon to the area icon, then click to define an area. **[Figure 23]** Double-click when you are done drawing the boundaries of the area to be measured. The default area will be measured in Square Meters. Change the Area measurement units to Square Feet as described above. **[Figure 23]**



**Figure 22:** Taking distance measurements on the map using the measurement tools.





**Figure 23:** Taking area measurements on the map using the measurement tools.

For convenience, each time you start the GIS Viewer it will begin with the original map of the Town. You can then create a map of anything you wish following the instructions above (as applicable). Experiment with different views, scales, and layers to get a feel for the mapping possibilities. These instructions do not detail every layer or tool available, so it is suggested that you explore them yourself to realize the possibilities and understand how the program may help you to search for properties and print maps of parcels, a certain area, or even one of the whole town.

When a new GIS viewer becomes available a copy will be available from the Town Planner to replace this one.

If you have any questions or need additional information, please contact Andrew R. Port, Town Planner by calling the Planning Office at 781-826-761 or by emailing [port.planning@hanover-ma.gov](mailto:port.planning@hanover-ma.gov).