Moose River Basin Information Management System (MRBIMS)
Software: Beta Version Manual

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Table of Content

Welcome to the Moose River Basin Information Management System (MRBIMS)

Introduction

What is MRBIMS?

MRBIMS, often pronounced "Mr. Bims", is a user-friendly, Geographic Information System (GIS)-based software program. It is designed to provide access to a digital catalogue of geographically-referenced records in a unique and thorough manner. These records are bibliographic references of information holdings that are about the Moose River Basin (a watershed in northeastern Ontario, Canada). Currently, the catalogue contains over 9 400 records. Although the data is specific to the Moose River Basin (MRB), other watershed information can be compiled and added to the MRBIMS. At that point, a renaming of the System would be appropriate; maybe, "Basin Information Management System"?

Access to the bibliographic references using MRBIMS is unique, because records can be retrieved based on their relationship to the land. MRBIMS allows you to interactively highlight an area of interest on the map of the MRB, and then uses that input to retrieve records from the "Catalogue" or one of the other *features*. This search method is referred to as a "spatial search". MRBIMS also retrieves records by searching the text of the records of the many databases (text search). Using any one of the three spatial search techniques and combining it with any number of text-searches results in an infinite number of possible search results. The thoroughness of a search is only limited by your understanding of MRBIMS and your imagination.

MRBIMS was created using Microsoft Visual BASIC v5.0 development software with Environmental Systems Research Institute's (ESRI's) MapObjects v1.1 add-on. Microsoft Access v7.0 database software was used to manipulate the Catalogue data. ESRI's ArcView v3.0a was used to manipulate coverages and convert them into ESRI's shapefile format.

Tradmark, Copyright, and Government Use Notice:

Intended Users

MRBIMS will provide products such as computerized GIS-based maps. Such products will assist developers in compiling proposals and help decision-makers who review them. Developers should use MRBIMS….if decision makers suspect that developers have not used MRBIMS, they can use MRBIMS to look for records pertinent to the proposed development. If records are found that were not consulted by the developer, the appropriate measures can be taken by the decision-makers.

Data provided with MRBIMS

Catalogue

The Environmental Information Partnership (EIP) endeavored to collect as much bibliographic data on information and information holdings relevant to the Moose River watershed basin as possible. The 9 400 plus records representing this data was collected, and continues to be collected, based on five (5) categories:

1 Development Activities	– information holdings dealing with development (changes, use, planning, removal, alteration, extraction, depositing, influence)
2 Socio-Economic	– information holdings dealing with sociological and/or economical characteristics of the MRB area.
3 Biophysical	– information holdings about the biology and physical characteristics of the watershed (ecology, ecosystem, regionalism, habitat, species, …)
4 Geological	– information holdings on the geology of the area.
5 Traditional Ecological Knowledge	– information holdings of traditional peoples knowledge of the ecological state or components of the environment (or changes in…) as understood from historic and traditional teachings. (species changes, disasters, lifecycle observations, indicator species, species adaptations, species composition changes, species interactions, …)

The records collected under each category are collectively stored in one database file, often referred to as "the catalogue". Each record may contain the title, the author, the scale, the number of pages, the size, the medium, the date, the source, an abstract and other information about the information holding, but is not a copy of the book, map, database, compact disk, etcetera that is being bibliographically referenced. More importantly, each record is tied in to a geographic location within the MRB (geo-referenced). For example, if a university thesis compares the species composition of two cold-water streams within the MRB, the catalogue would record the bibliographic information about this thesis and the record would be geographically referenced to the location of the two study streams.

Development Activities

As major development on the land base (MRB) was discovered, the actual development sites were geographically recorded. These development activities are individually represented as records within the Catalogue; and, as such, are geo-referenced in the same manner as all other records (see above, "Catalogue"). However, some categories of the development activities have been emphasized and the information about each site has been expanded upon. Emphasis has been put on:

Mining activity
Electric power generation activity
Dams
Forest industry mills

Thematic Maps (map components)

General map components such as lakes, rivers, roads, railway lines, towns, townships, power lines, watershed boundaries, management unit boundaries, and District boundaries are provided by MRBIMS. These map components help users locate an area of interest. For the most part, these map coverages are for display purposes only.

Aquatic Impacts

The information represented here is summarized from a project that investigated impacts on aquatic environments within the MRB. Like most of the data provided by MRBIMS, this too, is in a coverage format. Because of the unique relationship between the Studies, the Study stations (sites), and the Stressors, any related information to the currently displayed feature can be displayed with the click of a button.

What you can do with MRBIMS

You can search for records of interest by interactively placing a *shape*, representing the geographical area you are interested in, on the map. Similarly, a *shape*, useful to your search, can be selected from many pre-defined shapes to perform the same spatial search. Alternatively, the text contained in the records can be searched to select entries of interest to you. Independent of your search method, you can view the information contained in the resulting records by using a browser. The browser also allows you to view the area on the map that the record is about. In the case of

the Catalogue, you can also view and print the name, address, and communication information that indicates where the information holding can be located for viewing. You can print out the content of any record displayed in a browser.

User skill-level requirements

The user will benefit if he/she is familiar with the windows environment and with using a mouse (single-click, click-and-drag, and double-click).

Installation:

System Requirements:

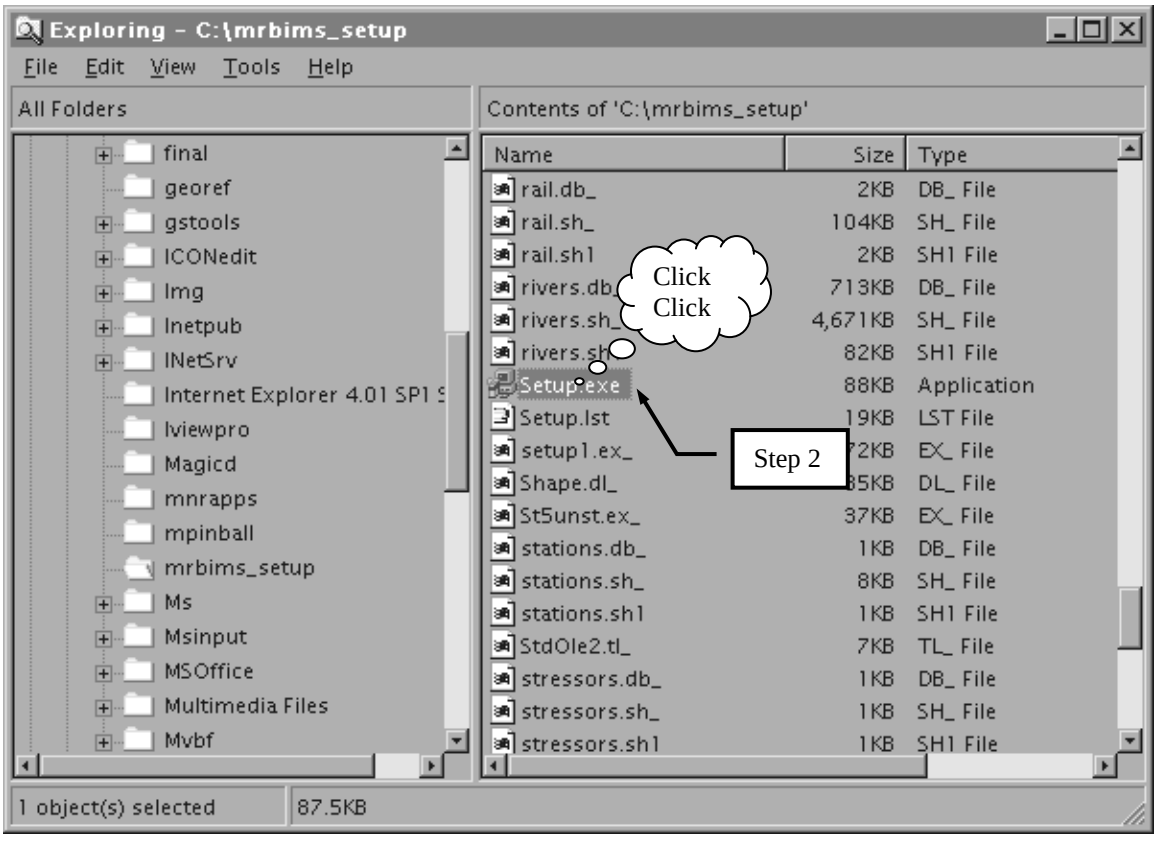
Minimum: Hardware: 16 Megabytes (Mb) Random Access Memory (RAM)
110 Mb hard disk drive space
Pentium 90 Mhz processor
Mouse
Software: Windows ’95 Operating System

Suggested: Hardware: 64 Mb Ram
1 Gigabyte (Gb) hard disk drive space
Pentium II 233 Mhz processor
Mouse
Software: Windows NT Operating System

Installation of MRBIMS:

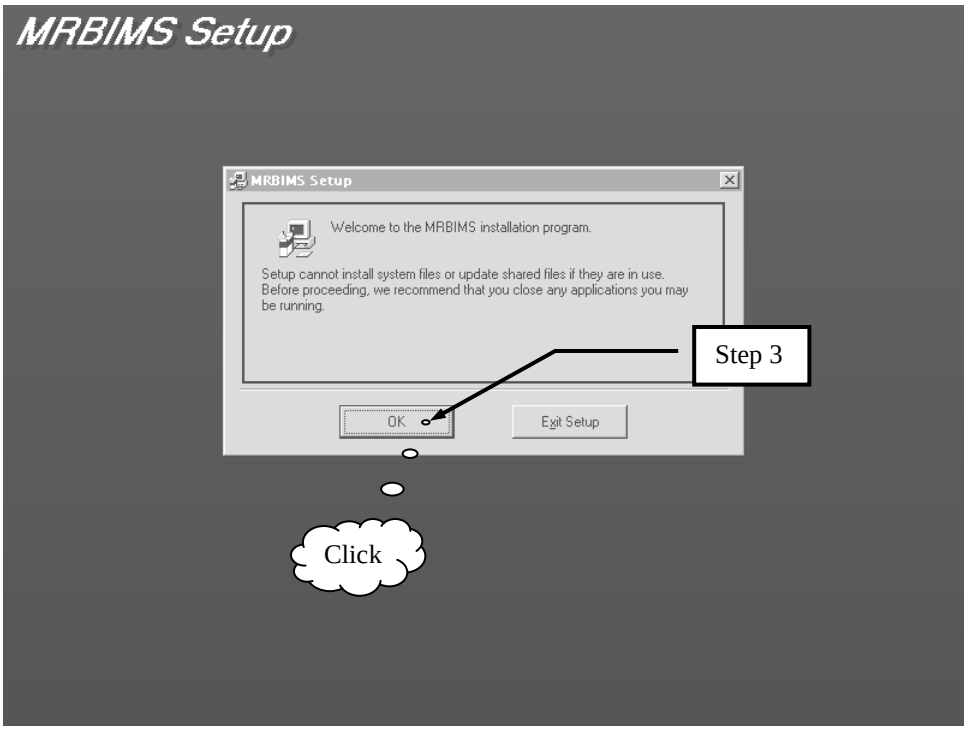
Step 1: Open Windows Explorer and navigate to the location of the setup files. For example, d:\mrbims_setup\.

Step 2: Find the file named SETUP.EXE and double-click over it.



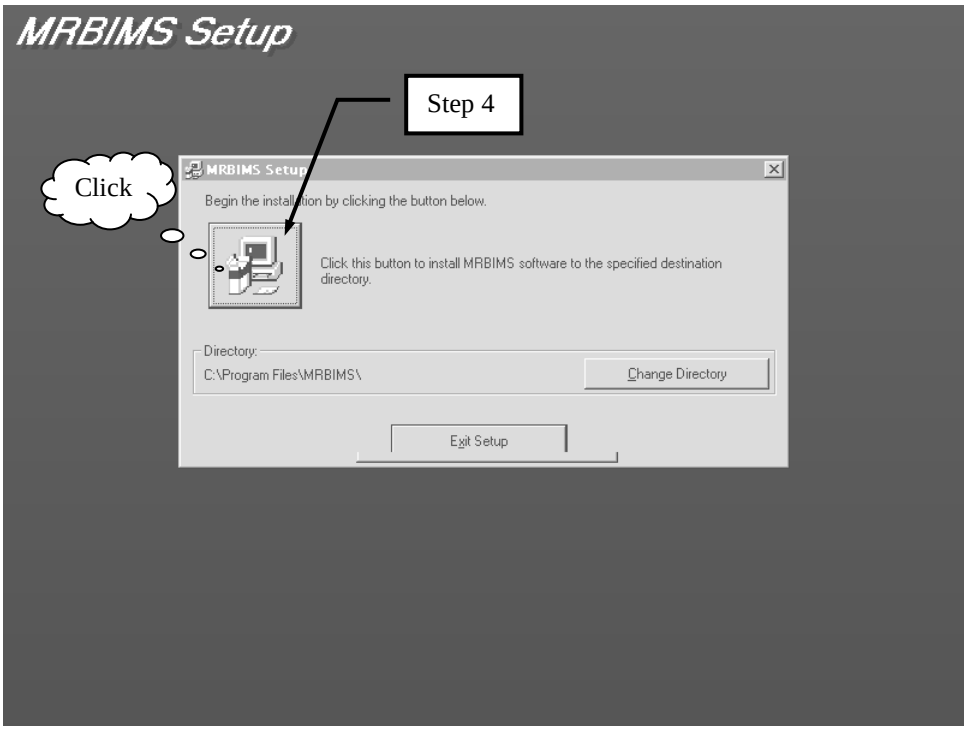
Note: The message “Copying initialization files …” will temporarily be displayed on the monitor.

Step 3: Click on the *OK* button, once all applications are closed.

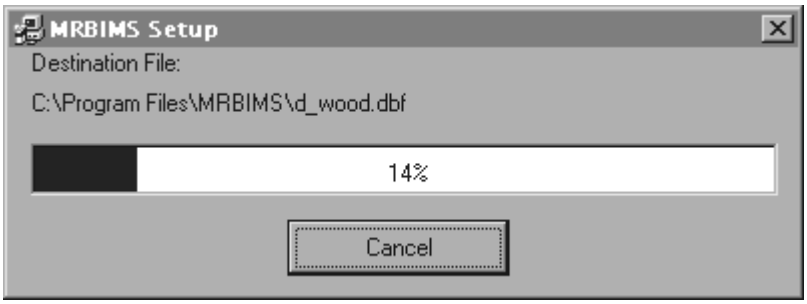


Note: At this point, the setup checks for available disk space.

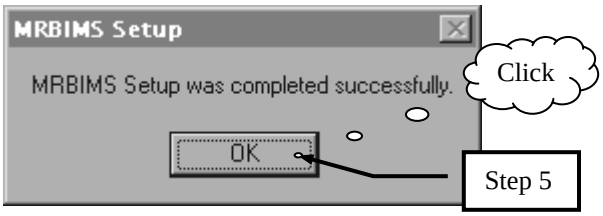
Step 4: If the default directory and location (c:\Program Files\MRBIMS) are **not** acceptable, click on *the Change Directory* button. Otherwise, click on the button with the picture of a computer.



Note: The following window will indicate the progress of the copying of files.



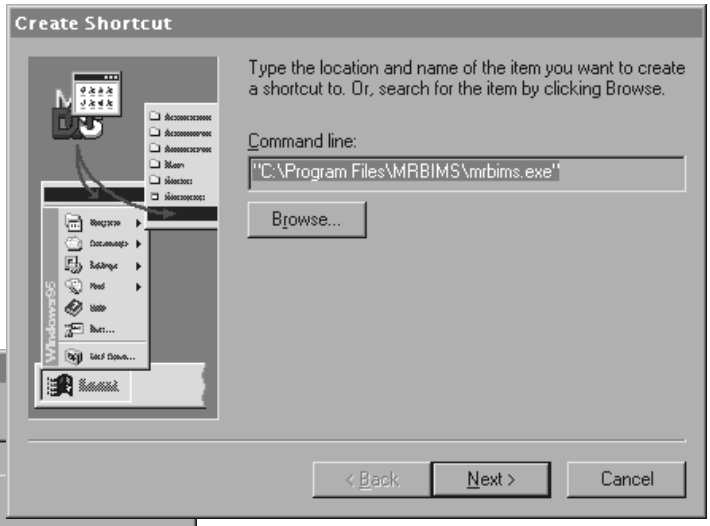
After the system is updated, and the program icons are created, the following message appears:

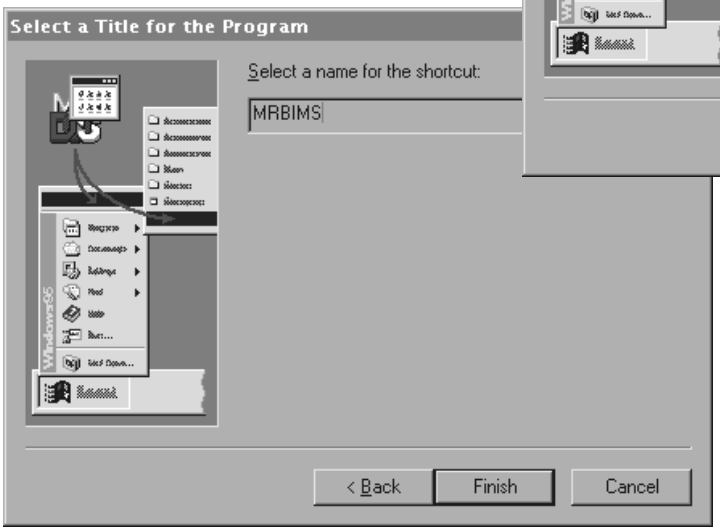


Step 5: Use the mouse and click on the *OK* button to close this message box.

Step 6: Optional. If you would like to create a short-cut icon for MRBIMS on your desk-top; then;

- while your mouse pointer is on the desktop, click the right mouse button,
- select New from the menu,
- select Short-cut Icon,
- enter "c:\program files\mrbims\mrbims.exe", including the double quotations, in the *Command line:* text box. If you installed the program elsewhere, include the path as you entered it during the previous install procedure,
- Click the *Next* button,





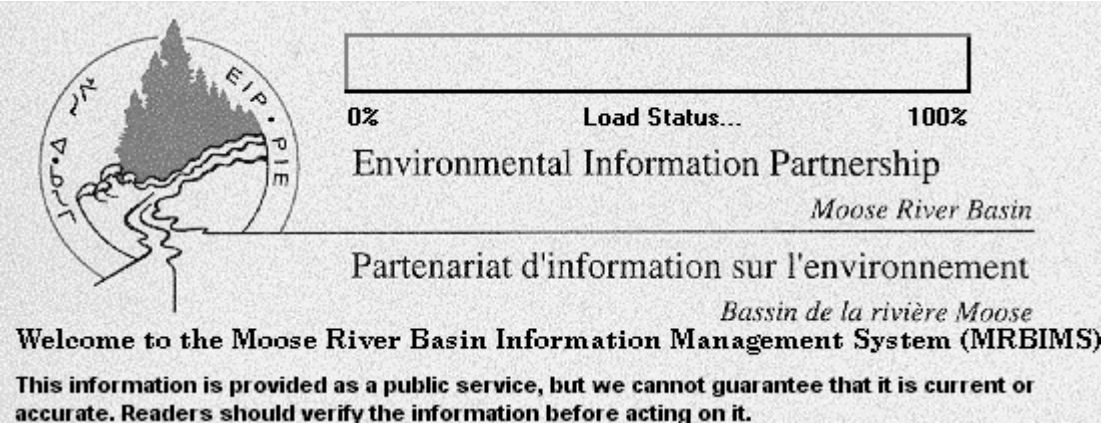
- Enter MRBIMS as the name for the shortcut,
- Click the *Finish* button.

Using MRBIMS:

Getting Started

Opening MRBIMS

Locate the MRBIMS executable file (…\mrbims\MRBIMS.exe) or a shortcut to it on your Desktop and double-click-left-mouse-button over it. A splash window will appear and remain visible until MRBIMS is completely loaded.



Main Window

Once the splash window has closed, the Main Window will open. From this window, the user interacts with the data. While this interaction occurs, other windows will open. These windows will have to be closed before regaining access to the Main Window.

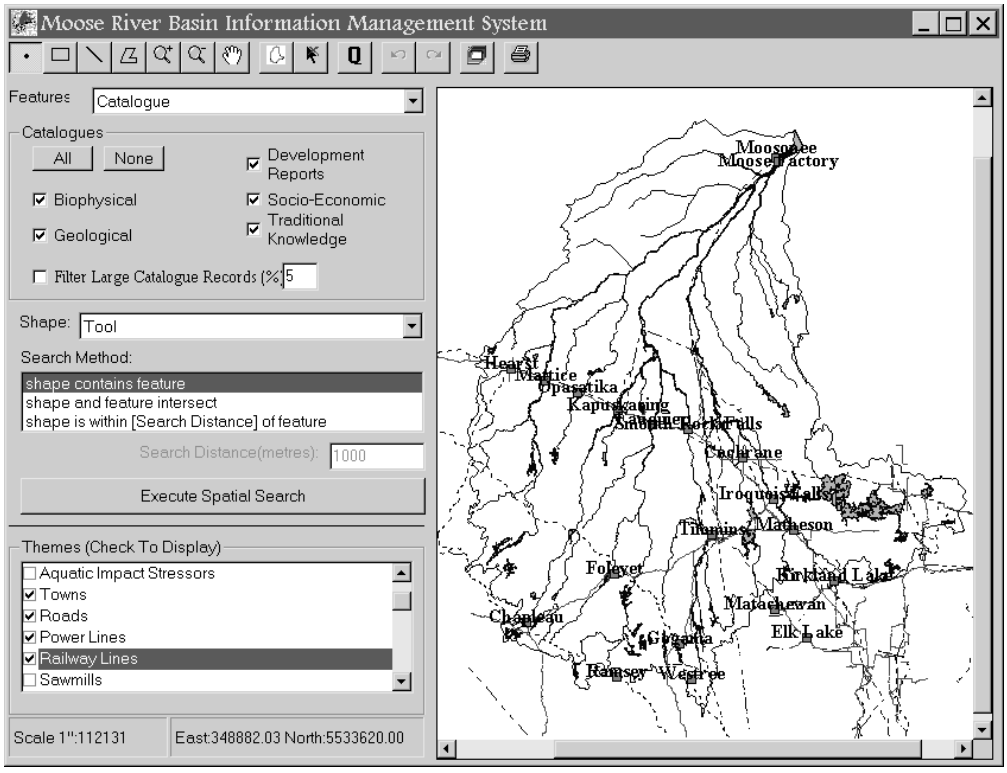


Figure 1: Main Window of MRBIMS.

Close Button

All windows can be closed by clicking on the close button, located in the upper right corner of the window. It is the button with the "X" on it. *Warning! Clicking on the close button on the Main Window closes MRBIMS.*

Fill screen button

Clicking on this button maximizes the window to the full extent of the screen. Maximizing the MRBIMS window results in a larger area to display the map.

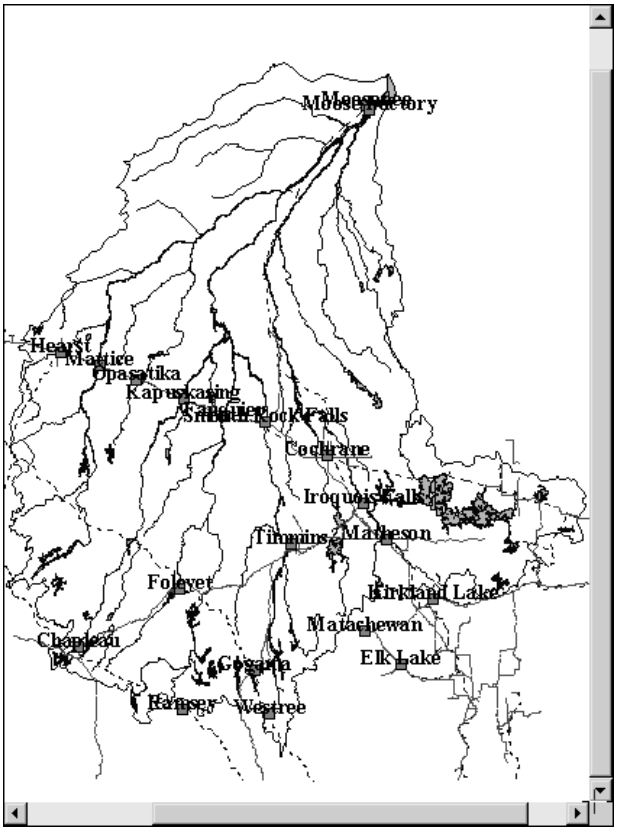
Minimize button

Click this button to remove the window from the screen without closing the program running in the window. The window can be re-opened by going to the task bar and clicking on the task button bearing the program's name.

Resize button

After the Fill Screen button is used, the maximized window will have this button displayed. Clicking it, will put the window in a state that allows you to customize the window's dimensions.

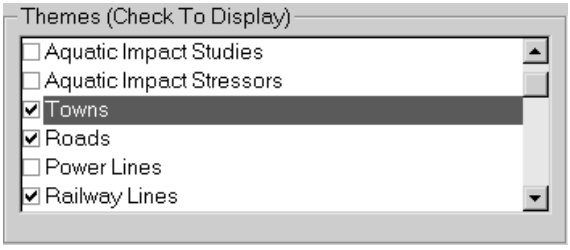
Map Display parts of the Main Window



Map display

Taking up a large portion of the MRBIMS window is the map display. Here, map components, like lakes, river, towns, roads, administrative boundaries, watersheds, and more, can be displayed. The list of map components available can be found in the *Themes (check to draw)* box.

Scale and Coordinates
The representative fraction changes as the map is zoomed in or out. Note, while the mouse pointer is over the *map display* its position is constantly updated. The Eastings and Northings are in units of metres and are based on the Universal Transverse Mercator (UTM) coordinate system; specifically, UTM zone 17.



Themes (Check To Display)
Here, you turn "on" or "off" the map components displayed in the *map display*. Just left-mouse-button-click over the map component you wish to affect.

Buttons:

Zoom in

Allows you to zoom in on an area of interest of the map by either outlining the area with the click-and-drag method or by placing the pointer on the center of the area and clicking. The map *scale* becomes larger.

Zoom out

Zooms out from the position where the pointer was clicked. The map *scale* becomes smaller

Pan

Pan the map in any direction by clicking and dragging the mouse pointer over the *map display*.

Full Extent

Zooms the map to display the entire Moose River Basin within the boundaries of the *map display*.

Clear Selection

Removes any graphics or selection boxes and thereby cleans up the content of the *map display*.

Spatial Query Parts of Main Window

Tool Buttons:

Point search tool

Selects based on a point. The point is indicated by the mouse pointer's position.

Rectangle search tool

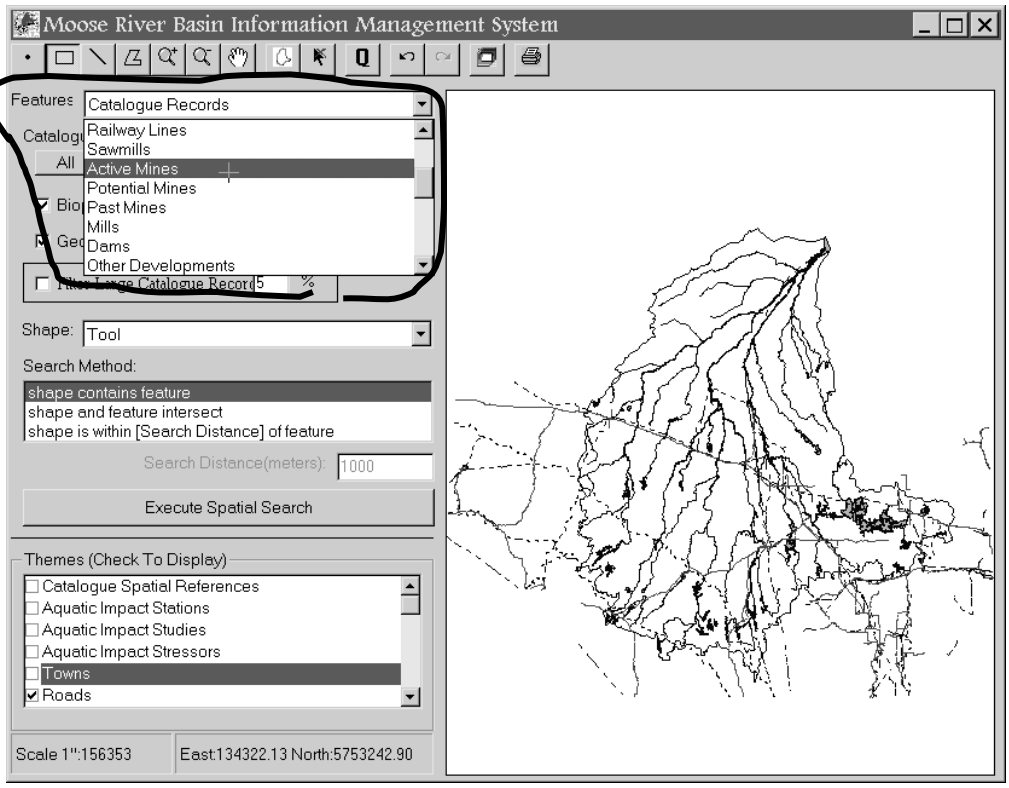
Selects based on a rectangle or square drawn on the *map display*. The mouse "click and drag" method is used to create the rectangle.

Line search tool

Selects based on a line or an arc drawn on the *map display*. The mouse "click, click, …, double click" method is used to create a line. The double click terminates the line.

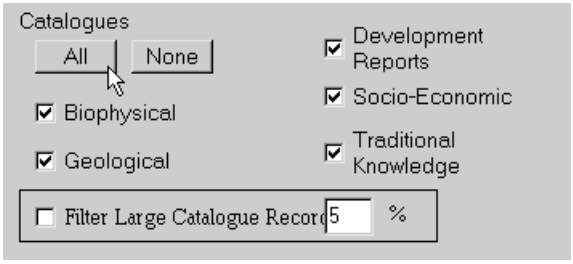
Polygon search tool

Selects based on an irregular polygon drawn on the *map display*. The mouse "click, click, …, double click" method is used to create a polygon. The double click closes the polygon.



Feature

Choose a *feature* that contains the information you want to query and view. Do this by scrolling through the list and clicking on your preference. The default *feature* is "Catalogue", and this *feature* activates the *Catalogues* section of the spatial query section of the *Main Window*. See next.



Catalogues

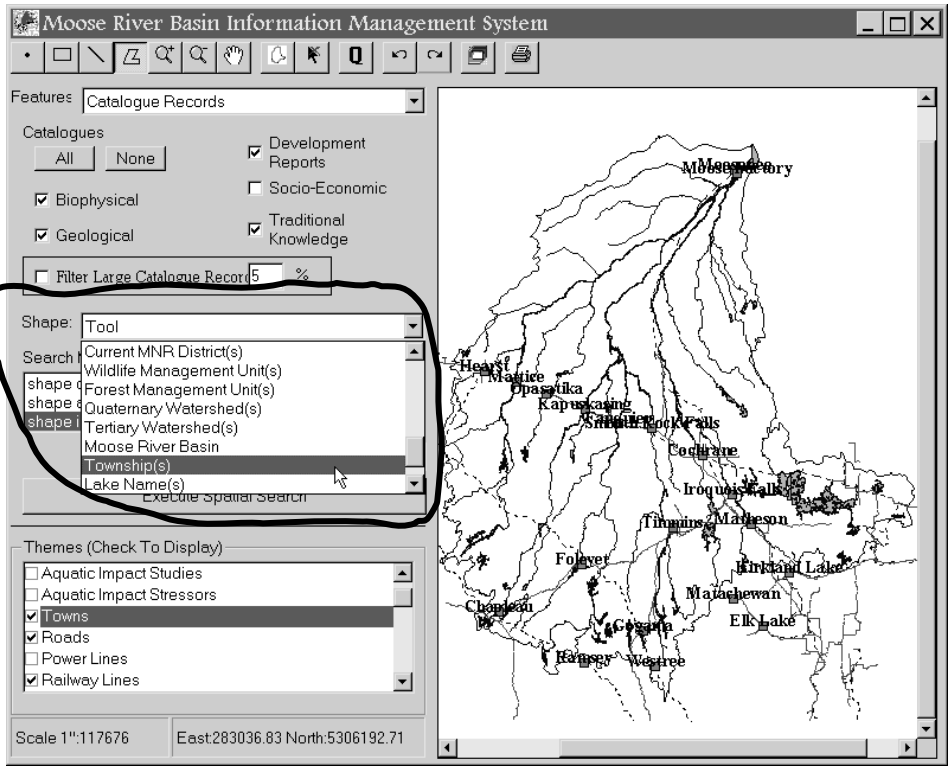
If "Catalogue" is selected in *features*, then this section is active, allowing you to select individual or multiple disciplines, from the five (5) listed.

All The "All" button quickly selects all five disciplines.

None The "None" button deselects all five disciplines.

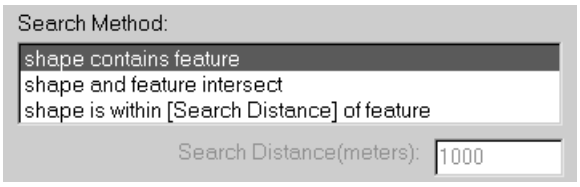
Filter Large Catalogue Records

When "*Filter Large Catalogue Records*" is selected, records from the *feature* "Catalogue" may be purged from the query results. The purging is based on the size of the geographically referenced area linked to each record in the Catalogue. The concept is to eliminate records, which have larger areas than the area of the *shape* used to select the records.



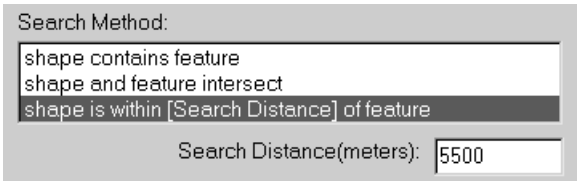
Shape

Choose from the list box the source of the shape you want to be used to select records from the coverage chosen in *Features*. The default *shape* is "Tool" and will allow you to use one of the four tool buttons to draw a custom shape on the map. All other selections are groups of pre-defined shapes that you must select using one of the four *shape* tool buttons.



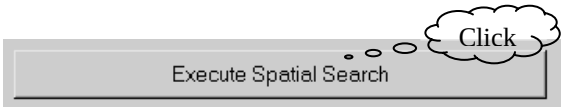
Search Method

The three choices determine how the *shape* will interact with or select from the geographically referenced areas linked to each record in the chosen *feature*. The first *Search Method*, "shape contains feature", indicates that any *feature* that is found entirely within the boundaries of the *shape* will be selected. The second *Search Method*, "shape and feature intersect", it will select *features* that have a common location with the *shape*. The last *Search Method*, "shape is within [Search Distance] of feature", is the most comprehensive but least specific of the spatial search methods. It will select *features* that intersect or are within the 'search distance' of the *shape*. See the Examples section for detail on each *Search Method*.



Search Distance (metres):

When "shape is within [Search Distance] of feature," is selected, a distance in metres (m) can be entered. This essentially enlarges the geographically referenced areas linked to each record, therefore, increasing the chances of selecting the record.



Execute Spatial Search Button

Once you have set the parameters of the spatial search to your liking, start the search by clicking this button.

Remaining Buttons:

Back one Query

Use this button to go back to the results of a previous query. The last five queries are stored for this purpose. Each time this button is pressed, the resulting records from the previous query become the current selected records. A window will open indicating the number of records selected. Then, when you press the *Feature Browser* button, the records will be displayed.

Forward one Query

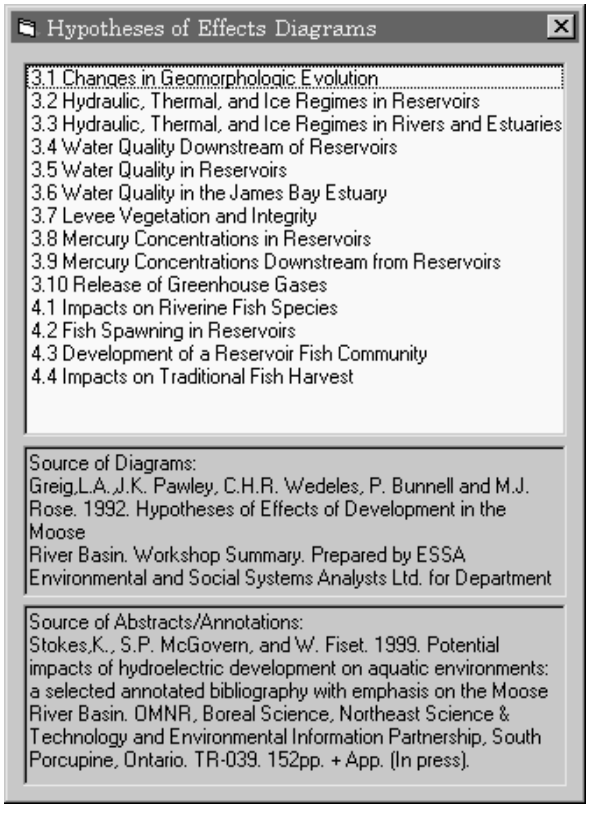
Click this button to return to the results of a more recent query. Sometimes you may click the *Back one Query* button too many times; skipping the results for which you were looking. You would use this button to return to the skipped query results.

Feature Browser

To view the results of the current query, click this button. The browser, designed for the *Feature* you have queried, will open. In most cases, the browser will also draw the geographic extent of the current record on the *Map Display*.

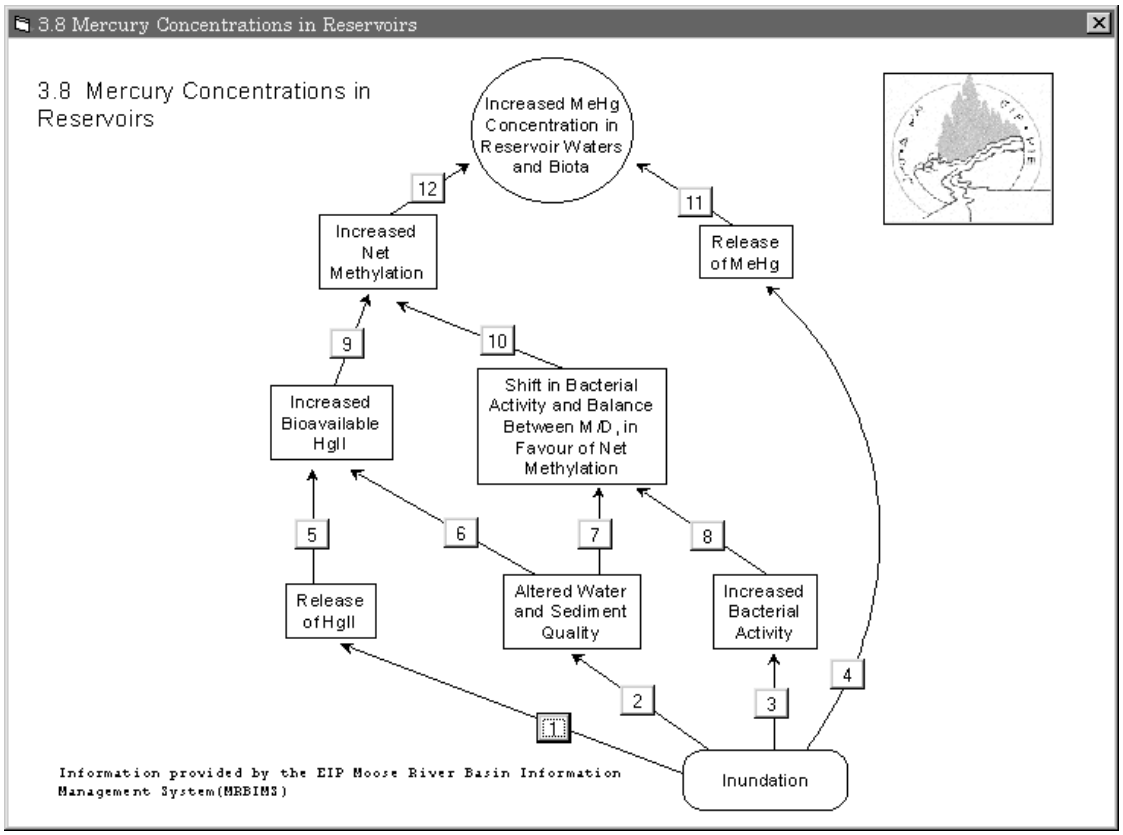
Hypothesis of Effects

To access the Hypothesis of Effects diagrams and related bibliographic references (citation), click this icon. A list of the diagrams will open, allowing you to choose the diagram from which you will be able to view and print the citations.

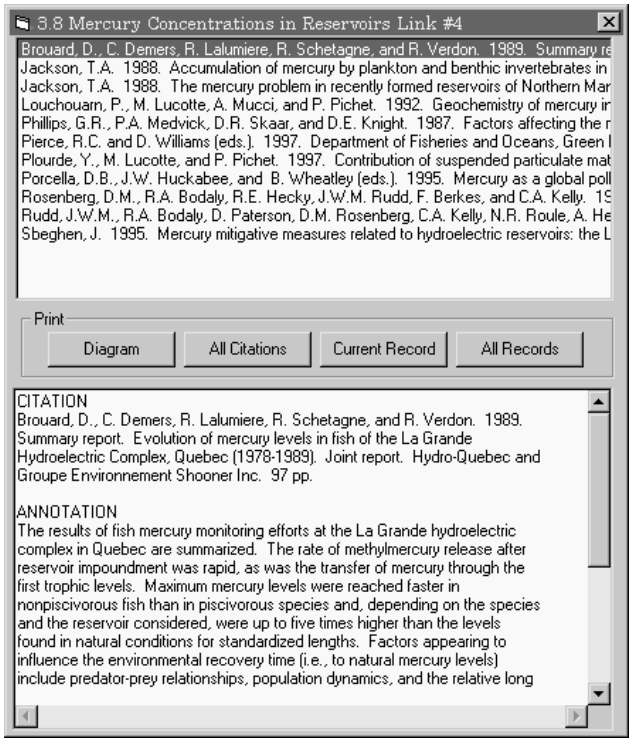


Hypothesis of Effects Diagrams:

Choose from the list the diagram that you are most interested in, by clicking once over the name. In this example, the diagram used is “3.8 Mercury Concentrations in Reservoirs”.



Once the diagram window is open, choose a linkage you are interested in, for example, the link between Inundation and Release of MeHg. Click on the number for that linkage, in this case number 4. This will open the following window which lists the associated citations.



3.8 Mercury Concentrations in Reservoirs Link #4:

This window allows you to select citations that interest you. The full citation, its annotation and keywords are displayed in the lower text box.

Print options:

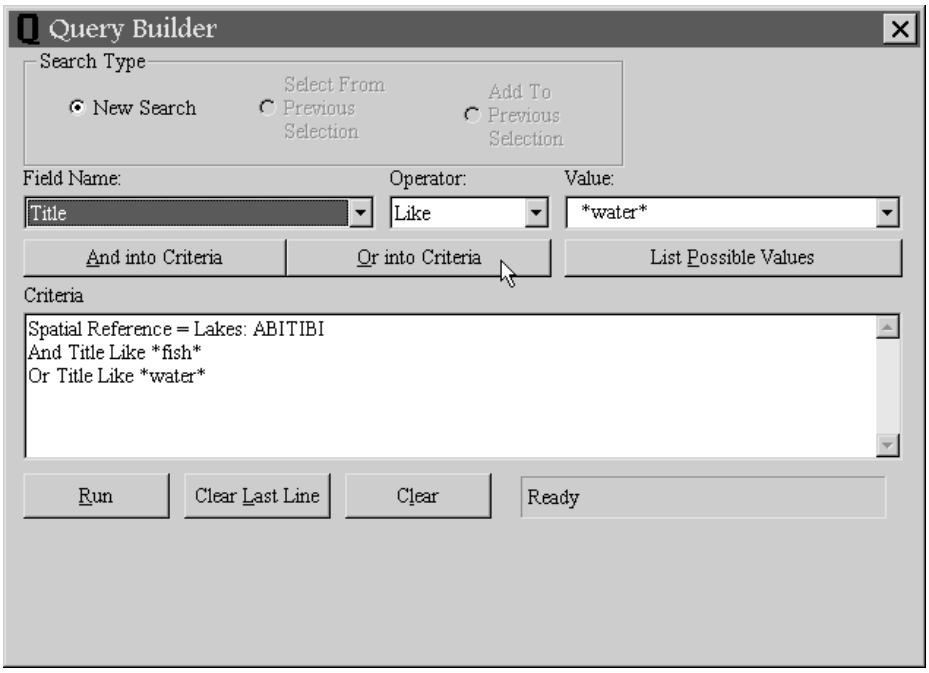
There are four print options: Diagram, All Citations, Current Record, and All Records. The *Diagram* button prints the diagram. The *All Citations* button prints only the citation portion of the all record displayed in the top text box. The *Current Record* button prints the citation, annotation and keywords for the highlighted record. The *All Records* button prints the citation, annotation and keywords for all the records displayed in the upper text box.

Print

Prints the content of the *Map Display* as you see it. Opens the print driver, giving you the option of redirecting the print job to an alternate printer.

Query

Click this button to open the *Query Builder* window.

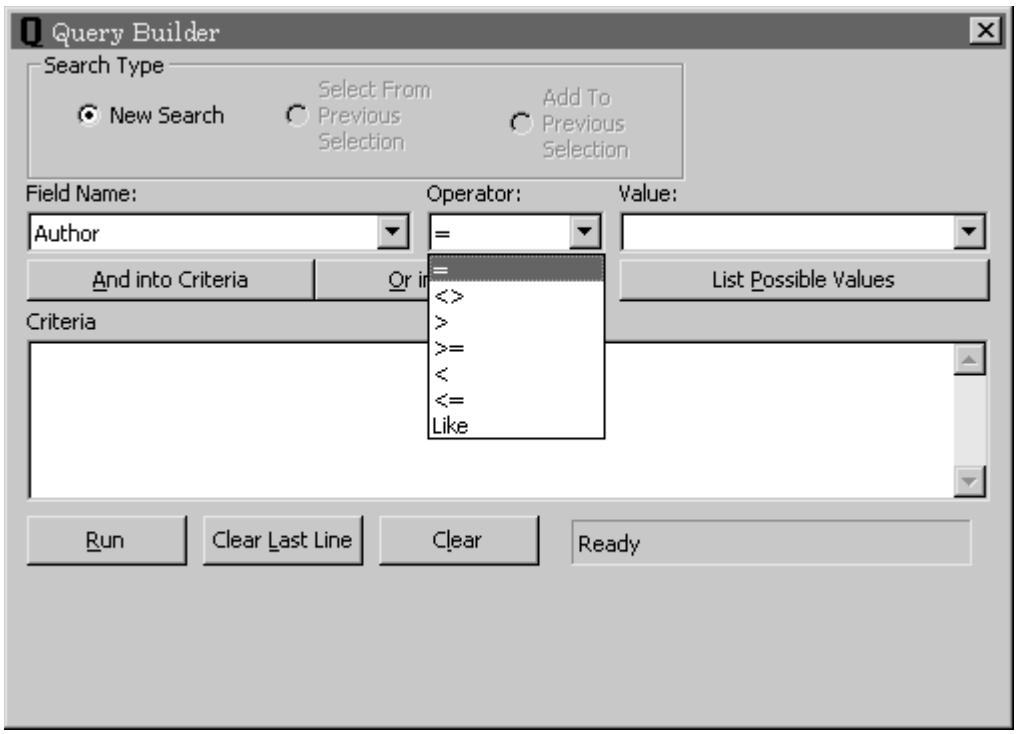


Query Builder

Once open, the *Query Builder* allows you to choose a "Search Type", and search the fields in the selected *Feature*. Individual searches can be combined with the "AND" or "OR" options. This adds to the complexity of the query. The "Search Type" has three choices: 1."New Search" will search all records in the selected *Feature*; 2."Select Form Previous Selection" will only search the records resulting from the previous search; and, 3."Add To Previous Selection" allows you to search all the records in the selected *Feature*, but then adds the selected records to the previous record selection before displaying the total resulting records.

The information contained in a *Feature* is organized into fields. You choose the field that has the information you want to query by selecting from the list box entitled "Field Name:". For some users, choosing an "Operator" will be the most difficult decision. It may help to think of the "Field Name", "Operator", and "Value" as parts to an equation. So, if you were looking for a specific word (value) like "trout" in the "Title" field, then, you would use the operator '='. Other available "operators" are:

<>	Field Name **not equal to** Value
>	Field Name **greater than** Value
>=	Field Name **greater than or equal to** Value
<	Field Name **less than** Value
<=	Field Name **less than or equal to** Value
like	Field Name **that has similarities to** Value



The last "operator", 'like', is the most versatile. When using 'like', the wildcard '*' can be used to replace any character(s) that may fall in that location of the specified "value". For example, if you were looking for information dealing with 'harvests', you may use the following "Criteria" to retrieve records containing the word(s) 'harvesting', 'harvester', 'harvests', 'timber harvest', and 'harvest'.

Title Like "*harvest*"

'Like' also ignores the difference between UPPER CASE and lower case so, for example, 'Bear' and 'bear' would be selected even if 'BEAR' was used.

Title Like "BEAR"

The '>', '>=', '<', and '<=' "operators" treat the alphabet just like numbers. So, when the criteria is:

Author >= w
And Author < x

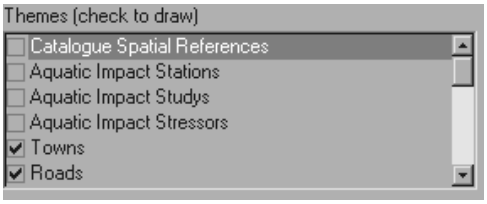
only records that start with 'w' in the 'Author' field will be selected.

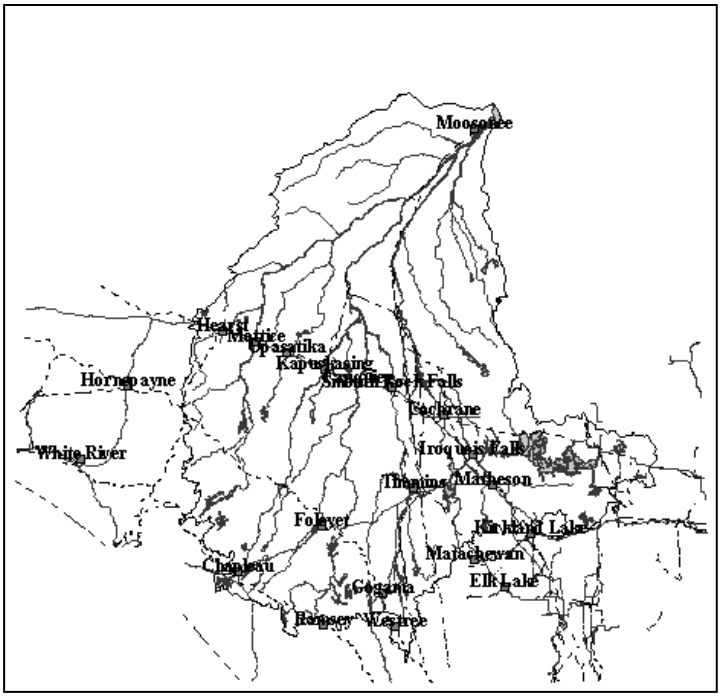
The Basic Functions of MRBIMS

Drawing Themes (or map components)

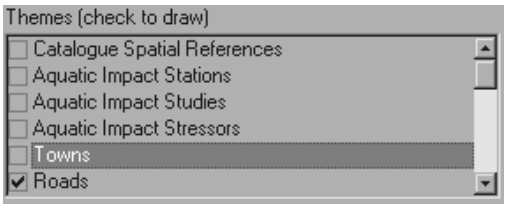
Before performing any searches, you should choose a combination of themes (map components) that assist you. To draw a theme in the *map display*, simply left-mouse-click over the theme's name in the *Theme (Check to Draw)* list box. A check mark will appear beside the name. Click, again, on the theme's name and the check mark disappears, removing the graphics from the *Map Display*.

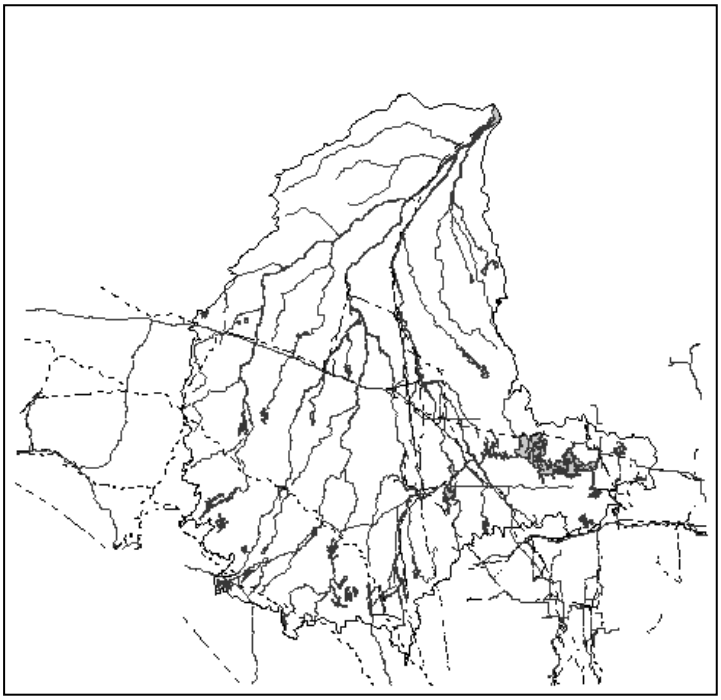
For example, **Roads** and **Towns** themes are checked "on" and are displayed in the *map display*.



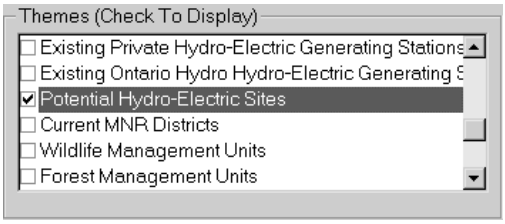


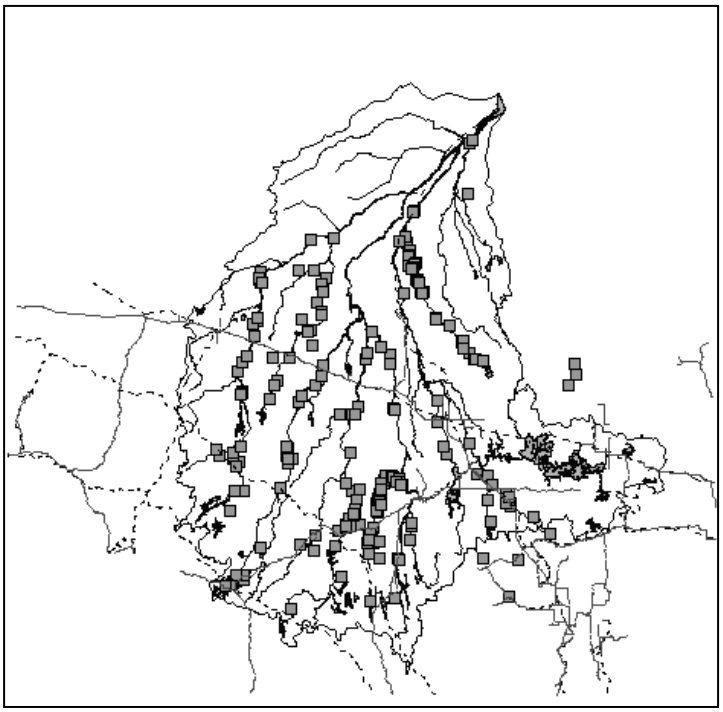
When **Towns** is checked "off" the *map display* is updated, as seen here.



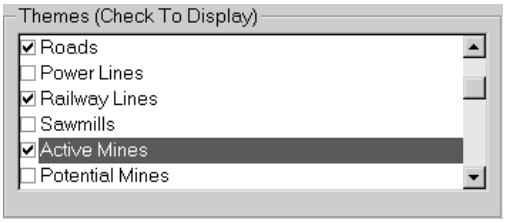


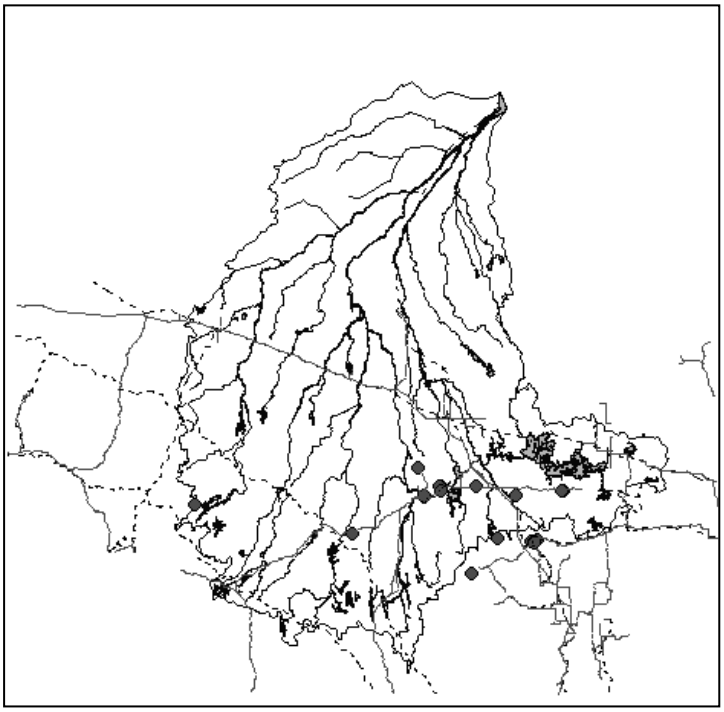
Here is the display when the theme **Potential Hydro-Electric Sites** is turned "on".





Again, note the changes to the *Map Display* when the theme **Active Mines** is selected from the *Themes (Click to display)* box.





Scale Dependent Detail

Some of the themes are displayed with more detail as you zoom in and the scale increases.

 To "zoom in" use the *Zoom Button*.

The next three images demonstrate how the themes, **Rivers** and **Lakes**, display more detail as the scale of the map is increased.

Figure 2: At a scale of 1:91 985, the display is only showing major rivers and large lakes.

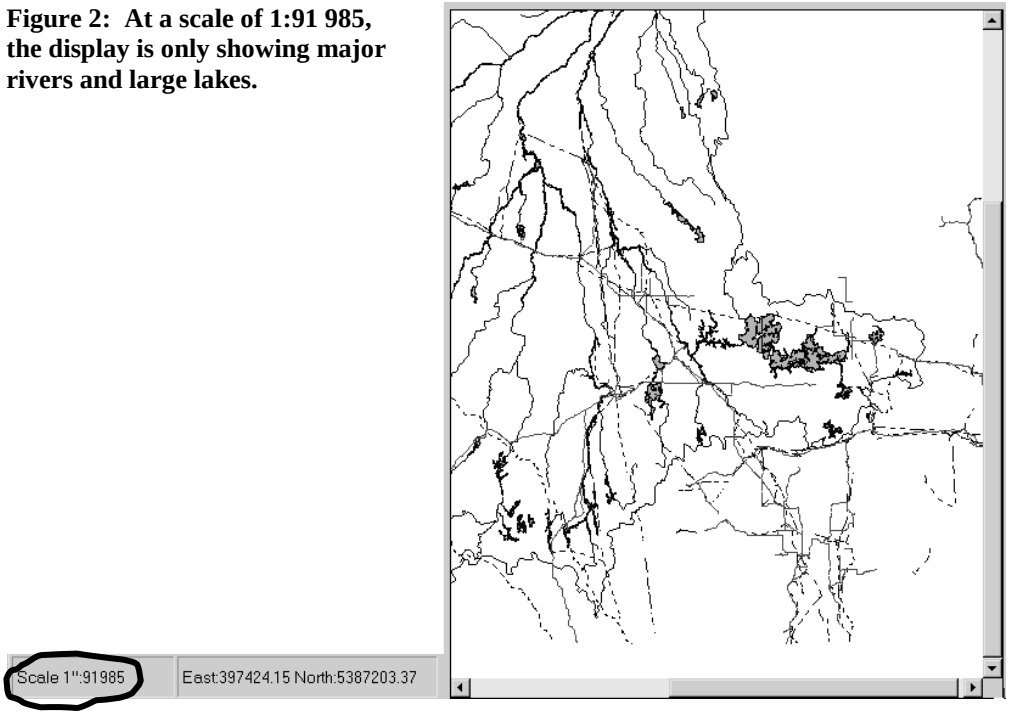


Figure 3: When the scale increase to somewhere near 1:73 251, the smaller lakes show up in the display.

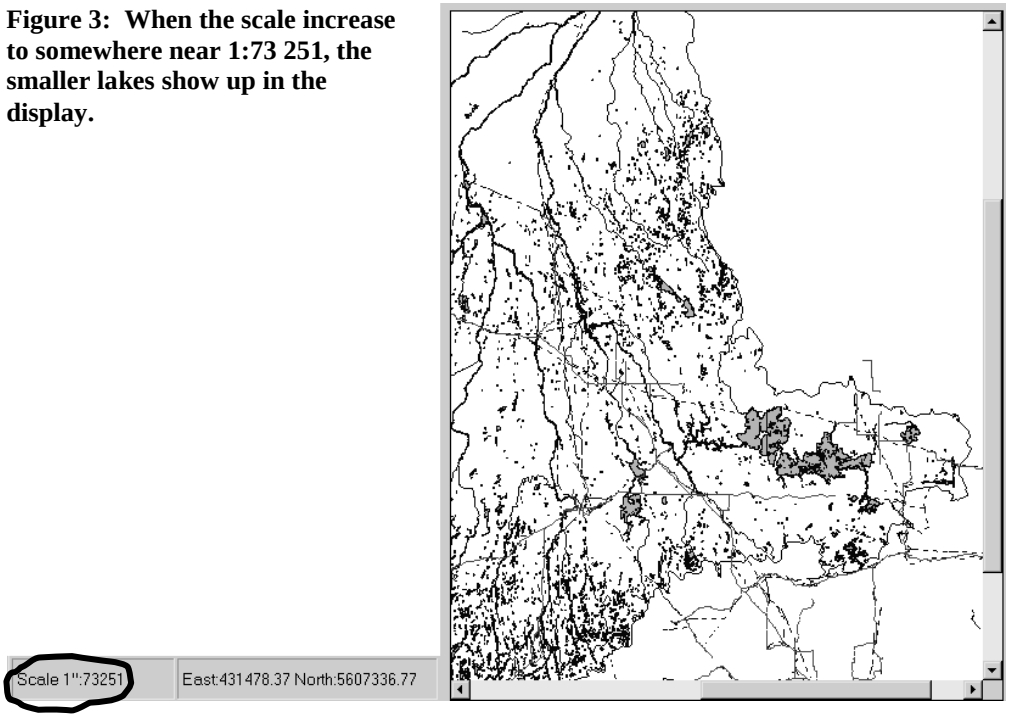
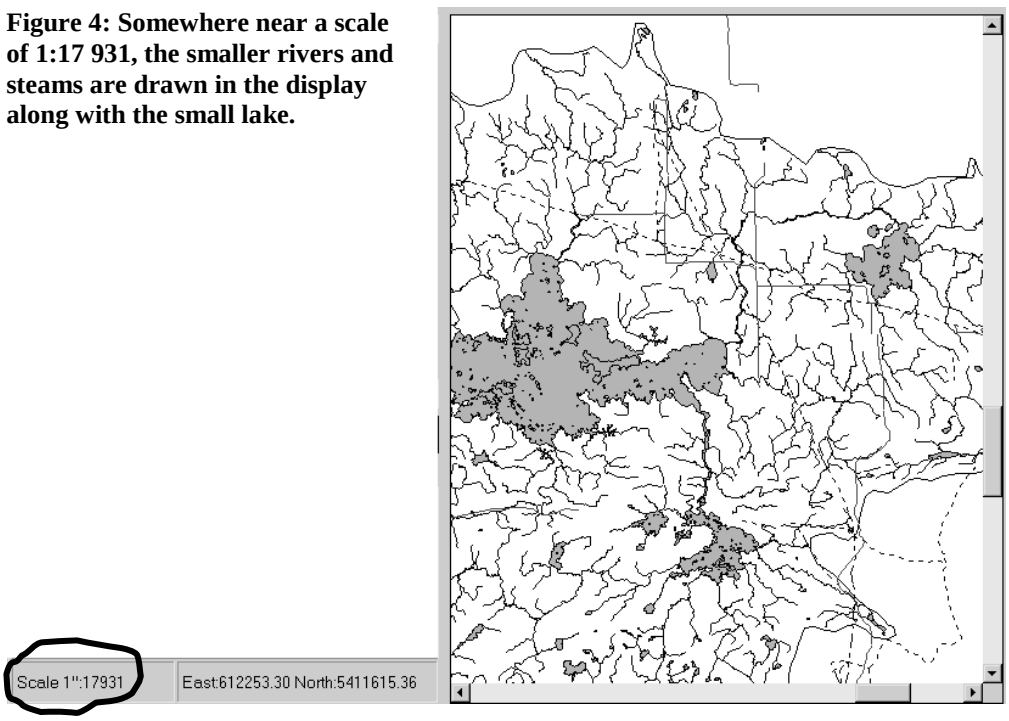


Figure 4: Somewhere near a scale of 1:17 931, the smaller rivers and steams are drawn in the display along with the small lake.



Querying Spatially

You perform a spatial query when you want to select records based on the geographic location to which the records are linked. The concept is relatively simple: 1. Choose the data set that has the information that interests you, 2. Draw or choose a *shape* that delineates the area on the map in which you are interested, 3. Start the query. There are more detailed steps in MRBIMS that make it flexible and comprehensive; but, the concept is still apparent.

Examples of Simple Spatial Queries

Spatial Example 1

Purpose: Demonstrate the steps of a simple spatial query and to illustrate the common query browser.

Feature: Existing Ontario Hydro Hydro-electric Generation Stations

Shape: Tool

Search Method: shape contains feature

Tool: Rectangle Search Tool

Scenario: You are from the Timmins area and are familiar with the geography. You heard on the radio that Ontario Hydro is fixing one of its hydro facilities near Timmins. This peaks your interest so you turn to MRBIMS.

Step 1: Set the map display by zooming in on the Timmins area. Turning “on” Roads, Railways, Lakes, Rivers, and Towns using the *Themes (Click to display)* box will assist you in delineating the geographic area around Timmins.

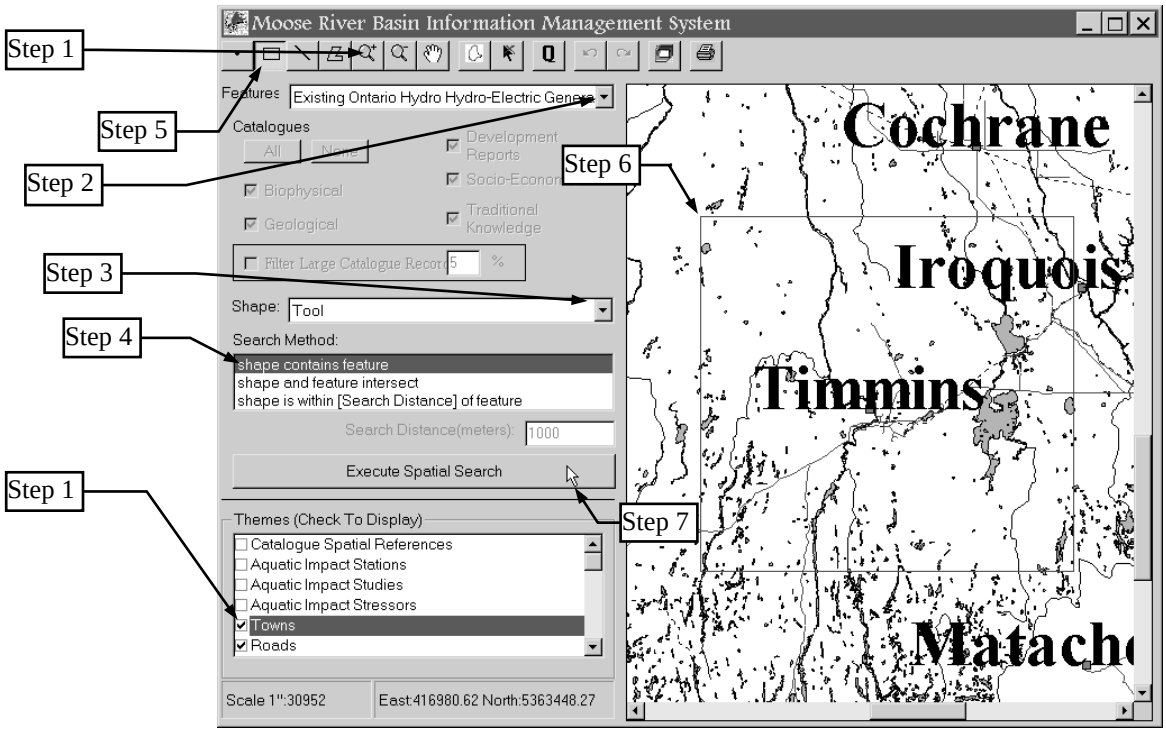
Step 2: Choose “Existing Ontario Hydro Hydro-electric Generation Stations” in the *Features* list box.

Step 3: Choose “Tool” in the *Shapes* list box.

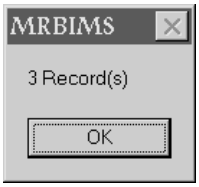
Step 4: Choose “shape contains feature” from the *Search Method* list box. This method of searching insists that the geographic extent of the generating stations be entirely in the boundaries of the *shape*.

Step 5: Choose the “Rectangle Search Tool” located on the tool bar at the top of the *Main Window*.

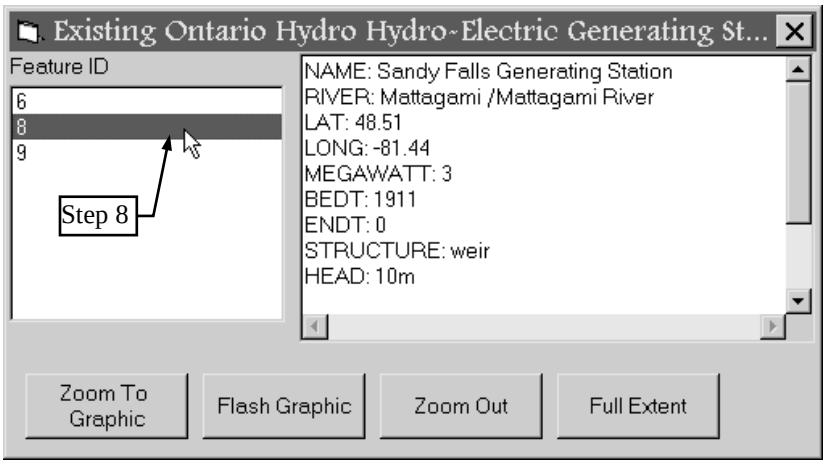
Step 6: Draw a rectangle on the *Map Display* that encompasses Timmins and the surrounding area. Use the click and drag method.



Step 7: Start the query by clicking the *Execute Spatial Search* button. A message box indicating the number of records retrieved from the feature "Existing Ontario Hydro Hydro-electric Generation Stations", will appear. Clicking on the "OK" button will open the **query browser**, where you can view the content of the retrieved records.



Note: At this point, you have no access to the Main Window, but you can change the map display by clicking the four buttons on the bottom of the browser window.



Step 8: Click on the different values in the *Feature ID* box to locate the generating stations and view the information about the stations. The highlighted generating station will appear green on the *map display* and the browser window will display the information for that station.

Step 9: Once you finish browsing, leave the browser window by clicking on the *close button*. 

Note: *Features* that have a similar "Query Browser" are:

Towns
Roads
Power lines
Railway lines
Sawmills
Active Mines
Potential Mines
Past Mines
Mills
Dams
Existing Private Co-generation Generating Stations
Existing Private Hydro-electric Generating Stations
Existing Ontario Hydro Hydro-electric Generating Stations
Potential Hydro-electric sites
Current MNR Districts
Wildlife Management Units
Forest Management Units
Quarternary Watershed
Tertiary Watershed
Moose River Basin
Townships
Rivers
Lakes

Spatial Example 2

Purpose: Demonstrate the steps of a simple spatial query and to illustrate the "Aquatic Impact Studies Browser"

Feature: Aquatic Impact Studies

Shape: Tool

Search Method: shape contains feature

Tool: Rectangle Search Tool

Note: This example will reinforce the concepts covered in *Example 1* by performing a similar spatial search. The difference being: 1. the location of the search, and 2. the modified Browser window specific to all the Aquatic Impact *features*.

Step 1: Set the map display by zooming in on Timmins area. Turning "on" Roads, Railways, Lakes, Rivers, and Towns may assist you in locating this area.

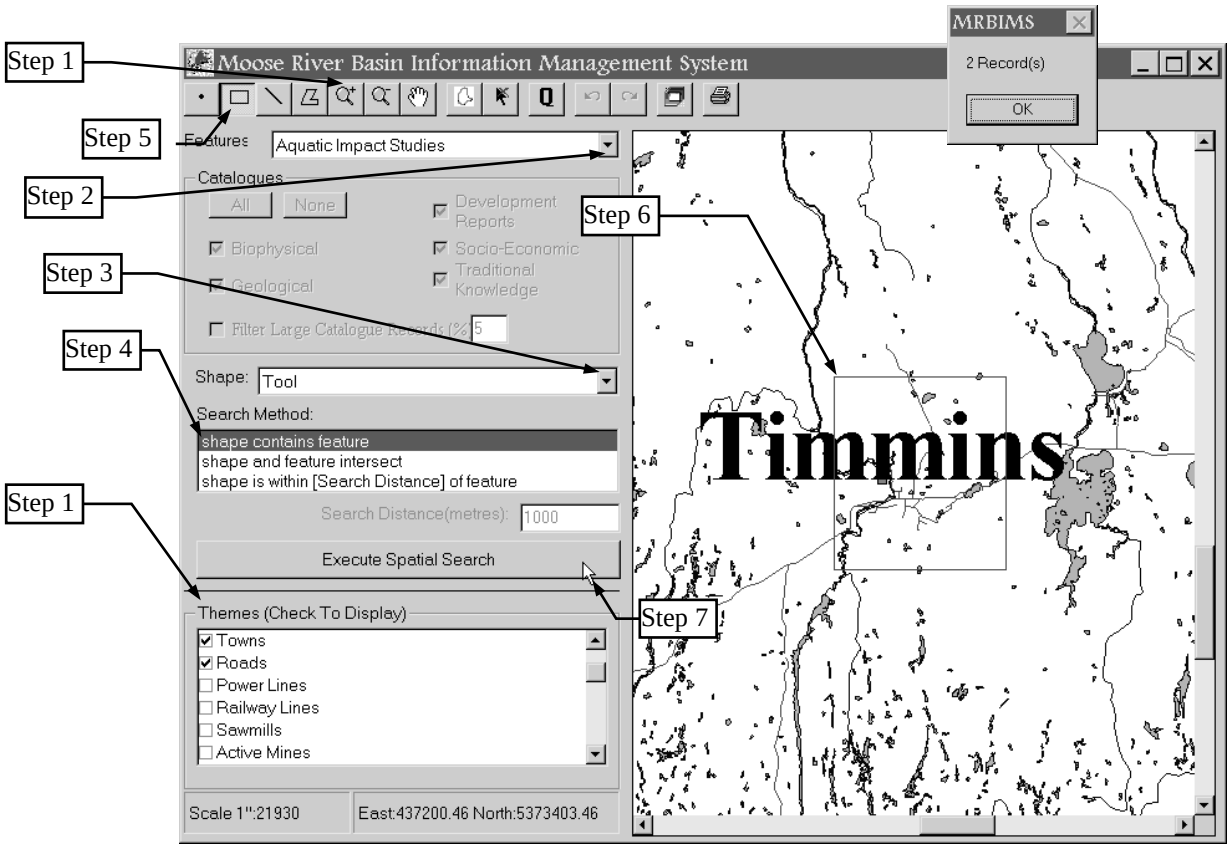
Step 2: Choose "Aquatic Impact Studies" in the *Features* list box.

Step 3: Choose "Tool" in the *Shapes* list box.

Step 4: Choose "shape contains feature" from the *Search Method* list box. This method of searching insists that the geographic extent of the "Aquatic Impact Studies" be entirely in the boundaries of the *shape*.

Step 5: Choose the "Rectangle Search Tool" located on the tool bar at the top of the *Main Window*.

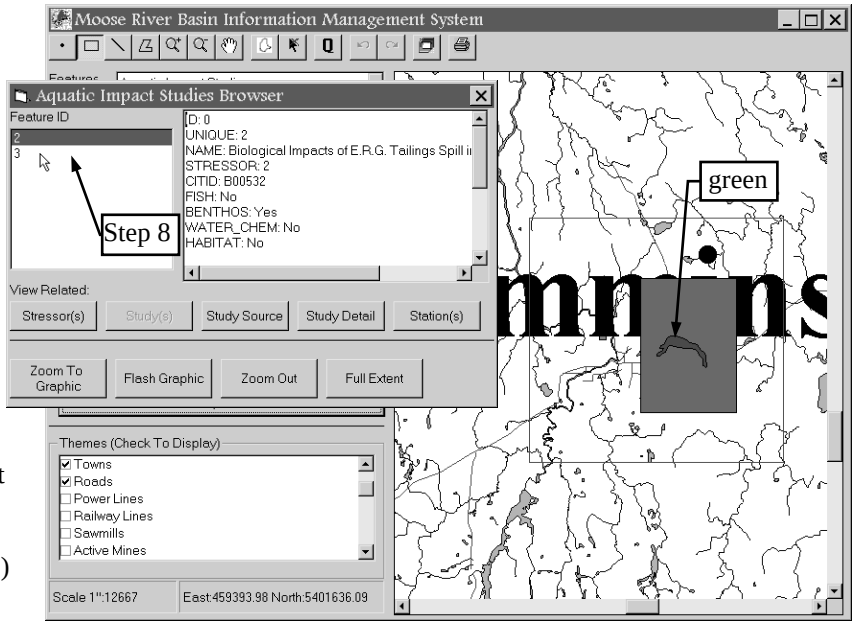
Step 6: Draw a rectangle on the *Map Display* that encompasses Timmins . Use the click and drag method. This should successfully query out two or more known Aquatic Impact Studies.



Step 7: Start the query by clicking the *Execute Spatial Search* button. A message box indicating the number of records retrieved from the *feature* "Aquatic Impact Studies", will appear. Clicking on the "OK" button will open the **query browser**, where you can view the content of the retrieved records.

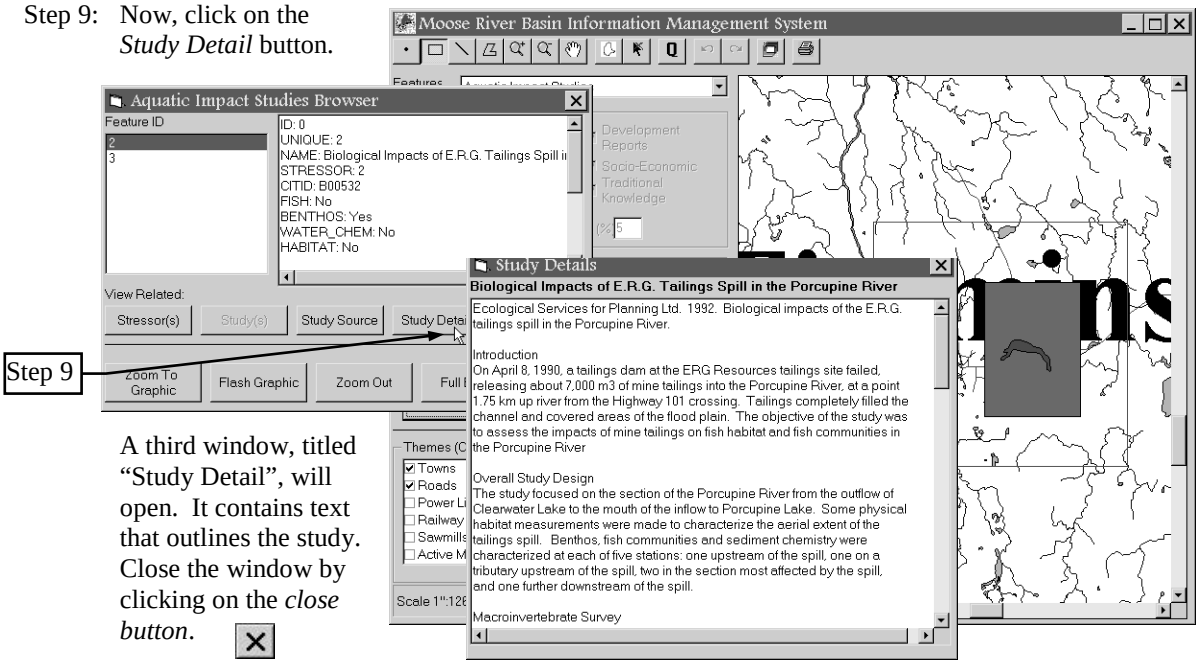
Note: At this point, you have no access to the Main Window, but you can change the map display by clicking the four buttons on the bottom of the browser window.

Step 8: Click on the different values in the *Feature ID* box to locate the study areas and view information about the studies. The highlighted study area will appear green on the *map display* and the browser window will display the information for that study area.



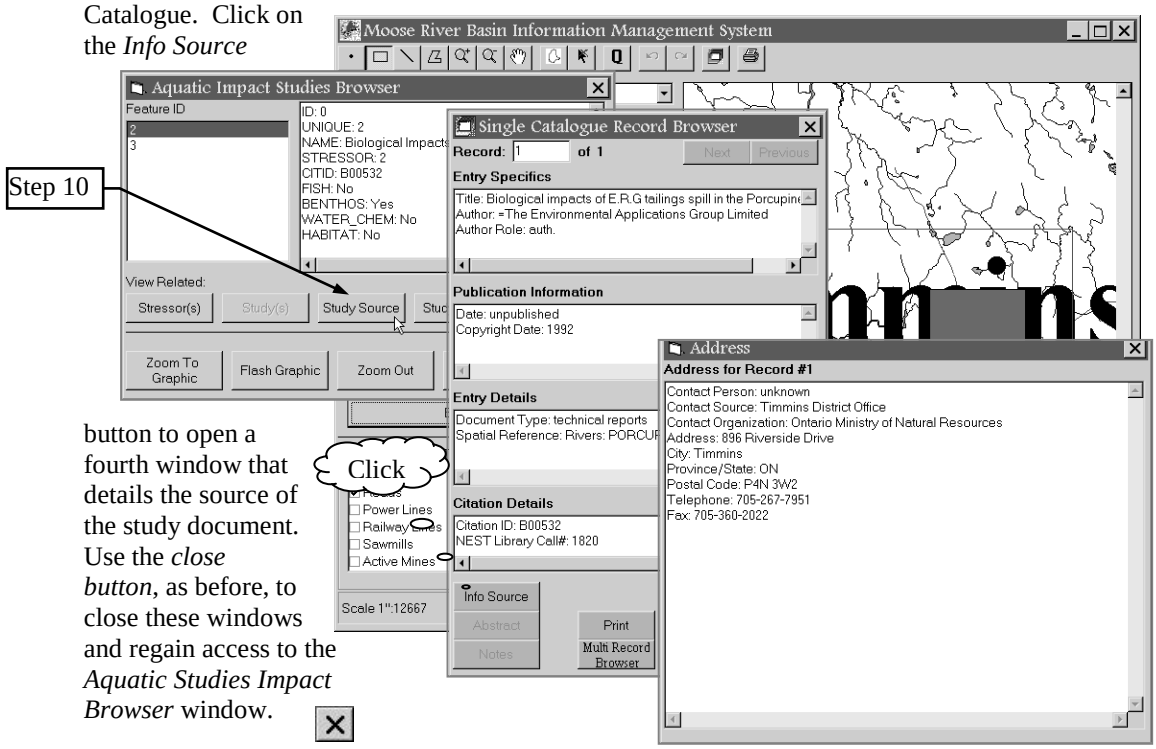
Note: For the next five (5) steps, study-area-2 ("2" in the *Feature ID* box), will be used. Your selection may vary.

Step 9: Now, click on the *Study Detail* button.

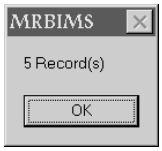


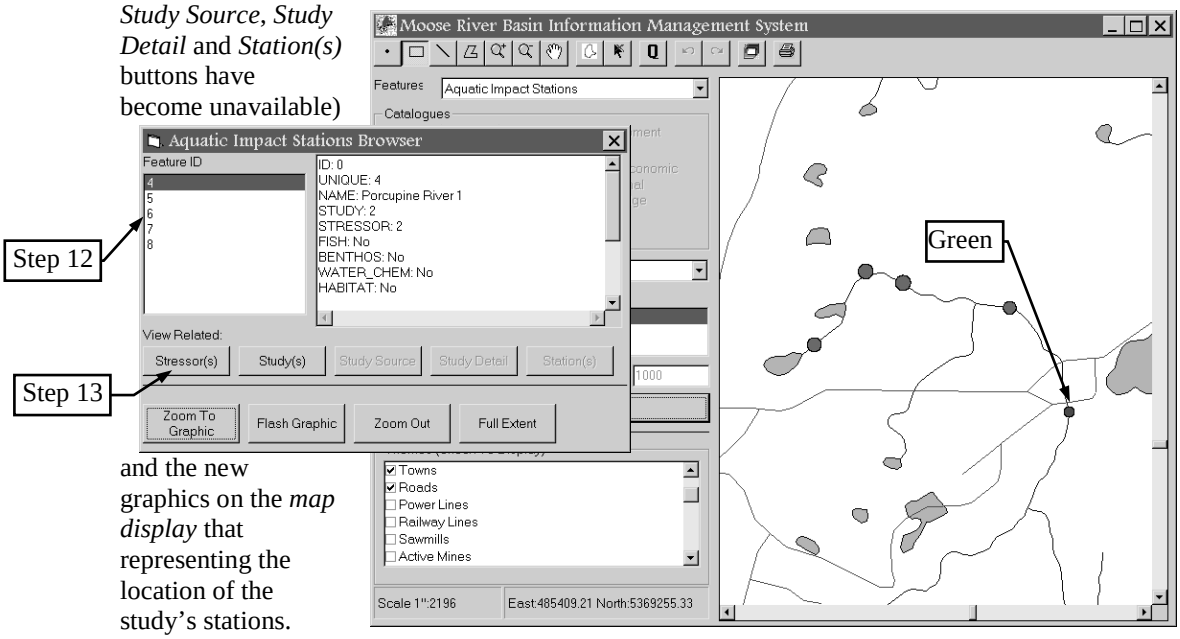
A third window, titled "Study Detail", will open. It contains text that outlines the study. Close the window by clicking on the *close button*.

Step 10: Click on the *Study Source* button. This will open the *Single Catalogue Record Browser* window. (See Catalogue Browser on page 25 for more detail) The record displayed here is from the Catalogue. Click on the *Info Source* button to open a fourth window that details the source of the study document. Use the *close button*, as before, to close these windows and regain access to the *Aquatic Studies Impact Browser* window.



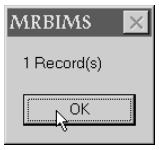
Step 11: Now, Click on the *Station(s)* button. A message box will appear, indicating the number of records; therefore, the number of stations associated with this study area that were retrieved from the *feature* "Aquatic Impact Stations". Clicking on the "OK" button will open the **query browser**, where you can view the content of the retrieved records. Note the slight change in the browser's appearance (the *Study Source*, *Study Detail* and *Station(s)* buttons have become unavailable) and the new graphics on the *map display* that representing the location of the study's stations.



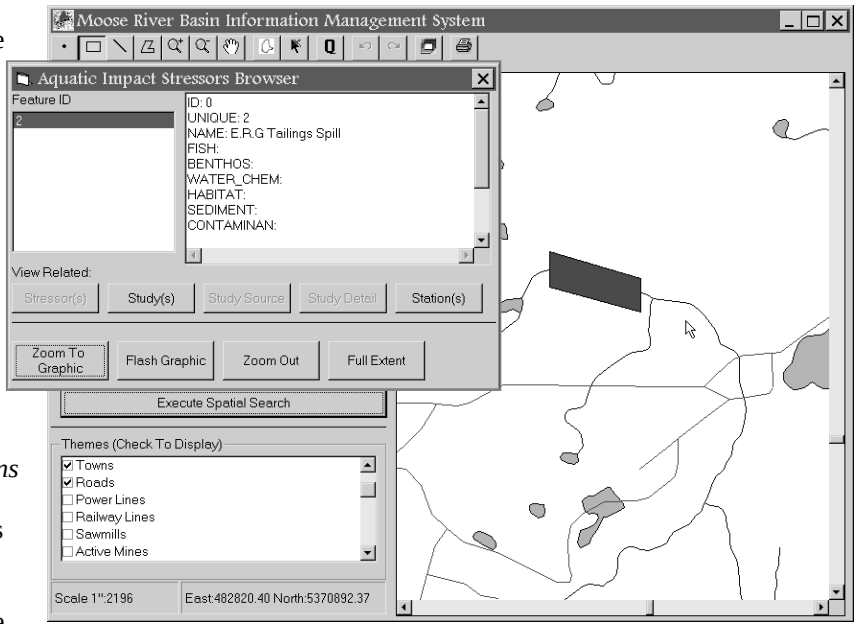


Step 12: Like in *Step 8*, you can click on the different values in the *Feature ID* box to locate the individual study stations and view the information about those stations. The highlighted station will appear green on the *map display* and the browser window will display the information for that station.

Step 13 Now that you have had a chance to browse the station data for the study area you originally selected, press the *Stressor(s)* button. A message box will indicate the number of stressor records associated with the study area that were retrieved from the *feature* "Aquatic Impact Stressors". Clicking on the "OK" button will open the **query browser**, where you can view the content of the retrieved records.



Again, note the slight change in the browser's appearance and the new graphics on the map display. The later represents the location of the *stressor*.



Note: You can continue to flip back and forth between *Stressors*, *Studies*, and *Stations* by clicking the appropriate buttons

Step 14: Once you finish browsing, leave the browser window, by clicking on the *close button*.

Spatial Example 3

Purpose: To demonstrate the steps of a simple spatial query of the Catalogue and to illustrate the "Catalogue Browser"

Feature: Catalogue

Catalogue: Biophysical

Shape: Tool

Search Method: shape contains feature

Tool: Polygon Search Tool

Note: This example will reinforce the concepts covered in *Example* 1 and 2 by performing a similar spatial search. The difference being: 1. the location of the search, 2. the tool, and 3. the modified Browser window specific to the "Catalogue" *features*.

Scenario: You are a developer and have plans to 'make it rich' on the shores of Lake Abitibi. One of your requirements before approval is to review any biological literature on the area. You are informed of the MRBIMS software and decide to use it.

Step 1: Set the map display by zooming-in on Lake Abititbi. Turning "on" Roads, Railways, Lakes, Rivers, and Lake Names will assist you in locating this area.

Step 2: Choose "Catalogue" in the *Features* list box.

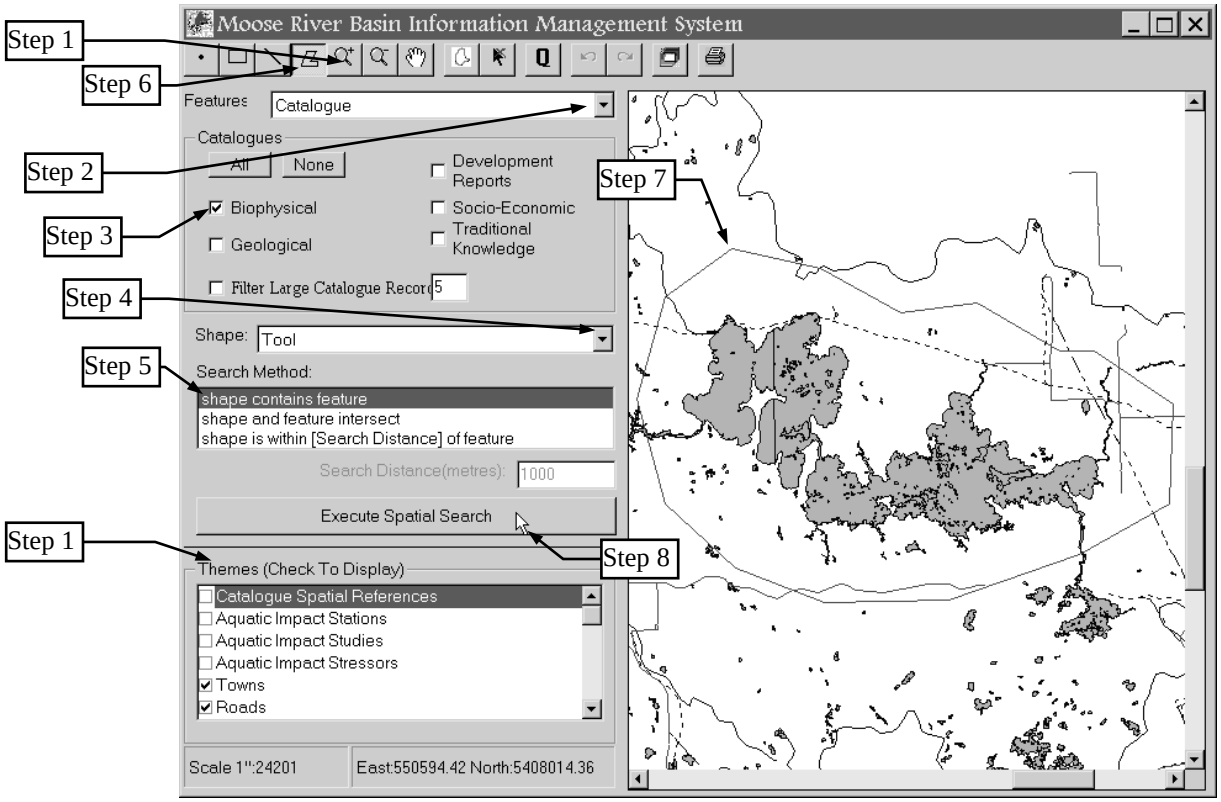
Step 3: Make sure there is a "check mark" beside "Biophysical" under the *Catalogue* section of the *Main Window*.

Step 4: Choose "Tool" in the *Shapes* list box.

Step 5: Choose "shape contains feature" from the *Search Method* list box. This method of searching insists that the geographic extent of the "Catalogues" be entirely in the boundaries of the *shape*.

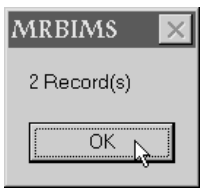
Step 6: Choose the "Polygon Search Tool" located on the tool bar at the top of the *Main Window*.

Step 7: Draw a polygon on the *Map Display* that encompasses Lake Abitibi. Do this by clicking the mouse at a starting point, then click around Lake Abitibi and then double-click the mouse to close the polygon.



Note: If you are unsatisfied with the polygon, you can redraw it. The previous polygon will be replaced.

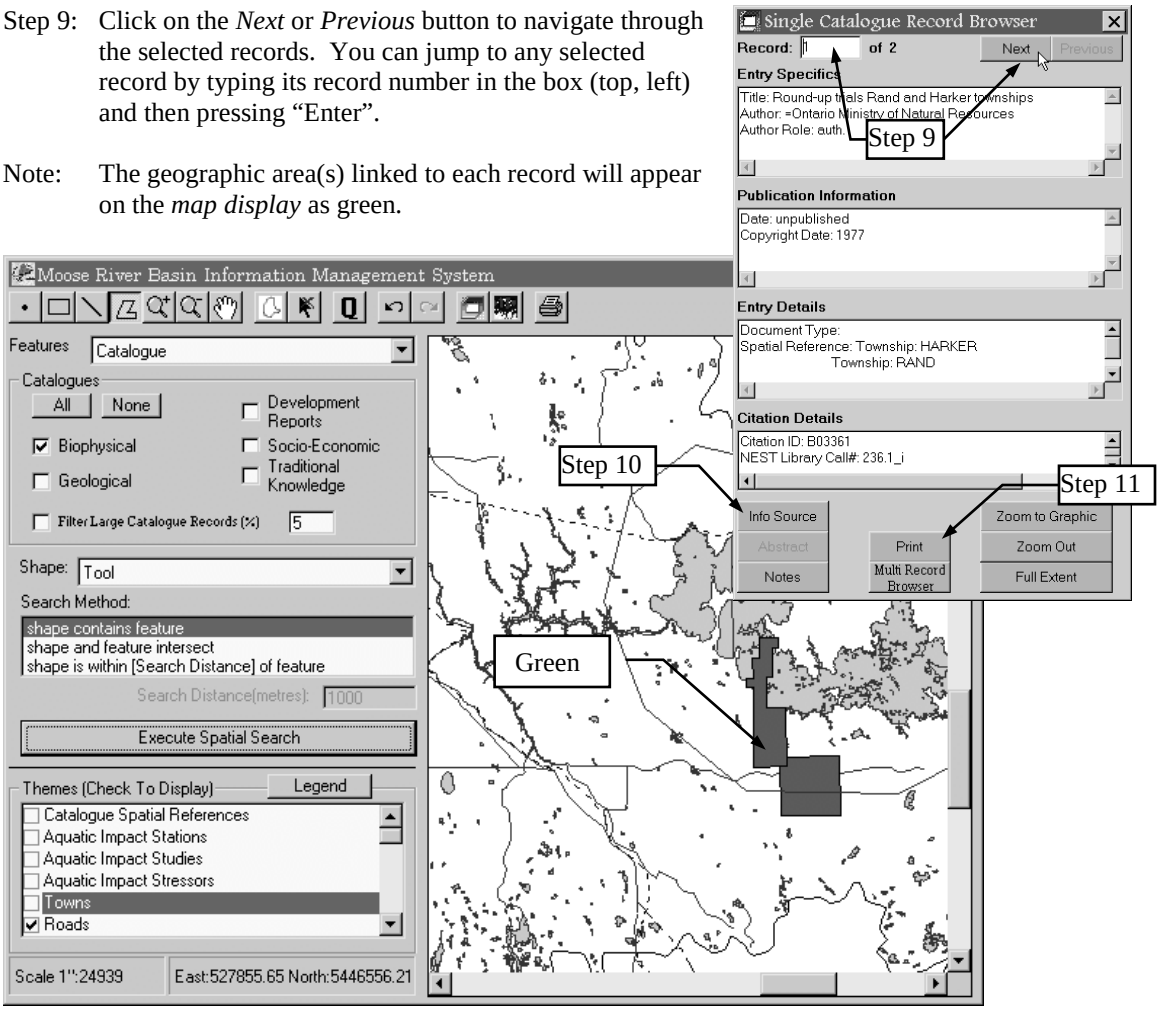
Step 8: Start the query by clicking the *Execute Spatial Search* button. A message box indicating the number of records retrieved from the *feature* "Catalogue", will appear. Clicking on the "OK" button will open the Single Catalogue Record Browser window, where you can view the content of the retrieved records.



Note: At this point, you no longer have access to the Main Window, but you can change the map display by clicking the *Zoom to Graphic*, *Zoom Out*, or *Full Extent* buttons.

Step 9: Click on the *Next* or *Previous* button to navigate through the selected records. You can jump to any selected record by typing its record number in the box (top, left) and then pressing "Enter".

Note: The geographic area(s) linked to each record will appear on the *map display* as green.



Step 10: Click on the *Info Source*, *Abstract*, or *Notes* button if they are available. Each gives additional information in a pop-up window. This window must be closed before proceeding, by clicking on the *close button*.

Step 11: If a record is of interest to you, click the *Print* button. All the information displayed in the Single Catalogue Record Browser window is printed along with the "Info Source", the "Abstract", and the "Notes", if they exist.

Spatial Example 4

Purpose: To demonstrate the steps of a simple spatial query of the Catalogue and to illustrate the "Multi-Catalogue Record Browser"

Feature: Catalogue

Catalogue: All

Shape: Tool

Search Method: shape contains feature

Tool: Polygon Search Tool

Note: This example will reinforce the concepts covered in *Example 3* by performing a similar spatial search. The difference being: 1. ALL records in the Catalogue will be searched not just the Biophysical records.

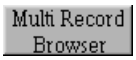
Scenario: You are a developer and have plans to "make it rich" on the shores of Lake Abitibi. One of your requirements before approval is to review any literature on the area. You are informed of the MRBIMS software and decide to use it.

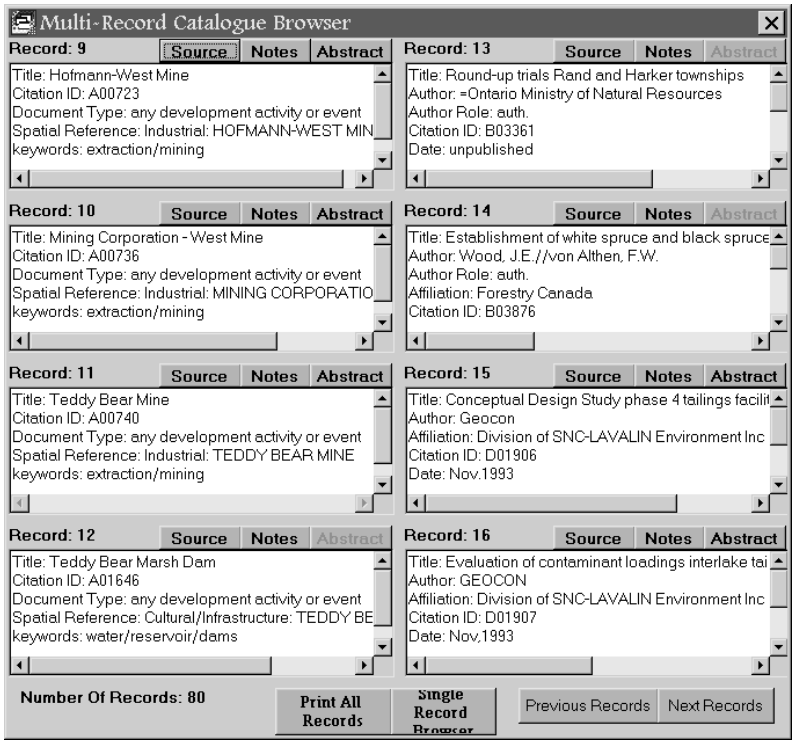
Follow the steps in Example 3, substituting the following steps.

Step 3: Make sure there is a "check mark" beside all five disciplines in the *Catalogue* section of the *Main Window*. You can do this quickly by clicking on the *All* button. 

Step 7: Draw a polygon, similar in size and shape drawn in Example 3, on the *Map Display* that encompasses Lake Abitibi.

Note: Because you are spatially querying all of the *feature* called "Catalogue", not just the Biophysical portion of Catalogue, the number of records selected should be higher than in Example 3.

Step 12: Click on the *Multi Record Browser* button to view more than one selected record at a time. 



Querying Text

Commonly, people search databases based on the text contained within its records. First, you choose the database (*Feature*) that has the information in which you are interested. Second, you choose the field you will search. Third, you indicate what text is of interest to you. Finally, you start the query.

Text Queries

Text Example 1

Purpose: To illustrate the steps of building a simple text query

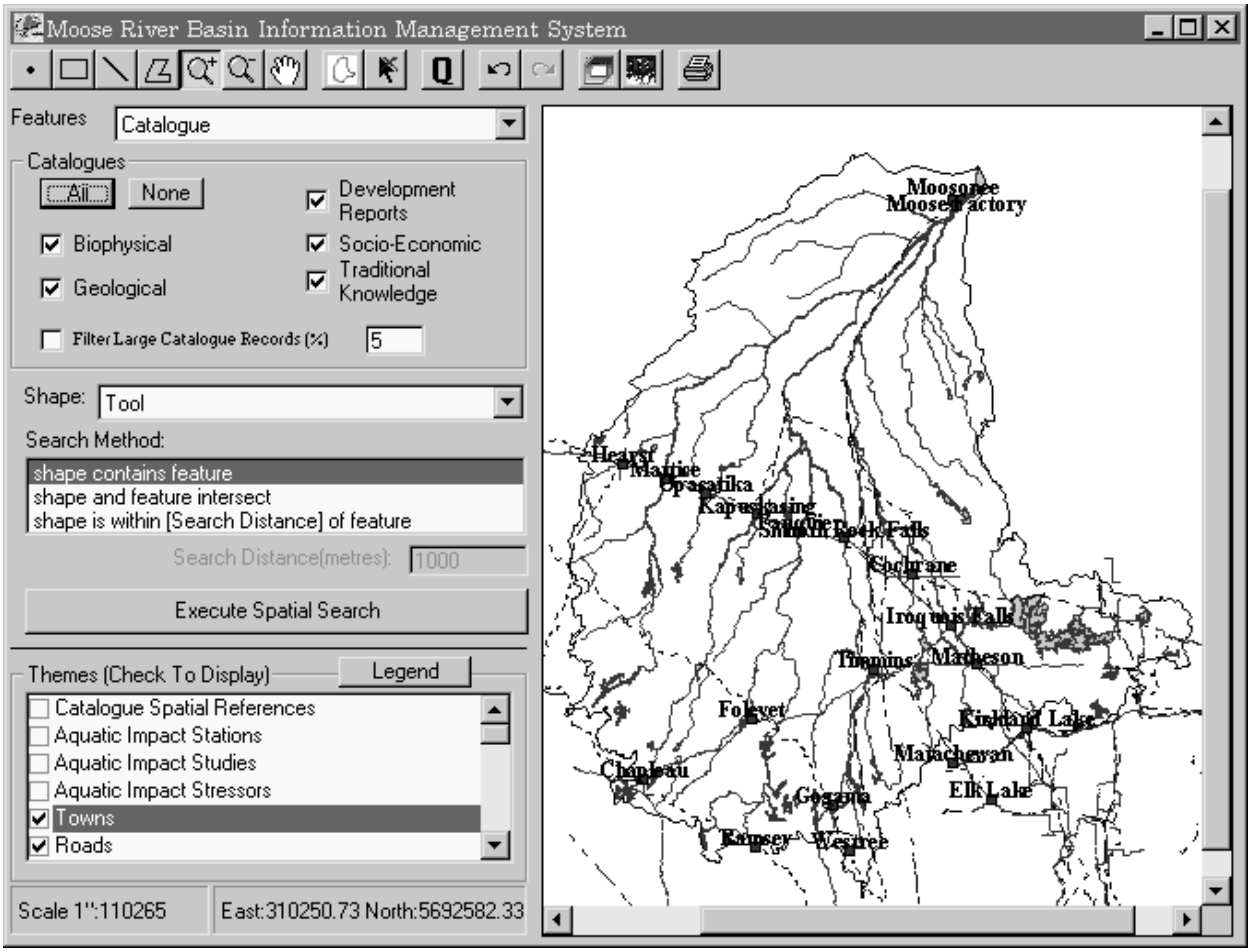
Feature: Catalogue

Note: The results of this query will show all Catalogue records which have 'Ducks Unlimited Canada' in the Author field.

The browser that appears will be the Single Record Catalogue Browser.

Step 1: Select "Catalogue" in the *Features* list box

Step2: Click on the *Text Query button*  to open the Query Builder window.



Step 3: Choose 'New Search' as the *Search Type.*

Step 4: Select 'Author' from the *Field Name* list box.

Step 5: Select '=' from the *Operator* list box.

Step 6: Click on the *List Possible Values* button. Once the values are loaded open the *Value* list box and select the '=Ducks Unlimited Canada' entry.

Note: Corporate authors listed in the *Value* list box, when 'Author' is selected in the *Field Name* list box, will have an '=' sign in front of them. This source of confusion will be eliminated from future versions of MRBIMS.

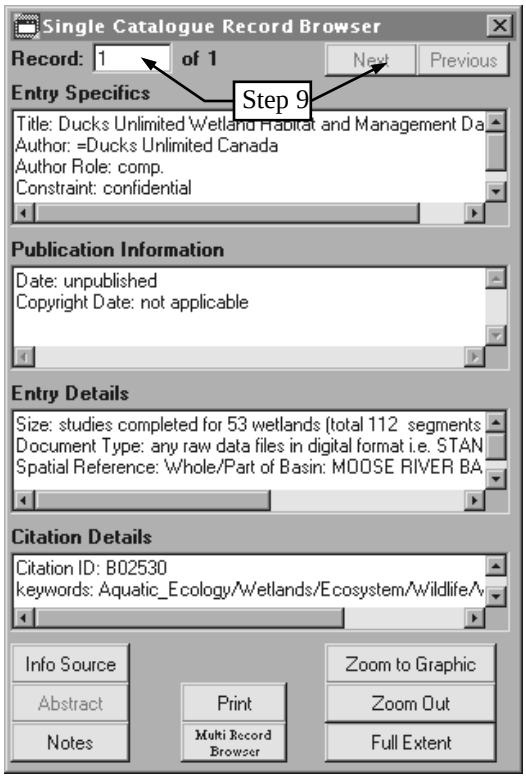
Step 7: Click the *And into Criteria* button so that your choice is added to the *Criteria* list box.

Step 8: Click the *Run* button to start querying. A message box indicating the number of records retrieved from the *feature* 'Catalogue', will appear. Clicking on the *OK* button will open the Single Catalogue Record Browser window, where you can view the content of the retrieved records.

Note: At this point, you have no access to the Main Window, but you can change the map display by clicking the *Zoom to Graphic*, *Zoom Out*, or *Full Extent* buttons.

Step 9: Click on the *Next* or *Previous* button to navigate through the selected records. You can jump to any selected record by typing its record number in the box (top, left) and then pressing the "Enter" key.

Step 10: Once you have finished browsing, leave the browser window by clicking on the *close button*.



Text Example 2

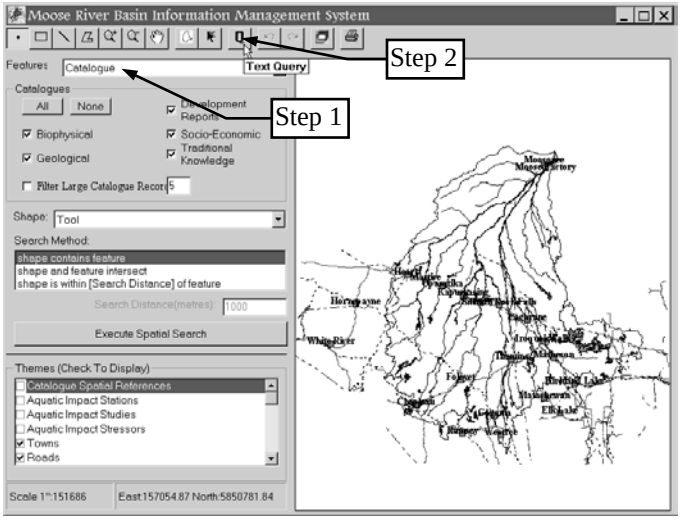
Purpose: To illustrate the steps of building a complex text query.

Feature: Catalogue

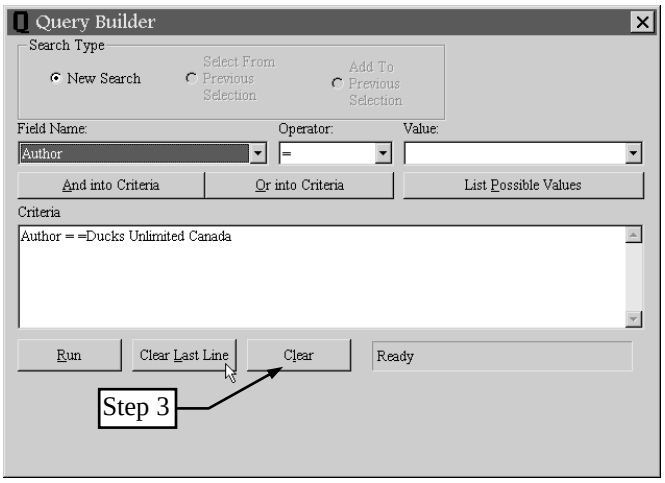
Note: The results of this query will show all Catalogue records which are spatially referenced to Lake Abitibi and which also have the words fish or water somewhere in their title field.

Step 1: Select "Catalogue" in the *Features* list box.

Step 2: Click the *Text Query button* to open the Query Builder window.



Step 3: If you previously performed a text query, then the criteria of that query will still be in the *Criteria* list box. Clear the *Criteria* list box by clicking the *Clear* button. 



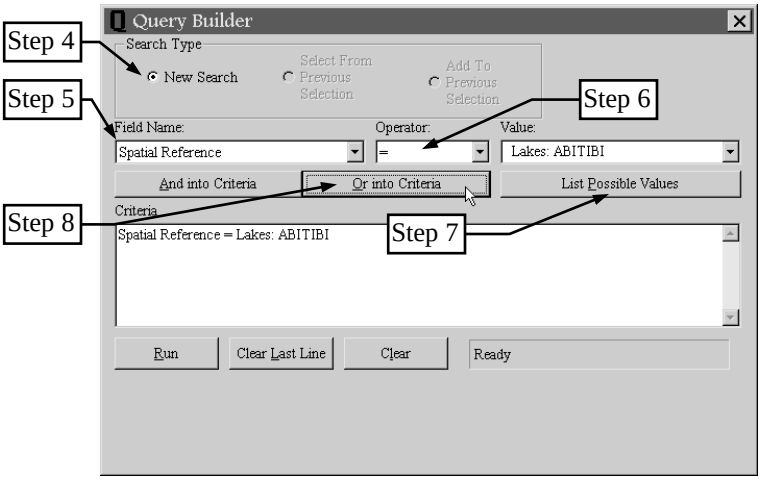
Step 4: Choose 'New Search' as the *Search Type*.

Step 5: Select 'Spatial Reference' from the *Field Name* list box.

Step 6: Select '=' from the *Operator* list box.

Step 7: Click on the *List Possible Values* button. Once the values are loaded, open the *Value* list box and select 'Lakes: ABITIBI'.

Note: To move quickly through the drop-down list box, type the first few letters of the entry.



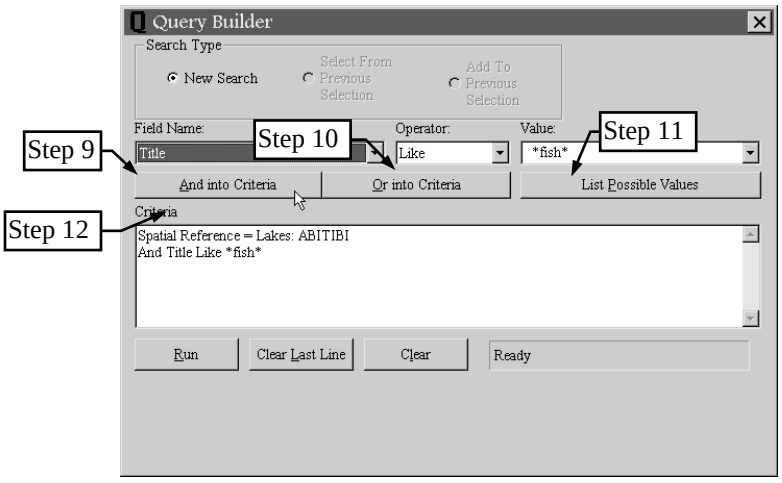
Step 8: Click on either the *Or into Criteria* button or the *And into Criteria* button, so that your choice is added to the *Criteria* list box.

Step 9: Then, select 'Title' from the *Field Name* list box.

Step 10: Select 'Like' from the *Operator* list box.

Step 11: Type '***fish***' into the *Value* list box.

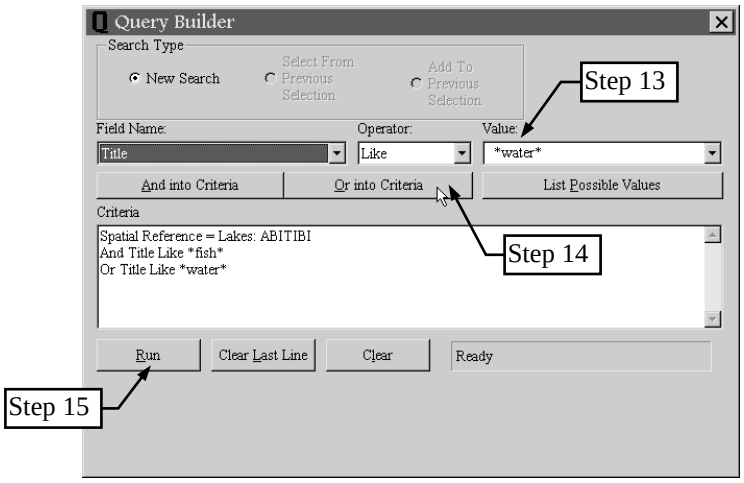
Step 12: Click on the *And into Criteria* button so that your choice becomes the second part of the criteria.



Step 13: Type '***water***' into the *Value* list box.

Step 14: Click on the *Or into Criteria* button so that your choice becomes the third part of the criteria.

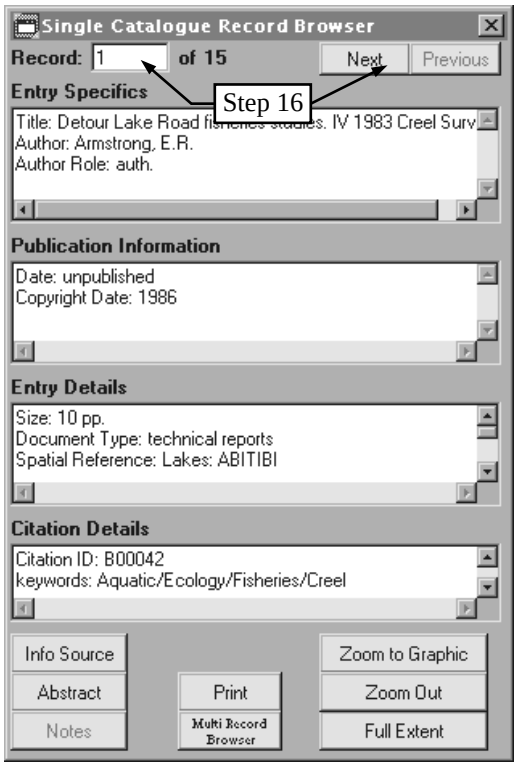
Step 15: Click the *Run* button to start querying. A message box indicating the number of records retrieved from the *feature* 'Catalogue', will appear. Clicking on the *OK* button will open the Single Catalogue Records Browser window, where you can view the content of the retrieved records.



Note: At this point, you have no access to the Main Window, but you can change the map display by clicking the *Zoom to Graphic*, *Zoom Out*, or *Full Extent* buttons.

Step 16: Click on the *Next* or *Previous* button to navigate through the selected records. You can jump to any selected record by typing its record number in the box (top, left) and then pressing the "Enter" key.

Step 17: Once you have finished browsing, leave the browser window by clicking on the *close button*.



Combined Spatial and Text Queries

Note: You can perform a text query on the results of a previously performed spatial query. However, you can **not** spatially query the results of a text query.

Spatial/Text Example 1

Purpose: To illustrate the steps of building a combined spatial and text query.

Feature: Catalogue

Scenario: Far North Fishing Guides Ltd. are thinking of expanding their territory to Moosonee and Moose Factory. They wish to review any information about fish in the area before proceeding.

Step 1: Set the map display by zooming in on the area around Moosonee and Moose Factory. Turning Towns "on" in the *Themes (Click to Display)* box will assist you in locating this area.

Step 2: Select "Catalogue" in the *Features* list box.

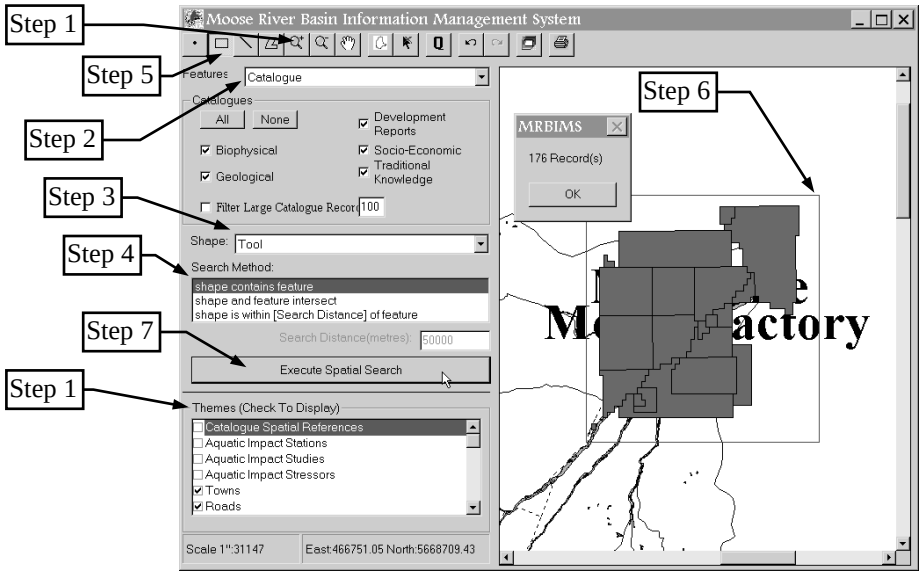
Step 3: Select "Tool" in the *Shapes* list box

Step 4: Select "shape contains feature" from the *Search Method* list box. This method of searching insists that the geographic extent of the *feature* be entirely in the boundaries of the *shape*.

Step 5: Click the *Rectangle Search Tool* button located on the toolbar at the top of the Main Window.

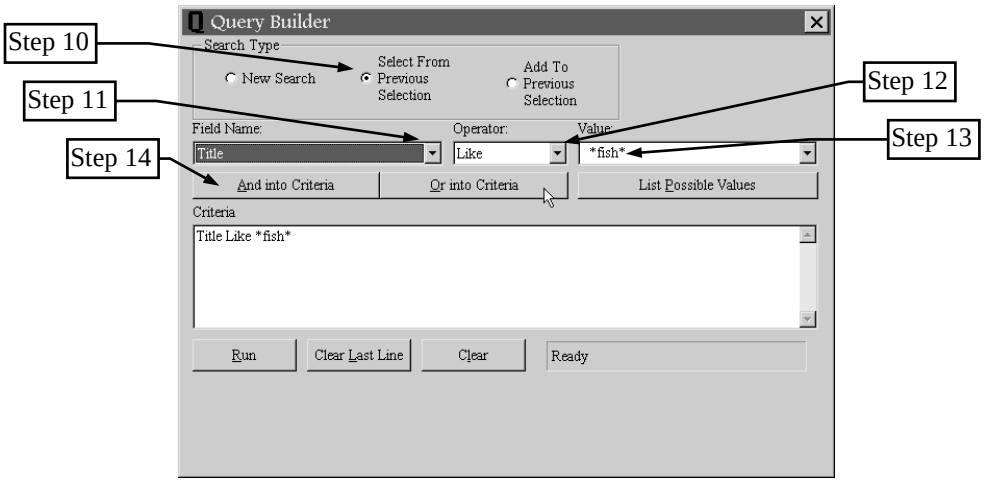
Step 6: Now you are ready to draw a rectangle on the *Map Display* that encompasses both Moosonee and Moose Factory. Try to make this rectangle large enough to represent a 40 km (40000 m) radius from the communities, using the Northing and Easting display as a guide. Use the click and drag method. See graphic below.

Step 7: Start the query by clicking the *Execute Spatial Search* button. A message box indicating the number of records retrieved from the *feature* "Catalogue", will appear. Clicking on the "OK" button will open the query browser, where you can view the content of the retrieved records.



Step 8: Leave the Single Catalogue Record Browser window by clicking on the *close button*.

Step 9: Now, open the Query Builder by clicking on the Text Query button located on the tool bar of the Main Window.



Step 10: Choose 'Select From Previous Selection' as the *Search Type*. This allows you to select only from the resulting records of the last query you just closed.

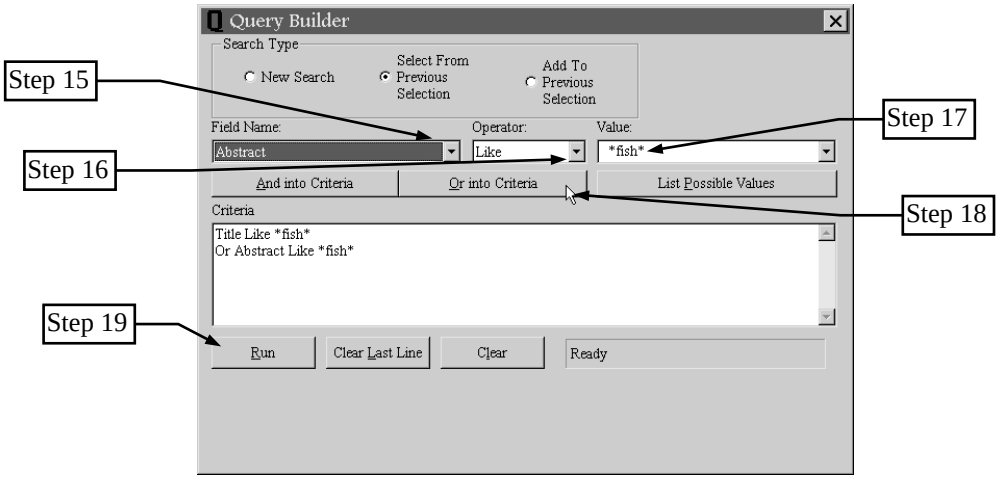
Note: When searching the Catalogue for specific subjects, query for keywords in the 'title' and 'abstract' fields. Keywords should be reduced to root words to capture as many forms of the word. For example, if you were interested in fishing, fisherman, fish, fishes, fished, etc. you could retrieve all of these by using '*fish*'. The asterisk (*) is used as a wildcard, and essentially means 'any character(s) can be in this location'.

Step 11: Select 'title' from the *Field Name* list box.

Step 12: Select 'like' from the *Operator* list box.

Step 13: Type '***fish***' in the *Value* list box.

Step 14: Click the *And into Criteria* button so that your choice becomes part of the criteria.



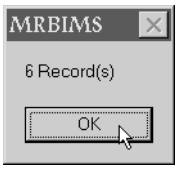
Step 15 Select 'abstract' from the *Field Name* list box.

Step 16: Select 'like' from the *Operator* list box.

Step 17: Type '***fish***' in the *Value* list box.

Step 18: Click the *Or into Criteria* button so that your choice becomes part of the criteria.

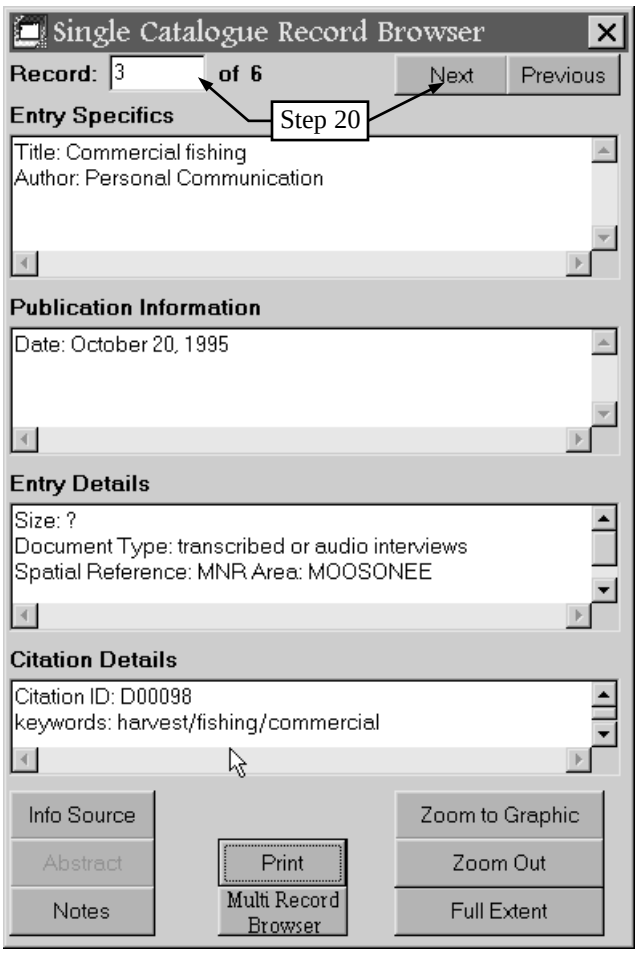
Step 19: Click the *Run* button to start the query. A message box indicating the number of records retrieved from the *feature* 'Catalogue', will appear. Clicking on the *OK* button will open the Single Catalogue Records Browser window, where you can view the content of the retrieved records.



Note: At this point, you have no access to the Main Window, but you can change the map display by clicking the *Zoom to Graphic*, *Zoom Out*, or *Full Extent* buttons.

Step 20: Click on the *Next* or *Previous* button to navigate through the selected records. You can jump to any selected record by typing its record number in the box (top, left) and then pressing the "Enter" key.

Step 21: Once you have finished browsing, leave the browser window by clicking on the *close button*.



Spatial/Text Example 2

Purpose: To illustrate the steps of spatial queries using a pre-defined *shape*. To illustrate the steps of building a combined spatial and text query.

Feature: Catalogue

Shape: Forest Management Unit(s)

Tool: Point

Scenario:

Step 1: Set the *map display* by turning "on" the theme "Forest Management Unit(s)" in the *Themes (Click to Display)* box. This will assist you in locating this area.

Step 2: Select "Catalogue" in the *Features* list box.

Step 3: Select "Forest Management Unit(s)" in the *Shapes* list box.

Step 4: Select "shape and feature intersect" from the *Search Method* list box. This method of searching only requires that the *shape* and *feature* occupy a common geographic location in order for the records in the *feature* to be selected.

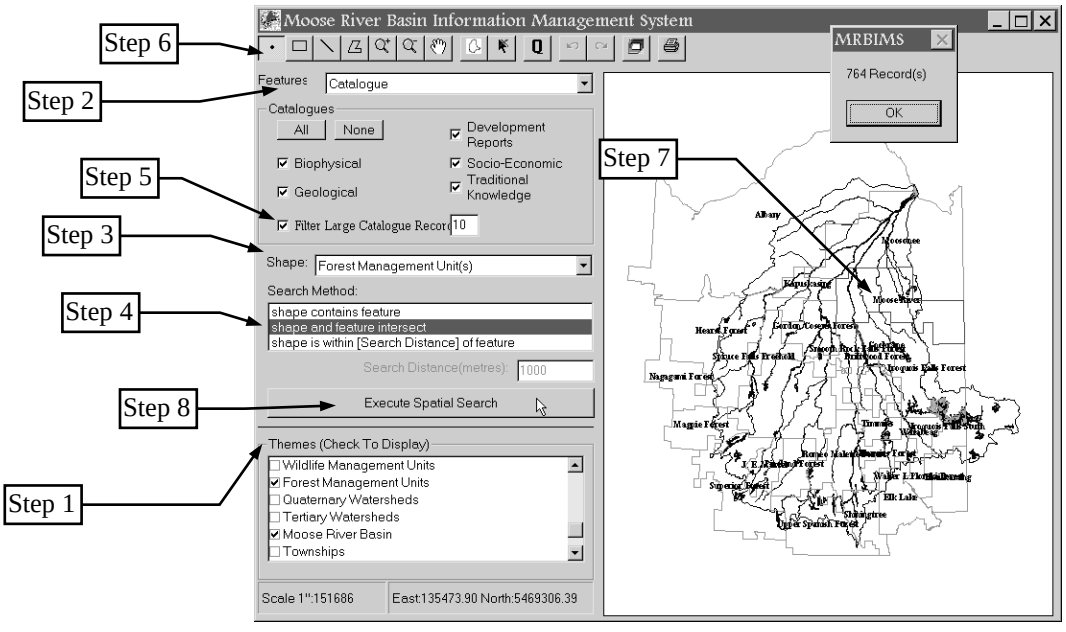
Step 5: Since the *search method* will select very large *features* from "Catalogue", turn on "Filter Large Catalogue Records" and set to 10%.

Note: "Filter Large Catalogue Records" will take the maximum extents of the *shape* (in this case the Moose River Forest Management Unit outline) and calculate its area and add 10%. If any selected shapes from the *feature* are larger than the calculated 110% area, they will not be included in the selected records.

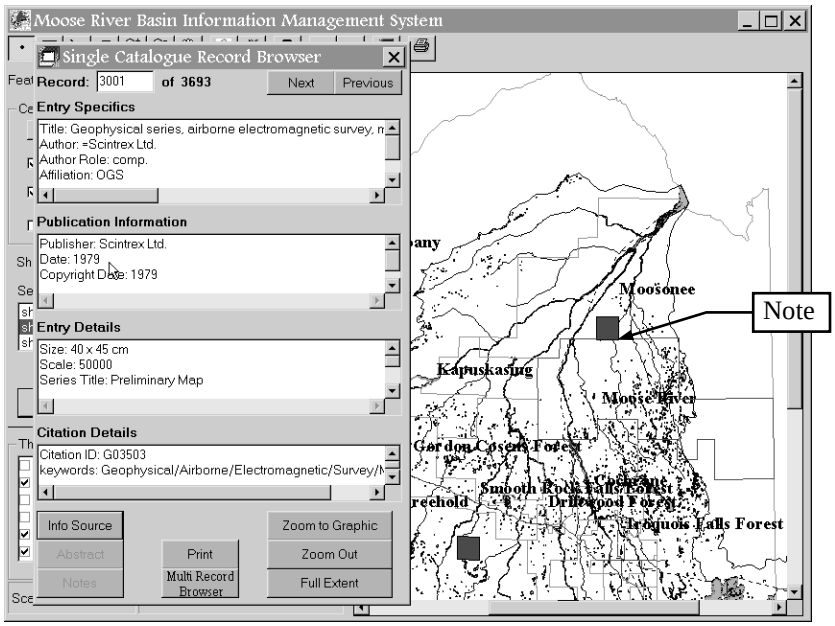
Step 6: Click the *Point Search Tool* button located on the toolbar at the top of the Main Window.

Step 7: Now, using the tool, click inside the polygon labeled "Moose River" so that it is highlighted "red". The red outline of the Moose River Forest Management Unit is now the *shape*.

Step 8: Start the query by clicking the *Execute Spatial Search* button. A message box indicating the number of records retrieved from the *feature* "Catalogue", will appear. Clicking on the "OK" button will open the query browser, where you can view the content of the retrieved records.

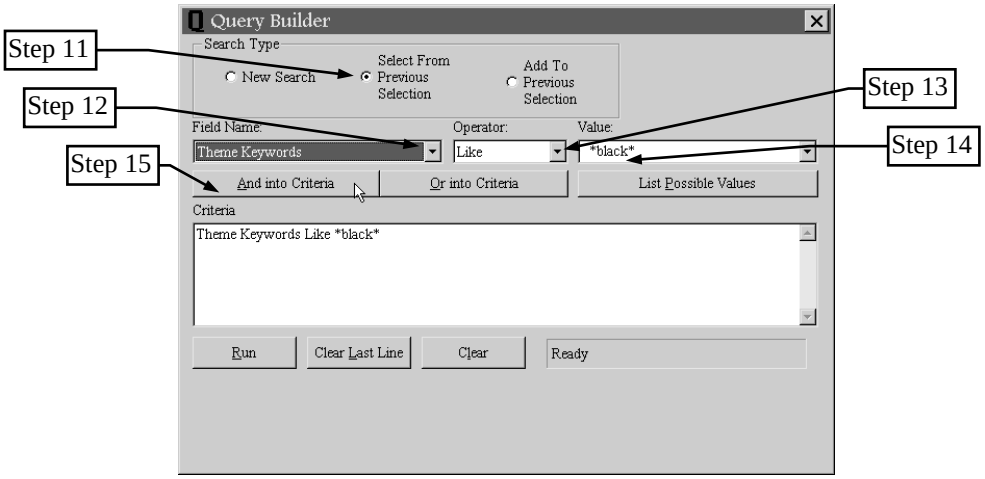


Note: To the right is an example that demonstrates how the *Search Method*, "shape and feature intersect", works. Notice that the intersection or common area between the *shape* and *feature* is their edges.



Step 9: Leave the Single Catalogue Record Browser window by clicking on the *close button*.

Step 10: Now, open the Query Builder by clicking on the Text Query button located on the tool bar of the Main Window.



Step 11: Choose 'Select From Previous Selection' as the *Search Type*. This allows you to select only from the resulting records of the last query you just closed (for example, the spatial query).

Step 12: Select 'Theme Keywords' from the *Field Name* list box.

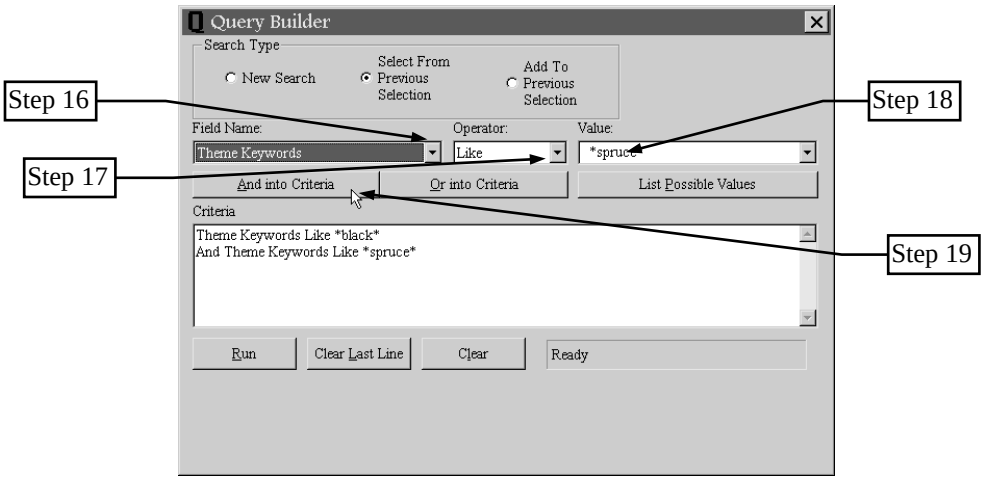
Step 13: Select 'like' from the *Operator* list box.

Step 14: Type '***black***' in the *Value* list box.

Step 15: Click the *And into Criteria* button so that your choice becomes part of the criteria.

Step 16 Select 'Theme Keywords' from the *Field Name* list box.

Step 17: Select 'like' from the *Operator* list box.



Step 18: Type '***spruce***' in the *Value* list box.

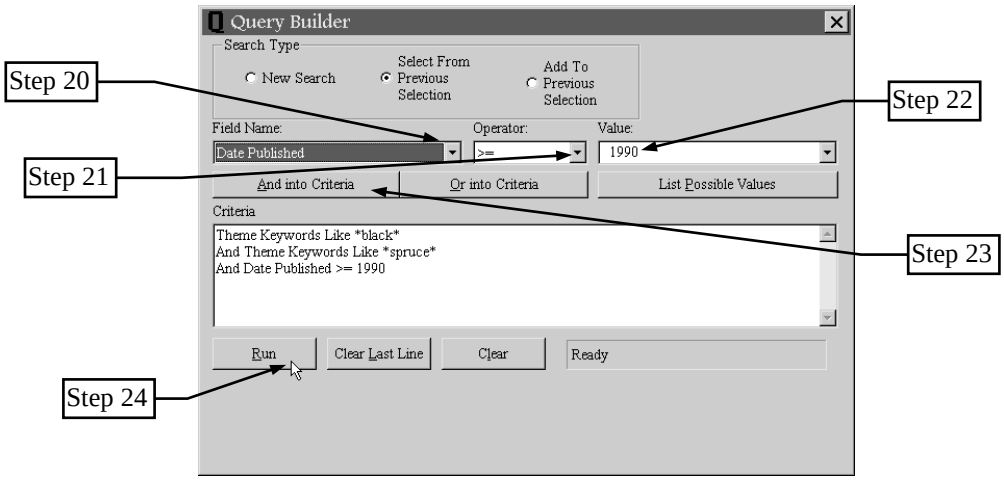
Step 19: Click the *And into Criteria* button so that your choice becomes part of the criteria.

Step 20: Select 'Date Published' from the *Field Name* list box.

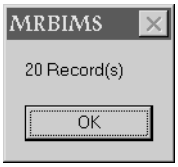
Step 21: Select '>=' from the *Operator* list box.

Step 22: Type '**1990**' in the *Value* list box.

Step 23: Click the *And into Criteria* button so that your choice becomes part of the criteria.



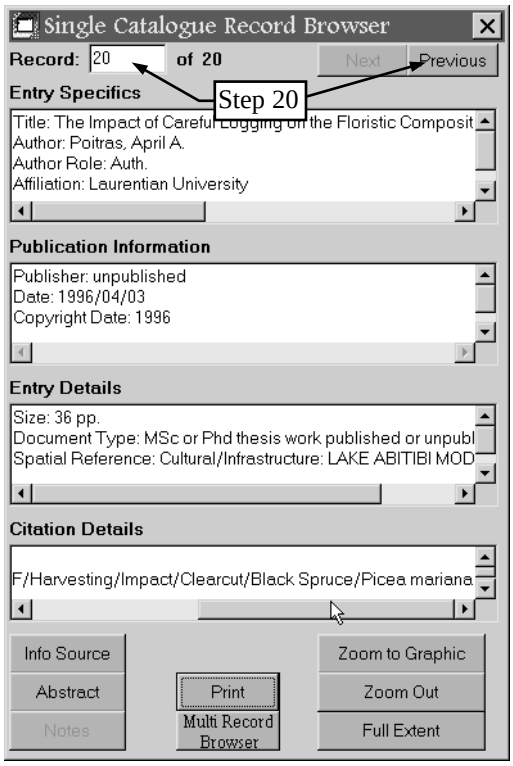
Step 24: Click the *Run* button to start the query. A message box indicating the number of records retrieved from the *feature* 'Catalogue', will appear. Clicking on the *OK* button will open the Single Catalogue Records Browser window, where you can view the content of the retrieved records.



Note: At this point, you have no access to the Main Window, but you can change the map display by clicking the *Zoom to Graphic*, *Zoom Out*, or *Full Extent* buttons.

Step 20: Click on the *Next* or *Previous* button to navigate through the selected records. You can jump to any selected record by typing its record number in the box (top, left) and then pressing the "Enter" key.

Step 21: Once you have finished browsing, leave the browser window by clicking on the *close button*. 



Glossary

catalogue:	The title of one of the available *Features*. Specifically, Environmental Information Partnership's bibliographic database for the Moose River Basin that has each record linked to at least one geographic area.
click-and-drag method:	Terminology associated with the use of the mouse. Usually, the mouse pointer is moved to a specific location and then the left mouse button is clicked and held down. Then the pointer is moved (dragged) to a new location.
click, click, …, double click method:	In MRBIMS, the mouse pointer is used to generate a polygon. Each click of the mouse represents a vertex or corner of the polygon. The double click tells the computer this is the last vertex and to close the polygon.
coverage:	A layer, map component, map layer, or theme.
database:	Commonly referred to as a table or tables of information. Within MRBIMS, each *Feature* is a set of information about a specific topic. This information is stored in a database format and it is from that format that the information displayed to you in the Browsers comes.
desktop:	In Windows '95, the perceived surface on the monitor that everything (software) can be found.
*feature:	In MRBIMS, this is the available coverages to be searched. Many of these coverages are the same data sets listed in the *Shape* list box and *Themes (Click to display)* list box.
information holding:	The real life thing that is referred to by each record in the bibliographic database called, "Catalogue". For example, a book, map, or digital file.
layer:	A map layer, a map component, or a theme.
left-mouse-button-click:	Often, when being instructed to use a mouse, you will be told to "click". This invariable means press and release the left farthest mouse button.
map components:	The *Map Layers* or *Themes* of a map. In MRBIMS, the layers listed in the *Themes (Click to display)* list box.
map layer:	A group of geographic features that are brought together, forming a theme. For example, all open bodies of water (lakes, rivers, streams, ponds, creeks) may be represented as one thematic layer called, "Drainage". Marshes, swamps, and fens could just as easily been included in Drainage. Or, lakes and ponds could have made up a thematic layer called, "Lake", and rivers, streams, and creeks could have formed a thematic layer called, "River". These different themes or layers make up the parts of a completed map and can be vitalized as overhead projector acetates representing the layers and the overlaying of these acetates results in a map.
maximize:	To increase the size of a window to fill the entire screen (display).
minimize:	To remove a window from the viewable screen but **not** close the application. The title of the window is added to the task bar.

pan:	The scrolling or moving of the image so that concealed detail becomes visible.
pointer (mouse pointer):	The graphic representing the location of the mouse cursor. Usually an arrow or cross-hairs.
representative fraction:	Usually in the form 1/x or 1:x where "x" is the real world distance represented by every 1 unit measured on the map. The scale of a map.
screen:	The CRT (Catho Ray Tube) or monitor.
*shape:	In MRBIMS, the available sources of a geometric shape or polygon that will be used to geographically search the selected *Feature*. One source is the "tool". This allows the user to generate a unique geometric shape on the map display. All other sources of geometric shapes are pre-defined. They may be outlines of rivers, municipal boundaries, wildlife management units, and more.
shortcut:	In Windows '95, it is usually an icon which is linked to the actual software that will be run.
station:	Associated with the Aquatic Impacts. The position within a study area where raw samples where collected.
stressors:	Associated with the Aquatic Impacts. The source(s) of the impacts. Usually a development.
study area:	Associated with the Aquatic Impacts. The geographic area where the study took place. It encompasses the stations.
task bar:	The area on the desktop that contains the *start* button and the window buttons of all open software.
*theme:	The available map layers (in MRBIMS) to be used for display purposes and orienting the user on the map display. Many themes listed in the *Themes (Click to display)* list box are the same data sets found in *Features* and *Shapes*. Do not let this fact confuse you.
tool bar	In MRBIMS, the strip of icons below the window's title.
UTM (zone 17):	Stands for Universal Transvers Mercator. This projection system is divided into zone. All coverages in MRBIMS have been projected to zone 17 of this system.