

User's Guide

For

The Miami Conservancy District's Great Miami River Watershed GIS Application

Introduction

The Miami Conservancy District has developed a web-based interactive mapping tool that allows users to view over 50 map layers, including geologic and hydrologic information as well as aerial photos and topographic maps. It is the goal of The Miami Conservancy District to share information that is available about the water resources of the Great Miami River Watershed. This mapping tool has more functionality than many other Internet mapping applications because it allows the user to create and save their own map features such as points, lines, and polygons. Once the user has created a map, the map can be printed or saved for later manipulations. Users may also query individual map layers for specific attribute information.

Accessing the GIS Application

Users may access the GIS application by visiting www.miamiconservancy.org and clicking on the **Resources and Publications** tab at the top of the page. The Resources and Publications page has a navigation bar on the left-hand side of the page. Click on **GIS Maps** to enter the GIS application. During your first visit, you will be asked to create an account, which will be used to manage the GIS application only and will not be shared with any outside parties. Please use the username and password established during this session to re-enter the GIS application when you return.

Contact Information

For questions and comments please send email to mekberg@miamiconservancy.org.

Disclaimer

While the Miami Conservancy District has made every effort to provide accurate and complete information, map layers were obtained from a variety of sources and may not always be up-to-date. Accuracy of the data varies greatly from layer to layer depending upon the purpose behind the creation of the layer. This information is provided with the understanding that it is not guaranteed to be correct or complete and that conclusions drawn from the information are the sole responsibility of the user. The Miami Conservancy District does not assume liability for any damages caused by inaccuracies in these data, documentation of these data, or as a result of the failure of the data or software to function in a particular manner. The Miami Conservancy District makes no warranty, expressed or implied, as to the accuracy, completeness, or utility of this information, nor does the fact of distribution constitute a warranty.

Great Miami River Watershed GIS Application Environment

The GIS application has several windows that comprise the layout. The main Map Window displays the layers and is surrounded by other elements that provide access to tools and information. The User's guide will explain how all of these elements work, but for the most part the Map Toolbar on the left and the Zoom and Locator Map windows on the bottom will remain static throughout your session. The display inside the main Tab Window on the right will change depending upon which tool you select. The Tab Window is the "work area" of the application.

NOTE: When the cursor is in the Map Window, its state plane coordinates are displayed at the bottom of the browser window. All state plane coordinates in this application use the Ohio State Plane South (NAD 83) state plane coordinate system.

The screenshot displays the GIS application interface. At the top, there is a navigation bar with a home icon, a 'GIS Layers' tab, and links for 'Legend', 'Views', 'Search', 'Graphics', and 'Contact Us'. Below this is a teal header with the text 'GREAT MIAMI RIVER WATERSHED GIS Application'. On the left side, there is a vertical toolbar with icons for help, zoom in, zoom out, pan, information, print, scale, text, and other map functions. The main map area shows a map of the watershed with county boundaries and names: Mercer, Auglaize, Hardin, Logan, Shelby, Darke, Miami, Champaign, Clark, Preble, Montgomery, Greene, Butler, Warren, and Hamilton. A scale bar below the map indicates 0 to 35 Miles. To the right of the map is a 'Update Layers' button and a list of map layers: Imagery, Flood Protection, Geology, Hydrology, Infrastructure, Political, Watershed, and Recreation. At the bottom, there are two panels: 'Zoom' and 'Locator Map'. The 'Zoom' panel includes a 'Set Scale' section with a text input '1: 1678632' and a 'Go!' button, a 'Quick Zoom' section with a dropdown menu set to 'Butler' and a 'Go!' button, and a 'Fixed Zoom' section with a list of scale options: 1: 100k, 1: 64k, 1: 24k, 1: 12k, 1" = 1320 ft., and 1" = 660 ft. The 'Locator Map' panel shows a smaller version of the watershed map with a red rectangular box highlighting the current map's view area.

Map Layers

Turning layers on and off

- 1) Click the **Layers** tab from the GIS application tab window.
- 2) Click on the bullet in front of **Imagery** or one of the other categories in the Tab Window to “open” the category and see the layers available under that particular heading.
- 3) Click on the checkbox next to the layer (or layers) to either make the layer visible or invisible in the Map Window. Once you have made your selections, click the **Update Layers** button near the top of the Tab Window to make the changes to the map.
- 4) To close the category click on the bullet in front of the category name in the Tab Window.

The screenshot displays the 'GREAT MIAMI RIVER WATERSHED GIS Application' interface. At the top, there is a navigation bar with tabs for 'GIS Layers', 'Legend', 'Views', 'Search', 'Graphics', and 'Contact Us'. Below this is a header for the application. The main map area shows a map of the watershed with county boundaries and names: Mercer, Auglaize, Hardin, Shelby, Logan, Darke, Miami, Champaign, Clark, Preble, Montgomery, Greene, Butler, Warren, and Hamilton. A scale bar indicates 0 to 35 miles. To the left of the map is a vertical toolbar with various navigation icons. To the right is a 'Layer Management' panel with an 'Update Layers' button and a link to 'Learn more about each map layer'. The panel lists two main categories: 'Imagery' and 'Flood Protection', both with 'Visible' and 'Active' checkboxes. Under 'Imagery', there are several layers with checkboxes, including 'Dams', 'Low Dams', 'Dayton Flood', 'Features', 'Retention', 'FEMA Butler County', 'FEMA Greene County', 'FEMA Hamilton County', and 'FEMA Montgomery County'. Under 'Flood Protection', there are several layers with checkboxes, including 'Devonian Columbus Undifferentiated', 'Devonian Olenangy Shale', 'Silurian Cedarville Dolomite', 'Silurian Lockport Dolomite', 'Silurian Massie Shale', 'Ordovician Undifferentiated', 'Buried Valley Aquifer', 'Lithology of Glacial Sediments', 'Thickness of Unconsolidated Sediments', 'Unconsolidated Aquifer Yield', 'Unconsolidated Aquifer Setting', and 'STATSGO (Soil)'. At the bottom, there is a 'Zoom' section with a 'Set Scale' input field (1:1678632) and a 'Go!' button, and a 'Locator Map' section showing a small map of the region with a red box highlighting the current map area.

Making a map layer active

- 5) Click on the circular check box next to the layer name to make the layer active. Note that only one layer may be active at a time. Once a layer has been made active, any tabular data that has been linked to that layer is searchable. You may use the **Identify** tool button to display any tabular data. The Identify tool button is discussed in the Map Tools section of this guide.

Accessing information (metadata) about each map layer

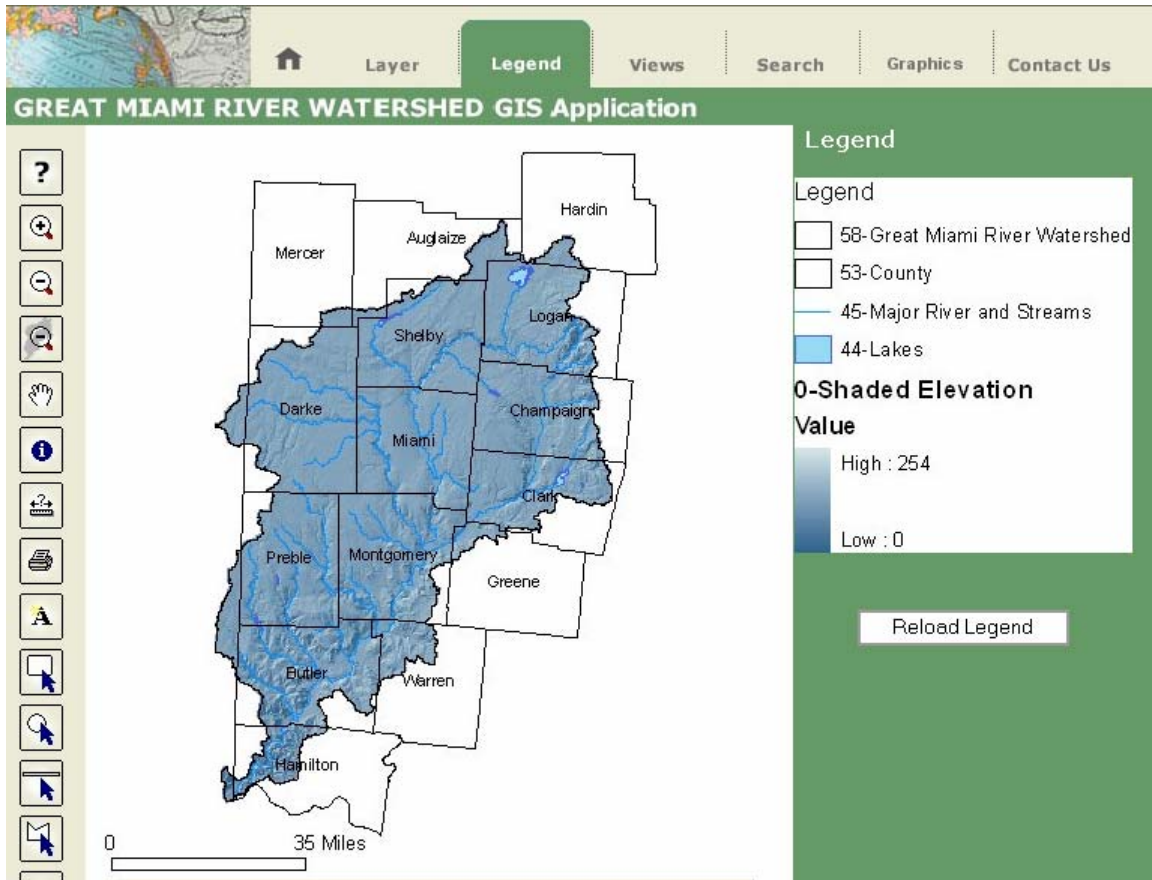
1. To learn more about each map layer such as who created it, when it was created, and positional accuracy click on the link “**Learn more about each map layer**”.
2. A separate window appears with links to each layer.

The screenshot displays the 'GREAT MIAMI RIVER WATERSHED GIS Application' interface. At the top, there is a navigation bar with tabs for 'GIS Layers', 'Legend', 'Views', 'Search', 'Graphics', and 'Contact Us'. Below this, a central map area shows a topographic view of the watershed with labels for 'Preble', 'Montgomery', 'Warren', and 'Greene' counties. To the right of the map, there is an 'Update Layers' button and a link to 'Learn more about each map layer'. Below the map, a browser window is open, showing the Miami Conservancy District website. The website header includes the logo and the text 'MIAMI CONSERVANCY DISTRICT' and 'PROTECTING. PRESERVING. P'. The main content area lists several map layers: 'DOQQs', 'Aerial Photography', 'DRGs', 'USGS 7.5 Min Topos', 'Flood_Protection', 'Dams', 'Dayton Flood', 'Features', 'FEMA Butler County', and 'FEMA Greene County'. To the left of the browser window, there is a vertical toolbar with various map navigation icons. At the bottom right, a legend window is visible, showing a map of the watershed with Butler County highlighted in red.

Map Legend

The legend store the symbols uses for each visible map layer. By looking at the legend you can determine what each symbol on the map represents.




1. Click on the **Legend** tab from the Tab Window.



Map Tools

The GIS application has tools to help you navigate to a particular location of interest, obtain information about layers, measure distances on a map, print maps, and get help. The map tools are located along the left side of the GIS application screen.

Using Map Tools

1. Whenever you have question about or need a quick reminder of what a particular tool button does, click the **Help** tool and locate the information. A pop-up window appears with a list of Help items for the application. 
2. Click the **Zoom In** tool once and then bring your cursor into the map window. Click and drag a box around the area you want to zoom in to, and then let go of the mouse button. The map window will refresh with the new map showing the area where you zoomed in. 
3. Click the **Zoom Out** tool once and then click in the Map Window at the point in the map you would like to be the center once the application 

zooms out. The map window will refresh showing the result of your zoom out request.

4. Click on the **Zoom to Full Extent Tool**. This will automatically zoom the map to the full extent of the Great Miami River Watershed.



5. To move the map extent but maintain the same zoom scale click on the **Pan** tool and then a point in the map window and hold your left mouse button down while you drag the map in the direction that you want. Once you have the map re-centered as desired, release the left mouse button. The map is now re-centered.



6. To obtain attribute information about a particular feature on the map, click on the **Identify** tool and then click on that feature in the map window. This tool will return information on all features at that point within the visible and searchable layers. A pop-up window will appear showing the results of any features found using the identify tool.



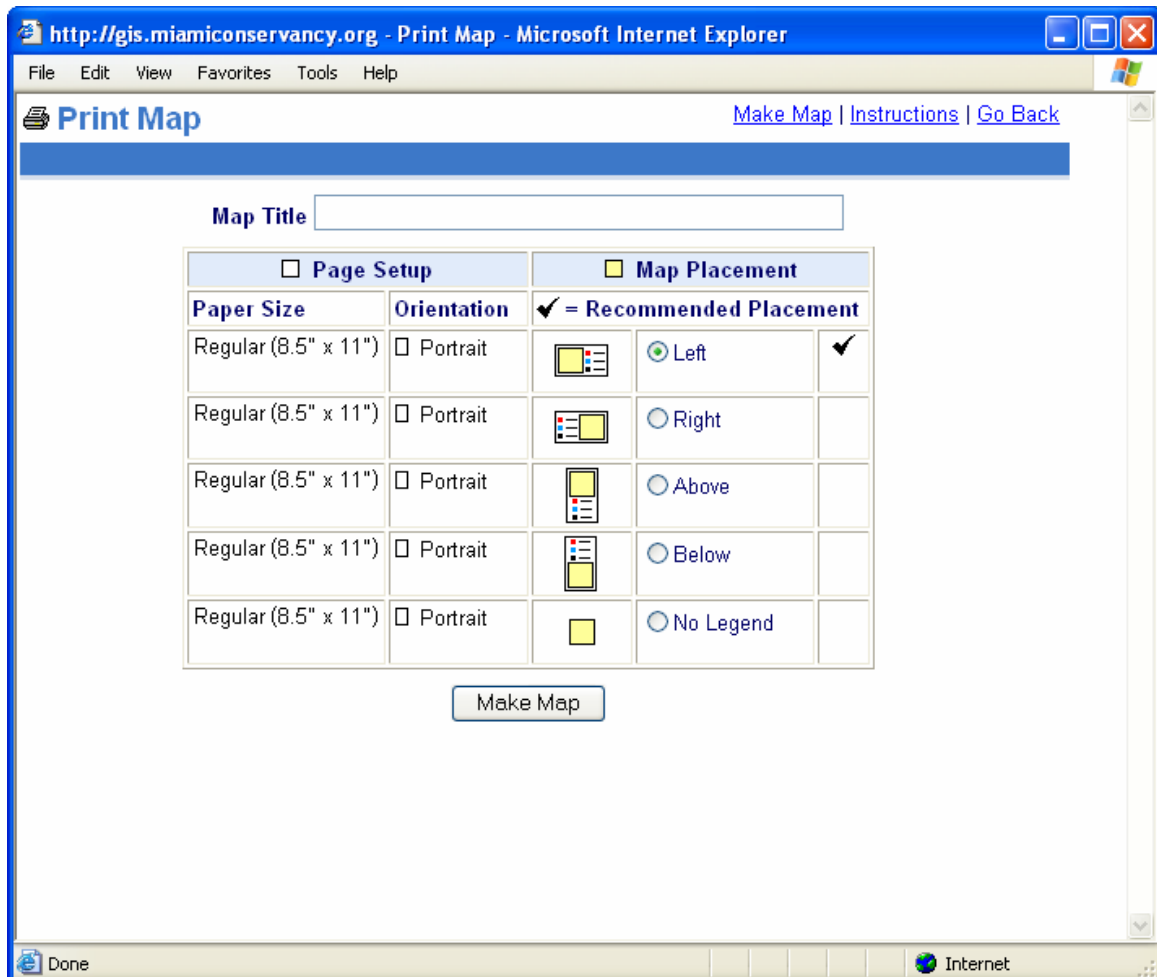
7. To determine the distance on a map, click the **Measure** tool. Next, move the cursor into the map window and click at least two points to create a line. Press the space bar to see the total distance in feet from your first to last point.



Publishing your map

8. Once you have selected the layers that you want to display, zoomed to the desired scale and extent, and added your annotation (see below for adding map annotation) you can print, or publish, your map by clicking on the **Print** tool. A pop-up Print Map window will appear with choices for creating a map that can be saved or printed.





You have five choices for positioning the map and legend on an 8.5 x 11 page. You may also give your map a title by typing the map title in the space at the top of the pop-up window. When you are finished making your selections, click on the **Make Map** button to print or save your map. Another pop-up window will appear showing the final map with the title and the legend. Under the file option choose print or save as to print or save your map.

Adding Map Annotation

The GIS application allows you to add your own annotation over the GIS layers in the map window. Annotations can be text, point (symbols), lines, and polygon areas. For each of these annotations, the GIS application allows you to choose color and other style elements to use in drawing the annotation. Your annotations will be saved so you can view them at a later date.

- To a text annotation click on the **Add Text** tool. Move your cursor to the exact location where you want to add text and left click the mouse. Type a description of the text you want to add to the map in the **Description** box. Type the text you want to add to the map in the **Map Text** box. Choose a Text Angle (you must



enter a value) choose 1 to display the text horizontally. Choose the **Size** and **Color** you want the text to be from the respective drop-down lists. Click the **Add Text** button to see your text appear in the Map Window, or click **Cancel** to abandon your text addition.

GREAT MIAMI RIVER WATERSHED GIS Application

Layer | Legend | Views | Search | **Graphics** | Contact Us

Setup
Click the map where you require your text to be placed.
Then select the properties for your text from the form below

Description

Map Text

Text Angle
* Note: Text angle may be a number from 1 to 360 that will determine the angle of text display on map.

Size 10pt
Color Black

10. To add a point symbol annotation click on the **Add Symbol** tool. Once you have selected this tool, move your cursor into the Map Window and click to indicate the place you want your point symbol to be. Type a description into the **Description** box. Choose a symbol from the list by clicking the button to its left (scroll down to find the complete list). Click the **Add Point** button to see the symbol appear in the Map Window. Alternatively, click **Cancel**.



GREAT MIAMI RIVER WATERSHED GIS Application

Layer Legend Views Search Graphics Contact Us

0 35 Miles

Zoom

Set Scale
1: 1678632 Go!

Quick Zoom
Butler Go!

Fixed Zoom
[1 : 100k](#)
[1 : 64k](#)
[1 : 24k](#)
[1 : 12k](#)
[1" = 1320 ft.](#)
[1" = 660 ft.](#)

Locator Map

Airport
 Bike Path
 Boat Ramp
 Building
 Hospital
 Interstate
 Outfall
 Star
 State Route
 Tree
 Triangle
 Waterdrop
 Well
 Well 2
 Well 3
 Well 4
 Yellow Circle
 Yellow Square

Add Point
Cancel

11. To add a line annotation click on the **Add Line** tool. Instructions will appear in the Tab Window. Click at least two points in the Map Window, one at each end of the line segment you wish to draw. When you are finished press the space bar and type a description or name for the line feature in the **Description** box. From the drop-down **Line Type** list, choose the type of line style you want the line feature to have. Select the width of the line by typing the width of the line in pixels in the **Line Width** box. From the **Color** drop-down list, choose what color you want your line to be. Click the **Add Line** button to make the line feature appear in the Map Window, or click the **Cancel** button to remove your selections.



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Layer Legend Views Search Graphics Contact Us

GREAT MIAMI RIVER WATERSHED GIS Application

Setup

Click 2 or more points on the map that represent the vertices of your desired line feature. When finished, click the Add line button and the line feature will be drawn on your map.

Description

Line Type

Solid

Line Width

pixels

Line Color

Black

Add Line Cancel

0 35 Miles

12. To add a polygon annotation click on the **Add Polygon** tool. Once you have selected the tool move the cursor into the map window and draw the polygon by clicking on the vertices or corners around the polygon perimeter. You must click at least three points to draw a polygon. When you are finished drawing the corners that define the polygon press the space bar. Next type in a name for the polygon in the **Description** box. This name will be used to keep track of the polygon so avoid using the same name for more than one polygon. You now have several **Symbology Options** to consider. First, decide whether or not you want the polygon to be hollow or filled in with color or patterns. For a hollow polygon check the **Show Border** box and uncheck the **Fill Polygon** box. Type in a Border Width (in pixels). Then choose a Border Color and a Border Type from the drop-down lists. Click the **Add Polygon** button to make the polygon feature appear in the Map Window. For a filled polygon check the **Fill Polygon** box and select options for the polygon border and fill. Choose the density of your fill pattern and the transparency of your fill material (between 0 and 100%). Click the **Add Polygon** button to make the filled polygon appear in the Map Window.



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Layer Legend Views Search Graphics Contact Us

GREAT MIAMI RIVER WATERSHED GIS Application

Setup
Click 3 or more points on the map that represent the corners of your polygon shape. When finished, type in a name for the polygon in the Description box, choose label and symbol options, and click *Add Polygon* to place the polygon on the map. Alternatively, click *Cancel* to delete your drawing.

Description
[Text Input Field]

Symbology Options

<input checked="" type="checkbox"/> Show Border	<input checked="" type="checkbox"/> Fill Polygon
Border Width 2	Fill Color Black
Border Color Black	Border Type Solid
Density 0.5	Trans. 50%
Fill Type Solid	

Add Polygon Cancel

0 35 Miles

Removing Map Annotation

Click on the Graphics Tab to display any previously saved map annotation. The Tab Window will list the names of any annotations that were created and saved from previous user sessions. To remove an annotation layer simply click on the red x mark in the Delete column and then click on the **Update Map** button. The annotation will be removed from the Map Window.

The screenshot displays the Miami Conservancy District GIS Application interface. At the top, the logo for the Miami Conservancy District is visible, along with the tagline "PROTECTING. PRESERVING. PROMOTING." Below the logo, a navigation menu includes "Layer", "Legend", "Views", "Search", "Graphics", and "Contact Us". The main title of the application is "GREAT MIAMI RIVER WATERSHED GIS Application".

The central map area shows a topographic map of the Great Miami River Watershed. A black polygon annotation is overlaid on the map, covering a portion of the watershed. The map includes labels for various locations: Preble, Montgomery, Warren, Butler, Hamilton, and Great Miami R. A scale bar at the bottom left indicates 0 to 7 miles.

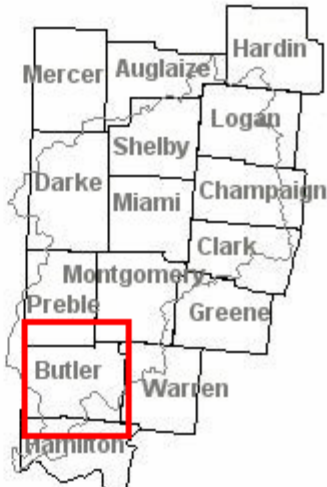
On the right side of the interface, there is a "Setup" panel. It contains a table with the following structure:

Graphic	Delete
polygon	X

Below the table is an "Update Map" button.

Additional Zoom Functions

The GIS application offers multiple ways to navigate to a place of interest. The zoom window at the bottom of the application includes tools for you to 1) zoom using an absolute scale, 2) zoom using a set of predefined scales, and 3) zoom to the extent of a county.

Zoom	Locator Map
<p>Set Scale</p> <p>1: <input type="text" value="356026"/> <input type="button" value="Go!"/></p> <p>Quick Zoom</p> <p><input type="text" value="Butler"/> <input type="button" value="Go!"/></p> <p>Fixed Zoom</p> <p>1 : 100k</p> <p>1 : 64k</p> <p>1 : 24k</p> <p>1 : 12k</p> <p>1" = 1320 ft.</p> <p>1" = 660 ft.</p>	 <p>The Locator Map displays a grid of county boundaries. The counties shown are Mercer, Auglaize, Hardin, Logan, Shelby, Champaign, Darke, Miami, Clark, Montgomery, Greene, Preble, Butler, Warren, and Hamilton. The Butler county is highlighted with a red rectangular border.</p>

Using Set Scale

1. You can choose any scale you want by using the set scale function in the zoom window. Set scale uses an “*absolute scale*” where a ratio like 1:10,000 means 1 measurement unit on the map equals 10,000 measurement units on the ground (e.g. 1 inch on the map = 10,000 inches on the ground, 1 meter on the map = 10,000 meters on the ground, etc.)
2. To zoom to a particular scale, type in the desired absolute scale and click the **Go!** button to the right of the **Set Scale** box.

Using Quick Zoom

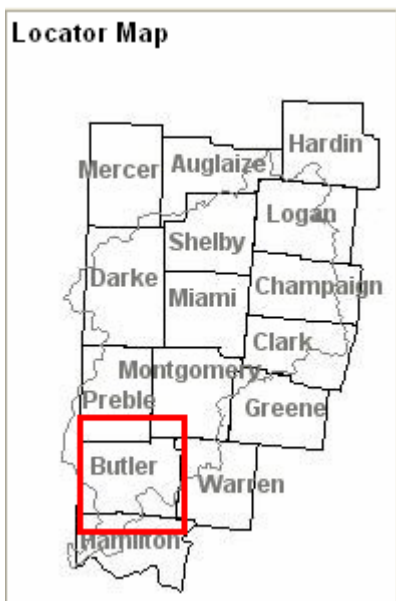
1. Choose the county you want to zoom to from the drop-down list.
2. Click the **Go!** Button.
3. The GIS application will zoom to the requested county in the Map Window.

Using Fixed Zoom

1. Click the desired zoom level from the **Fixed Zoom** list in the Zoom Window.
2. Using the center point of your initial map request the GIS application will zoom into or out to your requested zoom level.

Locator Map

The GIS application displays a locator map at the bottom of the page in order to show the Map Window location relative to the entire Great Miami River Watershed. Note that sometimes you will be zoomed in to such a small area that you will no longer be able to make out the red location box on the Locator Map.



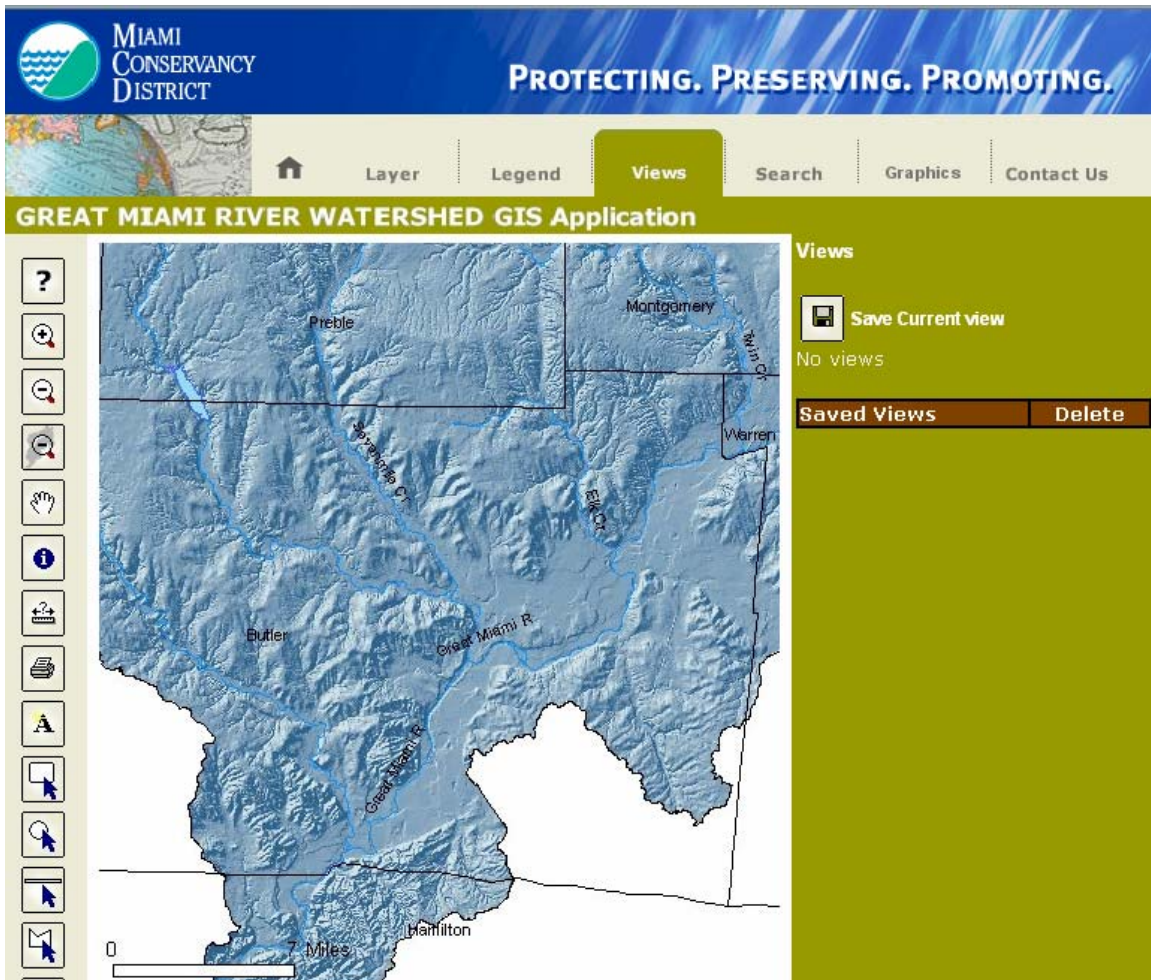
Saving Map Views

The GIS application has a Tab Window for you to save your map view so you can return to that exact map view at a later date. The GIS application remembers all of your map layers, annotation, and the zoom extent of your map.

Saving a Map View

1. Create a map view to save by selecting some map layers and, if desired, adding annotation.
2. Click on the **Views** tab from the Tab Window.
3. Click **Save Current View**.

4. The Tab Window will prompt you to give the map view a name. Type the name of your map view in the **Description** box.
5. Click the **Save View** button.
6. The Saved Views box shows a list of all saved views. To delete any of the saved map views simply click on the red X icon under the **Delete** heading.
7. To return to a saved map view, click on its heading in the **Saved Views** box.



Search Map Features

The GIS application allows you to learn more about features within queryable layers by searching at point or within a user defined area. A queryable layer is one where the map features (like well locations) have associated information stored in a table that is linked to that particular feature. A separate window displays the items found in the map and allows you to view the detailed data from the table for each item.

Performing a Search

1. Click the **Search** tab on the GIS application.
2. Follow the directions that appear in the box below the tab, shown below.

The screenshot displays the 'GREAT MIAMI RIVER WATERSHED GIS Application' interface. At the top, there are navigation tabs: Home, Layer, Legend, Views, Search (highlighted), Graphics, and Contact Us. The main map area shows a topographic view of the watershed with several yellow crosshair markers indicating search points. A vertical toolbar on the left contains various GIS navigation tools. Below the map is a 'Zoom' panel with 'Set Scale' (1: 356026), 'Quick Zoom' (Butler), and 'Fixed Zoom' options. To the right of the zoom panel is a 'Locator Map' showing a grid of counties with Butler highlighted in red. On the far right, the 'Search' panel is active, displaying 'STEP 1: Choose layer (or layers) from which to find items.' with a list of layers: 0-Shaded Elevation, 32-MCD Water Quality Well Network, 44-Lakes, 45-Major River and Streams, 53-County, and 58-Great Miami River Watershed. A 'Select' button is below the list. Below that, 'STEP 2: Choose method for finding? items.' is shown, followed by 'Selection Tools' with three icons.

3. In Step 1, you will select the layer that you want to search by clicking on the layer name. (Use CNTRL + click to select multiple layers).
4. In Step 2, you will choose a tool to find the items. You have four methods available: point, box, and polygon. Alternatively, you may select the **Identify** tool.
5. Once you have selected the search tool, go into the map window and click a point, draw a box, or draw a polygon depending on your tool choice.
6. The feature that the GIS application finds will be identified on a pop-up window. The data associated with each feature (attributes) will be displayed in the pop-up window as well. Refer to the **Learn more about each map layer** link under the **Layer** tab for a key to each attribute in the pop-up window.

47-Low Dams

FID	#SHAPE#	AREA	PERIMETER	LOW_DAMS_	LOW_DAMS_I	ID	EDITOR	EDITDATE	DAM	STREAM
15	[Geometry]	0.00000	0.00000	16	16	16	Vore	19931129	Piqua Power	Great Miami R

7. Some layers in the GIS application are linked to web applications on the MCD website that provide more information about the features in that particular layer. Layers linked to web applications include MCD Water Level Well Network, MCD Water Quality Well Network, MCD/OEMA Alert Gages, and MCD Rainfall Observers. Simply click on the UNID link in the pop-up window and the corresponding web application will appear as another pop-up window.


Groundwater Levels: click UNID for more detailed information

Miami Conservancy District - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Recycle Bin Mail Print W Yellow Folder Help

Address http://www.miamiconservancy.org/Water_Data/GWLevels/WellDataDisplay.asp?wellname=LOG10000 Go Links



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PRESERVE OUR WATER

- Water Basics
- Groundwater Programs
- Surface Water Programs
- Water Data**
 - MCD Real-time Data
 - USGS Real-time Data
 - Groundwater Levels

GROUNDWATER LEVEL APPLICATION

Well Description

Well Information for LOG10000

UNID	LOG10000	Location	West Liberty Ball Park along driveway
Well Name	LOGWL	Latitude	40.25251
Status	Transducer	Longitude	83.74507
County	Logan	Installation Date	4/30/2003
Township	Liberty	Contact Information	MCD Well

Done Internet