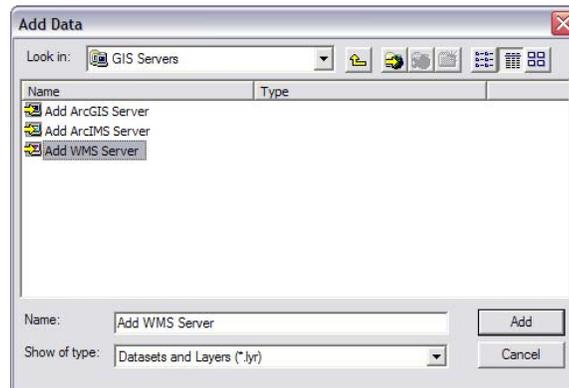


CONSUMING WMS AND WFS SERVICES IN ARCGIS DESKTOP AND MAPINFO PROFESSIONAL

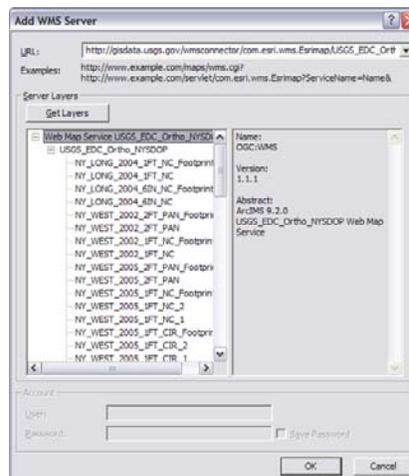
Adding a WMS Service in ArcGIS Desktop

1. From **ArcMap**, click the **Add Data** button. The Add Data dialog is displayed.
2. Within the Add Data dialog, select **GIS Servers** from the **Look in:** pulldown at the top of the dialog, then select **Add WMS Server** and click the **Add** button (or double-click "Add WMS Server").



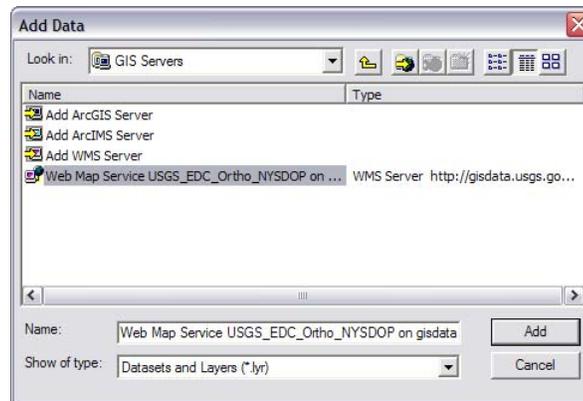
3. Within the Add WMS Server dialog, type (or paste) the URL of the desired WMS, and click the Get Layers button to test the server and list the available layers.
Note: The URL should include the question mark as the last character. For example, the URL for the NYS Orthophotography WMS is:

http://gisdata.usgs.gov/wmsconnector/com.esri.wms.Esrimap/USGS_EDC_Ortho_NYSODP?

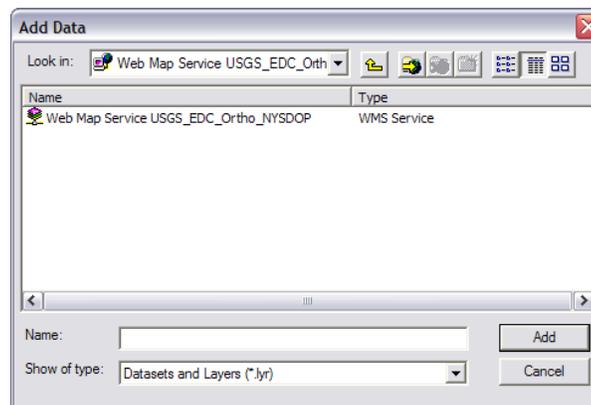


NYS Office of Cyber Security & Critical Infrastructure Coordination
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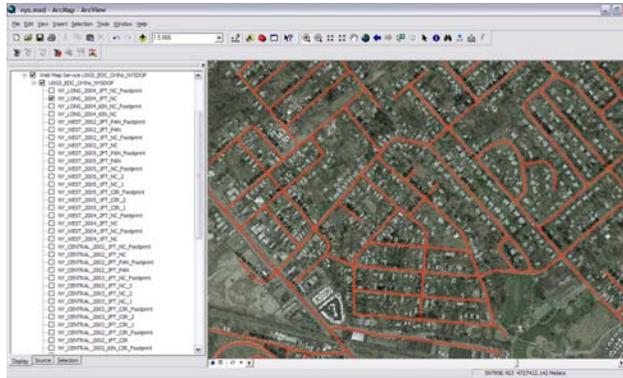
4. Click **OK**. ArcMap adds the WMS server connection and updates the Add Data dialog with the connection now available. Click the name of the new WMS server and click **Add** (or double-click the server name)



5. The server is opened and the dialog is updated displaying the name of the WMS service(s) available. Click the name of the WMS service and click **Add** (or double-click the service name).

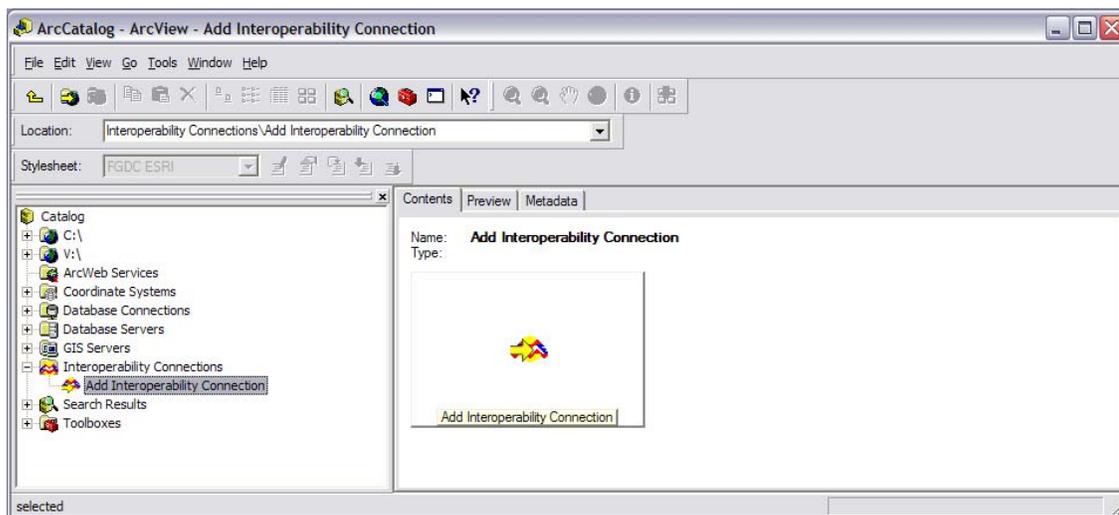


6. The map service is added to the active data frame and will appear as a group layer with all layers of the map service displayed as sub-layers.

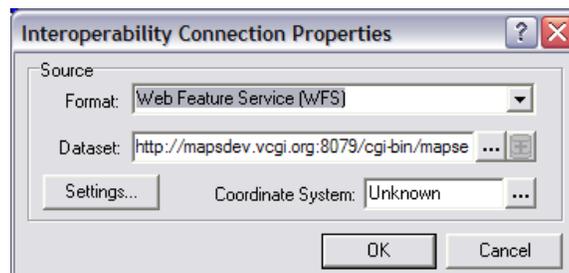


Using a WFS Service in ArcGIS Desktop

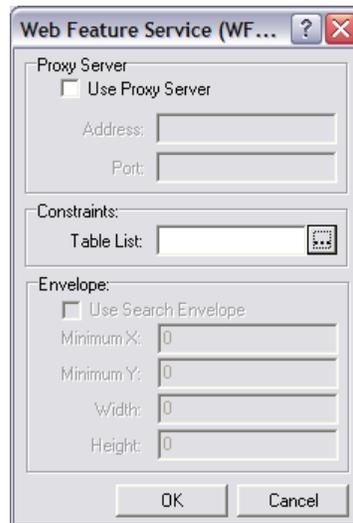
1. Within **ArcCatalog**, expand the **Interoperability Connections** node in the Catalog treeview on the left, and double-click **Add Interoperability Connection**



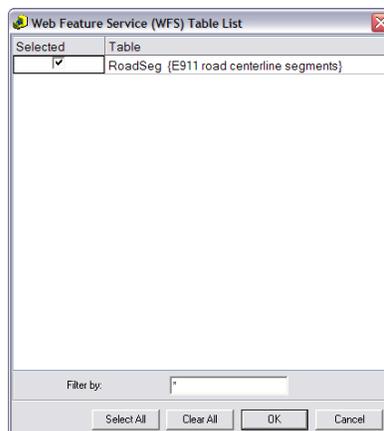
2. From the Interoperability Connection dialog, select **Web Feature Service (WFS)** from the **Format** pulldown list, then type (or paste) the URL of the WFS server in the **Dataset** input box. Click the **Settings...** button (*Note: Do NOT click OK yet, you must select one or more layers in the next dialog.*)



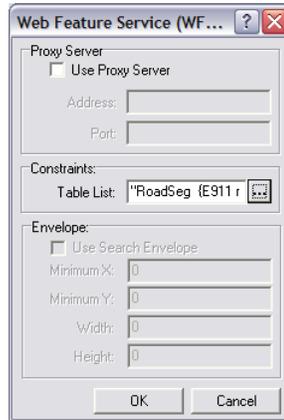
3. The Web Feature Service Properties dialog is displayed. If your organization uses a Proxy Server, click the **Use Proxy Server** checkbox at the top of the dialog and enter the **Address** and **Port** for the server. Next, click the “...” button to the right of the **Table List** control.



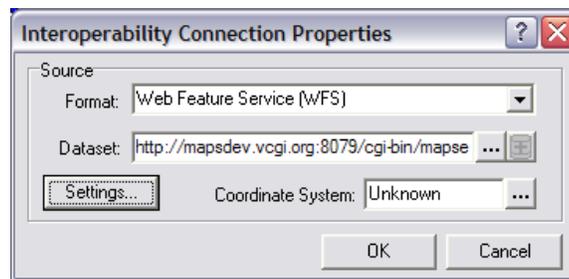
4. A list of the available layers is displayed. Select the desired layers by checking the corresponding box in the leftmost column. When done selecting layers, click **OK**.



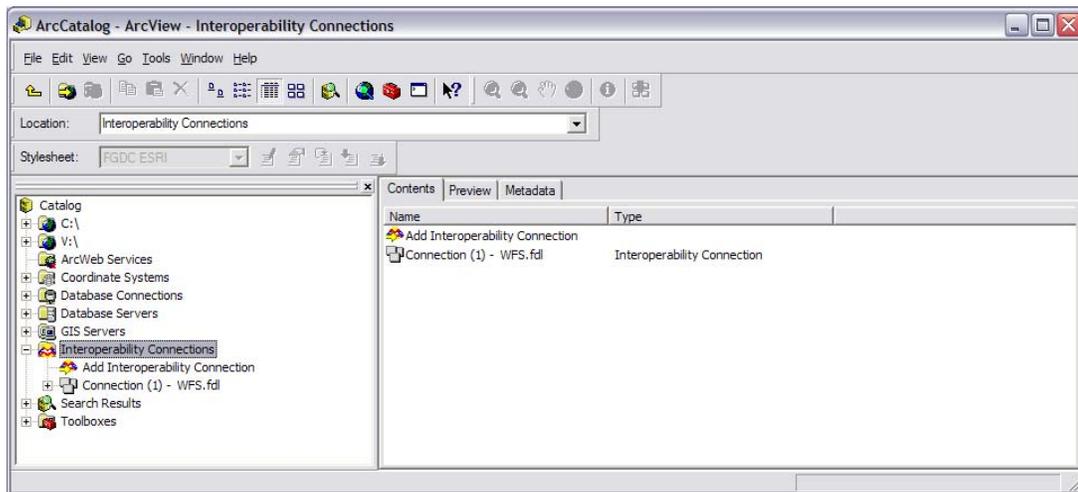
5. You are returned to the WFS Properties dialog box with the selected layer names populated in the **Table List** control. Click **OK**.



6. You are returned to the Interoperability Connection dialog. Click **OK**.

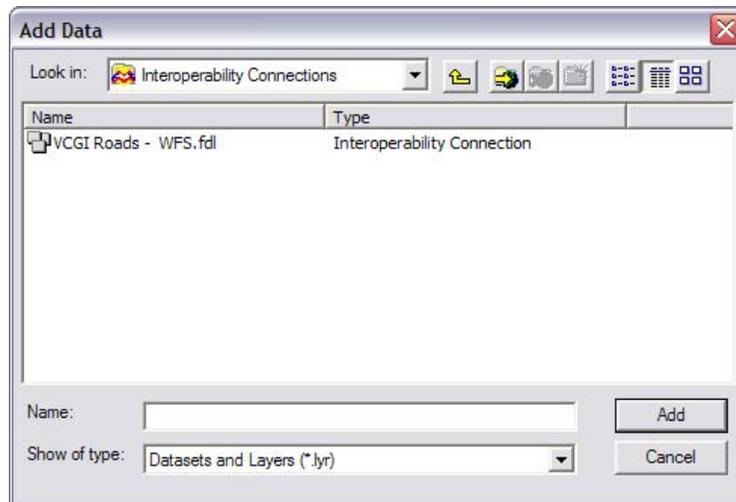


7. An Interoperability Connection is added to ArcCatalog with a generic name such as "Connection (1) – WFS.fdl". You can rename this connection by right-clicking on the connection name, and selecting **Rename** from the context menu.

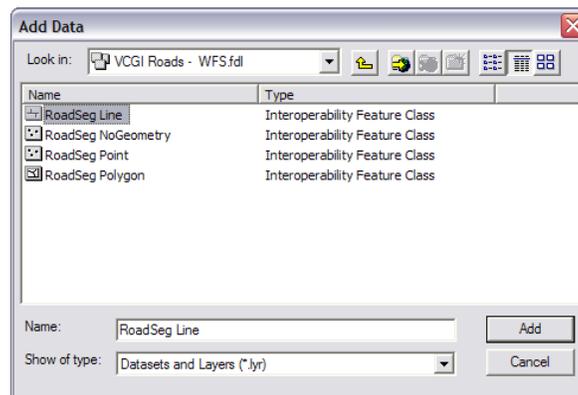


8. From **ArcMap**, click the **Add Data** button.

7. Within the Add Data dialog, select **Interoperability Connections** from the **Look in:** pulldown at the top of the dialog. The WFS connection that was established in ArcCatalog should be displayed. Double-click the connection name to expose the layers available in the connection.



9. Each layer will be displayed with multiple feature classes. Select the layer(s) to be added, and click **Add**.

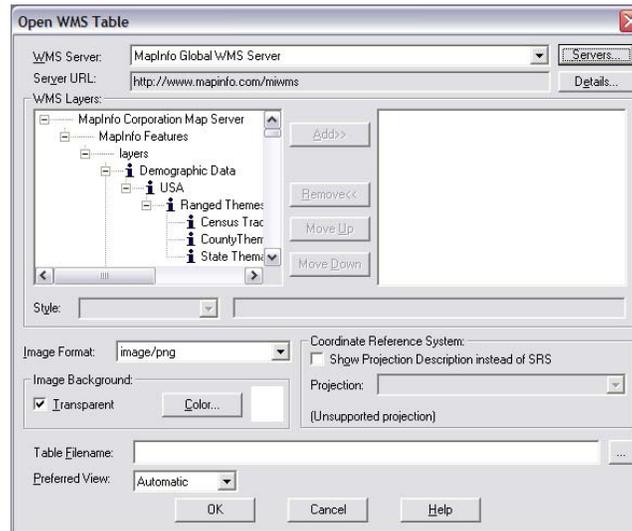


Notes on use:

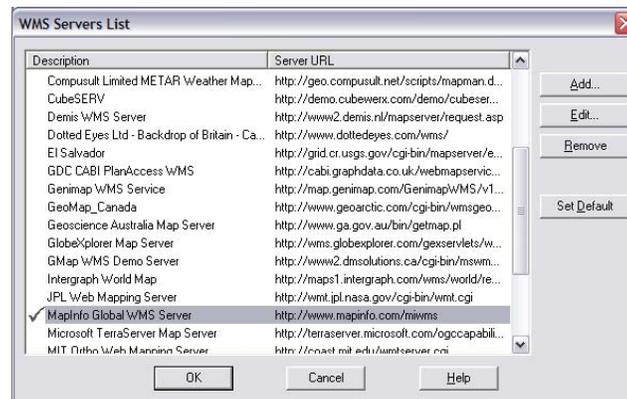
- You must install the Data Interoperability Extension (however, you do NOT need a license for it)
- Before adding in ArcMap, you must first create an “Interoperability Connection” in ArcCatalog
- Each layer appears with multiple feature classes, however, typically only one contains data.
- ArcMap interacts dynamically with a WFS, requesting features for the current geographic extent on each map update
- WFS layers cannot be edited in ArcMap

Adding a WMS Service in MapInfo

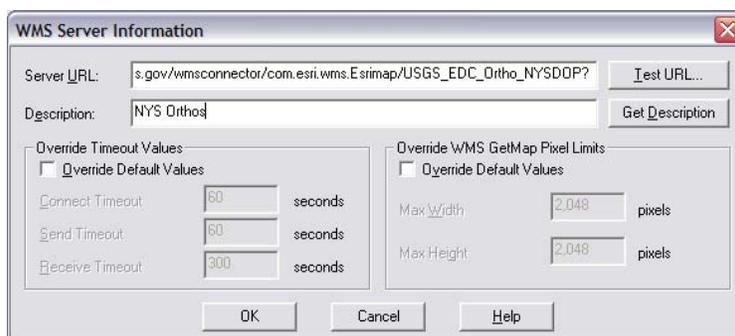
1. From the main menu, select **Open Web Service>Open WMS...** The Open WMS Table dialog is displayed.
2. Click the **Servers...** button in the upper right corner. The WMS Servers list is displayed.



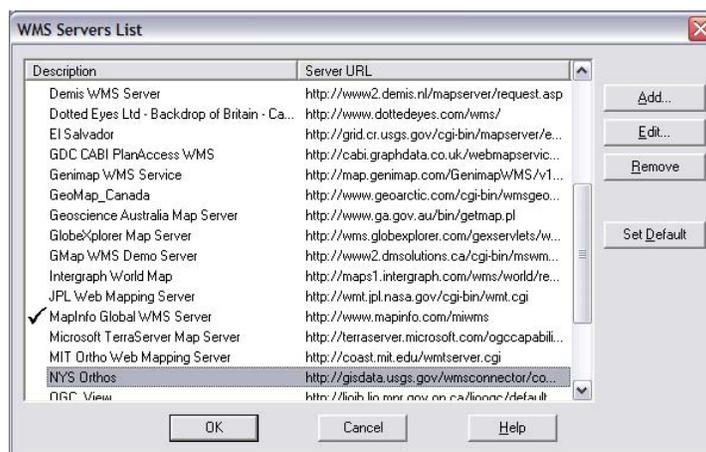
3. Click the **Add...** button to add the WMS Server to the list.



4. Enter (or paste) the URL of the WMS server in the **Server URL** input box, and enter a descriptive name for the server in the **Description** input box. Optionally, you can click **Test URL...** to test the server connection. If successful, the details of the WMS server are displayed in a popup window, after which you can click **Close**. Finally, click **OK** to save the server information.



- The WMS Servers list is displayed again, with the new server added to the list. Highlight the server that was just added and click **OK**.

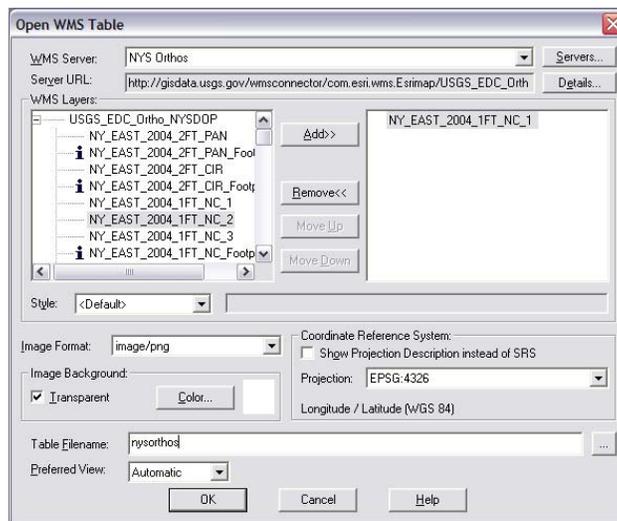


- A connection to the WMS Server is established and the Open WMS Table dialog is displayed with the available WMS Layers listed in the listbox on the left side of the dialog. Select the desired layer(s) from the list and click the **Add>>** button to transfer each layer to the right listbox which displays the layers to be added to your MapInfo session (*Note: If you select more than one layer you will not be able to control the individual visibility of each layer. To control each layer individually, this process should be repeated for each desired layer*).

MapInfo will write a table (.TAB) file to manage this connection throughout the session, so enter the name of a table file in the **Table Filename** input box at the bottom of the dialog.

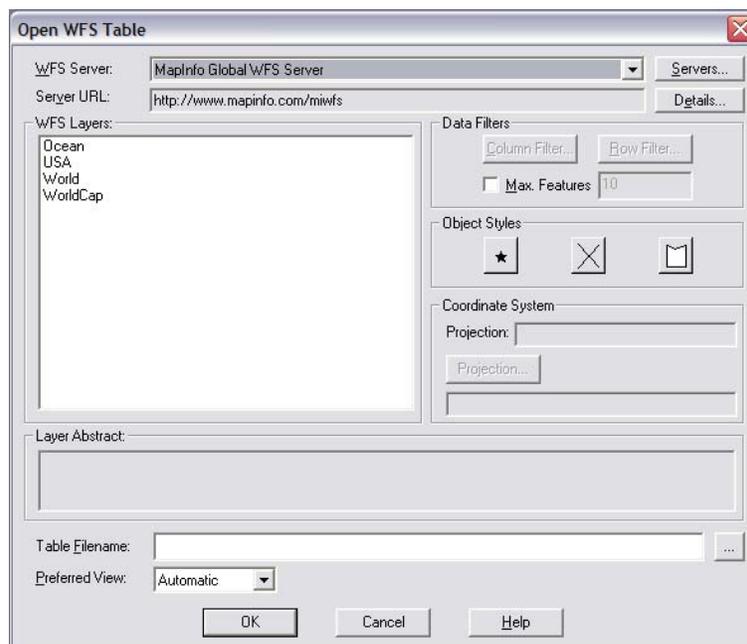
Optionally, set the **Preferred View** pulldown list at the bottom of the dialog to specify where the new WMS data will be added (the default is "Automatic" which will add the layers to the Current Mapper window if one exists, or a new Mapper window if there is no current Mapper).

Click the **OK** button and the selected layer(s) will be added.

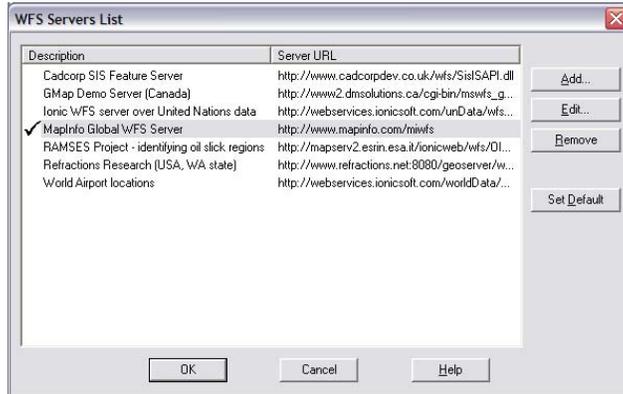


Adding a WFS Service in MapInfo

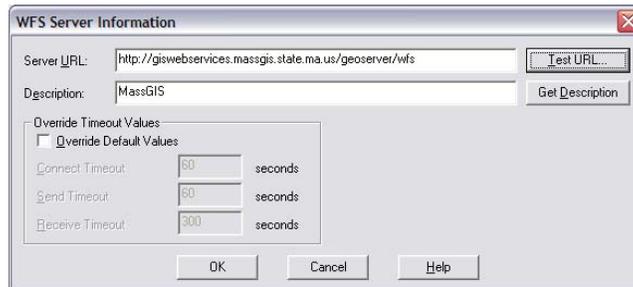
1. From the main menu, select **Open Web Service>Open WFS....** The Open WFS Table dialog is displayed.
2. Click the **Servers...** button in the upper right corner. The WFS Servers list is displayed.



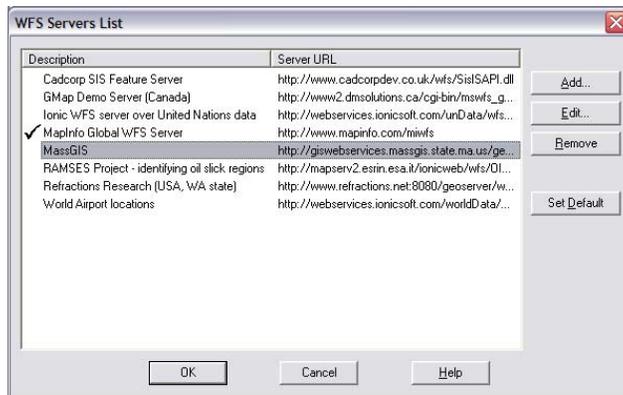
3. Click the **Add...** button to add the WFS Server to the list.



4. Enter (or paste) the URL of the WFS server in the **Server URL** input box, and enter a descriptive name for the server in the **Description** input box. Optionally, you can click **Test URL...** to test the server connection. If successful, the details of the WFS server are displayed in a popup window, after which you can click **Close**. Finally, click **OK** to save the server information.



5. The WFS Servers list is displayed again, with the new server added to the list. Highlight the server that was just added and click **OK**.



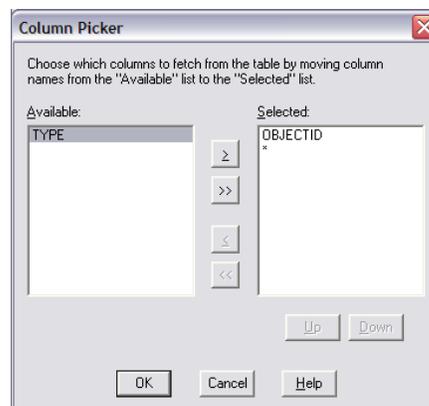
6. A connection to the WFS Server is established and the Open WFS Table dialog is displayed with the available layers listed in the **WFS Layers** listbox on the left side of the dialog. Click (highlight) the name of the desired layer from the listbox.

***Important Note:** When the layer is added, MapInfo will retrieve the specified features and **write a local copy of all data to a table (.TAB) file** for subsequent use. MapInfo utilizes the local copy of the data for all operations (the WFS table can be refreshed at anytime to update the local data).*

A default table name is populated in the **Table Filename** input box at the bottom of the dialog. If necessary, change the path/filename for the table file to be used to store the local data for this WFS layer.

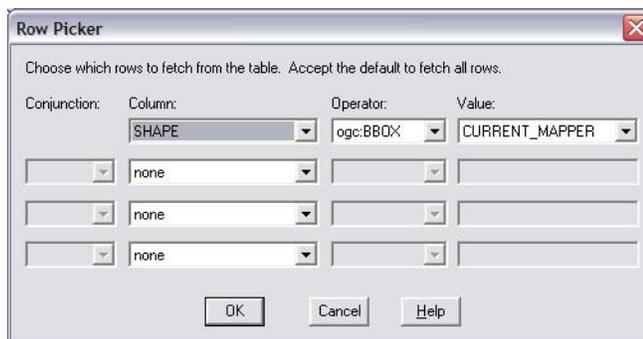
By default, ALL features and ALL columns from the selected layer will be retrieved. In most cases, this is NOT desirable.

To limit the columns to be retrieved from the attribute table, click the **Column Filter...** button and transfer the required fields from the **Available** list box to the **Selected** list box in the **Column Picker** dialog, then click OK.



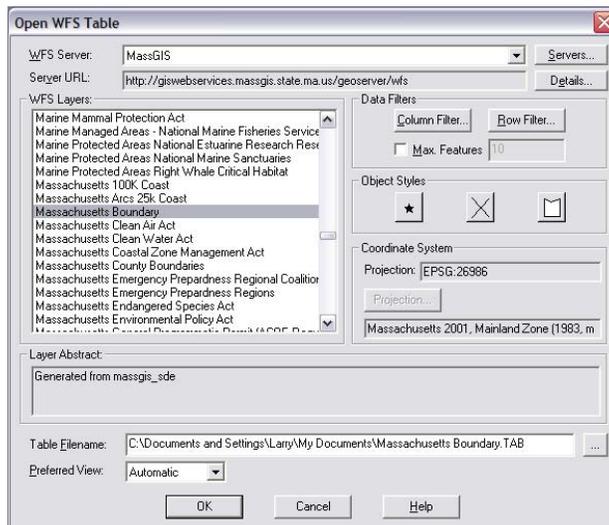
To limit the features retrieved, click the **Row Filter...** button, then construct a criteria to filter the rows (features). To restrict the features to those within the geographic extent of the Current Mapper window, select the **Column** representing the geography (e.g., SHAPE), select an **Operator** of “ogc:BBOX” and **Value** of “Current_Mapper”, and click **OK**.

(Note there must be a current Mapper window open to limit the columns by geographic extent, otherwise the ogc:BBOX operator is not available).



Optionally, set the **Preferred View** pulldown list at the bottom of the dialog to specify where the new WFS data will be added (the default is “Automatic” which will add the layers to the Current Mapper window if one exists, or a new Mapper window if there is no current Mapper).

Click the **OK** button and the selected layer will be added. Note that the initial retrieval can take several minutes depending on the number of features and columns. If the retrieval times out, you can override the default retrieval timeout for this server (see Step 4), and increase the value from 300 seconds (5 minutes) to a higher value. However, it may be more practical to modify the Column and/or Row Filters to limit the data requested rather than increasing the timeout.



Notes on use:

- *MapInfo Professional can open WFS services natively*
- *When a layer from a WFS service is opened, requested features are retrieved and written to a local MapInfo .TAB file*
- *Unlike ArcMap, it is NOT a dynamic interaction between MapInfo and the WMS service, retrieving features as needed. Once features have been retrieved and written locally, all subsequent operations are performed on the local .TAB file.*

- A WFS Table can be refreshed from the server (features retrieved and local table updated) at anytime by selecting **Table>WFS Table Refresh** from the main menu (or Alt+F5)
- It does not automatically limit the features retrieved to those within the current geographic extent of the Mapper window. The default is to retrieve ALL features from the layer. Therefore, you must specify a Row Filter on the spatial column (column name varies) to accomplish this.
- The initial adding of a layer from a WFS service can take several minutes, however, all subsequent operations are “normal” response times.
- Since the features are written to a local MapInfo .TAB file, all functionality is available once the WFS layer is added
- The WFS layer can be refreshed at anytime
- WFS layers cannot be edited and posted back to the server in MapInfo