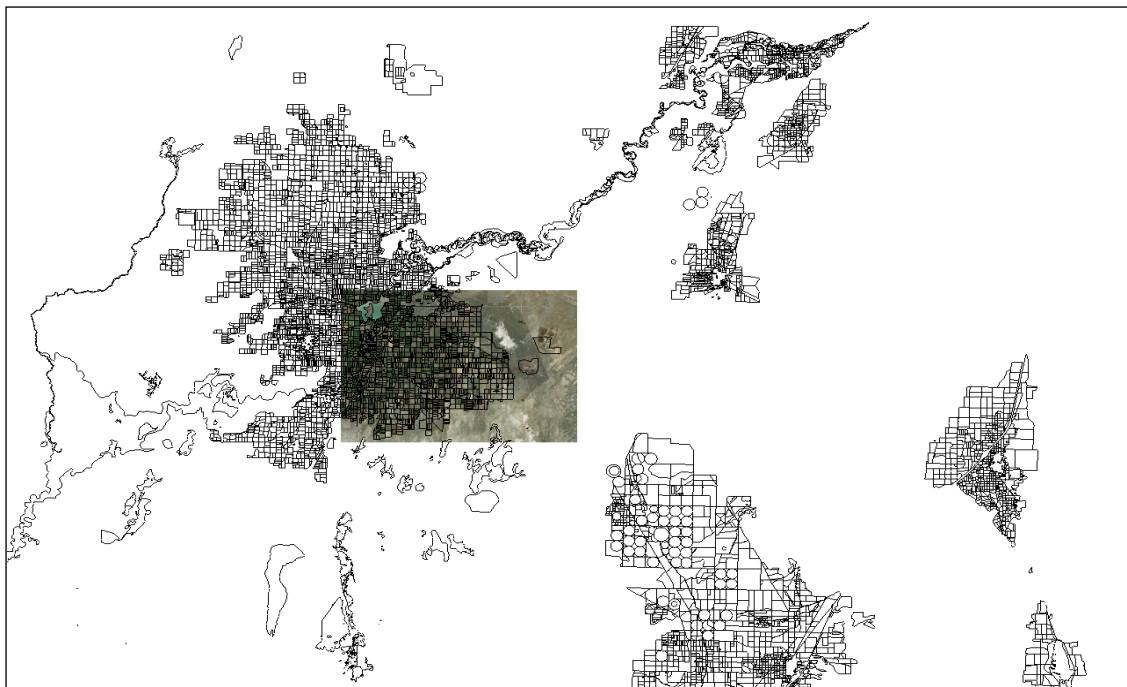*WMS 11.0 Tutorial*
GIS Module
Importing, displaying, and converting shapefiles

Objectives

This tutorial demonstrates how to import GIS data, visualize it, and convert it into WMS coverage data that could be used to build a watershed model. This tutorial will instruct on how to import water related land use information acquired from Utah's GIS portal, found online. However, the concepts can be useful to work with any GIS data in WMS.

Prerequisite Tutorials	Required Components	Time
• Introduction to WMS	• GIS Module • Map Module	• 15–30 minutes

AQUAVEO™

1   Getting Started

GIS (Geographic Information System) data can be useful for building models with WMS. This is particularly true for land use or other data that would be time consuming to digitize by hand. GIS data can also be made visible behind WMS data in the Graphics Window.

WMS contains two implementations for working with GIS data:

- Generic WMS implementation – Can import ArcGIS® shapefiles as well as MapInfo MIF/MID formats. Includes tools for selecting, viewing table data, and converting data to coverages and scatter sets.

This tutorial uses the default generic WMS implementation. The ArcObjects® implementation has some differences which are not shown or discussed here.

2   Opening an Existing GIS Data File and Viewing Attributes

The first step is to start by opening the shapefile in the generic WMS implemented mode. Opening a shapefile with ArcObjects® implementation requires a different procedure which is not covered in this tutorial.

To open a shapefile in the generic WMS implemented mode:

1. Select **Open** 📂 to bring up the *Open* dialog.

2. Browse to the *data files* folder for this tutorial.

3. Select "SGID_U024_WaterRelatedLanduse.shp" (make sure it is the one with ".shp" as the extension, not ".shp.xml").

4. Click **Open** to import the shapefile and exit the *Open* dialog.

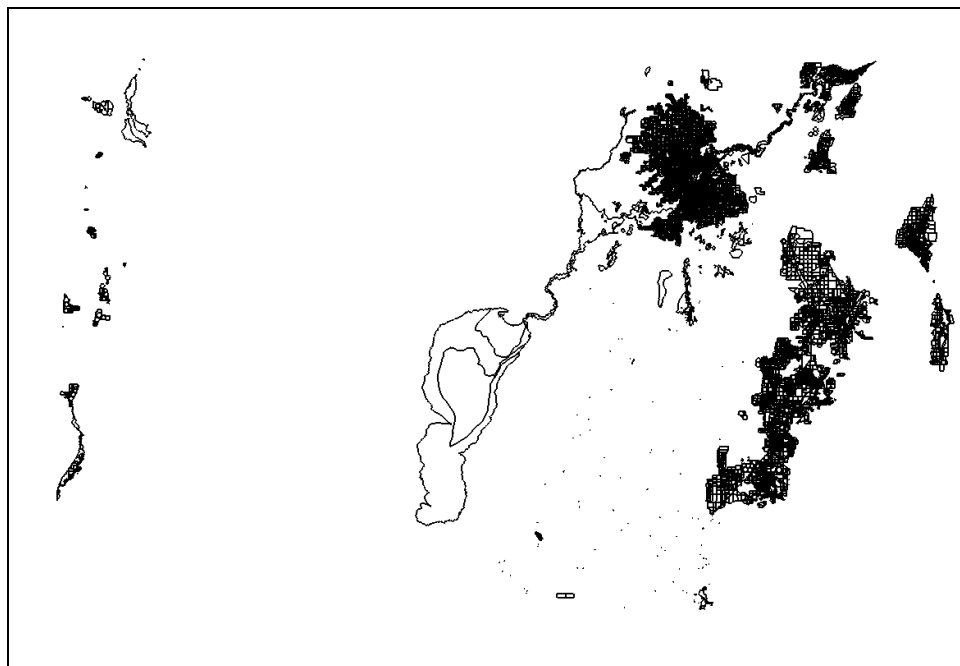The project should appear similar to Figure 1.

Figure 1   Shapefile after importing

5. Click on the **GIS Module** 🌎.

6. Right-click on "⊠ SGID_U024_WaterRelatedLanduse.shp" in the Project Explorer, and select **Open Attribute Table** to bring up the *Attributes* dialog.

The *Attributes* dialog shows the information listed for all polygons in the domain of the shapefile. Note that the dialog lists the total number of records in the bottom left corner of the dialog.

7. Click **OK** to close the *Attributes* dialog.

3   Mapping the Shapefile to an Active Coverage

In order to incorporate data into models, the GIS data needs to be converted into native WMS data. GIS data is generally converted into map coverages, which are similar to GIS layers.

Data converted from GIS layers into map coverages are put into the active coverage. Therefore, it is important to create the type of coverage wanted and make it active before the conversion process.

To convert the landuse data into an area property coverage with designated materials, do the following:

1. Right-click on "🌿 Drainage" and select *Type* | **Area Property.**

2. Select "🌿 Area Property" to make it active.

3. Switch to the **GIS Module** 🌎.

4. Select *Mapping* | **Shapes → Feature Objects** to bring up the *GIS to Feature Objects Wizard* dialog.

5. Click **Next** to proceed to *Step 2 of 3* of the wizard.

6. In the *Mapping Preview* section, in the *Description* column, select "Material Name" from the drop-down on the *Mapping* row.

WMS will assign the polygon description to each polygon mapped to the active coverage.

7. Click **Next** to proceed to *Step 3 of 3(Finished)* of the wizard.

8. Click **Finish** to close the *GIS to Feature Objects Wizard* dialog.

9. Turn off " GIS Data" in the Project Explorer.
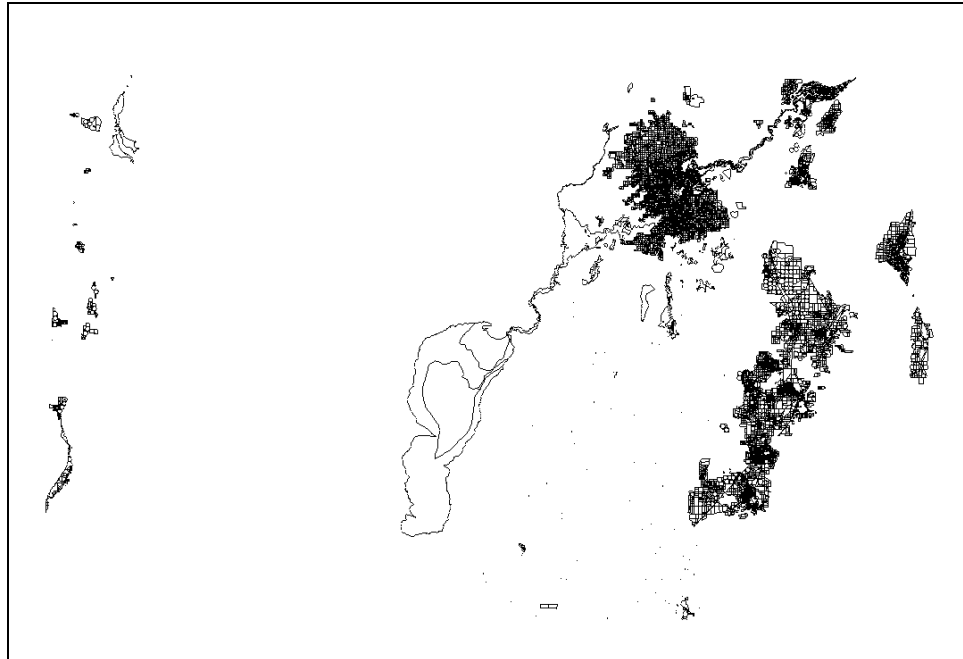
The project should appear similar to Figure 2.

Figure 2   After mapping to feature objects

4   Downloading An Aerial Image

Sometimes it is useful to download an aerial photo in order to supplement the display and for better observations. The "Images" tutorial gives instructions for one method of finding image data online. WMS can also grab image data from Terraserver for a specific geographic area. To grab an image from Terraserver for this area:

1. **Zoom** in to the area shown in Figure 3.

2. Click on the **Get Data Tool** and drag a box to select a region within the city (see Figure 4) to bring up the *Data Service Options* dialog.

3. Select *World Imagery* and click **OK** to bring up the *Save Web Services Data File(s)* dialog.

4. Enter "aerial" as the *File name* and click **Save** to close the *Save Web Services Data File(s)* dialog.

5. When asked to confirm creating the file, click **Yes** to bring up the *Raster Cell Size* dialog.

6. Click **OK** to accept the default size and close the *Raster Cell Size* dialog.

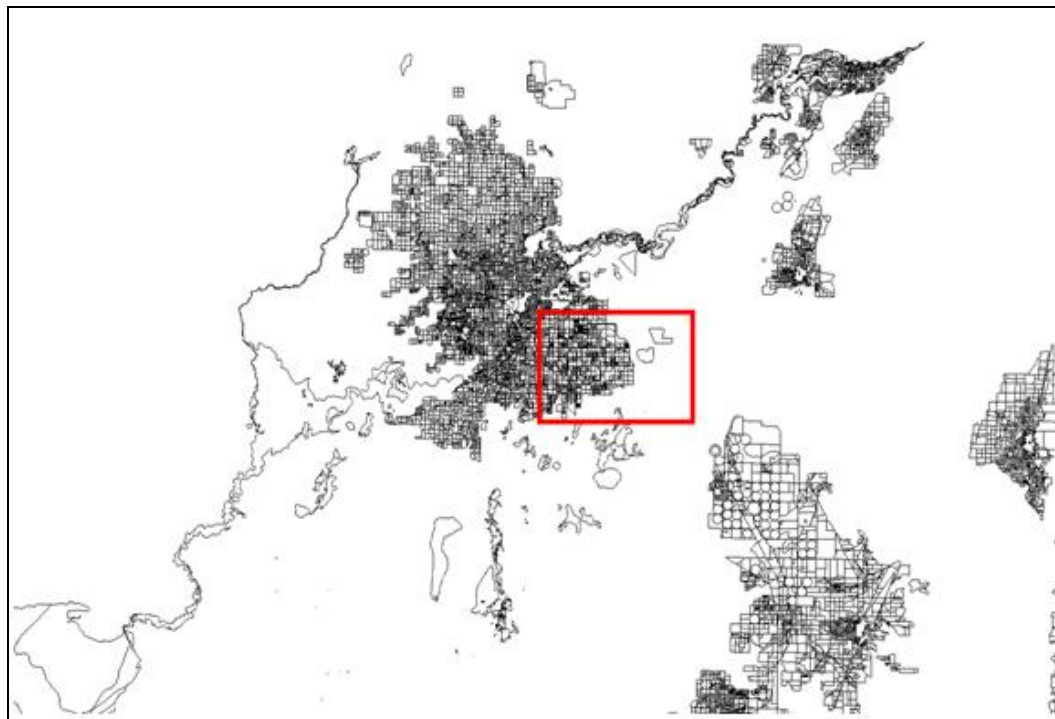The photo will take a moment to update and display. The image should appear similar to Figure 4.

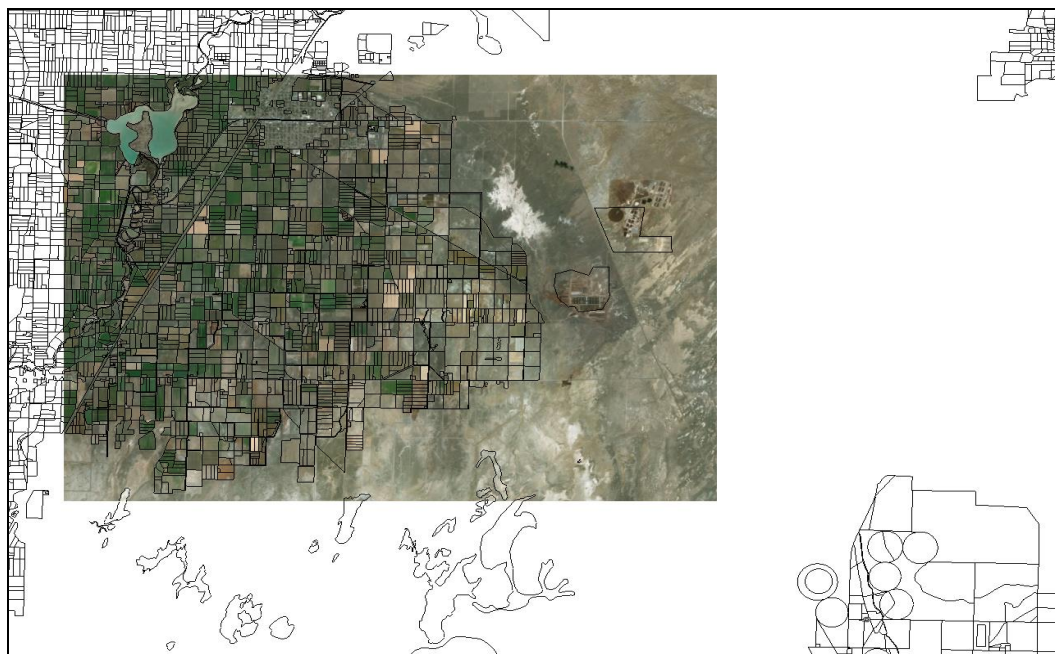*Figure 3   Selected area for aerial image*

Figure 4   The aerial image added to the project

5   Conclusion

This concludes the GIS Module tutorial. Feel free to continue to experiment with shapefiles in WMS by downloading other pertinent GIS data from websites. The WMS wiki[1] has a page that includes some ideas for places to acquire useful GIS and other spatial data.

---

[1] See http://xmswiki.com/xms/GSDA:GSDA for more details.