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**Notes:** In this and following tutorials, I will try to use the following

| | |
|---|---|
| [*New*] | a button activated by clicking on it |
| "A new blank map project" | a checkbox activated by put a check in the box by clicking on the box |
| "Username" | a text-box name where you enter data by typing it in |
| *ISSUE* | a potential limitation to the use of the software |
| *NOTE* | an addition comment to point out addition functionality or information |
| *TASK* | Asking you to practice a skill we just discussed |
| *QUESTION:* | Asking you to collect information provided by a *TASK* |
| | *Plugin* |

# 000.0 Major subject area

| | |
|---|---|
| *001.1* | *Sub-section Area* |
| *001.1.1* | *General Information about subject area* |
| *001.1.2* | *Creation or Setup Subsection* |
| *001.1.3* | *Usage of Subject Area* |

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# *Quantum GIS*

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# *Quantum GIS Version 7.4*

## *001.0       Introduction*

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### *001.1          Introduction*

*001.1.01*      **Quantum GIS (QGIS)** is a user friendly Open Source Geographic Information System (GIS) that runs on Linux, Unix, Mac OSX, and Windows. QGIS supports vector, raster, and database formats. QGIS is licensed under the GNU Public License.

*001.1.02*      **Features:**
- Support for spatially enabled PostGIS tables
- Support for shapefiles, ArcInfo coverages, Mapinfo, and other formats supported by OGR
- Raster support for a large number of formats
- Identify features
- Display attribute tables
- Select features
- GRASS Digitizing
- Feature labeling

*001.1.03*      **What's new in Version 0.7**

- On the fly projection support to automatically project layers from different coordinate systems
- Map Composer for creating map layouts
- Toolbox for running GRASS tools from QGIS. The toolbox can be easily customized to add additional tools
- Handling of spatially enabled tables and views in PostgreSQL has been greatly improved. QGIS can now load any table in the database that contains a geometry column
- PostgreSQL views containing a geometry column can be viewed in QGIS
- Raster graphing tool to produce a histogram for a raster layer
- Raster query using the identify tool allows you to get the pixel values from a raster by making it the active layer and clicking on the point of interest
- User preferences provides customizable settings for the digitizing line width, color, and selection color
- New symbols for use with point layers are available from the layer properties dialog

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- Spatial bookmarks allow you to create and manage bookmarks for an area on the map. Bookmarks are persistent and global; meaning they are available for all projects
- Measure tool allows you to measure distances on the map with both segment length and total length displayed as you click
- GPX loading times and memory consumption for large GPX (GPS) files has been drastically reduced
- Many enhancements to the digitizing tools have been made, including the ability to capture data straight into PostgreSQL/PostGIS, and improvements to the definition of attribute tables for newly created layers
- The Raster Georeferencer plugin can be used to generate a world file for a raster. The plugin allows you to define known control points in the raster coordinate system. Once enough control points are defined, the world file can be generated and the raster properly displayed in QGIS or other GIS applications
- Improvements to the Mapserver export tool

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# *002.0 Getting the software*

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## *002.1 Quantum GIS*

## *002.1.1 General Information for Quantum GIS: Not Applicable*

## *002.1.2 Get and Set Up Quantum GIS*

*002.1.2.01* Open your web browser and navigate to the **Quantum GIS** website at http://community.qgis.org/

*002.1.2.02* Click on the [*Download*] menu item



*002.1.2.03* Click on the [*Windows*] or Mac [*OSX*] version
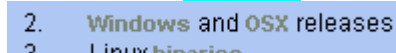


*002.1.2.04* Click on the Software file
For Mac



For Windows

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es] (2005-11-04 17:32)

qgis-0.7.4_setup.exe

002.1.2.02    You will go to SourceForge.net where you will select a mirror site. Click on [*Download*] just to the right of Atlanta, GA

002.1.2.03    Save the file to your computer.
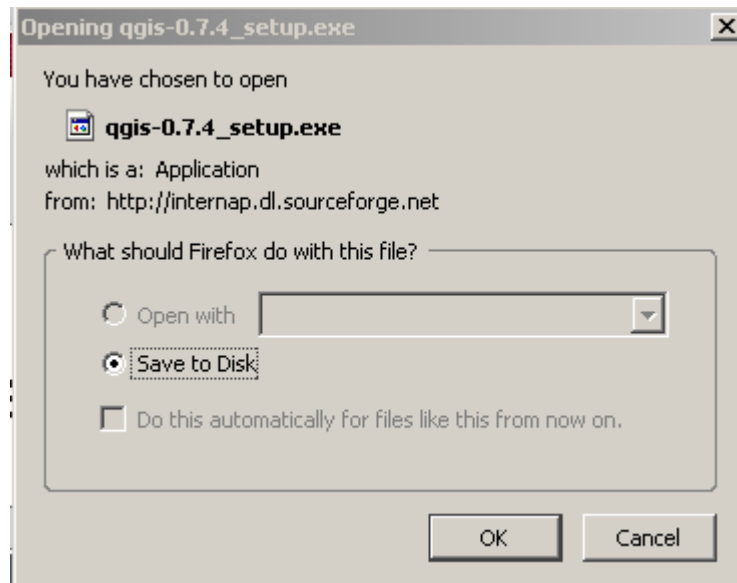


002.1.2.04    Install the software according to the operating system you are using.

002.1.2.05    This will create a desktop icon (shortcut) labeled Quantum GIS.



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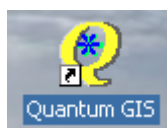


***002.2        WinZip***

***002.2.1        General Information for WinZip:  Not Applicable***

***002.2.2        Getting and Installing WinZip***

002.2.2.01    Open your web browser and go to www.winzip.com

002.2.2.02    Click on the [*Try Now*] Button"

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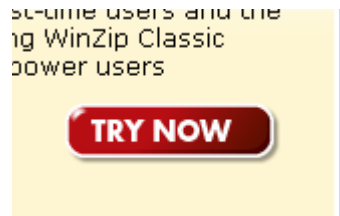


002.2.2.03    Click on the [*Try Now*] Button



002.2.2.04    Select the "Download.com" Button



then



002.2.2.05    This will down load winzip100.exe to your machine

002.2.2.06    To install Winzip, you double-click the download file **winzip100.exe** to
              start the installation procedure.

002.2.2.07    Follow the screen prompts to complete the installation of WinZip

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# 003.0          Getting the data
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**003.1          To Obtain Data from National Atlas**

**003.1.1        General Information for Obtaining Data from National Atlas:  Not
                 Applicable**

**003.1.2        To Obtain Data from National Atlas**

003.1.2.01    Create a directory called workspace on your machine i.e. D:/workspace.

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*003.1.2.02*    Open your web browser and go to
http://www.nationalatlas.gov/atlasftp.html

*003.1.2.03*    Click on "Boundaries"

**Raw Data Download by Chapter**

⬇ Agriculture      ⬇ Environment      ⬇ People
⬇ Biology          ⬇ Geology          ⬇ Transportation
⬇ Boundaries       ⬇ History          ⬇ Water
⬇ Climate          ⬇ Map Reference

▶ **Agriculture:** Agriculture Census 2002 – Crops, Expenses, Farmland...

▶ **Biology:** Bat Ranges, Butterflies, Forests, Invasive Species, Land Cover...

▶ **Boundaries:** Congressional Districts, Counties, Federal lands, States...

▶ **Climate:** Precipitation, Hazard Events, Hurricanes, Sea Temperature...

▶ **Environment:** Air Releases, Hazardous Waste, Toxics Release...

▶ **Geology:** Earthquakes, Landslides, Shaded Relief, Volcanoes...

▶ **History:** Presidential General Election 2000 County and State Results.

▶ **Map Reference:** Cities and Towns, Urban Areas...

▶ **People:** Census, Crimes, Energy Consumption, Mortality...

▶ **Transportation:** Airports, Parkways and Scenic Rivers, Railroads, Roads...

▶ **Water:** Aquifers, Dams, Watersheds, Streams and Waterbodies...


*003.1.2.04*    Download the following Shapefile layers and unzip them into your
Workspace folder:
- County Boundaries, 2001
- Federal Lands
- State Boundaries

*003.1.2.05*    Download the following Shapefile layer from "Map Reference" and unzip
them into your Workspace folder:
- Urban Areas

*003.1.2.06*    Download the following Shapefile layers from "Transportation" and unzip
them into your Workspace folder:
- Airports
- Railroads
- Roads

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*003.1.2.07*    Download the following Shapefile layer from "Water" and unzip them into your Workspace folder:
- Streams and Waterbodies

*003.1.2.08*    Download the following Shapefile layers from "Biology" and unzip them into your Workspace folder:
- Invasive Species - Africanized Honey Bees
- Invasive Species – Zebra Mussel Distribution

*003.1.2.09*    Download the following Shapefile layer from "People" and unzip them into your Workspace folder:
- Mortality, Various Causes
- Invasive Species – Zebra Mussel Distribution

*003.1.2.10*    Download the following Shapefile layer from "Geology" and unzip them into your Workspace folder:
- Shaded Relief Land - Color - 1 Kilometer Resolution
- Shaded Relief Land - Color - Conterminous United States 200 Meter Resolution

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# *004.0*    *Updating Quantum GIS*

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**004.1**    **Updating Quantum GIS**

**004.1.1**    **General Information for Updating Quantum GIS: Not Applicable**

**004.1.2**    **Setup for Updating Quantum GIS: Not Applicable**

**004.1.3**    **Updating Quantum GIS**

*004.1.3.01*    Double Click on the Desktop Icon



*004.1.3.02*    The following screen will appear
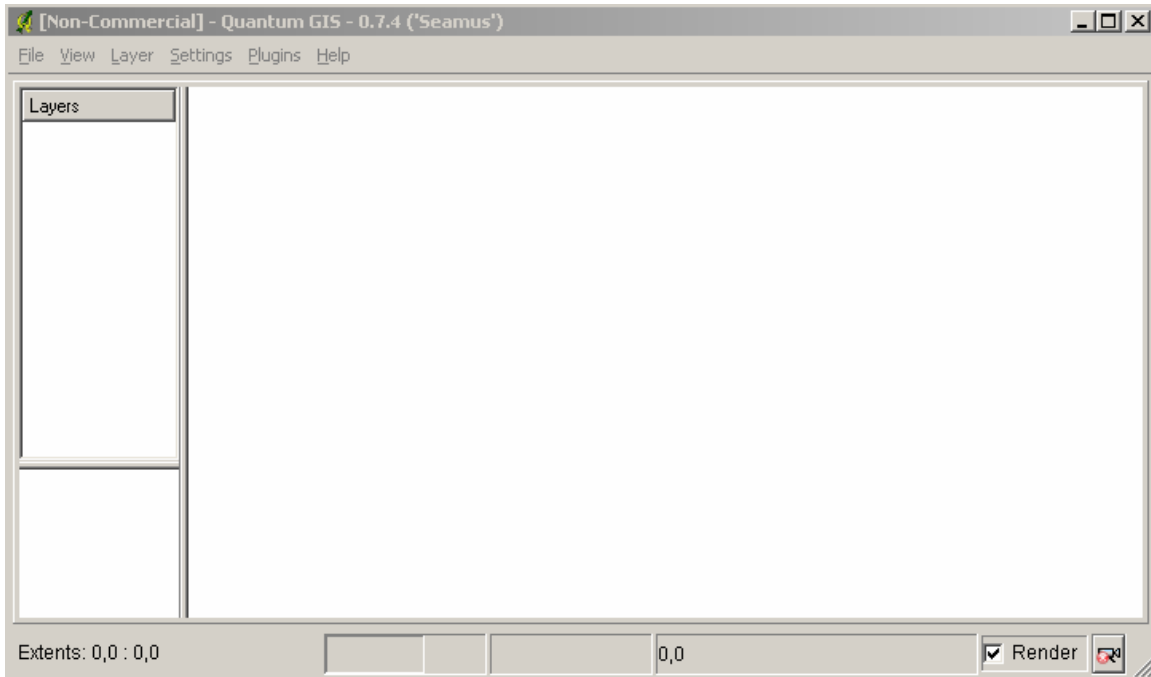
*004.1.3.03*     Click on [*File*]

*004.1.3.04*     Click on [*Check QGIS Version*]. The following will appear.
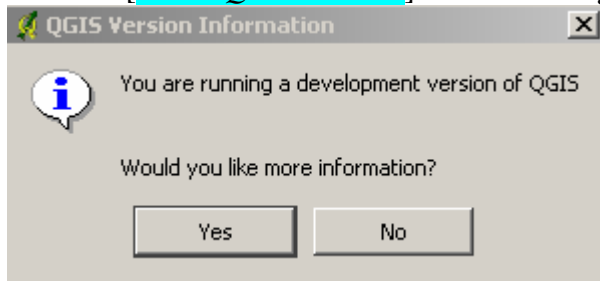


*004.1.3.05*     So go back to the website and check the current development release. Do
                 this occasionally to take advantage of the latest tools.


################################################################################
# *100.0     Projects*
********************************************************************************
# *101.0     Projects*
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## *101.1          Creating a New Project*

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### *101.1.1          General Information for Creating a New Project: Not Applicable*

### *101.1.2          Setup for Creating a New Project: Not Applicable*

### *101.1.3          Creating a new project*

*101.1.3.01*     Double Click on the Desktop Icon



*101.1.3.02*     The following screen will appear



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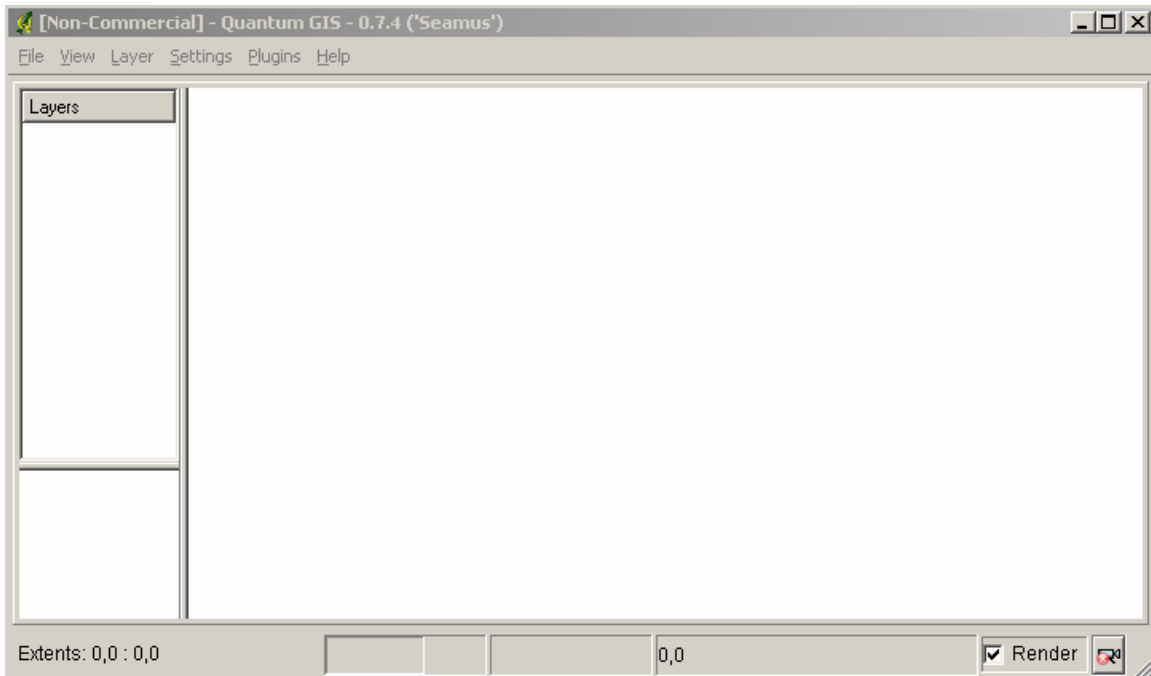


### *101.2          Loading an Existing Project*

### *1012.2.1          General Information for Loading an Existing Project*

### *101.2.2          Setup for Loading an Existing Project*

### *101.2.3          Steps for Loading an Existing Project*

*101.2.3.01*     Click on [*File*] menu item

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*101.2.3.02*        Click on [*Open Project*]

*101.2.3.03*        Navigate to the directory where you stored projects and select the project
you wish to open by highlighting it

*101.2.3.04*        Click the [*Open*] button to launch Quantum GIS with the selected project
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**101.3        *Saving a Project***

**101.3.1        *General Information for Saving a Project***

*101.3.1.01*        While working on any project it is advisable to save regularly to guard
against data lost and for later retrieval. When saving a project for the first
time it is necessary to provide a name for the project file. It is important to
note that a saved project file does not contain any map data. The project
file contains references to map data, as well as other information, such as
layer symbology. Projects are stored on the hard drive with an .epf
extension

**101.3.2         *Setup for Saving a Project: Not Applicable***

**101.3.3        *Steps for Saving a Project***

*101.3.3.01*        Click the [*File*] on the Main Toolbar

*101.3.3.02*        Click the [*Save*] item, if this is the first time you have saved the project,
you will be prompted to provide a path and filename

*101.3.3.03*        Click the [*Save as*] item, if you have already saved the project but you
want to save a different version, you will be prompted to provide a path
and filename

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# *102.0        Our First Project*
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**102.1        *Specifying Map Properties***

**102.1.1        *General Information for Specifying Map Properties***

*102.1.1.01*        Map Properties - It is important that all data loaded into a map is in the
same map properties.

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### 102.1.2          Setup for Specifying Map Properties

102.1.2.01          Click on the [Settings] from the main menu or click on little projector in

lower right corner of screen

102.1.2.02          Click on the [Project Properties]
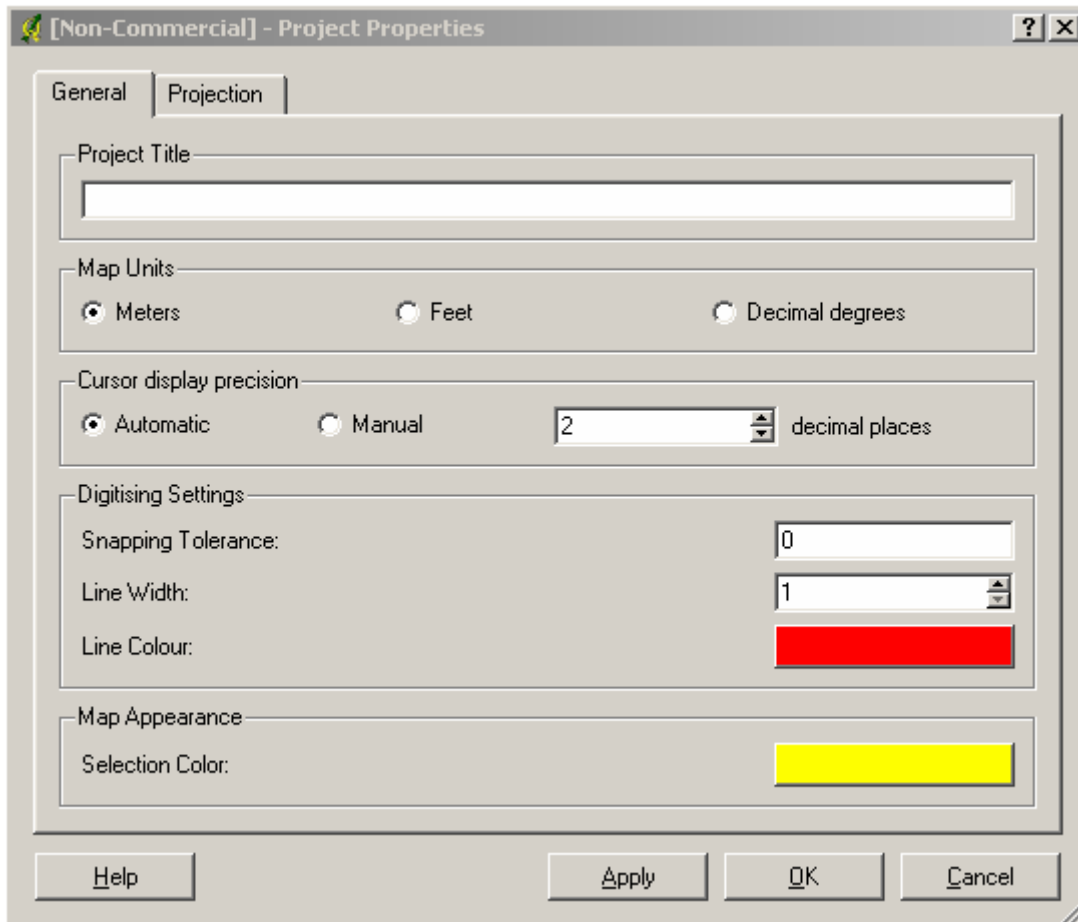


102.1.2.03          Select the [General Tab]

102.1.2.04          Type in a Project Title

102.1.2.05          Select the Map Units you want to use

NOTE #1***** the Map units should be in the units that your data is in i.e. Meters,
          Feet or Decimal Degrees. Do not set it to meters if your data is Decimal
          Degrees as this will generate strange results

102.1.2.06          Select the Cursor Display Precision

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102.1.2.07       Click on the [*Projection Tab*]

102.1.2.08       Click on 'Enable on the Flyer Projection'

102.1.2.09       Click on [*OK*]

*TASK # 1*****Under [General], Set decimal degrees as the map unit for this project Set Cursor Display Precision to 6 decimal places. Click [Apply]. Click on [Projection] tab, click on 'Enable Projection on the Fly'. Set Projection as WGS 84 under Geographic Coordinate System, Click [OK]*

*ISSUE  # 1***** The functionality to measure in feet if the map data is in Decimal Degrees is not included in the software due to the complex algorithms required to accurately compute distance when using decimal degrees.*

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## 102.2              Preferences

### 102.2.1              General Information for Preferences

102.2.1.01       This allows you to preset certain conditions within your project

### 102.2.2              Setup for Preferences

102.2.2.01       Click on the [*Settings*] from the main menu.

102.2.2.02       Click on [*Preferences*]

102.2.2.03       On the [*Appearance*] Tab, you can hide the opening splash screen. You can also change the icons on the toolbars. It starts out as default but you can change it to 'nkids'.

102.2.2.04       there is nothing to change on the [*Rendering*] tab

102.2.2.05       you can change the Search radius for identifying features on the [*Selection*] Tab

102.2.2.06       On the [*Projection*] tab you can set what to do when you load a layer that has no projection information with it. I would recommend you use 'Prompt for projection' unless you are sure all your data is already in the same projection, i.e. it all came from the same source.

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102.2.2.07    The [*Help Browser*] tab allows you to set the browser you will use when opening the Help documents

*NOTE #2***** in this exercise we will use d:\workspace or the directory you created when you installed the software*

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# *103.0      Rendering*

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## *103.1      Rendering*

### *103.1.1     General Information about Rendering*

103.1.1.01    By default, QGIS renders all visible layers whenever the map canvas must be refreshed. The events that trigger a refresh of the map canvas include:
- Adding a layer
- Panning or zooming
- Resizing the QGIS window
- Changing the visibility of a layer or layers

103.1.1.02    QGIS allows you to control the rendering process in a number of ways.

### *103.1.2     Setup for Rendering:*

103.1.2.01    Controlling Map Rendering: Map rendering can be controlled in the following ways:
- Stopping rendering during drawing of the map canvas
- Temporarily suspending rendering
- Setting an option to control the visibility of layers when they are added

103.1.2.02    Stopping Rendering: To stop the map drawing, press the [*ESC*] key. This will halt the refresh of the map canvas and leave the map partially drawn. It may take a bit of time between pressing ESC and the time the map drawing is halted.

103.1.2.03    Suspending Rendering: To suspend rendering, click the 'Render' checkbox in the lower right corner of the status bar. When the Render box is not checked, QGIS does not redraw the canvas in response to any of the events described in Section 12.1.1.01
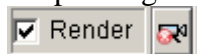
103.1.2.04    Examples of when you might want to suspend rendering include:
- Add many layers and symbolize them prior to drawing

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- Add one or more large layers and set scale dependency before drawing
- Add one or more large layers and zoom to a specific view before drawing
- Any combination of the above

*103.1.2.05*   checking the 'Render' box enables rendering and causes and immediate refresh of the map canvas.

*103.1.2.06*   Setting Layer Add Option: You can set an option to always load new layers without drawing them. This means the layer will be added to the map, but its visibility checkbox in the legend will be unchecked by default.

*103.1.2.07*   To set this option, choose [*Preferences*] from the [*Settings*] menu and click on the [*Rendering*] tab. Check the 'New layers added to the map are not displayed' checkbox. Any layer added to the map will be off (invisible) by default.

*103.1.2.08*   Updating the Map Display during Rendering, You can set an option to update the map display as features are drawn. By default, QGIS does not display any features for a layer until the entire layer has been rendered. To update the display as features are read from the data store, choose [*Preferences*] from the [*Settings*] menu and click on the [*Rendering*] tab. Set the feature count to an appropriate value to update the display during rendering. Setting a value of 0 disables update during drawing (this is the default). Setting a value too low will result in poor performance as the map canvas is continually updated during the reading of the features. A suggested value to start with is 500.

*TASK #2***** Go Ahead and adjust the rendering by Checking Initial Visibility and setting the Update during Drawing to 500*

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# 104.0     *Projections*

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## 104.1     *Projections*

### 104.1.1     *General Information about Projections*

*104.1.1.01*   QGIS supports on-the-fly projection of vector layers. This feature allows you to display layers with different coordinate systems and have them overlay properly.

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*104.1.1.02*    QGIS has support for approximately 2,700 known projections. Projections are stored in a Sqlite database that is installed with QGIS. Normally you do not need to manipulate the database directly. In fact, doing so may cause projection support to fail. Custom projections are stored in a user database

*104.1.1.03*    The projections available in QGIS are based on those defined by EPSG and are largely abstracted from the spatial references table in PostGIS version 1.x. Note that the identifiers used in QGIS do not correspond to the EPSG or PostGIS spatial reference identifiers. The EPSG and PostGIS identifiers are present in the database and can be used to specify a projection in QGIS.

*104.1.1.04*    In order to use OTF projection, your data must contain information about its coordinate system. For PostGIS layers QGIS uses the spatial reference identifier that was specified when the layer was created. For data supported by OGR, QGIS relies on the presence of a format specific means of specifying the coordinate system. In the case of shapefiles, this means a file containing the Well Known Text (WKT) specification of the coordinate system. The projection file has the same base name as the shapefile and a prj extension. For example, a shapefile named lakes.shp would have a corresponding projection file named lakes.prj.

**104.1.2        Setup for Projections: Not Applicable**

**104.1.3        Usage of Projections**

*104.1.3.01*    At startup, QGIS does not have On-the-Fly (OTF) projection enabled. To use OTF projection, you must open the Project Properties dialog, select a projection for the map, and enable projections. There are two ways to open the Project Properties dialog:

*104.1.3.02*    Select [*Project Properties*] from the [*Settings*] Menu

*104.1.3.03*    Click on the projector icon in the lower right-hand corner of the status bar

*104.1.3.04*    If you open the [*Project Properties*] dialog from the [*Settings*] menu, you must click on the [*Projection*] tab to view the projection settings. Opening the dialog from the [*Projector*] icon will automatically bring the [*Projection*] tab to the front.

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**104.2        The Projection dialog**

**104.2.1        General Information for the Projection dialog**

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104.2.1.01     The Projection dialog contains four important components 28

- Enable projections - this checkbox is used to enable or disable OTF projection. When off, no projection takes place and each layer is drawn using the coordinates as read from the data source. When on, the coordinates in each layer are projected to the coordinate system of the map canvas.
- Projections - this is a list of all projection supported by QGIS, including Geographic, Projected, and Custom coordinate systems. To use a coordinate system, select it from the list by expanding the appropriate node and selecting the projection.
- Proj4 text - this is the projection string used by the Proj4 projection engine. This text is read-only and provided for informational purposes.
- Search - if you know the PostGIS or EPSG identifier for a projection, you can use the search feature to find it. Enter the identifier and click on Find.

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*104.3          Specifying a Projection*

*104.3.1        General Information for Specifying a Projection*

15.3.1.01      QGIS automatically sets the map projection to the coordinate system of the first layer loaded. One way to specify the map projection is to first load a layer with the projection you want for the entire map. Then open the [Project Properties] dialog and click on the Enable on the fly projection checkbox. You can now close the Project Properties dialog and add additional layers to the map.

*104.3.2        Setup for Specifying a Projection: Not Applicable*

*104.3.3        Use  for Specifying a Projection*

104.3.3.01     If you have already added layers and want to enable OTF projection, open the Project Properties dialog and find the projection or geographic coordinate system you want to use in the list of projections. Alternatively, you can use the search feature as described in the previous section.

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*104.4          Custom Projections*

*104.4.1        General Information about Custom Projections*

104.4.1.01     If QGIS doesn't have the projection you need, you can define a custom projection

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*104.4.1.02*    At version 0.7 of QGIS, defining a custom projection requires a good understanding of the Proj.4 projection library. To begin, refer to Cartographic Projection Procedures for the UNIX EnvironmentNA UserOs Manual by Gerald I. Evenden, U.S. Geological Survey Open-File Report 90-284, 1990 (available at ftp://ftp.remotesensing.org/proj/new_docs/OF90-284.pdf ). This manual describes the use of the proj and related command line utilities. The cartographic parameters used with proj and described in the user manual are the same as those used by QGIS.

*104.4.1.03*    The Custom Projections dialog requires only two parameters to define a user projection:
  • a descriptive name
  • the cartographic parameters

**104.4.2**      *Setup for Custom Projections: Not Applicable*

**104.4.3**      *Usage of Custom Projections*

*104.4.3.01*    To define a projection, select [Custom Projections] from the [Settings] menu. Custom projections are stored in your QGIS user database. In addition to your projections, this database contains your spatial bookmarks and other custom data.

*104.4.3.02*    To create a new projection, click the [New] button and enter a descriptive name and the projection parameters.

*104.4.3.03*    You can test your projection parameters to see if they give sane results by clicking on the [Test] tab and pasting your projection parameters into the Parameters field.

*104.4.3.04*    Then enter known WGS 84 latitude and longitude values in 'North' and 'East' fields respectively.

*104.4.3.05*    Click on [Calculate] and compare the results with the known values in your projected coordinate system.

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###############################################################################
## *200      Interface*
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## *201      The Quantum GIS Interface*
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*201.1*         *The Standard Toolbars*

*201.1.1*        *General Information about The Standard toolbar*

[Non-Commercial] - Quantum GIS - 0.7.4 ('Seamus')
File   View   Layer   Settings   Plugins   Help
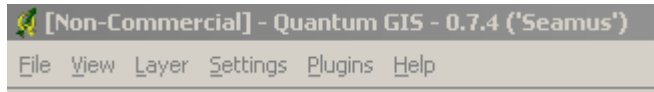
In the upper left corner of the program is a toolbar with several drop-down menus. Each of the Drop-down lists has several functions within them.

*NOTE #3***** several of the Buttons appear in both the drop-down lists and individual toolbars, I will only define the button the first time.*

*201.1.1.01*     [File]

- [*New Project*] -  create a new project
- [*Open Project*] – open an existing project
- [*Save* Project] – save a project with the existing name
- [*Save Project As*] – save a project with a new name
- [*Print*] – call up the Map Composer
- [*Export as Image*] – Export as a .bmp, .jpeg, or .png file
- [*Export As Mapserver File*]  - export as a .map for the web-server MapServer
- [*Check QGIS Version*] – check for update
- The most recent project files
- [*Exit*] – exit the program

*201.1.1.02*     [View]

- [*Zoom to Full Extent*]
- [*Zoom to Selected Features*] in Active layer
- [*Zoom to Previous Extent*]
- [*Zoom to Layer*]
- [*Geospatial Book Marks*] – list all existing bookmarks
- [*New Geospatial Book Marks*] – create a new bookmark
- [*Refresh*] – redraws the map

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*201.1.1.03*     [Layer]

- [_Add a Vector Layer_] – add a data layer

- [_Add a Raster Layer_] – add a image layer

- [_Add a PostGIS Layer_]
- [_Remove Layer_]
- [_New Vector Layer_] – create anew data layer
- [_Toggle in Overview_] – send to overview map

- [_Add All to Overview_] – add all layers to overview
- [_Remove All from Overview_] – removes all layers from overview

- [_Show All Layers_] – make all layers visible
- [_Hide All Layers_] – make all layers invisible

- [_Attribute Tables_] – open the attribute table
- [_Properties_] – show properties of the layer

*201.1.1.04*     [_Settings_]
- [_Project Properties_] – set project information for layer or project
- [_Preference_] – set preferences for the project
- [_Custom Projections_] – build your own custom projects

*201.1.1.05*     [_Plugins_]
- [_Plugin Manager_] – turn on and off plugins
- [_Decorations >_]

  o [_Copyright Label_] add copyright to map

  o [_North Arrow_] add north arrow to map

  o [_Scale Bar_] add scale bar to map
- [_Delimited Text >]_

  o [_Add Delimited Text Layer_]

*201.1.1.06*     [_Help_]
- [_Contents_]
- [_What's this?]_
- [_QGIS Home Page_]
- [_QGIS SourceForge Page_]
- [_About QGIS_]

**_201.2_**         **_Addition Menus:_**

**_201.2.1_**       **_General Information about Addition Menus:_**

If you right-click on an empty place on the toolbar, a drop-down menu will appear. By click on different name you can add extra specific tool bars. Most of the buttons on the additional menus or toolbars are contained in the drop down menus.

*TASK #3***** right-click on an empty place on the toolbar, a drop-down menu will appear. Click on all the different specific tool bars.*

*The screen will look as follows:*
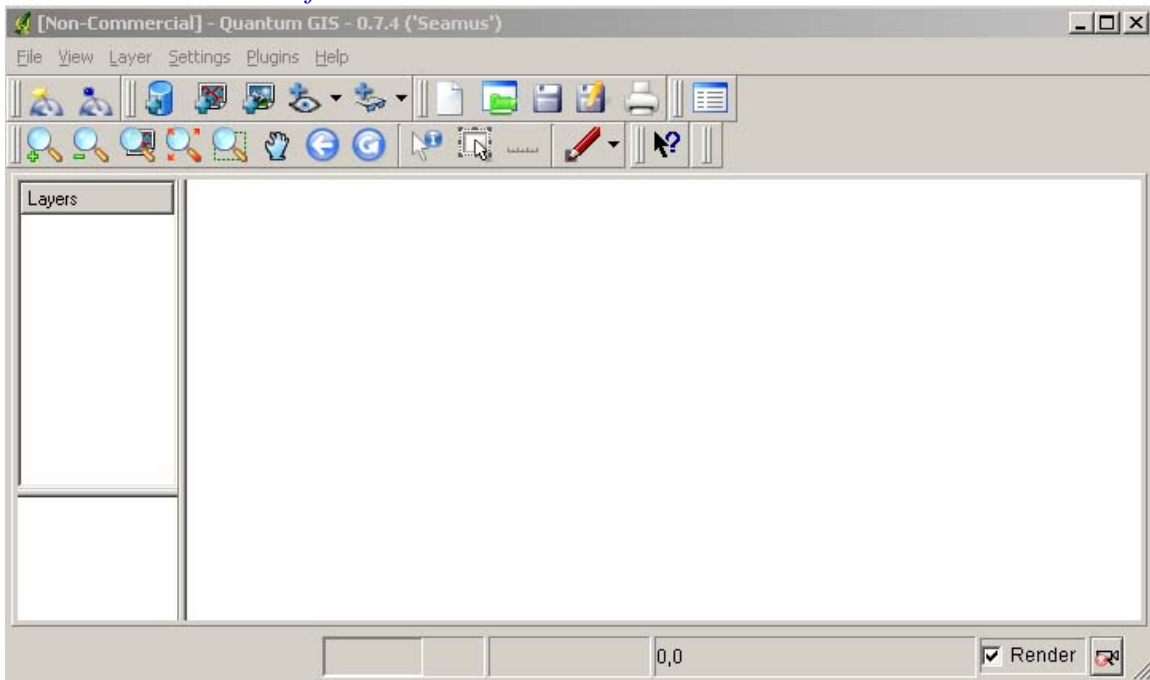


*201.2.1.01*      [*File Management Toolbar*] (Click this tool to turn it one)



*201.2.1.02*      [*Data Toolbar*] (Click this tool to turn it one)



 >

- [*Show All Layers*]
- [*Hide All Layers*]

 >

- [*Add all layers to overview map*]
- [*Remove all layers from overview map*]

-----------------------------------------------------------------------------------------------------------------

*201.2.1.03*        [*Map Navigation Toolbar*] (Click this tool to turn it on)

- [*Zoom In*]

- [*Zoom Out*]

- [*Pan*]

- [*Identify a Feature on Active Layer*]

- [*Select Features in Active Layer*]

- [*Measure*]

- [*Capture Points >*]

- [*Capture Points*]
- [*Capture Lines*]
- [*Capture* Polygons]
- [Delete Selection]

*201.2.1.04*        [*Attribute Data Toolbar*] (Click this tool to turn it one)

*201.2.1.05*        [*Help Toolbar*] (Click this tool to turn it one)

*201.2.1.06*        [*Plugin Toolbar*] (Click this tool to turn it one)

[*Add Delimited Text Layer*]

[*Copyright Label*]

[*GeoReferencer*]

[*GPS Tools*]

[*Graticle Creator*]

[*North Arrow*]

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[*Scale Bar*]

[*Import Shapefiles into PostgreSQL*]

*201.2.1.07*    [*Bookmark Toolbar*] (Click this tool to turn it one)

*201.2.1.08*    [*Run*] Toolbar
[*run*]

###############################################################################
# 300     Tools

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# 301.0          Zoom Tools
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## 301.1          Map Zoom Tools

### 301.1.1          General Information for Map Zoom Tools

*301.1.1.01*    When working with a map it may be necessary to zoom in to view an
area in more detail, or zoom out to see a larger area.
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## 301.2          Zooming In

### 301.2.1          General Information for Zooming In: *Not Applicable*

### 301.2.2          Setup for Using the Zoom-in Function: *Not Applicable*

### 301.2.3          Steps for Using the Zoom-in Function

*301.2.3.01*    Zoom in to a specific area. Click and hold the left mouse. Move the mouse
to drag a rectangle to create the area you wish to zoom to. Release the
mouse button to complete the zoom.
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## 301.3          Zooming Out:

### 301.3.1          General Information for Zooming Out: *Not Applicable*

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**301.3.2**          *Setup for Using the Zoom-out Function:  Not Applicable*

**301.3.3**          *Steps for Using the Zoom-out Function*

*301.3.3.01*      Zoom out to a specific Area. Click and hold the left mouse button, Move the mouse to drag a rectangle to create the area. The current map extent will be resized to fit in the rectangle you draw. As a result the smaller the rectangle the further you will zoom out. Release the mouse button to complete the zoom.

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**301.4**          *Zooming to Full Extent*

**301.4.1**          *General Information for Zooming to Full Extent*

*301.4.1.01*      Zooming to full extent resets the map view so that every feature of very layer is contained within the visible extent

**301.4.2**          *Setup for Zooming to Full Extent: Not Applicable*

**301.4.3**          *Steps for Zooming to Full Extent*

*301.4.3.01*      Click the [*Zoom to Full Extent*] button on the Tools toolbar or click on [*View*] then [*Zoom to Full Extent*]

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**301.5**          *Zooming to Previous Extent:*

**301.5.1**          *General Information for Zooming to Previous Extent*

*301.5.1.01*      Zooming to previous extent allows stepping back through past map views. For example, start with a map view at full extent then zoom in to an area on the map. Now click the previous extent button; the map will return to the most recent previous map view, which was the full extent.

**301.5.2**          *Setup for Zooming to Previous Extent: Not Applicable*

**301.5.3**          *Steps for Zooming to Previous Extent*

*301.5.3.01*      For Zooming to Previous Extent – Click the [Zoom to *Previous Extent*] button on the Tools Toolbar

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### 301.6        *Zoom to Layer*

### 301.6.1        *General Information for Zoom to Layer*

301.6.1.01        Zoom to a layers extent will set the map display to an area just big enough to show every feature in a particular layer.

### 301.6.2        *Setup for Zooming to Layer: Not Applicable*

### 301.6.3        *Steps for Zooming to Layer Extent*

301.6.3.01        Click on the [*Zoom To Layer*] button on the Map Navigation Toolbar or

301.6.3.02        Right-click on the layer in the legend, a new menu will popup

301.6.3.03        Click on [*Zoom to Extent of Selected Layer*]

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

# 302.0        *Panning*
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### 302.1        *Panning*

### 302.1.1        *General Information for Panning*

302.1.1.01        Panning allows you to move the map display around to show areas outside of the current viewing area without changing the scale of the map.

### 302.1.2        *Setup for Panning: Not Applicable*

### 302.1.3        *Steps for Panning*

302.1.3.01        Click the [*Pan*] button on the Map Navigation Toolbar.

302.1.3.02        Move the mouse over the map.

302.1.3.03        Click and hold down the left mouse button.

302.1.3.04        Move the mouse, still holding down the mouse button. The map will move with the mouse.

302.1.3.05        Release the mouse button to complete the pan operation

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# 303.0     Measuring

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## 303.1        Measuring distance

**ISSUE #2**\*\*\*\*\* *the map unit will reset to the same units as the data if projection on the fly is turned on. If projection on the fly is turned off, it will display the set map unit but will still measure in the data units.*

### 303.1.1        General Information for measuring distance

303.1.1.01      The measurement tool is used to calculate distances between 2 or more user-defined points on the map.

### 303.1.2         Setup for Measuring Distance: See *102.1.2.05*

### 303.1.3        Measuring Distance

303.2.3.01      Click the [Measure] tool on the Map Navigation Toolbar.

303.2.3.02      Move the mouse over the map to the starting position.

303.2.3.03      Using the left mouse button click once, and now move to the next position. A line will draw as the mouse is moved.

303.2.3.04      Using the left mouse button, click once to define the end position.

303.2.3.05      Repeat steps 3 and 4 to create a multi point line as necessary.

303.2.3.06      Complete the measurement by single clicking instead of single clicking for the final point with the right mouse button. The distance will be calculate and displayed in a popup window. The left column is the length of each segment while the right column is the cumulative length

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# 400      Vector Data

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# 401.0     Adding Vector Data

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## 401.1        Adding Vector Map Data

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### 401.1.1          *General Information for Adding Vector Map Data: Not Applicable*

*401.1.1.01*          Quantum GIS supports numerous GIS data formats that can be added to a project with a few simple clicks. It should first be determined if the GIS data is in a vector format that is compatible with Quantum GIS by using the list below:
- ESRI® Shapefiles (*.shp)
- ESRI® Arc/Info Binary Coverages (*.E00)
- MapInfo® TAB files (*.tab)
- STDT

*401.1.1.02*          QGIS supports vector data in a number of formats, including shapefiles, MapInfo mif, and PostGIS layers in a PostgreSQL database. Support for additional data types is provided by plugins, for example delimited text. Many of the features available in QGIS work the same regardless of the vector data source. This is by design and includes the identify, select, labeling, and attributes functions

*401.1.1.03*          PostGIS layers are stored in a PostgreSQL database. The advantage of PostGIS is the spatial indexing, filtering, and query capability. Using PostGIS, vector functions such as select and identify work more accurately than with OGR layers in QGIS.

*401.1.1.04*          Each GIS data set will be added to the map project as a single layer

*NOTE #3***** In this course we will work with shapefiles*

### 401.1.2                    *Setup for Adding Vector Map Data: Not Applicable*

### 401.1.3                    *Adding Vector Map Data*

*401.1.3.01*          Adding data using *[Layer]* then *[*Add a Vector Layer] or Click on the [*Add a Vector Layer*] icon on the [*Data*] Toolbar

*401.1.3.02*          Browse to the location of the GIS data.

*401.1.3.03*          Click on the GIS data you want to add as a new layer in your project.

*NOTE #4 ***** If you want to add multiple layers, hold down the control key and select each addition layer by clicking on it.*

*401.1.3.04*          Click the [*Open*] button. The new layer will be added to your project

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*TASK #4***** Go ahead and add afrbeppp020, airportx020, countyp020, fedlandp020, hydrogpl020, hydrogpp020, mortalp020, railrdl020, roadtrl020, statep020, urbanp020, and zmussel020 layers to your project.*

*TASK #5 ***** Turn the Statep020 Layer on by putting the check in the box next to the layer name*

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# 402.0      The Legend
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### 402.1      Using the Legend to Control the Layers

### 402.1.1      General Information about Using the Legend to Control the Layers

402.1.1.01      The legend is a graphical representation of all the map layers in the current project. The default position of the legend is docked on the left hand side of the screen. The legend offers layer manipulation functionality including but not limited to changing a layers symbology or its z order in the drawing process.

*QUESTION #1 ***** Can you undock the Legend and move it elsewhere on the screen?*

402.1.1.02      Right Click Functionality
   • [*Zoom to Extent of Selected Layer*]
   • [*Toggle in Overview*]
   • [*Remove*]
   • [*Open Attribute Table*]
   • [*Start Editing*]
   • [*Stop Editing*]
   • [*Properties*]
---------------------------------------------------------------------------------------------------------

### 402.2      Changing the Layer Name.

### 402.2.1      General Information for Changing the Layer Name

402.2.1.01      Changing the name of a layer does not affect the underlying data. The layer name is project dependent and will not modify any information stored against the map source.

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***402.2.2***        ***Setup for Changing the Layer Name: Not Applicable***

***402.2.3***        ***Steps for Changing the Layer Name***

*402.2.3.01*     Right-click on the layer in the legend and a new menu will popup.

*402.2.3.02*     Click on the [*Properties*] and the Layer Properties dialog will be displayed.

*402.2.3.03*     Click on [*General*] Tab

*402.2.3.04*     Change the text in the "Display Name" box. This will be the new layer name.

*402.2.3.04.*     Click the [*OK*] button to close the Layer Properties dialog. The legend will update to show the new layer name.

*TASK #6***** Change*

- *afrbeep020 to Africanize Honey Bees*
- *airportx020 to Airports*
- *countyp020 to U.S. Counties*
- *fedlandp020 to Federal Lands*
- *hydrogpl020 to Rivers and Streams*
- *hydrogpp020 to Lakes and Ponds*
- *mortalp020 to Mortality 1988-1992*
- *railrdl020 to Railroads*
- *roadtrl020 to Roads*
- *statesp020 to U.S. States*
- *urbanp020 to Urban Areas*
- *zmusslx020 to Zebra Mussels*

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***402.3***        ***Changing the Drawing Order***:

***402.3.1***        ***General Information for Changing the Drawing Order:***

*402.3.1.01*     The legend indicates the order that layers are drawn in. The first layer in the legend is the top layer of the map. The last layer in the legend is the bottom layer on the map. The layers are drawn from bottom up, hence the bottom layer is drawn first then the last but one layer and so on. As a result is it important to carefully order your map layers so data is not obscured by layers placed on top.

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**402.3.2**        **Setup for Using the Changing the Drawing Order: Not Applicable**

**402.3.3**        **Steps for Using the Changing the Drawing Order:**

*402.3.3.01*        Click and drag a layer to the desired location.

*TASK #7***** *Put the layers in the following order from top to bottom,*
        *Zebra Mussels*
        *Africanized Honey Bees*
        *Airports*
        *Roads*
        *Railroads*
        *Mortality 1988-1992*
        *Rivers and Streams*
        *Lakes and Ponds*
        *Federal Lands*
        *Urban Areas*
        *U.S. Counties*
        *U.S. States*

        *Then save your project*

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**402.4**        **Removing a Layer from the Map**

**402.4.1**        **General Information for Removing a Layer from the Map**

*402.4.1.01*        Removing a layer does not remove or delete the underlying data, it just
        removes the reference to the layer from the project

**402.4.2**        **Setup for Using the Removing a Layer from the Map: Not Applicable**

**402.4.3**        **Steps for Using the Removing a Layer from the Map**

*402.4.3.01*        Right-click on the layer in the legend, a new menu will popup.

*402.4.3.02*        Click on [*Remove*]

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**402.5**        **Making the Layer Scalable**

**402.5.1**        **General Information for Making the Layer Scalable**

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| 402.5.1.01 | When adding a new data layer to the project the default scale dependency will be set to all. Essentially meaning that the layer will be visible at all scales. If map units have been set for this project it is possible to make any of the layers scale dependent, that is, visible between certain scale bounds. |

| 402.5.1.02 | For example, for a layer to be visible below 1:50000 set Min Scale to 1 and Max Scale to 50000. For a layer to be visible between 1:20000 and 1:50000 set Min Scale to 20000 and Max Scale to 50000 |

**402.5.2        Setup for Using the Making the Layer Scalable: Not Applicable**

**402.5.3        Steps for Using the Making the Layer Scalable**

| 402.5.3.01 | Right-click on the layer in the legend, a new menu will appear. |

| 402.5.3.02 | Click on [*Properties*], the Layer Properties dialog will be displayed. |

| 402.5.3.03 | Click on [*General*] tab, by default the Minimum scale is set to 1 and Maximum scale is to the largest dataset scale, which means the layer is not scale dependent. |

| 402.5.3.03 | Change the "Minimum" text box to a valid scale value. This is the minimum scale at which a layer will be visible. |

| 402.5.3.04 | Change the "Maximum" text box to a valid scale value. This is the maximum scale at which a layer will be visible. |

| 402.5.3.05 | check the 'use scale dependent rendering' |

| 402.5.3.06 | click *[ok]* |

*TASK #8***** set the Maximum scale for U.S. Counties to be 2500000, check the 'use scale dependent rendering' turn on U.S. Counties.*

*ISSUE # 3***** the scale dependent rendering does not appear to work at full extent.*

*TASK #9***** Zoom into the area around the Great Lakes*

*TASK #10***** Zoom out to the Full extent of the map using the [Zoom to Full Extent] Button*

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**TASK #11** ***** *using the [Zoom to Previous Extent] and [Zoom to Full Extent],
you can switch between the Great Lakes and the Whole coverage*

**TASK #12** ***** *Turn on the Zebra Mussel layer and zoom to its extent*

**QUESTION #2** ***** *what is your current map scale? It is on the lower right of
screen Scale 1: ?*

**TASK #13** ***** *Zoom in and measure the distance from the eastern tip of Long
Island, New York to the western end.*

**NOTE #5** ***** *the distances should be in Decimal Degrees.*

**QUESTION #3** **** *what is the distance measured in Decimal Degrees?*

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# 403.0    Map Symbolization
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### 403.1          Map Layer Symbolization

### 403.1.1        General Information for Map Layer Symbolization:

403.1.1.01     Default Symbology - When adding a new map layer to your project a
default symbol will be automatically generated. Quantum GIS will select a
random color scheme and pick a pen and fill style appropriate to the
geometry type of the data to be used for display purposes.

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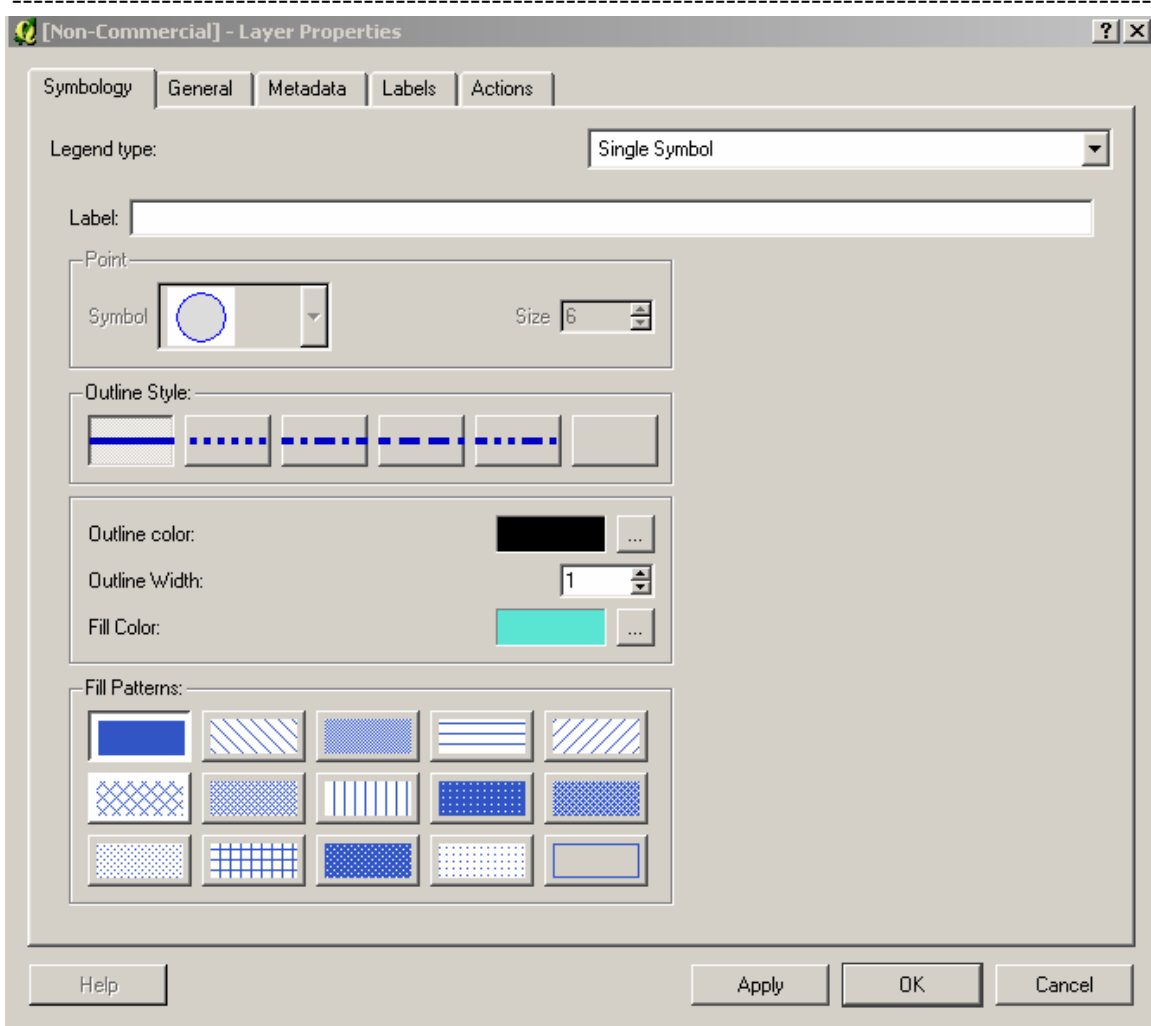


*403.1.1.02*  QGIS supports a number of symbology renderers to control how vector
features are displayed. Currently the following renderers are available:
- Single symbol - a single style is applied to every object in the layer.
- Graduated symbol - objects within the layer are displayed with
  different symbols classified by the values of a particular field.
- Continuous color - objects within the layer are displayed with a spread
  of colors classified by the numerical values within a specified field.
- Unique value - objects are classified by the unique values within a
  specified field with each value having a different symbol.

*403.1.1.03*  For layers containing point features, additional renderers are available that
use SVG icons:
- Single marker - a single specified icon is used for every point within
  the layer.
- Graduated marker - points within the layer are displayed with different
  icons classified by values within a particular field.

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- Unique value marker - points are classified by unique values within a specified field with each value having a different icon.

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***403.2***        ***Changing the Default Symbology***

***403.2.1***      ***General Information for Changing the Default Symbology: Not Applicable***

***403.2.2***       ***Setup for Changing the Default Symbology: Not Applicable***

***403.2.3***       ***Steps for Changing the Default Symbology***

*403.2.3.01*      Right-click on the layer in the legend, a new menu will appear

*403.2.3.02*      Click on [*Properties*], the Layer Properties dialog will be displayed

*403.2.3.03*      Click on the [*Symbology*] tab. Changes made under the outline style and Fill Patterns sections will become the new default symbology

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***403.3***        ***Changing Selected Symbology***

***403.3.1***      ***General Information for Changing Selected Symbology***

*403.3.1.01*      Selected symbology is used to render a feature that has been selected. By making this symbol different from the main default symbol it is easy to see which features on the map are selected

***403.3.2***       ***Setup for Changing the Selected Symbology: Not Applicable***

***403.3.3***       ***Steps for Changing the Default Symbology***

*403.3.3.01*      Click on [*Settings*]

*403.3.3.02*      Click on [*Project Properties*]

*403.3.3.03*      Click on the Colored bar under Map Appearance and set the color to your choice. I would leave it yellow.

*TASK # 14****** Lets change the color of the U.S. States Layer. Right click on it in the legend, Click the [Properties]. Click the [Symbology] tab. Click the fill color and set it to Red, Green Blue(RGB) Values of 240,219,0;  Click [Add*

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*to Custom Colors]; Click [Ok]; Click the Outline color and set it to RGB 0,97,73;  Click [Add to Custom Colors]; Click [Ok]Click "Close".*

**TASK #15***** Then Turn on Zebra Mussels, Right click on it in the legend, Click the [Properties]. Click the [Symbology] tab. Click the fill color and set it to Red, Green Blue(RGB) Values of 255,194,77;  Click [Add to Custom Colors]; Click [Ok]; Click the Outline color and set it to RGB  117,44,0; Click [Add to Custom Colors]; Click [Ok]Click "Close".*

*Save your Project*

**ISSUE #4***** y*ou will find that the symbology for points is very limited in the Windows version but much more versatile in the Mac Version.*

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# 404.0    Labeling Layers

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**404.1**            **Adding a Label to a Layer**

**404.1.1**          **General Information for Adding a Label to a Layer: Not Applicable**

*404.1.1.01*     Label themes are an easy method to add dynamic text labels to geometry feature on the map. Quantum GIS will extract a user-defined field from the map data to be used as the label text.

**404.1.2**           **Setup for Adding a Label to a Layer: Not Applicable**

**404.1.3**           **Steps for Adding a Label to a Layer**

*404.1.3.01*     Right-click on the layer in the legend, a new menu will appear

*404.1.3.02*     Click on [*Properties*], the Layer Properties dialog will be displayed.

*404.1.3.03*     Click the [*Labels*] tab

*404.1.3.04*     Select the 'Field containing label'

*404.1.3.05*     Select the 'display labels' so a check appears.

*404.1.3.06*     Click [*OK*]

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**ISSUE #5** ***** *the program does not remove duplicate labels so every polygon of a theme is labeled. This is a problem with multiple parts having the same name such as Florida which would label each Island.*

*404.1.3.07*      To remove the label theme, Select the '<mark>display labels</mark>' so the check disappears.

**TASK #16** ****** *Go ahead and label U.S. Counties with the County names. Zoom in until the counties and their name appear and then zoom out again to the Zebra Mussel Coverage*

**NOTE #6** ***** *I don't know if it is a software, hardware, or user issue on my part, but every once and a while, the program will kick me out back to the operating system. So save your project after you complete a major piece of work.*

*If you come to a place where it exits the program more than twice, read over the part that does not work and proceed past it. We have run into a problem where it works on one machine but does not work on an second identical machine. We have a problem symbolizing the lakes and streams ( it could be size of the data) but we can perform the same task using urban areas, so go ahead and experiment a little to learn the strengths and limitations of Quantum GIS*

**TASK #17** ***** *Turn on Lakes and Ponds, Open the layer property, Change 'Legend Type' to "Unique Value",*

| Legend type: | Single Symbol ▾ |
|---|---|
| Label | |
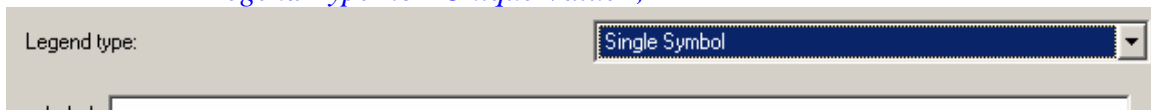
*Set the 'Classification Field' to "feature".*

| Classification Field: | Feature ▾ |
|---|---|

*Click [<mark>Apply</mark>],*
*Click on the [<mark>blank</mark>] Button under 'Outline Style'.*

Outline Style:

*Click on the Null Feature*

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Bay or Estuary or Ocean
Canal
Glacier
Lake
Lake Dry
Lake Intermittent
Null
Reservoir
Reservoir Intermittent
Stream
Swamp or Marsh
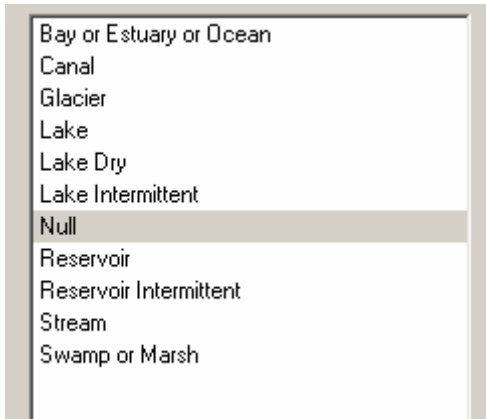
*Click on the [hollow] button under 'Fill Patterns'. This turns off the Outline*
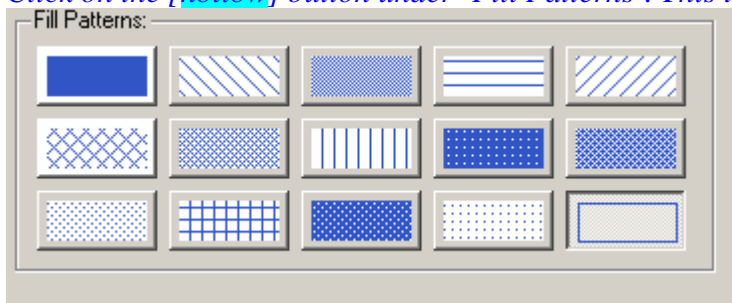
*Click [Apply]*
*This will make the null layer invisible*

*Repeat these steps for the 'Glacier' Feature*

*Now Select 'Bay or Estuary or Ocean' Feature, Click on the fill Color and set the RGB to 76,143,209*

Outline color:

Outline Width:    1

Fill Color:

Turn off the Outline as well just like you did for the 'Null' Feature

Repeat these steps for Canal, Lake, Reservoir, and Stream

For the 'Swamp or Marsh' Feature, hide the outline and set RGB to 76,209,185

For 'Lake Dry', 'Lake Intermittent', 'Reservoir Intermittent', hide the Outline and set the RGB to 197,132,2

Click [OK]

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*TASK #18*****Open the County File, on the symbology page, set the Fill to Hollow, then Click [OK]*

*QUESTION #4 ***** Are there swamps in both North Carolina and South Carolina?*

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*TASK #19***** Turn on Rivers and Streams, Right click on it in the legend, Click the [Properties]. Click the [Symbology] tab. Click the fill color and set it to (RGB) Values of 29,190,224;  Click [Add to Custom Colors]; Click [Ok]; Click the Outline color and set it to blank; Click [Ok]Click "Close".*

*ISSUE #6 ***** If the data set is too large, when you try to symbolize it, it may kick you out of the program*

*TASK #20***** Turn on Urban Areas, Right click on it in the legend, Click the [Properties]. Click the [Symbology] tab. Set outline Style to Blank; Click the fill color and set it to (RGB) Values of 244,150,104;  Click [Add to Custom Colors]; Click [Ok]; Click the Outline color and set it to blank; Click [Ok]Click "Close".*

*Save Project*

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*ISSUE #7***** If you try to zoom out to full extent after you do a reprojection and the data set is too large, it may exit the program without warning. So zoom out in smaller increments if it does happen. Also I recommend you save your project just before you do any reprojecting*

*TASK #21***** Click on [Settings] then [Project Properties], Click on the [Projection Tab]. Select "Projected Coordinate Systems" then click on the plus box next to "Lambert Azimuthal Equal Area" until "U.S. National Atlas Equal Area" appears. Highlight "U.S. National Atlas Equal Area" and click [OK].*

*NOTE #6***** the unit of measure will switch from decimal degrees to Kilometers (KM).*

*TASK #22***** Measure the distance from approximately New York City to the Chicago area.*

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**QUESTION #5** *\*\*\*\*\* what is the unit of measure and the approximate distance between New and Chicago.*


\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# *405.0      Manipulating the map*
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### *405.1        Querying Map Features*

### *405.1.1        General Information for Querying Map Features*

*405.1.1.01*     Identifying features - The identify tool  is the simplest way to retrieve attribute data about a feature on the map

*405.1.1.02*      The identify result tool has a limited radius of effect.

### *405.1.2         Setup for Querying Map Features:*

*405.1.2.01*     Click the [Settings] menu from the main menu.

*405.1.2.02*     Click on the [Selection] tab

*405.1.2.03*     Enter a valid search radius.

*405.1.2.04*     Press the [OK] button.

### *405.1.3         Steps for Querying Map Features*

*405.1.3.01*     Click the [Identify] button on the toolbar.

*405.1.3.02*     Move the mouse over the map and click on the feature to be identified. The Identify Results dialog will be displayed.

**QUESTION #6** *\*\*\*\*\* what is the major urban areas south of Detroit along the shore of Lake Erie?*

**QUESTION #7** *\*\*\*\*\* what are the urban area at the extreme southern end of Lake Huron?*

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**NOTE #7**\*\*\*\*\* the query tool works on the active layer

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### 405.2 Attribute Actions

### 405.2.1 General Information for Attribute Actions

405.2.1.01 QGIS provides the ability to perform an action based on the attributes of a feature. This can be used to perform any number of actions, for example, running a program with arguments built from the attributes of a feature or passing parameters to a web reporting tool.

405.2.1.02 Actions are useful when you frequently want to run an external application or view a web page based on one or more values in your vector layer. An example is performing a search based on an attribute value.

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# 406.0 Selecting Features

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### 406.1 Selecting Features by Rectangle

### 406.1.1 General Information for Selecting Features by Rectangle

406.1.1.01 Select by Rectangle allows you to select features on the map by drawing a rectangle. Any features of the active layer that fall within the selection tolerance of the rectangle will be selected

### 406.1.2 Setup for Selecting Features by Rectangle: Not Applicable

### 406.1.3 Steps for Selecting Features by Rectangle

406.1.3.01 Click on the layer you want to select feature from on the legend. This will make the layer active.

406.1.3.02 Click the [*Select Features*] button on the toolbar.

406.1.3.03 Move the mouse over the map and click and hold the mouse button. This click will represent the first corner of the rectangle.

406.1.3.04 Move the mouse to another location, keeping the mouse button held down.

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406.1.3.05     Release the mouse button to specify the opposite corner of the rectangle. Features of the active layer that fall within the selection tolerance will be selected and drawn.

*NOTE #8*\*\*\*\*\* by holding down the control key, you can draw additional rectangles and add the selection to the original selected data.

406.1.3.06     Viewing Attribute Data of Selected Features

406.1.3.07     Right-click on the layer in the legend

406.1.3.08     Click on [*Open Attribute Table*], the Attribute Table dialog for the layer you clicked on will open.

406.1.3.09     Click on the [Move Selected to Top] button to see the attributes of the selected features moved to the top of the table

*QUESTION #8* \*\*\*\*\* *what are the names of the seven towns on Cape Cod, Massachusetts*

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# *407.0      Data Editing and Creating*

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## *407.1          Editing a Layer*

### *407.1.1        General Information for Editing a Layer*

407.1.1.01     QGIS supports basic capabilities for editing spatial data. Before reading any further you should note that at this stage editing support is still preliminary. Before performing any edits, always make a backup of the dataset you are about to edit.

### *407.1.2          Setup for the Editing a Layer: Not Applicable*

### *407.1.3          Steps for Editing a Layer*

407.1.3.01     If you wish to edit an existing layer, right clicking on the legend entry for that layer then choose [*Start Editing*] from the context menu. Remember to backup your data before starting! Once the layer is in edit mode you will see a small icon ı.✎. to remind you.

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407.1.3.02    Now that the layer is editable, you can use the [*Capture Points*]
              icon (or similar icon for line and polygon layers) on the toolbar to put the
              QGIS cursor into digitising mode. If you are capturing a point feature,
              simply use the pan and zoom tools to navigate to the area of interest, then
              click the [*Capture Points*] tool and click on the map area to create the new
              point feature.

407.1.3.03    A window will appear allowing you to set the attributes. In its current
              implementation the attributes dialog box does not check that the data
              matches the type expected, so make sure of this before pressing [*Ok*].

407.1.3.04    To delete a feature, select it using the selection tool and choose [*Delete
              selection*] from the editing tools

407.1.3.05    Once you have finished adding features, choose [*Stop Editing*] from the
              layer's context menu. Choosing [*Yes*] will save the changes to disk, while
              choosing [*No*] at this point will cause them to be discarded.

*ISSUE #8 ***** you can not add or delete attribute columns*

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**407.2        Creating a New Layer**

**407.2.1      General Information about Creating a New Layer: Not Applicable**

**407.2.2       Setup for Creating a New Layer: Not Applicable**

**407.2.3      Usage of Creating a New Layer**

407.2.3.01    To create a new layer for editing, choose [*New Vector Layer*] from the
              [*Layer*] menu.

407.2.3.02    The New Vector Layer dialog will be displayed. Choose the type of layer
              (point, line, or polygon).

407.2.3.03    To complete the creation of the new layer, add the desired attributes by
              clicking on the [*Add*] button and specifying a name and type for the
              attribute. Only real, integer, and string attributes are supported

407.2.3.04    Once you are happy with the attributes, click [*Ok*] and provide a name for
              the shapefile. QGIS will automatically add a .shp extension to the name
              you specify. Once the layer has been created, it will be added to the map
              and you can edit it in the same way as described in Section 407.1 above.

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*TASK #23*****Click on [Layer] then [New Vector Layer], select 'point', then click
on [Add], make the name "Callsign", type is' string', click [OK], repeat
this and add columns for lat, long, and name to the new layer, then click
[OK] to close the new layer. Save it as newBuoys, click [Save] Then go
back and recreate FPSN7, Its name will be "Flying Pan Shoals, NC"

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# *500*      *Raster Data*

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# *501.0*      *Working with Raster Data*

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### *501.1*      *Working with Raster Data*

### *501.1.1*      *General Information for Working with Raster Data*

*501.1.1.01*      Definition:  Raster data in GIS are matrices of discrete cells that represent
features on, above or below the earth's surface. Each cell in the raster grid
is the same size, and cells are usually rectangular (in QGIS they will
always be rectangular). Typical raster datasets include remote sensing data
such as aerial photography or satellite imagery and modeled data such as
an elevation matrix.

*501.1.1.02*      QGIS supports a number of raster data formats. QGIS supports a number
of different raster formats. Currently tested formats include:
- Arc/Info Binary Grid
- Arc/Info ASCII Grid
- Grass Raster
- GeoTIFF
- Spatial Data Transfer Standard Grids (with some limitations)
- USGS ASCII DEM
- Erdas Imagine

*501.1.1.03*      Because the raster implementation in QGIS is based on the GDAL library,
other raster formats implemented in GDAL are also likely to work, but
have not yet been tested.

*501.1.1.04*      unlike vector data, raster data typically do not have an associated database
record for each cell.

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### 501.2        *Loading Raster Data*

### 5012.1        *General Information about Loading Raster Data: Not Applicable*

### 501.2.2        *Creation or Setup for Loading Raster Data: Not Applicable*

### 501.2.3        *Usage of Loading Raster Data*

501.2.3.01        Raster layers are loaded either by clicking on the [*Load Raster*] icon or by selecting the [*View*] and then [*Add Raster Layer*] menu option. More than one layer can be loaded at the same time by holding down the Control key and clicking on multiple items in the file dialog.

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### 501.3        *Raster Properties*

### 501.3.1        *General Information about Raster Properties*

501.3.1.01        QGIS supports three forms of raster layers:
* Single Band Grayscale Rasters
* Palette Based RGB Rasters
* Multi-band RGB Rasters

501.3.1.02        From these three basic layer types, eight forms of symbolized raster display can be used:
* Single Band Grayscale
* Single Band Pseudocolor
* Paletted Grayscale (where only the red, green or blue component of the image is displayed)
* Paletted Pseudocolor (where only the red, green or blue component of the image is displayed, but using a pseudocolor algorithm)
* Paletted RGB
* Multi-band Grayscale (using only one of the bands to display the image)
* Multi-band Pseudocolor (using only one of the bands shown in pseudocolor)
* Multi-band RGB (using any combination of three bands)

501.3.1.03        QGIS can invert the colors in a given layer so that light colors become dark (and dark colors become light). Use the Invert Color Map checkbox to enable / disable this behavior. QGIS has the ability to display each raster layer at varying transparency levels. Use the transparency slider to

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indicate to what extent the underlying layers (if any) should be visible though the current raster layer. The transparency can also be set using the transparency slider in the layer context menu which is accessible by right-clicking on the layer in the legend.

501.3.1.04    QGIS can restrict the data displayed to only show cells whose values are within a given number of standard deviations of the mean for the layer. This is useful when you have one or two cells with abnormally high values in a raster grid that are having a negative impact on the rendering of the raster. This option is only available for pseudocolor images.

## 501.3.2      *General Tab*

501.3.2.01    The General tab displays basic information about the selected raster, including the layer source and display name in the legend (which can be modified). This tab also shows a thumbnail of the layer, its legend symbol, and the palette.

## 501.3.3      *Metadata Tab*

501.3.3.01    The Metadata tab displays a wealth of information about the raster layer, including statistics about each band in the current raster layer. Statistics are gathered on a 'need to know' basis, so it may well be that a given layers statistics have not yet been collected.

## 501.3.4      *Gathering Raster Statistics*

501.3.4.01    To gather statistics for a layer, select pseudocolor rendering and click the [*Apply*] button, Gathering statistics for a layer can be time consuming. Please be patient while QGIS examines your data!

## 501.3.5      *Pyramids Tab*

501.3.5.01    Large resolution raster layers can slow navigation in QGIS, By creating lower resolution copies of the data (pyramids), performance can be considerably improved as QGIS selects the most suitable resolution to use depending on the level of zoom.

501.3.5.02    You must have write access in the directory where the original data is stored to build pyramids.

*NOTE #9*\*\*\*\*\**Please note that building pyramids may alter the original data file and once created, they cannot be removed. If you wish to preserve a 'non-pyramided' version of your raster, make a backup copy prior to building pyramids*.

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*ISSUE #9***** If you forget to check 'projection on the fly' and add an image to a set of shapefiles layers and they are in different projections, it may exit the program.*

*ISSUE #10*****If you try to reproject the image by setting 'projection on the fly' and then adding shapefile layers in one projection (thus setting the projection for the project) and then add a image layer in a different projection, it may exit the program.*

*NOTE #10***** Add the image to the project first, check 'projection on the fly', add shapefile layers, do not reproject while images are loaded.*

*TASK #24***** Open new project, load srld48i200l.tif as a raster file to the new project, set projection as "Lambert Azimuthal Equal Area" then "U.S. National Atlas Equal Area", set "projection on the fly". Add the states file and set the fill to transparent.*

*NOTE #11*****You will notice that there is an offset in the way the state layer overlays the image. This is because the projections are not identical.*

*The Image is*
*+proj=laea +lat_0=45 +lon_0=-100 +x_0=0 +y_0=0 +ellps=GRS80 +datum=NAD83 +units=m +no_defs*
while "*U.S. National Atlas Equal Area*", is
+proj=laea +lat_0=45 +lon_0=-100 +x_0=0 +y_0=0 +a=6370997 +b=6370997 +units=m +no_defs

*TASK #25***** Build a custom projection using the image parameters*

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*Custom Projection Definition*

You can define your own custom projection here. The definition must conform to the proj4 format for specifying a Spatial Reference System.

Name: test

Parameters: +proj=laea +lat_0=45 +lon_0=-100 +x_0=0 +y_0=0 +ellps=GRS80 +datum=NAD83 +units=m +no_defs
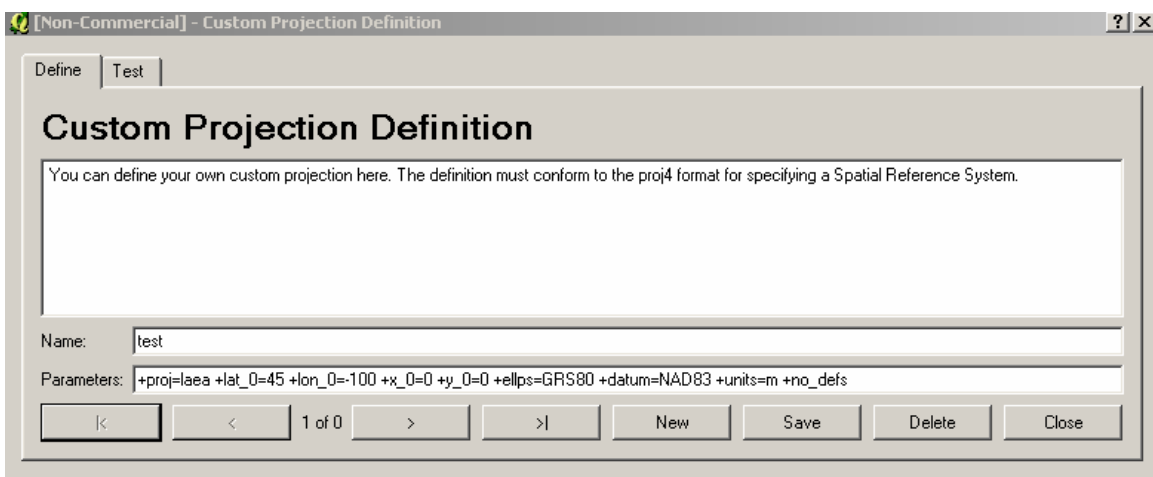
*QUESTION #9 ***** Does this fix the shift error?*

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# 600        Plugins or Extensions

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# 601.0        Plugins

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## 601.1        Plugins

### 601.1.1        General Information about Plugins

*601.1.1.01*    QGIS has been designed with a plugin architecture. This allows new features/functions to be added to the application. Many of the features in QGIS are actually implemented as plugins.

*601.1.1.02*    There are two types of plugins in QGIS: core and user-contributed. A core plugin is maintained by the QGIS development team and is part of every QGIS distribution. A user-contributed plugin is an external plugin that is maintained by the individual author. The QGIS Community site (http://community.qgis.org) serves as the repository for user contributed plugins.

### 601.1.2        Setup for Plugins

*601.1.2.01*    when you install QGIS, all of the core plugins are included. Additional user contributed plugins may be available on the QGIS Community site.

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> To see what user-contributed plugins are available, see the plugins page on the Community site (http://community.qgis.org/plugins).

601.1.2.02    Typically, user-contributed plugins are distributed in source form and require compiling. For instructions on building and installing a user-contributed plugin, see the documentation included with the plugin.

### 601.1.2    Usage of Plugins

601.1.2.01    Managing plugins consists of loading or unloading them from QGIS.

601.1.2.02    Loaded plugins are "remembered" when you exit the application and restored the next time you run QGIS.

601.1.2.03    To manage plugins, open the [*Plugin Manager*] from the [*Tools*] menu. The Plugin Manager displays all the available plugins and their status (loaded or unloaded).

601.1.2.04    Typically all QGIS plugins are installed in the same location. This location is shown in the Plugin Directory text field. You can tell QGIS to load plugins from another location by specifying a different directory.

601.1.2.05    If you find that QGIS crashes on startup, a plugin may be at fault. You can stop all plugins from loading by editing your .qt/qgisrc file in your home directory on Linux/Unix (Windows users will have to edit the registry). On Linux/Unix, open the qgisrc file in a text editor and find the [Plugins] section. Set all the plugin values to false to prevent them from loading. For example, to prevent the Delimited text plugin from loading, the entry in qgisrc should look like this: Add Delimited Text Layer=false.Do this for each plugin in the [Plugins] section. You can then start QGIS and add the plugins one at a time from the Plugin Manger to determine which is causing the problem.

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# 602    Using the Delimited Text plugin

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### 602.1    Adding Data Using the Delimited Text plugin

### 602.1.1    General Information for Adding Data Using the Delimited Text plugin:

602.1.1.01    The Delimited Text plugin allows you to load a delimited text file as a layer in QGIS.

### 602.1.2    Setup for Adding Data Using the Delimited Text plugin:

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602.1.2.01    To view a delimited text file as layer, the text file must contain:
- A delimited header row of field names. This must be the first line in the text file
- The header row must contain an X and Y field. These fields can have any name.
- The x and y coordinates must be specified as a number. The coordinate system is not important

602.1.2.02    An example of a valid text file might look like this:

name,latdec,longdec,cell,
196 mile creek,61.89806,-150.0775,tyonek d-1 ne,
197 1/2 mile creek,61.89472,-150.09972,tyonek d-1 ne
a b mountain,59.52889,-135.28333,skagway c-1 sw,
apw dam number 2,60.53,-145.75167,cordova c-5 sw,
apw reservoir,60.53167,-145.75333,cordova c-5 sw,
apw reservoir,60.53,-145.75167,cordova c-5 sw,
aaron creek,56.37861,-131.96556,bradfield canal b-6,
aaron island,58.43778,-134.81944,juneau b-3 ne,
aats bay,55.905,-134.24639,craig d-7,

Some items of note about the text file are:
- The example text file uses , as delimiter. Any character can be used to delimit the fields.
- The first row is the header row. It contains the fields name, latdec, longdec, and cell
- No quotes (") are used to delimit text fields
- The x coordinates are contained in the longdec field
- The y coordinates are contained in the latdec field

### 602.1.3         Adding Data Using the Delimited Text plugin:

602.1.3.01    Open the Plugin Manager by choosing the [*Tools*] then the [*Plugin Manager]* menu. The Plugin Manager displays a list of available plugins. Plugins that are already loaded have a check mark to the left of their name.

602.1.3.02    Click on the checkbox to the left of the [*Add Delimited Text Layer*] plugin and click [Ok] to load it.

602.1.3.03    New toolbar icon is now present: Click on the icon to open the Delimited Text dialog.

602.1.3.04    First select the file to import by clicking on the ellipsis button:

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*602.1.3.05*    Select the desired text file from the file dialog Once the file is selected, the plugin attempts to parse the file using the last used delimiter, in this case ','

*602.1.3.06*    If the delimiter ',' is not correct for the file, the X and Y field drop-down boxes will not contain valid field names. To properly parse the file, change the delimiter

*602.1.3.07*    After changing the delimiter, click [*Parse*]. The drop-down boxes now contain the fields properly parsed.

*602.1.3.08*    Choose the X and Y fields from the drop down boxes and enter a Layer name.

*602.1.3.09*    To add the layer to the map, click [*Add Layer*]. The delimited text file now behaves as any other map layer in QGIS.

*TASK #26*\*\*\*\*\*   *we are going to place several C-man Buoys off the southeast coast. Using a text editor like wordpad or notepad, create a file with the following data in it*

*callsign, lat, long,*
*SGOF1, 29.41, -84.86,*
*DRYF1, 24.64, -82.86,*
*SECG1, 30.8, -80.32,*
*DUCN7,36.18, -75.75*

*Add save it as buoys.txt*

*Click on [Tools] then [Plugin Manager] menu, Turn on [Add Delimited Text Layer], Click on the icon to open the Delimited Text dialog, select buoys.txt to import, make sure the delimiter is ',' Choose 'long' as the X field and 'lat' as the Y field, enter a Layer name of buoys, click [Add Layer].*

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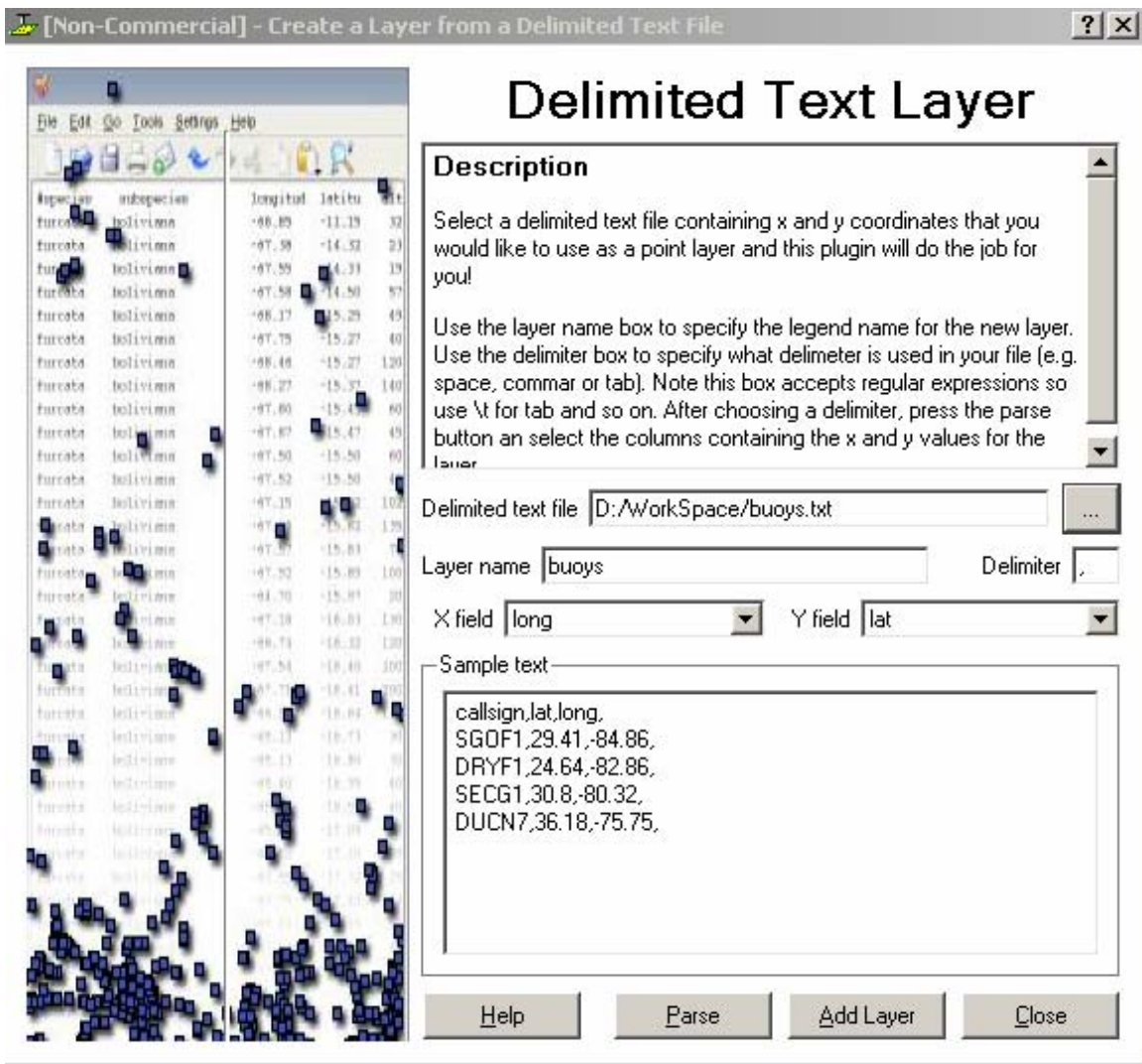


**ISSUE #11***** will only accept .txt files*

**ISSUE #12***** In order to do any further editing of this file you have to right-click on the file just created and select [Save as Shape File].*

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### 602.2 Working with the Attribute Table

### 602.2.1 General Information for Working with the Attribute Table

602.2.1.01    Using the Attribute Table - The attribute table displays all data that is associated with the currently selected layer. This data is displayed as a table on which functions can be performed

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*TASK #27*\*\*\*\*\**Right-click on the buoys layer, click on [Start Editing], Click on [Capture Points], navigate to the location Latitude 33.49 Longitude -77.59 and click the mouse. A table will open up and enter the data callsign FPSN  lat 33.49 long -77.59 and then click [OK]. Right-click the buoys layer, click on [Stop Editing] Click on [yes]*

*TASK #28*\*\*\*\*\**Right-click on the buoys layer, click on [open attribute table], click on [Start Editing] in lower left corner, Click on the box containing FPSN and change it to FPSN7, click on [Stop Editing] then [Close]*

*ISSUE #13*\*\*\*\*\* *you can not add or delete attribute columns*

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# 603.0        Other Core Plugins
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**603.1**          **Copyright Plugin**

**603.1.1**          **General Information about Copyright Plugin:**

*603.1.1.01*          This plugin overlays copyright information on the rendered map

**603.1.2**          **Setup for Copyright Plugin:** *Not Applicable*

**603.1.3**          **Use of Copyright Plugin**

*603.1.3.01*          Click on [*Plugins*] on Main toolbar

*603.1.3.02*          Click on [*Plugin Manager*]

*603.1.3.03*          Check "CopyrightLabel"

*603.1.3.04*          Click [*OK*]

*603.1.3.05*          Click [*Copyright Label*] on main toolbar

*603.1.3.06*          Type in copyright information in box

*603.1.3.07*          Select placement

*603.1.3.08*          Check "Enable Copyright Label"

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*603.1.3.09*     Click [OK]

*TASK #29***** *Put a copyright for your organization in the lower right corner*

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**603.2**          *Georeferencer Plugin*

**603.2.1**        *General Information about Georeferencer Plugin*

*603.2.1.01*     The QGIS Georeferencing plugin is a tool that can generate world files for raster files. World files are small text files that contain the world coordinates for the upper left corner of the raster, and the size in world coordinate units of every raster pixel.

*603.2.1.02*     This plugin can for example be used to add world files to scanned paper maps, so you can use them in a project with other datasets covering the same area.

**603.2.2**        *Setup for Georeferencer Plugin: Not Applicable*

**603.2.3**        *Use of Georeferencer Plugin*

*603.2.3.01*     To figure out the coordinates for the raster's upper left corner and the size of the pixels, the plugin needs to know the world coordinates for some points in the raster. You supply these coordinates by clicking on points in the raster and entering their coordinates in a popup window. The more coordinates you give, the better the generated world file should fit the "real" coordinates.

*603.2.3.02*     When you think that you have entered enough coordinates you tell the plugin to generate the world file.

*603.2.3.03*     The plugin will then try to fit a certain transform to your given coordinates. You can choose between two types of transform, "Linear" and "Helmert".

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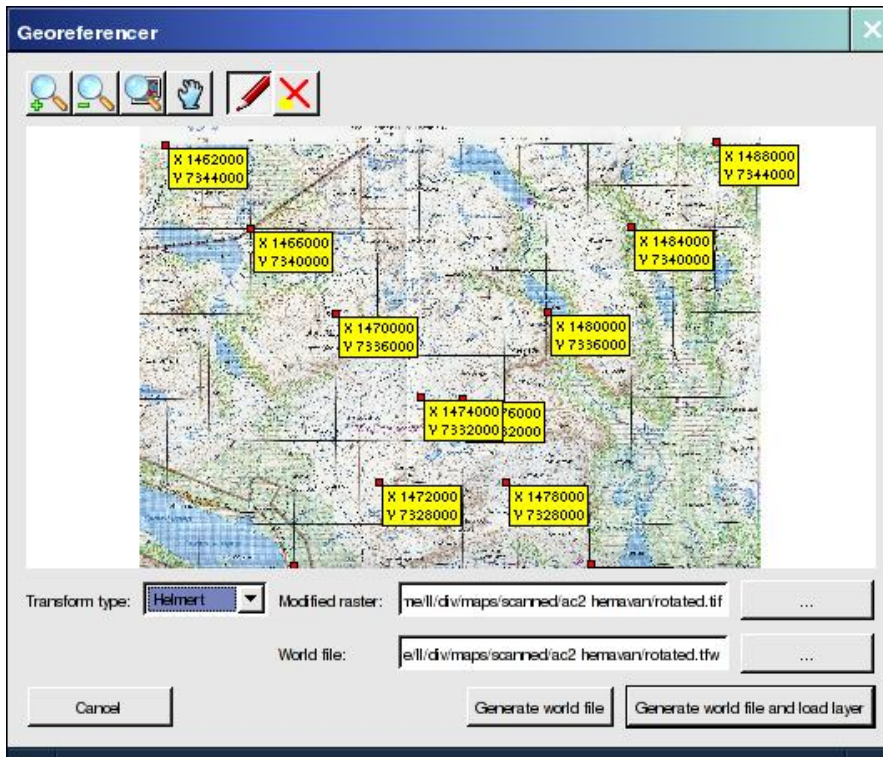


603.2.3.04    If you choose the "Linear" transform type (which isn't really linear in the
              mathematical sense but it is a combination of two separate line functions
              in the X and Y coordinates) the plugin will assume that the raster only
              needs to be scaled and translated to fit the map, and it will simply generate
              a world file for the original raster file.

603.2.3.05    If you on the other hand choose the "Helmert" transform the plugin will
              assume that the raster also needs to be rotated to fit the map (this is useful
              if you have scanned a paper map and couldn't get it to line up perfectly in
              the scanner). A new raster file will be generated, which is a rotated copy
              of the old raster, and a world file will be generated for this new raster file
              instead.

603.2.3.06    If you choose the "Helmert" transform you will also get to choose the
              resampling method for the rotation - "Cubic" or "Bilinear" is best for RGB
              raster, but "Nearest neighbor" should be used for raster that use an indexed
              colormap.

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### 603.3        GPS Tools Plugin

### 603.3.1      General Information about GPS Tools Plugin

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*603.3.1.01*     Tool for loading and importing GPS data

**603.3.2**        ***Setup for GPS Tools Plugin: Not Applicable***

**603.3.3**        ***Use of GPS Tools Plugin***

*603.3.3.01*     This is a little more involved for a basic introduction to Software

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**603.4**          ***Graticule Creator Plugin***

**603.4.1**        ***General Information about Graticule Creator Plugin:***

*603.4.1.01*      This tool allows for the building of a graticule grid over the map

**603.4.2**        ***Setup for Graticule Creator Plugin: Not Applicable***

**603.4.3**        ***Use of Graticule Creator Plugin***

*603.4.3.01*     Click on [*Plugins*] on Main toolbar

*603.4.3.02*     Click on [*Plugin Manager*]

*603.4.3.03*     Check "Graticule Creator"

*603.4.3.04*     Click [*OK*]

*603.4.3.05*     Click [*Graticle Builder*] on main toolbar

*603.4.3.06*     Fill in the appropriate values

*603.4.3.07*     Click [OK]

***TASK #30******* Build a Grid from Latitude 10.0 Longitude -170.0 to Latitude 80.0 Longitude -10.0, Graticle Size 5 and 5, save as shape "latlon" in your workspace directory

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**603.5**          ***North Arrow Plugin***

**603.5.1**        ***General Information about North Arrow Plugin***

**603.5.2**        ***Setup for North Arrow Plugin: Not Applicable***

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**603.5.3**          *Use of North Arrow Plugin*

*603.5.3.01*     Click on [*Plugins*] on Main toolbar

*603.5.3.02*     Click on [*Plugin Manager*]

*603.5.3.03*     Check "NorthArrow"

*603.5.3.04*     Click [*OK*]

*603.5.3.05*     Click [*North Arrow*] on main toolbar

*603.5.3.06*     Select desired placement

*603.5.3.07*     Click on "Enable North Arrow"

*603.5.3.08*     Click on "Set direction automatically"

*603.5.3.09*     Click [*OK*]

*TASK #31***** Put a North Arrow in the upper right corner*

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**603.6**            *QGS Launcher Plugin*

**603.6.1**          *General Information about QGS Launcher Plugin*

*603.6.1.01*     This toll launches a program or script from within QGIS

**603.6.2**          *Setup for QGS Launcher Plugin: Not Applicable*

**603.6.3**          *Use of QGS Launcher Plugin*

*603.6.3.01*     This is a little more involved for a basic introduction to Software

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**603.7**            *Scale Bar Plugin*

**603.7.1**          *General Information about Scale Bar Plugin*

*603.7.1.01*     Plugin to draw scale bar on Map

**603.7.2**          *Setup for Scale Bar Plugin: Not Applicable*

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**603.7.3**          *Use of Scale Bar Plugin*

*603.7.3.01*          Click on [*Plugins*] on Main toolbar

*603.7.3.02*          Click on [*Plugin Manager*]

*603.7.3.03*          Check "ScaleBar"

*603.7.3.04*          Click [*OK*]

*603.7.3.05*          Click [*Scale Bar*] on main toolbar

*603.7.3.06*          Select desired placement

*603.7.3.07*          Select Bar Style

*603.7.3.08*          Click on "Enable Scale Bar"

*603.7.3.09*          Click on "Automatically snap to round numbers in resize"

*603.7.3.10*          Click [*OK*]

*TASK #32***** Put a Scale Bar in the low left corner*

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**603.8**          *Spit Plugin*

**603.8.1**          *General Information about Spit Plugin*

*603.8.1.01*          This is a Shapefile to PostgreSQL/PostGIS Import Tool

**603.8.2**          *Setup for Spit Plugin: Not Applicable*

**603.8.3**          *Use of Spit Plugin*

*603.8.3.01*          This is a little more involved for a basic introduction to Software

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# 604.0          *User Contributed Plugins*

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**604.1**          *Open Modeler Plugin*

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### 604.1.1         *General Information about Open Modeler Plugin*

*604.1.1.01*       OpenModeller is a spatial distribution modeling library, providing a uniform method for modeling distribution patterns using a variety of modeling algorithms. openModeller can be used via programmatic interfaces, including SOAP and SWIG-python, as well as via a user friendly desktop graphical user interface and a GIS plugin.

### 604.1.2         *Setup for Open Modeler Plugin: Not Applicable*

### 604.1.3         *Use of Open Modeler Plugin*

*604.1.3.01*      The openModeller desktop GUI program runs on both Linux and Windows (9x,ME,2k,NT,XP). The program can be run as a standalone GUI application or as a plugin for Quantum GIS. The program takes the form of a 'Wizard', collecting information from the user via a number of screens. The selections made are saved between sessions thus streamlining the modeling process on subsequent occasions.

*604.1.3.02*      The first screen prompts the user to select the modeling algorithm to use. Tabbed pages provide the user with information about each algorithm such as the author details, general description and references.

*604.1.3.03*      The second step asks the user to select a coordinate system. openModeller uses the projection library proj to support using point locality data in any WKT defined coordinate system

*604.1.3.04*      Next, the user is asked to load a text file containing the point locality data for the study species. As the text file can contain data for more than one species, the user must then specify which species to use.

*604.1.3.05*      Then the user defines the environmental raster layers with which to build the model. Layers can be specified one by one, or the folder containing all the required files can be selected and openModeller will load them recursively. The openModeller uses the GDAL library to read raster surfaces and therefore it supports most of the popularly used GIS data formats. The openModeller can use raster layers of different extents and coordinate systems within the same analysis and therefore all raster layers must have coordinate systems defined.

*604.1.3.06*      The following page provides a similar interface so the user can specify the layers into which they would like to project their model. This could be the same data as was specified in the previous page (to model the present day potential distribution), or data for a different region or time period.

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*604.1.3.07*    Next, the user is prompted to select the mask layers which will be used to mask the input occurrences and to determine the output format. As openModeller supports raster layers of different extents and coordinate systems, the output mask layer specified determines the extent and coordinate system of the resulting prediction.

*604.1.3.08*    The next step allows the user to define parameters required for the selected modeling algorithm. The number of available parameters depends on the algorithm selected. By holding your mouse over each box, a tooltip provides a more detailed description of each parameter's function

*604.1.3.09*    Here the user defines the base file name for the model output files and the folder where these files should be written. The wizard will produce a GEOTIFF image suitable for use in most GIS packages, a configuration file which can be used to run the model again using the openModeller console client and a color ramped PNG image for initial viewing by the user.

*604.1.3.10*    The final wizard screen displays progress bars informing the user of the progress of the model creation and model projection.

*604.1.3.11*    Once the wizard has completed the task, a new window is opened showing the color ramped PNG image of the model output. The window can be used to save the image in a variety of file formats as well as to open the Wizard to run another model

*NOTE #11***** There is a link from the http://community.qgis.org/ site to the openModeller plugin. Download and work through it if you want, but it is a little more involved for a basic introduction to Software*

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## 700        *Extra Features*
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## 701.0       *Map Overview*
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### 701.1        *Map Overview*

### 701.1.1        *General Information for Map Overview*

*701.1.1.01*    The map overview area provides a full extent view of layers added to it. Within the view is a rectangle showing the current map extent. This allows you to quickly determine which area of the map you are currently viewing.

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Note that labels are not rendered to the map overview even if the layers in the map overview have been set up for labeling.

**701.1.2**       **Setup for Using the Map Overview**

**701.1.3**       **Steps for Using the Map Overview**

*701.1.3.01*       You can add a single layer to the overview by right-clicking on it in the legend and choosing [*Toggle in Overview*].

*701.1.3.02*       You can also add or remove all layers to the overview using the [*Add to Overview*] tool on the main toolbar.


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# 800      Hard Copy

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# 801.0      Printing using Map Composer

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**801.1**       **Map Composer**

**801.1.1**       **General Information about Map Composer**

*801.1.1.01*       The map composer is a feature that provides improved layout and printing capabilities. The composer allows you to add elements such as the QGIS map canvas, legend, scalebar, and text. You can size and position each item and adjust the properties to create your layout. The result can be printed, exported as an image, or exported to SVG.

**801.1.2**       **Setup for Map Composer: Not Applicable**

**801.1.3**       **Using Map Composer**

*801.1.3.01*       to access the map composer, click on the [*Print*] button in the toolbar or choose [*Print*] from the [*File*] menu

*801.1.3.02*       To use the map composer, first add the layers you want to print to QGIS. The layers should be rendered and symbolized to your liking prior to composing the map. Opening the map composer provides you with a blank canvas to which you can add the current map view, legend, scalebar, and text.

*801.1.3.03*       The map composer has two tabs: [*General*] and [*Item*]. The General tab allows you to set the paper size, orientation, and resolution for the map.

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The Item tab displays the properties for the currently selected map element. By selecting an element on the map (eg. legend, scalebar, text, etc.) and clicking on the Item tab, you can customize the settings.

*801.1.3.04*   You can add multiple elements to the composer. This allows you to have more than one map view and legend in the composer. Each element has its own properties and in the case of the map, its own extent.

*801.1.3.05*   Adding a Map to the Composer
- To add the QGIS map canvas to the map composer, click on the [*Add a new map*] button in toolbar.
- Drag a rectangle on the composer canvas to add the map. You can resize the map later by clicking on the Select/move item button, clicking on the map, and dragging one of the handles in the corner of the map. With the map selected, you can also resize the map by specifying the width and height on the [*Item*] properties tab.
- The map is linked to the QGIS map canvas. If you change the view on the map canvas by zooming or panning, you can update the map composer view by selecting the map in composer and clicking on the [*Set Extent*] button. You can also change the composer view by specifying a map scale. To set the view to a specific scale:
  - Choose [*Scale*] (calculate extent) from the Set drop-down box
  - Enter the scale denominator in the scale box
  - Press [*Enter*]

*801.1.3.06*   Adding other Elements to the Composer

*801.1.3.06.01*  A legend can be added to the composer canvas and customized to show only the desired layers. To add a legend, click on the [*Add Vector Legend]* button. The legend will be placed on the composer canvas and you can move it where you like.

*801.1.3.06.02*  Click on the [*Items*] tab to customize the appearance of the legend, including which layers are shown.

*801.1.3.06.03*   To add a scalebar to the composer, click on the [*Add Scalebar*] button.

*801.1.3.06.04*   Use the [Item] tab to customize the segment size, number of segments, scalebar units, size, and font for the scalebar.

*801.1.3.06.05*  You can add text labels to the composer by clicking on the [*Add New Label*] button.

*801.1.3.06.06*  Use the Item tab while the text is selected to customize the settings or change the default text.

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*801.1.3.07*     The map composer has navigation tools to zoom in and out.

*801.1.3.07.01* To zoom in, click the zoom in tool. The map composer canvas will be scaled by a factor to 2. Use the scrollbars to adjust the view to the area of interest.

*801.1.3.07.02* Zooming out works in a similar fashion.

*801.1.3.08*     If you find the view in an inconsistent state, you can use the refresh button to redraw the map composer

*801.1.3.09*     The map composer allows you to print the map to a printer, export to a PNG, or export to SVG. Each of these functions is available from the composer toolbar.

*ISSUE #13***** When you add the map to the composer, it does not always bring along all the layers. This may be a memory or virtual page size issue.*

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# *900        Support and  Help*

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# *901        Support*

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## *901.1        Support*

### *901.1.1        General Information about Support*

*901.1.1.01*     QGIS is still under active development and as such it won't always work like you expect it to. The preferred way to get help is by joining the qgis-users mailing list. Your questions will reach a broader audience and answers will benefit others. You can subscribe to the qgis-users mailing list by visiting here: http://lists.sourceforge.net/lists/listinfo/qgis-user

*901.1.1.02*     If you are a developer facing problems of a more technical nature, you may want to join the qgis-developer mailing list here: http://lists.sourceforge.net/lists/listinfo/qgis-developer

*901.1.1.03*     There is also a presence on IRC - visit QGIS by joining the #qgis channel on irc.freenode.net. Please wait around for a response to your question as many folks on the channel are doing other things and it may take a while for them to notice your question.

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*901.1.1.04*     Commercial support for QGIS is available from Micro Resources

*901.1.1.05*     While the qgis-users mailing list is useful for general 'how do I do xyz in QGIS' type questions, you may wish to notify us about bugs in QGIS. You can submit bug reports using the QGIS bug tracker. When reporting a bug, either login to SourceForge or, if you don't have a SourceForge id, provide an email address where we can request additional information.

*901.1.1.06*     Please bear in mind that your bug may not always enjoy the priority you might hope for (depending on its severity). Some bugs may require may require significant developer effort to remedy and the manpower is not always available for this.

*901.1.1.07*     If you have found a bug and fixed it yourself you can submit it to the QGIS Sourceforge patch queue where someone will review it and apply it to QGIS. Please don't be alarmed if your patch is not applied straight away - developers may be tied up with other commitments.

*901.1.1.08*      Feature requests can be submitted using the feature tracker.

*901.1.1.09*     There is also a community site for QGIS where we encourage QGIS users to share their experiences and provide case studies about how they are using QGIS. The community site is available at: http://community.qgis.org

*901.1.1.10*     Lastly, we maintain a WIKI web site at http://wiki.qgis.org where you can find a variety of useful information relating to QGIS development, release plans, links to download sites and so on.