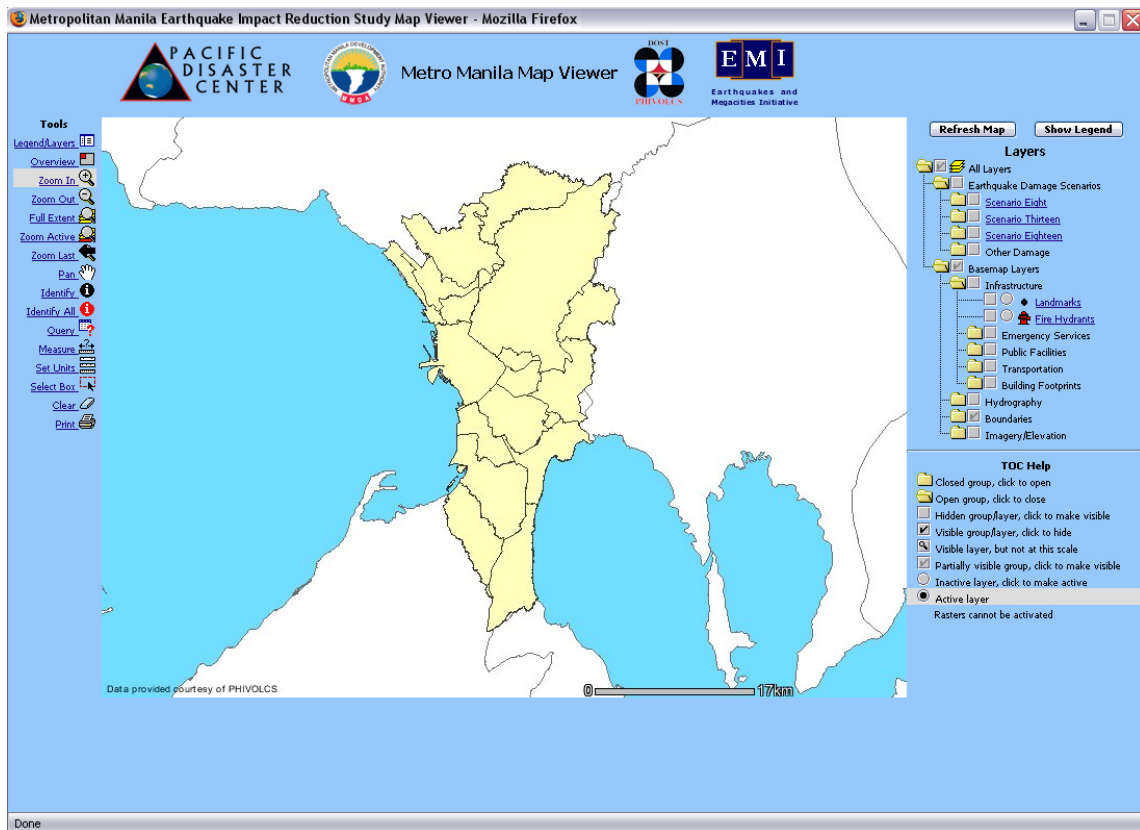




# Metro-Manila Map Viewer

## Training Workbook Exercises



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## Before You Get Started

1. The Metro Manila Map Viewer has been optimized for a Windows environment using Microsoft Internet Explorer (IE) version 5+. The map Viewer will not run properly in Netscape.
2. Pop-up blockers must be disabled for the site to work properly.
3. This training manual combines detailed descriptions of site elements with hands-on activities to reinforce learning. This symbol  followed by **dark blue text** indicates a hands-on activity.

## Accessing the Site

Access the Map Viewer website at: <http://www.pdc.org/metromanila>

Click on “Launch Map Viewer” near the top of the page. See Figure 1.



Figure 1

## Overview of the Site

The *Metro Manila Map Viewer* has four distinct components:

- **The Table of Contents (TOC)** is a folder structure composed of data layers, data symbols (icons), links to metadata, etc. The TOC allows the user to *choose* what is displayed in the map view.
- **The Map** displays the choice of data layers active in the TOC, and can be modified using a variety of tools in the Toolbar. The area beneath the Map displays various attributes of the data layers when specific tools are used.
- **The Toolbar** offers numerous options to *interact* with the Map and the Data Layers. Several tools are used for navigation purposes (zoom, pan, etc.), while others are used to measure distance, perform queries, display additional information about the data layers, etc.
- **Data Attributes:** This section displays the attribute (tabular) information associated with each layer. This information is accessed using the *Identify* tool.

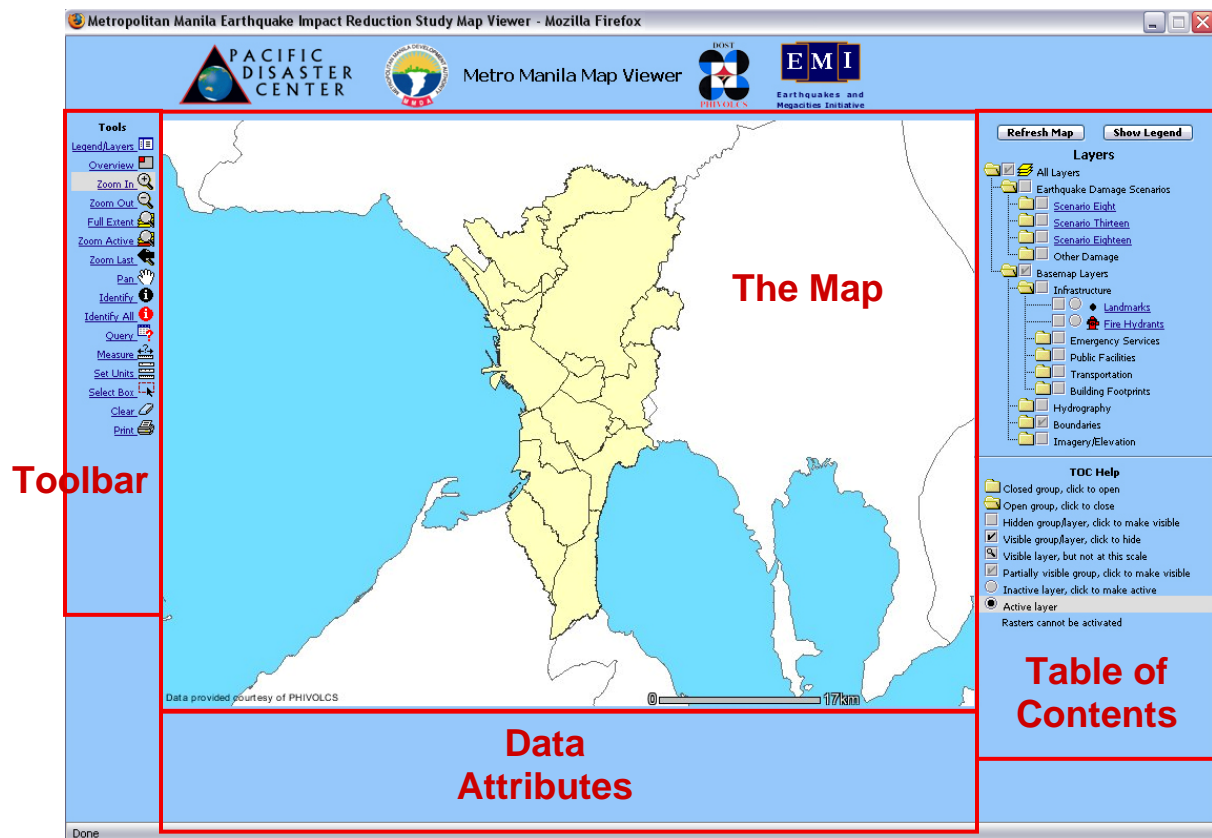



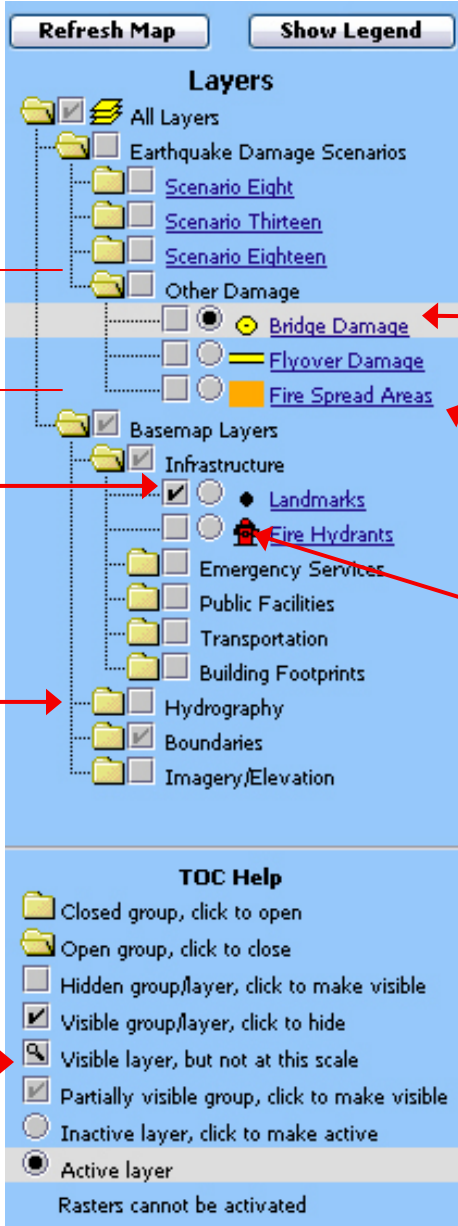
Figure 2

## The Table of Contents (TOC)

**Data Organization** – The TOC is organized into a series of folders – groups of related data. A single click on a yellow folder  will open or close a data group.



Click once on a closed yellow folder to open a data group. Note that there may be additional folders within folders.



**“Refresh Map”** → **Refresh Map**      **“Show” / “Hide” Legend** ← **Show Legend**

**Open Data Group** → **Layers**

- All Layers
- Earthquake Damage Scenarios
  - Scenario Eight
  - Scenario Thirteen
  - Scenario Eighteen
  - Other Damage
    - Bridge Damage (Active Layer)
    - Flyover Damage
    - Fire Spread Areas
- Basemap Layers
  - Infrastructure
    - Landmarks (Visible Layer)
    - Fire Hydrants (Metadata Hyperlink)
  - Emergency Services
  - Public Facilities
  - Transportation
  - Building Footprints
  - Hydrography
  - Boundaries
  - Imagery/Elevation

**Visible Layer** → **Infrastructure**

**Closed Data Group** → **Hydrography**

**Scale Dependent Data Layer** → **Visible layer, but not at this scale**

**“Active” Layer** ← **Bridge Damage**

**Metadata Hyperlink** ← **Fire Hydrants**

**Data Icon** ← **Fire Hydrants**


**TOC Help**

- Closed group, click to open
- Open group, click to close
- Hidden group/layer, click to make visible
- Visible group/layer, click to hide
- Visible layer, but not at this scale
- Partially visible group, click to make visible
- Inactive layer, click to make active
- Active layer
- Rasters cannot be activated

**TOC Help** ← **TOC Help**

Figure 3

**Data Selection** – Specific data layers in the TOC may be chosen for viewing in the map frame. Next to each yellow folder *and* each data layer is a gray box  which may or may not contain a check mark. A checked gray box means the data layer is visible in the Map view. An unchecked box means the layer is not visible. A single click in a gray box will make the data layer visible or turn it off.

Note: If a gray box is checked next to a *closed* yellow folder,  this means that there are one or more data layers *within* the folder that are currently visible in the Map.



**Click on a closed yellow folder that has a gray checked box next to it to see what data layers are visible.**


**Click several unchecked data layers to add to the data selection. (Notice there is no change to the Map view.)**

**The Refresh Map button** provides a link between chosen data layers and what is seen in the Map view.



**Click the Refresh Map button to view changes to the data selection.**

**Click the F5 button on the keyboard to return to the default Map.**

**Active versus inactive layers** – At any given time, there is only one *active* data layer. It appears highlighted in the TOC, with a black dot within a gray circle.  Any data layer with the exception of raster layers (Imagery) can be selected as the active layer by clicking on the gray dot. The significance of the active data layer becomes apparent when using specific tools (e.g., the “Identify” tool). This will be discussed in more detail below. Note the *active* layer in the TOC.

**Data Icons** – Each data layer has a colored icon or symbol associated with it that will appear on the Map. For many of the data layers, there are color variations associated with the same icon. The different colors can represent variables such as intensity, severity, a range of temperature or wind speed. The Legend is used to display all of the color variations.

**Legend** – The “Show Legend” and “Hide Legend” button at the top of the TOC is a toggle. With one click the TOC is replaced with a data legend showing *all* colored icons, scales, intensities, etc. associated with the visible layers.



**Click the “Show Legend” button to view all data icons.**


**Click “Hide Legend” to return to the TOC.**

**Metadata Links** – The title of each data layer is a blue hyperlink that will provide additional information about the layer.





**Click once on any data hyperlink for an abstract that briefly describes the data.**

**Data Resolution / Scale** – Due to the resolution of some data layers, they may not be visible in the Map view at certain scales. This is particularly true of the Imagery/Elevation data group. These data sets have been programmed to appear when the map scale is ideal for viewing. A small magnifying glass icon  will appear in the gray box instead of a check mark if the scale is not ideal. Using the “Zoom In” or “Zoom Out” tools will change the scale in the Map frame.



**Open the Imagery/Elevation data group and click the gray box next to the *Orthophotos* layer. Note the magnifying glass icon. This layer will not be visible until the map is zoomed to a larger scale.**

**Imagery / Raster Data** – These data differ from other layers in that:

- Imagery data cannot be selected as an “active” layer.
- Depending upon the spatial resolution of the imagery, it may be visible only at certain scales.
- Ideally, only one or two imagery layers should be visible at a time.

## ***The Map***

The Map view changes when the “Refresh Map” button is clicked, reflecting the data choices made in the TOC. The Map view also changes when navigational tools are used to interact with it.

Several important things to keep in mind:

1. Too many visible data layers will cause overlap and a lengthy refresh time. Be aware of what, and how many layers are simultaneously visible.
2. Keep in mind that there are resolution and scale dependencies with some data layers (e.g., imagery).
3. The Internet Explorer Image Toolbar can be turned off using the Right Mouse Button and disabled permanently using the Tools -> Internet Options Function.

## ***Data Attributes***

Data attributes will appear in a table underneath the Map (See Figure 5) when certain tools are used like the Identify tool, Identify All, the Select Box, or as a result of performing a query. Attributes may include the name, and population of a Barangay, or peak ground acceleration values of a particular area for an earthquake scenario.

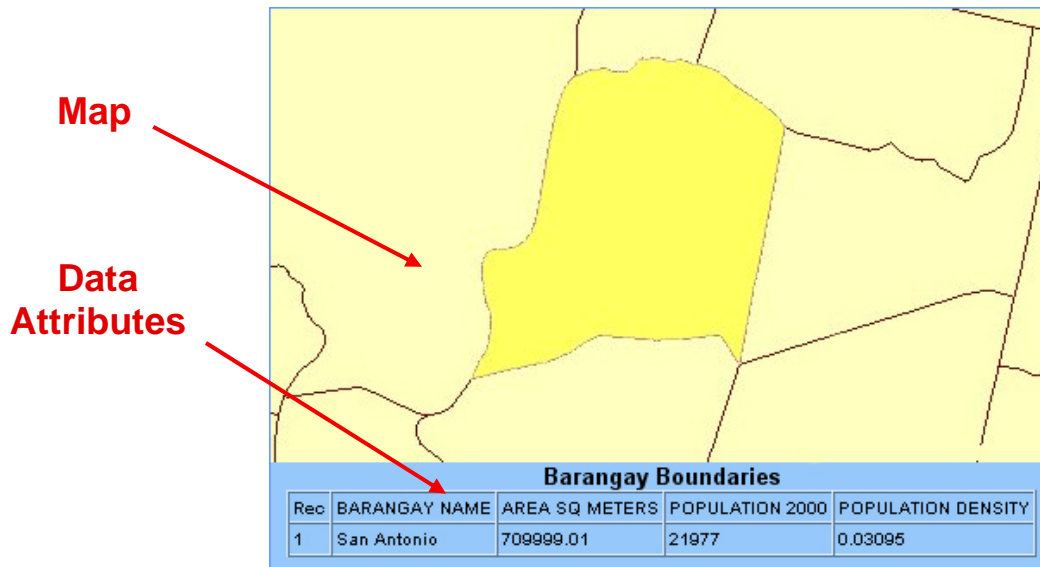





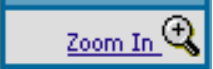

Figure 4

## The Toolbar

Generally speaking, tools in the toolbar fall into two categories based on function – *navigational* and *informational*:

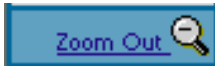
- **Navigational** tools are used to adjust the view within the Map frame (e.g., Zoom, Pan).
- **Informational** tools are used to display details about the data layers, or answer questions about the data that is displayed in the Map view (e.g., Identify, Query).

A tool is activated by clicking once on the tool name or icon. Only one tool can be selected at a time. The active tool will appear highlighted in the Toolbar.

Tools	
	<b>Legend/Layers:</b> Toggles between the Legend and the Layer list in the TOC (the same function as the “Show/Hide Legend button”).
	<b>Overview:</b> Toggles the Overview Map on and off.  <b>Click on the Overview Map tool.</b>
	<b>Zoom In (the active tool by default):</b> Zooms in to an area of the map.  <b>Use the “Zoom In” tool to zoom to an area of interest. It</b>

may be used in two ways:

1. Click on an area in the map frame, or
2. Click, and while holding the mouse button down, draw a rectangle within the map frame.



**Zoom Out:** Zooms out from an area clicked on the map.



Use the “Zoom Out” tool to zoom out. It is used in the same manner as the “Zoom In” tool. Notice how the Overview Map changes with every zoom.



**Full Extent:** Zooms to the full extent of the map. This is the “fullest extent” or the greatest perspective that can be achieved using this tool.



Click the “Full Extent” tool. It is not necessary to click on the map.



**Zoom Active:** Zooms to the full extent of the current *active* layer. It is not necessary to click on the Map when using this tool. (Note: If the active layer is a global dataset, the full extent of the Map will appear when using this tool.)



**Zoom Last:** Zooms to the previous extent of the map. Similar to the “Back” button of a web browser, but only toggles between the last two views. It is not necessary to click on the Map.



Click on the Zoom Last tool.



**Pan:** Moves the map display in the direction that the mouse pointer is moved.



Click, hold the mouse button down, and drag an area of the Map to a new location.

Click the F5 button of the keyboard to return to the default Map.

 Identify 

**Identify:** Displays attribute information for the *active* data layer feature or features that are selected on the Map. The Identify tool links all site components: the TOC, Toolbar, the Map, and Data Attributes.



**To use this tool, an active layer must be selected first. Open the *Boundaries* folder and make the *City Boundaries* Layer active by clicking the round gray dot (the dot should turn black). Then click on the Identify tool.**

**In the Map, draw a box around the feature or features corresponding to the active layer. Notice the information table that appears beneath the Map.**

 Identify All 

**Identify All:** Displays attributes for all layers in the Map frame, not only the active layer. (This tool may be slow if many layers are visible.)



**Click on the Identify All tool. Draw a box in part of, or encompassing the entire Map view. Attributes of all visible layers will appear beneath the Map.**

 Query 

**Query:** Searches for features based on a query expression. (This tool will be used in Activity 6.)

 Measure 

**Measure:** Measures distances on the map.



**Click on the Measure tool. Click on a point on the Map. Wait for the Map to re-draw. Click on another point on the Map, and so on. Notice that this tool measures each segment as well as the combined total.**

 Set Units 

**Set Units:** Changes units displayed on the map.



**Click on the Set Units tool. Use the drop-down window that appears to change units. Click the Set Units button.**

 Select Box 

**Select Box:** Selects the group of features contained by or in contact with a rectangle you draw on the map. (This tool will be used in activity 4.)



**Clear:** Clears the selected set of features.



**Click on the Clear tool to remove features drawn on the Map.**



**Print:** Prints the current Map view.



# Disaster Management Applications

The following exercises offer introductory step-by-step guidance in using the tools and data layers to answer practical questions pertaining to disaster management and planning.

Launch the Metro Manila Map Viewer at: <http://www.pdc.org/metromanila>

Default data layers in the Metro Manila map viewer include city boundaries, Metro Manila boundaries, and provincial boundaries (Figure 5). Note the check marks in the gray boxes next to these layers. These will always appear in the Map upon launching the map viewer.

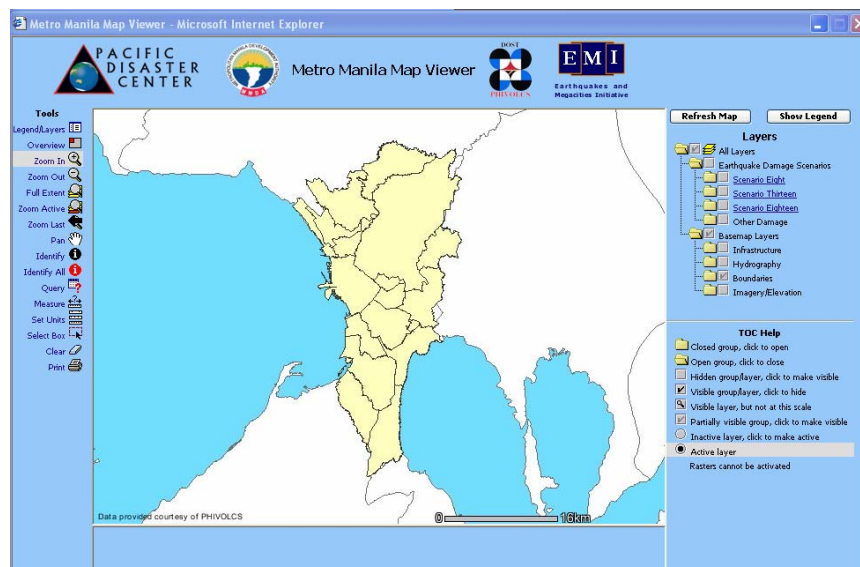


Figure 5

## ***What is the earthquake risk?***

### **Activity 1: Earthquake scenario overview: Exploring data layers, metadata.**

The following activity will explore three different earthquake damage scenarios for the Metro Manila area:

1. Scenario 8 – a 7.2 magnitude earthquake along the West Valley Fault.
2. Scenario 13 – a 7.9 magnitude earthquake along the Manila Trench.
3. Scenario 18 – a 6.5 magnitude historical earthquake that occurred in 1863.

These damage scenarios appear in the Table of Contents or Layer list on the right side of the viewer. Data layers for each scenario are contained within yellow folders next to each scenario name.

**Part 1: Which of these three earthquake scenarios would cause the strongest shaking hazard in Metro Manila (physical ground acceleration as measured by seismic monitoring instruments)?**



**Click the yellow folder next to “Scenario Eight” to view data layers associated with this scenario.**

**Click on the metadata link for “Scenario Eight” to view information about this scenario.**

Close the metadata window to continue.



**In the TOC, click the gray box next to the Peak Ground Acceleration (PGA) layer for Scenario Eight. Click the Refresh Map button (see Figure 6).**

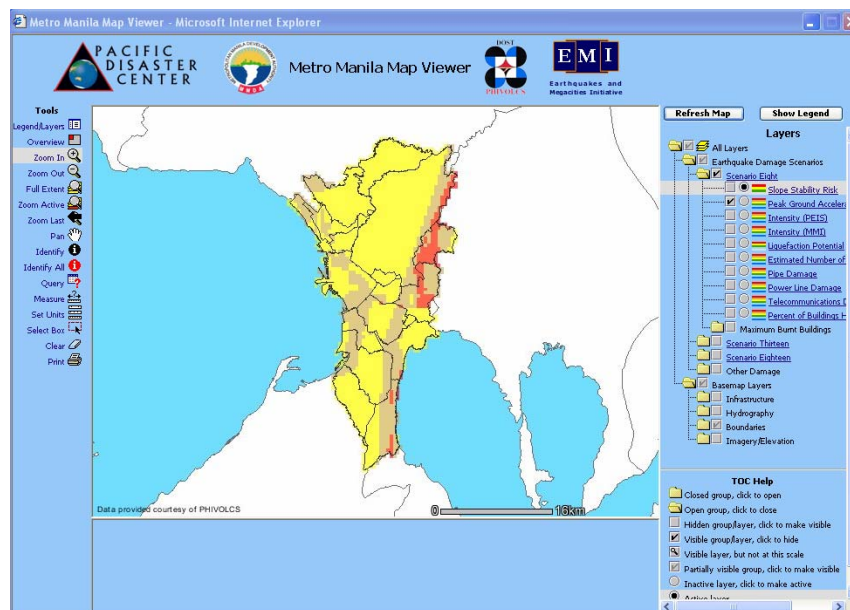


Figure 6



**Use the “Show Legend” button to understand the different colors that appear on the map (see Figure 7).**



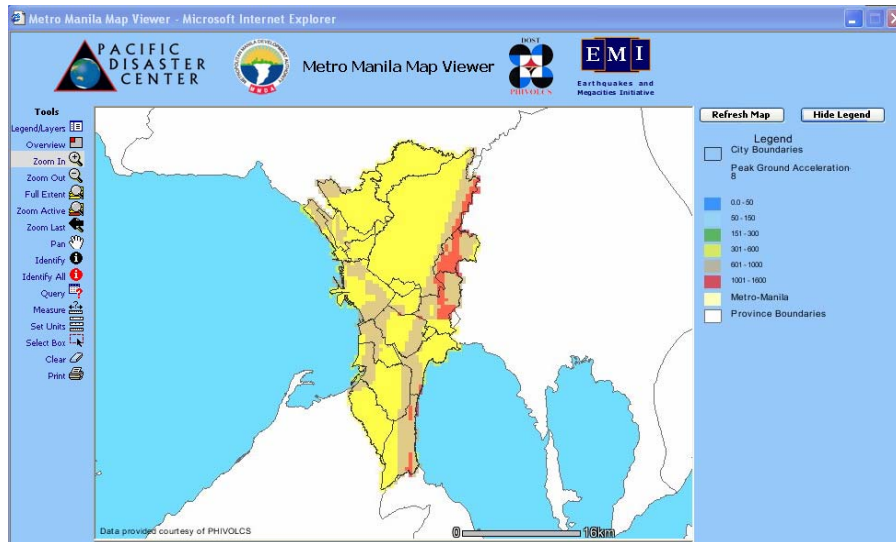


Figure 7



**“Hide” the Legend, and return to the Layer list.**

**Click the gray box next to the Peak Ground Acceleration (PGA) layer for Scenario Eight to uncheck the box. Click on the “Scenario Eight” folder to close.**

**Click the Refresh Map button to return to the default data layers in preparation to explore “Scenario Thirteen.”**

**Click the yellow folder next to “Scenario Thirteen” to view data layers associated with this scenario.**

**Click on the metadata link for “Scenario Thirteen” to view information about this scenario.**

Close the metadata window to continue.



**In the TOC, click the gray box next to the PGA layer for “Scenario Thirteen.” Click the Refresh Map button (Figure 8).**

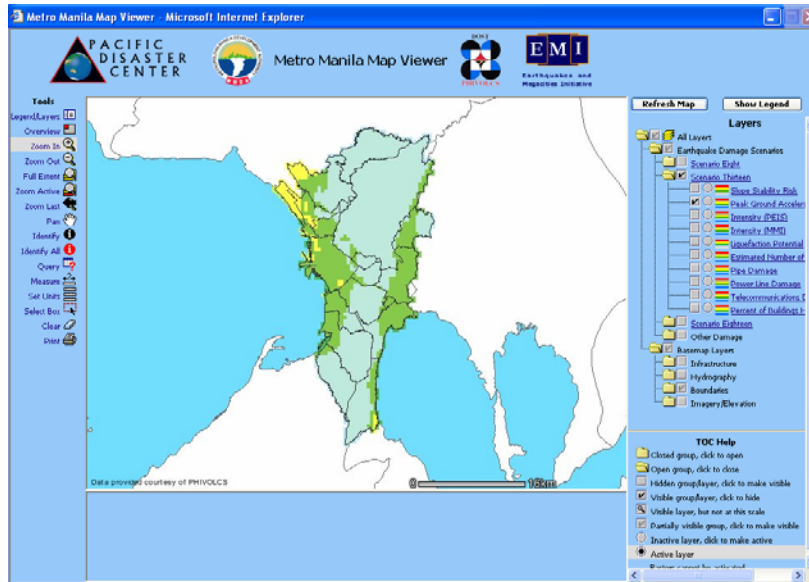


Figure 8



Use the “Show Legend” button to understand the different colors that appear on the map. “Hide” the Legend, and return to the Layer list.

Turn off the PGA layer for “Scenario Thirteen” (uncheck the box). Click on the Scenario Thirteen folder to close.

Click the Refresh Map button to return to the default data layers in preparation to explore “Scenario Eighteen.”

Follow the same procedure to view the Peak Ground Acceleration layer for “Scenario Eighteen.” Results in Figure 9.

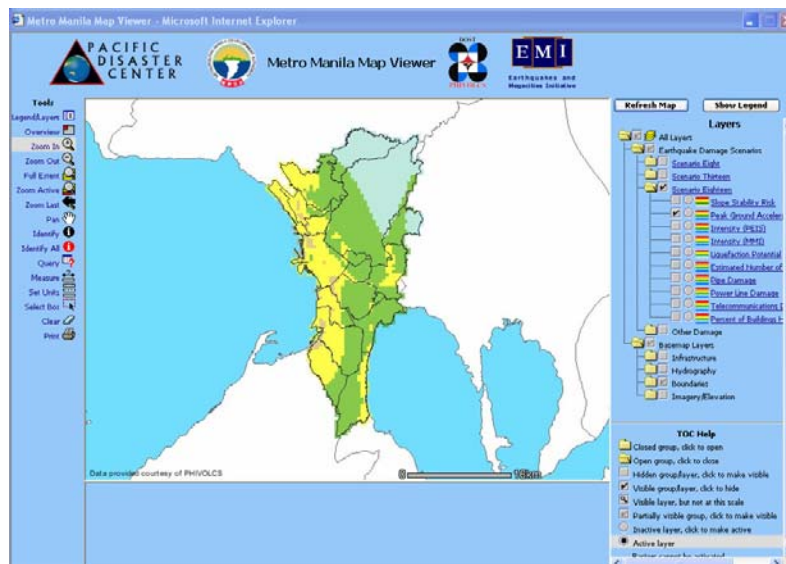


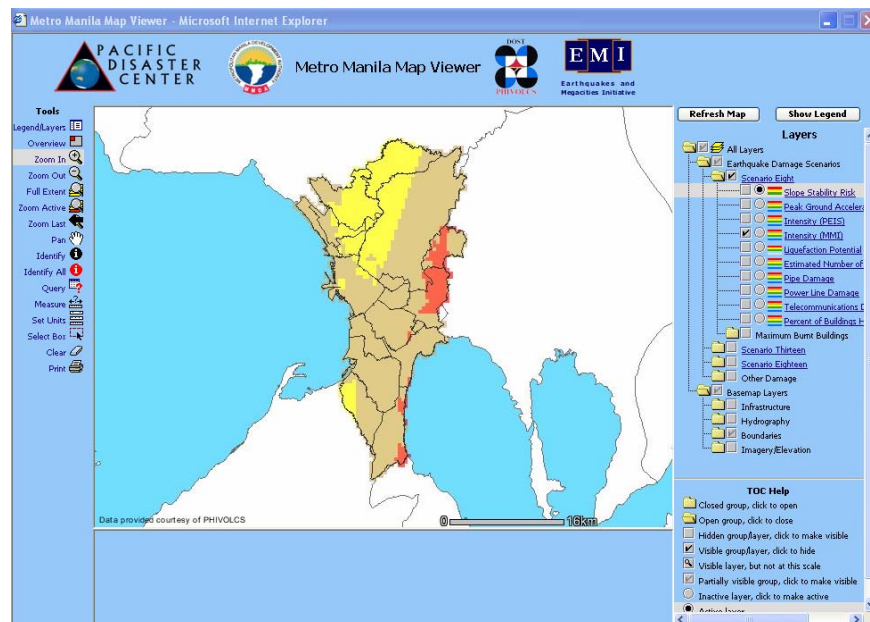
Figure 9

**Part 2: Which of these three earthquake scenarios is likely to cause the greatest damage to buildings? The Modified Mercalli Intensity (MMI) scale classifies physical damage to structures.**



**In the Layer list, open the “Scenario Eight” folder.**

**Turn on the Intensity (MMI) layer. Refresh the Map (Figure 10).**



**Figure 10**



**Click the “Show Legend” button to understand the different colors that appear on the map. “Hide” the Legend, and return to the Layer list.**

**Turn off the Intensity (MMI) layer for “Scenario Eight,” and turn on the Percent of Buildings Heavily Damaged layer. Refresh the Map (Figure 11).**

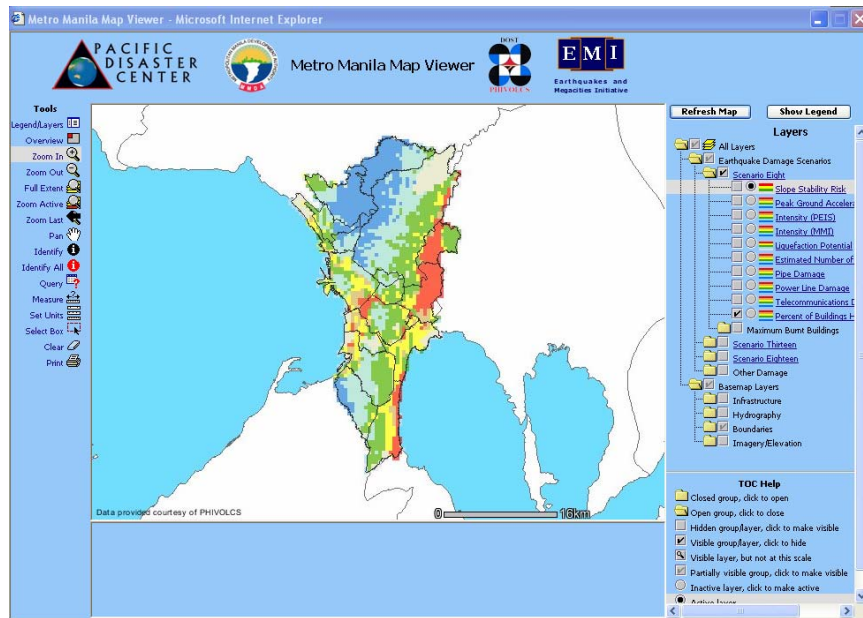


Figure 11



**View the Legend for this layer, noting the relationship between the two layers.**

**Turn off the Percent of Buildings Heavily Damaged layer for “Scenario Eight.” Click on the “Scenario Eight” folder to close.**

**Click the Refresh Map button to return to the default data layers in preparation to explore “Scenario Thirteen.”**

Repeat the steps in Part 2 above for scenarios 13 and 18. Compare the Modified Mercalli Intensity layer and the Percent of Buildings Heavily Damaged layer for each earthquake scenario.

**Part 3: Which earthquake scenario would likely cause the greatest number of casualties?**



**Use the techniques practiced above to determine where the greatest number of casualties would occur for each of the earthquake scenarios.**

**Open each scenario (8, 13, and 18), and turn on the Estimated Number of Deaths layer. View Legend information, etc.**


## What is at risk?

### Activity 2: The City perspective. Using the Identify tool. Zooming In.

This activity zooms in to a city perspective and offers practice using the Identify tool to learn more about particular data layers, and navigating within the Map frame.



**Open the Boundaries folder in the Layer list. Notice the gray circle next to each layer. Click in the gray circle next to the “City Boundaries” layer.**

City Boundaries becomes the *active* data layer, noted by a black dot within the gray circle  next to the layer name. **Only one layer can be active at any given time.** A layer **must be active** to use several of the Tools, such as the **Identify** tool, and the **Query** tool.

The Identify tool will be used next to identify cities within the greater Metro Manila area. Note that in the Map, city boundaries are outlined in black.



**Now that City Boundaries is the active layer, click on the Identify tool, and click once on the Map within a city’s boundaries.**

Below the Map an attribute table will appear, providing additional information about the layer, such as City Name, Population, Number of Households, and Population Density. See Figure 12.

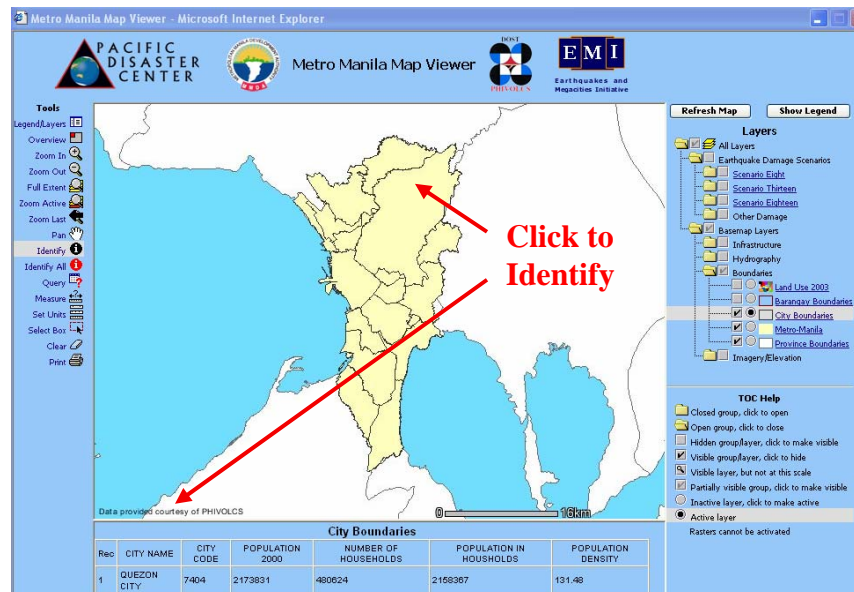


Figure 12



Click on the Map within other city boundaries, and note the change to the attribute table below the Map.

Find Pasig City using the Identify Tool.

In the Toolbar, click on the Zoom In tool. Remember that this tool can be used in two ways (see pages 6-7). In this case, draw a box around Pasig City boundaries to zoom in to the city (Figure 13).

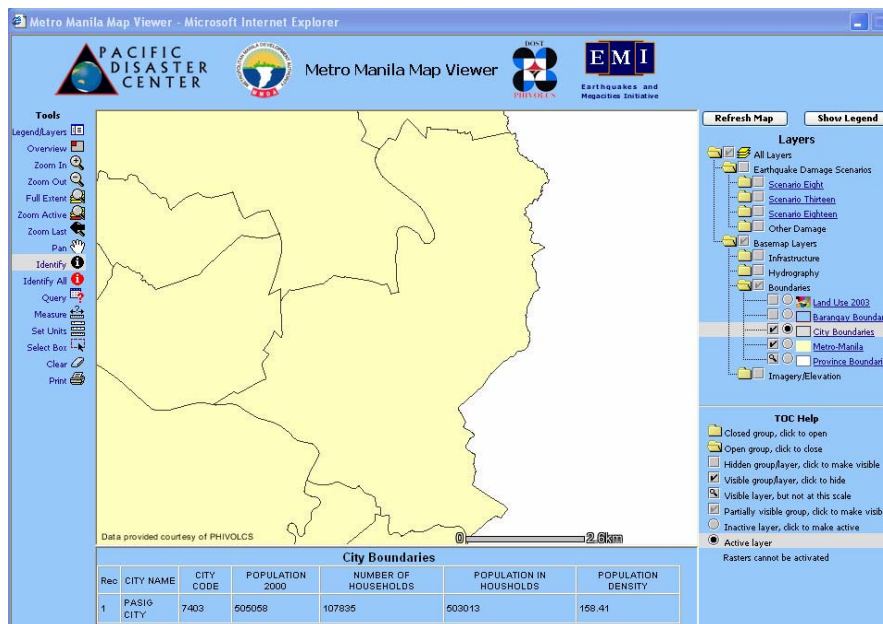


Figure 13



In the Layer list, turn on the PGA layer for Scenario Eight. Refresh the Map and note the shaking intensity for Pasig City.

In the Layer list, open the Infrastructure folder, and then open the Emergency Services folder. Turn on the Hospitals layer, and refresh the Map (Figure 14).

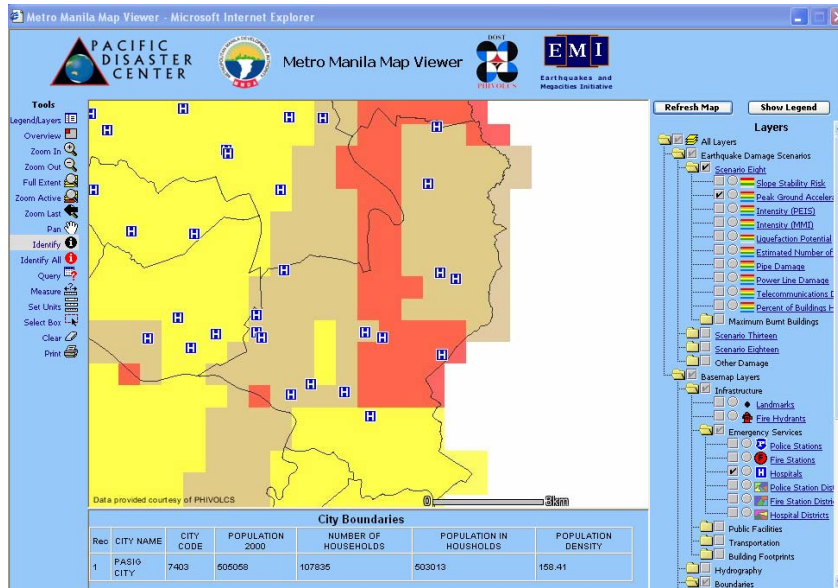


Figure 14

Which hospitals are likely to experience more damage from earthquake shaking than others?



Make the Hospitals layer the *active* layer (make sure a black dot appears within the gray circle next to the Hospitals layer) and use the Identify tool to determine the name of the hospitals in the red-colored zone by drawing a box around those hospitals in the Map (Figure 15).

Attributes for selected hospitals will appear in the table beneath the Map.

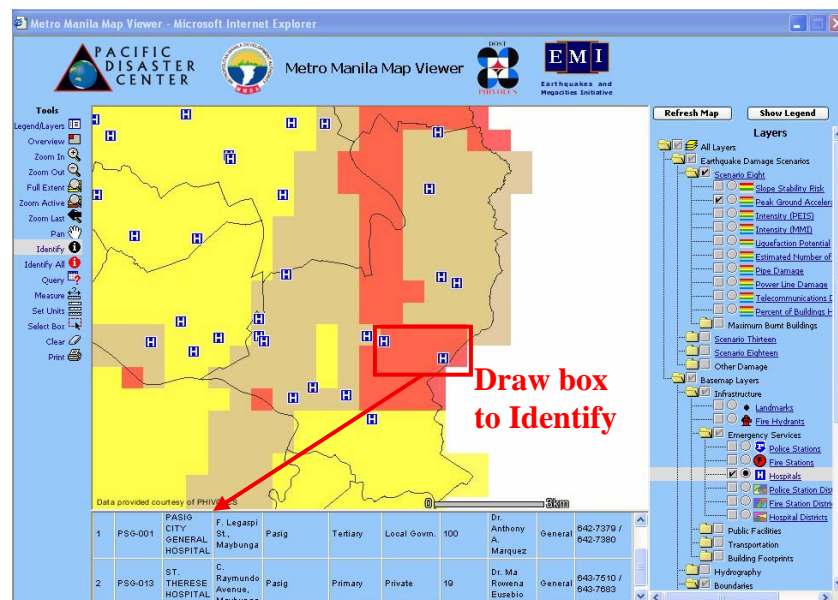


Figure 15

What other facilities may experience significant ground shaking?



Within the Emergency Services folder, turn on the Police Stations and Fire Stations.

Open the Public Facilities folder and turn on the Barangay Halls layer, and the MMDCC layer. Refresh the Map (Figure 16).

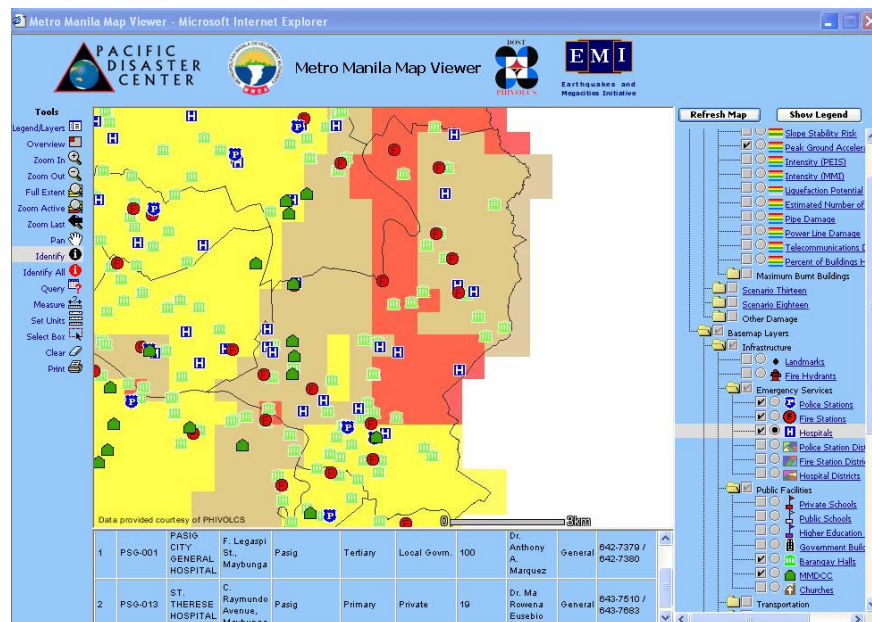


Figure 16

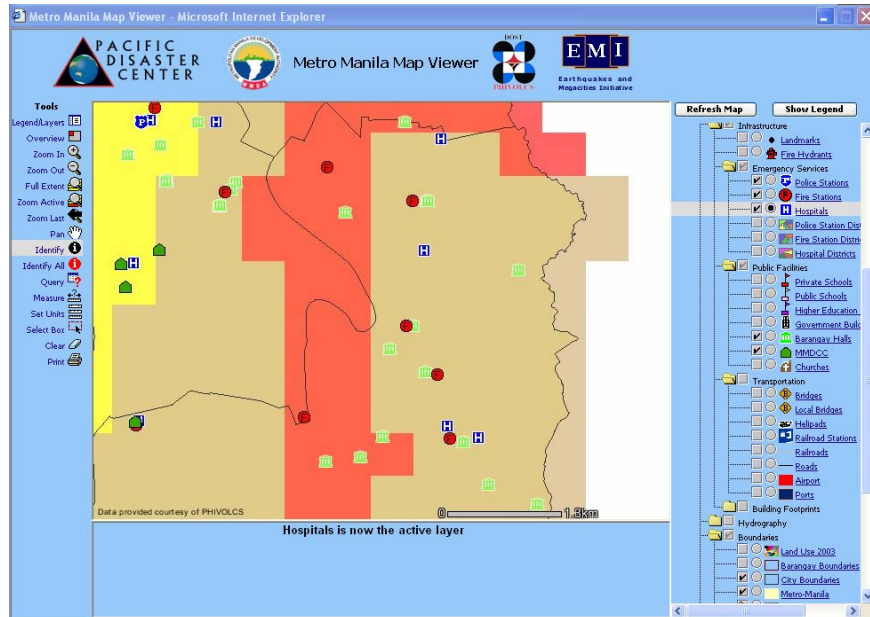


Note the facilities located in areas of significant ground shaking. Make one of the added layers *active* and use the Identify tool to obtain the name and address of several facilities. Note that some layers have more attributes associated with them than others.





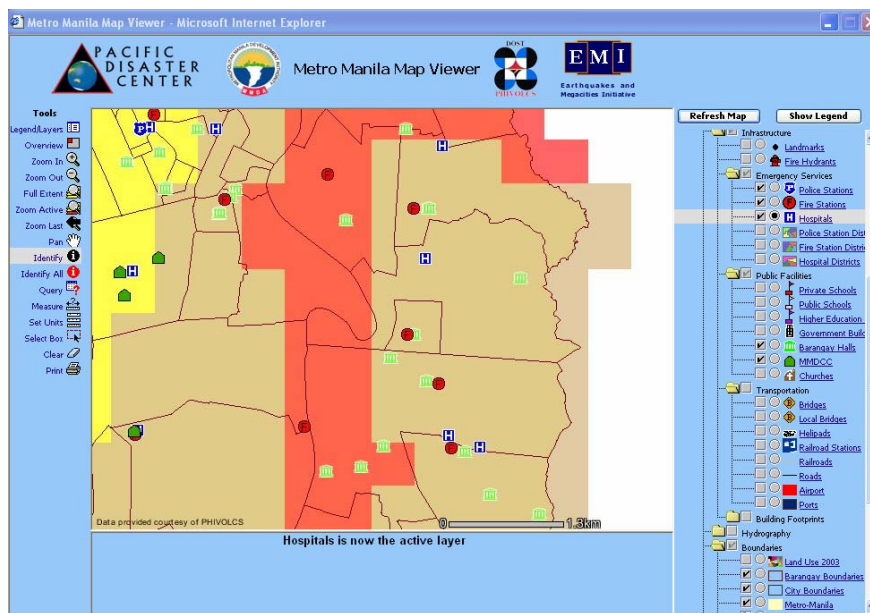
**Zoom in to the northern half of Pasig City (Figure 17).**



**Figure 17**



**Scroll toward the bottom of the TOC to the Boundaries folder, and add the Barangay Boundaries layer to the Map. Remember to refresh the Map (Figure 18).**



**Figure 18**



Use the Identify tool to find the Barangay Rosario (remember to make the Barangay Boundaries layer *active*).

**Hint:** Rosario is one of the largest barangay, and overlaps the red-orange PGA zone.

Zoom in so that Rosario Barangay fills the Map frame as in Figure 19.

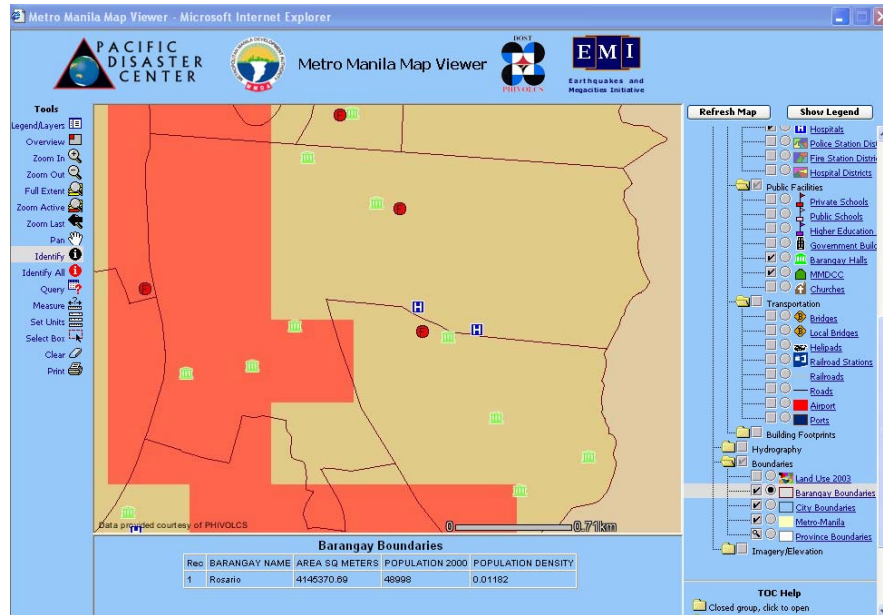


Figure 19

If you are displeased with the Map view after zooming in, use the Zoom Last tool to return to the previous Map view; then try again. Note that this option allows you to return *only* to the previous view.



Turn off the Scenario Eight PGA layer. Open the Transportation folder and turn on the Bridges layer and the Roads layer.

Scroll to the bottom of the Layer list, open the Imagery/Elevation folder, and turn on the Orthophotos layer. Refresh the Map.



Click on the Overview tool.

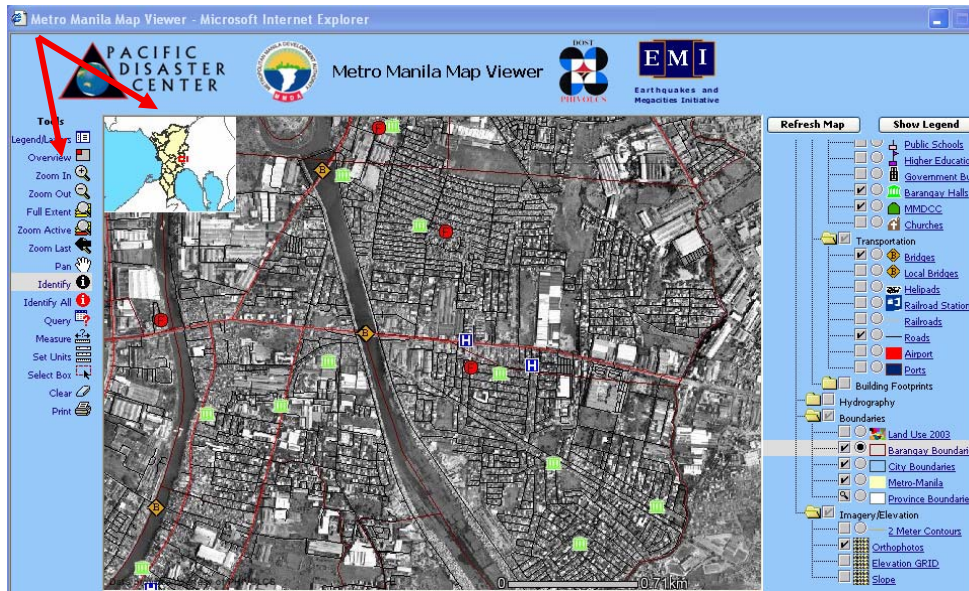


Figure 20

A small overview map will appear in the upper left corner of the large Map frame (Figure 20). This feature is useful to maintain a sense of location when zooming in to a detailed location.



Click the Overview tool to remove it from the Map.

**Note:** This exercise prepares the user for the next Activity.

## Emergency Response

### Activity 3: Introducing new tools – How to Query, Measure, Pan, Set Units.

An incident has occurred on the Daang Pasig Bridge in Barangay Rosario. A truck carrying hazardous material has overturned, and 12 people have been seriously injured. Local police have closed the bridge and diverted traffic from the area. Only emergency response vehicles are allowed on the scene. The injured must be transported to the nearest hospital.



Use the Identify tool to locate the Daang Pasig Bridge. (Remember to make Bridges the *active* layer).

**Note:** On small features or icons in the Map it is most effective to draw a box around the feature to “Identify” it, rather than just click on it.

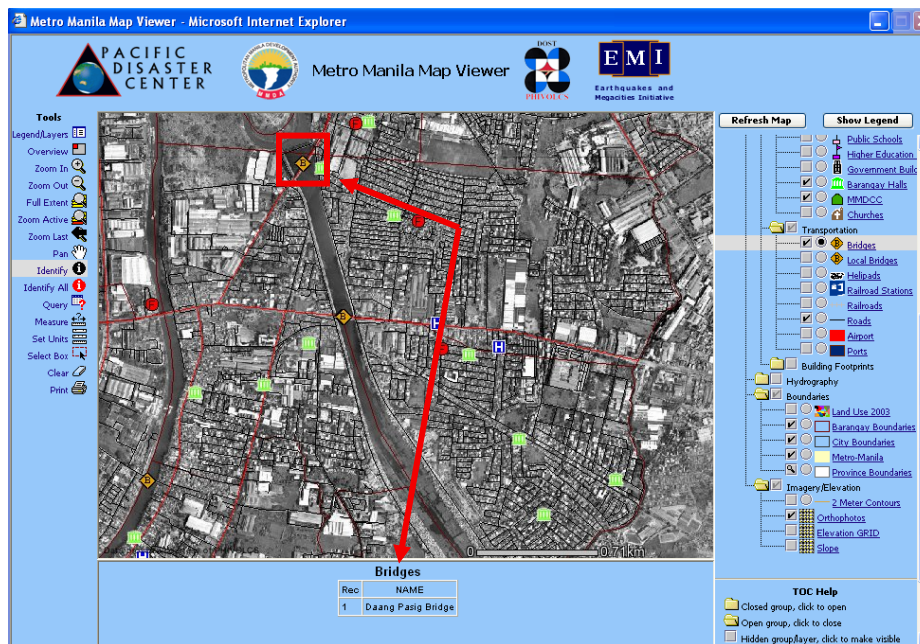


Figure 21

Note the locations of the nearest hospitals to the bridge.

The Query tool will be used to determine whether there is a hospital nearby with enough beds to accommodate the injured. A two-part query will be performed that asks: What hospitals have at least 20 beds? And of these, which ones are located in Pasig City?



To begin, make Hospitals the *active* layer. Click on the Query tool. (A series of drop-down menus and buttons will appear under the Map.)



Under “Field” choose “BED CAPACITY,” under “Operator” choose “>=,” and under “Value” write “20.” Click “Add to Query String” (Figure 22).

Field	Operator	Value	And	Or
BED CAPACITY	>=	20	Get Samples	Not ( )
Add to Query String		MMEIRS.P_HOSPITAL_SDEVIEW.BED_CAPACITY >=		
Execute		Undo	Clear	

Figure 22



Click the “And” button. (This will add to the query.) Under “Field” choose “MUNICIPALITY,” under “Operator” choose the “=” sign, and under “Value” click the “Get Samples” button. Choose “Pasig” from the list. See Figure 23.

Click “Add to Query String.”

Finally, click “Execute” to perform the query.

Field	Operator	Sample Values	And	Or
MUNICIPALITY	=	"Pasig"	Not	( )
Add to Query String		MMEIRS.P_HOSPITAL_SDEVIEW.BED_CAPACITY >=		
Execute		Undo	Clear	

Figure 23

The requested subset of the hospitals in Metro Manila will appear in the attribute table underneath the Map. In addition, a hospital in the current Map view meeting the query criteria will appear highlighted in yellow on the Map. See Figure 24.

The screenshot shows the Metro Manila Map Viewer interface. The map displays a satellite view of Pasig, with a red arrow pointing to a yellow-highlighted hospital. The attribute table below the map lists the following data:

Rec	HOSPITAL CODE	NAME	ADDRESS	MUNICIPALITY	CATEGORY	OWNERSHIP	BED CAPACITY	HOSPITAL DIRECTOR	CLASS	TEL. NO.
1	PSG-009	OPTIMUM GENERAL	10 Gen. Araneta St., San Antonio	Pasig	Tertiary	Private	50	Dr. Eleanor M.		831-fax

Figure 24



Use the Identify tool to determine the name of the hospital highlighted in yellow on the map. What is the bed capacity of this hospital? (See Figure 25 attributes).

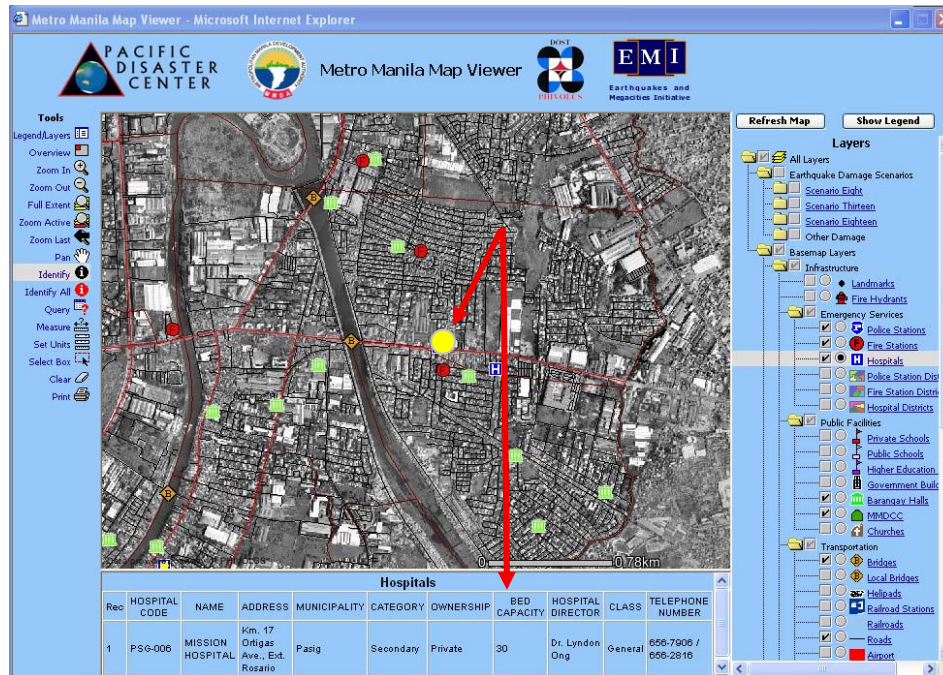


Figure 25

The **Measure** tool will be used to measure the distance along a roadway from the Daang Pasig Bridge to the hospital capable of accommodating the injured.



In preparation to use the Measure tool, zoom in a bit more so that the Daang Pasig Bridge and two hospitals fill the Map view. If necessary, the Pan tool may be used to adjust the Map view by clicking on an area of the Map, and while holding the left mouse-button down, move the Map slightly in the desired direction. Release the mouse-button, and the Map will redraw.



Click the Measure tool. Click once on the Daang Pasig Bridge. ***Important:*** Be sure to wait for the Map to redraw after every click!

Once the Map redraws, follow along the roadway in straight line segments, clicking at every change in direction. Measure the most direct route to the

hospital. Notice that the total distance traveled is recorded at the top of the Map, as well as the distance of the last segment measured (Figure 26).

What is the distance from the Pasig Bridge to the Mission Hospital?

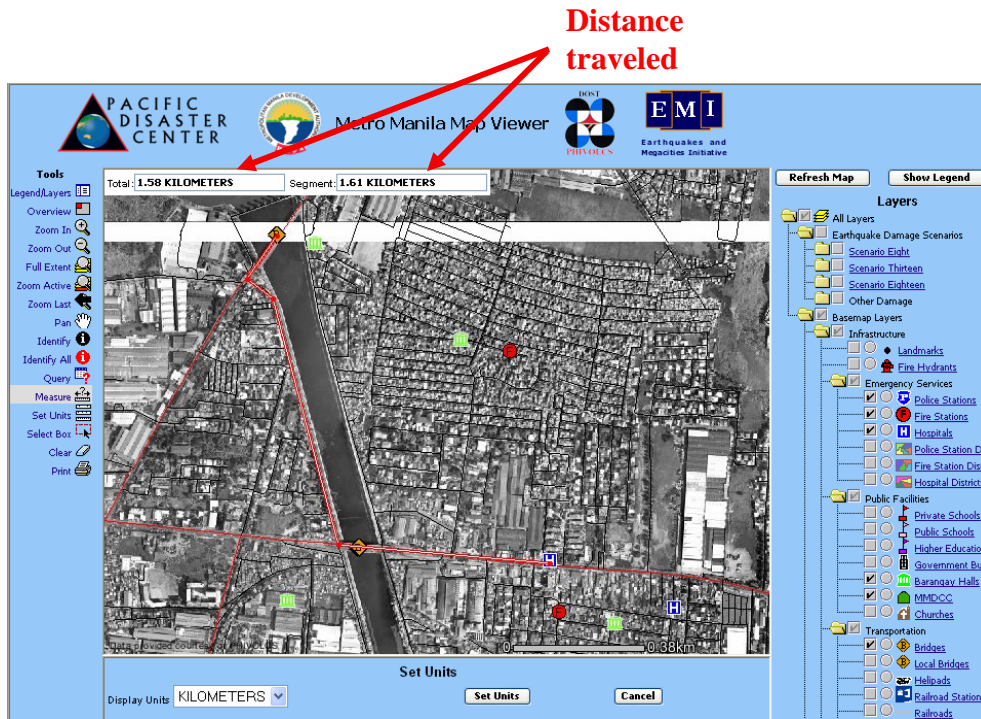


Figure 26



Click the Clear tool to measure another route. The Clear tool is used to remove any highlighted data selection or drawing from the Map.

When using the Measure tool, it may be desirable to use different units such as meters, feet, or miles. These options may be specified by using the Set Units tool (Figure 27).

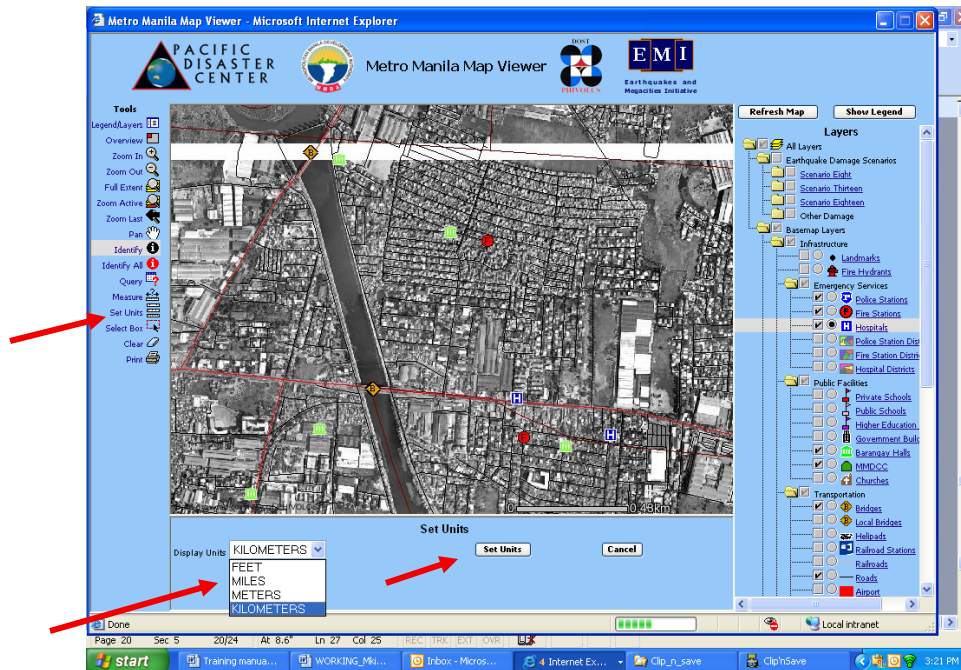


Figure 27



Click on the Set Units tool, choose desired units from a drop-down list below the Map; then click the “Set Units” button.

## Exploring Land Use Categories

### Activity 4: Land use categories in your city. Time-saving short cuts.

Begin this activity by pressing the F5 button on the keyboard to completely refresh the Map Viewer. Only default data layers will be visible.



Zoom in to the city or Barangay where you live. Turn on data layers and features that will assist you in identifying where you are on the Map. If necessary, use the Overview map to guide you.

Try the following shortcuts as you turn layers on and off and zoom in or out.

**Shortcut:** After checking or unchecking data layers to turn them on or off – instead of refreshing the Map at this point, simply Zoom In, Zoom Out, or Pan to an area of interest. The Map will refresh with the desired data layers at the same time.



**Shortcut:** Click the Full Extent button when you would like to quickly return to the original extent showing the entire Metro Manila area.

Once you have zoomed to the area where you live and are satisfied with your choice of data layers:



**Turn on the Land Use 2003 data layer. Use the Legend and the Identify tool to understand what the different colors signify.**

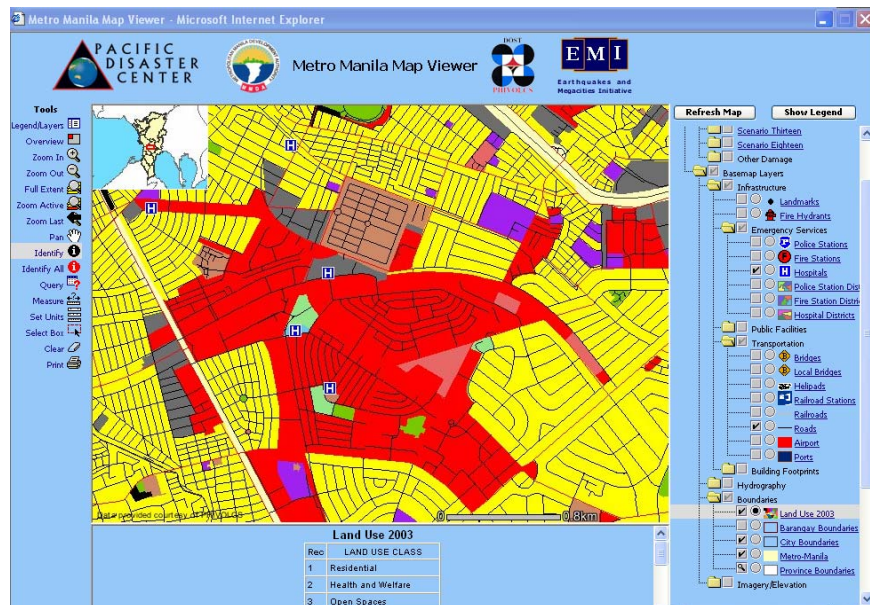


Figure 28



**Use the Land Use layer to identify open space or recreation areas in your community that might be used as gathering places during an evacuation or emergency situation.**

**Turn on the Hospitals layer and identify the nearest hospital to your residence, your workplace. Do family members attend school nearby? Can you think of other ways this tool might be used to plan or prepare for an emergency?**

**Congratulations! This concludes the introductory Metro Manila Map Viewer training. Please take this opportunity to explore the application independently.**

## Notes