

# The Washington State Office of Civil Legal Aid *Geographic Information System*

## **The OCLA GIS User Guide**

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# 1 Introduction to the OCLA GIS

## 1.1 About the Information System

The Washington State Office of Civil Legal Aid (OCLA) Geographic Information System (GIS) is an internet based application that allows the display, query and analysis of demographic data, information regarding Civil Legal Aid providers, and other relevant information presented spatially on maps and in reports. The information system requires internet access and can be accessed using a web browser. User access is restricted and requires a user name and password. The following URLs <sup>1</sup> are valid Internet sites to log into the system: <http://alliance.terrageris.net> and <http://ocla.terrageris.net>.

## 1.2 Main Goals of the OCLA GIS

The goal of the GIS is to support the planning, communications, analytical needs, and day-to-day operations of the civil legal aid system in Washington State. The system is intended to enable users to visualize and analyze information spatially and graphically, and in reports in a way not available elsewhere or via other means. The objective is to create a reliable and robust system that can grow over time and adapt to the developing needs of Washington's Alliance for Equal Justice. Consequently the system has to be modular and extensible in such a way that new functionality and data can be easily added, and is compatible with future software and hardware modifications and upgrades. Two major goals are:

- build efficiencies that support the effective planning, oversight, data analysis and other functions needed to better serve the low income population in need of civil legal aid.

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<sup>1</sup>Uniform Resource Locator, in simpler terms a web site address

- improve strategic planning for future services, locations with existing over or under supply of legal aid services; monitor and spatially map and analyze other information related to a range of client services and considerations.

The overall system aims to facilitate the analysis of existing services and demand, supply up-to date and localized (spatial) information about these services, support local aid advocacy relating to spatial inequities, and support the planning and design process of future civil legal aid system enhancements.

## 1.3 History of the System

The OCLA GIS was built on the system of the Washington State Bar Association Access to Justice Board (WSBA/ATJ) that had been implemented by CommEn Space<sup>2</sup> in 2006, and used by the WSBA/ATJ during the development of the 2006 revised State Plan for delivery of civil legal aid services to low income people in Washington State. While functionally similar to the WSBA/ATJ Board system the OCLA GIS is based on a different software framework; existing and new data have been migrated to and incorporated into the system, and new functionality has been added.

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<sup>2</sup>The Community and Environmental Spatial Analysis Center was a non-profit service provider for GIS. It closed down its operations in 2007.

## 2 Basic Concepts of a Geographic Information System

This user guide is not intended to be a comprehensive introduction to GIS<sup>1</sup>; however many users can benefit from a basic summary about static and interactive web-based maps.

### 2.1 Abstraction

A basic characteristic of two-dimensional maps is that the real world is reduced to two dimensions on the display. A map is an abstraction of a three-dimensional object that has been altered (simplified) by means of mathematical procedures (a map projection) in order to be displayed as a two-dimensional object. When we consider the accuracy of measurements of area, distance and angles on a map we have to be aware that only two of

these three measurements can generally be represented with exactitude on the map (or for parts of it). *Thus, we note in this context that a map is an abstraction of the real world showing parts of it with certain restrictions and limited accuracy.*

### 2.2 Generalization

Generalization is a process used to display the appropriate amount of visible information and features on a map. Depending on the map extent (i.e., "Is it the whole world displayed, versus one neighborhood park?") and scale of the map (i.e. how big a real world unit displayed on the map) more or less information detail is shown on a map. One example from OCLA GIS is the initial extent and view of the State of Washington (compare Figure 1 on page 6) and a zoomed in view showing street level

<sup>1</sup>Geographic Information System

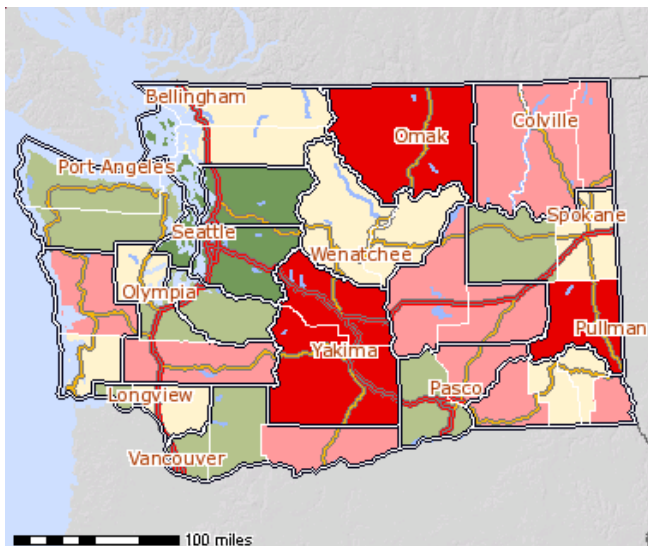


Figure 1: Overview map of the State of Washington. Initial View/Extent in the OCLA GIS

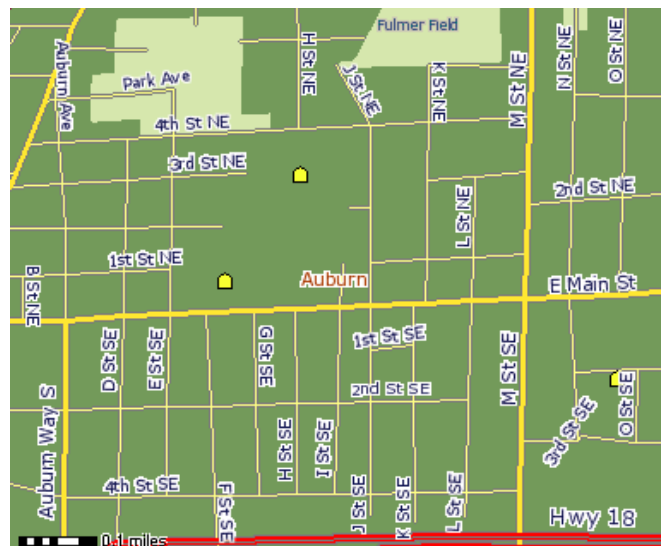


Figure 2: Detailed view of the City of Auburn. Zoomed in view in the OCLA GIS

details for parts of the city of Auburn/WA (compare Figure 2 on page 6). The overview map in Figure 1 shows only basic details such as major HIGHWAYS, COUNTY BOUNDARIES, and major LAKES. In comparison the detailed view of the city of Auburn in Figure 2 shows spatial information relevant for the neighborhood including arterial and minor STREETS and labels, PARKS and SCHOOLS. Generalization also means that real world features may be displayed bigger than their original size at the given scale in order to make them stand out better, especially on small scale (overview) maps. One example is the major roads/highways shown on the map (Figure 1 on page 6) which are drawn much wider than their real proportional width at this scale.

## 2.3 Map Themes

A static map (paper or digital) has a certain defined subject or theme. Most of us are familiar with topographic maps and road maps. Topographic maps represent a comprehensive view of an area, displaying topography that includes a variety of features of the natural and human made physical environment. Topographic maps can serve a variety of purposes. For example they include information about elevation, land use such as settlements and forest cover, and infrastructure such as road and railway networks. A road map is focused on infrastructure information and often will be mainly used for navigational purposes. Another type of map is a thematic map containing specialized information related to a certain topic. This information can be displayed transparently on top of a base map (e.g. a topographic map) and may include real world features<sup>2</sup> or synthetic features<sup>3</sup> such as human made boundaries like city limits, country borders, or population density. Those maps are intended to serve more or less well defined purposes. The maps mentioned above all have "value added" to them in the sense that they show an interpreta-

tion of the physical environment for a certain area. They all:

- have a fixed scale
- show a certain level of detail (compare the section 2.2 *Generalization* on page 6)
- have a defined subject theme (and presumably serve a certain purpose)
- show one defined interpretation of the physical world (have value added)
- are static (no information can be added or taken off the map)<sup>4</sup>

The features mentioned above have made static maps a very useful tool. Because of their relatively narrowly defined purpose (compared to dynamic maps), extent, scale, and resulting generalization and classification of features, a cartographer will choose a specific representation and layout to create a map that is appealing and serves the intended purpose well. However, their specific characteristics restrict their use to display, analyze and evaluate information in a dynamic way. The following section will talk about the general capabilities of dynamic maps in the OCLA GIS and the specific implications for designing the system for use by non-expert GIS users.

## 2.4 Dynamic Maps and their use in the OCLA GIS

While paper maps represent one type of an effective but static GIS, interactive web maps belong to a different category and may also serve different purposes. OCLA GIS is one example of an interactive, dynamic, web based Geographic Information System. For this reason the system faces different challenges than static maps and needs specific attention

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<sup>2</sup>For example a hospital, a mountain, or a river

<sup>3</sup>Features of a more or less abstract nature not always directly visible in the physical world

<sup>4</sup>They are static because the classification shown on the map is set and cannot be changed. For example if a map is showing population density of Counties and has three classes defined as *low*, *intermediate* and *high* this cannot be changed to represent four classes instead of the existing three.

with regard to its design in order to function effectively. Because the dynamic elements such as *extent*, *scale*, and *layers* are selectable by the user for display on the map, the system has to be logically designed in order to be useful for users of all skill levels and at the same time allow the flexibility to support a variety of uses. Because GIS data layers can be switched on and off, many different kinds of maps may be created by the GIS users. Thus, the layer drawing order and their symbol representation needs to support many different layout combinations. Colors and symbology of the layers should not conflict with each other. For example: *blue rivers* on a *blue background* showing population density will not be well visible. Whereas, some of the possible display and layout conflicts are automatically handled by the map generation engine (such as the avoidance of overlapping labels of river names with city labels), appropriate symbology for each layer is necessary. One main implication of a dynamic map is that the representation of cartographic detail has to be scale dependent for each layer. Thus, multiple representations of the same data (or data category) will need to be defined in the system. This is analogous to multiple static maps having different levels of generalization at different scales. One example is that the overview map of WA shows few details for the roads layers whereas the zoomed in map of the city of Auburn shows local streets and their labels (Figure 1 and Figure 2 on page 6). Multiple levels of information detail are available for roads. The same is true for a variety of other layers such as RIVERS, LAKES, DEMOGRAPHIC DATA (census tracts vs. counties). This also means that certain data will be unavailable for display at certain scale ranges because they will cause the map to be cartographically unpleasing or even unreadable for the user. There are more than one hundred and twenty (120) GIS layers available in the OCLA GIS. For a list of the layers in the system as of the date of publication of this guide (December 14, 2009) see the tables starting on page 36 <sup>5</sup>. This is too many lay-

ers to be effectively displayed simultaneously on a map - regardless of whether it is static or dynamic. The representation of GIS layers in the OCLA GIS is defined in a way similar to static maps. For example the number of classes for PERCENTAGE OF PEOPLE IN POVERTY PER COUNTY or the color of ROADS and HIGHWAYS is defined in the system configuration and is static (the user cannot change it). One reason for this is that the information should be presented in a way that is most intuitive and easy to use for the non GIS-expert, but at the same time will allow the flexibility of "value added" features. For example, a user can create user defined maps and freely choose many map parameters: layers to display, scale and map extent. In some instances however this ability is intentionally limited in order to make the system easier to understand for the general user. The system offers many resources to display, including data covering the same geographic area that consequently will overlap with each other on a map. This will not pose a problem if RIVERS are shown on top of PARKS and CITIES, or if COUNTY BOUNDARIES and ROADS are displayed on top of POVERTY POPULATION BY COUNTY because all of those layers can be displayed on a map at the same time. However, if datasets have the same spatial extent and are represented in cover fill (e.g. polygon GIS layers such as demographic data mapped by County or Census Tracts) their representation conflicts because only one layer can be visible on a map at a time. Because of this problem the system restricts the display of conflicting layers and allows only one layer to be selected for display by the user at a time. If a conflicting layer is switched on by the user, an already active conflicting map layer will be switched off automatically. This set-up will ensure that no *area fill colored* layers cover each other up, and consequently information will not be hidden on the map. For instance, if a user wants to display demographic information and first switches on the layer PERCENT POVERTY PER TRACT, then switches on PERCENT 17 AND YOUNGER, the first layer PERCENT POVERTY PER TRACT will automatically be switched off because the system detects that the layers are conflicting (covering the same area in colored areas). Con-

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<sup>5</sup>An updated list of data layers will be hosted on the OCLA website: [www.ocla.wa.gov/gis.html](http://www.ocla.wa.gov/gis.html)



sequently only the second layer is displayed on the map and in the legend. Table 17 on page 40 lists all conflicting layers in the OCLA GIS.

## 3 How to use the OCLA GIS

### 3.1 Prerequisites

#### 3.1.1 Internet Browsers and Settings

The OCLA GIS supports most modern internet web browsers, but was specifically developed and tested to work with Mozilla Firefox version 2.0 or higher, and Microsoft Internet Explorer 7.0 or higher. While other browsers and lower versions of Mozilla Firefox or Microsoft Internet Explorer may be used, functionality might be limited or not work at all. Thus, using one of the supported browser software versions is advised to ensure proper functioning of the GIS application. In addition, some web browser settings are required as prerequisites. While in some cases the settings are already set per default, it is good practice to verify the following:

- Java Script is enabled
- Cookies are accepted
- Pop-up windows are not blocked

#### Mozilla Firefox

In Firefox go to the *Tools menu* and choose *Options* (see Figure 4 on page 11).

In *Options* choose the *Privacy Tab* and check the *Accept cookies from sites* box (see Figure 3). This setting will allow all web sites visited to accept cookies. If instead you only want to allow cookies from specific sites, you can specify those allowed sites under *Exceptions*. To add the OCLA GIS site to the allowed sites under *Exceptions* click the *Exceptions* button and enter <http://alliance.terrakis.net> in the text field below *Address of Web site*, then and click on the *Allow* button on the right hand side. The setup is correct if your settings are as shown in Figure 29 on page 32 in the

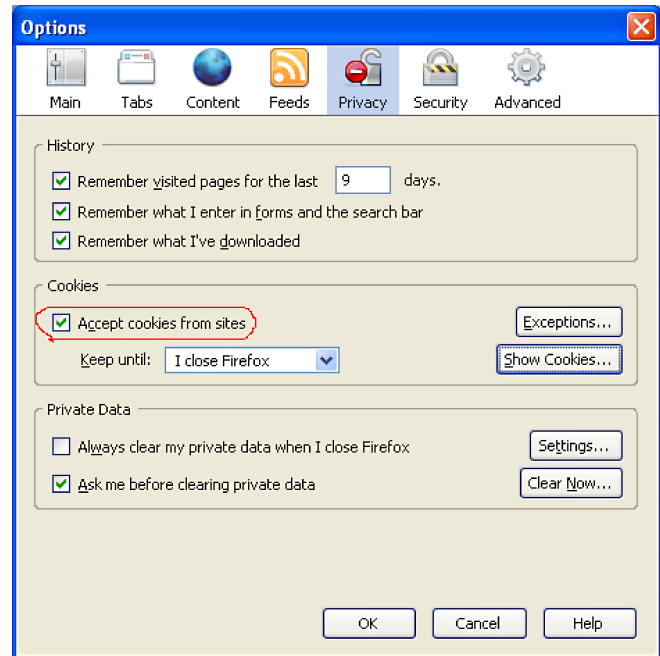


Figure 3: Privacy Settings in Firefox

Appendix, and consequently the web site appears in the allowed sites list.

Figure 31 on page 32 shows the settings to enable Java Script in Firefox: go to *Tools/Options/Content Tab* and check the box marked with the red circle around it. To enable pop-up windows, such as the ones appearing with the use of the QUERY TOOL (compare Figure 27 on page 28), you can choose to uncheck the box for *Block pop-up windows*. This setting will *globally* allow all websites viewed in your browser to trigger pop-up windows. Alternatively you can check this box and allow pop-up's as an exception only for the OCLA GIS site (analogue to allowing cookie exceptions). Figure 30 on page 32 shows the pop-up exceptions list with the OCLA web site added to it.

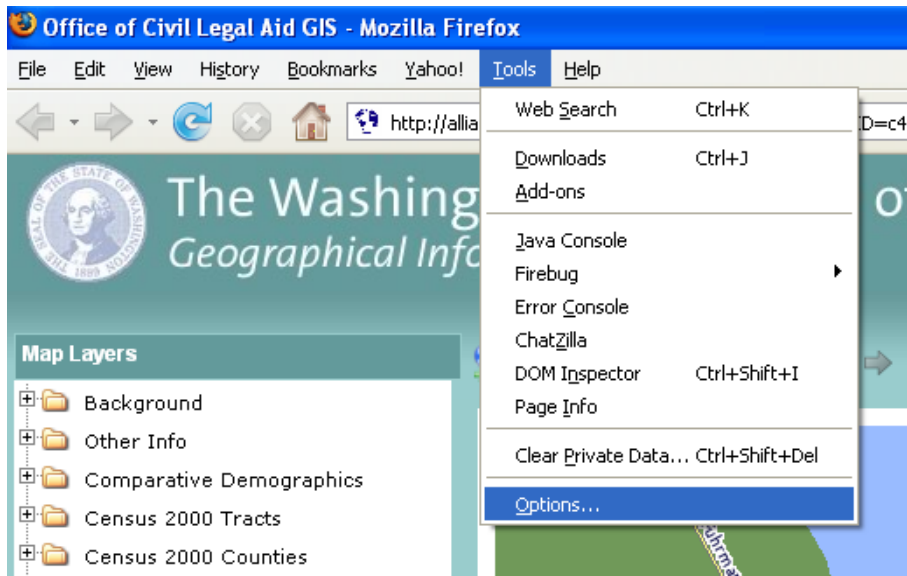


Figure 4: Options menu in Firefox

### Microsoft Internet Explorer

In Internet Explorer (IE) go to the *Tools menu* and choose *Internet Options* (see Figure 5). In *Options* choose the *Privacy Tab* and select your level for *privacy* (see Figure 6). If you choose a level that does not *globally* allow cookies from all web sites you can specify allowed sites under *Sites*. To add the OCLA GIS site press the *Sites* button, enter <http://alliance.terragis.net> in the text field below *Address of Web site* and press the *Allow* button on the right hand side. The Setup is correct if your window looks like the one shown in Figure 32 on page 33 and consequently the web site appears in the allowed sites list.

Figure 6 on page 12 shows the settings for pop-up windows. To allow pop-up windows for the GIS system you can either choose to uncheck the box for *Block pop-ups* (that setting will *globally* allow all websites viewed in your browser to trigger pop-up windows) or alternatively check the box and allow pop-ups as an exception for the GIS site. Figure 32 on page 33 shows the pop-up exceptions list with the OCLA website added to it. To add a site to the allowed list for pop-up windows click on *Settings* on the right hand side next to the check box. The *Pop-up Blocker Settings* win-

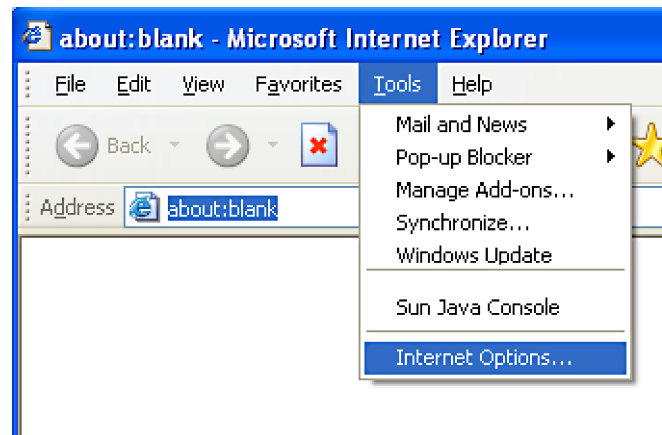


Figure 5: Internet Options in Internet Explorer (IE)

dow opens (Figure 32 on page 33). To add the OCLA GIS site to the list of allowed sites type <http://alliance.terragis.net> in the text field and click on the *Add* button. To enable Java Script in IE choose *Internet Options/Security Tab* and click on *Custom Level* to define a *Security level* as shown in Figure 33 on page 33. In the new window *Security Settings* that appears scroll far down to the section *Scripting*. There you can enable the radio buttons for *Active scripting*, *Allow paste operations via script* and *scripting of Java applets* as shown in Figure 35 on page 33.

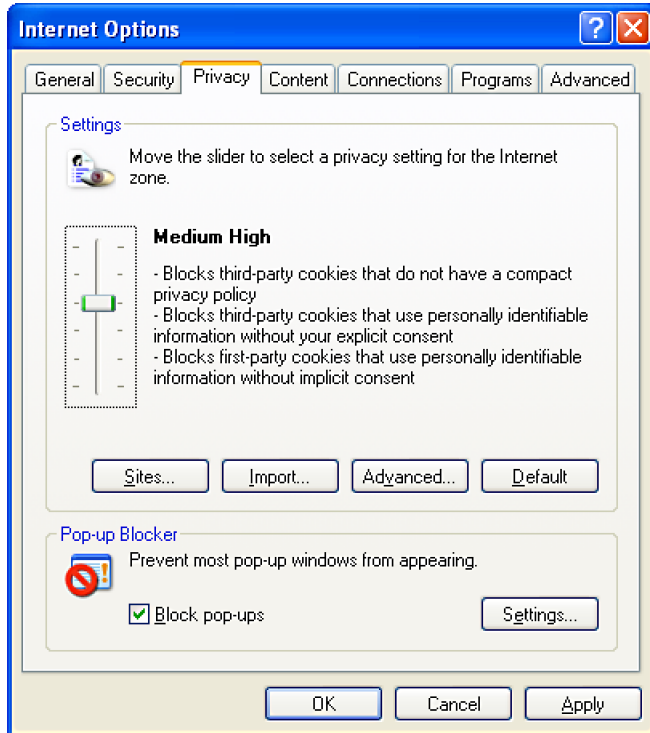


Figure 6: Internet Privacy Options in Internet Explorer (IE)

### 3.1.2 User Accounts and Permissions

To log into the system point your browser to one of the two system URLs<sup>1</sup> <http://alliance.terragis.net> or <http://ocla.terragis.net>. A valid user name and password is required. If you were not provided with a user name and password contact the Office of Civil Legal Aid via email at [ocla@ocla.wa.gov](mailto:ocla@ocla.wa.gov) to obtain login credentials. After pointing your browser to one of the URLs mentioned above you will be prompted for the user name and password. Since both are case sensitive, make sure that the *Caps Lock* is not active. If problems persist please read section 3.1 *Prerequisites* on page 10 and the *FAQ* starting on page 30 prior to contacting the Office of Civil Legal Aid.

<sup>1</sup>Uniform Resource Locator, in simpler terms a web site address



Figure 7: Login Prompt for the OCLA GIS

### 3.1.3 User Skills

This user guide provides all the basic information that a user needs to successfully log into the system and use the basic tools. Depending on the tasks a user intends to perform using the OCLA GIS, additional instruction, such as special training or practice using the system may be beneficial in order to perform the desired tasks in an effective way. The tools that are available in the system are documented in detail in section 3.2 starting on page 13. No specific requirements and knowledge are absolutely necessary in order to use the systems successfully, however basic knowledge of operating a computer, such as familiarity with using the mouse and keyboard of a computer, as well as knowledge of operating a browser to access web sites are beneficial for all users. It is not required to be a seasoned GIS user or have prior knowledge of GIS or on-line maps, however it is helpful if the user is familiar with certain concepts that apply to maps in general and to web based dynamic maps (GIS) specifically. Some concepts of the OCLA GIS, that also apply to digital maps in general, are described in Chapter 2 starting on page 6. Many Internet users are familiar with web based mapping applications that are offered as free services on commercial web sites such as Mapquest, Google maps and Google Earth, Yahoo maps, or Microsoft Virtual Earth to name a few. Users that have used or are familiar with these kind of applications will observe that many of the basic functionalities are similar in the OCLA GIS. While the services mentioned above provide basic address identification routing services, alongside with street and topographic maps, OCLA GIS serves far more specialized purposes. The system includes more than 120 GIS layers, including *base layers* such as ROADS, CITIES, and COUNTY BOUNDARIES, and specialized

GIS layers such as PERCENTAGE OF POVERTY POPULATION BY CENSUS TRACT, by COUNTY or the locations of providers of CIVIL LEGAL AID SERVICES. For a list of all GIS layers available in the OCLA system as of December 14, 2009 see the listing in the tables starting on page 36. For an updated list of data layers go to [www.ocla.wa.gov/gis.html](http://www.ocla.wa.gov/gis.html).

## 3.2 Elements of the User Interface and their Functionalities

The initial start screen after logging into the OCLA GIS site is shown in Figure 10 on page 14. The following section will explain the elements of the user interface and their functionalities. In Figure 10 the main elements are labeled 1 through 4 and surrounded by red boxes for easier reference.

Table 1: Elements of the OCLA GIS user interface

- |    |   |
|----|---|
| 1  | Tabs  |
| 1a | Check box to switch on/off layers               |
| 2  | Tool bar  |
| 3  | Map display                                     |
| 3a | Navigation arrows                               |
| 3b | Map scale bar                                   |
| 3c | Resize map tool                                 |
| 4  | Legend (showing active map layers symbols only) |

### 3.2.1 Functionality of the Tabs

Label 1 and the corresponding rectangular red box shows the *Tab* feature that includes multiple parts: from top to bottom those are *Map Layers*, *Create Printable file*, *Credits*, *Overview Map* and *Help*. The *Tabs* allow activation of one of the five options. By clicking on the *Tab* header the *Tab* will be activated and its content will be expanded. Clicking on the *Tab* while expanded will close it. In the initial state the *Map Layers Tab* is active and expanded. Figure 8 on page 13 shows a graphic of the collapsed *Tabs*.

The following sections explain in detail the individual *Tabs* and their functionalities.



Figure 8: *Tabs* with different functionalities in the OCLA GIS

### Map Layers Tab

The *Map Layers Tab* serves as the Table of Contents (TOC) for the GIS data layers. Most layers (although not all) are listed here and many of them can be switched on or off by the user (label 1 in Figure 10 on page 14). The layers are grouped by their subject matter into folders similar to a folder structure on a personal computer.

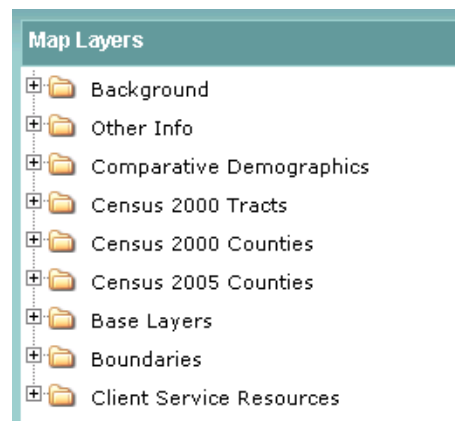


Figure 9: Map Layers Tab

Figure 10 shows the collapsed view of all data folders. Most of the categories are self explanatory. BACKGROUND includes layers that are always switched on, either for display or for query capability reasons, such as STATES, COUNTIES, and OCEAN. OTHER INFO includes layers that are not fitting well into the other categories, such as

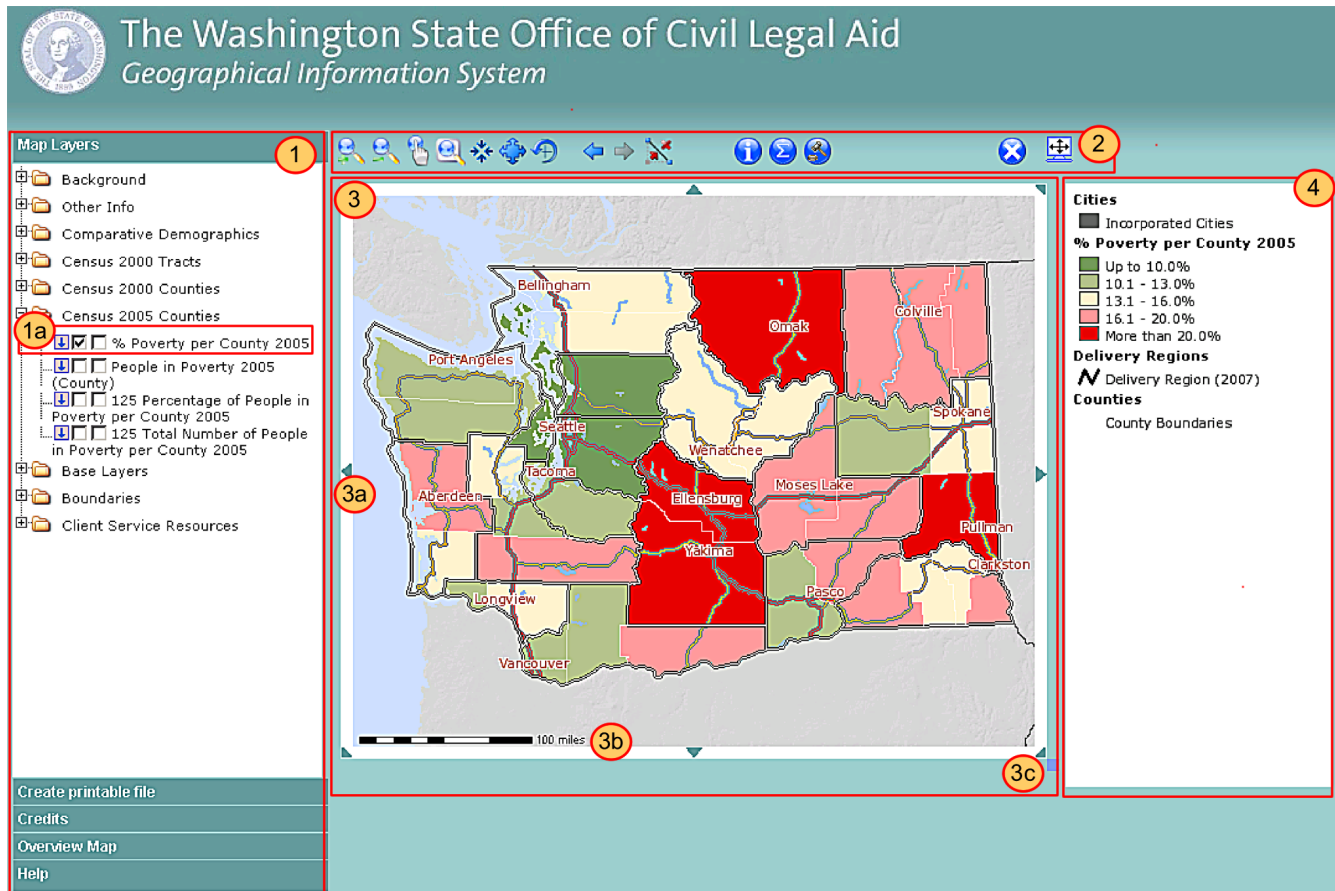


Figure 10: The User Interface of the OCLA GIS

FARM WORKERS, and WSBA MEMBERS BY ZIP CODE AREA. COMPARATIVE DEMOGRAPHICS includes layers that show trends for the poverty population over time and compare numbers and percentages of people in poverty per county. This category will be expanded as additional comparative demographic data become available. BASE LAYERS contains the basic feature layers of the map such as cities, parks, roads, lakes, rivers etc. Those are layers that contain information that is commonly used on topographic maps (see tables starting on page 36 for a list of all layers available in the system as of December 14, 2009). Folders in the *Map Layers Tab* can be expanded by clicking on the plus sign and collapsed by clicking on the minus sign shown to the left of the folder icon. In the initial state when logging into the system, certain map layers are switched on, while others are switched off by

default. For example PERCENT PEOPLE IN POVERTY PER COUNTY, COUNTIES, and DELIVERY REGIONS are displayed by default. Note that for ease of use and other system design reasons certain layers cannot be switched on at the same time when they pose display conflicts on the map (see section about the DYNAMIC MAPS AND THEIR USE IN THE OCLA GIS starting on page 7). To switch on a layer click the first check box (left of the layer name) in the TOC. This will turn on the layer and display it on the map. *Note that the second check box has nothing to do with the display, but is used for activating the layer as a query layer.* All query layer attributes will be returned in a pop-up window when using the QUERY TOOL (see section about the QUERY TOOL on page 27). Note that the level of detail shown on a map may change with respect to map scale due to generalization of the features. To read about general-



ization refer to section 2.2 *Generalization* on page 6. Some layers such as ROADS or CITIES have labels attached to them that will be displayed along with the features when switched on. For the most part the mapping engine <sup>2</sup> will place labels automatically, resolve placement conflicts, and display the appropriate number of labels as defined in the system configuration. In some cases, conflicts of label placement may still arise and overlapping labels may be present in the map. Some labels were configured to be a layer on their own in order to allow the user more control over the map output (e.g. the labels for COLUMBIA LEGAL SERVICES, NORTHWEST JUSTICE PROJECT and COUNTIES).

### Create Printable File Tab

Using this *Tab* you can configure the output of a PDF <sup>3</sup> file including the map display and legend (see labels 3 and 4 in Figure 10 on page 14) that you can download.

Figure 11: Create Printable File Tab

The first step to producing a PDF file is to configure the layers, the map extent and scale (zoom level) to fit your needs. You cannot print directly from the system but can download the file in its digital form for viewing, distribution or for printing. The use of the tool is mostly self-explanatory.

<sup>2</sup>The mapping engine for the OCLA GIS is MapServer. For more information about MapServer refer to section 5.2.1 *MapServer* on page 34.

<sup>3</sup>Portable Document Format. Files may be viewed using Adobe Acrobat Reader software or alternative software programs that can read the format.

There are four options you can choose from to configure your PDF output file:

- Format (letter/tabloid)
- Orientation (landscape/portrait)
- Quality - map resolution (low - 72 dpi / high - 288 dpi <sup>4</sup>)
- include overview (locator) map (yes/no)

Currently only a resolution of 72 dpi is configured as an output option in the system. When the check box for *include overview map* is active, a small inset map will be included on the PDF on the lower left hand side of the map. The overview map serves as a locator and looks like the one available in the *Overview Map Tab* (for details refer to section OVERVIEW MAP on page 17). The locator map shows the extent of the main map marked with a red rectangle. The entries in the two remaining text fields are optional and the output for title and comment will stay empty (is omitted) in the PDF file in case you leave the default text as is, e.g. *Title (max.55)*. Enter your title and comment text if desired. The text length is limited to 55 characters for title and 200 characters for comments to allow best fit onto all the available paper/output size formats along with all the other elements such as legend, overview map etc. Figure 12 on page 16 shows an example of a printed map for an area in Vancouver, WA (label key in Table 2).

Table 2: Key for the labels in Figure 12

1	Map Title (optional)
2	Main Map
3	Overview/Locator Map (optional)
4	Scale Bar
5	Legend
6	User Comment (optional)
7	Map date, North Arrow and Credits

<sup>4</sup>Dots per inch. This unit specifies the resolution of an output device such as a printer.

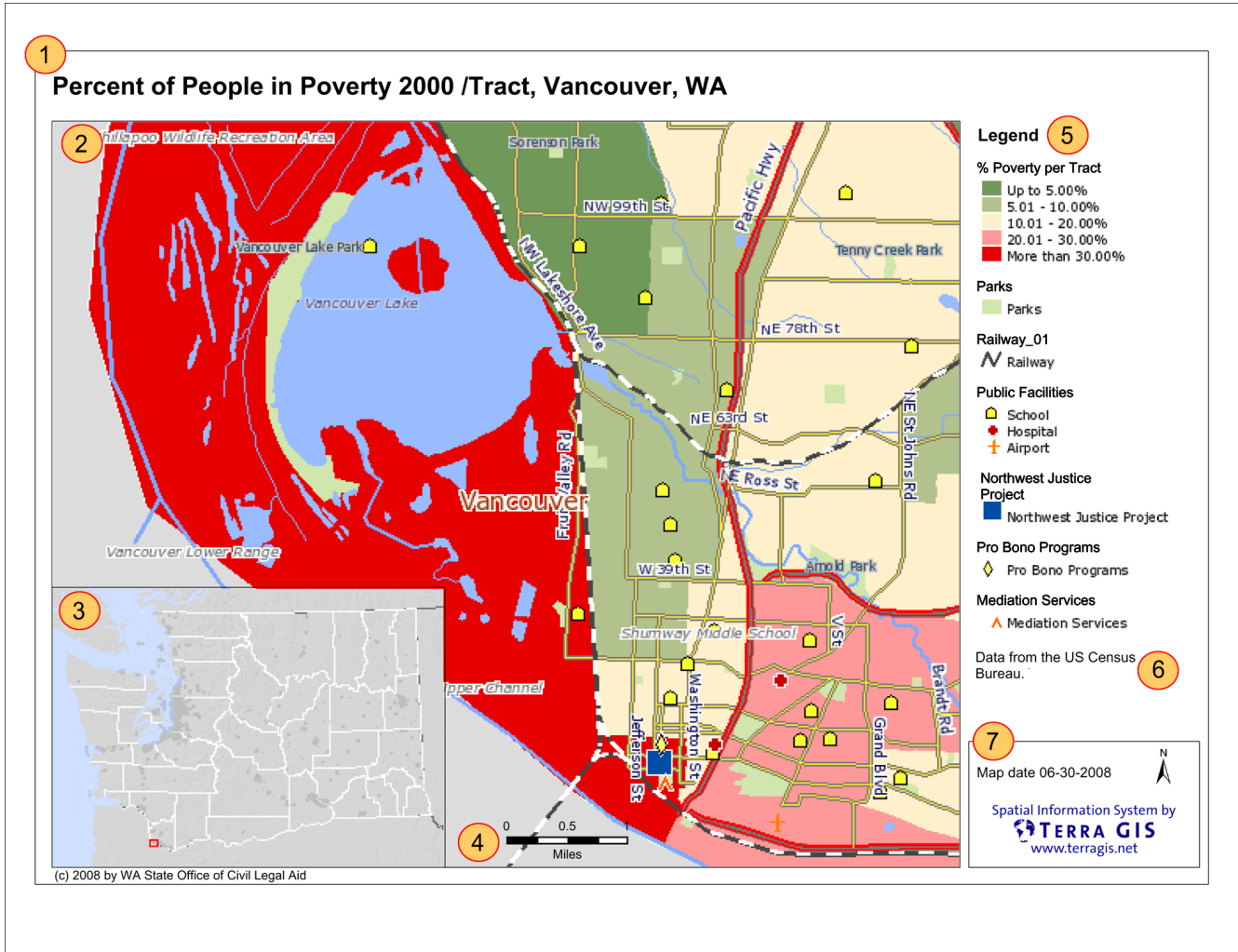


Figure 12: Map PDF generated in the OCLA GIS: Percent of People in Poverty in 2000/Tract, Vancouver

Note that when using the drop down boxes for format and orientation, the map will adjust its extent and size according to your preferences in order to generate an appropriately sized map with the selected map resolution for inclusion in the PDF file. When you are done with the settings, you can proceed and click on *create PDF*. The requested map will be generated on the server and available for download afterwards. You can download and view the map by clicking on the hyper link provided in a new browser window. Note that in order to view and print your map, Adobe Acrobat Reader or another software program capable of reading PDF files is necessary.

### Credits Tab

The *Credits Tab* (Figure 13 on page 17) has the purpose of listing the entities involved in creating the OCLA GIS. Complete address and contact details are given for both: the THE WASHINGTON STATE OFFICE OF CIVIL LEGAL AID, OLYMPIA WA (OCLA), and the GIS consultant TERRA GIS LTD, SEATTLE, WA. OCLA is responsible for the data content, TERRA GIS is responsible for the implementation and hosting of the system. OCLA and Terra GIS cooperated on specifying the system requirements. Links to the websites of both entities are included along with email addresses.





Figure 13: Credits Tab

### Overview Map Tab

The overview map is shown in Figure 14 on page 17. The purpose of this small locator map is to show the current map extent of the main map as a red rectangle outline on top of an overview map of the State of Washington. It is mainly useful when the map is zoomed to intermediate scales. If the main map is zoomed in extensively the red rectangle may become too small to be visible on the overview map.



Figure 14: Overview Map Tab

The rectangle allows users that are unfamiliar with the area displayed on the main map to under-

stand in which part of the State the current map extent is located. The overview map can optionally be included on the PDF files generated by the system. Note that there is no user control over the map layers that are visible on the overview map.

### Help Tab

The *Help Tab* offers access to help resources available for the system. The *USER MANUAL* is this document in digital file format as a PDF file. The *QUICK GUIDE* is a very short reference and lists the main tools and their functionalities, the glossary is a third help file available from here. The documents can be download by accessing the hyperlinks from the *Help Tab*.

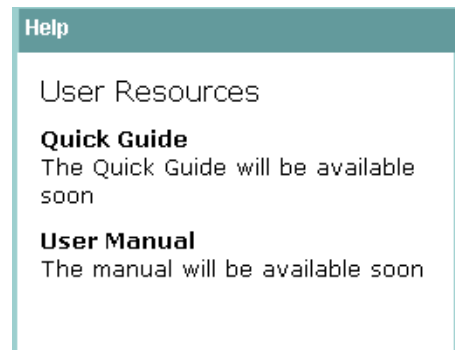




Figure 15: Help Tab


### 3.2.2 The Tools


Many of the tools in the OCLA GIS are directly accessible on the user interface via the *main tool bar*. The *main tool bar* is shown in Figure 10 on page 14 (label 2). The following sections describe the tools located on the *main tool bar*. Each listing shows an image of the tool in its passive mode on the left hand side and its active mode (usually indicated with a yellow star on the upper left hand side of the tool button) next to it on the right hand side. Some tools only have an *active mode* because the action they perform is triggered immediately by pushing the tool button once without requiring additional interaction by the user. For tools that have both a *passive* and *active* mode, the tool will be activated


by clicking it once; the tool image then changes to indicate its mode (active/passive). For many of the tools a yellow star is shown on the upper left hand side of the button indicating that the tool is active. When the tool is active the user can go ahead and use its functionality. For example the user can query the map when the QUERY TOOL is active by clicking on a location on the map. The tool stays active until the tool button is clicked again or until the user clicks on a different tool that consequently will become active. The previously active tool will then return to its passive mode, which is indicated by the tool button showing the image without the yellow star (or a faded color for the BACK and FORWARD tools). The following section describes each tool along with the tool's icon and a description of their functionality and usage. In addition Table 18 starting on page 41 in the Appendix lists all tools along with a short description as a quick reference.


 The ZOOM IN TOOL allows you to focus in on a smaller, more detailed region of the map. The tool has only an active mode. Click on the tool to zoom in on the map.


 The ZOOM OUT TOOL allows you to focus on a larger, more general area of the map. The tool has only an active mode. Click on the tool to zoom in on the map. The map will not zoom out beyond it's fixed maximum extent.


 The PAN TOOL allows you to change the extent of the map without changing the map scale. When this tool is active, click on a location on the map and drag the map (while holding the mouse button down) to view a new location. Release the mouse button when done dragging.


 The ZOOM BY RECTANGLE TOOL allows you to zoom directly into a specific area. When the tool is active, click on the map, keep the mouse button pushed down and drag open a red rectangle over the areas on the map you want to zoom to. Once the rectangle covers the area you intended to zoom in on, release the mouse button. The rectangle you created will become the new map extent.


 The SET MAP CENTER TOOL allows you to click on the map to specify a new map center. When the tool is in active mode, click on the map once and the clicked point location will become the new map center.

 The DISPLAY COMPLETE MAP TOOL allows you to reset the map extent to display the initial extent showing the entire State of Washington.

 The REDRAW TOOL allows you to force the mapping application to generate a new map in case something does not appear to have refreshed in the way you expected. Map extent and layers switched on will stay the same, however a new map image will be generated and displayed.<sup>5</sup>

 The BACK TOOL allows you to step back to the last state of the map. You can go back multiple steps by clicking on the tool multiple times. The tool will be available (shown in blue when active) only if you advanced to a different map view beforehand (e.g. by zooming in). To use it click on the tool once.

 The FORWARD TOOL allows you to go forward to the next map view you generated and display it. This function will be available (shown in blue when active) only if you used the BACK TOOL to step back to a previous view beforehand. To use it click on the tool once.

 The MEASURE DISTANCE TOOL allows you to measure distances on the map. The total distance in miles and distances for each of the measured segments, will be displayed along measurement lines. Distances measured are point-to-point and do not reflect travel distances by road. To use it activate the tool, click on the map once for the start point, then once for each segment you would like to measure. To start over and to erase the measure lines and distances from the map use the ERASE LINES TOOL. To quit, click on the tool button for a second time. When the MEASURE DISTANCE TOOL

<sup>5</sup>There should rarely be the need to use this tool since the map updates automatically when layers are switched on or off or if tools are used the update the map.

is active, three tools with related functionality will become available and will be displayed in the upper left hand corner of the dynamic map display. Those tools are the ERASE LINES TOOL, the CLOSE POLYGON TOOL, and the MEASURE INFO TOOL.



The ERASE LINES TOOL allows you to reset the measurement lines and distance results that are displayed on the map after you used the MEASURE TOOL. The tool will be visible in the upper left hand corner of the map display after activating the MEASURE DISTANCE TOOL.



The CLOSE POLYGON TOOL allows you to create a polygon from the line segments created with the MEASURE TOOL. By clicking on this tool after having created multiple line segments, a line will be created and snap the last point to the start point of your measured segments. The area inside the resisting polygon can be retrieved by using the MEASURE INFO TOOL. The tool will be visible in the upper left hand corner of the map display after activating the MEASURE DISTANCE TOOL.



Clicking once on the MEASURE INFO TOOL will open a pop-up window and display the total distance of the measured line segments. In case you created a polygon, the area and spatial perimeter of the area enclosed by the polygon will be displayed. The tool will be visible in the upper left hand corner of the map display after activating the MEASURE DISTANCE TOOL.



The QUERY TOOL allows you to retrieve attributes of most GIS layers on the map. Information about each query layer (the second check box is activated in the *Map Layers Tab*) will be retrieved<sup>6</sup>. When active clicking on a location on the map will trigger a query of the attribute data of all active query layers and display the results in one or more pop-up windows.



The DEMOGRAPHIC SUMMARY TOOL is a special variation of the query tool. When the tool is active, you can click on any point on the map

and retrieve demographic information. This information is mainly derived from US Census data aggregated on County and Census Tract level (where available). The information corresponding to the County and US Census Tract of the location you clicked on will be displayed in a pop-up window. In contrast to the query tool there is no need to activate any query check boxes for any layer to use this tool.



The PROVIDER SUMMARY TOOL is a special variation of the QUERY TOOL. When active you can click on any point on the map and retrieve information about Providers of Civil Legal Aid Services on county and aggregated by planning region level<sup>7</sup>. The information corresponding to the county/planning region of the location you clicked on will be displayed in a pop-up window. In contrast to the QUERY TOOL there is no need to activate any query check boxes on any layer to use this tool.



The QUERY BUILDER AND REPORT TOOL is a comprehensive tool that allows to run database queries, to view the query results in tabular form and on the map and provides functionality to download the queried data in MS Excel format (detailed description starts on page 20).



By clicking once on the QUIT SESSION TOOL you can log out of the OCLA GIS.




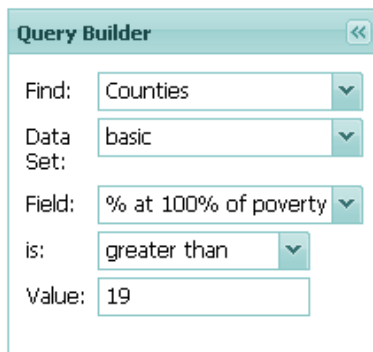
The OPTIMIZE MAP SIZE TO BROWSER WINDOW TOOL allows you to optimize the map display size corresponding to the current browser window size. By clicking on this tool the map display will be maximized to fit to the browser window for optimal usage of display space.

<sup>6</sup>The first check box is used to switch the layer on and make it visible on the map. The second check box is to activate the query of its attributes when using the QUERY TOOL.

<sup>7</sup>Planning Regions (Delivery Regions) have been established by the Supreme Court's Access to Justice Board and are often aggregations of multiple counties and in some cases are identical to the counties as the case for King County.

### 3.2.3 Queries and Reports

The QUERY BUILDER AND REPORT TOOL  can be opened from the corresponding button on the MAIN TOOL BAR. A click on the button will open a new window with an interface that supports custom queries to the database. The query results can be displayed in two ways: (1) in tabular format on the screen and (2) spatially as a map layer on the interactive map. Both options can be used to create reports of the results: the tabular query results can be downloaded in MS Excel file format, while the spatial representation (a dynamic map layer called QUERY) can be used to create custom maps including the query results via the *Create Printable File Tab* (see page 15). In order to start working with query data, an initial query needs to be run using the *Query Builder* on the left hand side of the QUERY BUILDER AND REPORT window. The workflow for using the tool involves the completion of five selections/entries (see figure 16 below).



**Query Builder**

Find:

Data Set:

Field:

is:

Value:

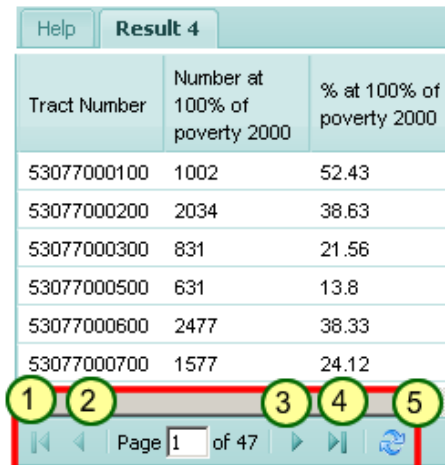
Figure 16: The query builder menu of the QUERY BUILDER AND REPORT TOOL

The work sequence for using the tool is as follows:

1. **GEOGRAPHY:** Select the GEOGRAPHY unit, such as COUNTY, CENSUS TRACT, REGIONS or FORECAST ANALYSIS ZONES on which you would like to query.
2. **DATASET:** Select the DATASET which you would like to have returned for your query. This setting determines which selection of

table columns will be returned from the database. If you would like to retrieve the most common data (table columns) choose the option *basic*, if you like to get all data available from the database choose option *all*. For some geometries (REGIONS and FORECAST ANALYSIS ZONES) only one option (*all*) is available.

3. **FIELD:** Select the FIELD (table column) you will query against. Depending on your choices for (1) and (2) you will have a different set of fields (table columns) to choose from.
4. **OPERATOR:** Select the OPERATOR. This setting determines how the query comparison will be done (*greater than*, *less than*, *equal* etc).
5. **VALUE:** Enter the VALUE you are querying for (or which you are comparing with).



Tract Number	Number at 100% of poverty 2000	% at 100% of poverty 2000
53077000100	1002	52.43
53077000200	2034	38.63
53077000300	831	21.56
53077000500	631	13.8
53077000600	2477	38.33
53077000700	1577	24.12

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Figure 17: Navigation of tabular query results in the QUERY BUILDER AND REPORT TOOL






Your query will be executable once you have selected all five options in the *Query Builder*. To run the query click on the RUN QUERY button (see figure 18 on page 22). The results will be displayed in tabular form on a new *Tab* that will be added to the main window on the right hand side (see figure 18 on page 22). Figure 17 on page 20 illustrates tools that you can use to navigate the tabular query results. Display of query results is generally limited to twenty records on one page. If more than

twenty results are returned those are split into multiple pages. To view the next page click on the forward arrow (label 3). To navigate to the previous page the backward arrow (label 2). To refresh (run again) the query click on the reload button (label 5). To jump to the first or last pages use the buttons labeled 1 and 5 respectively. You can run multiple queries and each time the results will be added to a new (numbered) result *Tab*. After you have run one or multiple queries you can work with the results or modify the results in various ways using the tools available on the QUERY AND REPORT TOOL interface.

### Using the tools on the Query Builder and Report Tool menu

Several tools are located on top of the menu of the QUERY BUILDER AND REPORT TOOL window (see table 3 on page 21 and label 1 on figure 18 on page 22). The QUERY BUILDER tool bar has the following five options:

Table 3: Buttons on the QUERY BUILDER AND REPORT TOOL menu

 run query	to run a query using the settings in the QUERY BUILDER on the left hand side.
 show map	to display the active <i>Tab</i> results spatially on the map.
 reset filters	to reset all filters that you may have set in the active result <i>Tab</i> .
 remove Tab	to remove (delete) the active result <i>Tab</i> from the display window.
 export results	to download (export) the filtered results in the active result <i>Tab</i> in MS Excel file format.

The *arrange window menu* (see label 1 figure 18 on page 22) can be used to resize and position the QUERY BUILDER AND REPORT TOOL window in relation to the browser window. This can be useful if you would like to view the query results in tab-

Table 4: *arrange window menu* of the QUERY BUILDER AND REPORT TOOL

Position up	positions the window on the top of the browser window and makes it smaller
Position down	positions the window on the bottom of the browser window and makes it smaller
Center	centers the position of the window
Full screen	resizes (maximizes) the window to occupy the whole browser
Collapse	minimizes the window
Resize Size/Position	resets the size and position of the window to its initial setting
Close	closes the query builder window

ular form and some part of the map next to each other. The tool window can be resized by moving the mouse to the lower edge of the window: once a small arrow appears (see labels 4a and 4b on figure 18 on page 18) click and hold down the mouse button while pulling the tool window smaller or larger. To complete the resize operation release the mouse button. Clicking on the small upwards facing arrow on the window right upper corner will collapse the window. Only a small narrow strip will stay visible. This can be useful to fully view the map. To expand the window to its previous size click the same button one more time (see label 3a on figure 18 on page 18). The icon to the right of the arrow allows you to maximize the query window to occupy the whole browser window (label 3b). To close the QUERY AND REPORT TOOL window click on the small cross icon (label 3c).

Note that all operations using the above tools will be performed on the query result of the currently active result *Tab*. The active *Tab* is the one displayed in bold letters and for which the tabular data are shown in the main panel window (see label 1 on figure 21 on page 23). You can refine any of the results you have previously created by setting *filters* to narrow down your search. Once set, those *filters* can be applied to both the tabular



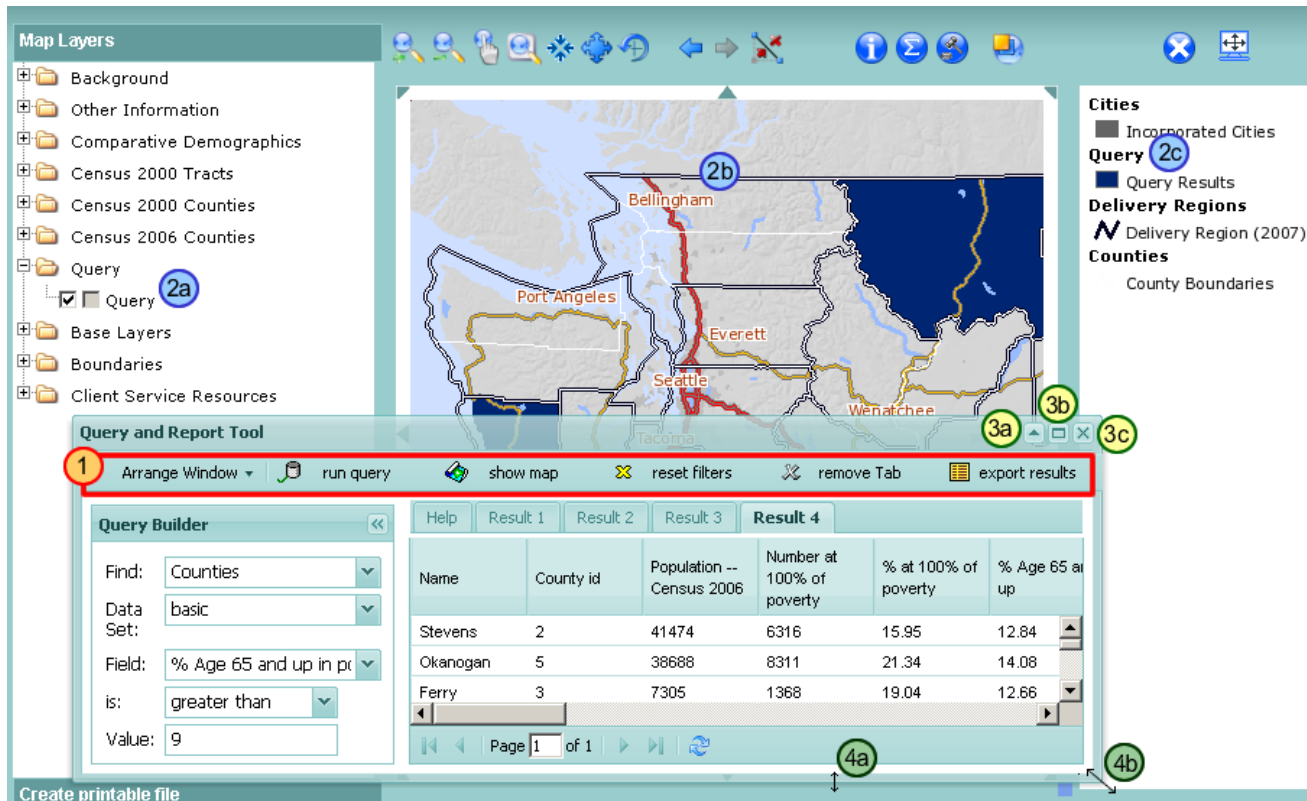


Figure 18: Using the query builder and report tool

data that may be eported as an MS Excel file, and to the geographies shown on the map (QUERY map layer when using the SHOW MAP TOOL). To set a *filter* property click on the arrow next to the header of any one of the table columns returned for your query in the display window (label 1 on figure 20 on page 23). A drop down *menu* opens with several menu options (label 2 shown on the same figure). The last option is *Filters*. When hovering with the mouse pointer over the *Filters* menu an additional *menu* will appear (label 3). Options on this second *menu* will depend on the data type of the table column you are filtering. In case of text (string) data a single menu line for filtering will be available (indicated by a small *binocular* icon - see label 1 on figure 19 on page 23). If you enter a text string into the input field next to the binocular icon, your query result will be automatically filtered for data records containing the input text string after a short delay. For example if your table column was *Counties* and

you entered *k* in the text box, only records where the County name contains a lower caps *k* will remain in the *Result Tab* (the text string search is case sensitive). After entering the text, the results for the query *Tab* refreshes after a short delay and will reflect the filtered data. If the data type of the table column is numeric, the second menu that will appear has three entries *greater*, *smaller* and *equal* (label 3 on figure 20 on page 23).

You can set one or more filters. For each filter you can set one or more restrictions (for example you could filter a table columns for values  $> 12$  and  $< 22$ ). You will get appropriate results as long as your query logic is correct. Setting filters in one *Tab* does not affect the data displayed on any of the other *Tabs*. To remove the filters you have set for one or multiple fields, you can uncheck the individual check boxes located on the left hand side of the *Filters* menu (label 2 on figure 21 on page 23). You can uncheck any of the *filters* you previously

Name	County id	Population -- Census 2006	Number at 100% of poverty	% at 100% of poverty
Stevens			6316	15.95
Okanogan			8311	21.34
Ferry			1368	19.04
Grays			1888	18.88
Yakima				
Lewis	29	70896	9460	14.01
Garfield	31	2294	334	14.22
Columbia	33	4022	507	12.65

Figure 19: The filter menu of the QUERY BUILDER AND REPORT TOOL - text (string) values

Population -- Census 2006	Number at 100% of poverty	% at 100% of poverty	% Age 65 and up	% Age 65 and up in poverty
41474			12.84	11.41
38688			14.08	10.13
7305			12.66	10.23
67773			15.38	9.2
226028				
70896	9460	14.01		
2294	334	14.22		
4022	507	12.65		

Figure 20: The filter menu of the QUERY BUILDER AND REPORT TOOL - numeric values

Population -- Census 2000	Population -- Census 2006	Number at 100% of poverty	% at 100% of poverty	% Age 65 and up
38965			21.34	14.08
31521			19.64	11.64
35132			25.59	9.26
220069				
49826				

Figure 21: The filter menu of the QUERY BUILDER AND REPORT TOOL - column selection

set manually or. To remove all filters set for a result *Tab*, you can click on the RESET FILTERS BUTTON on the QUERY BUILDER tool bar ( see figure 3 on page 21) and label 1 in figure 18 on page 22).

Note that all values you entered in the input boxes for any of the filters will remain available after removing filters and need not be re-entered in case you decide to re-activate any of the previously set *filters*. To remove a previously created *Result Tab* activate it by clicking on it (if not already active). Table column headings of active *Tabs* are shown in bold letters (see label 1 on figure 21 on page 23). After removing a *Tab* it will disappear from the display and the *Help Tab* will become active. The *Help Tab* contains information about using the QUERY BUILDER AND REPORT TOOL.

Additional *menu* options that can be activated by clicking on the arrows right next to the column headers as shown in figure 20 on page 23, label 1. You can sort the result data in ascending or descending order by clicking on the respective menu entries or by double clicking on the column title (header) to toggle between *ascending* and *descending*. When hovering over the columns menu entry a sub-menu containing a list of all available table columns will appear (see label 2 on figure 21 on page 23). You can remove any of the columns from the display in the *Result Tab* by unchecking the respective boxes for the table fields. Removing columns from the display will not affect the results you are downloading as an MS Excel Table (the removed columns will still be extracted from the database).

## Creating reports

To export query results in tabular form, run your desired queries as outlined in the sections above. You may modify the results using one or multiple filters on any numbers of table columns. The results in the *Result Tab* will reflect the initial query and all the filters that you added. You can download the results to your local computer by clicking the EXPORT RESULTS BUTTON (see label 1 figure 18 on page 22). The data will be extracted from the database and streamed to your browser. You will

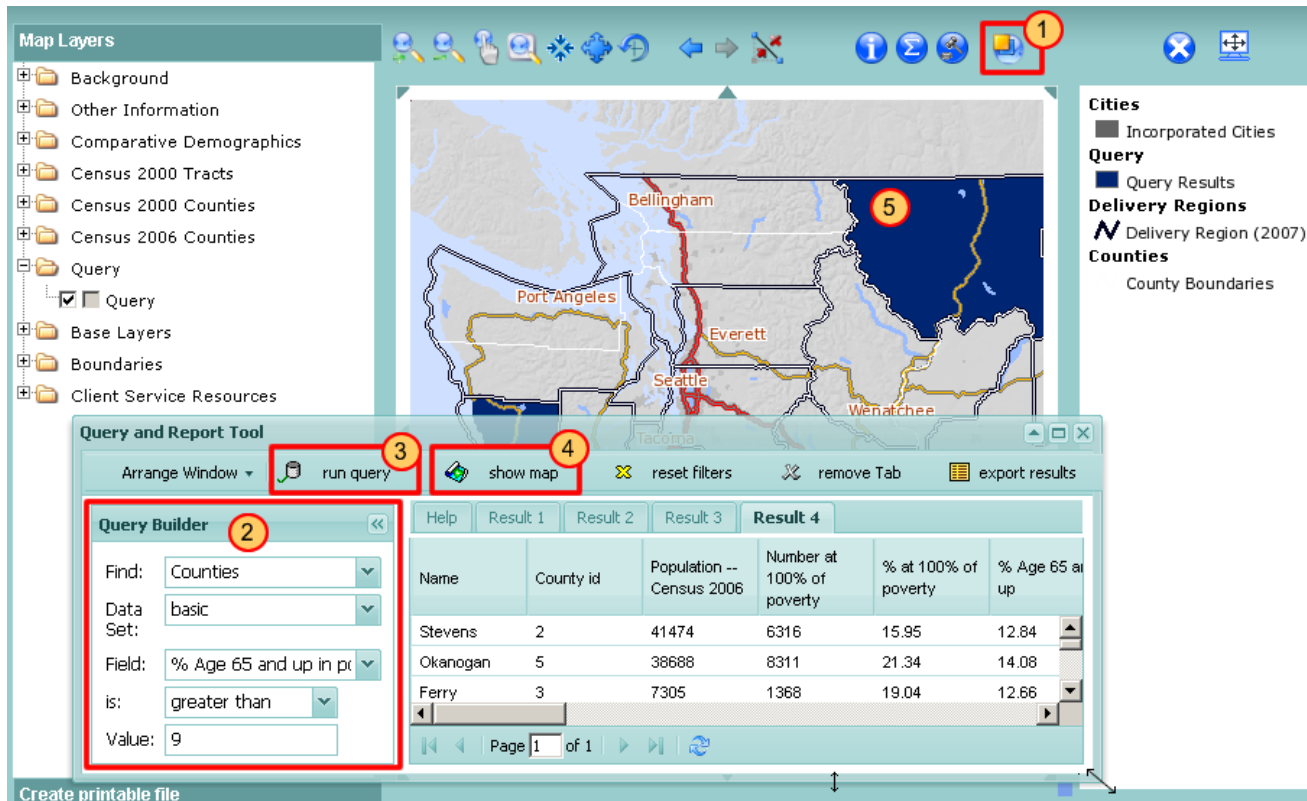


Figure 22: Example workflow using the query builder and report tool

be prompted to open or save a MS Excel file (see figure 23 on page 25). In order to open the file you will need a software that can read files in the above format.

When closing the QUERY BUILDER AND REPORT TOOL note that none of the results, filters or other settings will be saved and consequently will be lost. You can use the SHOW MAP BUTTON to display the results (honoring the filter settings) on the map (label 4 on figure 22 on page 24). Note that if you set a new filter or change existing filter settings you will need to click on the the SHOW MAP BUTTON again to update the map. To create a PDF file of a map including the query results you can use the regular process of exporting a PDF files of the map using the work flow outlined in section *Create Printable File Tab* starting on page 15.

### Example workflow using the Query Builder and Report Tool

The work sequence illustrated in Figure 22 on page 24 can be used as an example of using the Query Builder. To produce tabular output and at the same time show the results spatially use the following work sequence:

1. OPEN THE QUERY BUILDER AND REPORT TOOL (label 1) by clicking on the tool button. This will open the QUERY AND REPORT TOOL window.
2. ENTER THE SELECTIONS FOR THE QUERY BUILDER (label 2). Complete the information for your query: query the County geometries (Find: *Counties*), show all available data in the result window (Data Set: *all*), Find *Counties* where percent Age 65 and up in poverty is greater than 9% (Field: *Age 65 and up in poverty*, is *greater than*., Value: 9).



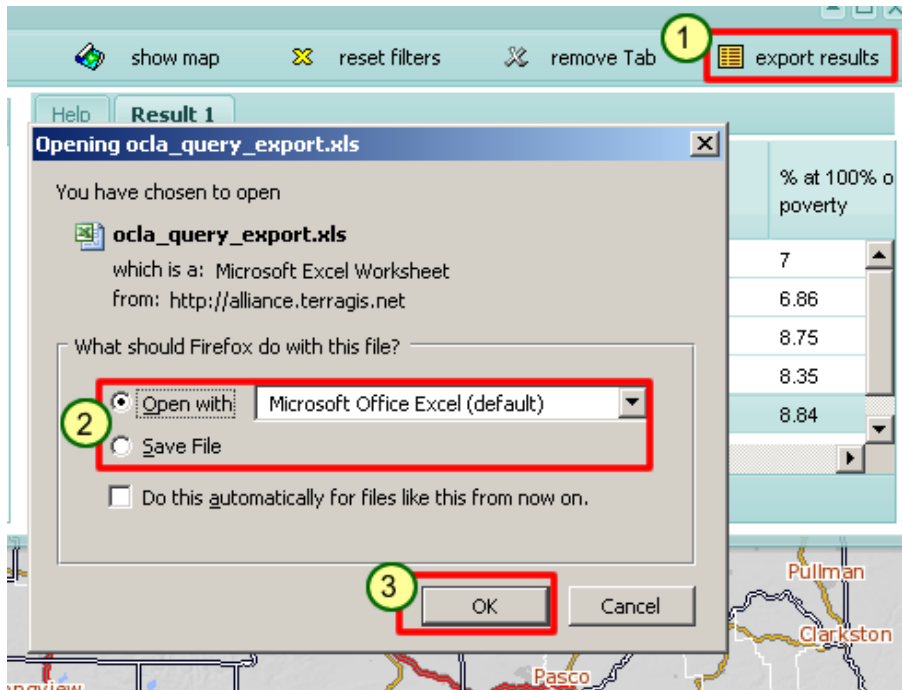


Figure 23: Exporting query data in MS Excel format using the query builder and report tool

3. EXECUTE THE QUERY by clicking on the RUN QUERY button (label 3). The results will display in tabular form in a new *Tab*.
4. DISPLAY THE RESULTS SPATIALLY ON THE MAP by clicking on the SHOW MAP tool (label 4). The results are shown on the map (in the layer called QUERY) in blue color (see label 5) and on the legend. The query results layer can be switched on and off - just like any of the other layers in the OCLA system - using the checkboxes in the *Map Layers Tab* (label 2a on figure 18). When switched on the QUERY layer will also show up on PDF files generated of the map (see *Create Printable File Tab* on page 15).

### 3.2.4 The Map Display

The center and focus point of the GIS application is the dynamic map display (label 3 in Figure 10 on page 14). The display features the main map in the center, navigation arrows (label 3a) on each of the corners and sides, a scale bar (label 3b) on the lower left hand side, and the resize map button on the lower right hand side (label 4). The user can click on the resize map button and drag the map size to the desired size while keeping the button pressed and releasing it when done (see Figure 25 on page 27). Another way to automatically maximize the map window display is to use the OPTIMIZE MAP SIZE TO BROWSER WINDOW TOOL (details on page 19). The map display will automatically update when layers in the *Map Layers Tab* are switched on or off. Similarly the map extent and scale bar will adapt to the new settings when the user changes the zoom level, map extent or performs other map relevant interactions using the tools. Another way of navigating to a point of interest on the map is to click on the navigation arrows surrounding the map (label 3a Figure 10). By clicking once on an arrow with the mouse, the map will pan in the direction indicated by the arrow tip. Note that the map cannot be zoomed out further than the maximum extent defined in the system settings.

### 3.2.5 The Legend

The legend dynamically shows information about the symbology and classification of the currently active GIS layers for most of the OCLA GIS system layers (see Figure 10 label 4). However, some layers are omitted in the legend display if they are easily recognizable (e.g. roads and highways). The legend lists the titles of most layers currently shown on the map. Below the layer titles you see the symbols used to draw the GIS layer on the map along with their respective classification by attributes (if any). For layers showing areas (polygons) either an outline in the color used on the map (e.g. for DELIVERY REGIONS(2007)), or a small rectangle with the respective fill color is drawn for all classes that are defined in the system. For example the layer

PERCENT POVERTY PER COUNTY 2006 is split by its attributes (classified) into five classes shown as color filled rectangles and ranging in colors from dark green to dark red. Similar to the map display, the legend is automatically updated when layers are switched off or on. Note that the Symbol for COUNTY BOUNDARIES is a white colored outline and is not visible on the white background of the legend box.

### 3.2.6 Examples on how to use the Tools

The section on page 17 describes the tools available on the MAIN TOOL BAR in the OCLA GIS along with a description and brief instruction of their usage. This section describes tools that are not located on the MAIN TOOL BAR itself. These notes are intended to help users to more efficiently use the tools and their features.

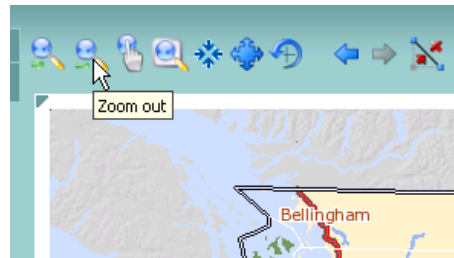


Figure 24: Information pop-up box for tools

#### Tools Tips

Figure 24 on page 26 shows a small information box that appears below each of the tools in the tool bar (shown on label 2 in Figure 10 on page 14) as a tool tip (if the mouse pointer is located on top of a tool button and not moved for an instant of time). In Figure 24 the mouse pointer is positioned above the ZOOM OUT TOOL and consequently a small information box with the tool's name displays after a short delay.

#### Resize Map Tool

Figure 25 on page 27 shows the usage of the RESIZE MAP TOOL. To manually resize the map the

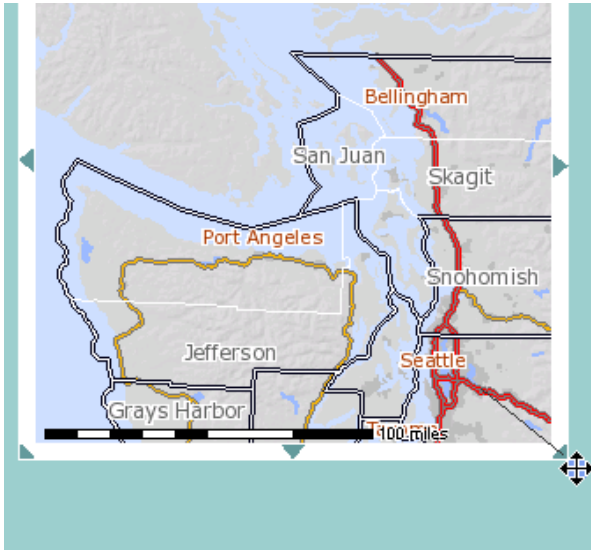


Figure 25: Resize Map tool

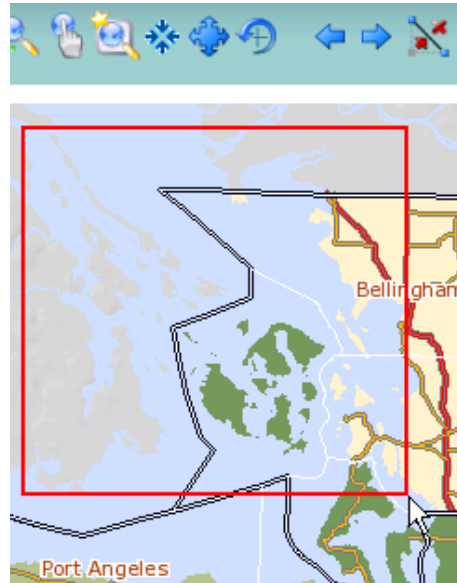


Figure 26: ZOOM BY RECTANGLE tool

user can click on the button <sup>8</sup> and drag the map size to the desired size, while keeping the mouse button pushed down. Once the map is the desired size the button can be released and a new updated map with the new map extent will be automatically generated by the system.

### Query Tool

Figure 27 on page 28 shows the usage of the QUERY TOOL. In the TOC <sup>9</sup> select the layers <sup>10</sup> from which you would like to retrieve attribute information. Multiple selections are possible. When clicking on a map location, a query of the attribute data of all active query layers will be executed and the results will be displayed in one or more pop-up windows. Table 5 on page 27 lists the work sequence corresponding to the labels on Figure 27.

Table 5: Work sequence when using the QUERY Tool

1	Counties is a query layer (second check box checked)
2	The tool name is displayed in a small info box when the mouse pointer hovers over the tool, then tool is activated by a single click
3	A location on the map is clicked, query runs, sand clock is displayed while retrieving data
4	Pop-up window is displayed with the COUNTY layer attribute data

### Measure Distances Tool

Using the MEASURE DISTANCES TOOL, distances between locations can be measured on the map. Figure 28 on page 28 shows the usage of the tool. When the tool is active, the user can click on multiple locations. Between two locations a measure line segment will be displayed in purple on top of the map, along with the segment length in miles (rounded to full miles) in the middle of the segment, and the cumulative distance at each seg-

<sup>8</sup>Compare label 3c in Figure 10 on page 14. When moving the mouse pointer over the tool the pointer will change to a cross with arrows as shown in Figure 25.

<sup>9</sup>Table of Contents - Map Layers Tab

<sup>10</sup>Click the second check box of a layer name to make the layer a query layer.

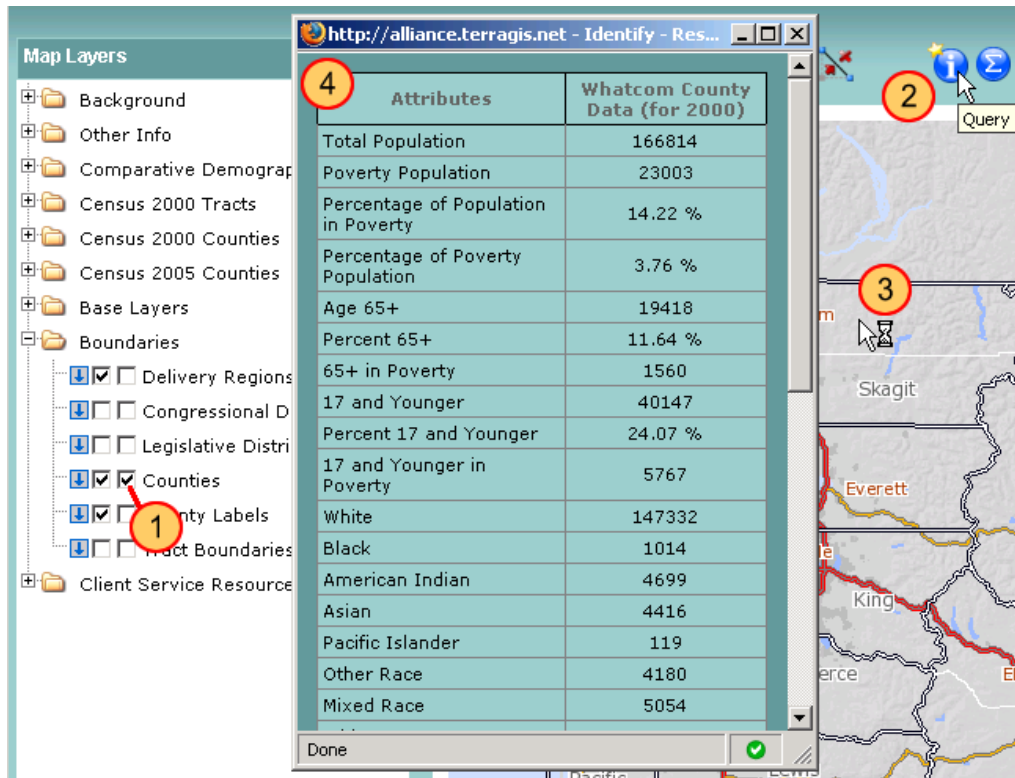


Figure 27: Using the QUERY Tool

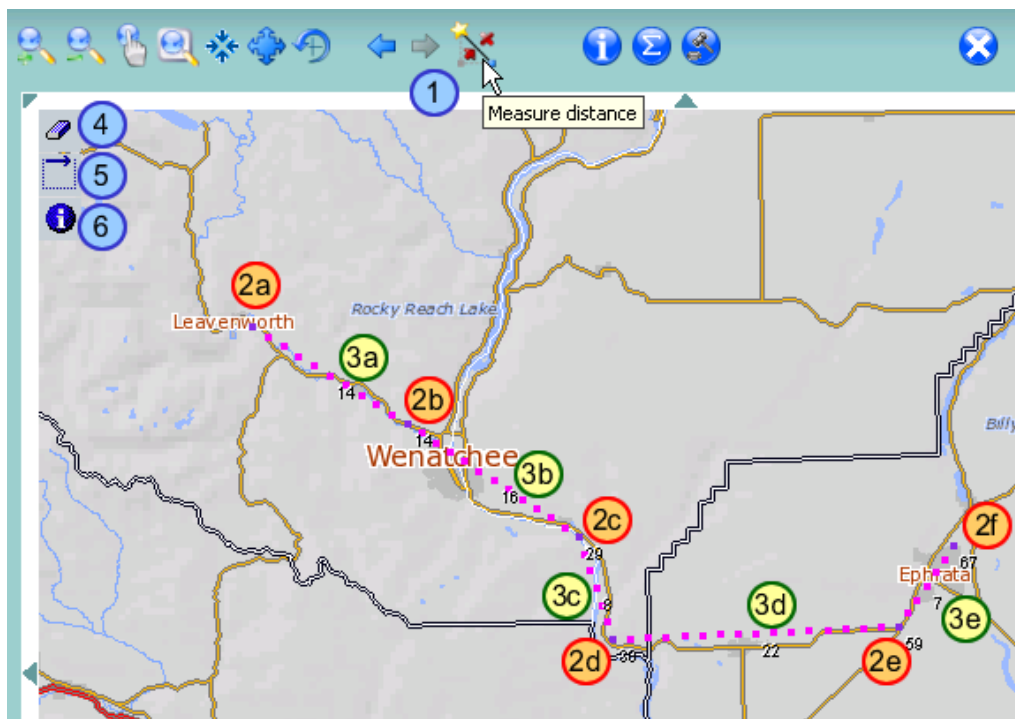


Figure 28: Using the MEASURE Tool

Table 6: Work sequence when using the MEASURE Tool

1	The tool name is displayed in a small info box when the mouse pointer hovers over the tool, then tool is activated by a single click.
2a-2f	A location on the map is clicked to start measuring. Multiple locations are measured. Each clicked location displays the cumulative (rounded) distance from the start location.
3a-3e	The lengths of the individual segments are displayed.
4	To reset the tool or quit measuring, click on the ERASE TOOL.
5	To snap the last location to the start location (creating a polygon) click on the CLOSE POLYGON TOOL. This can be used to determine area size.
6	To retrieve the measured total distance or to display the area of a polygon created, click on the MEASURE INFO TOOL.

mouse pointer marking the approximate new map extent. *This tool is one of the most effective navigational tools offered in the system.*

ment end point <sup>11</sup>. The total cumulative distance is also shown dynamically close to the mouse pointer when moving it over the map interface while the tool is active. To reset the measurements and erase the measurement lines from the map, use the ERASE LINES TOOL (description on page 19). Simply clicking on the MEASURE DISTANCES TOOL will deactivate the tool but not remove the lines and measured distances from the map display. Table 6 on page 29 lists the work sequence corresponding to the labels on Figure 28.

### Zoom by Rectangle Tool

Figure 26 on page 27 shows the usage of the ZOOM BY RECTANGLE TOOL with the red rectangle that dynamically changes with the movement of the

<sup>11</sup>The measurement lines and distances are not intended for print purposes and will not print correctly when generating a PDF file.

## 4 Frequently Asked Questions

### ***What can I do if...***

#### **Pop-up windows for queries do not appear**

If you followed the instructions in section 3.1.1 *Internet Browsers and Settings* on page 10, but pop-up windows still do not work you might have a secondary pop-up blocker installed on your system. Such third party pop-up window blockers exist for both Internet Explorer and Firefox and might prevent the pop-up window to appear, even if you changed the browser settings to allow pop-up windows for the OCLA GIS. Try the following:

- Disable the pop-up blocker if one is installed or add the OCLA website to the allowed sites or exceptions list of that software
- If you are not sure whether a second pop-up blocker is installed consult your system administrator

#### **My login does not work**

- Double check that the login and password are the correct credentials and that you use upper and lower case characters if present (password and login are case sensitive)
- Double check that your Caps Lock key is not active
- Make sure that cookies are accepted (see section 3.1.1 *Internet Browsers and Settings* on page 10)
- Type the password and login into a text editor like notepad first and then copy and paste them into the appropriate text fields (this way you can make sure that there are no accidental typos).

#### **The tools do not work any more**

Make sure that Java Script is enabled in your browser (see section 3.1.1 *Internet Browsers and Settings* on page 10). If Java Script is enabled try following the steps in FAQ - *Something else is not working* on page 30.

#### **The whole system does not seem to work anymore**

This may happen if you have been logged in for a long period of time (more than several hours or even several days). Reasons that the OCLA system may not be working properly could be any of the following:

- Your login session has expired
- The GIS system may have been internally updated (functionalities or data were altered)
- In rare cases the system operating software experiences a server update or downtime occurred while you were logged in

In case the system does not work as expected (or the screen is *frozen*), try the instructions in the next section.

#### **Something else is not working**

- Double check that your Internet connection is working properly and without interruption (especially when using a wireless connection). Check that you can open other websites (try several to make sure)
- Double check which browser and version you are using. For recommended browsers read section 3.1.1 *Internet Browsers and Settings* on page 10.

If the Internet connection is working properly, you are using a recommended browser, and you have checked all your browser settings (see section 3.1.1 *Internet Browsers and Settings* on page 10) try the following<sup>1</sup>:

1. Logout from the system, and then login again
2. Close your browser window and restart the browser
3. Restart/reboot your computer and try again

## **How to...**

### **How can I enable a layer for use with the query tool?**

In the *Map Layers Tab*, switch on the second check box (counting from the left) for the desired layer. Refer to the section about the QUERY TOOL on page 27.

### **When using the query tool I get multiple pop-up windows. How can I switch them off?**

From previous queries, query check boxes might still be active for multiple layers. Switch off the second check box (counting from the left) for the desired layers that you do not want to query. Refer to the section about the QUERY TOOL on page 27.

### **I lost my login user name or password. Can I get a new one?**

Contact the entity that provided you with the password and login first. As a second resort contact the organizations listed under section *I need help. Whom can I contact?* on page 31.

### **I need help. Whom can I contact?**

When all other means failed and this guide did not help you to accomplish your task you can contact the following entities:

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<sup>1</sup>If one of the steps solves the problem there is no need to try the next step

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#### **Inquiries regarding data and general content**

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##### **THE WASHINGTON STATE OFFICE OF CIVIL LEGAL AID**

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1112 Quince Street SE  
P.O. Box 41183  
Olympia, WA 98504-1183  
Office (360) 704-4135  
Fax (360) 704-4003  
email: [ocla@ocla.wa.gov](mailto:ocla@ocla.wa.gov)  
<http://www.ocla.wa.gov>

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#### **Technical Support**

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Terra GIS Ltd., Seattle, WA  
2119 Boyer Ave E  
Seattle, WA 98112  
Office (206) 905-1711  
email: [info@terrakis.net](mailto:info@terrakis.net)  
<http://terrakis.net>

You can also access the newest contact information in the OCLA GIS via the *Credits Tab*. Compare Figure 13 on page 17.



## 5 Appendix

The following sections list additional information that did not fit well into the previous chapters or would have interrupted the text flow with a lot of details in an undesirable manner.

### 5.1 Browser Settings

Chapter 3.1.1 INTERNET BROWSERS AND SETTINGS, starting on page 10, describes how to alter the browser settings for both of the main supported browsers, Internet Explorer and Firefox. Some additional Figures below illustrate how to change the settings in order to allow cookies, pop-up windows, and Java Script settings to be activated in order for the OCLA GIS to run properly.

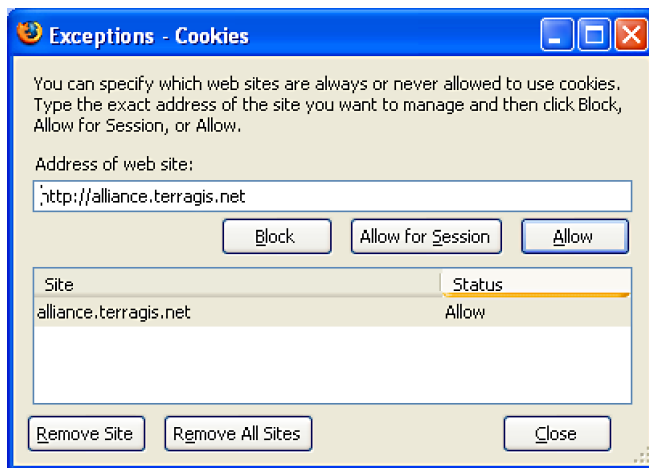


Figure 29: Exceptions for Cookies in Firefox

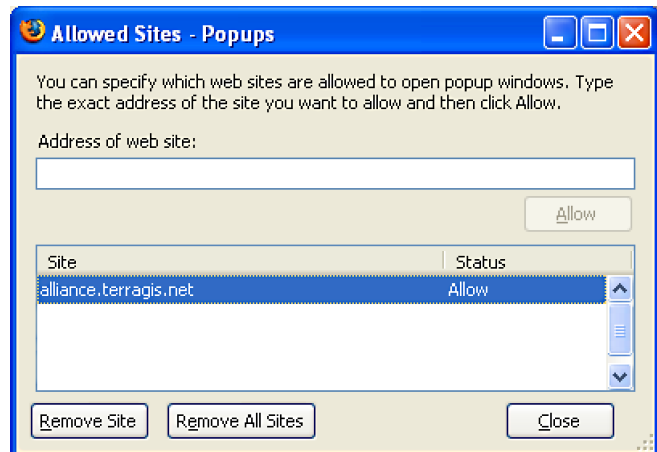


Figure 30: Allowed sites for pop-up windows in Firefox

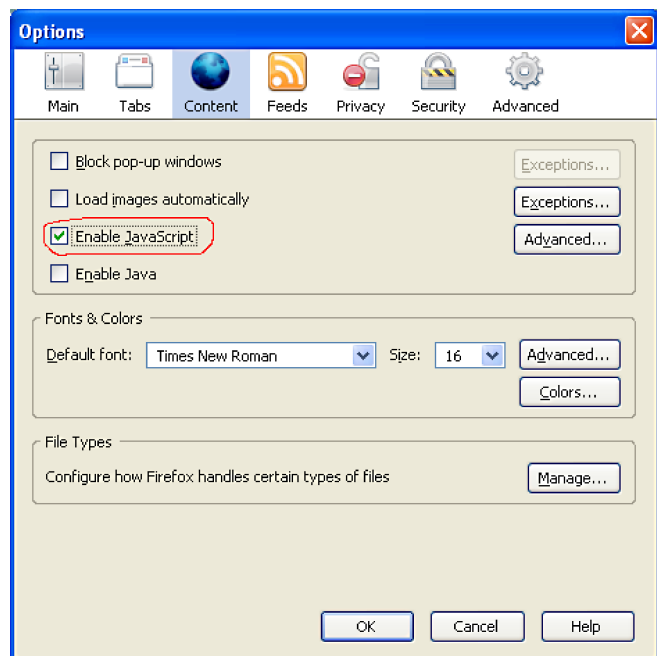


Figure 31: Content - Java Script in Firefox



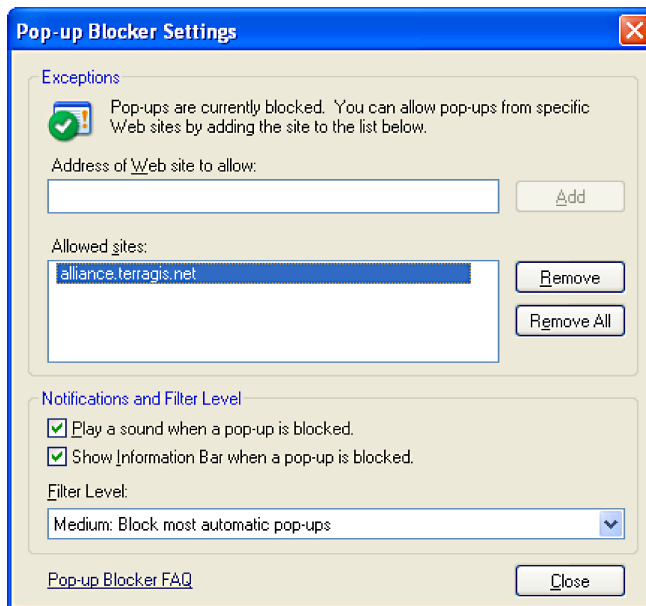


Figure 32: Site Privacy Actions in IE - pop-up window exceptions

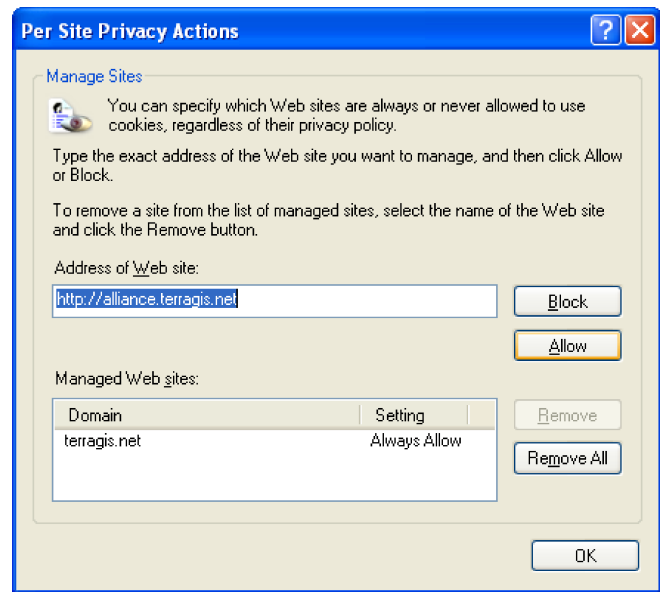


Figure 34: Site Privacy Settings in IE - exceptions for cookies

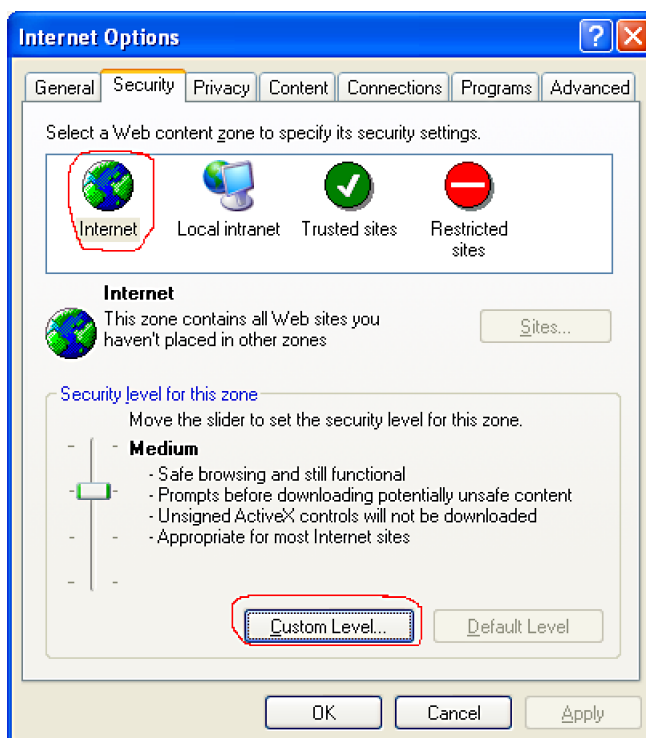


Figure 33: Internet Options - Security - Internet - Custom level

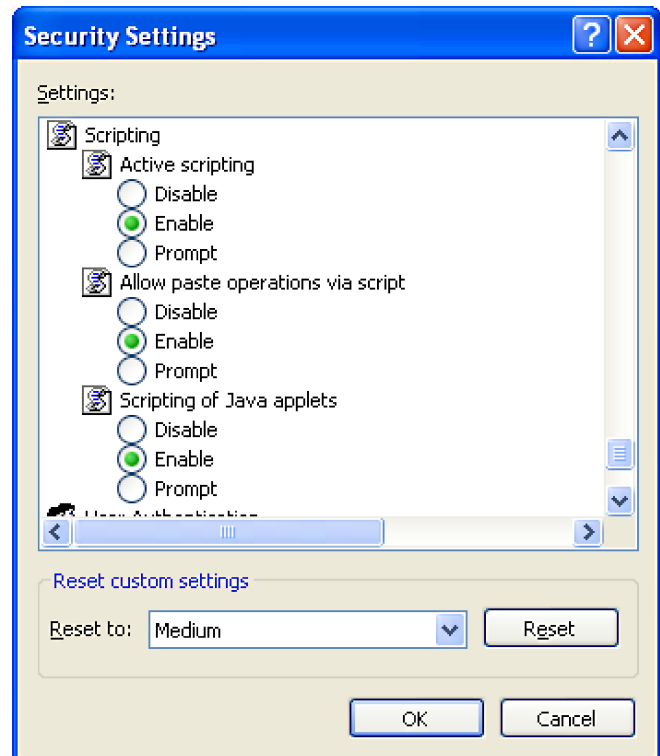


Figure 35: Security Settings - Enabling Java Script in IE

## 5.2 Technical Notes on the Software used in the OCLA GIS

The OCLA GIS system is based on a software stack of Open Source Software. Table 7 on page 35 lists the main components used for building the system. Linux is being used as the server operating system. Apache Web Server, PostgreSQL, PostGIS, Map Server, Mapbender and PHP are other components that are used in an inter-operable system that makes up the application. For a more detailed description consult the OCLA GIS Technical System Guide or contact Terra GIS.

### 5.2.1 Open Source Geospatial Software

Open source means that the source code is available to the general public for use, distribution, and modification from its original design free of charge (among a long list of other requirements). *Open Source* is not equal to *Open Standards*.



Figure 36: Logo of the Open Geospatial Consortium

While most open source geospatial software is built on the standards of the OPEN GEOSPATIAL CONSORTIUM (OGC), the term *Open Source* is not synonymous with *Open Standards* because both proprietary and open source software can be compliant with the OGC Open Standards <http://www.opengeospatial.org>.



Figure 37: Logo of OSGeo

OSGeo is the organization that supports the development of the highest quality open source geospatial software <http://www.osgeo.org>.

### MapServer

MapServer is an Open Source development environment for building spatially-enabled internet applications. MapServer excels at rendering spatial data (maps, images, and vector data) for the web. MapServer was originally developed at the University of Minnesota (UMN). Presently, the MapServer project is hosted by the TerraSIP project, a NASA sponsored project between the UMN and consortium of land management interests. MapServer is written in the C programming language. Website: <http://mapserver.org>

### Mapbender

Mapbender is a comprehensive framework to build web mapping applications and spatial information systems. It includes client and server side components and provides a data model and interfaces for displaying, navigating and querying map services such as WMS<sup>1</sup> and WFS<sup>2</sup>. Furthermore the framework provides authentication and authorization services, OWS proxy functionality, management interfaces for user, group and service administration in Web GIS projects. Mapbender is based on PHP (see section 5.2.2 on page 35). Website: <http://www.mapbender.org/>

### PostGIS

PostGIS is an extension for PostgreSQL (a powerful open source object-relational database). It adds support for geographic objects to PostgreSQL. This allows the PostgreSQL server to be used as a back end spatial database for geographic information systems (GIS). Spatial operations and analysis simply mean running a (spatial) SQL query onto the database. PostGIS is written mostly in the C programming language. Website: <http://postgis.refractory.net/>

<sup>1</sup>Web Mapping Service

<sup>2</sup>Web Feature Service

Table 7: The software stack of the OCLA GIS

Type	Software	Source
Server operating system	Linux (Host GIS version)	<a href="http://www.hostgis.com/linux">http://www.hostgis.com/linux</a>
Web server software	Apache	<a href="http://www.apache.org">http://www.apache.org</a>
Data base software	PostgreSQL	<a href="http://www.postgresql.org">http://www.postgresql.org</a>
Spatial extension for PostgreSQL	PostGIS	<a href="http://postgis.refrations.net">http://postgis.refrations.net</a>
Web Mapping Application	MapServer 5	<a href="http://MapServer.gis.umn.edu">http://MapServer.gis.umn.edu</a>
	Mapbender 2.4.5	<a href="http://mapbender.org">http://mapbender.org</a>
Additional GIS software	GDAL/OGR	<a href="http://www.gdal.org">http://www.gdal.org</a>
Programming languages	PHP	<a href="http://www.php.net">http://www.php.net</a>
	Html, CSS, Java Script, and Ajax	N/A

### 5.2.2 Other Open Source Software

#### Apache

Apache is a popular software for running web server applications. The Apache HTTP Server currently serves about half of all websites on the world wide web (as of June 2008). Apache HTTP Server is available for servers running Unix/Linux and MS Windows operating systems. Apache is written in the C programming language

#### PHP

PHP is a computer programming language, sometimes also (only) called a scripting language. PHP can be directly embedded in HTML pages and run server side scripts. It was initially developed to replace Perl scripts on the initial author's web page and the name PHP originally stood for *Personal Home Page* but was later changed to the recursive acronym *Hypertext Preprocessor*. Today PHP is a widely-used scripting language that is especially suited for web development.

### 5.3 GIS Data Layers

The tables on the following pages list the GIS data layers that are used in the OCLA GIS <sup>3</sup>.

<sup>3</sup>For information about data sources of demographic data layers see table 20

Table 8: GIS Layers - Census Counties Year 2000

Layer	Type	Visible	switch on/off
People in Institutions - number	polygon	yes	yes
Percent Non English	polygon	yes	yes
Non English - number	polygon	yes	yes
Percent No Phone Service	polygon	yes	yes
No Phone Service - number	polygon	yes	yes
American Indian percent	polygon	yes	yes
American Indian - number	polygon	yes	yes
Asian percent	polygon	yes	yes
Asian - number	polygon	yes	yes
Black percent	polygon	yes	yes
Black - number	polygon	yes	yes
Mixed Race percent	polygon	yes	yes
Mixed Race - number	polygon	yes	yes
Pacific Islander percent	polygon	yes	yes
Pacific Islander number	polygon	yes	yes
White percent	polygon	yes	yes
White - number	polygon	yes	yes
Hispanic percent	polygon	yes	yes
Hispanic - number	polygon	yes	yes
Other Race percent	polygon	yes	yes
Other Race - number	polygon	yes	yes
Percent 17 and Younger - number	polygon	yes	yes
Seventeen and Younger	polygon	yes	yes
Seventeen and Younger in Poverty - number	polygon	yes	yes
Percent Sixty-five and Older	polygon	yes	yes
Sixty-five and Older - number	polygon	yes	yes
Percent Sixty-five and Older in Poverty	polygon	yes	yes
Percentage of People in Poverty per County 2000	polygon	yes	yes
Total Number of People in Poverty / County 2000	polygon	yes	yes

Table 9: GIS Layers - Census Tracts Year 2000

Layer	Type	Visible	switch on/off
People in Institutions - number	polygon	yes	yes
Percent Non English	polygon	yes	yes
Non English - number	polygon	yes	yes
Percent No Phone Service	polygon	yes	yes
No Phone Service - number	polygon	yes	yes
American Indian percent	polygon	yes	yes
American Indian - number	polygon	yes	yes
Asian percent	polygon	yes	yes
Asian - number	polygon	yes	yes
Black percent	polygon	yes	yes
Black - number	polygon	yes	yes
Mixed Race percent	polygon	yes	yes
Mixed Race - number	polygon	yes	yes
Pacific Islander percent	polygon	yes	yes
Pacific Islander - number	polygon	yes	yes
White percent	polygon	yes	yes
White - number	polygon	yes	yes
Hispanic percent	polygon	yes	yes
Hispanic - number polygon	yes	yes	
Other Race percent	polygon	yes	yes
Other Race - number	polygon	yes	yes
Seventeen and Younger in Poverty - number	polygon	yes	yes
Percent 17 and Younger	polygon	yes	yes
Seventeen and Younger - number	polygon	yes	yes
Sixty-five and Older in Poverty	polygon	yes	yes
Percent Sixty-five and Older	polygon	yes	yes
Sixtyfive and Older Number - number	polygon	yes	yes
Percentage of People in Poverty per Tract	polygon	yes	yes
Total Number of People in Poverty per Tract	polygon	yes	yes

Table 10: GIS Layers - Census Counties Year 2006

Layer	Type	Visible	switch on/off
Percentage of People in Poverty per County 2006 (SAIPE)	polygon	yes	yes
Total Number of People in Poverty per County 2006 (SAIPE)	polygon	yes	yes
125 Percentage of People in Poverty per County 2006 (ACS)	polygon	yes	yes
125 Total Number of People in Poverty per County 2006 (ACS)	polygon	yes	yes

Table 11: GIS Layers - Base Layers

Layer	Type	Visible	switch on/off
Cities	polygon	yes	yes
Place Features	Text /Label	yes	no
Populated Places	Text /Label	yes	no
Parks	polygon	yes	yes
Uninhabited Areas	polygon	yes	yes
Indian Reservations	polygon	yes	yes
Rivers and Streams	lines	yes	yes
Puget Sound	polygon	yes	no
Ocean	polygon	yes	no
Lakes	polygon	yes	yes
Roads	lines	yes	yes
Railway	lines	yes	yes
Public Facilities	point	yes	yes
City Names	Text /Label	yes	no

Table 12: GIS Layers - Boundaries

Layer	Type	Visible	switch on/off
Congressional Districts	polygon outline	yes	yes
Legislative Districts	polygon outline	yes	yes
Counties	polygon outline	yes	yes
County Labels	Text /Label	yes	yes
Tract Boundaries	polygon outline	yes	yes



Table 13: GIS Layers - Client Service Resources

Layer	Type	Visible	switch on/off
WSBA Members	point	yes	yes
Northwest Justice Project	point	yes	yes
Northwest Justice Project FTE Label	Text /Label	yes	yes
Columbia Legal Services	point	yes	yes
Columbia Legal Services FTE Label	Text /Label	yes	yes
Pro Bono Programs	point	yes	yes
Specialty Legal Aid Providers	point	yes	yes
Mediation Services	point	yes	yes
Law School	point	yes	yes

Table 14: GIS Layers - Background

Layer	Type	Visible	switch on/off
States	polygon	yes	no
Topography	raster	yes	yes
Counties	polygon	yes	no
Providers by Region (2007)	polygon	no	no
Providers Counties	polygon	no	no
Puget Sound	polygon	yes	no
Ocean	polygon	yes	no
Cities	polygon	yes	no

Table 15: GIS Layers - Other Info

Layer	Type	Visible	switch on/off
Farm Workers (2000 Larson Study)	polygon	yes	yes
WSBA Members per ZIP code area (2008)	polygon	yes	yes
Percentage of People in Poverty per Tract 1980	polygon	yes	yes
Percentage of People in Poverty per Tract 1990	polygon	yes	yes
Percentage of People in Poverty per Tract 2000	polygon	yes	yes

Table 16: GIS Layers - Comparative Demographics

Layer	Type	Visible	switch on/off
Increase Number of People in Poverty per County 2000-2006	polygon	yes	yes
Increase Percent of People in Poverty per County 2000-2006	polygon	yes	yes

Table 17: Conflicting GIS data layers in the OCLA GIS

Layer	Area	Layer	Area
People in Institutions	Tract	Other Race number	County
Percent Non English	Tract	Pacific Islander number	County
Non English	Tract	Asian number	County
Percent No Phone Service	Tract	American Indian number	County
No Phone Service	Tract	Black number	County
Mixed Race percent	Tract	White number	County
Other Race percent	Tract	Seventeen and Younger in Poverty	County
Pacific Islander percent	Tract	Percent 17 and Younger	County
Asian percent	Tract	Seventeen and Younger	County
American Indian percent	Tract	Sixtyfive plus in Poverty	County
Black percent	Tract	Percent 65plus	County
White percent	Tract	FTEs per Region	County
Mixed Race number	Tract	Percentage of People in Poverty	County
Other Race number	Tract	Total Number of People in Poverty	County
Pacific Islander number	Tract	Percentage of People in Poverty 2000	County
Asian number	Tract	Percentage of People in Poverty 2006	County
American Indian number	Tract	Total Number of People in Poverty 2000	County
Black number	Tract	Total Number of People in Poverty 2006	County
White number	Tract	Increase Number of People in Poverty 2000-2006	County
Seventeen and Younger in Poverty	Tract	Increase Percent of People in Poverty 2000-2006	County
Percent 17 and Younger	Tract	125 Total Number of People in Poverty 2006	County
Seventeen and Younger	Tract	Active Attorneys	County
Sixtyfive plus in Poverty	Tract	WSBA Members	ZIP code
Percent 65plus	Tract	Hispanic percent	Tract
People in Institutions	County	Hispanic number	Tract
Farm Workers	County	Sixtyfive and Older Number	Tract
Percent Non English	County	Hispanic percent	Tract
Non English	County	Hispanic number	Tract
Percent No Phone Service	County	Sixtyfive and Older	County
No Phone Service	County	125 Percentage of People in Poverty 2000	County
Mixed Race percent	County	125 Total Number of People in Poverty 2000	County
Other Race percent	County	125 Percentage of People in Poverty 2006	County
Pacific Islander percent	County	Sixtyfive and Older Number	Tract
Asian percent	County	Percentage of People in Poverty	Tract
American Indian percent	County	Total Number of People in Poverty	Tract
Black percent	County	Percentage of People in Poverty 1980	Tract
White percent	County	Percentage of People in Poverty 1990	Tract
Mixed Race number	County	Percentage of People in Poverty 2000	Tract

Table 18: OCLA GIS Tools



















off	on	Tool name	Description
		Zoom in	The ZOOM IN TOOL allows you to focus in on a smaller, more detailed region of the map.
		Zoom out	The ZOOM OUT TOOL allows you to focus on a larger, more general area of the map.
		Pan	The PAN TOOL allows you to change the extent of the map without changing the map scale.
		Zoom by rectangle	The ZOOM BY RECTANGLE TOOL allows you to zoom directly into an specific area.
		Set map center	The SET MAP CENTER TOOL allows you to click on the map to specify a new map center.
		Display complete map	The DISPLAY COMPLETE MAP TOOL allows you reset the map extent to show the initial extent showing the State of Washington as a whole.
		Redraw	The REDRAW TOOL allows you to force the mapping application to generate a new map in case something does not appear to have re-freshed the way you expected.
		Back	The BACK TOOL allows you to step back to the last state of the map. You can go back several steps .
		Forward	The FORWARD TOOL allows you to go forward to the next map view you generated and display it.
		Measure Distance	The MEASURE DISTANCE TOOL allows you to measure distances on the map. Distances as total distance and distances for each of the measured segments will be displayed in miles along measurement lines.
		Erase Lines	The ERASE LINES TOOL allows you to reset the measurement lines and distance results that are displayed on the map after you used the measure tool. The tool is visible in the upper left hand corner of the map display after activating the MEASURE DISTANCE TOOL.
		Close Polygon	The CLOSE POLYGON TOOL allows you to create a polygon from the line segments created with the measure tool. The tool is visible in the upper left hand corner of the map display after activating the MEASURE DISTANCE TOOL.

Table 19: OCLA GIS Tools 2












off	on	Tool name	Description
		Measure Info	Clicking once on the MEASURE INFO TOOL will open a pop-up window and display the total distance of the measured line segments or in case you created a polygon the area and spatial perimeter of the area enclosed by the polygon. The tool will be visible in the upper left hand corner of the map display after activating the MEASURE DISTANCE TOOL.
		Query	The QUERY TOOL allows you to retrieve attributes of most GIS layers on the map. Information about each layer that has the second (right hand) check box activated in the <i>Map Layers Tab</i> will be retrieved.
		Demographic Summary	The DEMOGRAPHIC SUMMARY TOOL is a special variation of the query tool. It allows to retrieve demographic information about any location on the map.
		Provider Summary	The PROVIDER SUMMARY TOOL is a special variation of the QUERY TOOL. It allows to retrieve information about civil legal aid providers on county and aggregated by planning region level. The information will be displayed in a pop-up window.
		Query Builder	The QUERY BUILDER AND REPORT TOOL is a comprehensive tool that allows to run database queries, to view the query results in tabular form and on the map and provides functionality to download the queried data in MS Excel file format.
		Quit Session	By clicking once on the QUIT SESSION TOOL you can log out of the OCLA GIS.
		Optimize map size to browser window	The OPTIMIZE MAP SIZE TO BROWSER WINDOW TOOL allows you to optimize the map display size corresponding to the current browser window size.

Table 20: Sources of Demographic GIS Data Layers

Name	Data Source	Link
SAIPE	US Census Bureau, Small Area Income and Poverty Estimates 2006 (Model-based Estimates for States, Counties, and School Districts)	<a href="http://www.census.gov/hhes/www/saipe/">http://www.census.gov/hhes/www/saipe/</a>
ACS	US Census Bureau, American Community Survey 2006. Poverty Status imputed at county level (125% of FPL)	<a href="http://factfinder.census.gov/servlet/STTable?_bm=y&amp;-geo_id=04000US53&amp;-qr_name=ACS_2006_EST_G00_S1701&amp;-ds_name=ACS_2006_EST_G00_">http://factfinder.census.gov/servlet/STTable?_bm=y&amp;-geo_id=04000US53&amp;-qr_name=ACS_2006_EST_G00_S1701&amp;-ds_name=ACS_2006_EST_G00_</a>
2000 Stats county and census tract	US Census Bureau, 2000 Decennial Census (100% + 125% of FPL)	<a href="http://factfinder.census.gov">http://factfinder.census.gov</a>
Larson	2000 Larson Study	<a href="http://www.ncfh.org/enumeration/PDF11%20Washington.pdf">http://www.ncfh.org/enumeration/PDF11%20Washington.pdf</a>
PSRC	Puget Sound Regional Council Statistical Information (7/2008). Forecast Analysis Zones (FAZ) 2000-2010 for the Puget Sound area. <a href="http://www.psrc.org/data/gis/shapefiles">http://www.psrc.org/data/gis/shapefiles</a>	

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