

Special Population Planner

Version 4.0
January 2007



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Overview of SPP

General Background

Emergencies happen every day. Many are caused by storms or auto accidents and can be planned for, if not predicted. Emergencies resulting from natural hazards often affect a large number of people, and planning for them can be difficult, since knowledge of the needs of the people involved is generally unavailable. Emergencies resulting from accidents at industrial and military facilities can also be large scale in nature if people must be evacuated or sheltered in place. Federal planning for large scale emergencies is the responsibility of the Federal Emergency Management Agency (FEMA), which provides assistance to various emergency management agencies at the national, state and local level. More information about FEMA is available at <http://www.fema.gov/>.

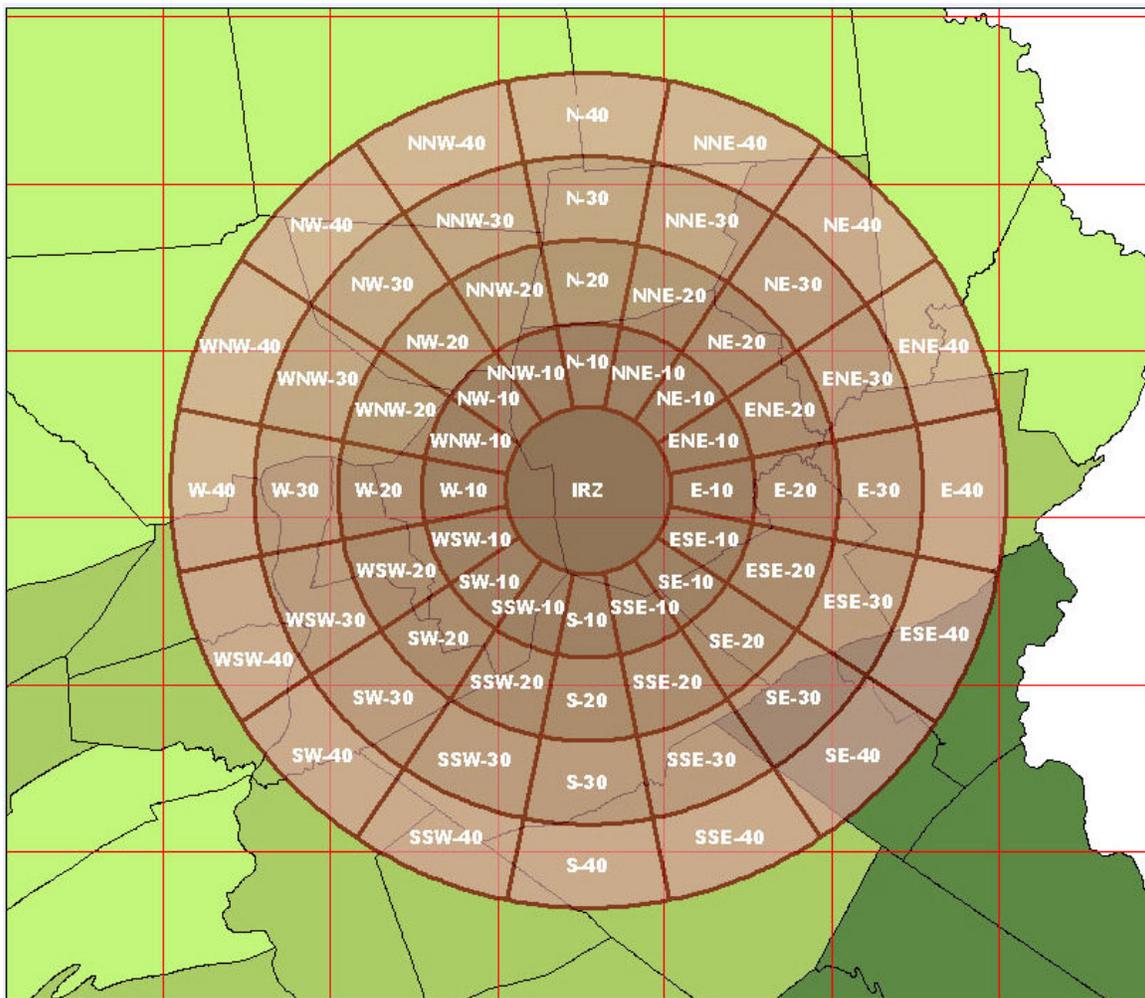
The purpose of the Special Population Planner (SPP) is to help emergency planners address the needs of persons with special needs. The exact definition of "special population" is a policy decision. Policymakers have included a variety of groups in this term, such as persons with disabilities, those who do not have vehicles with which to evacuate, children who are unattended at times (latchkey children), and many others. The SPP was developed initially for the Alabama Emergency Management Agency as part of its Chemical Stockpile Emergency Preparedness Program (CSEPP), which aids emergency planning and preparedness in communities surrounding military installations across the United States where chemical weapons are stored pending their destruction under federal law. Like that specialized application, this open-source version contains a set of specialized Geographic Information System (GIS) tools to facilitate emergency planning on behalf of persons with special needs, regardless of how the term is defined.

While the original SPP system was developed for emergency planning relating to chemical hazards, it can be applied to other threats as well. It is apparent from Hurricane Katrina and other natural and man-made disasters that many of the problems posed by emergency planning for a chemical weapons agent release are shared by other hazards as well. The notion that emergency planning shares common functions underlies the decision by FEMA to include the Chemical Stockpile Emergency Preparedness Program (CSEPP) in its "all-hazards" planning approach. The CSEPP's official planning guidance operationalizes this approach by suggesting that state and local CSEPP emergency plans "should be appended to the existing all-hazards emergency plan."

The SPP is programmed as a set of tools within an ESRI ArcMap 9.1 project. ArcMap is a component of both ESRI ArcGIS 9.1 and ESRI ArcView 9.1, and it provides a rich GIS user interface for viewing spatial and tabular data, analyzing

it, and producing output reports and maps. This GIS interface has been augmented with the SPP tools for a user interface that provides custom functionality for emergency planning. The system as released also includes some hypothetical example records for special needs populations, facilities, resources, control points and sirens sufficient for showing how the system would work with real information. A GIS database is included with some publicly available example layers.

The SPP is designed to support emergency planners as they address emergency management issues, and includes capabilities that support the collection and importing of data, the review of data in a spatial context, and GIS tools for emergency planning.



Area with Emergency Zones Defined

The SPP system allows for the identification and categorization of response zones to allow for multiple levels of preparedness. An Immediate Response Zone (IRZ) might be designated as the area 0 to 10 miles from a facility where the response would be the most urgent. SPP can support more than one set of

planning zones to accommodate different types of emergencies or the different jurisdictions of emergency response organizations. These areas can be delineated by any number of criteria that make sense for the area. An area like New Orleans might designate response zones based on the depth above/below sea level, or an urban area may categorize an IRZ as the "central business district" with the PAZ encompassing the larger outlying area.

Many of the sites involved in the CSEPP currently use an integrated emergency response information system to support their emergency management planning. The D2-Puff system (including or WebPuff 2.1) by Innovative Emergency Management, Inc. is the main software serving this purpose. More information on D2-Puff can be found at www.ieminc.com. SPP differs from D2-Puff in that it is designed for planning, not response to assist those with special needs, is programmed within a popular commercial GIS software system, and can be loaded with large amounts of data to support all hazards emergency planning.

Important Warning

A key aspect of the SPP architecture is its inclusion of a database, or "registry," to identify persons with special needs, along with such individual characteristics as their contact information and the nature of each one's special needs.

Registry-based emergency planning is one way to enable emergency responses to address the specialized needs of individuals or groups, but registries also raise a host of significant privacy, confidentiality, ethical, legal, and liability concerns, which are outside of the scope of this manual. **SPP users are warned to consider these issues with great care before initiating a special population registry or database.**

Overview of Special Population Planner

SPP, developed by Argonne National Laboratory, is used to store and manage information about persons with special needs, track materials and training provided to them, and assist in the creation of plans for responding to possible emergencies. It is designed to simplify the preparation and maintenance of maps that show special-needs populations, facilities requiring special planning, evacuation routes, control points for managing traffic flows, alert routes, shelter in place zones, and resources. SPP presents relevant information to the planner in a graphical interface to reduce the effort needed to prepare plans that are specific to a certain scenario. Although SPP was explicitly designed for preparing response plans for possible chemical weapons emergencies, it is also a general-purpose tool suitable for planning for other types of emergencies.

The system has three main elements:

- Databases - that will usually be confidential and require careful protection contain the names and other key data about persons and facilities that would need special emergency planning efforts, in addition to resources to support planning efforts and control points for managing traffic flows,
- GIS layers that allow the planning to be done in a spatial context, and
- GIS software with customized tools that allow planners to integrate this information into plans.

SPP contains the tools needed to support four basic activities. These are:

- Using the data to prepare response plans,
- Updating the data,
- Automatically generating reports and maps, and
- Managing and updating plans and plan-specific data.

The process of preparing and editing plans involves using tools to present the data in an easily viewed map format, with tools to indicate evacuation routes, alert routes, control points, and resources. Maintenance of the data is accomplished by either loading external files or directly editing existing files.

SPP makes data tables and GIS layers more accessible and useful to planners for two purposes.

- The first purpose of SPP is to be a planning toolkit, which allows the user to query and examine data, create and retrieve emergency response plans, and generate maps and reports.
- The second purpose is database maintenance, which includes tools to track resources and training, edit GIS layers, look up supporting information efficiently, and maintain the supporting database tables. Maintaining the data tables is sometimes handled by an administrator

rather than allowing all users to manipulate the data. The planning process depends on accurate information regarding the locations of people and places being planned for.

The SPP is designed to work with a set of planning zones. Users can define emergency events, specify the planning zones they affect, and formulate plans for them. When an emergency event is selected for planning, a map of the planning zones and supporting GIS layers associated with the event is generated and planning tools are enabled. The planning tools include customized menus, buttons, tools, and dialogs, as well as standard ArcView functionality.

SPP augments the standard ArcView tools with customized capabilities that are geared towards emergency planning. A written plan and map view can be stored and recalled rapidly at a later time. Reports and maps are generated from current information in the database. Although it is essential to maintain a hard copy version of the plans, many elements of the electronic plans are dynamic and will reflect changes that are made to the data. Based on this new information, users can revise their planning decisions.

What SPP Can Do For You

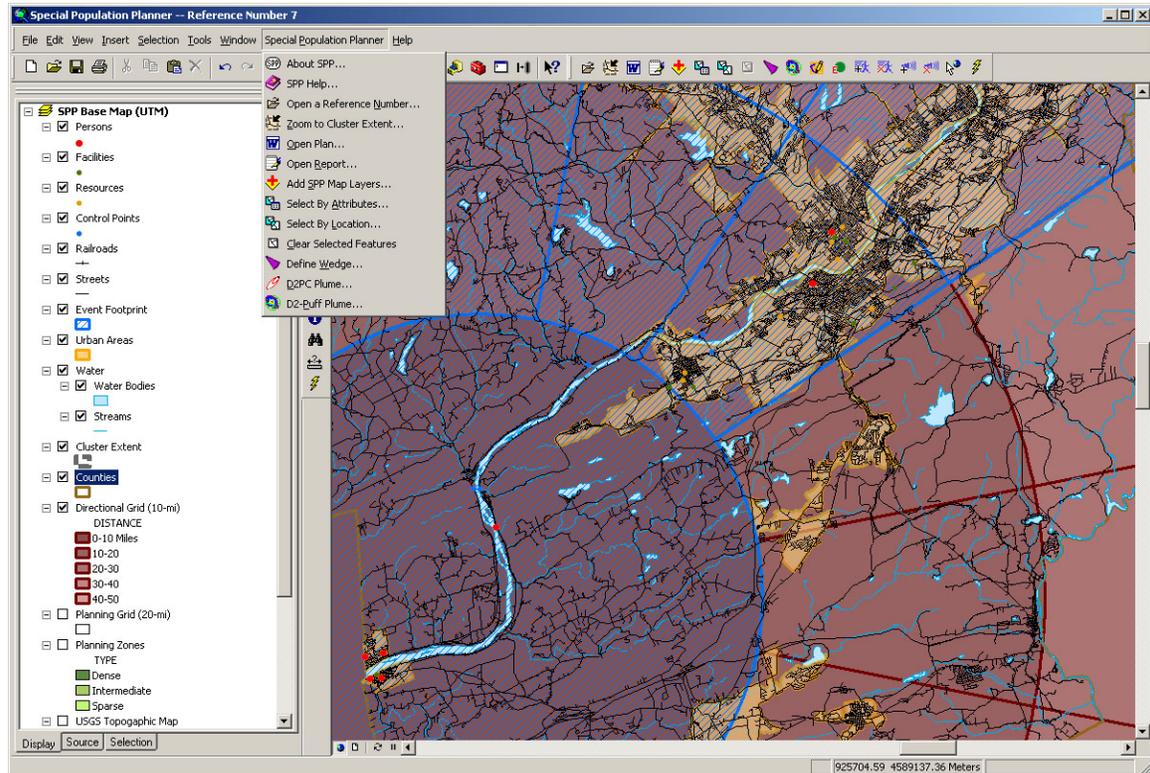
SPP can be used to accomplish a variety of tasks, including but not limited to:

- Identifying the emergency planning zone of resident who calls your organization,
- Identifying persons with special needs who have conditions requiring special training or equipment,
- Printing reports and exporting data,
- Making a plan,
- Updating special-needs population data,
- Editing a point features,
- Identifying the EPZs and persons with special needs affected by an emergency event,
- Mapping evacuation routes and alert routes,
- Identifying persons with special needs within hearing range of an alert route, and
- Locating control points at key intersections of evacuation routes.

Main Screen of the SPP System

Main Screen of the Special Population Planner

To start the Special Population Planner, double click on the SPP icon on the desktop or choose Special Population Planner from the Start Menu. ArcView will open, followed by SPP, which opens with a splash screen and the most recent planning map view.

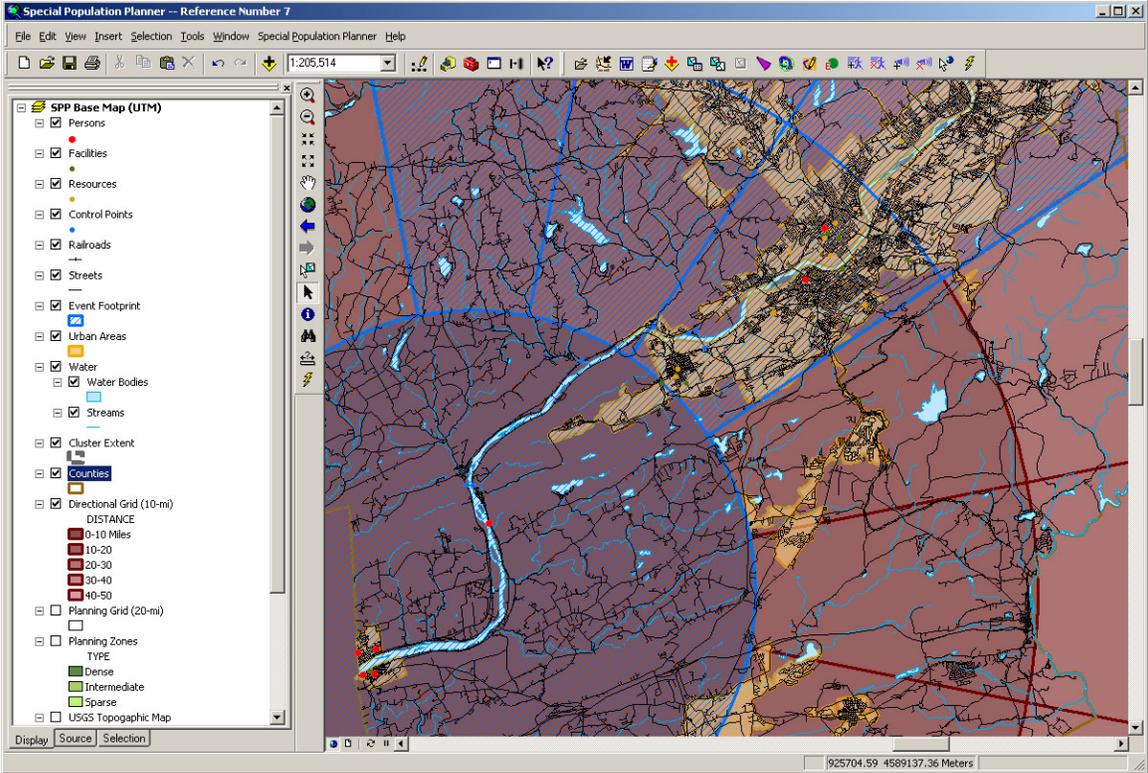


The **Table of Contents** area shown to the left of the map lists the various data layers, or themes, for display on the map. The checked items are drawn on the map. Only a few of the available layers are included by default. Use the *Add SPP Map Layers* button to add more. The display order of the layers may be changed by left-clicking on a layer name and dragging it to the desired position in the contents list. When the map is drawn, the bottom layer in the Table of Contents is drawn first, and layers above it are drawn on top of it in the map. For this reason, line and point features should usually be kept near the top of the Table of Contents to avoid having them hidden by solid polygon features or images. Some themes, such as Cluster Extent, are generated by the software automatically.

To remove a layer from the Table of Contents, right click on the layer name and choose *Remove* from the pop-up menu. This action only removes the layer from

Create a New Area View

If an area view has not been created already, a new view can be created and defined with a new reference number.



Overview of ArcView Controls

Standard ArcView Controls

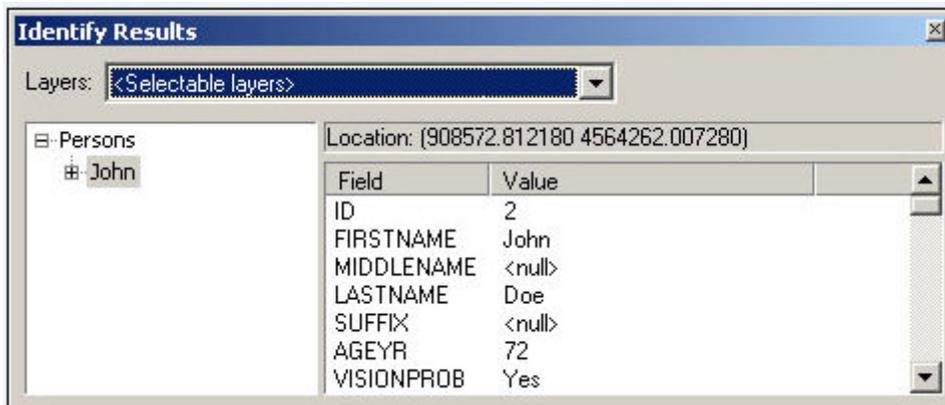
ArcView GIS is a desktop GIS. A GIS is a combination of software and a database that links information to locations which allows the user to manage, visualize and analyze data in new and useful ways. SPP is a software product that adds specialized tools to ArcView, and the ArcView software must be licensed. Some of the standard tools in the ArcView software will be frequently used during the operation of SPP. These tools are briefly presented here, and are described in full detail in the standard ArcView manuals and help files. Changes and upgrades to the ArcView software will affect these tools, and the user will benefit from reviewing the ArcView manuals directly. Complete explanation of ArcView functions is outside of the scope of this manual. The material in this section is offered only for user convenience. Please consult ArcView documentation or other support in case of problems using ArcView.

What's This

The *What's This* button can be used to access Help for the ArcView menus, buttons and tools. To open Help, click on the *What's This* button and then click on the desired menu entry, button or tool to access Help information.

Identify

The *Identify* tool brings up a table of information about features clicked on the map. First click on the icon for the tool, then click on the features of interest on the map. Information is displayed for the selectable layers. Note the Layers dropdown list at the top of the Identify dialog which controls the layer(s) from which the tool will display data.



Select Feature

The *Select Feature* tool is used to select items in a layer directly from the map. This highlights them on the map, and the selected features can then be used in many standard and SPP tools. First use the *Set Selectable Layers* dialog under the Selection menu, or the *Selection* tab at the bottom of the Table of Contents to designate the layers of interest. The tool can be used with a single click or a drag of a rectangular area. Holding the Shift key during the selection allows features to be added or dropped from the selected set. The *Clear Selected Features* button found on the SPP toolbar or in the Selection menu will clear the selection.

Zoom In

The *Zoom In* tool enlarges the map scale in the view (while reducing its geographic extent). It also centers the zoomed view on the clicked location. Dragging a box with the Zoom In tool creates a map view of the area of the box.

Fixed Zoom In

This button enlarges the map scale without changing the center of the view.

Zoom Out

Clicking on a point in the current map view with the *Zoom Out* tool will center the map on the location and reduce the map scale (while increasing its geographic extent). Dragging a box with this tool reduces the display scale in proportion to the size of the box. A small box will greatly reduce the scale, while a large box will reduce it slightly.

Fixed Zoom Out

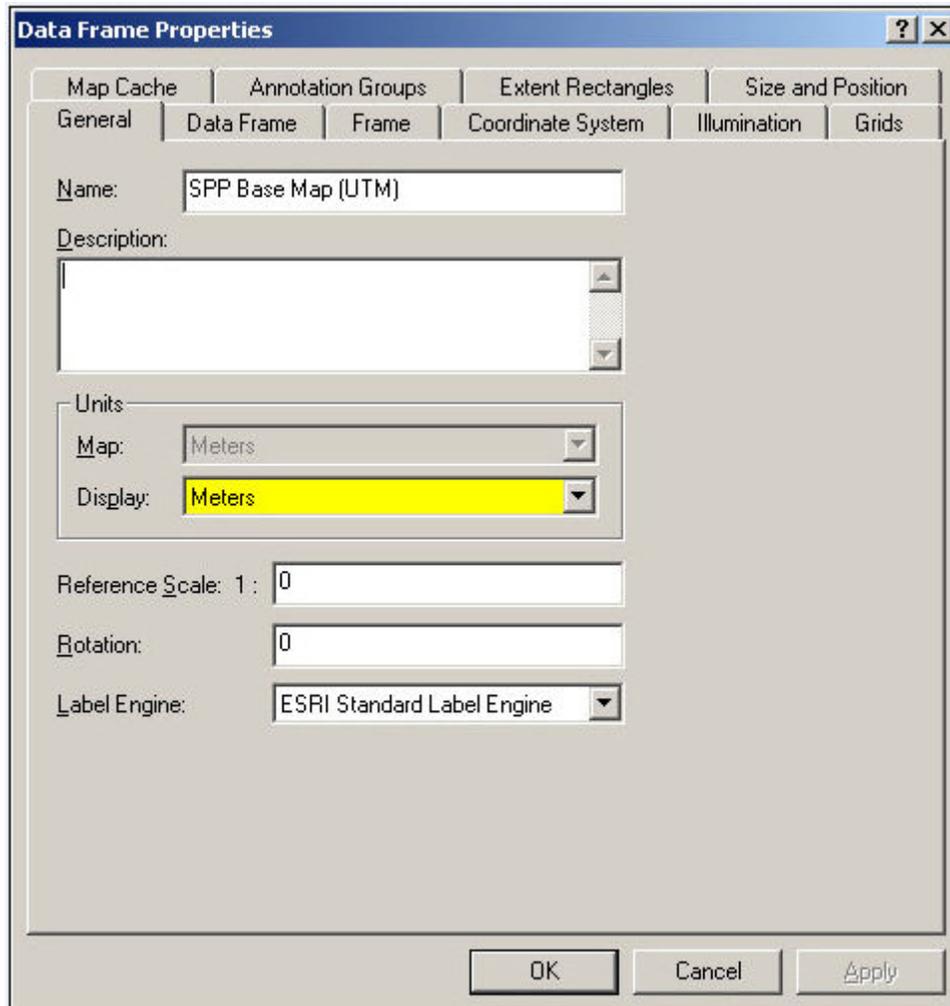
Clicking on the *Zoom Out* button reduces the scale of the map without changing the center of the view.

Pan

The *Pan* tool moves the map center within the view window. Click on a point on the view and drag it to the desired position within the window. The screen will refresh automatically. The scroll bars on the sides of the map can also be used for this purpose.

Measure

Linear distances between points can be measured by clicking on a point, then clicking along a line towards the desired end point, and then double-clicking to stop. The distance is shown at the bottom of the ArcView application window. To change the measurement units, choose *Data Frame Properties* from the View menu and specify the desired measurement units in the General tab.



Full Extent

This tool zooms the map view out to the fullest extent of all layers in the Table of Contents.

Go Back to Previous Extent

This tool returns the map view to the extent that immediately preceded the current extent.

Go to Next Extent

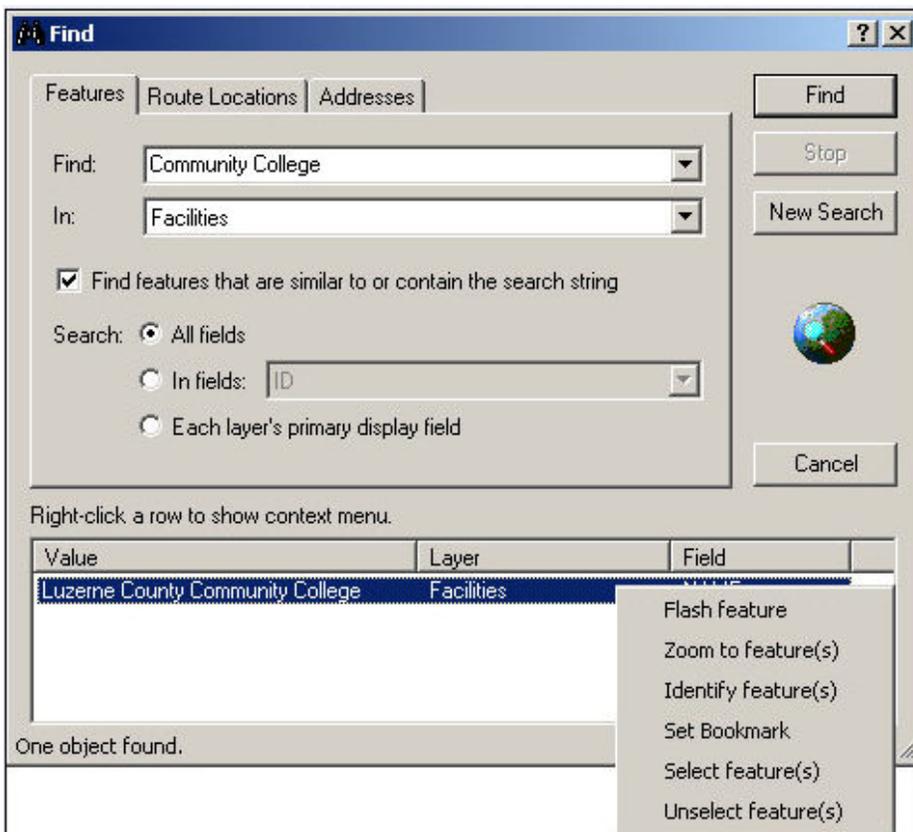
This tool moves to the next map extent after *Go Back to Previous Extent* has been used.

Select Elements

The *Select Elements* tool may be used to select graphics and text for various actions.

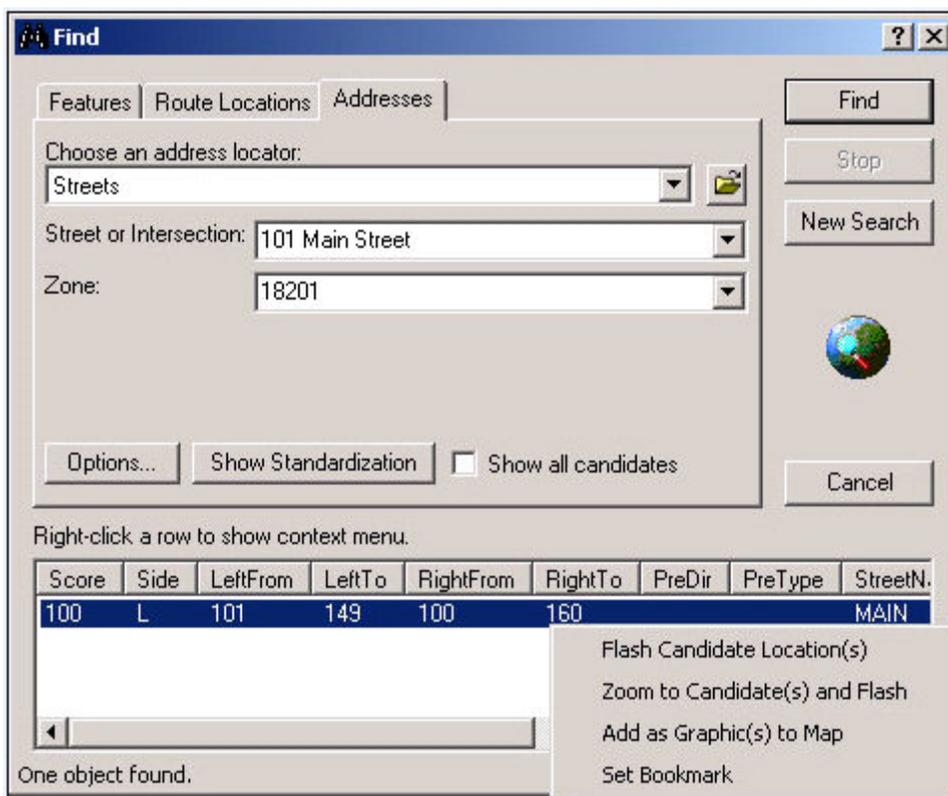
Find

This button opens the *Find* dialog. The Features tab allows the user to find features in GIS layers and then perform one or more specific actions on the feature(s) found, by right-clicking on them in the list.



The *Route Locations* tab in this dialog does not apply to existing SPP data or needed functions.

The *Addresses* tab of the Find dialog will search for a street address location. It requires a geocoding service, which for the SPP system is the Streets layer. If the geocoding service "streets" is not listed, use the browse button to add it. It is located in the SPP GIS database directory "Spp_Server\Data\". Use the street and zone fields to specify the address and zip code, for example, "101 Main Street," "18201," and then click *Find*. If the address can be located, one or more matches will appear at the bottom of the dialog. Right click on an entry to use the pop-up menu of available actions.

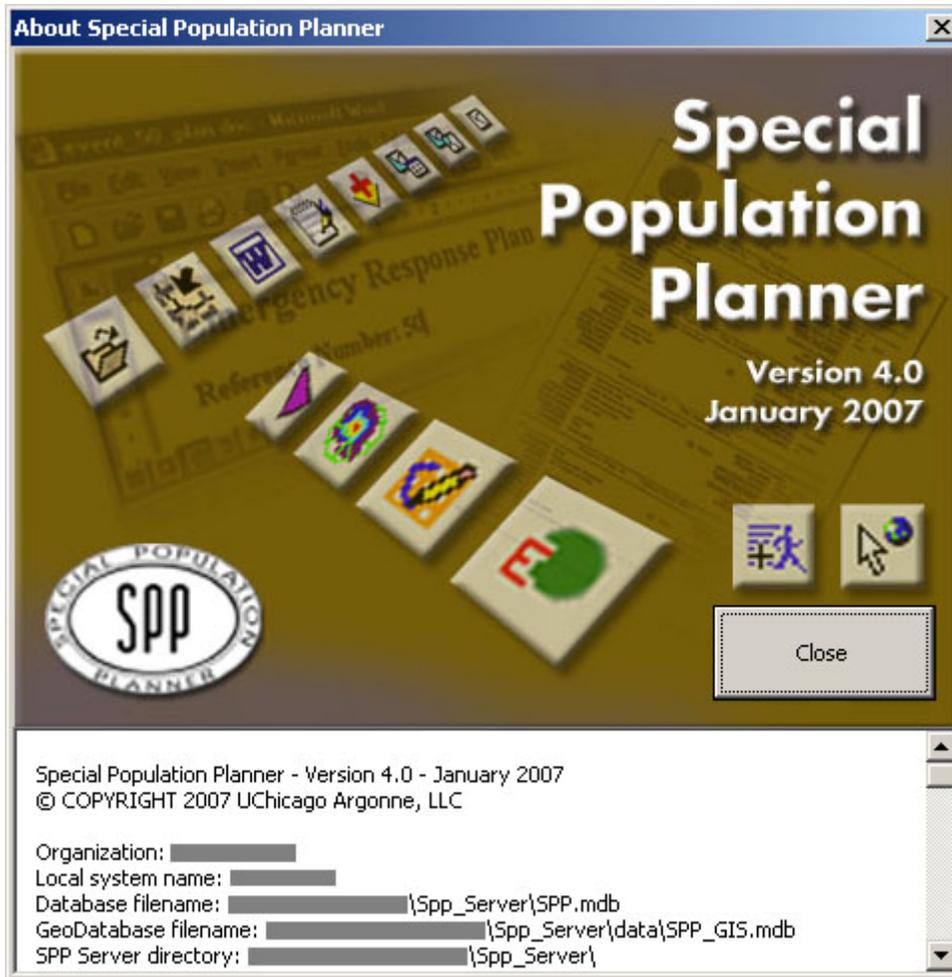


Although addresses can be located with the *Find* dialog, it is not used for editing SPP point layers, such as adding a new person to the map by their address. Use the *Location Editor* for this purpose.

SPP Controls

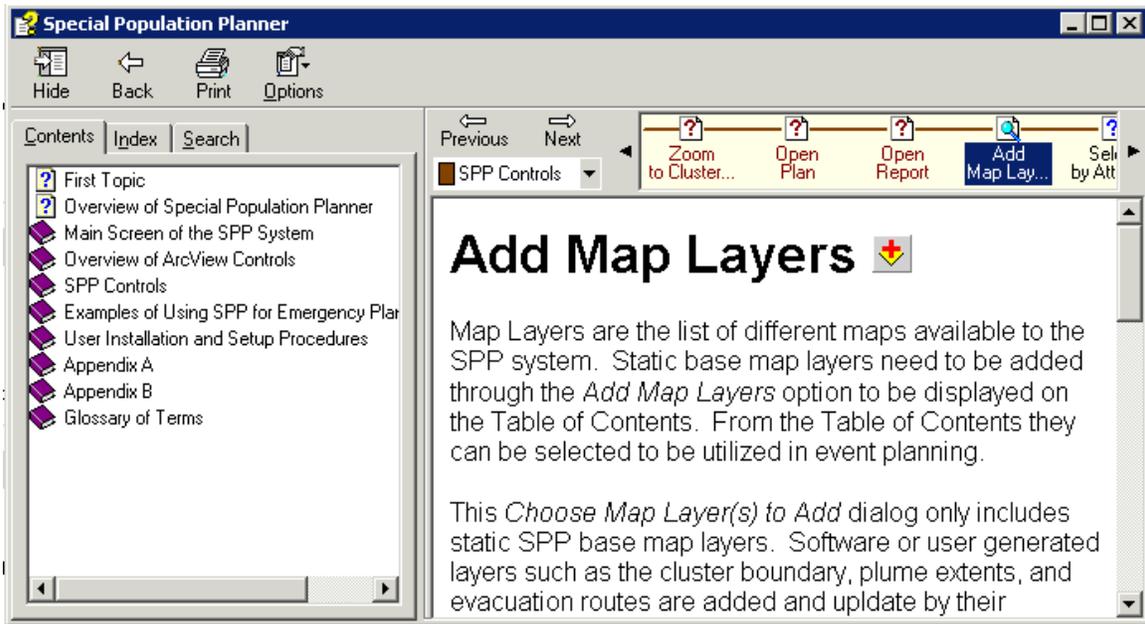
About SPP

Clicking on *About SPP* in the dropdown Special Population Planner menu displays software and system information, including local system name and environment variables.

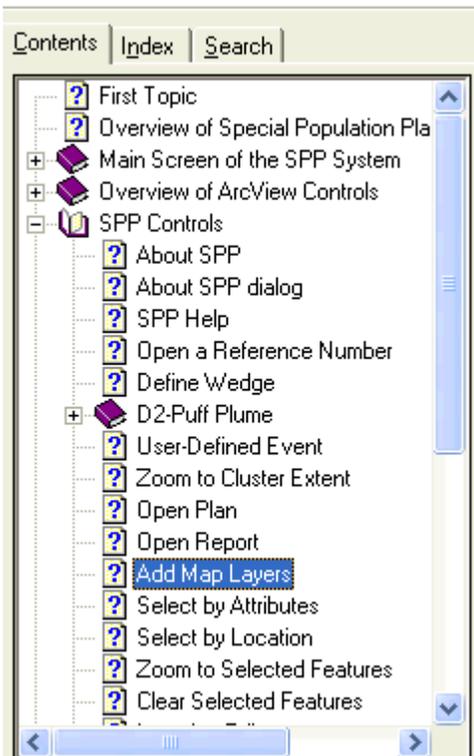


SPP Help

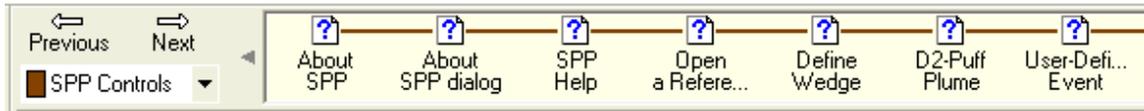
Clicking on *SPP Help* in the Special Population Planner menu opens the SPP Help file. Users may also refer to the same material in the printed documentation.



SPP Help is accessible from the Table of Contents, Index or search fields from the left side of the screen.



The previous/next control at the top-middle of the screen allows users to scroll from page to page.

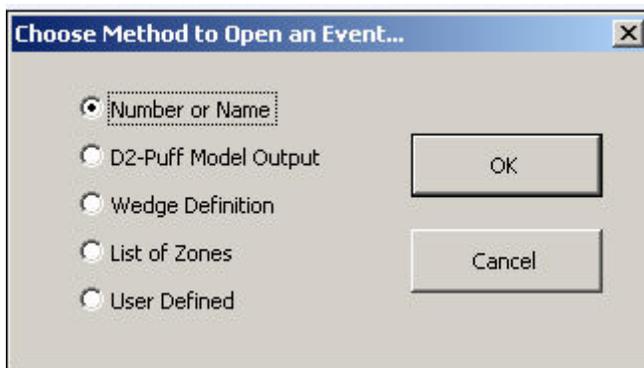


Open a Reference Number

A Reference Number is a unique number that is assigned to an emergency event. By using a reference number, a planned response to an event can be easily recalled and reevaluated.

After the user clicks on the *Open a Reference Number* button, the *Choose Method to Open an Event* dialog box appears. This allows a user to find a previously defined event. SPP has several ways for retrieving a previously defined event. The user can choose to find the event by:

- Number or Name,
- D2-Puff Model Output,
- Wedge Definition,
- List of Zones, or
- User-Defined Criteria.



Number or Name

Selecting the Number or Name, opens the *Find Reference Number by Name* dialog where a reference number can be input directly or chosen by name from a drop-down list. If a name is chosen from the drop-down list, the corresponding reference number appears. Clicking on the *Use Ref Number* button causes the map view to be updated with data for that reference number.



D2-Puff Model Output

Opening an event based on a D2-Puff or WebPuff 2.1 Model plume is done by clicking D2-Puff Model Output option from the *Choose Method to Open an Event* dialog, or by clicking the *D2-Puff Plume* button on the SPP toolbar.

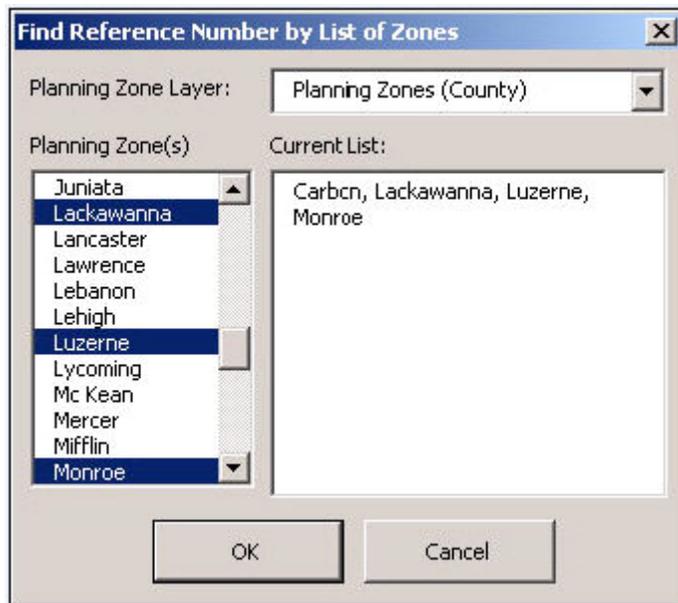
Wedge Definition

Opening an event based on a wedge shape is done by clicking the Wedge Definition option from the *Choose Method to Open an Event* dialog or by clicking the *Define Wedge* button on the SPP toolbar.

List of Zones

An event can be opened by entering the list of planning zones associated with the event. Selecting the List of Zones option from the Choose Method to Open an Event dialog opens the Find Reference Number by List of Zones dialog. First choose a Planning Zone Layer from the drop-down list, and then choose the desired zones from the Planning Zone(s) list. To select multiple zones, hold the control key down while selecting each zone.

If the main planning layer installed in SPP is used and the list of zones matches an event previously created with a reference number, a message will appear asking whether to use that reference number. Choosing Yes will cause the map view to be updated with data for that reference number. If the list of zones does not match an existing reference number, the user will be prompted about creating a new reference number before the map is updated.



User Defined

An event can be opened by using any GIS layer or an area drawn on the map view as a “footprint” by selecting the *User Defined* option from the *Choose Method to Open an Event* dialog or clicking the *User Defined Event* button on the SPP toolbar.

Define Wedge

A wedge is a pie-slice shaped area used to indicate an airborne plume location. The *Wedge Definition* tool allows the user to define a new wedge, and either add it to the current map or use it to open an existing or new reference number.

The Wedge Definition dialog defines a plume by the location of the origin of the plume, the wind direction expressed as an azimuth, the width of the plume in degrees, and the radial distance.

First choose a Planning Zone Layer from the drop-down list if the wedge is to be used to open an event.

The origin of the wedge may be a pair of coordinates in the projection used by the SPP map, or a point clicked on the map. Direction will determine the direction of the wedge from the point of origin and is specified as a "from" wind direction azimuth, where 0 degrees is north, 90 is east, etc. Width determines the width of the wedge and is specified in degrees. Distance will be used to determine the radius of the wedge in the Units specified.

Once the wedge is defined, it can be added directly to the map by choosing the *Draw* button or by opening an event. Draw will create the wedge on the current map and it is not permanently stored in SPP.

The *Open Event* button will update the map with the event and reference number that fit the wedge definition. If the main planning layer installed in SPP is used and the list of zones matches a previously created reference number, a message will appear asking whether to use that reference number. Choosing Yes will cause the map view to be updated with data for that reference number. If the list of zones does not match an existing reference number, the user will be prompted about creating a new reference number before the map is updated.

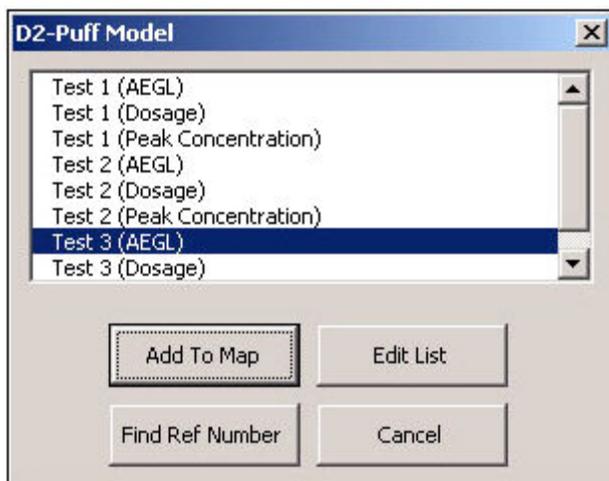
D2-Puff Plumes

D2-Puff and WebPuff 2.1 Plumes

D2-Puff and WebPuff 2.1 are separate plume dispersion modeling applications developed by Innovative Emergency Management, Inc. (IEM), to create and manipulate atmospheric accident release scenarios from the eight unitary chemical weapons storage installations in the continental United States. Their distribution is limited and their correct use requires training.

A D2-Puff Plume Model provides a more complex plume than a wedge or previously used models by taking into account more factors (such as the terrain) and returning more plume information than a wedge. The formulas for calculating these plumes is not created or maintained by the SPP system, rather SPP can import GIS files created in D2-Puff or Web Puff 2.1.

The *D2-Puff Plume* button opens the *D2-Puff Model* dialog. It contains a list of D2-Puff outputs that have been added to the system by the user. When D2-Puff exports a plume, there are three sets of overlapping information in the layer: (1) AEGL (Acute Emergency Guideline Levels), where there are three levels AEGL-1, AEGL-2, and AEGL-3; (2) dosage (1% lethality, no deaths, and no effects); or (3) peak concentration. AEGL-2 is probably of greatest interest in emergency planning. It is the airborne concentration of a substance at which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.



When the user chooses a D2-Puff plume, the action buttons in the dialog are enabled, including *Add to Map* and *Find Ref Number*.

Add to Map

Choosing *Add to Map* will cause the appropriate plume footprints to appear on the current map view.

Find Ref Number

Choosing the *Find Ref Number* opens a dialog showing the matching reference number for the selected plume. The system prompts for confirmation before using that reference number. If the user clicks *Yes* to continue the existing map view will be updated for the identified reference number with the D2-Puff plumes added. If the D2-Puff plume created has not already been created, a prompt verifies that the user wants to create a new reference number before updating the map.

Exporting D2-Puff Plumes

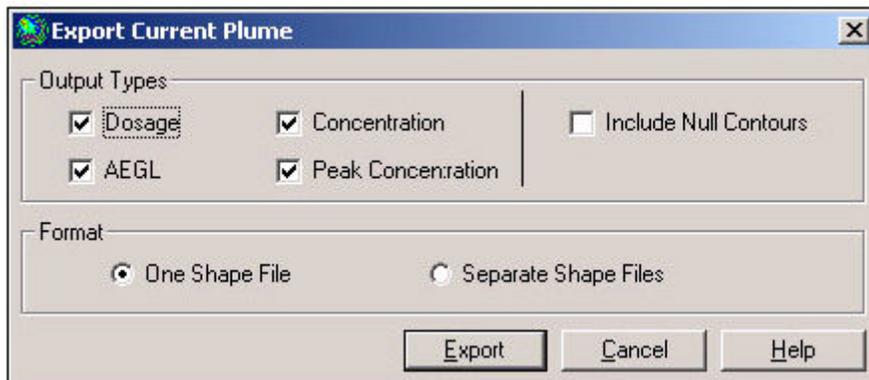
This manual assumes that users have already acquired the D2-Puff software and have been trained in its use. The discussion of D2-Puff included here is intended only to show how D2-Puff can be used to export the agent plume data that are generated by accident release scenarios, so that these data can then be imported into the Special Population Planner. The process has been tested with D2-Puff 4.4, and WebPuff 2.1 and both have similar procedures and output files.

Therefore, users must consult their current D2-Puff or WebPuff documentation, or IEM technical support personnel, for accurate information on how to export plumes properly.

When SPP is first installed, the list of D2-Puff model plumes is empty, so the first step needed is to export a plume of interest from D2-Puff and then use the *Edit List* button to add it to SPP.

Export Plume

Once a model run has been completed, choose *Export Plume* then selecting *Current Plume* from the File menu. Keep all the output types checked and the format set to One Shape File as shown below. Next, click the *Export* button; browse to the desired output directory and save the shapefile with an appropriate name. The export directory should be a network directory accessible by the SPP client system(s). In the case of WebPuff 2.1, the plume file is saved to the user's system as a .ZIP compressed archive file, and an extra step is needed to extract the files from the archive.

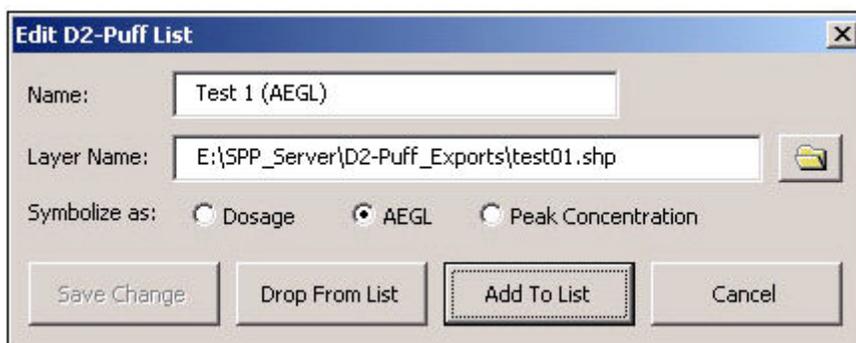


Note that using the Export Plume, Export Settings from the File menu D2-Puff includes the capability to automatically export the plume after each run. This capability can also be used, and it is recommended that the same options as shown above be used in this dialog.

Add Plume to SPP

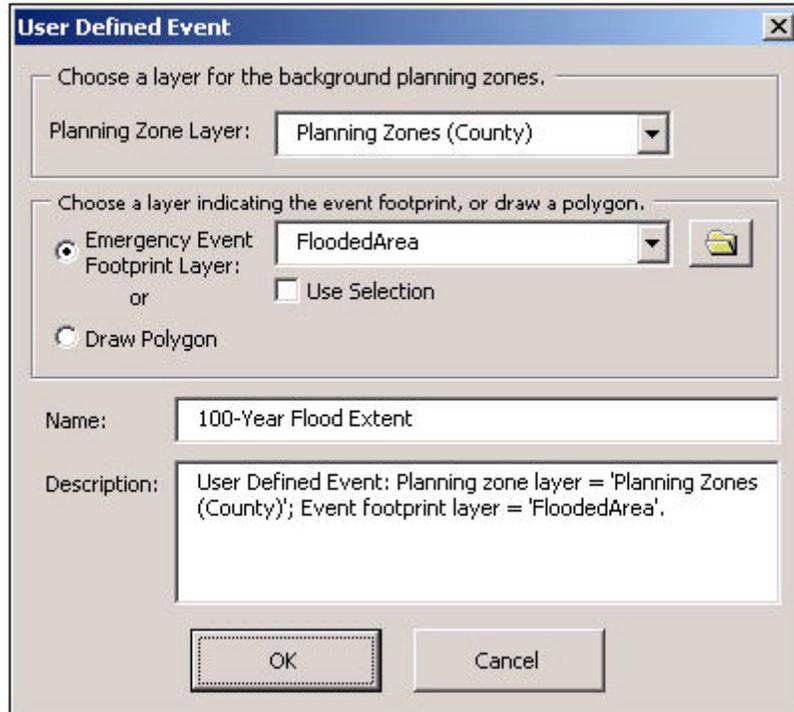
Choose *Edit List* to open the Edit D2-Puff List window.

The Edit D2-Puff List dialog is used to link to unique D2-Puff runs of interest. To link to them, the plumes must be exported from D2 Puff runs before they can be added to events. If SPP is being used on multiple computers, it is suggested that D2-Puff output files be added to the SPP list in a network directory available to all SPP systems with the same directory path. Doing so allows the D2-Puff plumes to be accessible to all SPP systems.



User-Defined Event

The *User Defined Event* dialog provides a flexible tool to use any existing GIS layer or an area drawn on the map to open a planning map for all hazards analysis. Click on the *User Defined Event* tool to on the SPP toolbar to open the dialog



User Defined Event

Choose a layer for the background planning zones.

Planning Zone Layer: Planning Zones (County)

Choose a layer indicating the event footprint, or draw a polygon.

Emergency Event Footprint Layer: FloodedArea 

or Use Selection

Draw Polygon

Name: 100-Year Flood Extent

Description: User Defined Event: Planning zone layer = 'Planning Zones (County)'; Event footprint layer = 'FloodedArea'.

OK Cancel

The Planning Zone Layer drop-down list is used to specify the planning zone layer to use, which can include user defined planning layers installed with the administrative tools.

Next, use one of the available options to specify the extent of the area affected by the event. Choose a pre-existing layer from the list or click the *folder* button to browse to one. To use only selected features from a pre-existing layer, load it into the table of contents and make the selection first, then choose the layer in the dialog and click the *Use Selection* box. Alternatively, click the *Draw Polygon* option and draw an area on the map by clicking on the vertices of the polygon and double clicking to finish the polygon. Enter the event name and description as appropriate, and then click *OK*. The user-defined event is then assigned a new reference number and opened.

Zoom to Cluster Extent

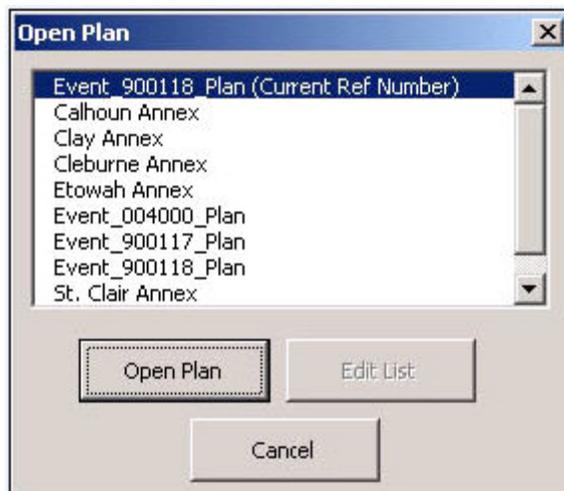
This button allows the user to zoom the map to the cluster of planning zones associated with the current reference number on the screen. It requires the Cluster Extent layer to be present in the table of contents.

Open Plan

This tool provides a way to link documents to the database. Any kind of file can be used as long as it has an associated program to view it in. These documents (typically emergency plans) can be tied to specific events (by the reference number) or be a more general document that would apply to a variety of events. General documents should be stored in the SPP_Server\Documents directory so they will be accessible to all SPP users.

Clicking on the *Open Plan* button opens the *Open Plan* dialog. The dialog displays the list of plans, an *Open Plan* button, an *Edit List* button, and a *Cancel* button.

The plan for the current reference number will be listed at the top of the box and a new blank plan document will be started if there is not a pre-existing one. The template file used for new plans in SPP is SPP_Server\Config\Templates\PlanTemplate.doc and it can be customized if desired.



To open an existing plan, select it and click *Open Plan*.

Edit List

The *Edit List* button is used to add general documents to the system, or change or remove existing ones.

Add Map Layers

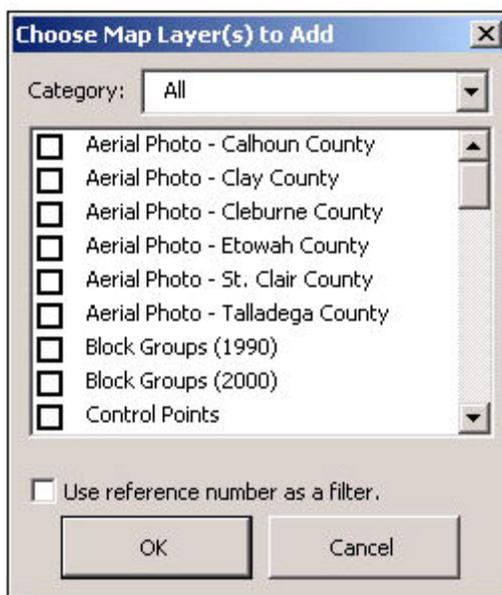
Map Layers are GIS files that can be added to the table of contents and used in the system. Many data formats can be used in the GIS and in SPP. SPP has a database of layers that have been installed and configured for the SPP tools, and the SPP Add Map Layers tool is used to add them to the table of contents. Once in the table of contents, they can be displayed on the map and used by the many other GIS tools.

The *Choose Map Layer(s) to Add* dialog includes all GIS layers installed in SPP except event-specific layers that are automatically generated by SPP, such as the cluster extent.

The *Add Map Layer* button on the SPP Toolbar opens the *Choose Map Layer(s) to Add* dialog with a list of SPP base map layers that can be added to the map view. Choosing a category other than “All” at the top of the dialog will show a subset of the available layers. Highlighting one or more entries and then clicking on the *OK* Button will add the selected layers to the map view and the table of contents. (Use the shift and/or control keys to select multiple entries.)

The *Use Reference Number as a Filter* check box at the bottom of the dialog applies only to the core SPP database point layers such as Persons and Facilities. If the box is checked, that point layer will be filtered to only show points within the current cluster boundary. If it is not checked, the entire layer will be added. Loading these layers with the box unchecked is a quick way to remove the filtering of these layers by the cluster boundary.

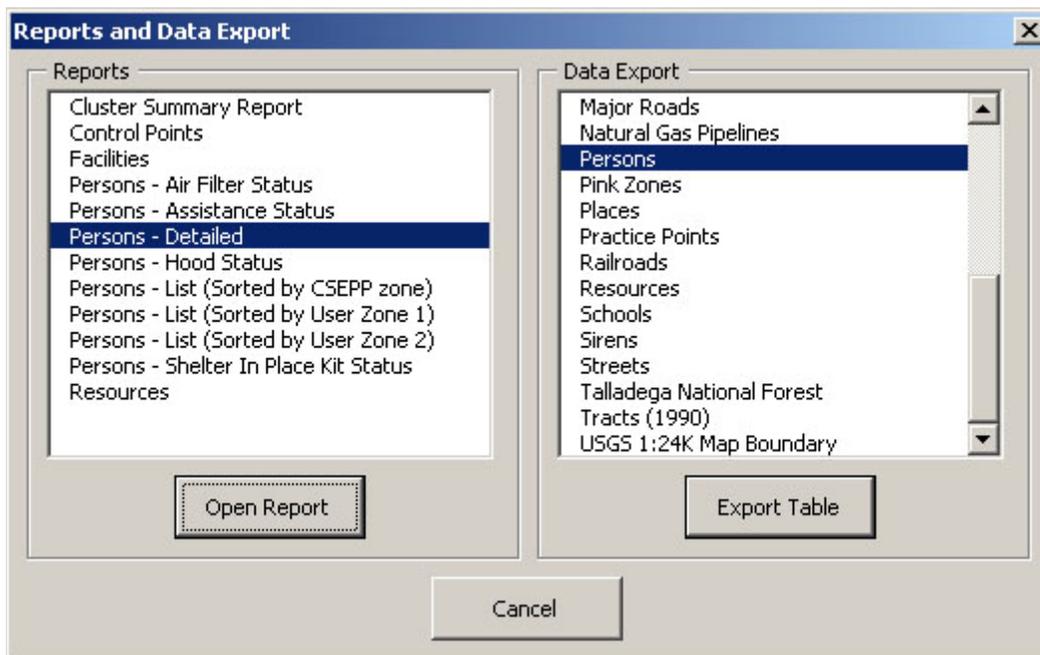
Any layers already in the table of contents are reloaded with their default symbolization settings.



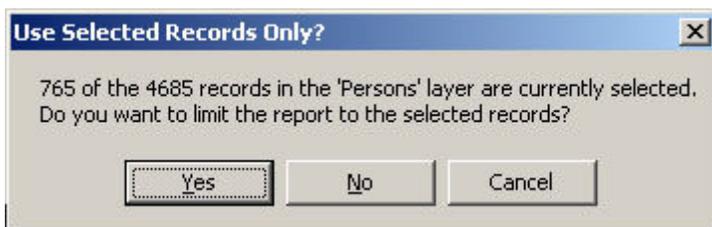
Open Report or Export Data

The SPP system has a set of predefined reports that can be generated using the current data displayed in the system.

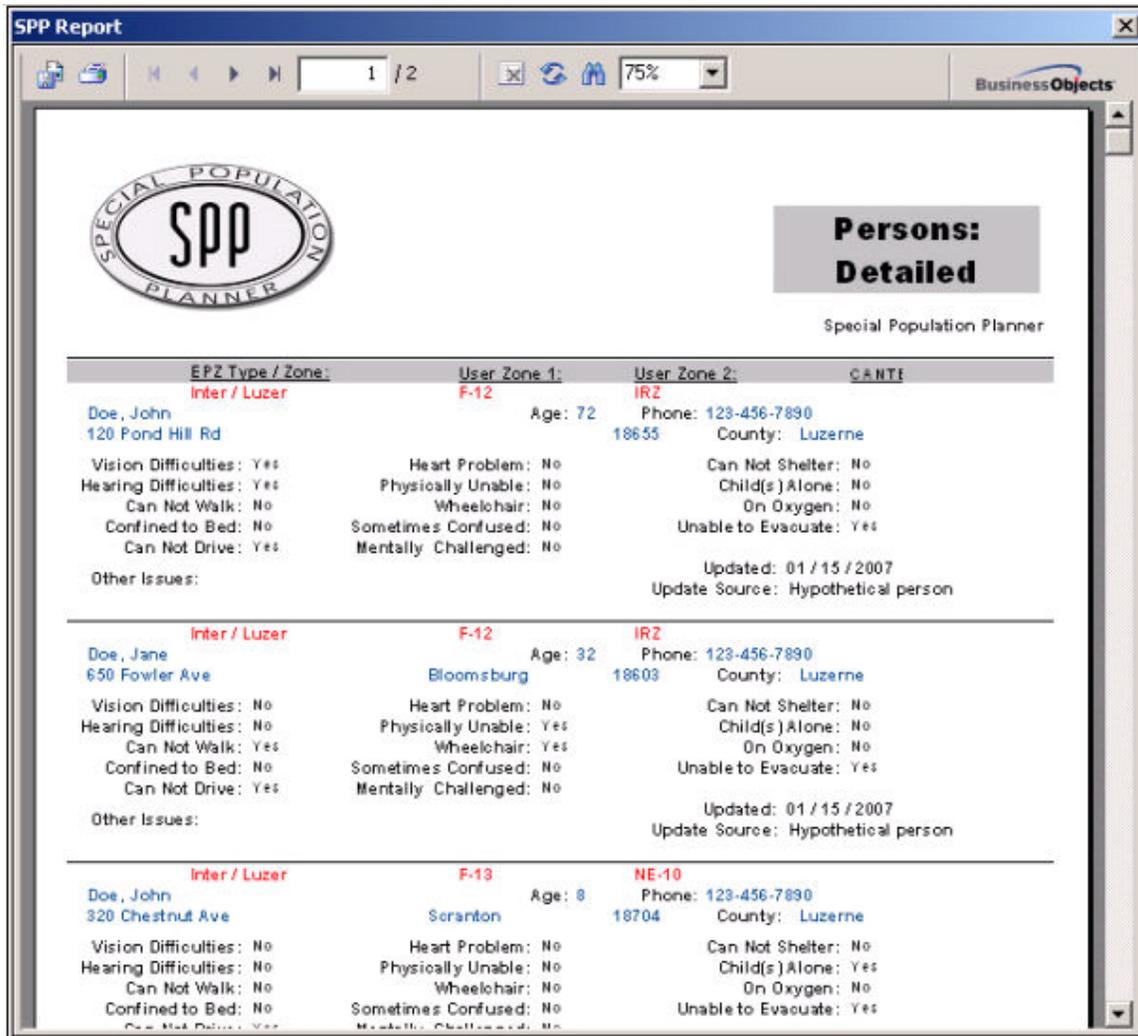
The *Open Report or Export Data* button opens the *Reports and Data Export* dialog for selecting a report or choosing information to export from the system.



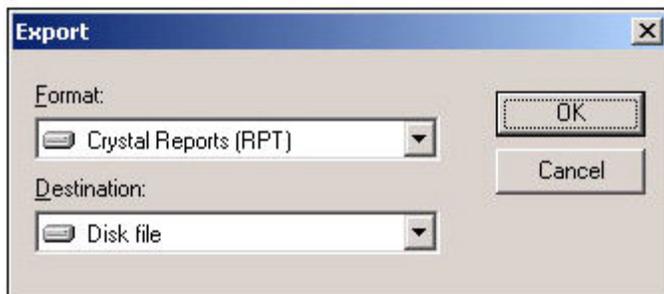
Selecting a report and clicking *Open Report* will open the *Report Viewer* dialog. If there is currently a selection on the map layer on which the report depends, the user is prompted to select either the full table or the current selection for inclusion in the report.



Reports are generated from the current database and are not saved permanently. Report choices can be customized in the system after installation, so the reports listed in the dialog may vary.



The Report viewer dialog has a bar near the top of the screen that allows the user to print the report, to export the report, or to do a search. If the export option is chosen, the options include exporting a PDF file, an Microsoft Excel file, an Microsoft Word file, or a file in other text formats.

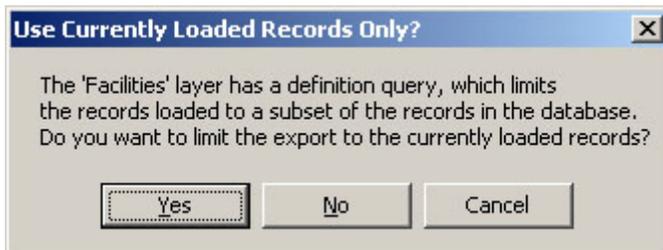


The right side of the Open Report or Export Data dialog allows any of the tabular data stored in SPP to be exported to dBase format files. These files can then be opened in other software packages such as Excel.

If there is currently a selection on the chosen item, a prompt similar to the one for reports will appear which allows either the selected records or all the records to be exported.



In addition, SPP uses definition queries to filter some layers to the zones belonging to the current event. If a chosen item has a definition query and the export has not already been limited to the selected records, a prompt will appear that allows either the currently loaded records or all the records in the database to be exported.

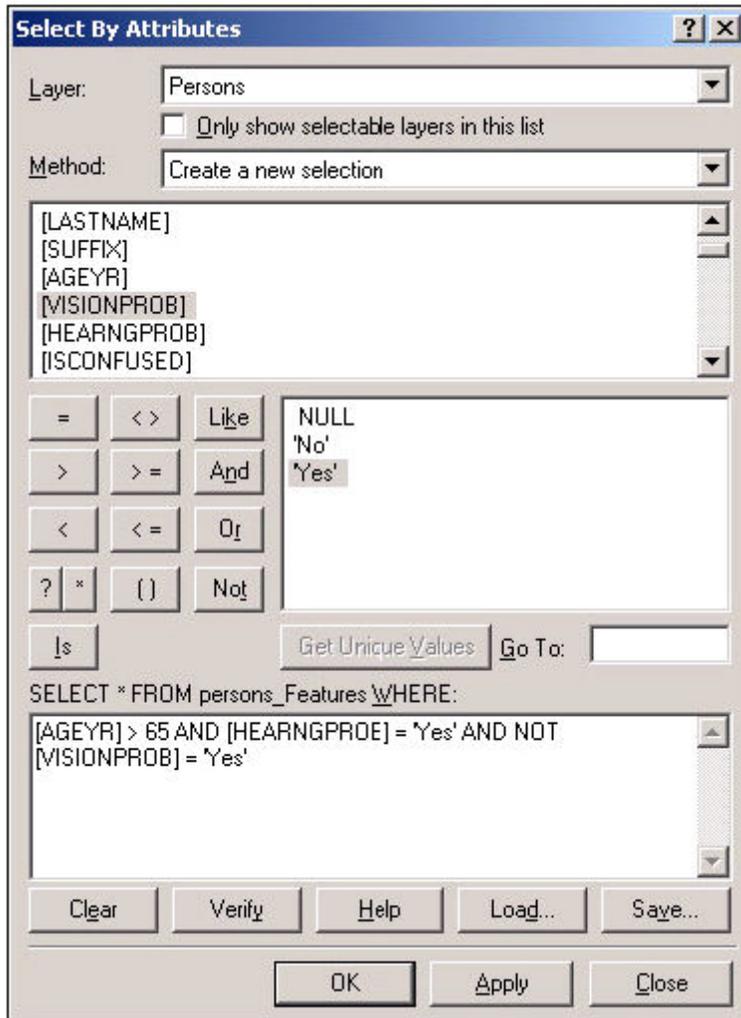


Finally a dialog appears allowing the location and filename of the exported file to be specified.

Select by Attributes

One of the important features of SPP is its ability to select a subset of features within a map layer based on user-specified criteria. This feature is part of the standard ArcMap interface, and was included on the SPP toolbar for convenience.

The following example shows how to select records from the Persons layer based on several criteria.



Click on the *Select by Attribute* button on the SPP toolbar to open the dialog. Select "Persons" from the Layers drop-down list.

One way of selecting attributes is to use the query-building capability. Double-click a field name in the *Fields* list to begin. Then add an operator (equal, greater than, less than, etc.), and double-click a value from the *Unique Values* list, which fills when a field name attribute is selected and the *Get Unique Values* is clicked.

A combination of attributes can be selected by stringing together chosen attributes with use of conjunctions (and, or, and not, etc.). Click the *Verify* button to check the query, and if it executes properly, click the *Apply* button to apply the selection to the Attribute table. The matching records are selected and will be highlighted on the map. The example above shows the *Select by Attribute* dialog with a query of persons over 65 who have hearing problems, but do not have vision problems.

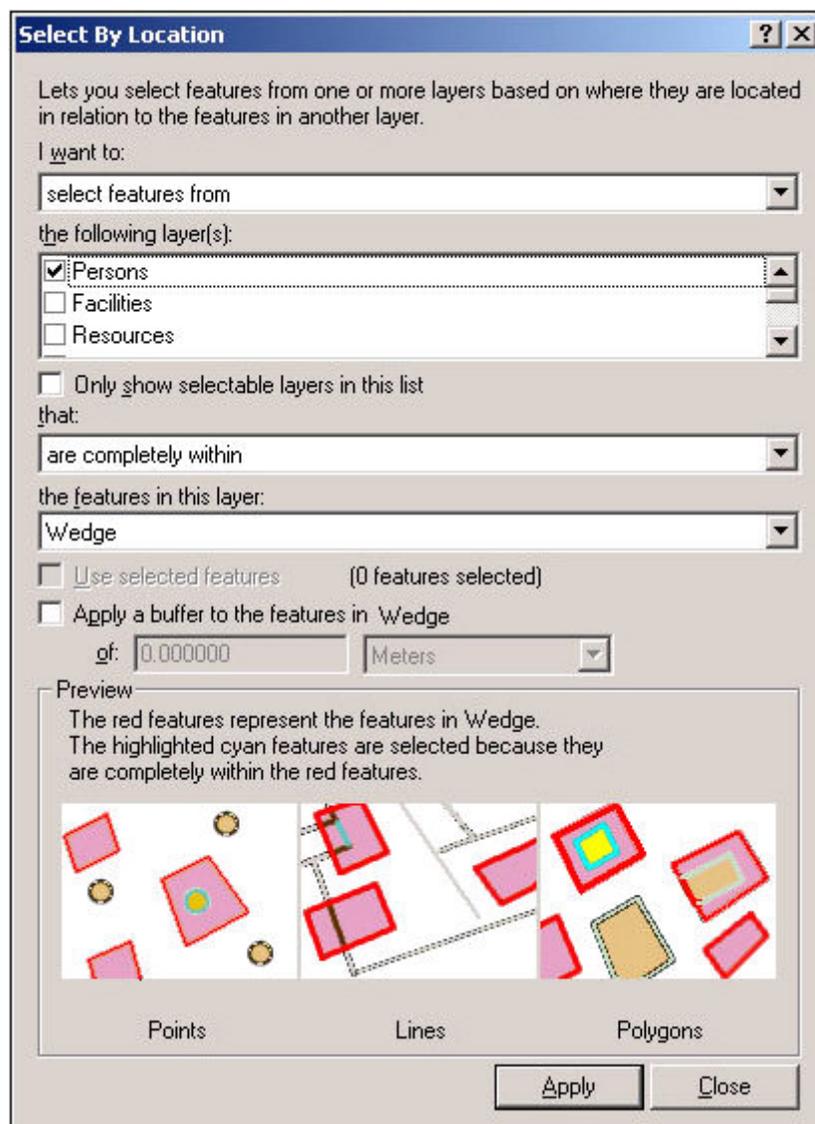
More complex queries may require using parenthesis to group parts of the statement, or queries may be done in several steps by using other options on the

Method drop-down list to add to, remove from, or perform another query on an existing selected set. When records are selected in a layer, the selected set will be highlighted both on the map and in the layer's attribute table.

Select by Location

Select by Location allows features to be selected based on spatial relationships, which is a very useful capability of GIS systems. An example would be to select the people who are located within a wedge plume.

Open the *Select by Location* dialog by choosing *Select by Location* from the SPP toolbar. This feature is part of the standard ArcMap interface, and the button was included on the SPP toolbar for convenience.



View the *Select by Location* screen as a sentence explaining the way to select items.

The example reads as:

I want to **select features from** the **Persons** layer that **are completely within** the **Wedge**. This will select all the people who are located within the Wedge layer in the current map, and highlight them both on the map and in the Persons layer's attribute table.

The first option allows you to select what you want including:

- Select features from,
- Add to the currently selected features in,
- Remove from the currently selected features in, or
- Select from the currently selected features in.

This allows more complex queries to be made by repeating the Select By Location dialog with different settings, or using it in combination with other selection tools.

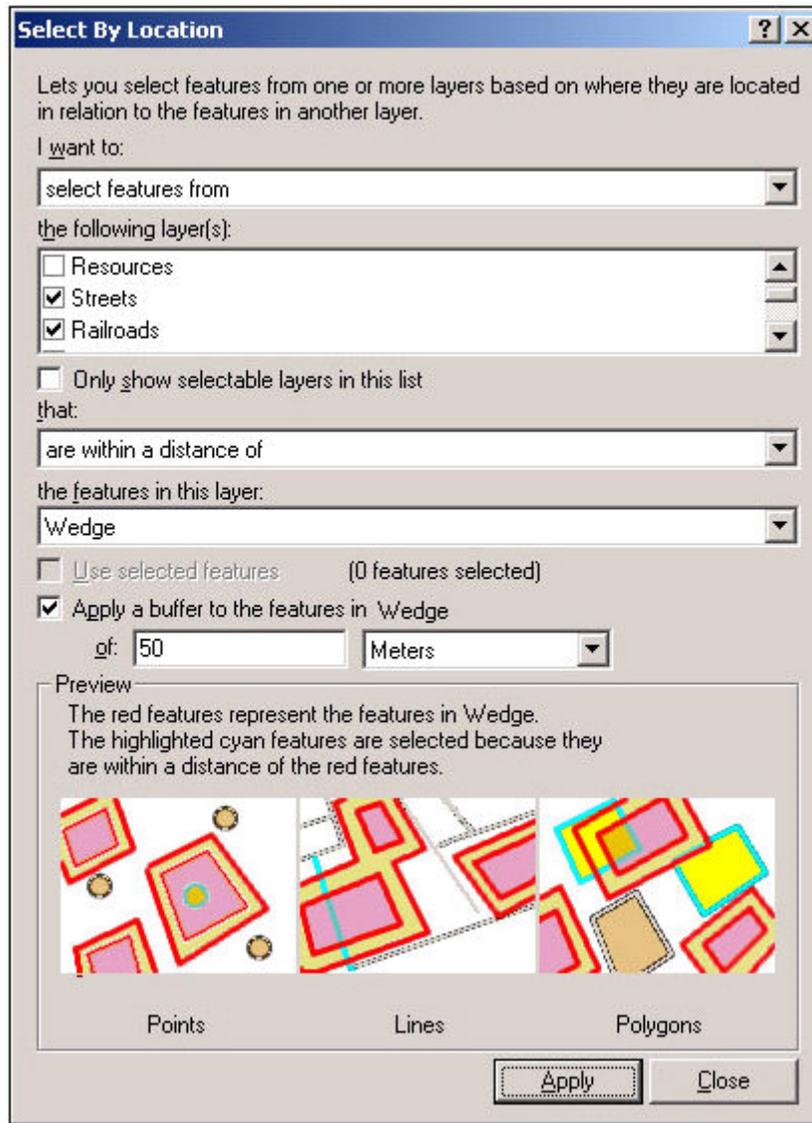
Next, select the Layer(s) containing the features of interest.

Third, choose the kind of spatial relationship to be used to make the query, from the choices which include:

- Intersect
- Are within a distance of
- Completely contain
- Are completely within
- Have their center in
- Share a line segment with
- Touch the boundary of
- Are crossed by the outline of
- Contain or
- Are contained by.

Finally, specify the layer to be used for the spatial query.

As another example, if roads and railroads within 50 meters of a plume area would need to be closed, features from those layers that intersect a plume could be selected to determine where to stop or divert traffic in the area.



Another location-based query could be made to identify all persons in a planning zone not within hearing range of a siren, which suggests that alert routes might be needed. The first selection would be for all persons within a planning zone, then persons within a specified distance of a siren (hearing distance) could be removed from the currently selected features. The persons still selected are not within hearing distance of sirens. Alert routes could be added with use of the *Add Alert Route* tool. After alert routes have been added the *Select by Location* tool could be used to deselect those persons within hearing distance of the speakers on the alert route vehicles. The persons who remain selected are in hearing range of neither sirens nor alert routes.

Zoom to Selected Features

When features have been selected in one or more layers, choosing *Zoom to Selected Features* on the Selection menu will cause the map view to zoom to and center on the selected features.

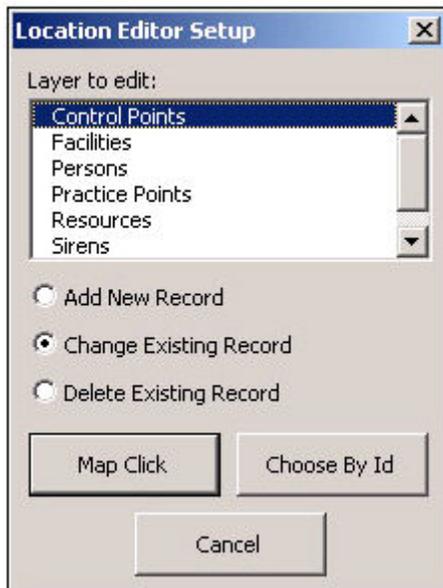
Clear Selected Features

This is a standard ArcView tool that clears features that had previously been selected. It has been added to the SPP toolbar to make it more accessible.

Location Editor

SPP provides an editing capability for SPP-specific point layers through the Location Editor. This tool allows individual records to be added, deleted, or changed, and integrates editing of the spatial and tabular aspects of the data.

Although ArcView provides editing tools, they should not be used on the point features in the database because there are many fields maintained automatically by the SPP tools. Also, the SPP-specific point layers are stored in a standard Access database, not a GeoDatabase which the ArcView tools are designed for. This design allows the SPP point layer tables to also be managed and edited with Access forms and procedures, a necessary activity for data maintenance in SPP that ESRI does not support for GeoDatabases.



Clicking on the *Location Editor* button opens the *Location Editor Setup* dialog, which is used to identify the layer to edit, the type of operation, and which feature to edit.

To add a new record, choose the layer to edit, click the *Add New Record* button, and click *OK*. This opens the *Location Editor* dialog in the *Add New Record* mode. When the *Change Existing Record* or *Delete Existing Record* option is selected, the record to be edited must first be identified either by *Map Click* or by *Choosing By Id*. Once the feature is identified, the *Location Editor* dialog is opened in *Change* or *Delete* mode.

To choose by map click, first click the *Map Click* button, then click the feature on the map view. To choose by Id, click the *Choose by Id* button, and type the record Id when prompted. It is possible for records to exist in the database but to lack coordinate locations. If so, they must be accessed by their Id since they will not appear on the map.

The *Location Editor* dialog has two tabs, one for editing the location of the point, and one for editing the attributes or tabular data tied to the point. (In *Delete* mode, the data for the record are shown for inspection only, so the *Location* tab is disabled, and the *Attribute* tab fields are read only.)

In the *Location* tab, if *Map Click* is used, a click on the map view will update the coordinates. First click the *Map Click* button, then click on the map. Coordinates can also be typed directly into the *X Coord* and *Y Coord* fields. These coordinates are specified in the projection listed below the coordinate fields, which defaults to the projection used by SPP. If a different projection is needed, such as for geographic latitude and longitude coordinates, the *Change Projection* button can be used to choose it, and SPP will automatically convert locations to its internal coordinate system when storing them in the database.

To locate a point on the map based on a street address (geocoding by address), enter the street address (such as 101 Main Street) and the zip code, then click *Locate*. SPP will then use the streets layer to look up a location, and update the point location if successful. SPP defaults the geocoding options to require an exact match of the address. If the address is not located, the *Geocoding Options* button allows the settings used for geocoding, such as spelling sensitivity, to be adjusted, allowing some addresses to be located that do not exactly match the data as coded in the streets layer.

When points are specified or moved, the *Location Editor* automatically looks up related spatial information, such as planning zone information or county name.

Location Editor: Add 'Persons' Record 905809

Location | Attributes

Click on the map, enter a coordinate, or use an address to locate the point

Map Click | Change Projection

X Coord: Units: Meter

Y Coord:

Projection: NAD 1983 UTM Zone 16N

Geocoding by Address

Reference Layer:

Address: Zip:

Geocoding Options | Locate

Setup | Add | Cancel

Location Editor: Add 'Persons' Record 905809

Location | Attributes

Id:

Firstname:

Middlename:

Lastname:

Suffix:

Ageyr:

Visionprob:

Hearngprob:

Isconfused:

Mentdisab:

Cantwalk:

Setup | Add | Cancel

The Location Editor dialog has three action buttons at the bottom. The center button is labeled as *Add*, *Apply*, or *Delete*, depending on the editing mode, and saves the changes to the database. The *Setup* button provides a way to return to the Location Editor Setup dialog in case a different setup is needed. *Cancel* closes the dialog. If there are unsaved changes, Location Editor will prompt about saving them before continuing.

Add a Record

Click the *Location Editor* button on the SPP toolbar to open the Location Editor Setup dialog. Choose the desired layer from the list and click the *Add New Record* button. Then click *OK*. *Location Editor: Add Record* will open. Make the edits using the Location and Attributes tabs, and then click *Add* to save them.

Change a Record

Click the *Location Editor* button on the SPP toolbar to open the Location Editor Setup dialog. Choose the desired layer from the list and click the *Change Existing Record* button. Then click *Map Click* and choose the point on the map view that is to be changed. *Location Editor: Change Record* will open. Make the edits using the Location and Attributes tabs, and then click *Apply* to save them.

Delete a Record

Click the *Location Editor* button on the SPP toolbar to open the Location Editor Setup dialog. Choose the desired layer from the list and click the *Delete Existing Record* button. Then click *Map Click* and choose the point on the map view that is to be deleted. *Location Editor: Delete Record* will open. Inspect the data to ensure that the proper record has been chosen, then click *Delete* to delete it. A prompt will appear to confirm the deletion.

The map can be adjusted with other tools and buttons while the Location Editor Setup and Location Editor dialogs are open. If a tool such as Pan is used while a Map Click operation has been started, the map click tool will be turned off. Click on the *Map Click* button again to restart it.

The Location Editor dialog is designed to be flexible and can be configured in several ways. See the System Administration section for more information.

Add Evacuation Route

An evacuation route can be added by clicking on *Add Evacuation Route*, which adds the evacuation route layer to the table of contents. Click on *Add Evacuation Route* again to draw the route on the map. Begin by clicking the mouse on the starting point, and then click along the desired route to draw it. A double-click ends the route. A prompt will then appear where the description of

the new evacuation route can be entered. After clicking *OK*, the new route will be shown on the map view.

Delete Evacuation Route

Evacuation routes can be deleted by clicking on *Delete Evacuation Route* and then clicking on a point on the evacuation route in the map view. The user is then prompted to confirm the deletion.

Add Alert Route

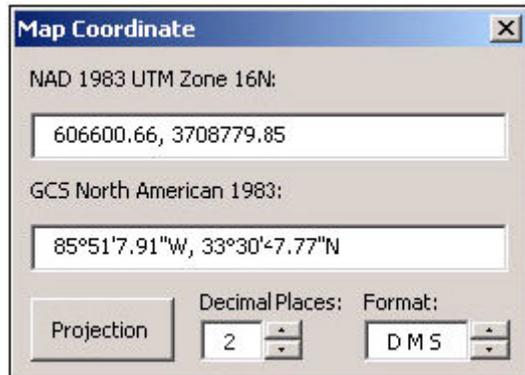
An alert route can be added by clicking on *Add Alert Route*, which adds the alert route layer to the table of contents. Click on *Add Alert Route* again to draw the route on the map. Begin by clicking the mouse on the starting point, and then click along the desired route to draw it. A double-click ends the route. A prompt will then appear where the description of the new alert route can be entered. After clicking *OK*, the new route will be shown on the map view.

Delete Alert Route

Alert routes can be deleted by clicking on *Delete Alert Route* and then clicking on a point on the Alert route in the map view. The user is then prompted to confirm the deletion.

Show Coordinates

Clicking on this tool opens the *Map Coordinate* dialog. The coordinates are displayed in two coordinate systems in the dialog as the cursor is clicked in the map view. The upper coordinate system is the one used by the map view, and the lower one can be specified by the user using the *Projection* button. Format and decimal places shown in the dialog can be adjusted with the spin buttons. The coordinates can be copied from the text fields for use in reports, etc. The map can be zoomed, panned, etc., while the dialog is open. If the user chooses another tool, the *Map Coordinate* tool can be clicked on again to continue picking coordinates.



Hyperlink

The *Hyperlink* tool is a standard ArcMap tool that was added to the SPP tool bar for convenience. Some of the point layers, such as Facilities, are coded with Internet URL addresses that link the point on the map to a relevant web site. When a layer having a URL field and loaded with SPP tools is present in the table of contents, the Hyperlink tool will be enabled. Choosing the Hyperlink tool causes features with populated URL addresses to be highlighted in blue. Placing the cursor over these points causes the URL address to be shown as a map tip, and clicking on the point launches the system's Internet browser with that address.

Practice Points

Since changes are permanent when the layers are edited with the Location Editor, SPP includes a layer called Practice Points for the purpose of becoming familiar with this tool. Changes that are made to the Practice Points layer do not affect data residing in other layers.

Administrative Tools

The *Administrative Tools* dialog appears only in the Special Population Planner menu. It includes two tabs, one to allow batch updates of the location-dependent values stored in the point layers, and another to add or change the user-defined planning layers. It also allows the user's system configuration settings to be reset and changed. For more information see Customizing the Installation.

Examples of Using SPP for Emergency Planning Tasks

Finding a Person with Special Needs

Being able to find information about a particular person with special needs allows Emergency Management Agencies (EMAs) to make emergency plans, as well as determine training and/or equipment they might be eligible for.

EMA personnel can readily respond to requests for information about individuals with special needs using SPP, if the person is in the database. If the person is not in the database, they can be added with the Location Editor.

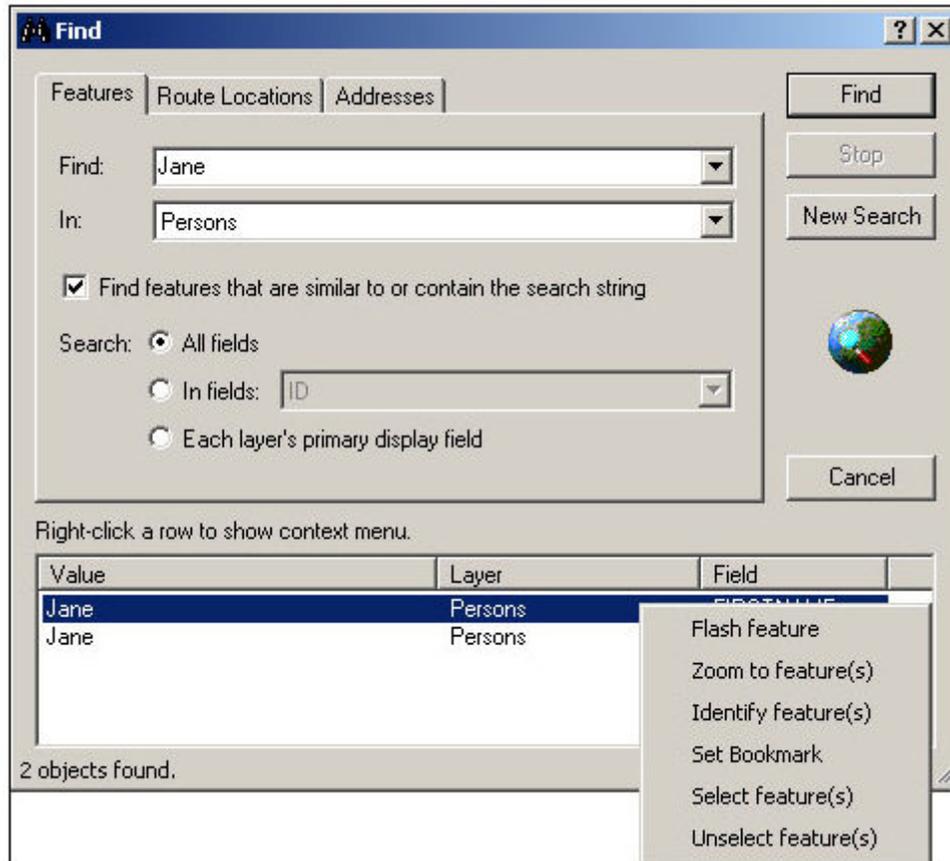
Verify the Person is in the Special-needs database

The first step after starting SPP is to make sure the person's data are loaded for the region in which the person lives, or to load the entire layer. To load the entire layer, click *Add Map Layers* and select Persons from the list, making sure the *Use Reference Number* as a Filter box is not checked. Next, click the *Find* button and use the *Features* tab. Enter the person's last name, address, or phone number in the Find textbox, choose the Persons layer in the Layers drop-down list and click the *Find* button. If one or more records are found, they will be listed at the bottom of the dialog. If not, changing the search text and repeating the process may locate a record.

Viewing Persons information

Once the desired record is in the list at the bottom, right click on the entry to show a pop-up menu. Choose *Identify Feature(s)* from the menu and the full record will be listed in another dialog.

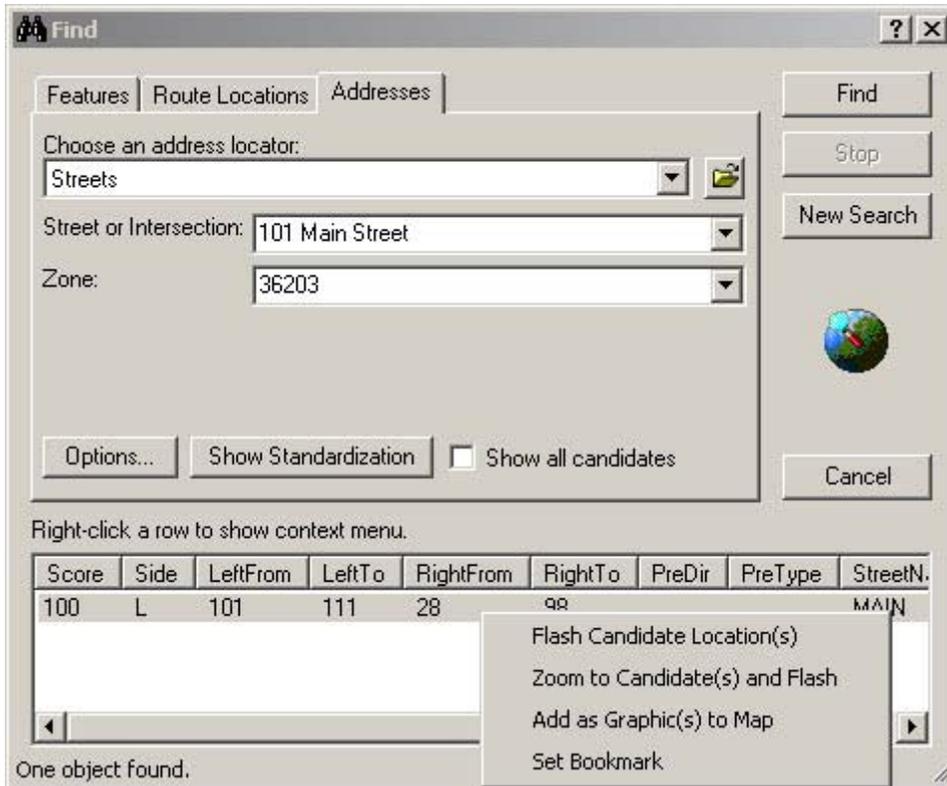
Descriptions of each field in the Persons table are listed in the appendix. The EPZ_Zone field identifies which Emergency Planning Zone the individual resides in.



Finding Planning Zones When A Person Is Not in the Special-needs Database

Determining the planning zone an individual resides in can be done without the person being listed in the special-needs database. SPP can determine the zone using a street address. Click *Find* to open the Find dialog, then switch to the *Addresses* tab. (If "streets" is not already listed as the geocoding service, click the *Browse* button to add it. This file is located with the SPP GIS data on the server as SPP_Server\Data\streets.loc.) Enter the street address and zip code. If an address is successfully located it will be listed at the bottom of the dialog. Right click on the entry and choose *Add as Graphic(s) to Map*, followed by *Zoom to Candidate(s)* and *Flash*. The map will be zoomed to the area, with a black dot indicating the location. If the EPZ Areas layer is visible, the zone number will be labeled on the screen. If not, make sure the EPZ Areas layer is checked in the table of contents in both the *Display* and *Selection* tab, and use the Identify tool to click on the *zone* and check the value.

To remove the black dot from the map, use the *Select* tool to pick it on the map and the *Delete* key to delete it.



Updating Special Needs Population Data

Keeping the special-needs population data current will require the ability to add, delete and modify individual people's data, and the Location Editor tool was designed for this purpose.

(This example focuses on the Persons layer for clarity, but to become familiar with the tool, using the scratch Practice Points layer is suggested. This will prevent unintended changes to the Persons table.)

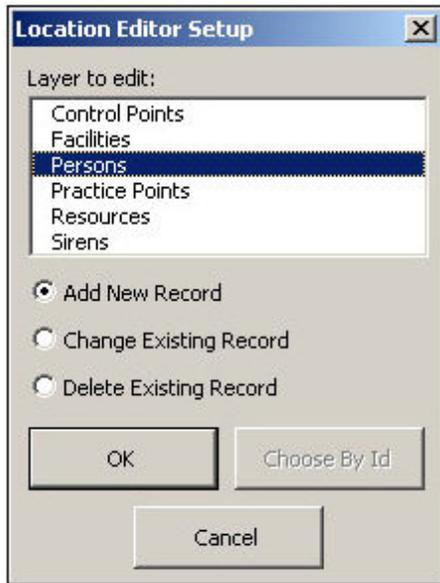
Before adding, deleting or modifying information, the user must determine if the person already resides in the database.

Verify the Person is in the Special-needs database

See the previous section entitled Finding a Person with Special Needs section for more information on looking for an existing record.

Adding a Persons Record

If a person is not found in the database, start adding the record by clicking the *Location Editor* button to open the Location Editor Setup dialog. Choose *Persons* from the list of layers to edit, change the button to *Add New Record*, and click *OK*. The Location Editor dialog will then open.



The *Location Editor* opens with the *Location* tab activated as shown below. A good place to begin is to enter the street address and zip code, and then click *Locate* to locate the address on the map. If the address is successfully located, the coordinate will be shown and some of the location-based attributes will be automatically populated. Next, switch to the *Attributes* tab and enter the attribute data using the scrolling list of text and combo boxes.

Location Editor: Add 'Persons' Record 905809

Location | Attributes

Click on the map, enter a coordinate, or use an address to locate the point

Map Click | Change Projection

X Coord: 608234.02 Units: Meter

Y Coord: 3720710.41

Projection: NAD 1983 UTM Zone 16N

Geocoding by Address

Reference Layer: Streets

Address: 101 Main Street Zip: 36203

Geocoding Options | Locate

Setup | Add | Cancel

Once the data are entered, click the *Add* button to add the record to the database.

Location Editor: Add 'Persons' Record 905809

Location | Attributes

Id: 905809

Firstname: John

Middlename: A.

Lastname: Smith

Suffix: Jr.

Ageyr: 76

Visionprob: Yes

Hearngprob: No

Isconfused: No

Mentdisab: No

Cantwalk: Yes

Setup | Add | Cancel

Change a Persons Record

The *Location Editor* can also be used to change an existing feature. To do this, use *Change Existing Record* in the Location Editor Setup dialog. Next, click *Map Click*, and then choose a feature on the map to open the Location Editor dialog. Alternatively the *Choose By Id* button can be used to start editing a record based on its Id number. Make the editing changes and click *Apply* to save them.

Deleting a Persons Record

When the *Delete Existing Record* option is selected, the record to be deleted must first be identified either by *Map Click* or by *Choosing By Id*.

To choose by map click, click the *Map Click* button, then click the feature on the map view. To choose by Id, click the *Choose by Id* button, and type the record Id when prompted. It's possible for records to exist in the database but lack a coordinate location. If so, they must be accessed by their Id since they will not appear on the map.

Once the feature is identified, the Location Editor dialog is opened in Delete mode. In Delete mode, the data for the record are shown for inspection only, so the Location tab is disabled, and the fields are read only.

The Location Editor can be used to modify more than just the person's layer, see the Location Editor section for more details.

Identifying Persons with Special Needs and Areas Affected by Emergency Events

An emergency event can occur anywhere and the need to be prepared is high. The SPP system can handle event planning responses to a variety of incidents that could occur such as a flood, tornado damage, a forest fire, a highway accident, a railroad accident, or a terrorist attack.

For planning purposes, identifying persons that are located within a potentially affected area becomes critical. Additionally being able to make emergency plans, determine evacuation routes and reporting is an important part of emergency planning. The first step to doing this planning in SPP involves mapping an emergency event and determining the persons affected.

The steps needed to identify persons affected include:

- Determining the boundaries of the emergency (using a wedge, D2-Puff or WebPuff 2.1 Plume, any GIS layer, or a user-defined shape), and
- Determining individuals with special-needs within the affected area.

Optionally, the user can:

- Create reports or excel spreadsheets,
- Design Evacuation Routes, Control Points and Alert Routes,
- Determine persons with special-needs persons within hearing range of alert routes, and
- Create a Plan.

Determine the Boundaries of the Emergency

The first step for planning for an emergency is to open a map view that includes a potential accident location, the affected area (such as the area under an airborne plume), and the planning zones affected. The boundaries can be defined by a:

- Wedge,
- D2-Puff or WebPuff 2.1 Plume,
- GIS layer, or
- User-defined Shape.

Define a Wedge

Use the Map viewing controls to move the map to the site of the emergency. Click on the *Define Wedge* button on the SPP toolbar. Click on the *Map Click* button and then click on the emergency location to set the wedge origin. Enter the parameters to define the wedge and click *Open Event*. See the Define Wedge section for more details.

Open the D2-Puff Plume

This option requires using D2-Puff or WebPuff 2.1 in advance to run the model and export a plume. See the D2-Puff Plume section for more details.

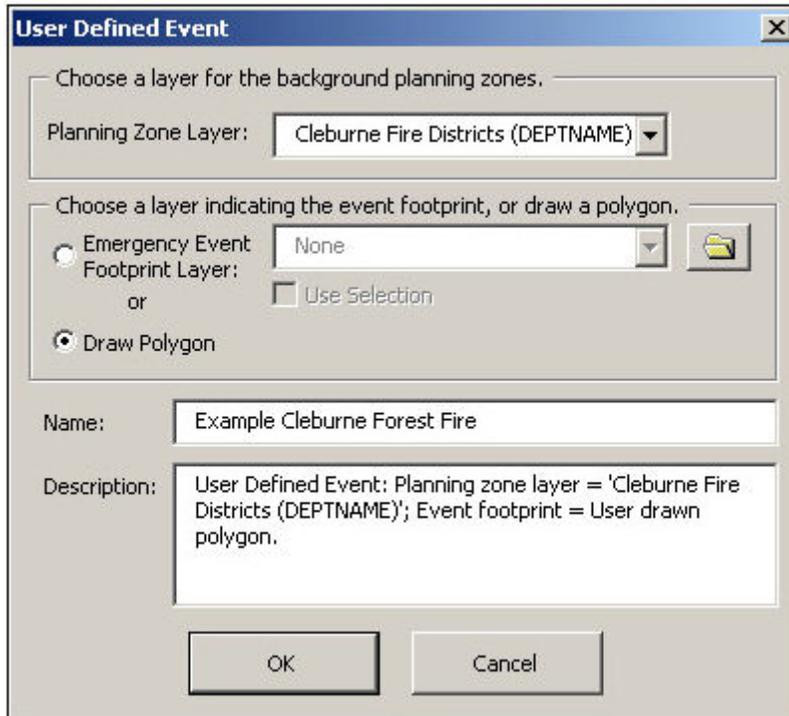
Click on the *D2-Puff Plume* button. This opens the D2-Puff Plume import dialog. Click the *Edit List* button.

Click the *Open Folder* button to the right of the Layer Name. Browse to the directory containing an exported D2-Puff plume shapefile and select the file. Click

on *Add to List* button and then the *Find Ref Number* button to apply this plume to the map.

GIS Layer or User-Defined Shape

Use the Map viewing controls to move the map to the site of the emergency and open the *User Defined Event* tool on the SPP toolbar. Select a planning layer and either choose a GIS layer for the Emergency Event Footprint Layer option, or draw an area directly on the map (Draw Polygon). Then click *OK* to update the map with the specified information. See the User Defined Event section for more details.

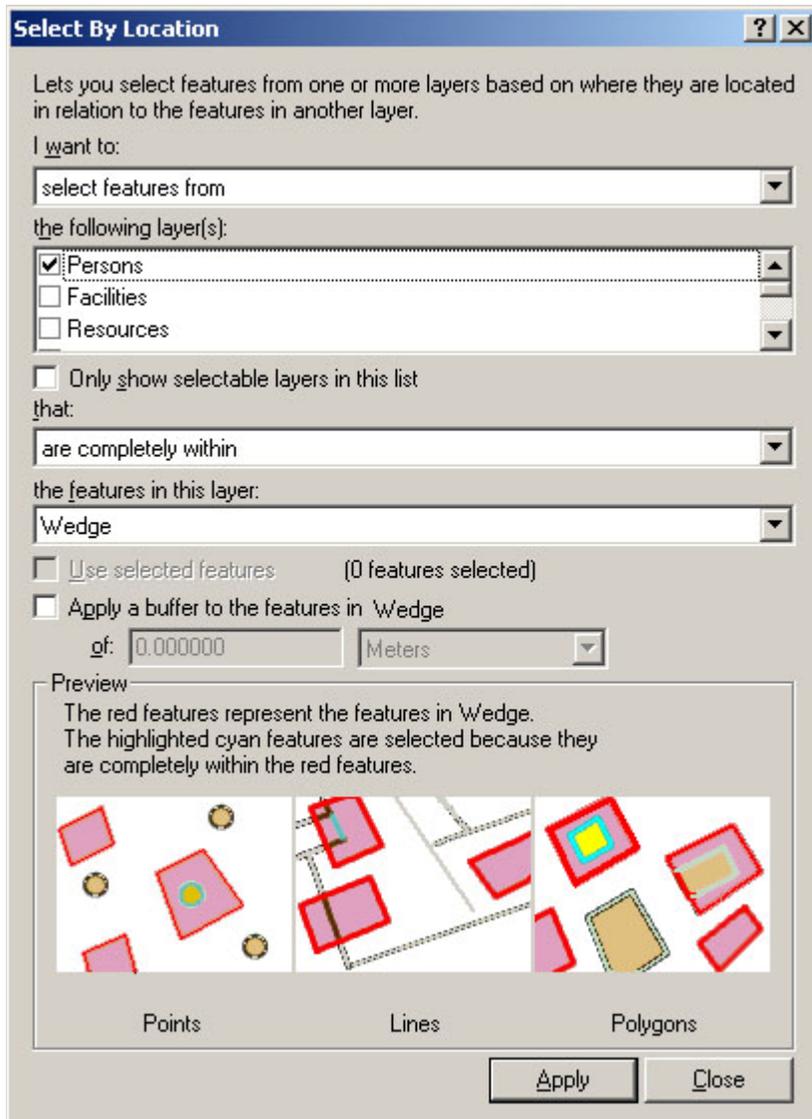


Determine Persons within the Hazard Wedge, D2-Puff plume, or User-Defined Shape

For the hazard wedge, click the *Select by Location* tool from the SPP toolbar and choose the settings as shown below to **select features from Persons that are completely within the Wedge**. Then click *Apply* to select the persons who fall within the hazard wedge, then *Close*.

This process would be the same for the other shapes.

The *Select by Location* dialog allows for many useful searches, see the *Select by Location* section for more details.



Create Reports or Export Data

Reports

Using the Open Report or Export Data button allows the user to create reports based on the current information in the database and on the map. Click on the *Open Report* or *Export Data* Button. Choosing the Persons-Detailed Report will produce a report detailing the persons records currently showing on the map, and if a subset of the persons records are selected on the map, the report can be limited to only the selected set. Many other reports are also available from this tool.

Export Data

Any tabular data in SPP can be easily exported from the system for use in Microsoft Excel or other software. Click the *Open Report* or *Export Data* button and use the right side of the Open Report or Export Data dialog to choose which information to export. Click the *Export Table* button to continue. There may be some prompts about selected records and/or definition queries, and then a dialog will allow an output location and filename to be specified. See the Open Report or Export Data section for more details.

Design Evacuation Routes, Control Points and Alert Routes

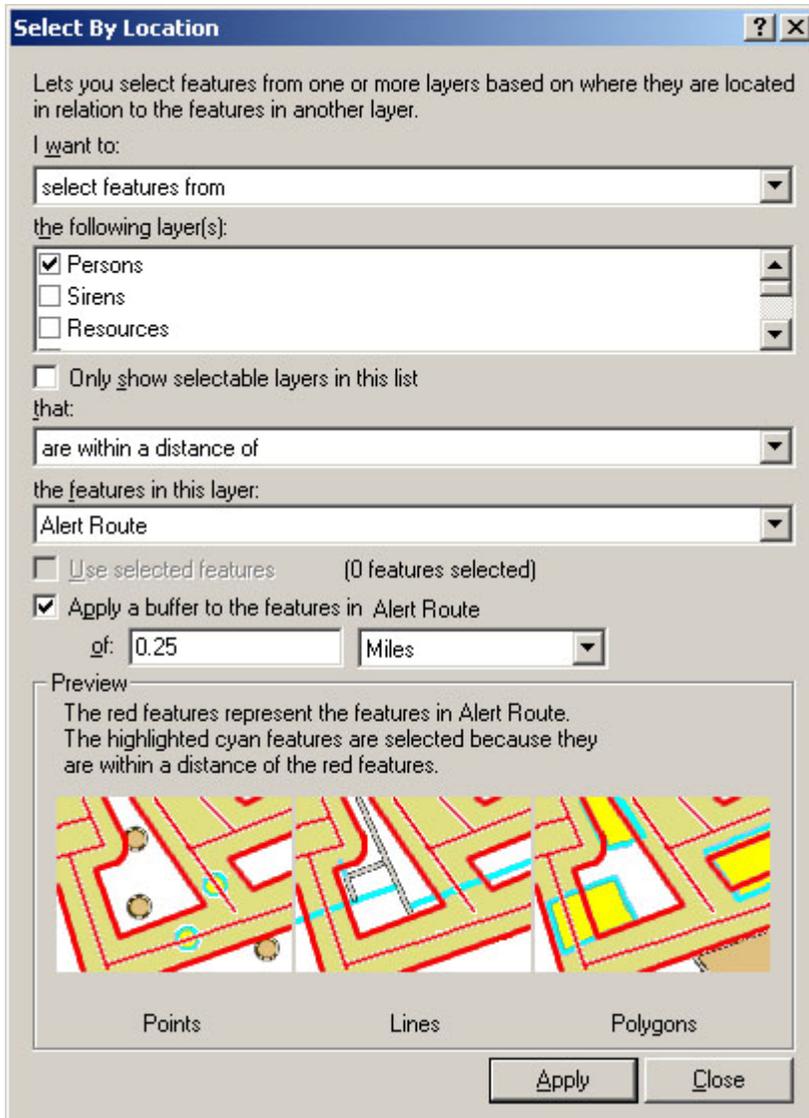
First, adjust the map to include the area intended for drawing evacuation routes. If they are not currently on the map, use *Add Map Layers* to add Streets and/or Major Roads to the map view. If the Evacuation Route layer is not in the Table of Contents, click the *Add Evacuation Route* tool to add it. Click the *Add Evacuation Route* tool again to activate it, then trace a route on the map by clicking a series of points to draw the line. Double-click to finish the line, then enter a description for the evacuation route and click *OK*.

Entry of non-evacuation traffic onto evacuation routes should be limited. If control points for the area do not already exist in the database, the Location Editor can be used to add new ones. When the *Location Editor Setup* dialog appears, select *Control Points* as the layer to be edited and *Add New Record* as the operation. After clicking *OK*, the Location Editor dialog opens. *Map Click* in the Location tab can be used to designate the location of the control point. Attributes can be entered for the control point under the Attributes tab. Finally, click *Add* to add the control point to the map view.

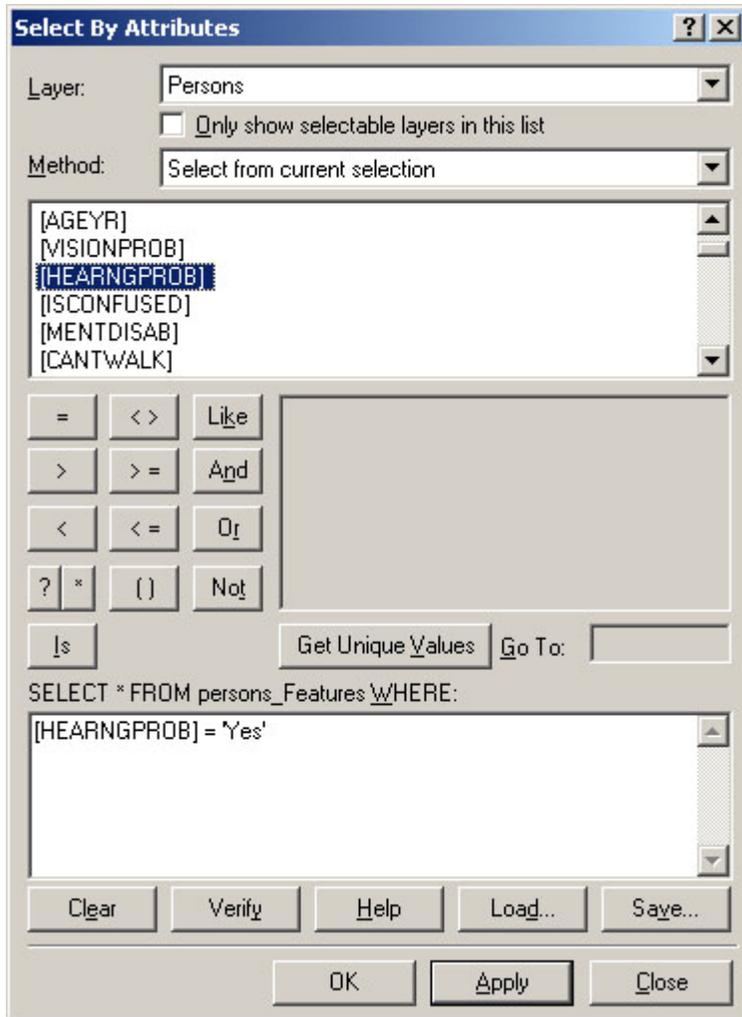
Alert routes are added the same way evacuation routes are, and indicate the planned route of a mobile alerting system. Use the Add Alert Route tool for this purpose.

Determine Persons with Special Needs within Hearing Range of Alert Routes

The purpose of alert persons with special needs to take some kind of action. For the alert route to be effective, persons with special needs should be within hearing distance of the route. Click the Select by Location button on the SPP toolbar or from the Selection menu to determine which features from the Persons layer are within a specified distance of alert routes.



However, some of those persons may have hearing problems and would not be able to hear the alert route message. To identify this subset of the already selected persons, click the Select by Attribute button on the SPP toolbar or from the Selection menu. In the dialog, choose the Persons layer, "Select from current selection" as the method, and [HEARINGPROB] = "Yes" as the operation. When *Apply* is clicked, only persons with special-needs within the specified distance of an alert route who have hearing problems will be highlighted on the map view.



Create a Plan

A written plan can be created to document the appropriate emergency response for this event. Click on *Open Plan*. The dialog displays the list of plans, with the top one being the one for the event with the currently selected Reference Number. This plan can be edited by choosing it and selecting the *Edit Plan* button. See Open Plan for more details.

Example of a Fire Emergency Event

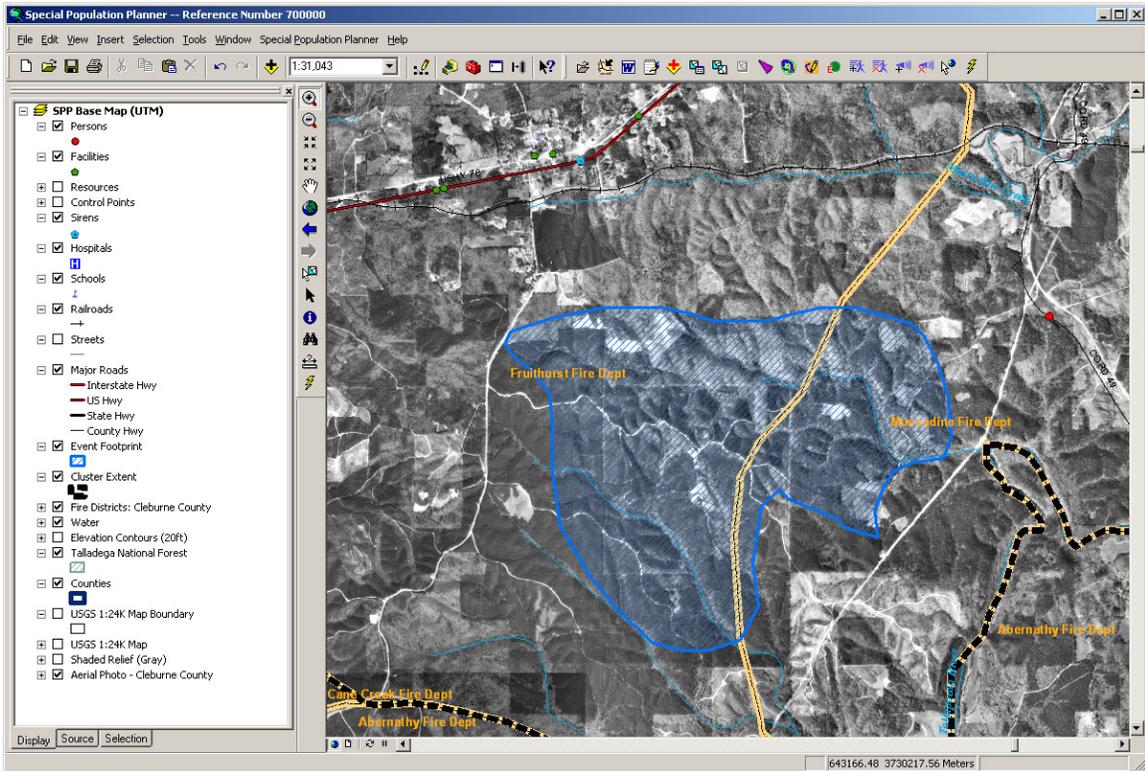
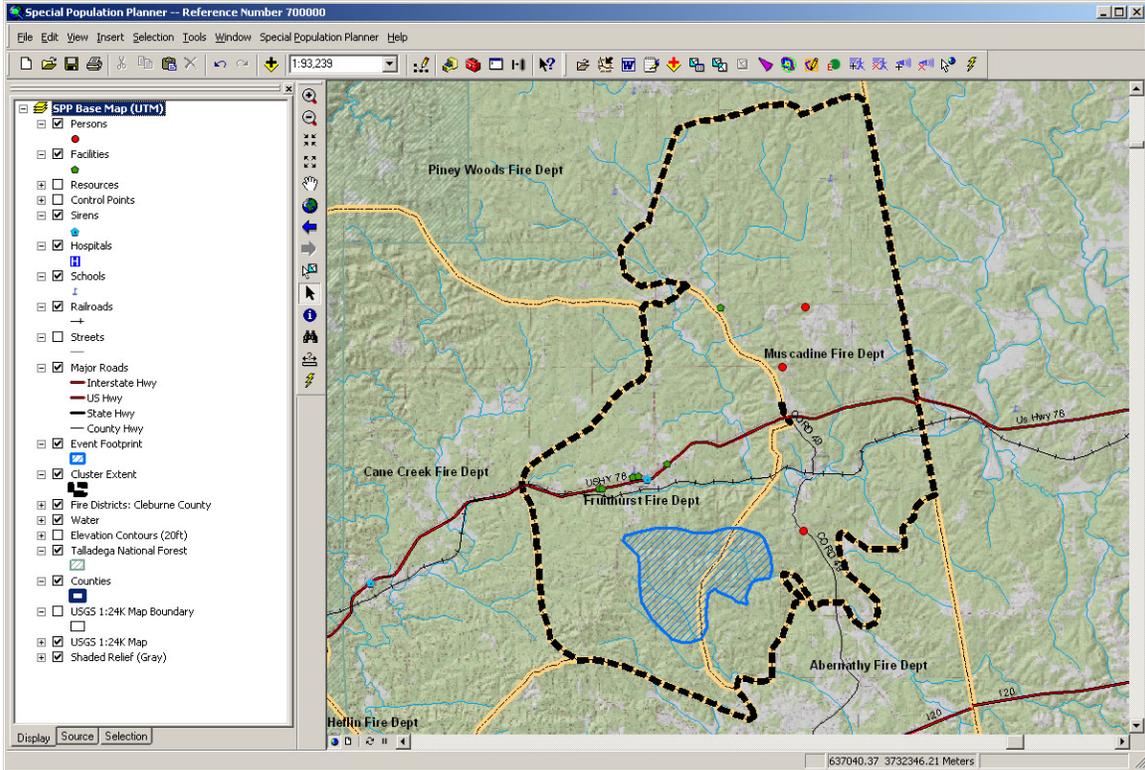
This example is a hypothetical forest fire using fire department districts as the planning zones.

Assuming the Fire Districts layer has already been installed as a planning layer (see the installation section), the next step is to zoom the map in SPP to the location of a hypothetical forest fire, and then open the User Defined Event tool. As shown below, the Fire District layer was chosen as the planning zone layer. The extent of the fire event was drawn on a map, the name has been specified, and the dialog is ready to open the event.



The graphic below shows the event opened in SPP, with some additional map layers added and shown on the map. The forest fire extent is shown in blue. No persons with special needs or special facilities are within the fire area. However, several of both are within the fire districts affected. Choosing the “Cluster Summary”, “Facilities Detailed”, and “Persons – List (Sorted by Userzone 1)” reports would provide many details about the affected area. The second image shows the map zoomed into the fire area with an aerial photograph in the background.

Special Population Planner



Example of a Rail Emergency Event

This example is for a train derailment that might cause the release of an inhalation hazard, such as anhydrous ammonia. Necessary information includes a potential location for the derailment and an assumed direction and extent for the plume. This example also assumes that responses will be based on Alabama emergency planning zones. The fire emergency example shows how another set of zones, such as fire districts, can be used.

Defining the Plume

The first step is to open a map view that includes a potential accident location and plume. Use the map viewing controls to move the map to the site of the potential accident. Add the Railroads layer to the map with the *Add Map Layers* tool, and verify its check box in the table of contents is selected to make it visible on the map.

Next, use the *Define Wedge* tool to open the Wedge Definition dialog. The EPZ Areas Layer from the drop-down list is checked. Click on the *Map Click* button and then the potential accident location on the map to set the wedge origin coordinate, then enter the rest of the parameters to define the wedge. Click *Open Event* to open a reference number relevant to the extent of the wedge.

Wedge Definition

Choose a layer for the background planning zones.

Planning Zone Layer: EPZ Areas (Zone)

Origin

Source igloo: None

Coordinate

X: 592048.35

Y: 3765491.69

Map Click

Direction

From Wind Direction (degrees): 110

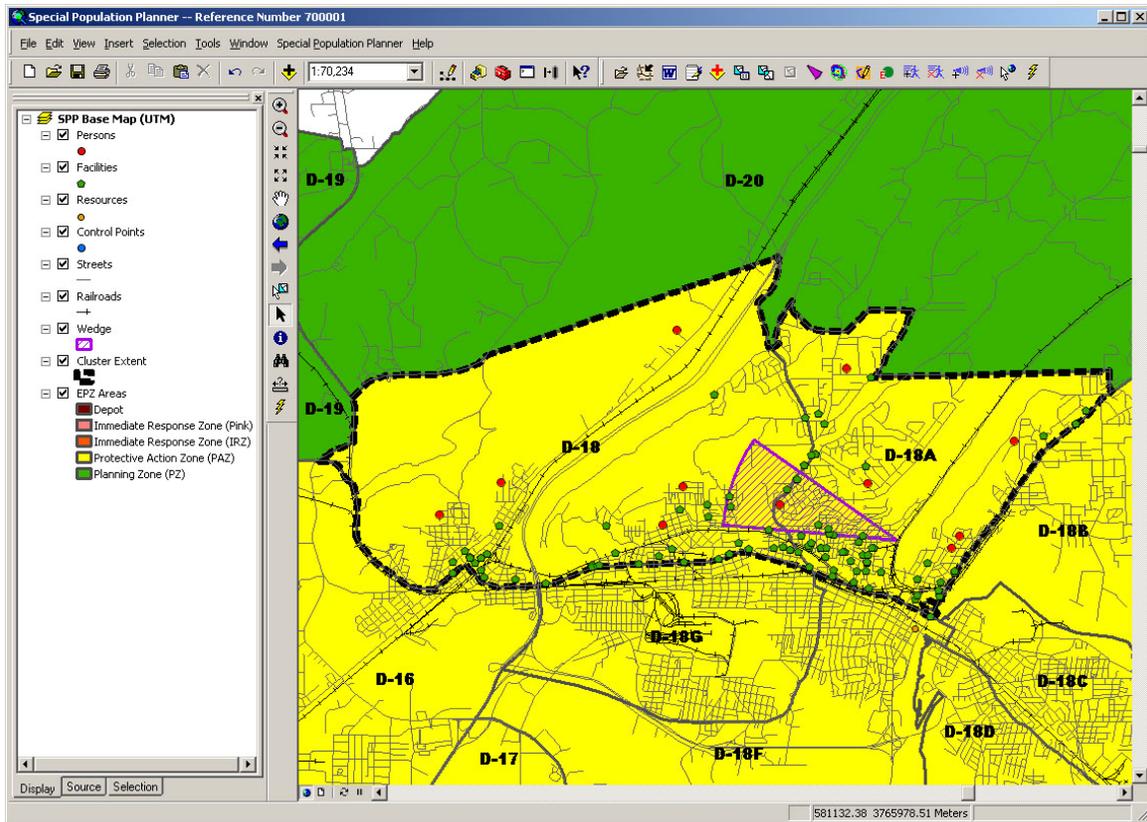
Width

Wedge Width (degrees): 30

Distance

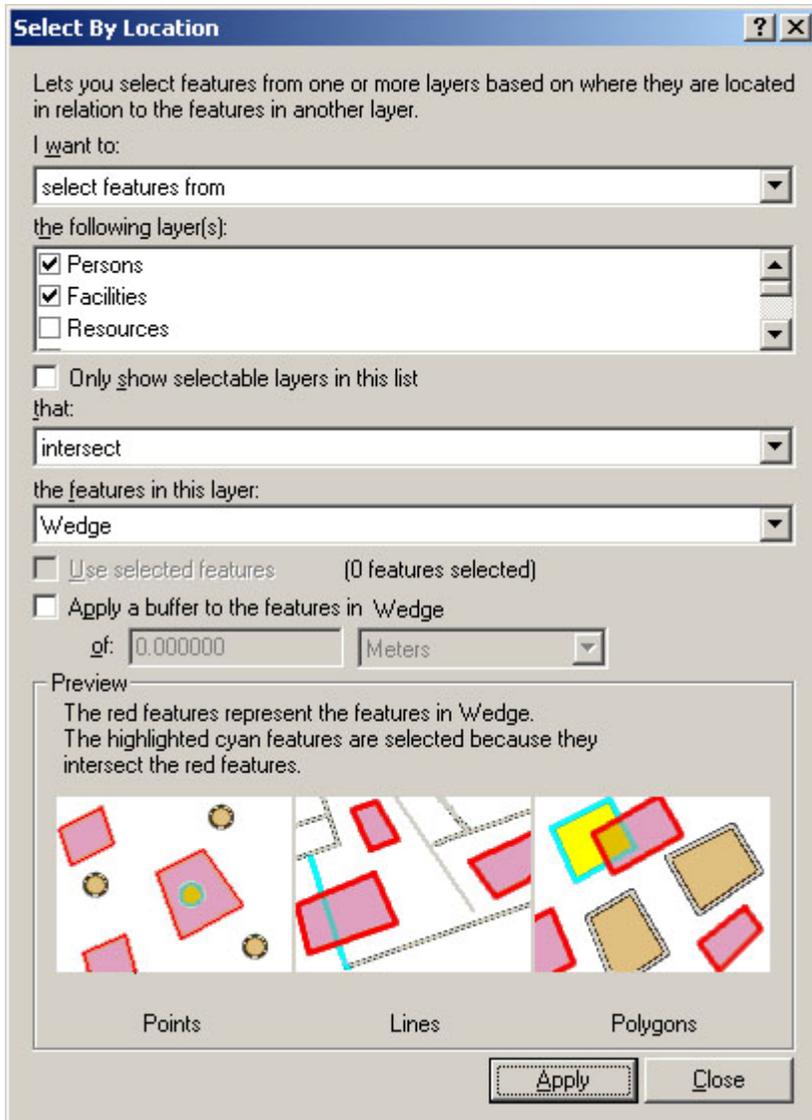
Distance: 2 Miles

Draw Open Event Cancel



Identifying Persons or Other Layers within the Plume

To select the persons and facilities contained within the plume, use the Select by Location button on the SPP toolbar or in the Selection menu as shown below. Click the *Apply* button to highlight the selected features on the map view.



Next, access the attribute table by right-clicking on *Persons* in the table of contents and selecting *Open Attribute Table* from the pop-up menu. The *Attributes of Persons* table opens with the selected records highlighted. Click the *Selected* button at the bottom of the table view to eliminate the other records from the display.

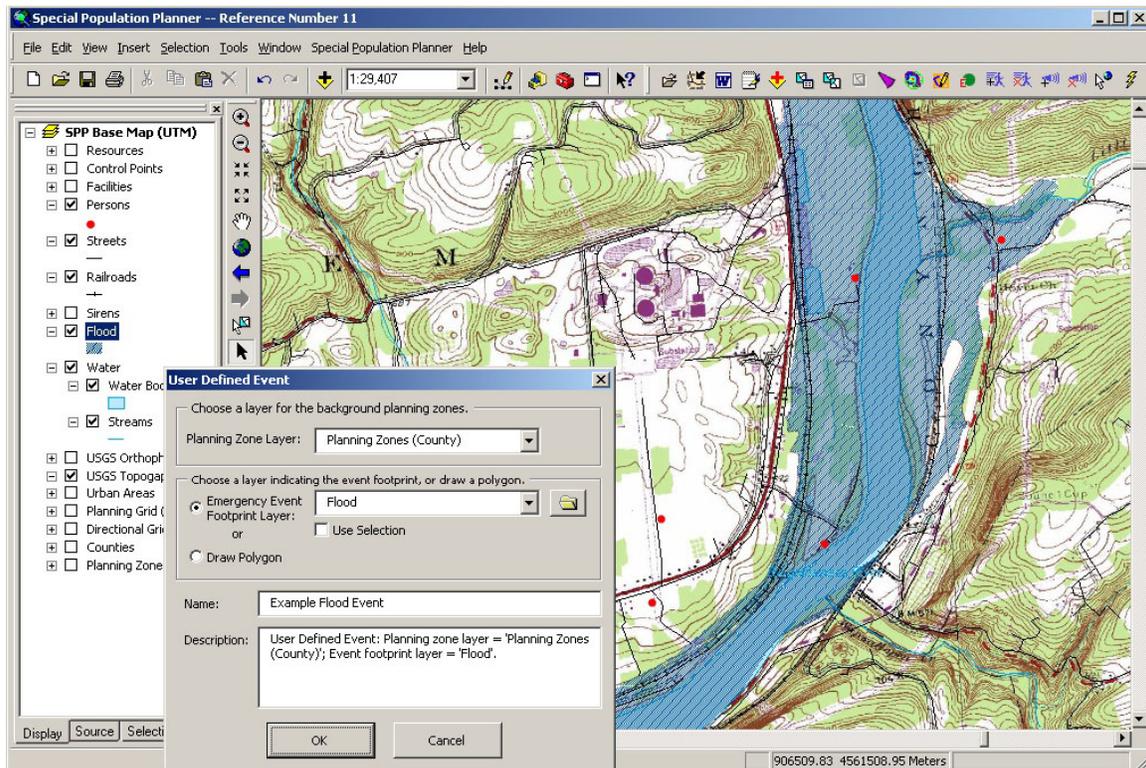
Example of a Flood Emergency Event

This example is for planning responses to a river flood that requires evacuation of the area. Creating plans using topographical information to identify low-lying areas and determining evacuation routes for those residing in these areas could be created with the SPP system. Necessary information includes the location of the potential flooding, and determining the extent that would be flooded. This could be estimated by screen digitizing a polygon over a contour map, using a digital elevation model to determine all elevations below a certain level, or by obtaining FEMA flood zone GIS layers.

Defining the Event

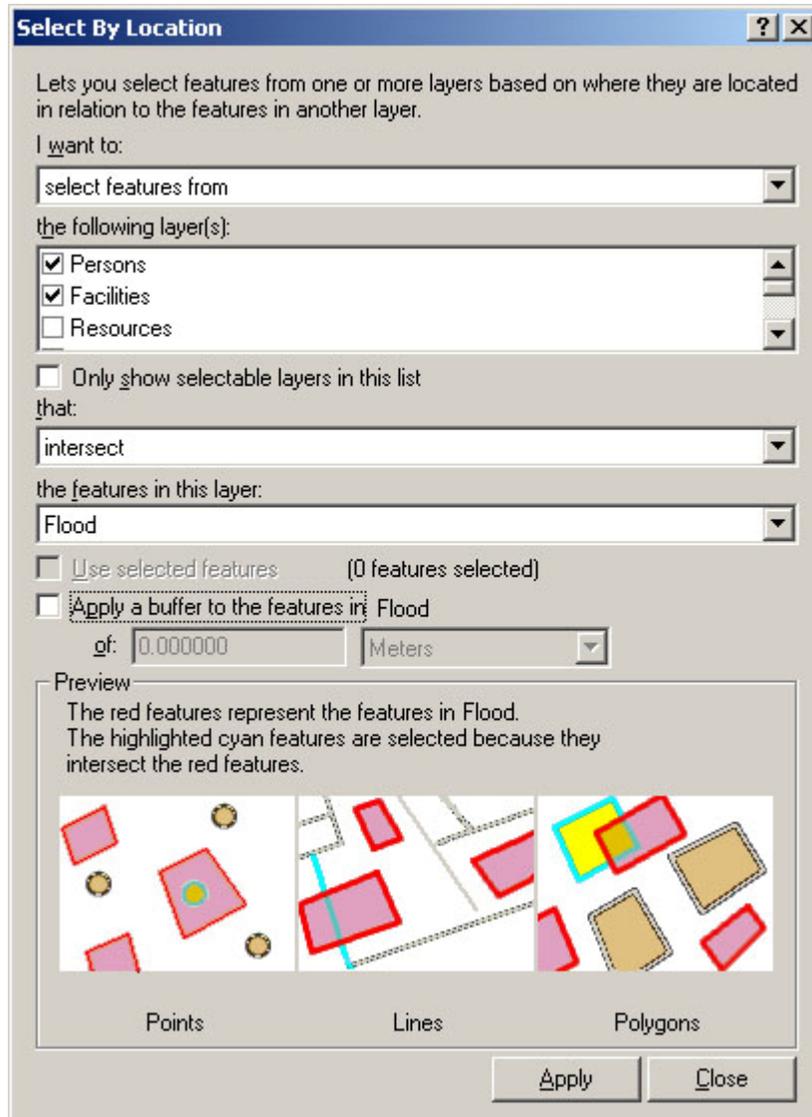
The first step is to open a map view that includes the flooding location and the area that is flooding. Use the map viewing controls to move the map to the area where the river is overflowing. Verify a flood layer is present or add a flood layer to highlight the low areas that would be flooded with *Add Map Layers* tool. Verify that the flood layer check box is checked in the table of contents to make it visible on the map.

Next, open the User Defined Event tool. As shown below, the flood layer was chosen as the event footprint. The extent of the flooding is shown on the map and the dialog is ready to open the event.



Identifying Persons or Other Layers within the Event

To select the persons and/or facilities contained within the flood zone, use the Select by Location button in the Selection menu as shown below. Click the *Apply* button to highlight the selected features on the map view.



Next, access the attribute table by right-clicking on *Persons* in the table of contents and selecting *Open Attribute Table* from the pop-up menu. The Attributes of Persons table opens with the selected records highlighted. Click the *Selected* button at the bottom of the table view to eliminate the other records from the display.

Identify Evacuation Routes

In flood emergency, planning evacuation routes for low-lying areas is critical.

Once the flooding event has been defined, use the Add Evacuation Route feature to define an evacuation route. Having a Street layer turned visible (Add Map Layer) eases creation of evacuation routes easier. Once this flood plan has been created, save the plan as an event (Open Plan).

User Installation and Setup Procedures

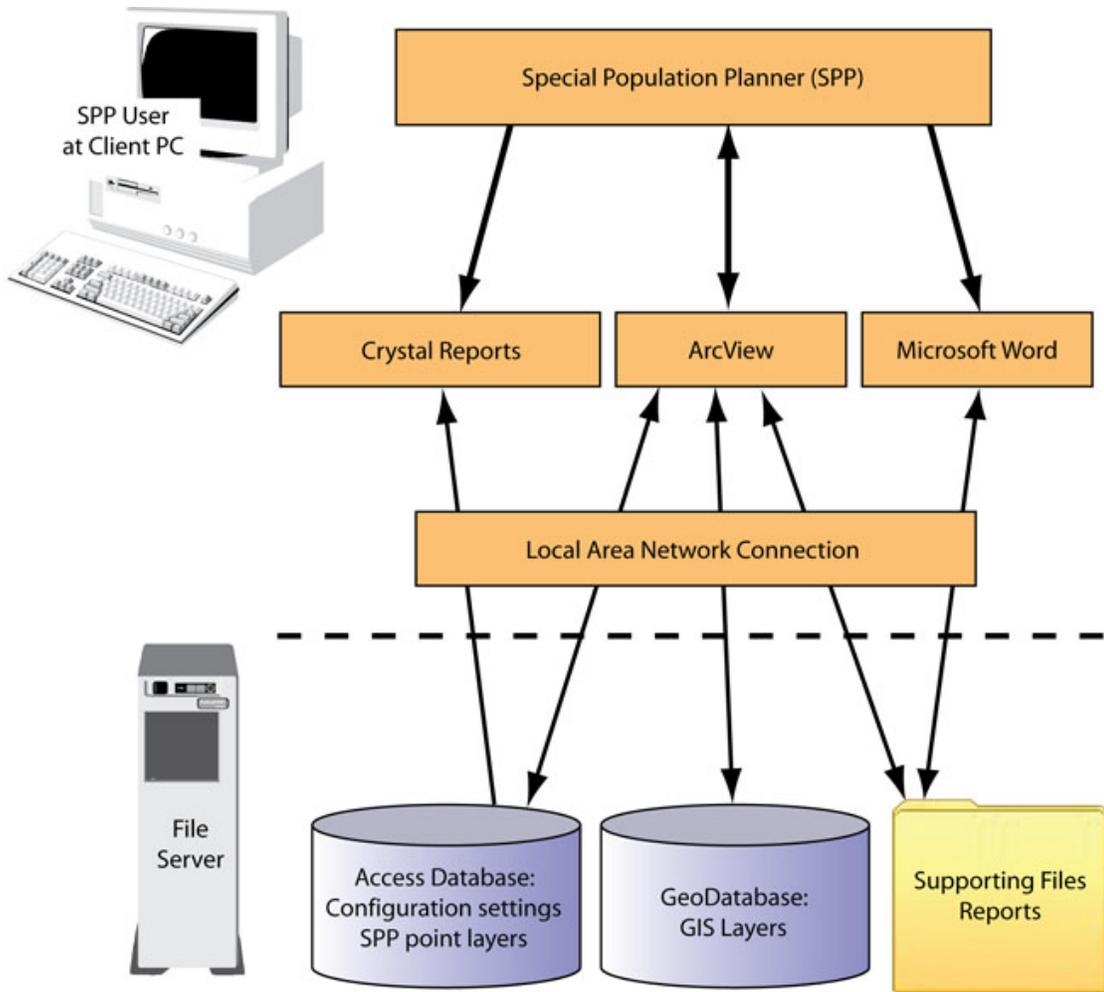
System Architecture

The SPP is programmed as a set of tools within an ESRI ArcMap 9.1 project. ArcMap is a component of both ESRI ArcGIS 9.1 and ESRI ArcView 9.1, and it provides a rich GIS user interface for viewing spatial and tabular data, analyzing it, and producing output reports and maps. This GIS interface has been augmented with the SPP tools for a user interface that provides custom functionality for emergency planning. The system as released also includes some hypothetical example records for special needs populations, facilities, resources, control points and sirens sufficient for showing how the system would work with real information. A GIS database is included with some publicly available example layers. The

SPP is designed to use a shared set of files on a networked disk drive, and one or more client systems for user access. No commercial software is needed for the server system. ArcView 9.1 or higher (or ArcGIS 9.1 or higher) is required for each client system, plus Crystal Reports 11 which is bundled with ArcView and ArcGIS software. Microsoft Access 2002 or greater is required for operations within the SPP database, including changes to the SPP database for use at a new installation. It is not required for typical planning activities. The example database is set up with the assumption that Microsoft Word or a word processor that supports *.doc files is present, but it can be easily configured to use a different word processor.

Software	Vendor	Purpose
ArcView or ArcGIS 9.1 (or higher)	ESRI	GIS and core interface
Crystal Reports XI (Bundled with ESRI software)	Business Objects	Reports
Access 2002 (or later)	Microsoft	Data storage and management
Word	Microsoft	Tabular plan editing

Software used within SPP



SPP System Architecture

SPP Server Setup

The shared SPP server files should be installed before the client system. They include an Access database used to store configuration settings and the point GIS layers managed by SPP, a GeoDatabase used to store the rest of the GIS layers, and directories containing supporting files and report templates.

The location chosen for the server files should be accessible to SPP users, secure from unauthorized users, have sufficient space for the installed files as well as files that will be generated as the system is used, and regularly backed up.

The initial install of SPP server files is a matter of copying the files onto the system with the installation program described later in this section. Several other steps are necessary for updating an active SPP system to ensure that previous work is not lost while updates are added.

Considerations for Sites Already Using SPP

In updating an existing SPP system the administrator must know what parts of the system need to be updated, and what parts of the system have been changed on the user's system. SPP has been designed with some of these update issues in mind such as assigning different ID number ranges to different organizations, and date stamping records that have been edited. Updates to the system should be made conservatively, including checking first whether changes have been made, and limiting the updates to the specific things that have changed.

This section covers the kinds of things that are most typically needed in SPP updates. However administrators should also inspect the system themselves and consult with the users about work that has been done and whether it should be preserved. Files under the SPP_Server directory can be searched for newer modification dates, and the SPP.mdb and SPP_GIS.mdb databases can be inspected for changes.

Quick Overview

First check and preserve the older version's system configuration settings stored in ConfigSppSettings and listed in the About SPP dialog.

SPP stores the path to the SPP.mdb file in a registry key and the rest of the configuration settings in the database itself. If the database location is moved after installation, use the SPP Configuration button in SPP Administrative tools to reset the key to the new database location for each client system.

Checking for and resolving changes to the items below are only necessary if the update includes changes to the particular items.

The system files should be inspected for data needing to be preserved. Specifically, preserve all files and directories in the Results directory. The ConfigEvent table should be inspected for any reference numbers added, and changes to the names or descriptions. Check for new layers added in the ConfigThemes table. If new layers are there, the files to which they point to and the legend files must also be preserved. Check for and preserve any entries in ConfigD2Puff and ConfigPlans. Check the point data tables for edits by performing a sort on the “Updated” field. If there are edits, consult with the user to determine whether these changes should be preserved, or superseded by newer SPP data.

More detailed information about these and other items is below.

ConfigSppSettings

This table should be different at each installation, and should not be replaced by an update. It contains the settings assigned during SPP configuration.

ConfigEvent Table and Results Directories

The ConfigEvent table in SPP.mdb is managed in parallel with numbered directories under SPP_Server\Results. When an event is opened in SPP, it is identified by a reference number either already in ConfigEvents or added to it. Files generated for that event are stored in a Results subdirectory named with the reference number, with a directory level for each two digits. For example, files for reference number 123456 would be stored in a Results\12\34\56\ directory. Comparing the new and existing ConfigEvents tables, and inspecting the Results directory will determine the action needed. The organization setting in SPP is used to assign unique number ranges to each site, in order to prevent duplicate reference numbers from occurring.

Edits to SPP Point Layers

The SPP Location Editor tool is used to add, change, and delete records in the point layers installed in SPP. (The editable layers are listed in the Location Editor Setup dialog.) If the update includes newer records for these tables, the existing database may need to be checked for edits made by the user. Added records will have ID numbers in the range assigned to the organization (to prevent duplicate numbers from occurring between organizations). The date and time of the last update to a record is stored in

the Updated field, which can be sorted alphabetically to look for changes. Deleted records are removed from the table.

Modifications to Reports

The ConfigReports table lists the reports installed in SPP, and the Config\Reports directory contains the template files. Modification dates on the report template files would indicate new or changed reports, along with corresponding entries in the ConfigReports table.

Installed GIS Layers

The ConfigThemes table lists the GIS layers installed in SPP, the Config\Data directory contains the files, and the Config\Templates directory contains some of the .lyr (symbolization properties) files. Modification dates on the files will indicate changes. Many layers are stored in the SPP_GIS.mdb database, which can be opened in Access to view the modification dates and times of the tables. (ESRI does not support modification of GeoDatabases within Access, so this step is only recommended as a means to look for changes.)

Other Configuration Tables

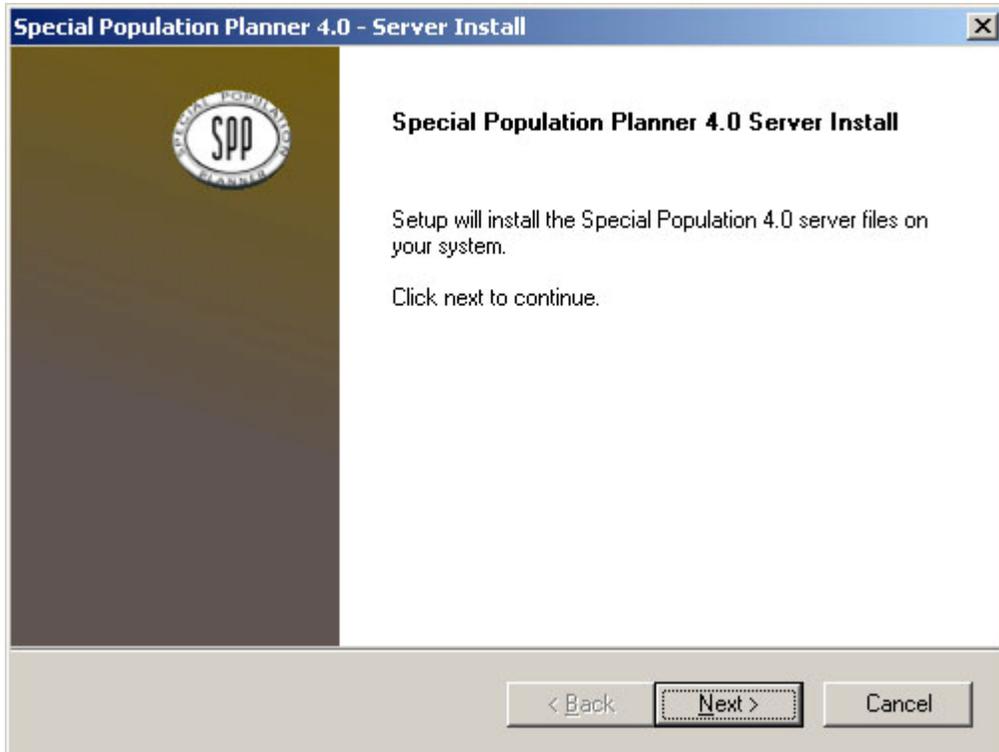
- The ConfigD2-Puff table stores links to D2-Puff model output files that may have been added by the user.
- The ConfigPlans table stores links to documents listed in the Open Plans dialog.
- The ConfigLocationEditorFields table manages the configuration of the Location Editor and is not modified by SPP. Advanced users may have modified it, and consulting them is the best way to determine whether action is needed.
- The ConfigPlanThemes table tracks the planning zone layers in the system and the location-dependent fields maintained by SPP. If user-defined layers have been added or changed, they will be listed in this table. If the user-defined layers have been used to open events there will be entries in the ConfigEvent table corresponding to these layers.

More Significant Changes

Advanced users can change aspects of the system beyond those listed above, such as changing the structure of point layer tables, editing the contents of GIS layers installed in the system, or changing the emergency plan template. These changes can be more difficult to blend with other parts of the system, and coordinating them among multiple installations should be carefully planned.

Server File Installation

Locate and run the SPP_40_Server.exe file. After some processing, the welcome screen will appear as shown below. Click *Next* to continue.



The following prompts will appear:

- License Agreement: Click to accept the terms and *Next* to continue.
- Choose Destination Location: Use the *Browse* button to specify a location for the shared SPP 4.0 SPP_Server directory. (The example database is about 50 Mb, and additional space will be needed depending on how much work is done with the example and whether data are added to it. This directory will need to be accessible from the client system(s).)
- Ready to Install: Click *Install* to install the server files.

Make Sure Files Have Proper Security Settings

Because SPP can contain sensitive information it is essential that files below SPP_Server are accessible by authorized users and not accessible to non authorized users, particularly the SPP.mdb database file. These settings should be made through the operating system.

SPP Client Setup

Installation of the server files for SPP should be done before the client installs. If the server install has not been completed, refer to the Server Setup Section of the help documentation and perform that procedure first.

For systems with users that do not have administrative privileges care must be taken to install the components of the system so as to be accessible by the user, and to test the components of the system with the end user's account.

Install ArcView or ArcGIS

SPP requires a copy of ArcView or ArcGIS 9.1 or later for each client. Insert the ArcView Desktop or ArcGIS Desktop CD and run setup.exe if it does not start automatically. A typical installation should be done. Refer to the Environmental Systems Research Institute (ESRI) documentation for help in installing and registering the software.

If this GIS software is already installed, continue to the next step.

Install Crystal Reports

SPP requires a copy of Crystal Reports 11 for each client, which is bundled with ESRI ArcView and ArcGIS software. Run setup.exe if it does not start automatically. A typical installation should be done. Refer to the ESRI and/or Crystal Reports documentation for help in installing the software.

If Crystal Reports 11 is already installed, continue to the next step.

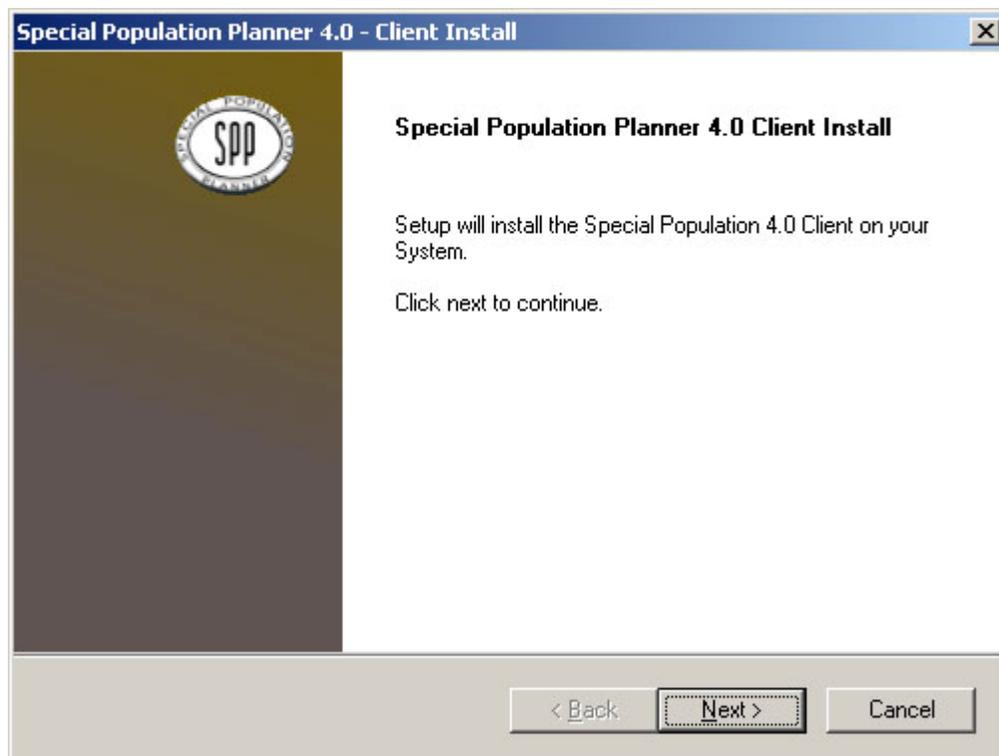
Install Access 2002 (or greater)

SPP requires a copy of Microsoft Access 2002 or greater for database editing and some higher-level database maintenance tasks, but not for typical planning activities. If Access is already installed or not needed for this client system, continue to the next step. Refer to documentation provided with Microsoft Access to install this product.

Install SPP

The client portion of SPP is simply a customized ArcMap project with its supporting DLL files.

Locate and run the SPP_40_Client.exe file. After some processing, the welcome screen will appear as shown below. Click *Next* to continue.



The following prompts will appear:

- License Agreement: Click to accept the terms and *Next* to continue.
- A Yes/No dialog will appear to determine whether the server files have been installed. Clicking *Yes* continues to the next item. Clicking *No* skips the next item.
- Browse for the SPP_Server\SPP.mdb Database File: Use the file dialog to browse for this file at the location where the server files were installed.
- Select Program Folder: Specify a Program Folder name or accept the default Special Population Planner program group.
- Ready to Install: Click *Install* to install the server files.

Launch SPP from the desktop icon.

Possible Extra Steps

On some client systems the following steps may be needed.

System Compilation

If the compatible versions of the necessary software (ArcView and Crystal Reports) are installed, this step should not be required, however if a DLL used by SPP is not available on the client system SPP will have a compile error. First, ensure that the necessary software has been installed and try running SPP again.

If there is still a problem, choose *Macros* then *Visual Basic Editor* from the Tools menu in the GIS. In the VBA editor, choose *References* from the Tools menu and look for entries starting with the word "MISSING." Second, use the list below to determine whether the missing references are required by SPP or not.

- If the missing reference is not in the list, uncheck the entry in the References list and SPP should compile without it.
- If the missing reference is in the list, it must be identified and linked. Search for the DLL file on the client system, or obtain it from a system where SPP is working. Then use the References dialog to link it.

Once the missing references are fixed, close the dialog and pick *Compile* from the Debug menu. If this completes properly, close the VBA editor window, save the project, and continue testing SPP.

References Required By SPP:

- Normal
- Visual Basic For Applications
- ESRI Framework Object Library
- ESRI UIControls
- Microsoft Forms 2.0 Object Library
- Registration Manipulation Classes
- ESRI ArcMap Object Library
- Microsoft ActiveX Data Objects 2.5 Library
- ESRI Geometry Object Library
- ESRI System Object Library
- ESRI Display Object Library
- ESRI GeoDatabase Object Library
- ESRI DataSourcesFile Object Library
- ESRI DataSourcesGDB Object Library
- ESRI Carto Object Library
- ESRI Location Object Library
- ESRI GeoDatabaseUI Object Library
- ESRI Catalog Object Library
- ESRI ArcMapUI Object Library
- ESRI Editor Object Library
- Microsoft Visual Basic for Applications Extensibility 5.3
- Crystal Reports ActiveX Designer Run Time Library 11.0
- Crystal ActiveX Report Viewer Library 11.0

Crystal Reports Initialization

In some cases, reports in the system do not work properly until the system has been rebooted, and/or a report has been previewed manually within Crystal Reports. If an error occurs during tests of the reports, first try rebooting if the system has not been rebooted since the Crystal Reports installation. Then reopen SPP and try running a report again. If it does not work, then without exiting SPP, browse to the C:\SPP directory in Windows and double-click on the .rpt file. This should launch Crystal Reports. In Crystal Reports, choose *View* then *Print Preview*. This triggers Crystal Reports to install a component that is sometimes not active otherwise. If the report displays properly, exit Crystal Reports and SPP reports should begin working. At this point if the reports do not work, the most typical problem is that the report file templates are inconsistent with either the version of Crystal Reports that was installed, or the database tables they depend on. Reports in SPP have been tested in both ArcGIS 9.1 and 9.2 and with the versions of Crystal Reports bundled with them.

Map Symbolization Errors

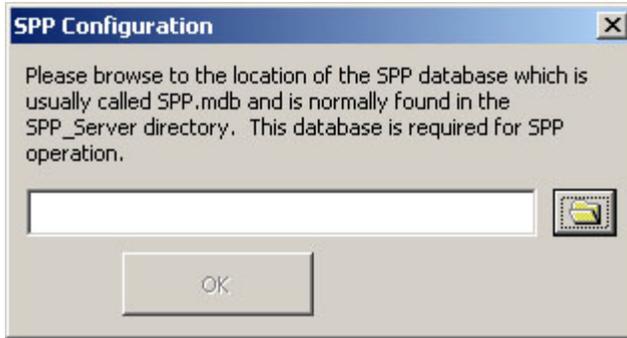
On some networks, map symbology does not load properly from server files even though the files are properly configured and SPP finds them successfully. If this occurs, the SPP_Server\Config directory can be copied to the C:\SPP directory on the affected client machine(s). SPP will first look for files in the local directory.

SPP Configuration Settings

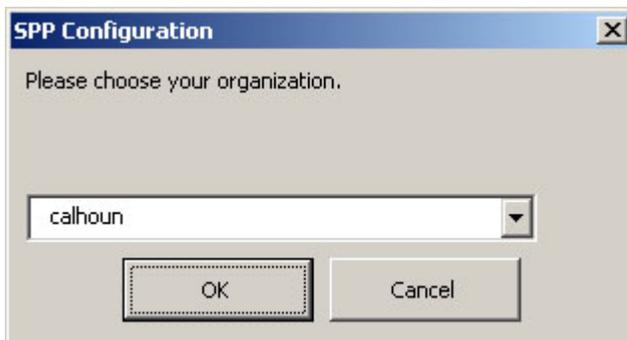
When SPP first launches with a new database, it will prompt for configuration settings. (These settings can be cleared and reassigned using the *SPP Configuration* button in the Administrative Tools dialog if changes are necessary later.)

The first configuration setting, the location of the SPP.mdb database, is normally assigned during the SPP client installation and will be skipped if SPP finds the database. This file is normally on a networked server drive under the SPP_Server directory.

Click the *Browse* button to browse to the SPP.mdb file, then click *OK* in the dialog when the file is identified. This setting is saved to the registry under HKEY_LOCAL_MACHINE\SOFTWARE\Argonne National Laboratory\Special Population Planner\SPP_Database and requires administrative privileges to be set or changed.



Next, the user organization is identified. (This setting and all subsequent settings are stored in the ConfigSppSettings table in the database.) This setting is used to assign unique ranges of numbers for new reference numbers and ID values in the database for each organization using the system.



Next, the location of the SPP_Server supporting files is identified. This directory is normally on a networked server drive. Click the *Browse* button to browse to the directory, then click *OK* in the dialog when the directory is identified.

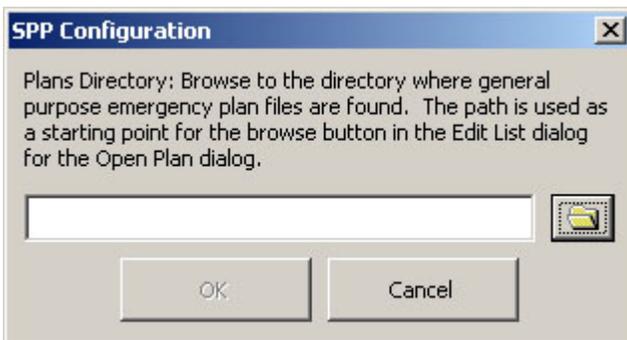


Next, the location of the D2-Puff directory is identified. This directory is the location where plume export files from D2-Puff or WebPuff 2.1 are saved, presumably on a remote network drive. It may be necessary to permanently mount the drive for the user as a drive letter so that SPP can consistently reach the files. If this directory is not available or the models are not being used at this location, it can be set to any other directory, such as C:\. Click the *Browse* button

to browse to the directory, then click *OK* in the dialog when the directory is identified.

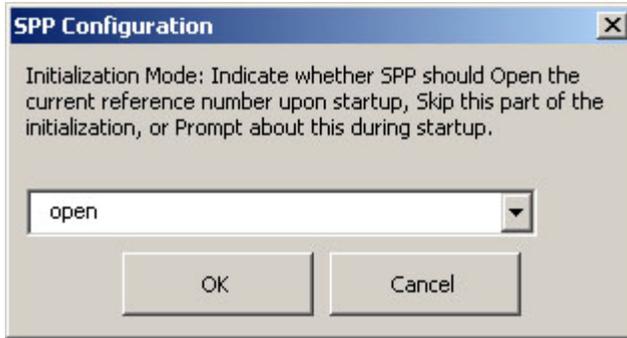


Next, the location of a plans directory is identified. The Documents directory under SPP_Server is suggested, but if there is an established location for planning documents it can be used instead. This directory is simply the location where the Edit List dialog for SPP plans starts browsing when the browse button is clicked. A variety of files can be stored in the directory and linked to SPP for fast access.



Finally, the initialization mode is identified. Users have three choices:

- **Open:** This is the default setting which causes SPP to reopen the last reference number opened by the client system each time it starts up.
- **Skip:** With this setting, SPP skips opening the last reference number during startup. This can be useful for advanced users that may want to preserve settings that would be refreshed if the last reference number was opened.
- **Prompt:** SPP prompts during initialization whether to reopen the last reference number.



The installation of SPP is now complete. The SPP tools should be tested and then the project should be saved before exiting.

Testing the Installation

- Choose *Start, Programs, Special Population Planner, Special Population Planner Help* to test the client machine copy of the help file.
- Launch SPP from the desktop icon.
- Test Special Population Planner, SPP Help within SPP.
- Open an event using one of the tools and inspect the map to verify that the main layers are opening properly with the proper symbolization.
- Use the Add SPP Map Layers tool and add all the layers listed to verify that they load properly. Deleting all layers from the table of contents and reopening an event is a quick way to go back to the main layers.
- Test adding a practice point and geocoding an address in the Location Editor tool.
- Test the Word connection by opening a plan.
- Test several or all the reports.
- Test an evacuation route. (If this fails, the problem is normally that the SPP\Config\Template files are read-only. They should be changed to be read/write.)

File/Directory Organization

Spp_Server

Config -- Contains system configuration files.

SPP.mdb – Shared Access database used by SPP.

SPP.cnt -- Table of contents for SPP help file.

SPP.hlp -- Help file for SPP.

SPP.ico -- SPP desktop icon.

Reports -- Directory containing Crystal Reports template files referenced in the ConfigReports table.

Templates -- Directory containing template files used throughout SPP.

*.dbf, *.shp and *.shx -- Files defining the structure of alert route and evacuation route themes generated in SPP.

*.lyr -- ArcMap layer files used for map symbology in SPP.

PlanTemplate.doc -- Microsoft Word emergency plan template used when a new plan is started.

Data -- Directory containing the SPP GIS files.

SPP_GIS.mdb – ESRI GeoDatabase containing SPP GIS files.

Streets.loc – Streets geocoding parameter file.

*.lyr -- ArcMap layer files used for map symbology in SPP.

*.img, *.rrd, *.aux – Imagery files

Other files may be present depending on data added to SPP.

Documents – Directory for system-wide plan, and other documents.

Results -- Directory created by SPP containing reference number specific files related to planning activities. Subdirectories are generated from the reference number with multiple levels to avoid too many files in one directory. For example, Results\00\17\06 would be the directory for reference number 1706.

AlertRouteLine.* -- Shapefile layer for alert routes.

Cluster.* -- Shapefile layer defining the extent of the zones for a reference number.

EPZ.dbf -- DBF containing the main planning zone layer zones definitions for a reference number.

EvacRoutLine.* -- Shapefile layer for evacuation routes.

Event_*_Plan.doc -- Word processing plan written for a reference number.

Other files will be present for events having user-defined planning layers.

Backing up Data on the System

Backing up Raw Data

The system administrator should back up the shared server files on a regular basis. Backups should be performed when the SPP system is not being used. SPP uses simple files and a Microsoft Access database, all of which can be reliably backed up through a simple copy process.

Customizing the Installation

This version of SPP was designed so that it could be customized for use with new geographic locations and other changes. In this section, procedures are described for the following changes to the system:

- Changing the GIS database to a new geographic area,
- Installing new data layers,
- Updating Location-Dependent Values,
- Adding or changing user planning zone layers,
- Updating or replacing the street layer used for geocoding,
- Modifying and adding new reports,
- Configuring the Location Editor, and
- Configuring extra location-dependent values.

Required Layers

This version of SPP includes an example database populated with publicly available GIS data, and some hypothetical information for demonstration purposes. As explained below, the system can be modified for a new geographic location, and adapted to a variety of uses. The required layers for SPP to run are:

Planning Zones

Many of the functions in SPP depend on a planning zones layer which should cover the full extent of the region of interested, and be portioned into a set of uniquely-identified zones. This layer also determines the map projection used by the system. One main planning zone layer is required, and up to two user-defined planning layers can be installed or changed by users.

Point Layers

At least one point layer is required for many of the SPP tools, and several are included in the example database, including Persons, Facilities, Control Points, Resources, and Sirens. More information on the options for changing these layers is described in the Customizing the Installation section.

Addressed Street Data

A geocodable street layer is needed for the Location Editor to locate points on the map by their street address. This layer is normally called "Streets" in SPP, and the Location Editor requires a "Streets.loc" geocoding parameters to be set up in the SPP_Server\Data directory.

Changing the GIS Database to a New Geographic Area

The first step in customizing SPP for use in a new geographic area, set of organizations, and/or for different uses is to create a new installation of the server files. The easiest way to do this is to first install and become familiar with the example database, and then to alter the example with the desired changes. This section includes main steps needed to set up SPP for a new geographic area, and the following sections provide more details about customizing aspects of the system once it is running with the new database.

- Install the example SPP_Server files and make sure the system is running properly.
- Copy the example SPP_Server files to a new directory that will become the new database. (In the following discussion SPP_Server refers to the new copy of SPP_Server, and SPP refers to the new SPP project file.)
- Copy the C:\Program Files\Special Population Planner\SPP_4.mxd to SPP_4_Example.mxd and make a desktop shortcut to it. This and the next change will allow you to continue to run the example database separately from the new instance.
- Start SPP, and choose *Macros, Visual Basic Editor* from the Tools menu. In the pane at the left, open *SPP (SPP_4.mxD), Modules, Main*. Right-click on *Main* and choose *View Code*. Locate the following line in the code for the mainSpplnit routine:

```
gsSppDbNameRegKey = "SOFTWARE\Argonne National  
Laboratory\" & _  
"Special Population Planner\SPP_33_Database"
```

Change the name of the final level of the registry key from “SPP_Database” to “SPP_Database_X” where X describes a short name for the new SPP instance. Choose *Compile SPP* from the debug menu, and close the programming window.

- Remove any layers listed in the table of contents, save the project, and quit from SPP.
- Inspect the files under the SPP server directory, removing files that will be replaced in the new instance, such as those listed below:
 - The entire Results directory
 - All files in the Documents and Data directories.
 - *.lyr files in the Config\Templates directory that will not be part of the new GIS (keeping in mind that *.lyr files for data sources not listed in the ConfigThemes table are used for various SPP functions, and that having extra, unused *.lyr files is preferable to removing needed ones).
 - *.rpt files in Config\Reports directory that correspond to reports in the ConfigReports table that will not be used in the new instance.
- Open the SPP_Server\SPP.mdb database and inspect the tables, making revisions as desired for the new instance, such as those listed below:
 - ConfigCurrentRefNumber: Remove all records except the DEFAULT one.
 - ConfigLocationEditorFields: Consult the Configuring the Location Editor section for information on this table.
 - ConfiReports: Remove records for reports that will not be used in the new instance, corresponding to *.rpt files removed from the Config\Reports directory.
 - Remove all records from the following tables. (For some of them it will be useful to keep a copy of the table for examples.)
 - ConfigD2Puff
 - ConfigEvent
 - ConfigLocationEditor
 - ConfigOrganization
 - ConfigPlans
 - ConfigPlanThemes
 - ConfigSppSettings
 - EventControlPt
 - EventResources
 - Remove records from the ConfigThemes table, except Streets and lines with Type = “db_event”.
 - Each Type = “db_event” line in the ConfigThemes table has a corresponding table in the database. These can be changed as described in later sections, but for now, remove

db_event lines in the ConfigThemes table, and the corresponding tables, if the layers will not be used in the new system.

- Remove all records from the database tables that correspond to db_event lines in ConfigThemes.
- Choose *Database Utilities, Compact and Repair Database* from the Tools menu, then exit Access.
- Use ArcCatalog to create a new Personal GeoDatabase in SPP_Server\Data called SPP_GIS.mdb
- Start a standard ArcMap project and prepare the layer for SPP main planning zone layer. It should cover the full extent of the new location, be composed of non-overlapping, continuous polygons, have a field containing a unique identifier that will be used to identify zones, and optionally have a zone type field to categorize zones. It should have a projection defined, which will become the projection used for the GIS layers in the new instance. It is difficult to change this layer once SPP is deployed, so it's important that it be carefully prepared at this step.
- Right-click on the layer name in the table of contents and choose *Data, Export Data*. Export it as a personal database feature class in the SPP_GIS.mdb GeoDatabase with the coordinate system to be used for SPP. Customize the symbology, add a line to the ConfigThemes table, and save a layer file as described in the Installing New Data Layers section, skipping the testing step for now. The EventLoadOrder field in ConfigThemes should have a low value such as 10 populated for this layer so it will be added early in the sequence when opening new events.
- Add a record to ConfigPlanThemes with a name matching the name in ConfigThemes for the planning layer. Specify the field name of the unique identifier field in ZoneField, and EPZ_ZONE as the PointField. The IsPlanningLayer and MainPlanningLayer fields should be checked.
- If there is a field indicating zone type, add a second a record to ConfigPlanThemes with the same layer name. Specify the field name of the zone type field in ZoneField, and EPZ_ZONE as the PointField. The IsPlanningLayer and MainPlanningLayer fields should not be checked.
- Add a record to the ConfigOrganization table for each organization or individual that will be using SPP, assigning each one a unique range of key values. These key values will be used when creating new emergency planning events and new point records, and help ensure that records added by different organizations or individuals can be combined into a common database without having duplicate record

numbers. New records and unique key value ranges can be added layer, but it is difficult to change the established record numbers after the system is deployed.

- Start SPP using the project with the updated registry key name. This should trigger the configuration process. (See the SPP Configuration Settings section for more details.) If you chose the “prompt” option, click *No* when prompted about opening a previous reference number. If you chose the “open” option, ignore the edit lock error.
- Click the *Open a Reference Number* button, choose *List of Zones* and click *OK*. In the *Find Reference Number by List of Zones* dialog, choose the main planning zone layer, and pick one or more zones from the list. Click *OK* to continue, and *Yes* when prompted about defining a new reference number. Ignore the error about the missing streets layer if it occurs. At this time SPP should have loaded the zone map, highlighted the chosen zone(s) with the Cluster Extent layer, and added several currently empty point layers.
- The new reference number will be listed at the top of the window. Open the ConfigCurrentRefNumber table in the database, and change the ClusterId field for the “DEFAULT” record to the new reference number.
- Determine a source for the addressed streets layer, and add it to the system following the steps in the Installing New Data Layers, and Updating or Replacing the Street Layer Used For Geocoding sections.
- At this point SPP will have a working but somewhat empty database. The following sections describe how to add more information to the system and how to customize other aspects of SPP.

Installing New Data Layers

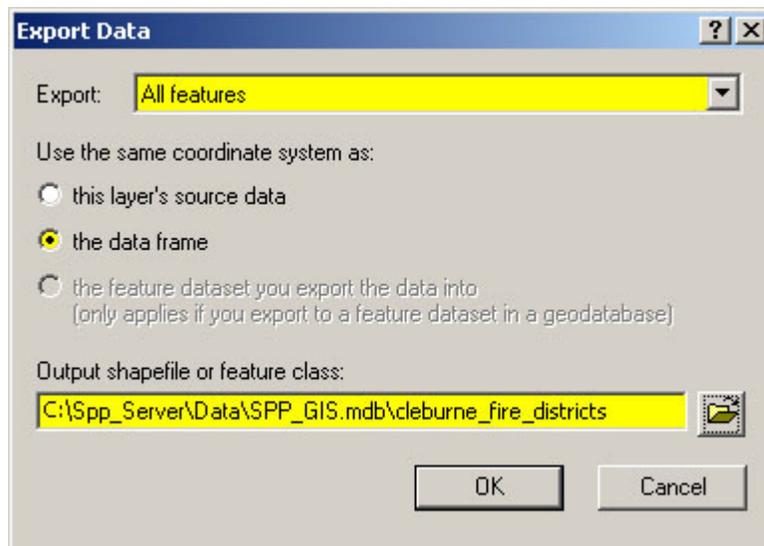
There are many good sources of GIS data that can be used to customize SPP for a new geographic location, including:

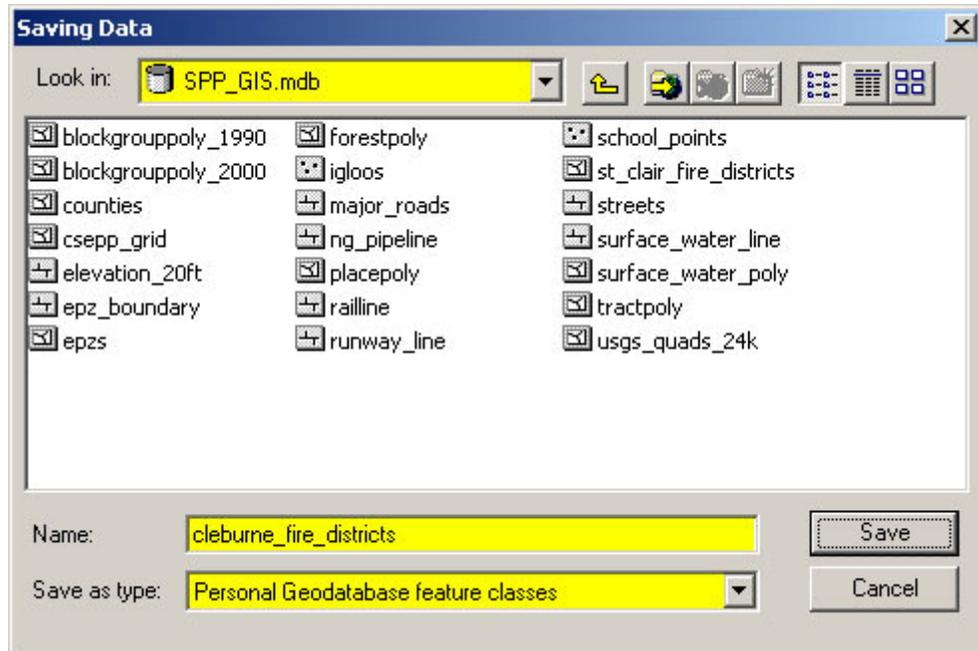
- The ESRI Data and Maps media kit which is included with ArcView and ArcGIS software,
- The GeoSpatial One Stop, at <http://geodata.gov>,
- U.S. Census TIGER data, from <http://www.census.gov/geo/www/tiger/>, and
- County, municipal, and other local government offices

Adding new data layers to SPP is not difficult, but it does require several steps. In this example, a polygon layer of fire districts for Cleburne County will be added for later use as a user-defined planning layer. It is best if the layer is stored in

the projection used in SPP. If it is not in this projection, it is essential that the projection be defined so that it can be reprojected properly. Perform the following steps to install a polygon layer for later use as a user-defined planning layer:

- Layers to be used only for display can be in any format supported in ArcView. User-defined planning layers should be stored as GeoDatabase layers as described in this example.
- Add the layer to the map in SPP using the standard ArcView *Add Data* tool. View the layer in with the other GIS layers to help ensure that it is correctly projected in relation to the rest of the layers. If it is not correctly projected, this must first be fixed by determining and applying the correct projection information to the layer.
- Right-click on the layer name in the table of contents and choose *Data* then *Export Data*. In the Export Data dialog, choose the options shown below, and use the browse button to direct the output to the SPP_GIS.mdb GeoDatabase in the SPP_Server\Data directory (not SPP.mdb), and to assign the output name. (The *Save as type* setting has to be changed to Personal Geodatabase feature classes before the Geodatabase will be shown or opened to the layers view.) Click *OK* in the Saving Data dialog, and then *Save* in the Export Data dialog. Click “Yes” to add the layer to the project when prompted.





- Right click on the new layer name in the table of contents and choose Properties from the menu. In the Properties dialog, customize the layer name, symbology, label settings, and other items. Click OK to save the changes. Then right-click on the layer name again and choose Save as Layer File. Browse to the shared SPP_Server\Config\Templates directory and save the file with a name that exactly matches the source data name used when exporting to the GeoDatabase. In this case, the filename should be Cleburne_fire_districts.lyr.
- With a file explorer, browse to the SPP Access database stored in the shared directory SPP, called SPP.mdb. In Access, open the ConfigThemes table and add a record for the data layer. In this example, Name = "Cleburne Fire Districts," Category = "Boundary," Type = "gdb," Featuretype = "poly," and Datasource = "cleburne_fire_districts." Then exit Access. Optionally, a number can be assigned to the EventLoadOrder field indicating that the layer should be added or updated in the table of contents when an event is opened. The layers will load in numerical order, with the first layers being drawn underneath the later ones.
- Right click on the old layer name in the table of contents and choose Remove to drop it from the table of contents. Repeat the process to remove the new layer name from the table of contents.
- In SPP, click the Add SPP Map Layer(s) tool. Locate and choose the new entry and click OK to add it to the map. The layer is then added to the table of contents with the settings saved in the layer file.

Other options:

- Shapefiles can be installed the same way as Geodatabase layers except that the files are saved in the Data directory as Shapefiles, the Type in the ConfigThemes table should be “file,” and the Datasource should include the “.shp” extension.
- Layers to be used only for background display do not have to be in GeoDatabase format. Layer files are used directly for these themes, and thus any GIS layer type supported in ArcGIS can be installed with this approach, including raster layers and groups of layers. Follow the same procedure above, except saving or copying the data into Data directory in the format desired, saving the layer file in the Data directory instead of the SPP_Server\Config\Templates directory. In the ConfigThemes table, the Type should be “layer,” and Datasource should be the name of the layer file with the *.lyr extension.
- The ConfigThemes table has entries for a variety of data types and layers, and it should be consulted for more examples.

Editable point layers can be added to SPP easily, but some additional considerations and steps are needed compared to the base map layers described above.

- These layers are stored as simple tables in the SPP.mdb Access database. Start by using Access to add a table in SPP.mdb to store the information. Inspect the Practice table for an example of the data types and settings for the required fields. Edit the table properties to ensure that there is an integer field called Id with properties Required = “Yes” and Indexed = “Yes (no duplicates).” It should be populated with a unique integer for each record, and be set as the key field. XCoord and YCoord fields are also required, and coordinates must be in the projection used for the rest of the GIS database. If they are included in the table, SPP will recognize and use the following fields: Address, Zip, Locstatus, EPZ_Type, EPZ_Zone, Userzone1, Userzone2, County, and Locstatus. Any data in these fields should follow the conventions used in the database.
- The ConfigThemes record used to add the layer should have Type = “db_event” and Featuretype = “Event.” “Datasource” should be the SPP.mdb table name. To enable editing of the layer with the Location Editor, check the CanLocEdit box. If an EventLoadOrder value is specified and the FilterByEvent field is checked, SPP will limit the layer to records falling within the cluster extent when an event is opened. (The *Use Reference Number as a Filter* check box in the *Add SPP Map Layer(s) Tool* overrides this setting.)
- Use *Add SPP Map Layer(s)* to add the layer.
- Right click on the *new* layer name in the table of contents and choose *Properties* from the menu. In the Properties dialog, customize the layer

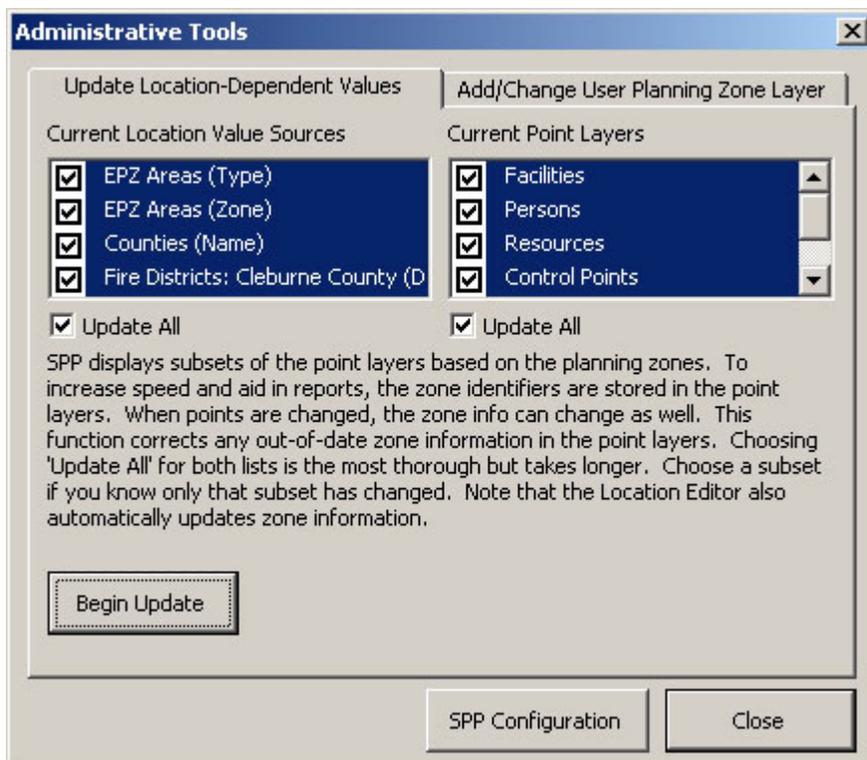
name, symbology, label settings, and other items. Click *OK* to save the changes. Then right-click on the layer name again and choose *Save as Layer File*. Browse to the shared SPP_Server\Config\Templates directory and name the file after the SPP.mdb table name.

- Use *Add SPP Map Layer(s)* again to reload the layer and test if the symbology is getting linked properly. If *CanLocEdit* was checked, open the *Location Editor* to test the editing functions.

Updating Location-Dependent Values

The *Update Location-Dependent Values* tab is available in the *Administrative Tools* dialog in the SPP menu. SPP point layers include fields containing location-specific information such as the planning zone or the county name. The *Location Editor* tool automatically updates this information when points are moved, however there is still the potential that the location-specific information could become out of date, such as if the table is populated or updated outside SPP. This function corrects any out-of-date zone information in the point layers. Choosing “*Update All*” for both lists is the most thorough method, but it takes longer. Choose a subset of location values and/or point layers when only that subset has changed.

Once the choices at the top have been made, click *Begin Update* to start the process. There will be one more prompt indicating that the process takes a long time to run and asking for confirmation. Click *Yes* to continue or *No* to cancel. Details about the progress of the tool are shown at the lower left of the ArcView application window.



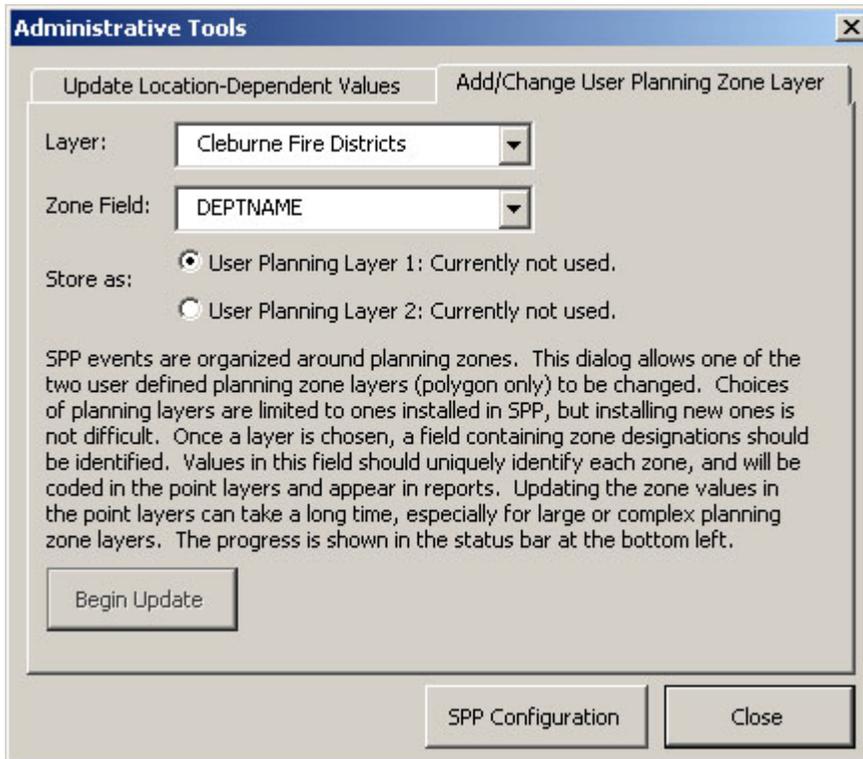
Adding or Changing a User Planning Zone Layer

The Add/Change User Planning Zone Layer tab is available in the Administrative Tools dialog in the SPP menu. SPP events are organized around planning zones. This tab allows one of the two user-defined planning zone layers (polygon only) to be changed. For example, SPP could be installed throughout a state with counties being used as the main planning zone layer. One county may want to designate their county's police jurisdictions and fire districts for their user defined planning layers, while another county in the same state might have a directional grid around a facility of interest. Choices of planning layers are limited to layers installed in SPP, but installing new layers is not difficult and is explained earlier in this section.

Once a layer is chosen, a field containing zone designations should be identified. Values in this field should uniquely identify each zone, and only up to 30 characters will be used by SPP. These values will be coded in the point layers, appear in reports, and be automatically updated in the Location Editor. Populating the zone values in the point layers during the update can take a long time, especially for large or complex planning zone layers. The progress is shown in the status bar at the lower left of the application window.

In the example shown below, a Fire District layer added to SPP (see the procedure in the Installing New Data Layers Section) is ready to be set up as User Planning Layer 1. The DeptName field will be used as the unique identifier.

Click *Begin Update* to start the process of updating the database. A prompt will warn that the process can take a long time. Clicking *Yes* will continue, and *No* will cancel.



Two planning layers can be designated with this tool and can be exchanged for others later. If a planning layer is replaced, however, any events opened with the earlier layer will warn the user that the earlier layer should be reinstalled for the events to open with full functionality.

Updating or Replacing the Street Layer Used for Geocoding

Geocoding is the process of locating a point on a GIS map based on a street address or some other non-spatial description. Successfully locating a street address is highly dependent on the quality of the database used to look up the address, and for emergency planning the accuracy of the locations is especially important. A variety of sources of GIS layers with street addressing information is available, including free U.S. Census TIGER streets data, StreetMap layers bundled with ESRI software, and commercial sources. SPP can use any of these layers as a geocoding source for the Location Editor. The layer is installed as "Streets" in the system, and a "Streets.loc" geocoding parameters file should be present in SPP_Server\Data directory. Replacing or updating the layer can be done following the process described in the Installing New Data Layers section, plus creating or updating the geocoding parameters file and indices.

It may be necessary to maintain the street layer in SPP if a good source of information exists for adding new streets and/or correcting errors that may be present in the layer. Editing can be done with the standard interface tools. It is recommended that edits to the street layer be done on a copy outside the SPP GeoDatabase to help reduce the possibility of altering other layers that exist in the SPP GeoDatabase. Editing the layer requires good knowledge of the many fields used for geocoding, and the conventions for street naming and abbreviations that will work best with the ESRI geocoding software.

In order for changes to the street layer to work, the geocoding parameters and geocoding indices must be updated after edits have been completed. Consult the ESRI documentation on “geocoding” in the ArcMap help file or printed manuals for more information.

Files and methods for geocoding in ESRI software have changed as new versions were released. For instance, version 9.2 geocoding files are not compatible with earlier versions. As a result, geocoding files must be created with the lowest version of the software being used with the system.

Modifying and Adding New Reports

Reports in SPP require 1) a data source, 2) a report template, and 3) configuration in the ConfigReports table. When running a report the SPP software creates a temporary file of the data used in a report, and uses a report template to format it. SPP is programmed using libraries from the Crystal Reports XI version, so in order for them to run successfully, the templates must be compatible with that version of the software.

To modify a report, first run it within SPP, and stay in SPP so the temporary files will not be removed. Browse to the C:\SPP directory and open the .rpt file belonging to the report in Crystal Reports. Modify the report as desired, then save it into the SPP_Server\Config\Reports directory, replacing the previous version. Then close the document in Crystal Reports, or quit the application so the C:\SPP version of the report file will not be locked. Run the report in SPP again to make sure it is working properly. This approach can also be used to update reports when new versions of Crystal Reports are released, however it is still essential that the libraries used in the SPP code, and the installed version of Crystal Reports are all consistent. Reports are designed around the structure of the source data they depend on, so it is important to update reports if changes are made to the structure of the source data. For example, removing or renaming a field in the source layer will cause the report to fail. However changes such as adding fields to the layer normally do not affect the reports.

Consult the Crystal Reports documentation for guidance on creating and editing the report templates themselves.

The ConfigReports table contains a line for each report data source that is used for a report. To create a new report, use the Reports and Data Export tool to export the table as a .dbf file to the C:\SPP directory, naming it to match the planned report template file name for consistency. Then design the report in Crystal Reports using the file in C:\SPP as the data source. Save the template in the SPP_Server\Config\Reports directory as described above. Using Access, add a line to the ConfigReports table in SPP_Server\SPP.mdb, and enter the report name that will appear in the interface, the name of the Crystal Reports template file, the table of contents name of the source data layer, and the name of the .dbf file the report is designed to use. Make sure the source data layer is available in SPP and test the report as described above.

Configuring the Location Editor

The Attributes tab of the Location Editor can be configured with drop-down lists, tool tips, and hidden or read-only fields. The ConfigLocationEditorFields table is used for this purpose, and each line of the table is geared to configuring one field. The example database shows a variety of configuration settings that will help show how configuration is done. Lines for the following fields should not be changed:

- Locstatus
- Id
- Updated
- XCoord
- YCoord
- ObjectId
- Shape

The Datasource field contains the name of the layer as listed in ConfigThemes for which the field should be configured. DataSource is blank; the configuration will be applied for any layer that has the field.

FieldName is the name of the field to be configured.

ControlType must be either "Textbox" or "Combobox."

Textbox ControlOptions can be "Read only," "Hide," or blank (to allow a control tip to be configured).

The ControlOptions field for Combobox entries should contain a comma-separated, case sensitive list of the choices in the order they should appear in the interface. There should be no spaces around the commas. A "No Data" choice should be included when the content of the field may be blank or cleared by the user. When using the editor, it will require the field to have one of the listed values, and will warn the user if a different value is found in an existing

record. When combining the Combobox option in the editor with location dependent values from GIS layers it is important to ensure that all the possible values are listed in the Combobox. An alternative is to make it a read-only text field as it should be populated automatically when edited.

The ControlTipText field specifies the text of a control tip that will display when the cursor is placed over the field in the editor.

The Comment field is used only for notations when working with the table, and is not used by the software.

Configuring Extra Location-Dependent Values

SPP is designed to maintain location-dependent information on the SPP point layers as records are added and changed. For example, when a record is added with the Location Editor, it will automatically populate the EPZ_ZONE field based on the main planning zone layer. There is also a batch capability to update all the location-dependent values in all of the point layers using the Update Location-Dependent Values tab in the Administrative Tools dialog in the SPP menu. When user-defined planning layers are installed or changed in SPP, the zones for those layers are also automatically populated by SPP in the point layers.

The requirements for location-dependent values are:

- The supporting layer must be installed in SPP, and be a polygon GeoDatabase or Shapefile layer. Ideally the polygons in the layer will cover the full extent where points might be located, however if they do not, they will be coded as "OZ," standing for "outside zone."
- A text field sufficiently large to hold the information must exist in all of the SPP point layers. (Numeric fields in the source data will be converted to character.)

Once these requirements are met, open the ConfigPlanThemes table in Access, and add a record with the Name field matching the Name field for the layer as listed in the ConfigThemes table. The ZoneField is the name of the field in the GIS layer containing the data values to be used. The PointField is the destination field in the point layers which will be used to store the value. The IsPlanningLayer and MainPlanningLayer fields should be null for these layers, and the other records in the table should not be modified because they are maintained by and used by other parts of the SPP system.

Appendix

SPP Data Tables

SPP maintains its tabular data in a Microsoft Access database file called SPP.mdb, which contains system support tables for configuration and system parameters, and the SPP point GIS layers. The structure of the key tables is listed in this section.

Point Layer Tables

Point GIS layers are stored in standard Access tables with their point locations generated by the GIS “on the fly” based on the XCoord and YCoord fields in the tables.

Control Points

(Access table name: Controlpts)

Field Name	Data Type	Description
ID	Number	SPP key
DESCRIP	Text	Description of control point
TYPE	Text	Type of control point (TCP, ACP, ECP)
ACTIVRESP	Text	Activation responsibility for control point (e.g. State Police, County Sheriff, etc.)
RESP1	Text	Name of first responding department or agency (e.g. Calhoun County Sheriff)
RESPTEL1	Text	Telephone number of first repoding department or agency
RESPEQUIP1	Text	Equipment and personnel provided by first responder
CONFIG1	Text	Note on configuration, placement, flow and ops for first responder
RESP2	Text	Name of second responding department or agency (e.g. Anniston Fire Department)
RESPTEL2	Text	Telephone number of second repoding department or agency
RESPEQUIP2	Text	Equipment and personnel provided by second responder
CONFIG2	Text	Note on configuration, placement, flow and ops for second responder
RESP3	Text	Name of third responding department or agency (e.g. State Police)
RESPTEL3	Text	Telephone number of third repoding department or agency
RESPEQUIP3	Text	Equipment and personnel provided by third responder
CONFIG3	Text	Note on configuration, placement, flow and ops for third responder
TIMEACT	Text	Activation time from receipt of PAD needed to have control point operational
POPULATION	Number	Population that has to clear TCP or ECP
TIMEDONE	Text	Time in hours and minutes from PAD announcement for population to clear TCP or ECP
ADDRESS	Text	Street address
ZIP	Text	ZIP code
EPZ_TYPE	Text	Depot, IRZ, PAZ, PZ, or OZ (out of zone)
EPZ_ZONE	Text	Planning zone ID (M-1, A-04, etc.)
COUNTY	Text	County name
USERZONE1	Text	Zone field for user defined planning zone layer 1
USERZONE2	Text	Zone field for user defined planning zone layer 2
XCOORD	Number	X coordinate of location
YCOORD	Number	Y coordinate of location
LOCSTATUS	Text	Point location status / method: G = geocoded, C = coordinate, X = map click, null = not located
EDITFLAG	Text	System flag to mark records associated with a particular plan or organization
UPDATED	Text	Time stamp (YYYYMMDDHHMM) of last update to record

Facilities

(Access table name: Facilities)

Field Name	Data Type	Description
ID	Number	SPP Key
CATEGORY	Text	General category of a facility: child care center, cultural center, correctional facility, educational facility, ...
DESCRIP	Text	Description of facility
NAME	Text	Business or given name of facility, business, development, or activity
SIC	Text	For or six digit SIC code based on list type (special facilities have six digit codes)
ADDRESS	Text	Street address
CITY	Text	City
STATE	Text	State
ZIP	Text	ZIP Code
ZIP4	Text	Plus-4 portion of ZIP code
PADDRESS	Text	Mailing address
PCITY	Text	City
PSTATE	Text	State
PZIP	Text	ZIP Code
PZIP4	Text	Plus-4 portion of ZIP code
PHONE	Text	Telephone number at location of facility, or facility contact if different from location contact
FAX	Text	Fax number at location or for facility contact
CONTACT	Text	Name (first and last) of contact person at location of facility or activity
TITLE	Text	Title of contact person: Administrator, Director, Manager, ...
EMPMIN	Number	Minimum number of employees
EMPMAX	Number	Maximum number of employees
RESIDMIN	Number	Minimum number of residents in a medical care, nursing, or personal care home, assisted living, or residential facility
RESIDMAX	Number	Maximum number of residents in a medical care, nursing, or personal care home, assisted living, or residential facility
HIGHNOISE	Text	Commercial facility with high noise level, such as a shopping mall arcade (Yes/No)
HEARING	Text	Level of difficulty hearing (High, Moderate, Low, or Minor)
CONSTR	Text	Facility under construction (Yes/No)
STARTDATE	Text	Starting month and year for an activity (construction, race, etc.)
ENDDATE	Text	Ending month and year for an activity (construction, race, etc.)
EPZ_TYPE	Text	Depot, IRZ, PAZ, PZ, or OZ (out of zone)
EPZ_ZONE	Text	Planning zone ID (M-1, A-04, etc.)
COUNTY	Text	County name
USERZONE1	Text	Zone field for user defined planning zone layer 1
USERZONE2	Text	Zone field for user defined planning zone layer 2
URL	Text	Internet URL for use with the hotlink tool.
XCOORD	Number	X coordinate of location
YCOORD	Number	Y coordinate of location
LOCSTATUS	Text	Point location status / method: G = geocoded, C = coordinate, X = map click, null = not located
EDITFLAG	Text	System flag to mark records associated with a particular organization
ACTIONPLAN	Text	Note on planned action by EMA
DATASOURCE	Text	Data source for this record
DATADIFF	Text	Known conflicting record (Y/N)
UPDATESRCE	Text	Source of updated information
UPDATED	Text	Time stamp (YYYYMMDDHHMM) of last update to record
CHANGELOG	Text	Description of edits to the record

Persons

(Access table name: Persons)

Field Name	Data Type	
LASTNAME	Text	Last name of special-needs person
SUFFIX	Text	Name suffix of special-needs person (e.g. Jr., III, etc.)
AGEYR	Number	Age of special-needs person
VISIONPROB	Text	Person has a vision problem
HEARNGPROB	Text	Person has a hearing problem
ISCONFUSED	Text	Person is confused
MENTDISAB	Text	Person is mentally disabled
CANTWALK	Text	Person can't walk
CONFTOBED	Text	Person is confined to bed
CANTDRIVE	Text	Person can't drive
NOVEHAVAIL	Text	Person does not have a vehicle available
ONOXYPGEN	Text	Person uses an independent oxygen supply
WHEELCHAIR	Text	Person uses a wheelchair
HEARTPROB	Text	Person has heart problems
PHYSUNABLE	Text	Person is physically unable
WHATELSE	Text	Description of other special needs
CANTEVAC	Text	Person is unable to evacuate
CANTSHELTR	Text	Person is unable to shelter
CHILDALONE	Text	Child could be alone
TARNUMBER	Text	Serial number of Tone Alert Radio
TAR_STAT	Text	Tone Alert Radio status (Requested, Received, Declined, etc.)
PRAC_STAT	Text	Portable room air conditioner status (Delivered, Remote switched, etc.)
SIP_STAT	Text	Shelter in place kit status (Delivered, picked up, etc.)
HOOD_STAT	Text	Protective hood status (Delivered, picked up, etc.)
TRAIN_STAT	Text	Training status (Provided, Requested, etc.)
HLPNETSTAT	Text	Help network status (Participating, Interested, etc.)
ADDRESS	Text	Street address
CITY	Text	City
STATE	Text	State
ZIP	Text	ZIP code
ZIP4	Text	Plus-4 portion of ZIP code
PADDRESS	Text	Postal (mailing) address of person (if different from street address)
PCITY	Text	City for postal address
PSTATE	Text	State for postal address
PZIP	Text	ZIP code for postal address
PZIP4	Text	Plus-4 portion of ZIP code for postal address
PHONE	Text	Telephone number of household
COLLDATE	Text	Date data was collected
EPZ_TYPE	Text	Depot, IRZ, PAZ, PZ, or OZ (out of zone)
EPZ_ZONE	Text	Planning zone ID (M-1, A-04, etc.)
COUNTY	Text	County name
USERZONE1	Text	Zone field for user defined planning zone layer 1
USERZONE2	Text	Zone field for user defined planning zone layer 2
XCOORD	Number	X coordinate of location
YCOORD	Number	Y coordinate of location
LOCSTATUS	Text	Point location status / method: G = geocoded, C = coordinate, X = map click, null = not located
EDITFLAG	Text	System flag to mark records associated with a particular organization
DATADIFF	Text	Known conflicting record (Y/N)
UPDATESRCE	Text	Source of update information
CONT_NAME	Text	Contact name for information on this person
CONT_PHONE	Text	Contact phone number for information on this person
UPDATED	Text	Time stamp (YYYYMMDDHHMM) of last update to record

Practice

(Access table name: Practice)

Field Name	Data Type	Description
ID	Number	SPP key
COMMENT	Text	Comment
ADDRESS	Text	Street address
ZIP	Text	ZIP code
EPZ_ZONE	Text	Planning zone ID (M-1, A-04, etc.)
EPZ_TYPE	Text	Depot, IRZ, PAZ, PZ, or OZ (out of zone)
COUNTY	Text	County name
USERZONE1	Text	Zone field for user defined planning zone layer 1
USERZONE2	Text	Zone field for user defined planning zone layer 2
URL	Text	Internet URL for use with the hotlink tool.
XCOORD	Number	X coordinate of location
YCOORD	Number	Y coordinate of location
LOCSTATUS	Text	Point location status / method: G = geocoded, C = coordinate, X = map click, null = not located
EDITFLAG	Text	System flag to mark records associated with a particular organization
UPDATED	Text	Time stamp (YYYYMMDDHHMM) of last update to record

Resources

(Access table name: Resources)

Field Name	Data Type	Description
ID	Number	SPP key
DESCRIP	Text	Name or source of the resource (e.g. Pressurized shelter, County EMA, Bottled water store, etc)
RESDISC	Text	Description of the resource (e.g. blankets, buses, PPE, food, medical supplies, etc.)
RESUSE	Text	Use for which the resource is needed (e.g. mass care, power generation, transportation, etc.)
RESQUANT	Text	Quantity of the resource, with units if appropriate
PROTOCOL	Text	Note on protocol for requesting and receiving an allocation of resources
AGENCYNAME	Text	Federal, state, or local authority for determining and approving resource allocation
AGENCYCONT	Text	Contact person for requesting an allocation of resources
AGENCYPHON	Text	Telephone number at authority to be used for requesting resources
AGENCYFAX	Text	FAX number at authority to be used for requesting resources
RESPHONE	Text	Telephone number at resource location, and where allocation will originate
RESFAX	Text	FAX number at resource location
RESCONTACT	Text	Contact person at resource location
RESTITLE	Text	Title of contact person at resource location
ADDRESS	Text	Street address of resource location
CITY	Text	City
STATE	Text	State
ZIP	Text	ZIP code
ZIP4	Text	Plus-4 portion of ZIP code
EPZ_TYPE	Text	Depot, IRZ, PAZ, PZ, or OZ (out of zone)
EPZ_ZONE	Text	Planning zone ID (M-1, A-04, etc.)
COUNTY	Text	County name
USERZONE1	Text	Zone field for user defined planning zone layer 1
USERZONE2	Text	Zone field for user defined planning zone layer 2
URL	Text	Internet URL for use with the hotlink tool.
XCOORD	Number	X coordinate of location
YCOORD	Number	Y coordinate of location
LOCSTATUS	Text	Point location status / method: G = geocoded, C = coordinate, X = map click, null = not located
EDITFLAG	Text	System flag to mark records associated with a particular organization
DATASOURCE	Text	Data source for this record
UPDATED	Text	Time stamp (YYYYMMDDHHMM) of last update to record
CHANGELOG	Text	Description of edits to the record

Sirens

(Access table name: Sirens)

Field Name	Data Type	Description
ID	Number	SPP key
NAME	Text	Siren name
LOCATION	Text	Location
SIREN_NUM	Text	Siren address number
RTU	Text	Remote transmitting unit number
TALK_GROUP	Text	Talk group id
RADIO_ID	Text	Radio id
CODE	Text	Siren code
HEIGHT_FT	Number	Antenna height in feet
AZIMUTH	Number	Antenna azimuth
RADIUS_FT	Number	Radius of area covered, in feet
SITE	Text	Site
VARRLTOR	Text	Siren has a device to cut back on power (Yes/No)
WATTS	Number	Power output in Watts
SIGNAL	Text	Signal strength in dBm
SURV_DATE	Text	Site survey date
VOICE_TONE	Text	Type of siren (Voice/Tone)
CONTROL	Text	Control of siren (EMA, local, ...)
FUNDED_BY	Text	Funding source for siren
MODEL	Text	Siren model name
SERIAL_NUM	Text	Siren serial number
LONGITUDE	Number	Longitude (NAD83)
LATITUDE	Number	Latitude (NAD83)
ADDRESS	Text	Street address of siren location
CITY	Text	City
STATE	Text	State
ZIP	Text	ZIP code
ZIP4	Text	Plus-4 portion of ZIP code
EPZ_TYPE	Text	Depot, IRZ, PAZ, PZ, or OZ (out of zone)
EPZ_ZONE	Text	Planning zone ID (M-1, A-04, etc.)
COUNTY	Text	County name
USERZONE1	Text	Zone field for user defined planning zone layer 1
USERZONE2	Text	Zone field for user defined planning zone layer 2
XCOORD	Number	X coordinate of location
YCOORD	Number	Y coordinate of location
LOCSTATUS	Text	Point location status / method: G = geocoded, C = coordinate, X = map click, null = not located
EDITFLAG	Text	System flag to mark records associated with a particular organization
DATASOURCE	Text	Data source for this record
UPDATED	Text	Time stamp (YYYYMMDDHHMM) of last update to record
CHANGELOG	Text	Description of edits to the record

Other GIS layer tables

Tables listed in this section are stored in .DBF files as part of a set of shapefiles, rather than in the SPP.mdb database.

Alert Routes

(Shapefile DBF name: AlertRouteLine.dbf)

Field Name	Description	Data Type	Field Size
SHAPE	GIS alert route line	Polyline	
CLUSTERID	Reference number	Integer	16
LENGTH	Length in meters	Number	20
MILES	Length in miles	Number	20
DESC	User input description	Text	80

Cluster Extent

(Shapefile DBF name: Cluster.dbf)

Field Name	Description	Data Type	Field Size
SHAPE	GIS cluster extent polygon	Polygon	
COUNT	Number of zones included	Integer	11
SUM_AREA	Total area of all included zone polygons	Integer	18
CLUSTERID	ID of the cluster event	Integer	11

Evacuation Route

(Shapefile DBF name: EvacRouteLine.dbf)

Field Name	Description	Data Type	Field Size
SHAPE	GIS evacuation route line	Polyline	
CLUSTERID	Reference number	Integer	16
LENGTH	Length in meters	Number	20
MILES	Length in miles	Number	20
DESC	User input description	Text	80

D2-Puff Plume

(Shapefile DBF name: Assigned by D2-Puff user)

Field Name	Data Type	Description
OName	Text	Name for plume polygon (AEGL-1, Risk envelope, etc.)
OLevel	Number	Concentration level
OType	Text	Plume type (AEGL, Dosage, or Peak Concentration)
EMode	Text	Emergency Mode
TimeStep	Text	Date / time of time step for the polygon
TimeStam	Text	Date / time stamp
LogonID	Text	User ID for logging into D2-Puff
County	Text	County organization

Wedge

(Shapefile DBF name: Wedge.dbf)

Field Name	Description	Data Type	Field Size
SHAPE	GIS wedge polygon	Polyline	8
IGLOO	Number of origin igloo, or None	Text	10
ORIGIN_X	X coordinate of plume origin	Number	13
ORIGIN_Y	Y coordinate of plume origin	Number	13
FROM_DIR	From wind direction (azimuth)	Number	13
WIDTH	Width of wedge (degrees)	Number	13
DISTANCE	Radial distance of wedge	Number	13
DIST_UNITS	Units used for the radial distance	Text	10

Supporting SPP data tables

Tables in this section are used to store supporting data for SPP functions. They should not be modified except by a knowledgeable SPP support person or as documented in the Customizing the Installation section.

ConfigCurrentRefNumber

This table stores the last reference number opened in SPP.

Field Name	Data Type	Description
ClusterId	Number	Current reference number
User	Text	Username with this reference number

ConfigD2Puff

This table contains the D2-Puff plume choices listed in the D2-Puff Model dialog.

Field Name	Data Type	Description
Id	AutoNumb	List Id
Name	Text	User name for the D2-Puff output layer.
Type	Text	Type of symbolization to use: Dosage, AEGL, or Peak
Filename	Text	Full path to the shapefile.

ConfigLocationEditor

This table stores the current record being edited with the Location Editor tool.

Field Name	Data Type	Description
Id	AutoNumt	Key
EditTheme	Text	Name of layer being edited
EditType	Text	Type of edit: Add, Delete, or Change
RecordId	Number	Id number for the record to be edited
User	Text	Username for this edit

ConfigLocationEditorFields

This table stores the configuration settings for the Location Editor dialog, such as whether a text box or drop-down list is used, the drop-down list choices, and hidden and read-only fields.

Field Name	Data Type	Description
Id	AutoNumber	
DataSource	Text	Name of the table this setting applies to. Leave blank to apply to all tables.
FieldName	Text	Name of the field using a combobox
ControlType	Text	Textbox, or Combobox
ControlOptions	Memo	Type Combobox: Comma separated list of choices. Include "No Data" if missing data is OK. Type Textbox: "Read only" to lock it, "Hide" to hide it.
ControlTipText	Text	Optional: Control tip that shows when mouse is over field.
Comment	Text	Comment about this entry.

ConfigOrganization

This table determines the range of unique numbers available for each organization using SPP. The numbers are used for new records in the point data layers, and for new reference numbers.

Field Name	Data Type	Description
Name	Text	Organization name
KeyMin	Number	Minimum value for new database key values
KeyMax	Number	Maximum value for new database key values

ConfigPlans

This table contains the plan choices listed in the Open Plan dialog.

Field Name	Data Type	Description
Id	AutoNumber	Plan Id
Name	Text	Interface name for the plan.
Planfilename	Text	Filename for the plan.

ConfigPlanThemes

This table lists the layers supporting the location-dependent fields in the point layers, and the user-defined planning layers.

Field Name	Data Type	Description
Id	AutoNumb	Table key field
Name	Text	Name of planning layer (must match name in ConfigThemes)
ZoneField	Text	Unique identifier field in planning layer used to identify planning zones.
PointField	Text	Field in point layers to be populated with zone field values.
IsPlanningLayer	Yes/No	Should layer be used as a planning layer (or only updates in editor).
MainPlanningLayer	Yes/No	Flag indicating which record is the main planning layer. SHOULD BE YES FOR EXACTLY ONE RECORD

ConfigReports

This table contains the Report choices listed in the Choose a Report to Open dialog.

Field Name	Data Type	Description
Id	AutoNumber	Report Id
Name	Text	Interface name for the report. Summary reports should have "Summary" in their name.
CrFile	Text	Crystal reports filename. Name must be the same across multiple records for summary reports.
Logofile	Text	Logo filename (optional)
Datasource	Text	Layer name of data source (repeat records for multiple data sources). These entries are case sensitive.
DbfFile	Text	Filename for the output DBF file used by the report. These filenames must match those used when designing the report.

ConfigSppSettings

This table contains the SPP configuration settings, such as the organization name, the server file location, and initial browse locations for various SPP tools.

Field Name	Data Type	Description
Name	Text	Name of the setting to look it up or save it.
Value	Text	Value of the setting

ConfigThemes

This table stores the name, type, and location of files needed for each SPP base map layer listed in the Choose Map Layer(s) to Add dialog.

Field Name	Data Type	Description
Id	Number	Unique sequential id number for the key
Name	Text	Name of the theme for the table of contents
Category	Text	Category for the data layer
Type	Text	Type of data source (file = file on disk, db_event = table in SPP database with standard X/Ystructure, gdb=point geodatabase layer, raster = raster layer)
Featuretype	Text	Type of features (point,line,poly, or raster)
Datasource	Text	Filename (path assumed to be SPP_HOME\spp\data\) or database table name.
CanLocEdit	Yes/No	Flag for whether the layer can be edited by the Location Editor (Y=It's supported by the code, and makes sense to be able to edit the layer)
FilterByEvent	Yes/No	Flag for whether the layer should be filtered to the cluster extent when opening an event (DB_event point layers only)
EventLoadOrder	Number	For opening events, indicates the order to load layer from bottom of TOC to top. Layers lacking a value are skipped. Planning zones layer used for event will be the top polygon layer regardless of this setting.

ConfigEvent Table

(Access table name: ConfigEvent)

Field Name	Data Type	Description
CLUSTERID	Number	Reference number
MIN_WDG_ANG	Number	Minimum wedge angle in degrees
MAX_WDG_ANG	Number	Maximum wedge angle in degrees
FM_WIND_DIR	Number	From wind direction in azimuth degrees
TO_WIND_DIR	Number	To wind direction in azimuth degrees
MIN_DIST_METERS	Number	Minumum distance in meters
MAX_DIST_METERS	Number	Maximum distance in meters
ZONELIST	Text	Encoded list of planning zones
CLUSTERNAME	Text	User-specified name for the reference number
PLAN	Text	User-specified description for the reference number
EDITLOCK	Text	System flag for managing editing access

Included Control Points

(Access table name: EventControlPt)

Field Name	Data Type	Description
CLUSTERID	Number	Reference number
ID	Number	Id of ControlPt table record

Included Resources

(Access table name: EventResources)

Field Name	Data Type	Description
CLUSTERID	Number	Reference number
ID	Number	Id of Resource table record

Glossary of Terms

ArcView Terms

Attribute Table

Most GIS layers are linked to an attribute table, which contains the tabular data for the layer. The attribute table for a layer is opened by right-clicking on the layer name in the table of contents and choosing Open Attribute Table.

Data View

The data view is the default map view used for interacting with the map.

Although it can be printed, it is intended for screen use and lacks some of the elements of a printed map. . To switch to Data View, choose *Data View* from the View menu, or click on the Globe icon at the lower left corner of the map .

Editor Toolbar

ArcView has a complete editor toolbar which can be used to edit shapefile and GeoDatabase GIS layers. This toolbar, however, should not be used to edit SPP layers, as they are not stored in a GeoDatabase format. Use the SPP Location Editor to edit SPP point data.

GeoDatabase

A GeoDatabase is a Microsoft Access database augmented with tables that are maintained by ESRI software. SPP uses a GeoDatabase (SPP_GIS.mdb) to store the more static GIS database layers installed in the system. ESRI does not support modifications to GeoDatabase layers within Access, which was too restrictive for the needs of the SPP software. Therefore the SPP point layers are stored in a separate, standard Access database (SPP.mdb) as tables that can be managed and edited in Access as well as in SPP.

Layers

The Table of Contents has a set of layers representing data contained in the database. Layers are shown on the left side of the Map View in the Table of Contents. Layers are listed with their names and Legends. A Layers legend shows the symbols and colors used to draw the Layer. Each Layer has a check box to its left that indicates whether the Layer is currently drawn in the view. The user controls which themes are drawn in the Map View by checking the appropriate boxes.

Layers in the table of contents are drawn in the Map View in the order in which they are listed, with the bottom layers drawn first. To change the drawing order, drag the Layer up or down in the table of contents.

Adding or removing Layers in the Table of Contents only adds and removes Layers from the current Table of Contents, not the database.

Layout View

Layout View is used to prepare maps for printing and can include legends, scale bars and other map elements. To switch to Layout View, click on the document icon  at the bottom left of the graphics area or choose Layout View from the view menu.

Legend

A Legend is the collection of symbols used to depict different classes of features (themes) on a map.

Menus, Buttons, and Tools

ArcView's GUI contains menus, buttons, and tools. Buttons and tools are shown as icons on toolbars and tool tips will pop up as the cursor is placed over them. The difference between a button and a tool is that a button performs its function immediately when clicked. A tool is enabled when it is clicked and is then used by clicking one or more times on the map view.

Query

A query is a process in which a logical expression is applied to the data with the result that the data records or elements meeting the criteria are selected. It provides methods for finding records with a particular attribute (e.g., highest value).

Shapefile

A shapefile is a collection of spatial data that is formatted for use with ArcView. Within ArcView, a shapefile is used as a map layer. On the file system, a shapefile is actually a set of at least three files with the same filename prefix and different extensions. Shapefiles can store point, line, or polygon features.

Table of Contents

The Table of Contents shows the GIS layers currently loaded and controls the drawing order, visibility, symbology, and other details of the map layers. If the

Table of Contents is closed it can be reopened by choosing Table of Contents from the view menu.

SPP Terms

Cluster

A cluster refers to a group of planning zones affected by a given event and identified by a reference number.

Emergency Planning Zones

EPZs are areas designated by emergency management authorities for use in coordination emergency responses.

Event

An event refers to an emergency event. Events can be added by planners to represent technological or natural hazard scenarios (i.e., hazardous material spills or tornados).

Plan

A Plan refers to the response that has been designed by emergency planners for each event (designated by a reference number). Plans can cover a single planning zone or multiple zones depending on the characteristics of the particular event number.

Reference Number

A reference number is a unique identifier used to save information about an emergency within the SPP system. Once an emergency event has been created within the SPP system (ie. a train derailment, fire, hurricane, etc.) the planning zone(s) affected, evacuation routes, etc. can be saved to be recalled at a later date.

Special-Needs Population

Special-needs status includes the following:

- Individuals who identify themselves or are identified by other adult household members as sensory, mobility, or mentally impaired and/or with special equipment needs because of medical conditions;
- Chronically ill persons;
- Individuals who do not have access to a car or other means of transportation; and
- Children who, at times, are not supervised by an adult and would need help.

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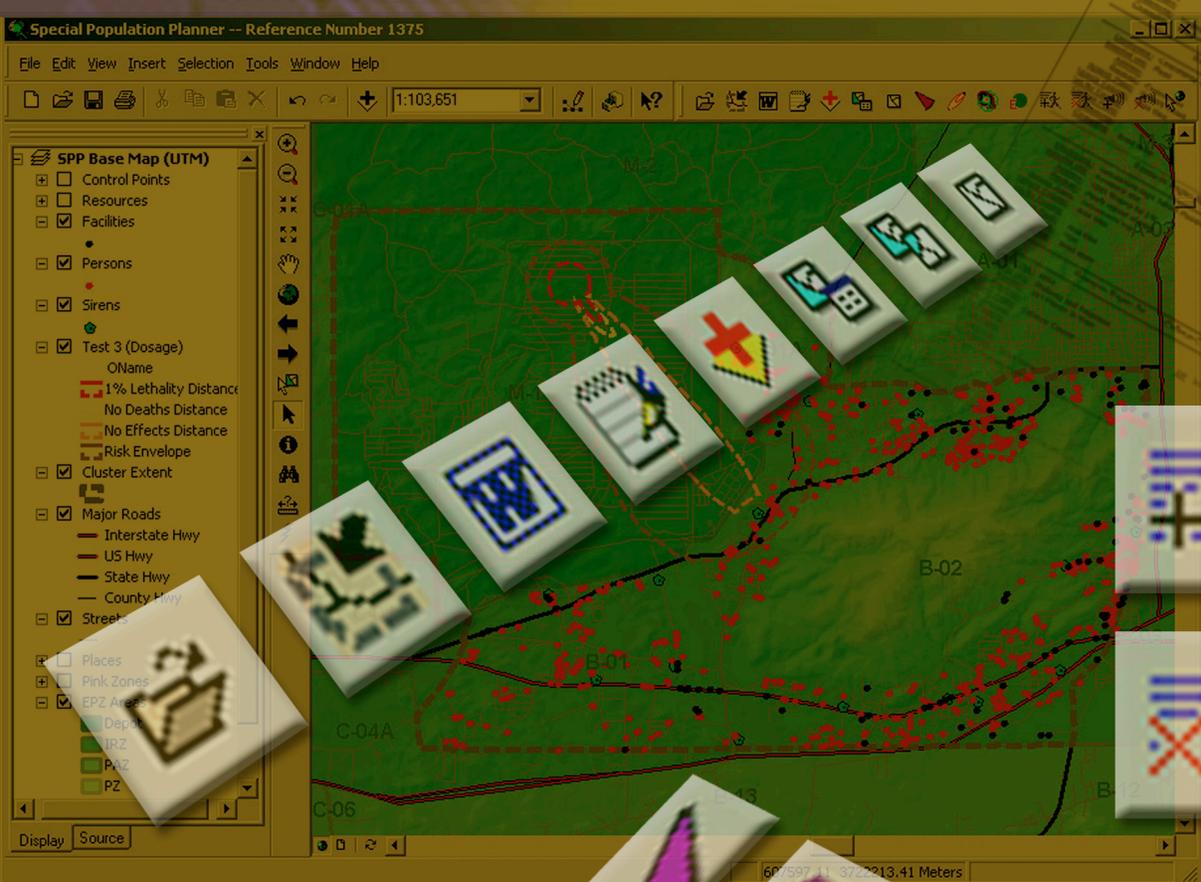
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