

# Vector Layer Controls

The Vector Layer Controls window provides access to display settings for vector layers. You can open the Vector Layer Controls window by left-clicking on the layer's icon button in the Display Manager or by right-clicking on the layer name and choosing Controls from the popup menu.

The layer controls are organized in a set of tabbed panels. The Object panel provides settings that pertain to the entire layer. A tabbed panel is also provided for each of the vector element types: Points, Lines, Polygons, Nodes, and Labels. One or more of these tabs may be dimmed and inactive if no elements of that type are present. The 3D tabbed panel provides display options for 3D perspective views.

After changing display settings, press the Apply button to apply the changes to the View while the Vector Layer Controls window remains open. Press the OK button to apply the changes and close the window. The Close button cancels any changes in settings not already applied and closes the window.

## Object Panel

The Object tabbed panel is exposed by default when the Vector Layer Controls window opens (see illustration to the right).

**Object:** The Object field shows the filename and object name of the vector object being displayed. Press the Object pushbutton to open the Select Object window to select a different vector object to assign to the current layer.

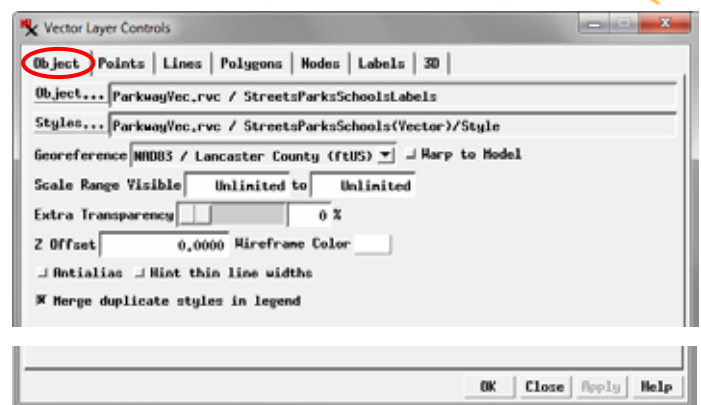
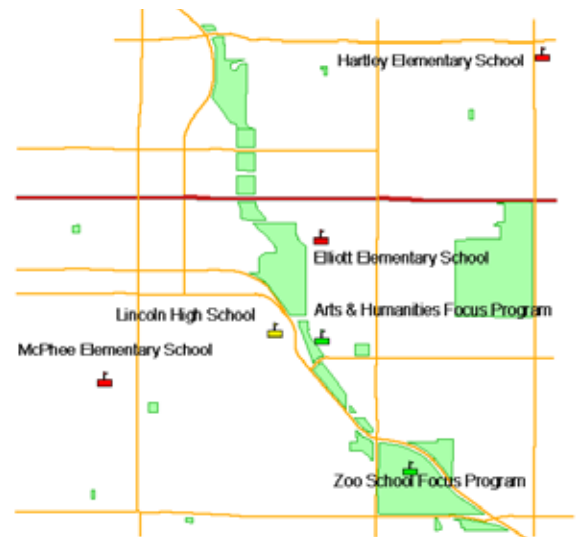
**Styles:** Press the Styles pushbutton to select a style subobject of the current vector object or a main-level style object in a Project File as a source of styles to use to display the elements. Style subobjects of a spatial object are primarily used to store style information for elements in that object with All Same styles that utilize symbols or patterns. Styles assigned to elements by attribute can be stored in a style subobject of the style assignment table, which is independent of the style object selected on the Object panel. See the Technical Guide entitled *Managing Styles* for more information about style objects.

**Georeference:** The Georeference menu defaults to the georeference subobject that was last used. If the object has more than one georeference subobject (not recommended), you can use the Georeference menu to choose the desired georeference to use for the display.

If the vector object has control point georeference, turn on the *Warp to Model* toggle button to use the object-to-map coordinate transformation model stored with the georeference information when rendering the layer in the View.

**Scale Range Visible:** The Scale Range Visible fields let you limit the range of map scales over which the layer is displayed. For example, you may wish to hide a detailed layer when the View is zoomed out beyond a certain scale.

You set up scale control by specifying a minimum (field on the left) and maximum (field on the right) map scale. The minimum map scale controls how far out you can zoom and still show the layer, while the maximum map scale controls how far you can zoom in.



Object panel on the Vector Layer Controls window.

The Scale Range Visible fields by default are initially set to Unlimited, in which case the layer is shown at all map scales. You can change both scale limits, just one, or neither. To set a map scale for either field, you can enter the full scale fraction (e.g., 1:10000) or just the denominator of the scale fraction (e.g., 10000); the resulting map scale fraction is then shown in the field. To reset a map scale field to Unlimited, enter 0. For more information about scale ranges, see the TechGuide entitled *Display Layers, Elements and Groups by Scale*.

**Extra Transparency:** Use the Extra Transparency slider and numeric field to set a transparency percentage for the entire layer (all elements). Transparency applied to the entire layer is in addition to any transparency set for particular element styles, such as partially-transparent polygon fill colors. Layer transparency can also be adjusted using the Transparency controls in the View window sidebar (see the TechGuide *Easily Vary Transparency for Any Layer*). Each transparency control is updated when the setting on the other control is changed.

**Z Offset:** The value in the Z Offset field applies when displaying in a 3D Perspective View. It sets the vertical offset (in meters) of the layer from the surface determined by the terrain layer.

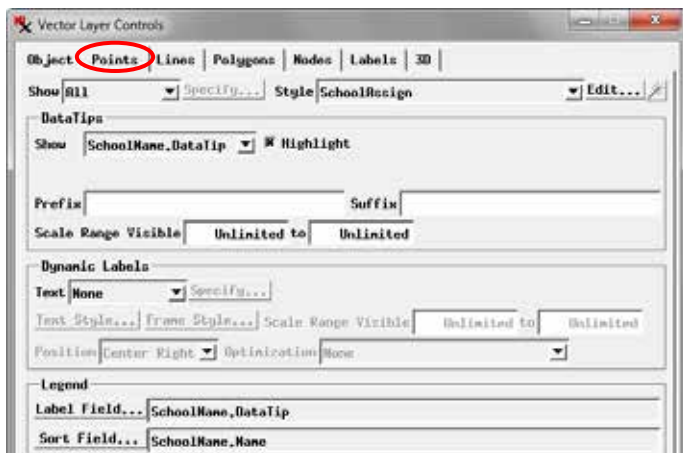
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This setting can be used to “float” the 3D layer surface above the terrain (and any other layers draped on that terrain surface; see the *3D Perspective Visualization* tutorial).

The *Wireframe Color* button shows the mesh color used for the layer in wireframe display in the 3D View. Press the color button to open a Choose Color window to select a different wireframe color.

**Antialias and Hint:** Turning on the *Antialias* toggle button applies antialiasing to lines and polygon borders to reduce the stairstep effect on diagonal and curving lines in the View. Antialiasing is applied to any line that has a width of less than 1.5 pixels on screen. Turning on the *Hint thin line widths* toggle applies partial transparency to lines that would be less than one pixel wide on screen at the current scale. The degree of transparency is proportional to the intended scaled width of the lines. For information and illustrations of antialiasing and hinting see the TechGuide entitled *Enhanced Line Rendering*.

**Merge Duplicate Styles:** When elements are styled by attribute, a style sample can be shown in the sidebar legend for each attribute. If the same style is assigned to different attributes, turning on the *Merge duplicate styles in legend* toggle shows only a single style sample for each set of duplicates and the legend label lists up to two attributes associated with that style, separated by commas. If there are more than two attributes, an ellipsis (...) follows the second attribute name.



Points tabbed panel

## Common Controls for Points, Lines, & Polygons

Many of the controls for individual element types are the same or similar on the Points, Lines, and Polygons tabbed panels. These common controls are described in this section; refer to the illustration of the Points tabbed panel above.

**Show:** The Show menu provides choices governing which elements of that element type to display. The options are All, By Attribute, By Map Scale, and By Query. Choosing an option other than All activates the *Specify* button next to the menu.

The *By Attribute* option lets you display only elements that have selected values in a specified database attribute field. After choosing this option from the Show menu, pressing the Specify button opens the Select by Attribute window (see illustration at

the top of the next column). This window allows you to choose an associated database table and field by pressing the *Attribute* button; the selected table.field reference is shown in the text field next to the button. If the elements are displayed using styling by attribute, the field on which the styles are based is selected by default.

The scrolling list in the Select by Attribute window shows all of the attribute values in the specified field; turn on the checkbox for each value whose elements are to be displayed. *Select All* and *Deselect All* icon buttons are provided above the list.



Select by Attribute window

The *Table* combobox shows the name of the table in which the attribute selections are recorded. If you are using the “style by attribute” field, the associated style table is selected by default. If you are using a different attribute field, a selection table is created to record the element selections. You can create and save more than one selection table; all available selection tables are listed on the Table combobox.

The *By Map Scale* option on the Show menu lets you set scale ranges for groups of elements by attribute value; the display scale in the View then determines which of these elements are displayed. Pressing the Specify button after selecting this option opens the Scale Ranges window, which is described and illustrated in the TechGuide entitled *Display Layers, Elements and Groups by Scale*.

The Specify button for the *By Query* option from the Show menu opens the Script Editor window so you can enter a selection query to specify the elements to display. Examples of selection queries are provided in the *Building and Using Queries* tutorial.

**Style:** The Style menu provides choices for styling the elements; the options include All Same, New - By Attribute, New - By Theme, and By Script. Press the *Edit* button next to the menu to set up the styles.

When you select *All Same*, pressing the Edit button opens the Style Editor with style controls for the relevant element type. The style you create or select is applied to all of these elements.

Choose *New - By Attribute* to set up different styles for different values in a specified attribute field. Styles can be created and assigned to attribute values manually or using an automated procedure. Associations between attribute values and styles are saved in a style assignment table. The names of any previously-created style assignment tables are automatically listed in the Style menu. For information on setting up styling by attribute see the TechGuides entitled *Style By Attribute: Manual Assignment* and *Style By Attribute: Automatic Style Generation*.

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The *New - By Theme* style option lets you assign elements to a specified number of theme classes, each with its own drawing style, based on the values in a numerical attribute field. The class range boundaries can be set automatically or manually, and you can specify color and size spreads to automatically generate drawing styles. After you save a theme for an element, the name of the theme appears as an option on the Style menu. For information about theme maps see the TechGuide entitled *Theme Mapping Geometric Elements* and the *Theme Mapping* tutorial.

The *By Script* style option lets you use a script to set drawing styles based on element attributes and to use CartoScripts to create custom cartographic renderings for point and line elements. For more information see the *Building and Using Queries* tutorial for examples of simple style scripts and the *Using CartoScripts* tutorial.

When the *By Script* style option is selected, the *Convert Script to Table* icon button is active to the right of the Edit pushbutton. This button allows you to convert the style specifications in the script to saved styles and style associations. When you press the icon button, you are prompted to select the database field on which the script styles are based. The procedure then interprets the color, dimension, and scale specifications in the style script, creates the equivalent styles, and creates a style assignment table relating a style to each unique value in the specified database field. This procedure can interpret values assigned to the predefined style variables that are listed in the Variables group in the Script Reference window. It cannot convert style scripts that use CartoScript functions.

**DataTips:** Use the DataTips controls on each element panel to specify an attribute field as the source for information to show in the View when the cursor is paused over or near the element. You can also set Prefix and Suffix text and set the DataTips to appear over a limited range of map scales. For more information on these controls see the TechGuides entitled *DataTips* and *DataTip Highlighting of Geometric Elements*.

**Dynamic Labels:** The Dynamic Labels controls let you configure the layer to show automatic display labels for the geometric elements using information in the element database. You can set text style options and choose to enclose the dynamic labels in frames with your choice of fill and border colors. Dynamic labels can also be set to display only within a specific scale range. For more information on these controls see the Technical Guide entitled *Dynamic Labels for Geometric Elements*.

**Legend:** When the style option for a vector element type is set to All Same, the View sidebar legend shows a single style sample with no label. If the element is styled by attribute, the Legend controls are active on the element's tabbed panel in the Vector Layer Controls. In this case the legend has a separate entry for each style with a style sample and a label. The default legend label is set from the database field that is the basis for assigning the styles. Press the *Label Field* button to choose a different field as the source for the sidebar legend labels; the selected table and field name are shown in the text field to the right of the button. When the elements are styled by theme

the legend automatically includes labels showing the numeric range of each style sample.

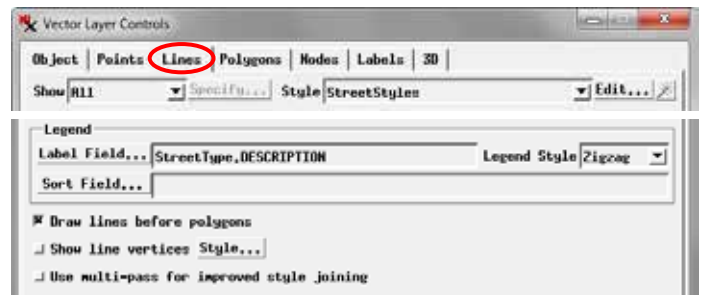
Legend entries by default are sorted based on the label text. You can choose to have the legend entries sorted by the entries in a different field; press the *Sort Field* button to select the field. For more information see the Technical Guide entitled *Vector and Shape Layer Legends*.

### Lines Panel

Several element-specific controls are found on the Lines tabbed panel; these controls are illustrated below.

The *Legend Style* menu to the right of the Label Field button and field lets you choose to show line samples in the sidebar legend in either a Straight or Zigzag style.

A polygon element is made up of one or more bordering line elements, and line elements and polygon borders can be styled separately. The default drawing order for vector layers draws the polygon elements before the line elements. This means that styled line elements may be drawn on top of polygon borders. The default order enables you to set an All Same style for lines using a color contrasting with the polygon fills to produce the appearance of uniform polygon borders, without the need to set a contrasting border color for each polygon style. Turn on the *Draw lines before polygons* toggle to reverse this drawing order and draw the polygons over top of the lines.



Element-specific controls on the Lines tabbed panel

If you would like to have all of the line vertices drawn in the View, turn on the *Show line vertices* toggle button and press the *Style* button to open the Style Editor with controls for setting a point style for the vertices. This option is most useful when you are editing a vector object.

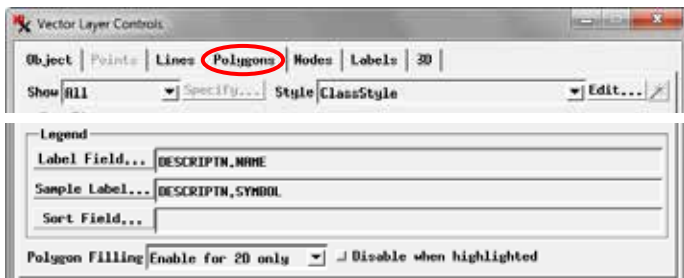
A special drawing mode can be applied to lines styled with line patterns made up of multiple pattern elements. The Multi-pass mode, set by turning on the *Use multi-pass for improved style joining* toggle, draws the first pattern component for all of the lines, then the second pattern component for all, and so on. If the line patterns are properly designed this mode can improve the appearance of the intersections between lines with pattern styles. See the TechGuide entitled *Enhanced Line Rendering* for details.

### Polygons Panel

Legends for polygons styled by attribute allow you to show not only a label next to each style sample, but also a label (such as a class code) within the style sample. The *Sample Label* pushbutton on the Polygons tabbed panel allows you to select the

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database field to supply the text for the sample labels; the selected table and field names are shown in the adjacent text field.



Element-specific controls on the Polygons tabbed panel

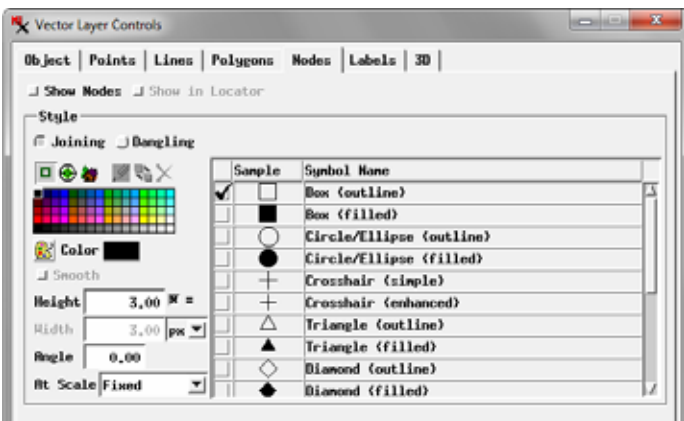
The *Polygon Filling* menu sets the circumstances in which polygon fills can be drawn in the View window. The options are Enable for 2D only (provided to speed rendering in 3D perspective views), Enable for 2D and 3D, and Disabled.

Turning on the *Disable when highlighted* toggle disables filling for a filled polygon that is highlighted during the DataTip event (as set by the Highlight toggle in the DataTips controls). See the TechGuide entitled *DataTip Highlighting of Geometric Elements*.

### Nodes Panel

Turn on the *Show Nodes* toggle on the Nodes tabbed panel to display the vector nodes. When this toggle is turned on the *Show in Locator* toggle is also active, allowing you to choose whether or not to also show the nodes in the Locator.

The Nodes panel also includes point style controls for choosing or creating symbols for the nodes (see the TechGuide entitled *Creating Styles for Points*). Separate styles can be set for nodes at intersections between lines (joining nodes) and those at the unconnected ends of lines (dangling nodes); the *Joining* and *Dangling* radio buttons above the style controls determine the node to which set the current style is applied.



Nodes tabbed panel

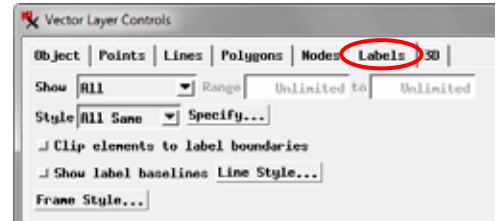
### Labels Panel

The Labels tabbed panel provides controls for the display of label elements in the vector layer.

**Show:** The Show menu provides the options None, All, and By Map Scale to determine label display; when the latter option is selected, the *Range* fields to the right of the menu are activated so you can enter minimum and maximum map scales for display

of the labels (see the TechGuide entitled *Display Layers, Elements and Groups by Scale*).

**Style:** The Style menu sets the text style(s) to use for the labels; the options are By Element and All Same. The By Element option uses the named text style that was assigned to each label when it was created or edited. Pressing the *Specify* button with this option selected opens the Style Editor with a list of the assigned styles. These individual text styles can be modified in the Style Editor, but their assignments to labels cannot be changed in this window.



Labels tabbed panel

The All Same style option uses the same text style for all of the label elements. Pressing the Specify button opens the Style Editor with controls for setting text style to use. See the TechGuide entitled *Setting Text Styles*.

**Other Label Controls:** Turning on the *Clip elements to label boundaries* toggle prevents other elements in the vector layer from being rendered within the confines of the rectangle bounding the label; this choice can make the label text more legible.

Label elements are stored with a baseline that is hidden unless you turn on the *Show label baselines* toggle. Pressing the *Line Style* pushbutton to the right of this toggle opens the Style Editor with controls for setting a line style for the baselines (see the TechGuide entitled *Creating Styles for Lines*).

Label elements can have the label enclosed in a frame with your choice of frame shape and fill and border colors. For labels with leader lines you can choose the leader line width and color or choose to show the leader as a triangular extension of the frame. Press the *Frame Style* pushbutton to open the Label Frame Style window to set these options; see the TechGuide entitled *Label Frames and Leader Lines* for more information.

### 3D Panel

The 3D tabbed panel provides controls for point and polygon elements in 3D perspective views, allowing them to be “extruded” above the terrain surface with varying styles. See the following TechGuides for more information: *Vector Points on Stalks in 3D Views* and *Extruded Polygons in 3D View*.

