

Dynamic Labels for Geometric Elements

When you display vector, CAD, or shape objects in TNTgis, you can configure the layer to show dynamic (automatic) display labels for the geometric elements using information in the element database. You can set up dynamic labels for points, lines, and polygons, with different positioning options available for each element type. Several point label optimization options are available to manage overlaps between labels from adjacent points. You can set text style options (font, style, size, and color) that are used by all dynamic labels in the layer.

You have the option to enclose dynamic labels in frames with your choice of fill and border colors, and polygon labels outside of their polygons can be set to have leader lines. Dynamic labels can also be set to display only within a specific scale range.

Vector, CAD, and Shape

When you display a vector object you can set dynamic labels separately for points, lines, and/or polygons. Dynamic Labels controls are found on each of the Points, Lines, and Polygons tabbed panels on the Vector Layer Controls window. Label positioning controls are included for points and polygons.

The controls for dynamic display labels for CAD objects are found in the Automatic box on the Label tabbed panel of the CAD Layer Controls window. (The Predefined controls on this panel apply to text elements in the CAD object.) Although CAD objects do not have defined element types with their own databases, the dynamic label procedure assesses the geometry of each element to determine whether it is a point, line, or a closed shape (text elements are ignored), and positions the labels accordingly. Points, Lines, and Areas menus on the panel provide positioning options for each element type along with the option None to not show labels for that element type.

The controls for dynamic display labels for shape objects are found on the Labels tabbed panel of the Layer Controls window. A shape object can include only one type of element (point, line, or polygon); the Position menu provides options appropriate for the type of element found in the object.

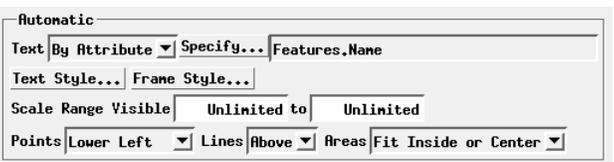
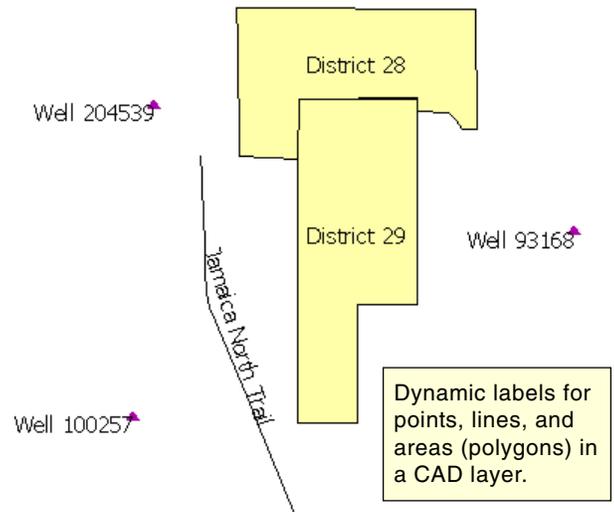
Dynamic Label Common Controls

Interface controls that are common to all object and element types are described in this section.

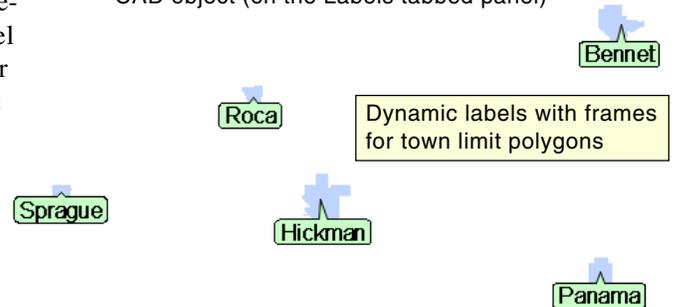
Text: This menu includes the default option None (setting for no labels) as well as two options for the label text: By Attribute and By Script; selecting either of these two options activates the Specify pushbutton to the right of the menu.

With the By Attribute option selected, pressing the Specify button opens the Select Label Attribute window in which you can choose a database table and field as the source of the label text; the table and field names are shown to the right of the Specify button. If you choose a numeric field, the numeric values in the field are automatically converted to text for the display labels.

With the By Script option selected, pressing the Specify button opens the Script Editor window in which you can enter or select a script to create the label text. You can use a script to concat-



Dynamic (automatic) label controls for a CAD object (on the Labels tabbed panel)



Dynamic labels with frames for town limit polygons

enate text from multiple fields, include static text in the label string, or to create different label text (or none) based on the values in various database fields.

Text Style: Press this pushbutton to open the Edit Styles window with controls for setting the text style, including font, font style, color, and size. See the Technical Guide entitled *Setting Text Styles* for more information about text style controls.

Frame Style: Press the Frame Style pushbutton to open the Label Frame Style window to activate the option to create label frames and to set the styles for the frame and leader lines (if any). See the TechGuide entitled *Label Frames and Leader Lines* for more information.

Scale Range Visible: The Scale Range Visible fields let you limit the range of map scales over which the labels are displayed. For example, you may wish to hide the labels 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 mini-

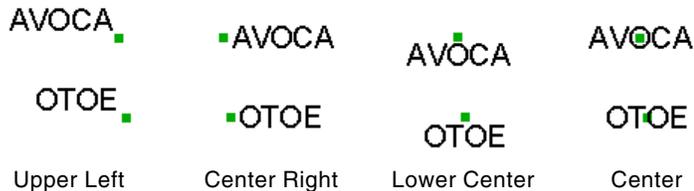
(continued)

imum map scale controls how far out you can zoom and still show the labels, while the maximum map scale controls how far you can zoom in. The Scale Range Visible fields by default are initially set to Unlimited, in which case the labels are 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 on scale control see the TechGuide entitled *Display Layers, Elements and Groups by Scale*.

Point Label Positioning

For point elements the dynamic labels can be placed in one of nine positions relative to the point, selected using the Position menu for vector and shape point elements or from the Point menu for CAD objects. The Center option places the center of the label (vertically and horizontally) at the point location. The other eight position options specify a vertical component first (Upper, Center, Lower) followed by a horizontal component (Left, Center, Right), producing the options Upper Left, Upper Center, Upper Right; Center Left, Center, Center Right; and Lower Left, Lower Center, and Lower Right. Several examples of different point label positions are illustrated below.

Point Label Position Examples



Point Label Optimization

Dynamic labels from crowded points may overlap and obscure each other. Reducing the label font size may reduce the overlap, but this strategy is limited by the minimum size needed for the label text to be legible at the desired map scale. You can use the options on the Optimization menu to reduce label overlaps (see illustration above right). The Default menu option None performs no label optimization. The remaining three options alter the label positions around their points to minimize overlap between labels. The *Fast, Hide Overlapping Labels* method uses a fast algorithm to rearrange labels, and resolves any remaining overlaps by hiding one of the overlapping labels. The *Full, With Overlapping Labels* and *Full, Hide Overlapping Labels* methods use a more complex algorithm to rearrange the label positions to avoid overlaps, differing only in how they handle remaining overlaps. These latter methods may result in longer redraw times for layers with many point labels, but may result in fewer hidden or overlapped labels than the Fast method.

Line Label Positioning

Dynamic line labels are placed centered along the length of the line with the text above the line element and generally parallel to it. The label baseline is a straight line with its endpoints on the line element.

Polygon Label Positioning

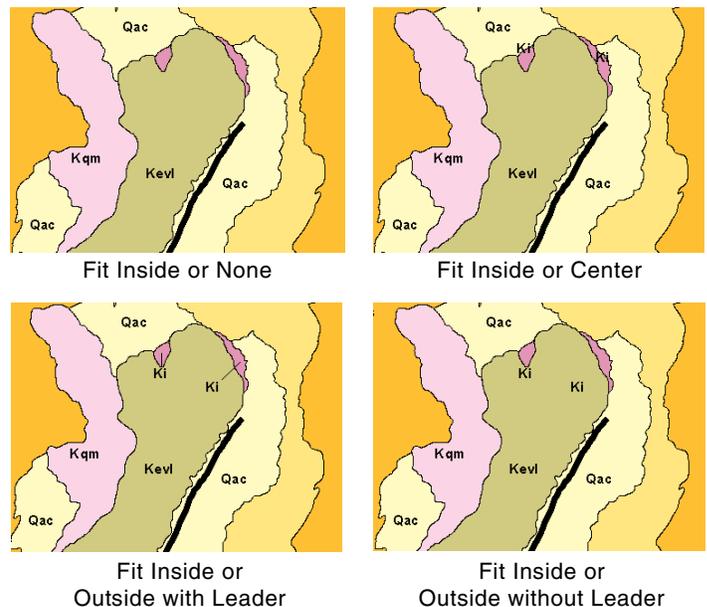
Polygon positioning options are illustrated above right. All options attempt to place polygon labels inside the polygon if they will fit. They differ in how labels that do not fit inside the poly-

Point Label Optimization Examples



If the fixed text style and automatic positioning options for dynamic labels do not produce an optimal result for a particular vector or CAD object, you can use the TNTmips Editor or TNTedit to create permanent label elements in the object. You can create label elements manually (one by one) in CAD and vector objects, and for vector objects you can auto-generate labels for active, marked, or all elements and also convert existing dynamic labels to label elements (see the Technical Guide entitled *Convert Dynamic Labels to Label Elements*).

Polygon Dynamic Label Position Options



gon are handled. The *Fit Inside or None* and *Fit Inside or Center* options are available for vector, CAD, and shape objects. The *Fit Inside or Outside with Leader* and *Fit Inside or Outside without Leader* options are available only for vector polygons.