RiverWare 5.1 Simulation Workspace Enhancements

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The RiverWare 5.1 release includes a reimplementation of the Simulation Workspace using the new Qt4 "Graphics View" architecture. This document describes the new features available with this new implementation.
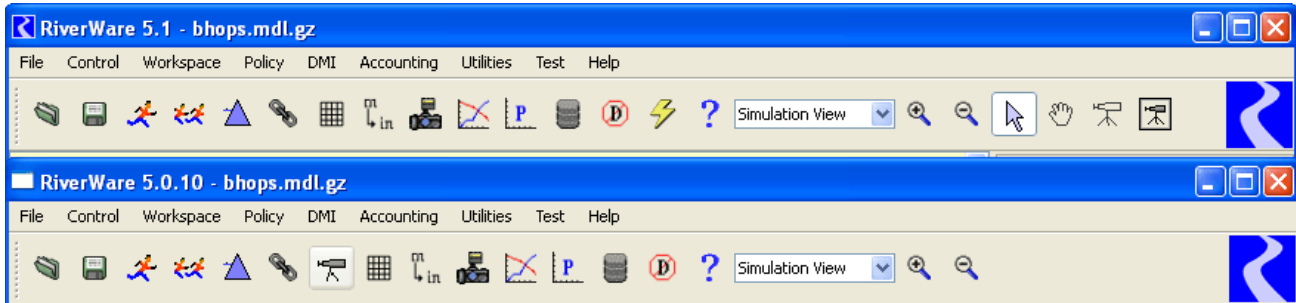
0.1   Other Relevant Documents

Source directory: /projects/riverware/doc/guiRework/workspace/

- RiverWare Workspace port to Qt4 Graphics View [January 2009]
- Workspace Design Document [January 2006]

0.2   Contents

1.0   Workspace Toolbar Changes

The following changes were made to the Workspace Toolbar. The new features are described in subsequent sections.

- Added Close Dialogs button (Lightning Bolt) -- Both Simulation and Accounting
- Added Workspace Cursor Modes -- Simulation Workspace Only (not Accounting)
    - Normal Selection Mode
    - Hand Drag Mode
    - In-View Locator Mode *(first telescope icon)*
- Show Locator Window button moved to the right side of the toolbar *(second telescope icon)* -- Both Simulation and Accounting

# 2.0   Toolbar Operation: Close Dialogs (Lightning Bolt)

Clicking on the Lighting Bolt button brings up the Close Dialogs dialog. This allows the user to quickly close all dialogs of various types.

The user can skip the showing of this dialog by holding down the Shift key when the Lightning Bolt toolbar icon is clicked.

Two types of dialogs are just minimized instead of being closed:

- RPL Set editors. Actually closing those dialogs would also remove the RPL Sets from the RiverWare session.
- SCTs not yet associated with (i.e. saved as) an SCT file.

The Close Dialogs (Lightning Bolt) button was also added the RPL Editor dialogs.
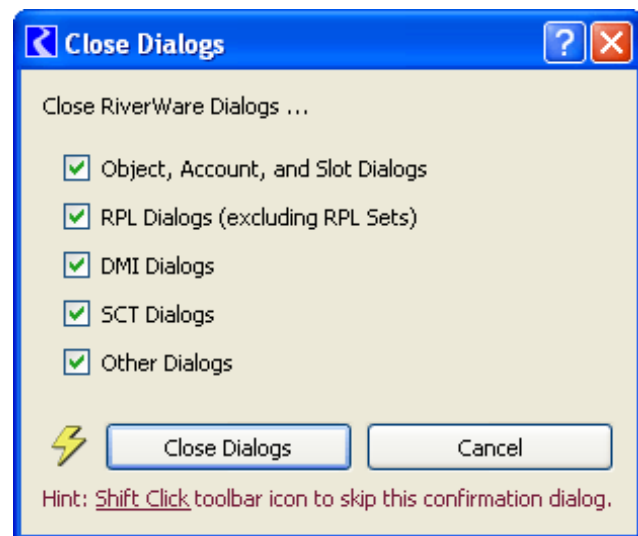
3.0 Toolbar: Workspace Cursor Modes: Select / Hand Drag / Locator Mode

The new Simulation Workspace implements three cursor selection modes. These define the effect of clicking and dragging the mouse on the workspace.

Normal Selection Mode is used for selecting and repositioning Simulation Object icons on the workspace.

Multiple proximate icons can be selected by dragging a rectangle over the icons (with the mouse drag operation started *off of* any icon). Clicking an icon while holding down the Control key toggles the icon in or out of the selected set.

Simulation Object icons can be moved only if the Lock Icon Positions setting is off (unlocked). A set of selected icons can be moved together by starting the icon drag *on* one of the selected icons. An icon move operation can be aborted by hitting the Esc (escape) key *before* releasing the mouse button.

Hand Drag Mode allows the user to move the workspace canvas within the visible workspace area. This is analogous to operating the Workspace's scrollbars.

In-View Locator Mode is an alternative to the separate Locator Window.

Selecting this mode causes the workspace to temporarily rescale to show the scope of all of the Simulation Object icons within the visible area of the Workspace. The rectangular region of the normally visible area (at the currently set zoom level) is shown as an inscribed rectangle. (On Windows, the inscribed rectangle is shaded). In the In-View Locator Mode, the inscribed rectangle can be dragged once; upon releasing the mouse button, the workspace is scrolled to the new indicated area and the cursor mode reverts to the prior mode (i.e. the mode which was active at the time of selecting the In-View Locator Mode).
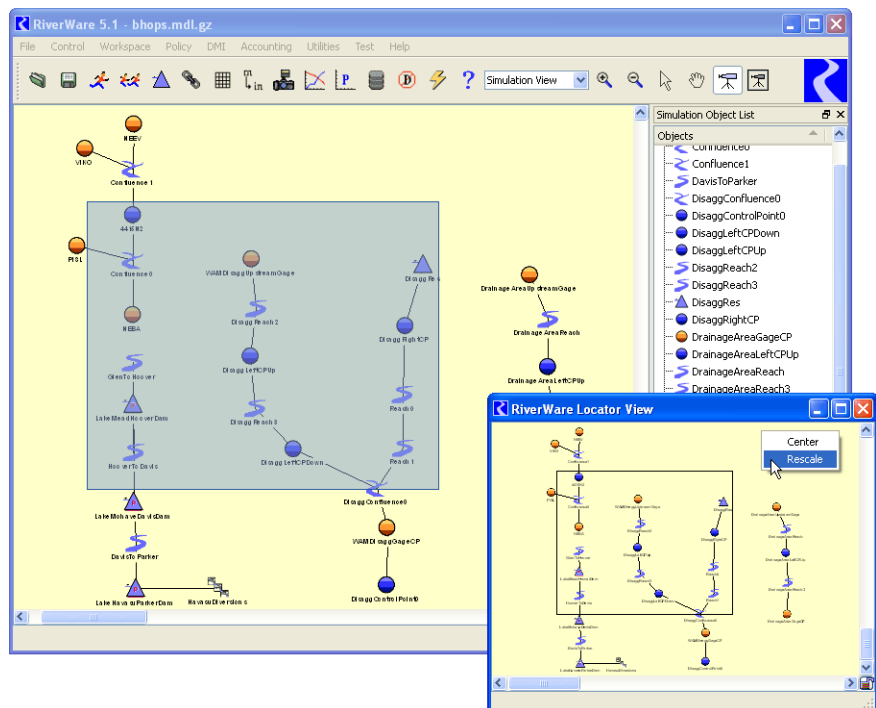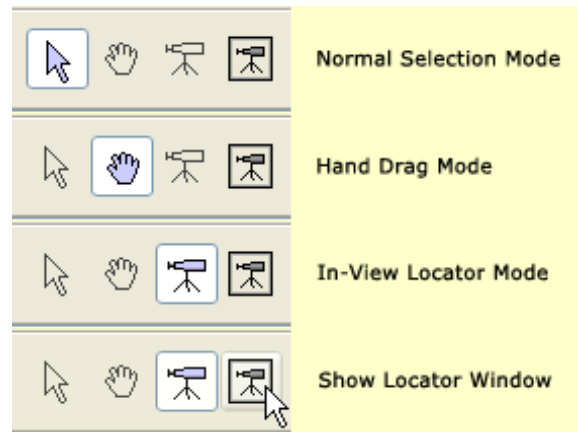
The user can also operate the Locator function in a separate window by clicking the **Show Locator Window** button. See the next section.

4.0   Locator Window

The separate Locator View from the prior RiverWare version is also implemented in RiverWare 5.1. (This is distinct from the new In-View Locator Mode described above). The Locator Window has two enhancements:

1. A status bar was added showing the name of the Simulation Object near the mouse cursor. *(See the bottom of this image)*. This functions even while dragging the inscribed rectangle.

2. The Locator View implements a Context Menu (right-click) having these two operations:

- **Center.** This recenters the inscribed rectangle at the clicked position. This is useful especially if the inscribed rectangle (representing the visible area of the workspace) is not visible within the Locator View -- that would occur if the workspace is currently scrolled to an area which doesn't contain any Simulation Object icons.

- **Rescale:** Recomputes the Locator View scale, e.g. if Simulation Objects have been added to the Workspace.
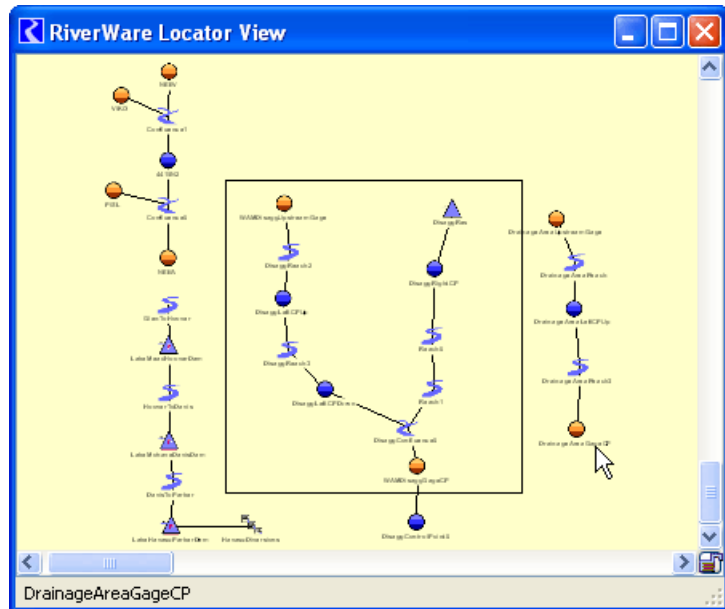
5.0   Lock Icon Positions Controls

As with the prior RiverWare version, the moving of Simulation Object icons on the Workspace can be disabled by locking icon positions. The controls for that feature are now more easily accessible.


- The Lock Icon Button -- in the corner between the two Workspace scrollbars -- is now replicated on all Workspace Views, i.e. currently both the Simulation View and the Accounting View.

- The menu checkbox is now more accessible.
  - •Old menu item: Workspace >> Objects >> Lock Object Positions
  - •New menu item: Workspace >> Lock Object Positions

6.0 Context Menu

The Simulation Workspace Context Menu (when not clicking on a Simulation Object icon) has few additional operations and a change.

- **Center** recenters the visible Workspace area on the clicked point.
- **Properties...** was renamed **Canvas Properties...,** and was moved above **Display Group Properties....**
- **Background Image...** brings up a new Background Image Configuration dialog. *See the next section.*
- **Show Background Image** (a checkbox) either shows or hides the configured background image. This item is enabled only if a background image is configured. This checkbox state is also represented as a checkbox widget in the Background Image Configuration dialog. *See the next section.*
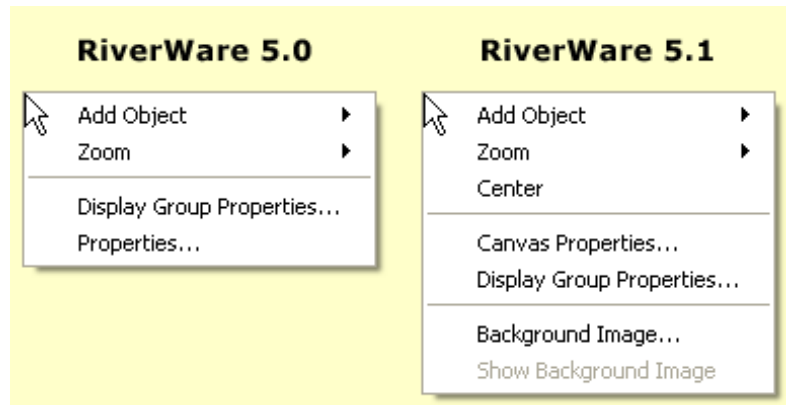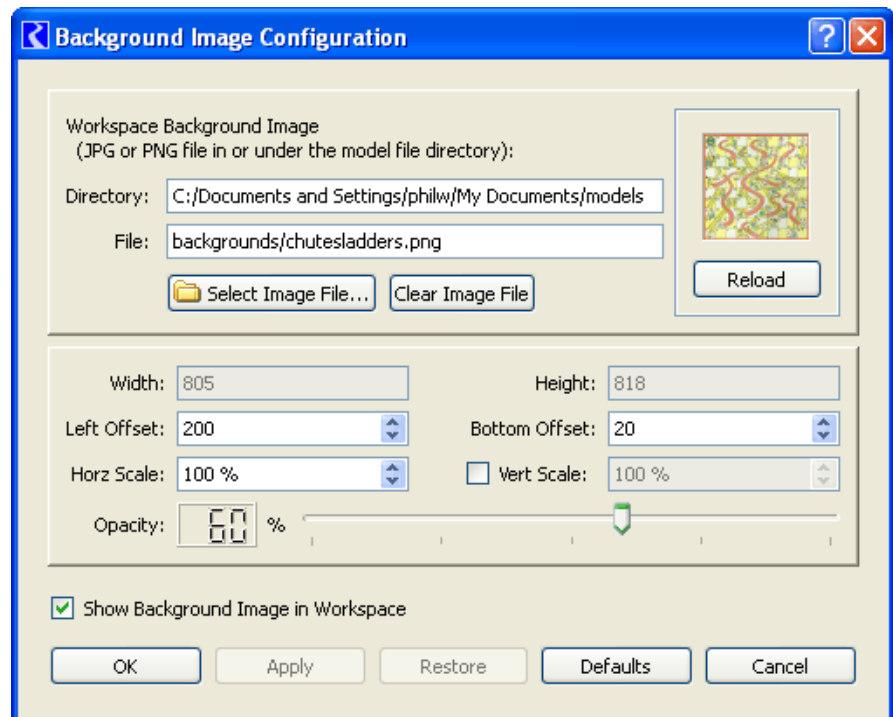
7.0 Background Image

The new Simulation Workspace supports the ability to show an image loaded from an image file (JPEG or PNG) as the background.

The current implementation limits the file path to one that is either in the same directory as that of the loaded model file, or in a subdirectory under that directory (at any depth).

The path of the selected image is preserved in the model file (if the model file is saved after configuring the background image). When loading a model with a configured background image file, if the background image file does not actually exist at the recorded path, the model loads without a problem, and the currently-invalid image file path is retained.

If the selected image file does not represent a valid, supported image file format, the thumbnail (small image preview) will be blank, and the Tooltip on the thumbnail will indicate an error. *See the image to the right.*
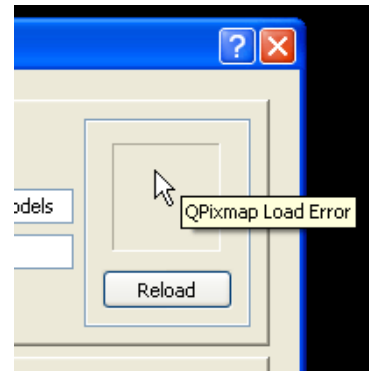
Configurable background image properties include:

- The image file path (to a JPG or PNG image file).
- The left offset of the image -- number of pixels from the left side of the workspace.
- The bottom offset of the image -- the number of pixels from the bottom of the workspace.
- The horizontal scale. (100% represents full image scale).
- An optionally independent vertical scale. (100% represents full image scale). If an independent vertical scale is not specified, the configured horizontal scale is used also for the vertical dimension.
- An opacity factor, as a percentage. Zero percent is completely transparent (invisible). 100% is complete opacity -- which generally is too opaque unless the actual image is already "faded".
- A toggle indicating whether or not the background image should actually be shown. This has the same state as the similar toggle in the workspace's context menu. *See the prior section.*

A natural use of a background image is a map image, if it is reasonable to position the Simulation Object icons at approximate georeferenced positions (on the map).

Another reasonable use is showing abstract regions of solid color for the sub-basins in the model (i.e. with a subbasin region image prepared outside of RiverWare).

This background image example *illustrated here* is probably *not* a reasonable use of the background image feature.

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