

# USING CANVIS FOR VISUALIZATIONS

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)  
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**NOAA Coastal Services Center**  
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# Using CanVis for Visualizations

CanVis Software – Visual Simulation for Resource Planning

[www.unl.edu/nac/simulation/](http://www.unl.edu/nac/simulation/)

NOAA Coastal Services Center CanVis Resources

[www.csc.noaa.gov/canvis](http://www.csc.noaa.gov/canvis)

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## Introduction

**Note:** For the purposes of this document, the descriptions of CanVis' capabilities are limited to basic use with docks and piers imagery. For a more detailed description of the software applications and capabilities, please visit the CanVis website or consult the *Visual Simulation Guide* portable document format (PDF) included on the CanVis CD. Much of this guide is condensed from the CanVis *Visual Simulation Guide*.

### What is CanVis?

CanVis is a free software program developed by the U.S Department of Agriculture that allows resource professionals to create realistic simulations with minimal computer skills. The program comes with a collection of object libraries that contain images of plants, agricultural features, people, wildlife, and park elements that can be quickly added to a base image. This saves users valuable time, because they do not have to create these objects from scratch.

CanVis also helps the user match the object to the image through adjustment of color, contrast, and shadow. More advanced features, requiring additional skills, allow users to remove existing elements from photographs, add topographical features, modify textures, and more.

### How does it work?

The basic features of this program can be learned in under 30 minutes by users with little or no photo-editing experience. The user provides a base image, which is a photograph or other type of image they would like to edit. The user imports this image into CanVis and adds objects to it from the CanVis object library. These objects can then be rotated, resized, colored, and otherwise reconfigured so that they more accurately "fit" the base image. The final image can be exported into multiple formats appropriate for printed materials, presentations, websites, and more. Users can also employ CanVis or more advanced photo editing software to create additional objects that can be included in the library, although this requires more advanced skills.

### Who is it for?

CanVis is ideal for users who are looking for a quick and easy method to illustrate the impacts of dock growth and development. Even those who have experience with more advanced image editing programs such as Photoshop or Paint Shop Pro might still benefit from the "pre-cut" images and the visualization guidelines provided in this document and in the CanVis *Visual Simulation Guide*.

## Before Using CanVis

Planning ahead will help you save valuable time and resources. Read this section if you have never used visual-simulation tools.

### Major Steps

#### Establish the Objective of the Simulation

*What are you trying to show?*

Before you start, you need to determine what you are trying to illustrate with the simulation. Do you want to emphasize the quantity of docks, the aesthetic impact of docks, or other issues?

*How do you want to share the results?*

Once you determine what you are trying to illustrate, you need to decide what you want to do with the simulated imagery. Do you want to print it? If so, how large do you want your print version to be? Do you want it posted on-line or incorporated into a PowerPoint presentation?

*What level of a simulation do you need?*

The amount of effort you put into your visualization depends on your purpose and audience. Simple visualizations may be appropriate for brainstorming exercises, but other situations may demand a higher level of accuracy or realism, requiring additional software and skills. Please see the table below for further guidelines.

**Disclaimer:** Please note that the guidelines provided in this document may not provide enough information to allow new users to produce highly realistic or accurate imagery without further assistance from the *CanVis Visual Simulation Guide*.

<b>Visual Simulation Criteria</b>			
<b>Purpose:</b>	<b>Brainstorming</b>	<b>Evaluating Alternatives</b>	<b>Impact Assessment</b>
<b>Defensible</b>	<b>Low</b>	<b>Medium</b>	<b>High *</b>
<b>Representative</b>	<b>Low to Medium</b>	<b>Medium to High</b>	<b>High</b>
<b>Accuracy</b>	<b>Low</b>	<b>Medium</b>	<b>High *</b>
<b>Realism</b>	<b>Low to Medium</b>	<b>Medium to High</b>	<b>High</b>
<b>Sufficiency</b>	<b>Needs to be adequate for the decision being made.</b>		
<b>Time &amp; Skill</b>	<b>Low</b>	<b>Medium</b>	<b>High *</b>
<b>Resolution</b>	<b>Low &lt; 150 DPI (96 x 64 pixels)</b>	<b>Medium &lt; 250 DPI (800 x 600 pixels)</b>	<b>High &gt; 250 DPI (1074 x 768 pixels)</b>
<b>* Impact Assessments may required specialized assistance.</b>			

*(Source: CanVis Visual Simulation Guide)*

### **Determine Location(s) and Viewpoint(s)**

*What geography must be included?*

Decide whether the imagery must be from a specific geographic location. Do you need to include a particular house or type of vegetation? Do you need to visualize a specific region, pond, or lake? Your objectives will help you decide these matters.

*What is your viewpoint?*

Your viewpoint will also depend on the objectives. Do you want imagery from ground level? Ground-level imagery helps viewers to evaluate impacts and provides the perspective that most people would experience. Elevated viewpoints, such as aerial or satellite imagery, show the impact of the area on surrounding features. It is important to consider how much area you want to include in an image (the scale). For instance, if you simply want to show one house, it is easy to see the impact of the dock. If you want to show a large area, the individual docks will be far less visible.

**Tip:** Select viewpoints that are the focus of your audience's greatest expectations, or viewpoints that provide the ideal setting for observing the proposed activity.

## **Acquire Base Imagery**

### *Do I have what I need?*

Once you have decided on your objectives, viewpoint, and geography, you need to obtain an image that meets these criteria. Depending on the intended audience and output—PowerPoint presentation, Web, or printed document—you will need specific ranges of resolutions. Please consult the image resolution guide in the Appendix, or the visual simulation criteria listed above, for more details.

**Tip:** Large image files increase processing time and should be reduced. For CanVis developers, the best base-image size is **800 x 600** pixels. See the Appendix for tips on resizing images.

**Tip:** JPEG images work best as base images for CanVis.

**Tip:** As it is hard to identify docks from a straight-ahead view, try to obtain pictures in which it would be feasible to add docks at an angle.

### *How can I obtain imagery?*

#### Digital Camera

Using at least a 3.0 megabyte (MB) digital camera, take pictures of the desired area and from the desired viewpoint at maximum resolution (you can reduce the resolution later). For additional pointers, see page 37 of the *CanVis Visual Simulation Guide*.

It is a good practice to document the exact location, camera, lens, angle, and time of day when taking a photograph. This allows for replication, such as photographing the same scene during different seasons and photographing the scene before or after development.

#### Scanner

If you have printed images, negatives, or slides, you can scan these. If you have not used a scanner before, please consult page 43 of the *CanVis Visual Simulation Guide*. Many places that develop photographs will scan images and negatives for a fee.

#### Internet

Many photographs are available on-line. In the appendix, several websites are listed that provide images. Be sure to read the provider's website to determine whether there are any restrictions on image use. For commercial or private sites, you must obtain written permission before

using images. For each site, you need to note the credit or source on the image or in the text. If working with Google Earth, see the “Using Google Earth Imagery” section.

#### Local Photographers

If needed, you can contact local photographers for permission to use pictures. They might charge a fee, and they might also ask to be credited in the text, on the image, or in both places.



## Examples of CanVis Results



Photograph: Green Pond in Falmouth, Massachusetts – Before Simulation

Photograph: Green Pond in Falmouth, Massachusetts – After Simulation



Google Imagery: Green Pond in Falmouth, Massachusetts – Before Simulation

Google Imagery: Green Pond in Falmouth, Massachusetts – After Simulation



## Step-by-Step Use of CanVis

**Tip:** Save your work as often as you can! Rename your files, so you don't lose original images or versions of the simulation. CanVis is a relatively new software and may crash without warning.

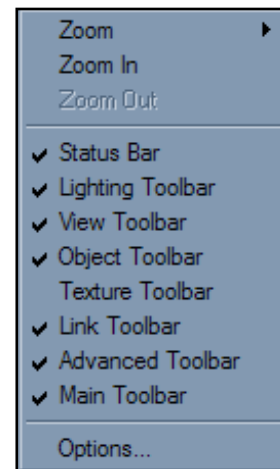
After starting the software, first open a base image. This is the image you will use when adding objects. (For more information on acquiring and selecting images, see information noted earlier in this document.)

### CanVis Set Up

**Note:** An image needs to be open for all of the set up options to be available.

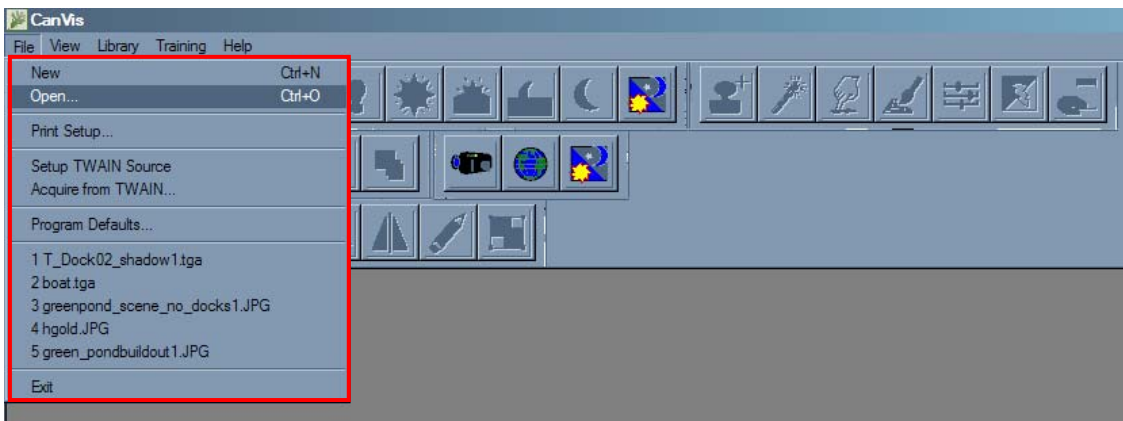
The easiest way to work with CanVis is through the icons. To set these up on your toolbar, go to the **View** tab (right) and select the tool bars you wish to see. Those that are already visible will have a check mark next to them. CanVis will usually save your setting, so you should only have to do this once.

**Note:** The examples in this document focus mainly on the View and the Object toolbars. However, the other toolbars do have functions that you may want to explore.



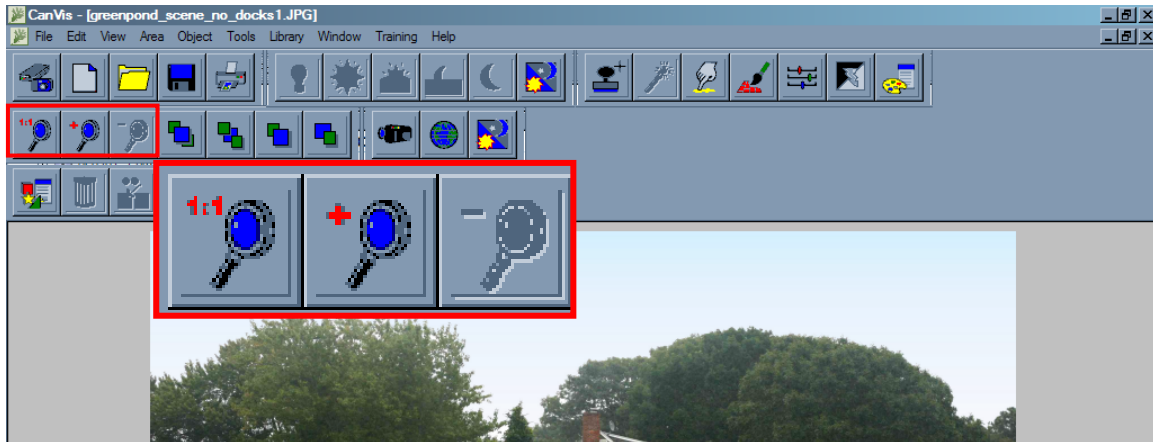
### Step 1 – Opening the Base Image

Go to **File > Open** and select your image. If working with Google Earth, see the “Using Google Earth Imagery” section.



Opening Base Image

Resize image as needed to get the correct perspective using the magnifying glasses. Select the + or – glass and click on the image to shrink or zoom. Press **Escape** to get out of the magnifier.



Magnification Tool

## Step 2 – Add Objects

Go to **Library**.

Select the desired library to view objects. Double-click on an object to add it to the base image.

### Creating New Objects

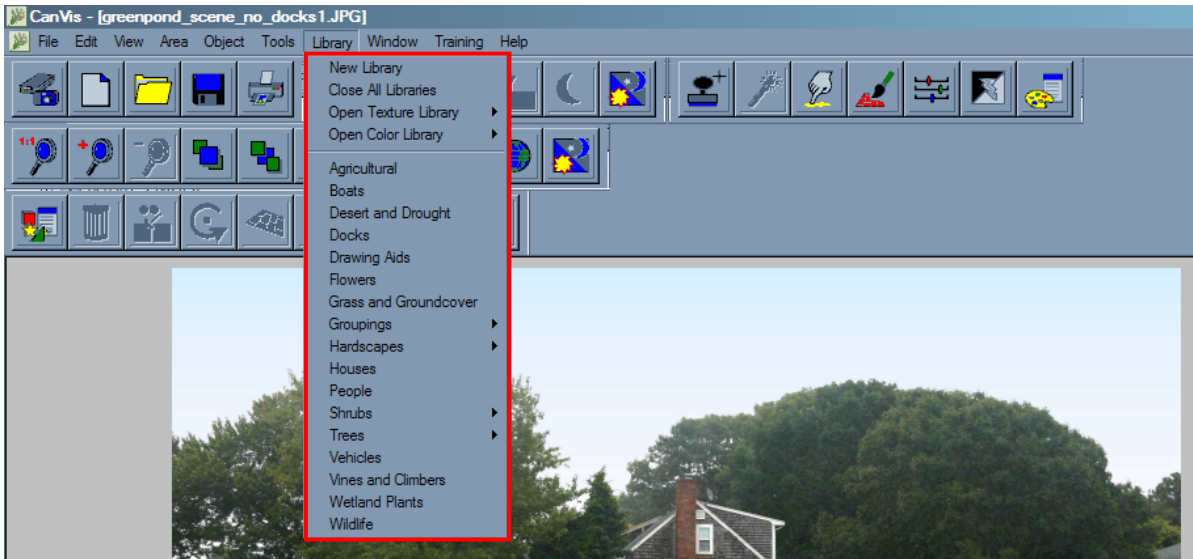
If you need objects that are not available, you can make them yourself. This can be done by using CanVis ([www.unl.edu/nac/simulation/objects.htm](http://www.unl.edu/nac/simulation/objects.htm)) or photo editing software (see list of programs in the appendix). When using other software, it's best to save the files in Targa (TGA) format with the transparency-enabled feature, if you are using a personal computer.

### Adding Objects to Library

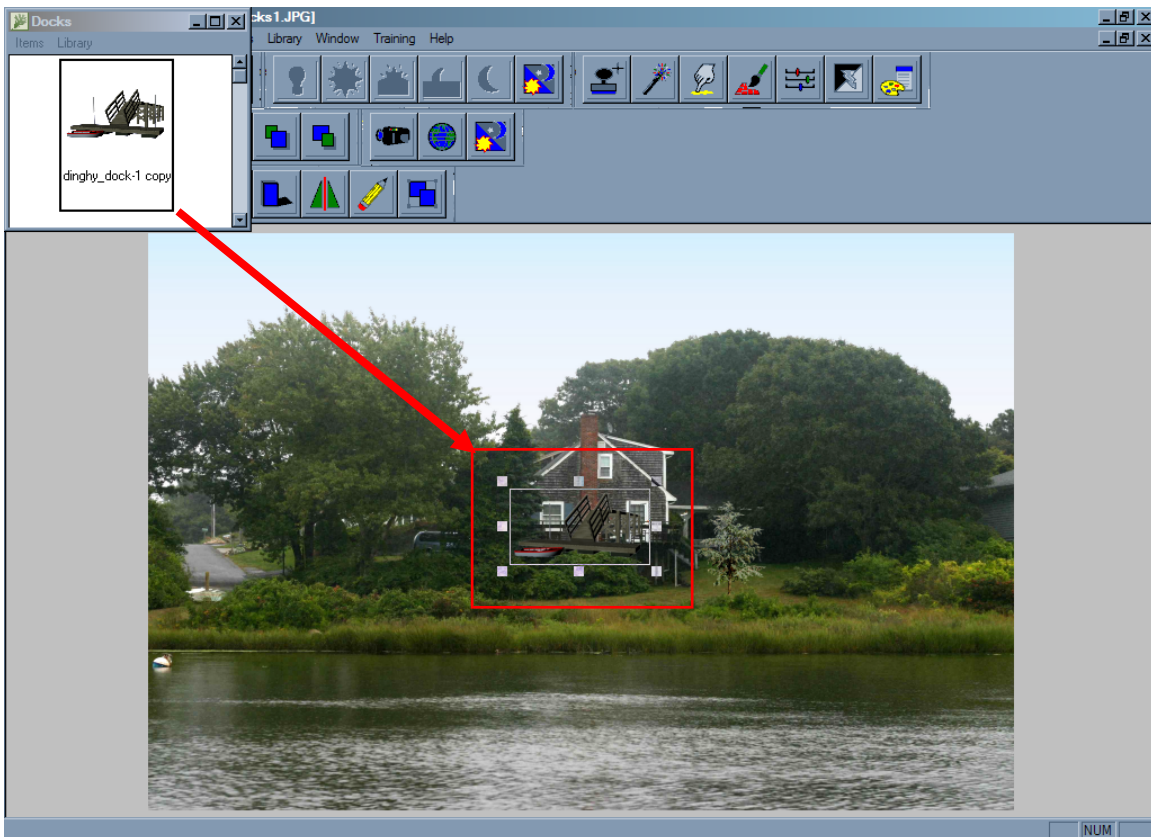
To add docks, houses, boats, Google imagery, and buoys to the library:

- From Library, select **New Library**
- Name the library
- Select **Items > Add Items**
- Select the files from the folder in the CD or on-line (use shift-click)

**Tip:** To avoid system crashes, keep objects smaller than 800 x 600 pixels. See Appendix for tips on resizing images.



CanVis Library Menu



Placing Objects Onto Base Image

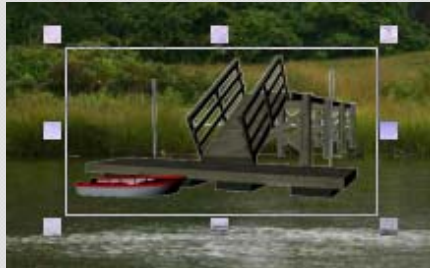
### Step 3 – Resizing and Positioning Objects

Any object you select will automatically appear in the center of the image. You will need to drag it to the desired location.

**Tip:** To disable a tool, right-click anywhere in the base image that is not within the object selection or hit the escape key.

### Object Selection

To perform these modifications and others that follow, make sure the object is selected. You can select the object by right-clicking on it. You can tell that an object is selected when a rectangle with small squares at the corners and edges is visible.



### Positioning Objects

Click on the box and drag the object to the location, keeping your finger on the mouse button and releasing it when the object is where you want it to be.

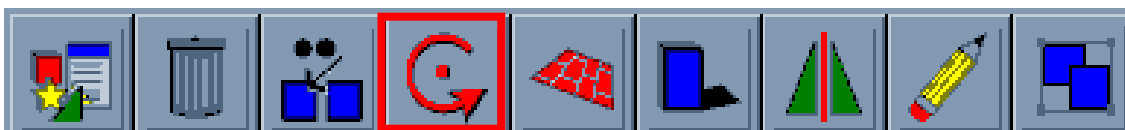
### Resizing Objects

The object may need to be resized. You can resize the object by “eye” or by using a series of mathematical calculations and grid guides to precisely resize the object. These are explained in detail on page 69 of the *CanVis Visual Simulation Guide*.

Select one of the corner squares on the rectangle and drag it to resize the object.

### Rotating Objects

From the **Object** menu or toolbar, select the rotation icon. Click on one of the corners of the image and rotate the object until it is in the right position. To disable, click **Escape**.



Object Toolbar – Rotate Icon

To add realism to the image simulation, add objects such as vegetation to the base of the docks.

Addition of buoys, boats, and people helps add to the realism of the simulation.

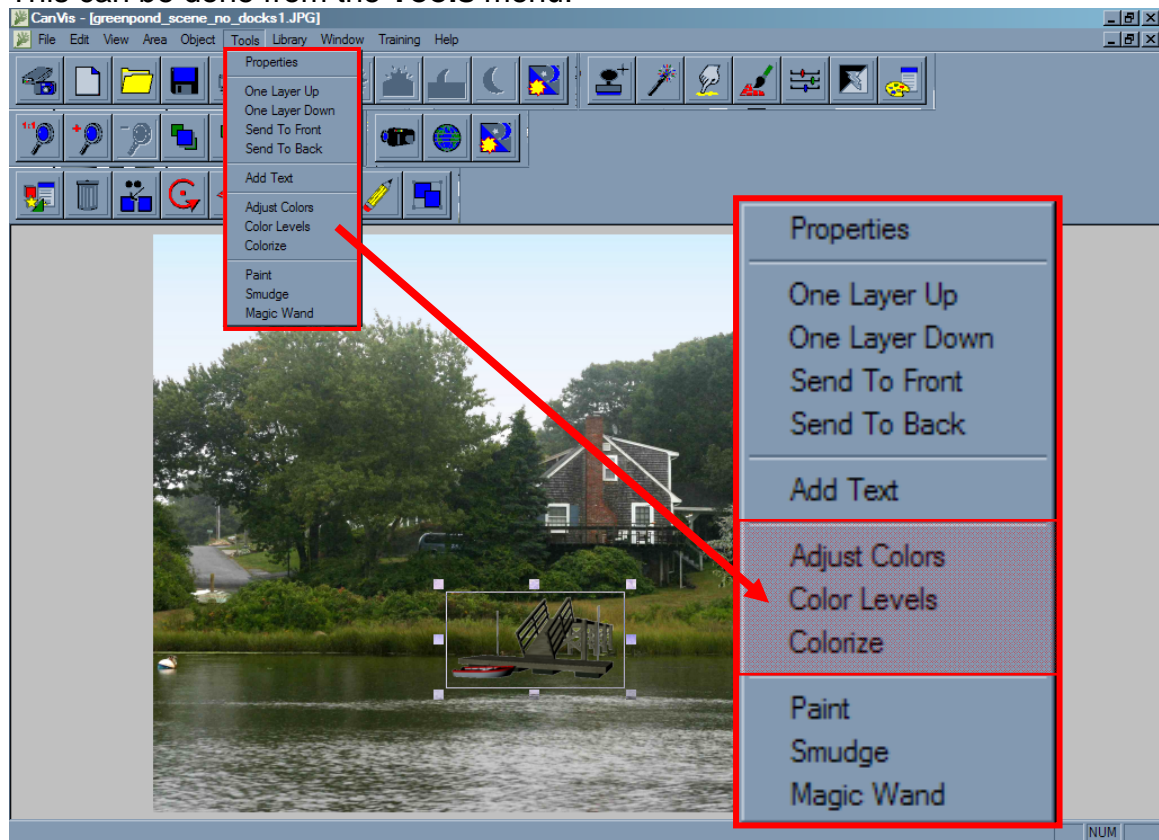
## Deleting Objects

Make sure the object is selected and press **Delete**.

## Step 4 – Modify Object

Once the image is in the location and size you desire, you may need to modify the color and shading to better match the base image.

This can be done from the **Tools** menu.

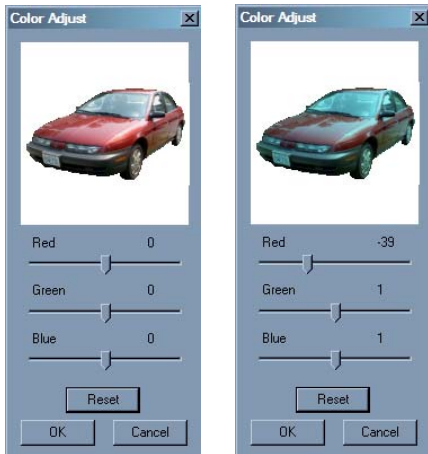


Tools Menu

Make sure the object you want to modify is selected. Otherwise, you will be modifying the base image.

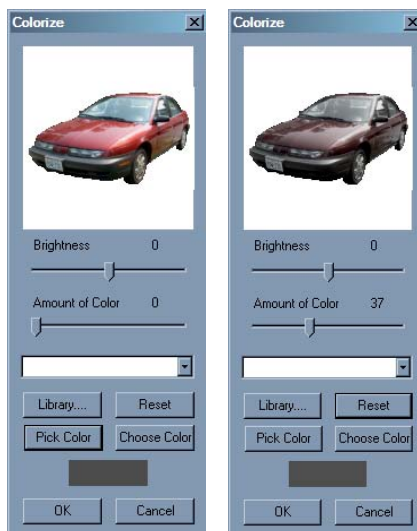
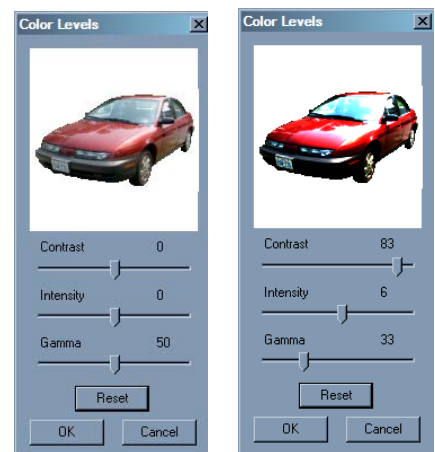
There are no clear rules to adjusting the colors, lightness, contrast, and intensity. The best way to learn how to use these features is to experiment and find out what works best for you.

## Adjusting Colors



The **Color Adjust** menu lets you tweak the *existing* reds, blues, and greens in the selected object. By making small modifications to this setting, you can help your object blend more readily into the environment or make a duplicated object look unique.

The **Color Levels** menu lets you adjust the contrast, intensity, and gamma features, which primarily control the black, white, and grey colors in the image. As with the color-adjust feature, these modifications can help your object blend more naturally into the environment or make a duplicated object look unique.



With the **Colorize** menu, you can change the brightness (which has a similar impact as the functions in the Color Levels menu) or add color. To add color, simply select a color from the image with the **Pick Color** tool or **Choose Color** and then modify the **Amount of Color** as needed.

**Important:** Edited images should be accompanied by a disclaimer explaining that the images are an approximation of change. Images with a high degree of realism should have a watermark identifying them as edited. This is an important step that will prevent viewers from misinterpreting the image as an existing condition.

## Additional Skills

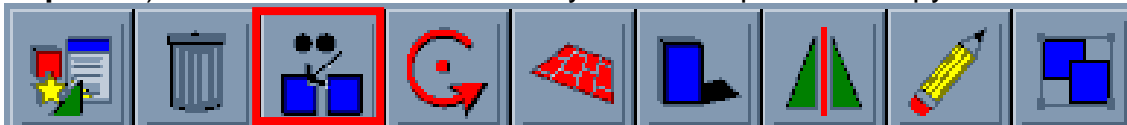
### Duplicating and Mirroring Objects

**Tip:** To disable this function, right-click anywhere in the base image that is not within the object selection or hit the escape key.

#### Duplicating Objects

Instead of inserting the same object from the library multiple times, you have the option of creating a duplicate.

Simply select the object, then select the duplicate icon (or go to **Object > Replicate**) and click the location where you want to place the copy.



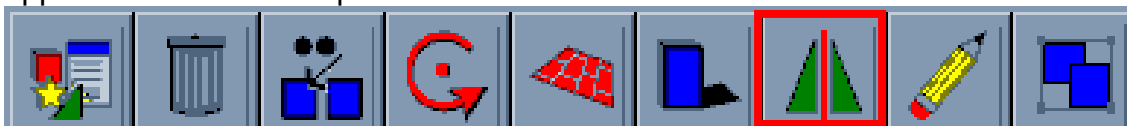
Object Toolbar – Duplicate Icon



Duplication of Docks

#### Mirroring Objects

CanVis also provides the option of mirroring or flipping an object. To do this, select the object, then select the **Flip Horizontal** icon (or go to **Object > Flip Horizontal**). This function can be used to change the orientation of the object to better fit the viewpoint of the image. It can also be used with the duplication feature to add the same pieces of vegetation or boats without creating the appearance of exact copies.



Object Toolbar – Flip Horizontal Icon

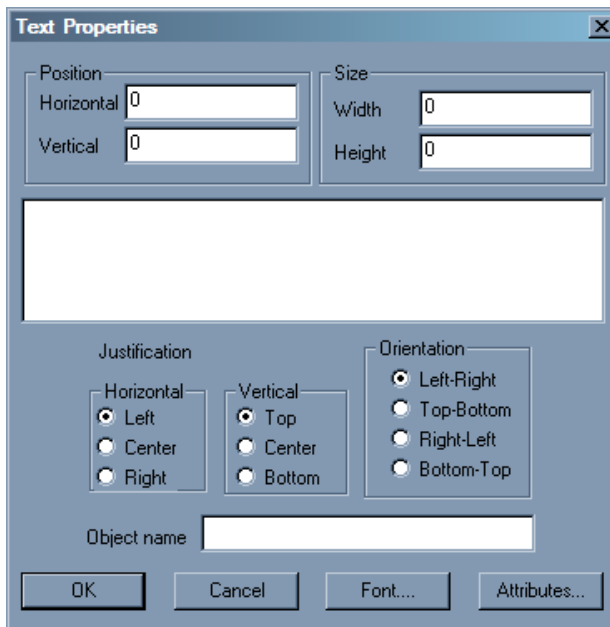




Mirror of Dock Object

## Adding Text to Simulations

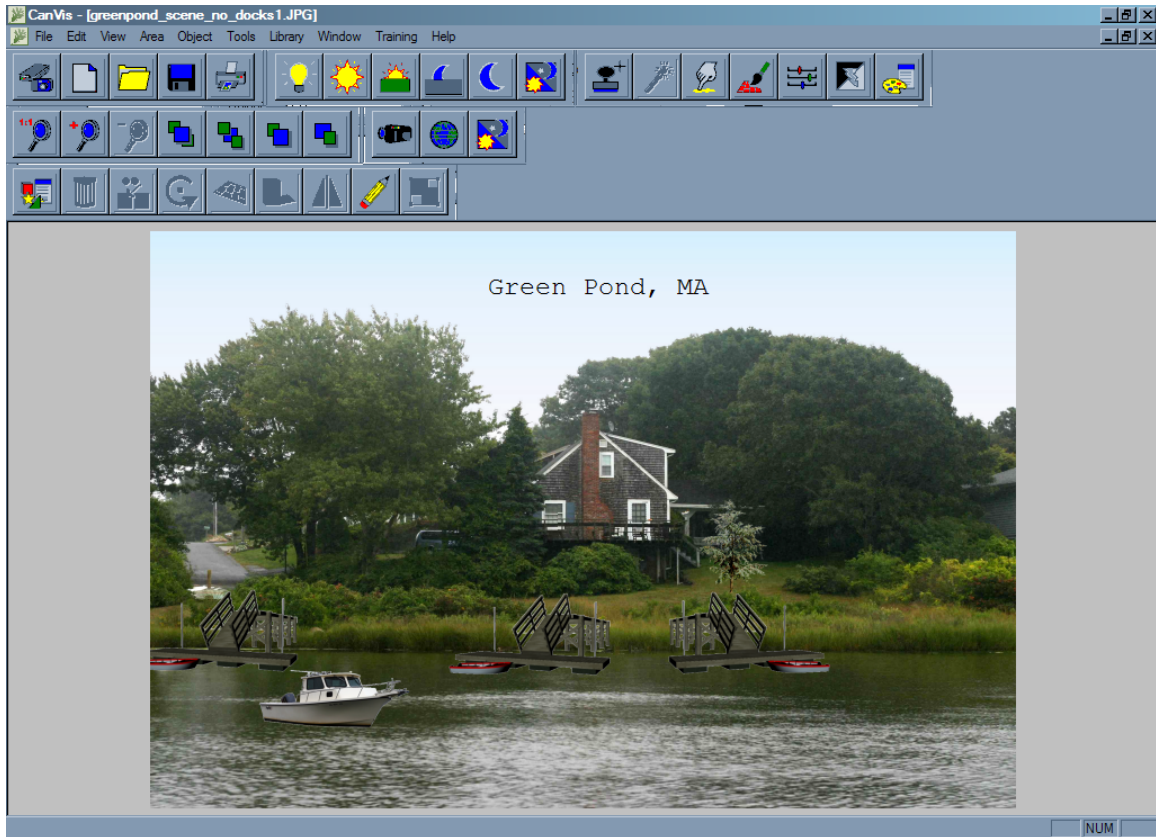
To add text such as titles, sources, copyrights, or credits to the simulation, go to **Tools > Add Text**.



In the **Text Properties** menu, type in your text and select the orientation or justification (you will be able to drag the text to other locations later).

The default text (Courier) is very small. You will probably need to modify the font. Click on **Font** and browse through the fonts, which vary in style and available size.

To change your font later, click on **Text** to select it and then right-click on it. This will open the **Text Properties** menu again.



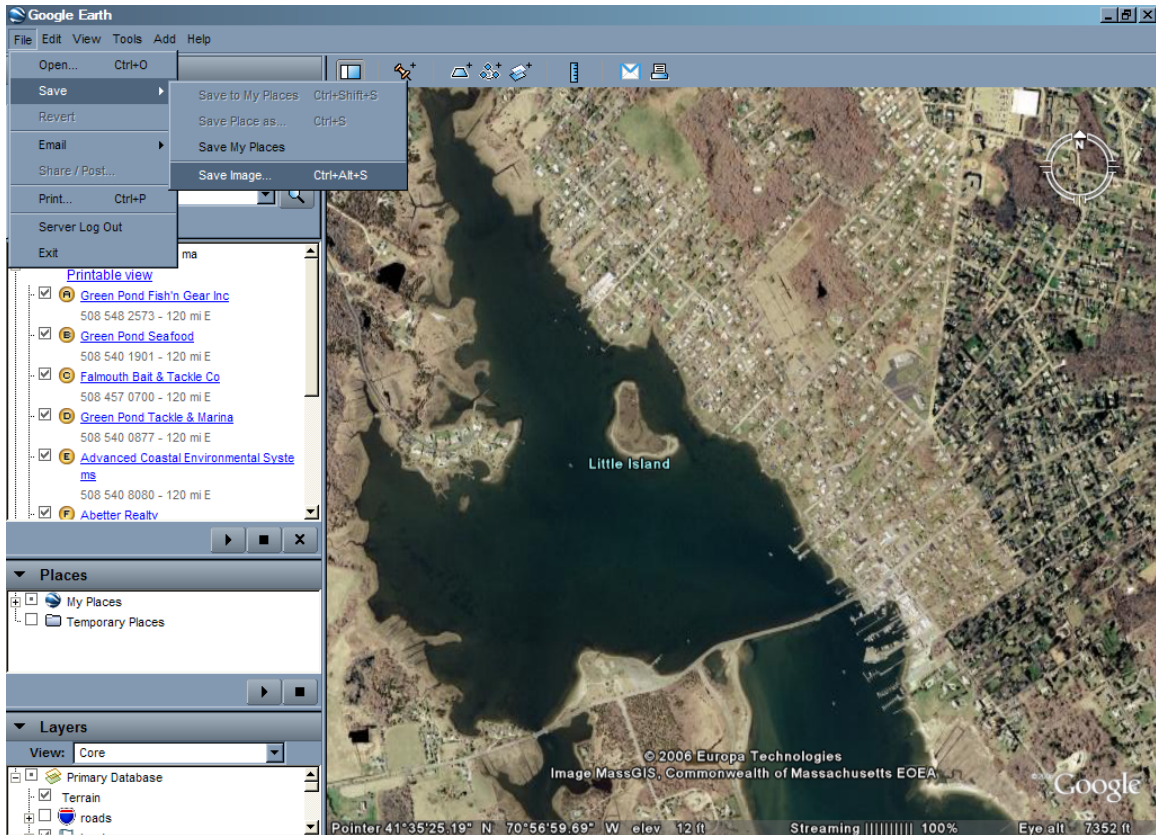
Example of Inserted Text

## Using Google Earth Imagery

Google Earth ([earth.google.com/](http://earth.google.com/)) is a good source of aerial imagery for many locations, particularly highly populated and coastal areas.

To use Google Earth, visit the website and type the desired location into the search bar. Use the controls in Google Earth to zoom and pan until the image is the perspective you want to use for the CanVis simulation.

You can save the image to your computer by selecting **File > Save > Save Image**.



## Google Earth – Saving Imagery

Once you save your files, they can be opened like any other image file.

You can add Google Earth docks, piers, houses, or boats to the imagery.

Upon completion of the simulation, credit Google Earth as the source of the imagery. The easiest way to do this is to keep the Google watermark on the imagery. Another option is to add it in as text (see above) or as a caption.

## Advanced and Specialized Skills

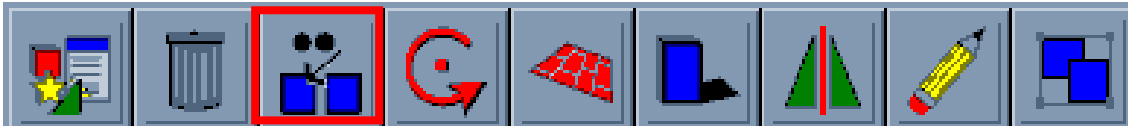
These skills will add realism to the visualization. **A recommendation:** become familiar with the basic CanVis tools and skills (above) before attempting these techniques. Please note that these may be time consuming—so remember to **Save** regularly to avoid losing your work.

## Creating Reflections

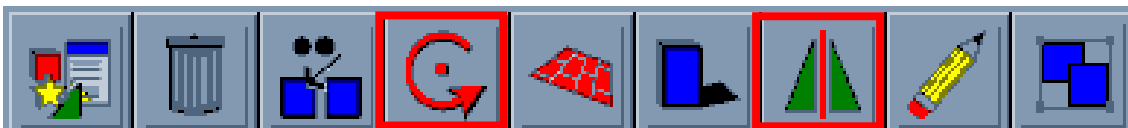
Creating reflections is an easy process that can add a lot of realism to visualizations. Reflections work best with objects with flat bases that are seen head-on (not from an angle).

1. Select the object for which you want to create a reflection. Duplicate the object (select the object, then select the duplicate icon—or go to **Object > Replicate**) and click the location where you want to place the copy.

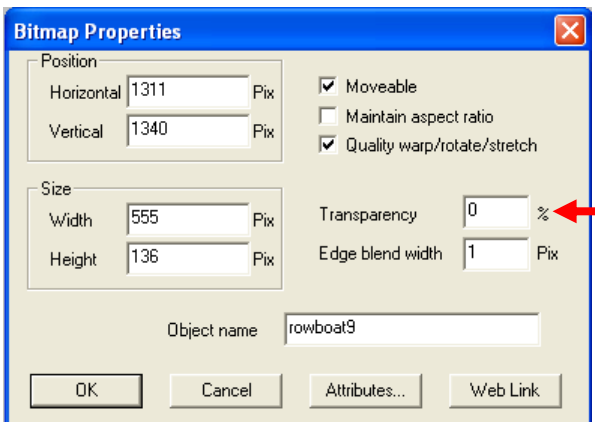
**Tip:** To disable the duplication functionality, either right-click on the image or hit the **Escape** key. This maneuver also works for rotation.



2. Select duplicated object. The object needs to be rotated 180° and flipped. This can be done two ways. Method One: From the object toolbar select the **Flip Horizontal** icon (flip the object), then select the **Rotation** icon from the same menu and turn the object 180°. Method Two: From the menu select **Object > Flip Vertical**.



3. Rotate the duplicated object as needed to match it with the base of the original object. Right click on the object to open the **Bitmap Properties** menu.



4. Increase the transparency of the object to somewhere between 50% and 90% (you may need to experiment a little).



Example of the impact of reflections on a visualization.

## Creating Shadows

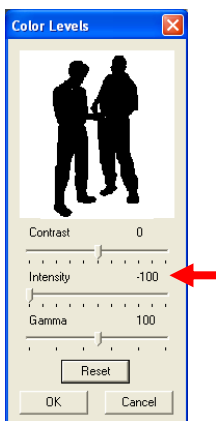
Creating shadows is similar to creating reflections. When creating shadows, however, it is important to look at the direction and intensity of existing shadows in the base photograph and mimic those as closely as possible.

### Method 1

1. Select object for which you want to create a shadow. Duplicate object (select the object, then select the duplicate icon (or go to **Object > Replicate**) and click the location where you want to place the copy).
2. From the Advanced Toolbar select **Color Levels**



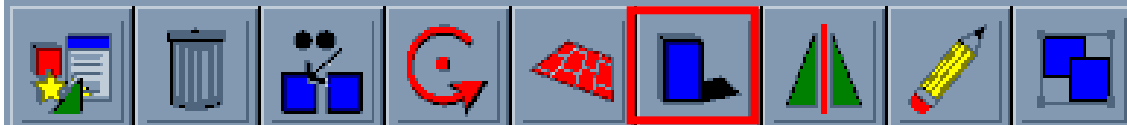
3. On the Color Levels menu move the **Intensity** slider to **-100**, making the object completely black.



4. Right-click on the object or shadow to open the **Bitmap Properties** menu. Change the transparency (see reflections). This will probably be around 70% to 90%.
5. Rotate and resize the object or shadow as needed to match the shadows in the original base image.

## Method 2

1. Select object for which you want to create a shadow. Select the **Shadow** icon from the object toolbar. This will create a shadow next to your object.



Shadow (grey shape behind people)

2. Hit **Escape** or click on base image to remove object selection. Select object again and move object to separate object from shadow.



Shadow (removed from behind people)

3. Right-click on the object or shadow to open the **Bitmap Properties** menu. Change the transparency (if needed).
4. Rotate and resize the object or shadow as needed to match the shadows in the original base image. You may need to use a combination of resizing, warping (see below), and rotating.



Completed Shadow of Men on Beach

## Modifying Objects – Advanced Warping and Cropping

Warping and cropping are mechanisms that can be used to modify the shape of an object. Warping allows users to take into account angles and perspectives. Cropping and erasing removes unwanted sections of the object, such as areas that overlap with other elements of the visualization.

**Tip:** Both warping and cropping have a tendency make CanVis crash. Before attempting either method, make sure to **Save** your work.

**Tip two:** If you create a new object that you plan to use in future visualizations, it can be saved by going to **File > Export Object** and exporting it as a TGA file (more on this below).

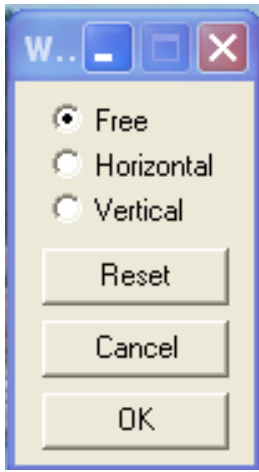
### Warping

The warping tool is used to warp objects. It can be accessed from the menu under **Object > Warp** or from the toolbar.



Once the **Warp** application is open, select the type of warping desired from the radial buttons (**Free** allows for the most movement in all directions).

Select one of the small squares surrounding the object and move these in the desired direction to create a warp effect.



Warp Application



Wall – Squares are Warp Points



Wall – After Warp

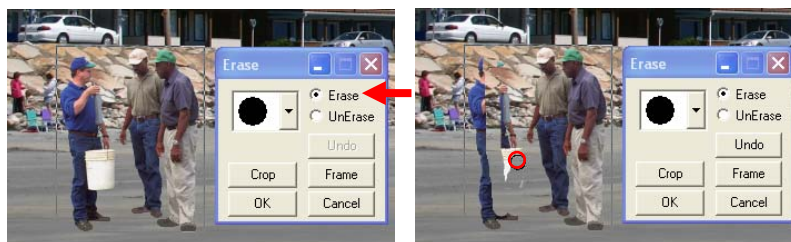
## Cropping and Erasing

This tool can be used to modify existing objects. Several options are available. Each option starts the same way:

1. Select object to be modified.
2. From the object toolbar select **Erase Object** or **Texture**.



### Options: Eraser Brush



The eraser brush removes a swatch of the object. Use the dropdown menu to select the width of the eraser. Depending on the object and what you are trying to



achieve, you may need to use several widths. If you make a mistake you can fix it by changing the radial button to **UnErase**.

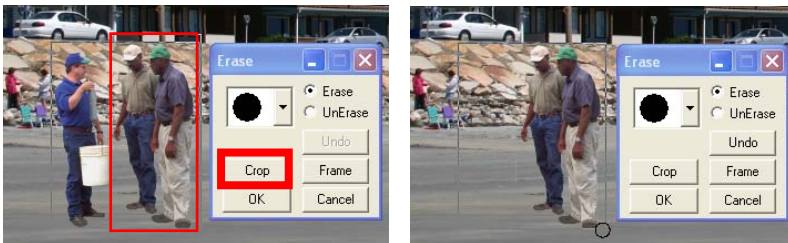
**Erase** is particularly helpful when you don't want to use straight lines.

### Frame



The **Frame** tool removes all of the area within the frame. Select the area you wish to remove by drawing a box around it. Click on the left mouse button when you are done. The area within the box should disappear. Click **OK** to accept the changes.

### Crop



The **Crop** tool is the opposite of the frame tool. It removes all areas that are not within the box. To use it, select **Crop** and draw a box around the area you wish to keep. Click on the left mouse button and the area outside of the box should disappear. Click **OK** to accept changes.

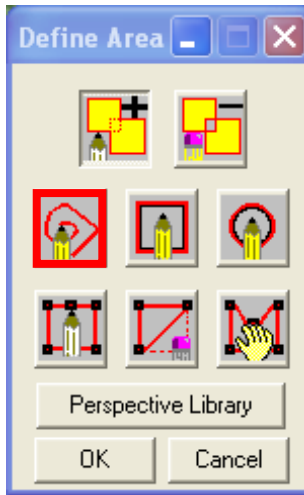
## Creating Objects from Background

This is important if you wish to create an object from a component of the background or base photograph. This object can then be used in the visualization, and it can also be added to the library for later. This is especially useful for vegetation.

1. Select Outline Area from the **Texture** toolbar



2. Choose the first selection tool. Regular shapes such as circles and rectangles can be used; however, the free selection tool allows the highest level of freedom.



This selection tool can be used two ways.

#### Method 1



**Hold down the left mouse button** while selecting the area. This will create a series of small points. This is quick but control is limited.

#### Method 2



**Select each point individually**, clicking between each one. A straight line is formed between each point. This takes longer but offers more control.

**Note:** In both cases make sure to return to the starting point. This will cause the selection to turn a darker shade, indicating it is selected.

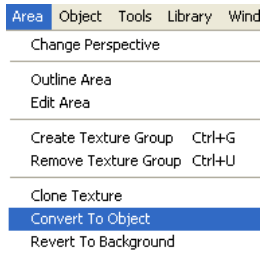
Select the area to replicate. Once it is selected, choose **OK**. The area will be represented in a darker shade and surrounded by a box. **Note:** If the shape selected does not change color, it is not selected.



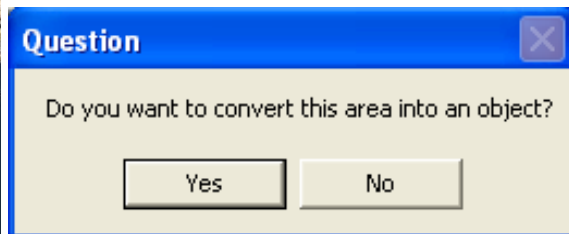
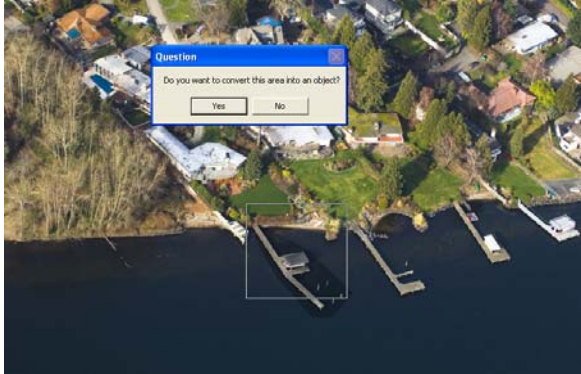
Selected area (darker color within box)



This area needs to be converted to an object. This can be achieved in one of two ways: (1) select **Area > Convert to Object**, or (2) attempt to move the selected area, which will result in a window pop-up enquiring, "Do you wish to convert this area to an object?" Choose **Yes**.



## Convert to Object Option



## Converting an Area to an Object

Once an area has been converted to an object, it can be moved and modified in the same way as any object added from the library.



## Image with Added Object

### **Saving New or Modified Objects (Optional)**

Once you have created an object, the object can be saved for future use and even added to the library! To save your object, select the object, then choose **File > Export Object**.

**Note:** Make sure to save the object as a TGA file if you wish to use it again in CanVis.

## Visualizing Sea Level Rise

Several strategies can be used to visualize sea level rise. The two methods illustrated below are quick and easy to use. Depending on the base photograph, either strategy—or a combination of both strategies—may be used.

### Method 1

This method consists of creating an object from the area that includes the existing water.

#### 1. Outline Area

Using the **Outline Area** tool (see page 23) select an area slightly above the existing water level, making sure it is parallel to the water and also includes as much of the existing water as possible. Try not to select an area outside of the base photo as it will appear black in any object created.



Once selected, the area will appear darker. Click **OK** to confirm selection.



Selection of Area – Avoiding Areas Outside of Base Photograph

## 2. Create and Move an Object

Select the area and attempt to move it. This will result in a window pop-up indicating, “Do you wish to convert this area to an object?” Choose **Yes** (see instructions above for more details). Once the object has been created, move it up the screen to the desired water level. Some rotating may be necessary.

## 3. Modify Object Properties

Right-click on the object to open the **Bitmap Properties** window. Increase the edge width (try between 10 and 30) and transparency (try between 15% and 30%) to help the object blend into the background image.



Charleston – Sea Level Rise – Before



Charleston – Sea Level Rise – After

**Method 2**

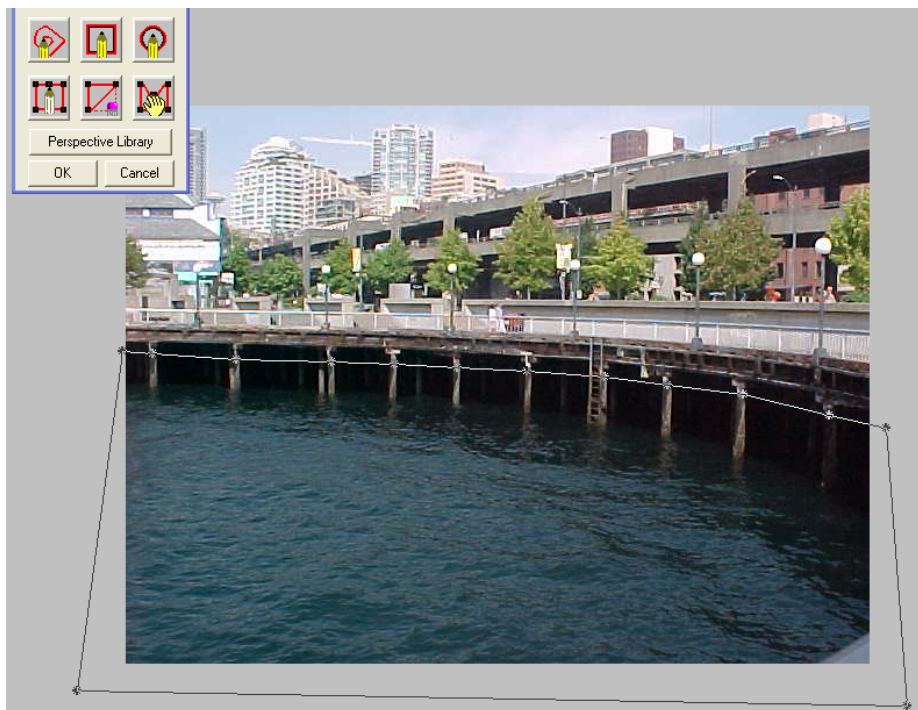
The second method involves selecting an area and “filling” it with water texture. This is useful when the water level can not be easily moved.

## 1. Outline Area

Using the **Outline Area** tool from the Texture toolbar (see page 23) select an area that includes existing water and the area you want to “fill” with water. Use existing sea level and watermarks and walls and poles as your guide. In this case going a little bit outside the base photograph with your selection is recommended.



Once selected, the area will appear darker. **Do not hit OK.**



Selection of Area – Including Area Outside of Base Photograph

## 2. Fill the Area

Select **Perspective Library** from the Outline Area tool (If you closed the Outline Area tool, simply open it again.) This will re-open the Perspective Library window.



Perspective Library Window

From the drop-down menu, select **Water**, and then select the **Display Textures** button. A series of water tiles will open; scroll through these until you find the one that most approximates the original water in your image (remember, you can make small adjustments to the water tile later). Click on the tile.

Depending on the size of the original image and the water tile selected, you may see tiling (obvious repetition of the same pattern):



Water at 80 ft. (note tiling)



Water at 16 ft.

Tiling can be corrected by modifying the **Approximate Distance** on the slider. The smaller the number, the less tiling. The results will appear on the base photo.



Approximate Distance Slider

Once you are happy with your results, select **OK**.

### 3. Blend Water Layer with Background

Using **Area Properties** (right-click on object), modify the **Edge Blend Width** and **Transparency** to help blend the water layer into the background. At this stage



you can also convert the area to an object (drag the area with your mouse), then modify colors, brightness, and contrast as needed.



Seattle Boardwalk– Sea Level Rise – Before



Seattle Boardwalk – Sea Level Rise – After

## Appendix

Graphic File Format Comparisons								
File Format	Type of Data		Operating System	Color Management & Transparency				Compression
	Raster	Vector		RGB	CMYK	Color bits	Transparency	
GIF	●		A	●		16	●	
JPG	●		A	●		24		●
BMP	●		W/M	●		24		●
PNG	●		A	●	●	48	●	●
TIF	●		A	●	●	48	●	●
EPS	●	●	W/M	●	●	24	●	
PCT	●	●	M	●		24		●
TGA	●		W	●		16-32	●	●
WMF/EMF	●	●	W	●		16-24		

Operating Systems: A = All      W = Windows      M = Macintosh

(Source: CanVis Visual Simulation Guide)

## Potential Sources of Base Imagery

### Government Sources (please review guidelines on each site before use):

The Library of Congress - Panoramic Maps: Geographic Location  
[www.memory.loc.gov/ammem/browse/ListSome.php?category=Maps](http://www.memory.loc.gov/ammem/browse/ListSome.php?category=Maps)

The Library of Congress - Prints & Photographs On-line Catalog  
[www.loc.gov/rr/print/catalog.html](http://www.loc.gov/rr/print/catalog.html)

National Oceanic and Atmospheric Administration Photo Library  
[www.photolib.noaa.gov/](http://www.photolib.noaa.gov/)

Natural Resources Conservation Service Photo Gallery  
<http://photogallery.nrcs.usda.gov/>

U.S. Department of the Interior Photo Library  
[www.doi.gov/photos/gallery.html](http://www.doi.gov/photos/gallery.html)

U.S. Environmental Protection Agency Photo Library  
[www.epa.gov/bioiweb1/html/photo\\_library.html](http://www.epa.gov/bioiweb1/html/photo_library.html)

U.S. Fish and Wildlife Service Photo Library  
[www.fws.gov/dls/](http://www.fws.gov/dls/)

### Additional Sources:

Google Earth  
<http://earth.google.com/>

Google Image Search  
<http://images.google.com/>

Marine Photobank  
[www.marinephotobank.org/home.php](http://www.marinephotobank.org/home.php)

Terraserver U.S.A. (provides ortho photos)  
[www.terraserver.microsoft.com/](http://www.terraserver.microsoft.com/)

**Note:** Always credit the image source or photographer, regardless of permission status.

## Image Resolution Guide

Method	Output	Recommended Resolution
Scan: photo or print	Web or digital projector	100-150 dpi
Scan: photo or print	100% print	300 dpi
Scan: photo or print	200% print (common when clipping objects) and archiving	600 dpi
Scan: slide	Web or digital projector	300 dpi
Scan: slide	Print and archiving	Min. 1200 dpi
Digital photography	Web or digital projector	640 x 480 pixels
Digital photography	100% print	1024 x 768 pixels
Digital photography	>200% print (common when clipping objects) and archiving	1600 x 1200 pixels

(Source: CanVis Visual Simulation Guide)

## Resizing Images

If your image is much larger than 800 x 600 (optimal size for CanVis) you will need to resize it. If you have access to photo editing software, go to **Image > Resize**, and, where given the option, select **pixels** (not percent or inches). If the photograph or image is in portrait orientation (vertical), type in 800 pixels for height; if it is in landscape orientation (horizontal), type in 800 pixels for width.

Make sure that the **lock aspect ratio** or **preserve aspect ratio** or the equivalent is selected. Hit **OK**. Select **File > Save As** and select a new name or location for your file to avoid losing the original.

InfranView ([www.irfanview.com/](http://www.irfanview.com/)) is a non-commercial (free) software that can be used to resize images if you don't have access to the photo editing software listed below.

## Select Photo Editing Software

### Noncommercial, No-Cost:

GNU Image Manipulation Program (GIMP)  
[www.gimp.org/](http://www.gimp.org/)

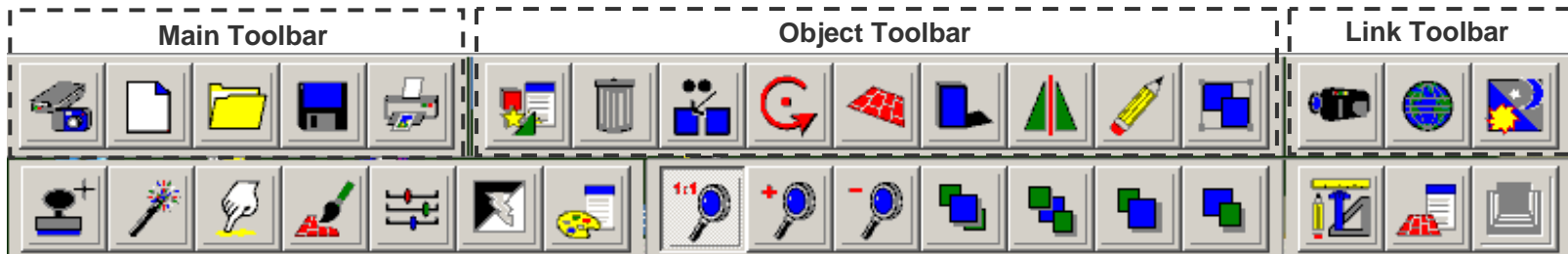
### Commercial:

Adobe Photoshop  
[www.adobe.com/products/photoshop/](http://www.adobe.com/products/photoshop/)

Adobe Photoshop Elements  
[www.adobe.com/products/photoshopelwin/](http://www.adobe.com/products/photoshopelwin/)

Paint Shop Pro  
[www.corel.com/servlet/Satellite/ca/en/Product/1184951547051#tabview=tab0](http://www.corel.com/servlet/Satellite/ca/en/Product/1184951547051#tabview=tab0)

For a more comprehensive list of photo editing software for PCs and Macintosh computers, visit:  
<http://graphicssoft.about.com/od/digitalphotosoftware/>



### MAIN TOOLBAR



**Acquire** – This allows a background image to be acquired from either a scanner or a digital camera. Since these devices use their own software, you should refer to the manuals for instructions.



**New** – Open a new blank document



**Open** – This will open a background image file which is stored on your hard drive or on a floppy disk. More than one background image may be open at once.



**Save** – This saves the current image (file) to either your hard drive or a floppy disk.



### OBJECT TOOLBAR



**Delete** – This is used to delete selected areas or objects.



**Object Library** – Access the contents of the object library.



**Erase** – This is used to “erase” unwanted areas from textures or objects.



**Replicate** – This will make a copy of the active object and keep same properties.



**Flip Horizontal** – This will horizontally flip an active object on the screen.



**Warp** – This tool will give the illusion of 3D to the active object.



**Rotate** – This is used to rotate an active object on its axis.



**Shadow** – Create the appearance of a shadow by inserting a transparent replica of the object.



**Group** – This will group selected objects or textures.

### LINK TOOLBAR



**Web Link** – This will present a list of important places on the Web for you to access.



**Help Movies** – When you click the Help icon, your cursor will change to an arrow with a question mark next to it. Place the question mark over the icon or menu item that you would like to see a movie about, and click.



**Open/Hide Lighting Toolbar** – This will open or hide the lighting toolbar.



### ADVANCED TOOLBAR



**Clone Texture** – This enables you to copy a desirable area of your background over an undesirable area of your background.



**Magic Wand** – Used for editing your own library images.



**Smudge** – Takes the sharp edges off objects.



**Paint** – Allows you to paint with a selected texture.



**Adjust Colors** – Allows you to adjust the red, green, and blue color content of your background image or a selected object or texture.



**Color Levels** – Allows you to adjust the contrast, intensity, and gamma content of your background image or a selected object or texture.



**Colorize** – Allows you to change the color and brightness of a selected object or texture.

### VIEW TOOLBAR



**Zoom 1:1** – Brings the view back to 100%



**Zoom In** – Will zoom in on the background image



**Zoom Out** – Will zoom out from current view.



**Send to Front** – Brings the selected object or texture up to the top layer.



**Send to back** – Bring the selected object or texture down to the bottom layer.



**One layer up** – Brings the selected object or texture up one layer at a time.



**One Layer Down** – Brings the selected object or texture down one layer at a time.

### TEXTURE TOOLBAR



**Outline Area** – This presents you with a set of tools used to outline an area to be filled with a texture. (see the Area movie for descriptions of the tools in the Area toolbox.)



**Texture Library** – Access the contents of the texture library.



**Change Perspective** – Access the Library Perspective Menu.



**NOAA Coastal Services Center**

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**Regional Presences:**

NOAA Pacific Services Center  
NOAA Gulf Coast Services Center  
Northeast Office  
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**Additional Regional Efforts:**

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