Creating Water Scenes on Your Layout
by William Lyders, Proprietor of the Whitewater & Virginia RR

In my quest for highlighting water scenes on my layout, especially whitewater scenes like the two pictured above of a waterfall and a swift moving creek, I seek the full scene with realistic details including figures and other scenic feature details. There are many articles in magazines and books that only give a snippet of text and maybe a picture on adding water to your layout. Most articles provide the construction basics in a text box or paragraph or two, i.e. create some shoreline, paint the water area black or a dark color, buy a “water product”, pour it into that space, and let it harden. But on my Whitewater and Virginia (W&V) RR, water is a primary scenic feature and having creative realistic water scenes is imperative. So in this article, I will provide you with the process and many techniques to create an interesting and realistic water scene on your layout that has visitors focusing on the scene and features and asking you how you did it. Are you ready? OK, let’s get started.

Overview Description/Objectives of Article

In this article, you will be provided information that will let you:

◆ Identify the features to simulate for different water scenes
◆ Identify the research you need to do before doing that simulation
◆ Illustrate the approach and process for water scene construction
◆ Identify techniques for water scene preparation
◆ Show results using different water products
◆ Identify available tools, materials, and products to create water
◆ Provide advantages/disadvantages of water products used

Research Your Water Scene before Starting Construction

Once you have selected a type of water scene and any features you want to simulate, first, research the scene before you begin construction. Know your region and the types of water scenes you expect to simulate, e.g. for an East Coast mountain layout, all of the water scenes in the Features table above apply. But Midwest, Rocky Mountain, & West Coast regions are very different… e.g. fewer trees, less water, taller and more rocky mountains. So use multiple references, e.g. search travel literature, books on a region, historical society photographs and diagrams, model railroad magazines, and topography maps. If you can’t travel and visit local sites, then use the Internet, including Google...
Earth to find pictures of applicable prototypical water scenes. Look for the details in pictures that you want to simulate. Actually visiting a scenic location is best. I am constantly looking for water scenes as I travel. The roar of flowing water will often lead me to great white water scenes. Then I approach the scene looking for the details I want to include on my layout. With my layout simulating Mid-Atlantic lakes and rivers, pictures of Smith Mountain Lake, VA provided a good prototype location for Lake Barbara on my layout. Buildings, trees, shoreline features, bottom topography, and water color/movement were noted in the two pictures below. Fig. 1 shows two pictures of actual sites and the realistic details that helped me choose the water color and forests at my most prominent lake.

To make a white water scene realistic, you must understand fast water flow over and around rocks and other water path obstructions e.g., where the water is clear and the water is white. I take lots of pictures of rivers, streams, and waterfalls to capture the details of the water flow effects, as shown in the set of pictures in Fig. 2, and use them in my modeling.

Features of a Water Scene

In Table 1 below, different types of water scenes and examples of multiple features applicable to each of them are identified for the modeler to consider simulating to make the scene more realistic.

<table>
<thead>
<tr>
<th>Water Scene</th>
<th>Features to Simulate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creek</td>
<td>Bottom sediment, still water pools, flowing water, rocks, branches, animals drinking, shallow clear water, plants, tree roots, debris</td>
</tr>
<tr>
<td>Harbor</td>
<td>Flat or rippled water surface, deep water, small waves, rocks near shore, floating branches, small boats, docks, debris, large ships at docks</td>
</tr>
<tr>
<td>Lake</td>
<td>Near shore bottom sediment, flat or rippled water surface, deep water, small waves, rocks near shore, floating branches, animals at shoreline, swimmers, small boats, docks, debris</td>
</tr>
<tr>
<td>Pond</td>
<td>Near shore bottom sediment, flat or rippled water surface, deep water in middle, rocks near shore, floating branches, animals at shoreline, swimmers, small boats, small docks, debris</td>
</tr>
<tr>
<td>Puddle</td>
<td>Small area of still water, debris, bottom sediment, plants</td>
</tr>
<tr>
<td>River</td>
<td>Near shore bottom, slow or fast flowing water, whitewater rapids, deep water in middle, rocks in water causing water flow redirection, waterfalls over drops in river surface, swimmers, small boats, small docks, debris, logs, trees along shoreline</td>
</tr>
<tr>
<td>Stream</td>
<td>Bottom sediment, some still water pools, flowing water - more than creek, rocks, branches, animals drinking, shallow clear water, plants, tree roots, debris</td>
</tr>
<tr>
<td>Waterfall</td>
<td><strong>Large flow:</strong> Fast moving water, whitewater within falls and larger at bottom, rocks in water above and below falls, no bottom sediment, rocky shoreline near waterfall, occasional debris flowing over falls or stuck at top, caves behind falls, pond or river flowing away from falls, swimmers in pond or splashing in waterfall, rock outcroppings adjacent to falls, often a dam. <strong>Small runoff flow:</strong> Slow flow or a weeping of water from rocks in a cliff or a small stream on top of a cliff, water on ledges, wet rocks along flow path down, puddles at bottom in ditch</td>
</tr>
</tbody>
</table>

Table 1- Features of a Water Scene
What is the terrain for a shoreline and water bottom? The pictures in **Fig. 2** provide an answer for a shallow fast moving stream or river. Preparation of details in a water bottom, especially when the details will be visible, is the initial simulation technique to be done. **Fig. 3** shows types of lake shore rocks [not smooth], depth that you can see details underwater, and color of water reflected by trees. The waterfall picture at the beginning of this article is an excellent example of water flow with a large drop that reflects both clear and white water flow.

**Construction Approach and Techniques**

The steps to building a water scene begin with preparing the bottom and conclude with adding details to “poured water”. Many articles primarily include how you pour water and the product that was used. This article covers constructing the whole scene and the multiple products that can be used.

So, I will now describe the basic steps below with a supportive set of pictures and include tips and techniques.

**Step 1: Prepare the base terrain for the shoreline and the water bottom**

The base of the scenery may be constructed from carved foam, plywood, or shaped plaster. Then I use paper towel soaked plaster to cover this base and set the terrain from the nearby shoreline all the way across the water bottom. Since the
water product(s) to be used later will flow to the lowest points in the river bed, lake, etc., I try to make the beds as level as possible to minimize the amount of product needed.

**Step 2: Painting the bottom to simulate depth**

With the base complete, I paint the shoreline and water bottoms to simulate the colors of the shoreline soils and depths of the water. Shallow water can be a similar color to the shoreline but as water gets deeper, the colors will get darker.

As shown in the Smith Mountain Lake pictures, in observing many bodies of water, and in Internet research, the color of ponds, rivers, or lakes are not a Caribbean blue. They are usually a shade of green caused by nearby green tree reflections or blue sky colors. Olive green is a good color for heavily tree lined water and a Dark Green acrylic paint [Folk Art Thicket] is excellent for that deep parts of a water body. Having the different paints from shoreline to deep water on a palette will allow you to blend the colors as the depth transitions from shallow to deep water. For many rivers that are dirty water – like in the mid-Atlantic region – a brownish green is a good color. Fig. 4 pictures a rocky shoreline on a deep water lake and a shallow to deep transition of colors from a culvert flowing into a lake.

![Fig. 4 – Shallow water to deep water requires painting a color transition](image)

**Step 3 - Inserting Features into the Scene before Pouring**

Scenic details make the realism and adding some features now are necessary. This is where you glue those rocks along the shoreline or within the river, stream, or creek bed. You can use real river rocks collected on a hike, like I do, or use broken pieces of plaster, or just packaged talus. Try to use rocks colored or shaped like those you see in your pictures. In addition, add logs or branches [collected twigs from those hikes], insert trees or branches in shallow water area, glue grasses, etc. Insert anything that is in the water and will be seen after the water is poured. Inserting a fisherman that will be in the water, a dock or bridge, a vehicle, or crashed box car are other examples of details to be added before a pouring. Some examples, shown in Fig. 5, are details [logs, rocks, grass on shore, etc.] in a creek flowing through a forest and a river shoreline with smooth “river” rocks to handle water flowing from a culvert into a smooth lake. These rocks are real to get the correct colors.

**Step 4 - Pouring the Water for Typical Water Scenes**

Later in the article, I summarize the many water products I have poured to simulate water. An industry favorite that I have used is two part
resins, including Magic Water by Unreal Details and Casting Resin, to create water in multiple water scenes.

One issue with a two part resin is that capillary action, the “surface tension in the liquid resin”, causes the liquid to climb up an adjacent surface – like a dock piling or shoreline. Hence the resin will “wick” up the shoreline [as it did on Lake Barbara] about 1/16” to 3/32” above the waterline along the whole shoreline. This is also true on pilings for docks and bridges or when shorelines are plaster or foam products. In a recent article, the author took note of this issue and suggested making up a small batch of the resin and paint a line of it onto the banks of the shoreline at the projected waterline. When the line dries, it acts
Two part resins have another issue: an overwhelming smell. Magic Water has a much more manageable aroma. An excellent alternative to a two-part resin are Woodland Scenics Realistic Water and Woodland Scenics Water Effects products. There is no mixing, no aroma, and you can use a bottle over time on multiple water scenes. The Water Effects makes including ripples and other lake water movement very easy. In Fig. 6, I picture different water scenes using the different water products discussed and reflected later in Table 3.

I used Magic Water, a two part resin/hardener, in making Lake Barbara. Magic Water allows a single deep pour. Woodland Scenics Water Effects was then used to simulate ripples from wind and the incoming culvert water flow. Most two part resins, like Magic Water, can be poured in layers up to ½” thick and each layer will dry in 12 to 24 hours depending on room temperature/humidity. I often wait 48 hours to be sure. My recommendation is to plan for as little “water depth” as possible. When mixing resins, you must thoroughly stir up the resin and hardener. However be careful that the mixing or the pouring doesn’t create bubbles. If that happens, take a hair dryer or better yet, an air heat gun and slowly “heat the surface until the bubbles rise to the top and disappear.

I have never tinted a water product but one author noted that if you want to tint a resin, you can add paint to it in a ratio of a ½ drop of paint per ounce of resin. But make sure the paint is an organic solvent-based paint and not a latex or acrylic paint. I personally prefer to let the water be clear and let the bottom provide the color. Another modeler used Enviro-Tex two-part resin and tinted it with blue dye and poured it to a depth of ¼” over the river bed. He then used a palette knife.
to create ripples and simulate wind-swept water.

Note: A table of advantages and disadvantages of these different available water products is shown later.

**Warning:** To avoid liquid runoff during pouring, make sure that the painted plaster bottom and shoreline is sealed via thick plaster over a firm wood or foam base. If the lake, stream, etc. has an open end [like the fascia or a dam, I secure a flat board or piece of hardboard over the end with clear acrylic caulk. This seals the barrier board to the lake bed or river bed with the bead of clear acrylic caulk where the water product will flow up to this barrier. Then when the water is cured, I can easily remove the barrier and cut away any barrier caulk.

**Step 5 - Constructing Special Whitewater Scenes, e.g. Waterfalls**

Constructing a waterfall is a special whitewater scene. You do not just pour a water fall, especially tall waterfalls – the typical products are too runny usually to do that. So I use some special techniques to construct them. Clear acrylic caulk on a clear plastic backing was used to make both the 42’ waterfall coming down from the dam to the Savage River headwaters and the Thunder Gorge tiered waterfalls in Fig. 7.

I can construct the waterfall on the workbench by running strips of clear acrylic caulk on a piece of clear Plexi-glass or plastic. Once the caulk is dried, I place it in position. Woodland Scenics Water Effects was used to simulate the frothing water and moving water going away from the dam. Dry brushing a white acrylic paint over the caulk provides the color for the waterfall and frothing water as shown in Fig. 7. A little bit of remaining Magic Water was used at the bottom of the dam for the water run-off. At a recent NMRA Mini-Con, a clinic was...
presented by Marshall Abrams on a type of waterfall that I hadn’t considered but had seen many times in real rock cuts while traveling. I call it the weeping cliff waterfall. This is when water is weeping out of rocks high on a cliff side and dribbling down the face until it hits the bottom and occasionally ponds. You don’t need to use expensive resins for this. He used Aileen’s Tacky Glue. I experimented with that product and also with applying Mod Podge down the face of my hand carved cliffs with a small paint brush. Both products go on white but dry clear. Hence a wet cliff rocks look and occasionally a puddle at the bottom. The results with both products were quite good as shown in Fig. 8 with Mod Podge. Tacky Glue works better for a heavier flow of water.

**Step 6 - Inserting Features into the Scene During & After Pouring**

Sometimes a feature can’t be in place prior to pouring and will need to be put in place during or after pouring the water. Examples of this have included inserting swimmers or fisherman or fishing lines, boats, or sometimes docks.

*Fig. 10 – Completing the Water Scene with more Details*

*Fig. 11 – Add a humorous scene that guests will enjoy*
or bridges with pilings. For the swimmers, I drill a very thin hole in the belly of the swimmer and glue a thin piece of wire into the swimmer. Then, when the “water” is curing, I can push the swimmer into the water to the correct depth. Once the water is cured, you can paint splashing by the swimmer. Some of these post pouring water scenes are shown in Fig. 9.

In creating a water scene, often it is the associated details adjacent to the actual water that completes the scene. For example, animals coming down to drink, campers on the shoreline, hikers crossing rocks or hiking the shoreline, and many other details that make that water scene special. Some examples are shown in Fig. 10.

### Examples of Memorable Water Scenes

Sometimes when you visit a layout, a scene you see becomes memorable. Some examples of different water scenes on the W&V are shown in Fig. 11. A scene depicted in that photo shows a bear confronting a deer about access to the local stream. Rather than every scene being “realistic”, adding a humorous water scene, e.g. an alligator catching a bunch of swimmers cavorting in Eagle Lake and it picks one swimmer for lunch – while the other swimmers flee to a railroad bridge piling in terror.

I have also found that having caves behind waterfalls that are just visible from the side adds a lot of interest. This is especially true if something, a treasure, or someone that can be seen in that cave from the side. On my layout, I placed a Preiser female Fig. stripping down...
### Table 3 - Advantages/Disadvantages of available Water Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Description and Preparation for Use</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Acrylic Caulk</td>
<td>Tube of acrylic caulk. Uses caulk tool to press out into ribbons for a waterfall or spreading by finger for waves or ripples on a lake, harbor, or to make rapids. Goes on white so can see shapes. Dry brush paint after it dries clear.</td>
<td>Keeps shape for waterfalls, waves, ripples, or rapids after installing. Is paintable.</td>
<td>Caulk can get messy to clean hands.</td>
</tr>
<tr>
<td>Drop Ceiling Clear Acrylic Sheets</td>
<td>The 2'x4' sheets used in drop ceilings can be installed over painted wood to look like water. Texture provides with ripples.</td>
<td>Quick and easy to install. Doesn't require any other water product.</td>
<td>Too uniform a wavelet surface. Sheet difficult to cut shapes as it is brittle.</td>
</tr>
<tr>
<td>E-Z Water (Woodland Scenics)</td>
<td>Small yellow tablets that are required to be melted in a pan on the stove to liquify for pouring into the scene. An old product, probably not available. Used to make a pond.</td>
<td>No mixing. No smells. Used for flat water.</td>
<td>Heat on stove and pour hot. Final product has yellow tinge.</td>
</tr>
<tr>
<td>Envirotex and Clear Casting Resin</td>
<td>Two-part resin products. Includes a Hardener and the Water Resin component to mix. Typically used for flat water scenes but with proper timing, can get ripples if stirred when almost hard.</td>
<td>Makes a clear flat water solution. Can add coloring if desired. Mixture has limited time to work with but easy to pour into scene.</td>
<td>Complicated if don't need to use all of product package. Limited to flat water, waves/ripples difficult. Has strong odor, so use in ventilated area or wear mask.</td>
</tr>
<tr>
<td>Magic Water (Unreal Details)</td>
<td>Actually another two-part resin. Use for flat water. Mixture is easy to pour.</td>
<td>Use for flat water. Can add coloring if desired. Mixture has limited time to work with but easy to pour into scene. No odor.</td>
<td>Complicated if don't need to use all of product package. Limited to flat water, waves/ripples difficult.</td>
</tr>
<tr>
<td>Matte Medium/Tacky Glue (Mod Podge/Allene's)</td>
<td>Spread over painted surface, smooth or rough for waves or ripples to give glossy sheen to simulate water. Use for slow moving water or weeping cliff face with water dribbling down on rocks, ledges, and puddle at bottom.</td>
<td>Easy to use - just spread with brush or dribble from container. Easy to find in craft stores.</td>
<td>Water limited to painted bottom shapes. Thin, so inserting boats or other figures is difficult.</td>
</tr>
<tr>
<td>Realistic Water (Woodland Scenics)</td>
<td>Near shore bottom sediment, flat or rippled water surface, deep water, small waves, rocks near shore, floating branches, animals at shoreline, swimmers, small boats, docks, debris</td>
<td>A no mix resin-like product. Easy to pour as much as needed. Best for flat water. No odor.</td>
<td>None</td>
</tr>
<tr>
<td>Water Effects (Woodland Scenics)</td>
<td>A single pour from bottle over previous water product for flat water. Use brush to spread for ripples or waves. Use as flow around rocks or docks or boats. Dry brush with white paint to highlight moving water areas. Alternative: Gloss Gel with Mod Podge to cover up brush strokes.</td>
<td>Pour on top of Realistic Water or other flat water product. It is thick and is used to make waves and ripples.</td>
<td>It does compress some, unlike caulk when making ripples or waves. Not good for waterfalls.</td>
</tr>
</tbody>
</table>

Website: [http://mer-nmra.com/](http://mer-nmra.com/)
and getting ready to join her friends skinny dipping. Be careful of what your visitors may see as my figure has disappeared and it may have been a visitor uncomfortable with the figure in the scene. So I will have to repurchase that.

**Tools and Materials for Construction**
Most construction articles include the tools and materials used in the construction somewhere in the descriptive text. For this article, I summarize this information in the Table 2.

**Available Products to Create Water**
There is a plethora of different water products available to simulate water. The water products I have used are shown in Fig. 12. Since I have experience using each of these products, I have summarized my experience and identified advantages and disadvantages with each in Table 3. Each product has their own techniques and benefits for doing specific simulations as noted in Table 3 also.