

Hana Kieger  
Team One

Team partners: Chet Roe, Eli Kopp-DeVol, and Ibrahim Alhajji

This image was for our first team assignment using the flume. Our intent was to see a side-portrait of a wave. Chet helped with controlling the water flow to create the wave. Eli helped figure out and maintain the lighting. Ibrahim helped with the dropping of food color. All three of my partners helped brainstorm this idea and we collectively came up with the setup.

Setup: Written by Eli

“As mentioned above, the team used a flume to create our crashing wave effect. We were initially unsuccessful in replicating ocean like conditions, such as a shore line and water pulse, to create our breaking wave and so had to resort to forcing a surge of water to curl back on itself. In order to accomplish this, we placed a dam at the far end of the flume which allowed only a small trickle of water through. We then placed a second, removable dam upstream of the first which blocked all flow when it was in place. One team member (Chet Roe) was responsible for operating this dam and held it in place until roughly ten inches of water built up behind it. Once the proper amount of water had built up, the upstream dam was rapidly removed causing a surge of water to flow down the flume and collide with the permanent dam. The splash from this impact created a wave-like effect, which we captured in the image above. The diagram below shows our set-up in greater detail.”

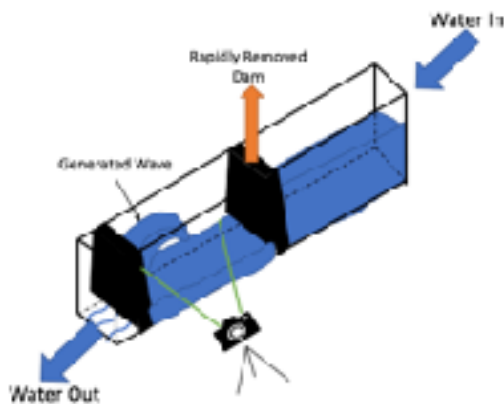


Figure 1: Diagram of Flow Apparatus (drawn by Eli)

Flow Apparatus: written by Ibrahim

“To obtain ideal pictures we used many materials to optimize lighting, contrast and resolution. We used a LED light and we placed a white layer at the background which provided better lighting and increased the visibility of the picture. We added a drop of red food coloring to enhance contrast and to add a unique color to the photo. A Nikon D80 camera was used to capture the photos. The flash light on the camera was turned off intentionally as flash light reflects on the glass could not be avoided.”

We used food coloring to add contrast and interest to the image, and to better visualize the flow of water through the wave.

For our photographic intent, we wanted to have the clearest image possible where we could focus just on the flow. For this reason, the field of view is quite restricted. The height of the field of view is roughly 11cm and the width was roughly 17cm. The distance from the lens to the wall of the flume was roughly 12 inches. The focal length was 85mm. As Ibrahim mentioned, we used a Nikon D80 camera (digital) which yielded a final image with the resolution of  $3872 \times 2592$ . The exposure was 1/2000 sec, the aperture was f/5.6, and the ISO was 1250.

The image demonstrates how water reacts when it is suddenly released to impact a solid wall. I like the clarity of the water in the image, and don't think I have any comments of things that I don't like – I am very happy with how it turned out. We fulfilled our intent really well, which we were initially unsure of how we were going to do. The image demonstrates the capillary waves and a turbulent air/water flow. We could develop this idea better by introducing the food coloring earlier in the process to better visualize the whole process of water hitting the wall and how the water creates the waves.