Matt Weber
Flow Visualization
Clouds Assignment
October 6th 2004

This assignment focuses on observing and documenting cloud phenomena and it's applicable fluid physics. The intent of my final picture is to show the magnitude of the storm clouds which had just passed through Boulder on this particular evening. These systems had brought lots of atmospheric instability and rain the previous evening. This picture was taken the following evening when the sun finally came out and reveled a visually stunning cloud formation that no picture can capture. The image was taken using three separate photographs and then combined using Photoshop to create the final image. In the final image the overlap lines are clearly visible making my lack of skill in Photoshop pretty evident.

This project did not require the use of a specific flow apparatus. Instead, like most clouds, the fluid flow was naturally occurring. The visualization technique was similarly as simple. No flash was used, as it was outside even though there was low to moderate light levels at this point in the day.

This image incorporates the following technical specifications:

- Net horizon capture was about 45 degrees. The image(s) were shot in the northwest direction around 4:15 pm on October 3rd 2004.
- In theory, the focal length was set to infinity as the images were of no calculable distance away from the camera.
- A Kodak DX3600 2.2 mega pixel Digital camera was used with shutter speed of 1/8 second.
- ISO setting of 100. The lens is 35-70mm. The aperture is unknown since this camera is a beginner's camera and allows the user little access to the specifics of the camera's pictures.
- In order to create the final image, Photoshop was used to crop the images and to adjust the brightness and contrast. More specifically, the brightness was increased to -45% and the contrast was increased to +47%.
- The weather report for that day included the following:

Max Temperature	69 F
Min Temperature	51 F
Average Humidity	41
Pressure	30.31in / 1026 hPa
Average Wind Speed	8 mph

Fortunately, this image worked a lot better than I originally thought it was going to. It was hard accepting this as my final image due to the fact that it was only a half hour before, in my commute home, that I had a clear shot of the clouds without the buildings and trees in the picture. I didn't want to risk losing the shot, so I decided to stay at home and accept the building and trees in my final image.
Additionally, since I thought capturing the entire cloud length would enhance the image, I needed to take several shots and combine them in

Photoshop. In the end, this combining was done poorly, but given my skill set in Photoshop, I did pretty well. You can see that not only did I adjust the brightness and contrast of the image but I also inverted the image for one picture. I think I partially fulfilled my intent, with the only thing that could have been improved is more naturally occurring contrast in the clouds and the sky, a more wide-open space, and better Photoshop skills.
Now I'll briefly explain my images:

This is the original image as taken by my camera with the exception of digitally combining them in Photoshop to create a more panoramic representation of the clouds. I felt that it needed more life and contrast so I took to Photoshop. Read on.

This is an image in which I inverted the colors to see what effect it would have. It turned out to be a scary image I thought. I didn't want to portray the images that I took with my camera that afternoon in this way so I I thought that the following image was a better representation.

This is my final image which is a simple conglomeration of three individual pictures taken at the same time. They were adjusted for brightness and contrast, and cropped to this shape. No additional changes were made. I feel this is the best one I took, but I am upset

at how poorly I was able to blend the images together as well as the houses that appear the bottom of the image.