

# Design Team–Documentation, Fall 2015

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## Part I: Problem Definition

### Introduction

Drew Hart, a graduate from the AguaClara Project Team, has been working to create a large, yet concise document that explains AguaClara's design algorithm to outside, interested parties. This document would be both an overview of the flow of water through the plant, as well as more detailed sections focusing on individual plant components. This would be done in two sections within the document. While such a document currently exists, many of the existing diagrams and explanations are out of date. Drew would like to update the document and also make it easier to understand.

### Design Details

The documentation will depend heavily on the current code. The different sections will include diagrams pulled from the AutoCAD drawings of the plant, as well as a list of variables found in the code and an explanation of these variables. There is a possibility that some diagrams will be updated automatically from the AutoCAD, but this needs to be explored more. Mostly, this task involves talking with Drew about the team's design algorithms and how they should be presented to those unfamiliar with AguaClara. The current focus is the sedimentation section of the document,

which should be finished before Drew leaves so that he can look it over and give guidelines about continuing with the other sections.

## Part II: Documentation

Some of the problems encountered in this task involved deciding what variables were needed for the document. Including all the variables used to design various parts of the plant would make the document extremely long and dense. Variables that are important to know for operators and during construction were included in the document, but some variables, such as the thickness of some minor walls, were excluded. The layout for each section of the plant and how much detail to include from the Mathcad code was also discussed with the idea that enough information should be included to consider this a technical document, but not too much code should be included because then the document would get unnecessarily long. An ongoing issue with this document is brainstorming what to do once Drew Hart leaves.

## Accomplishments

The following images were created:

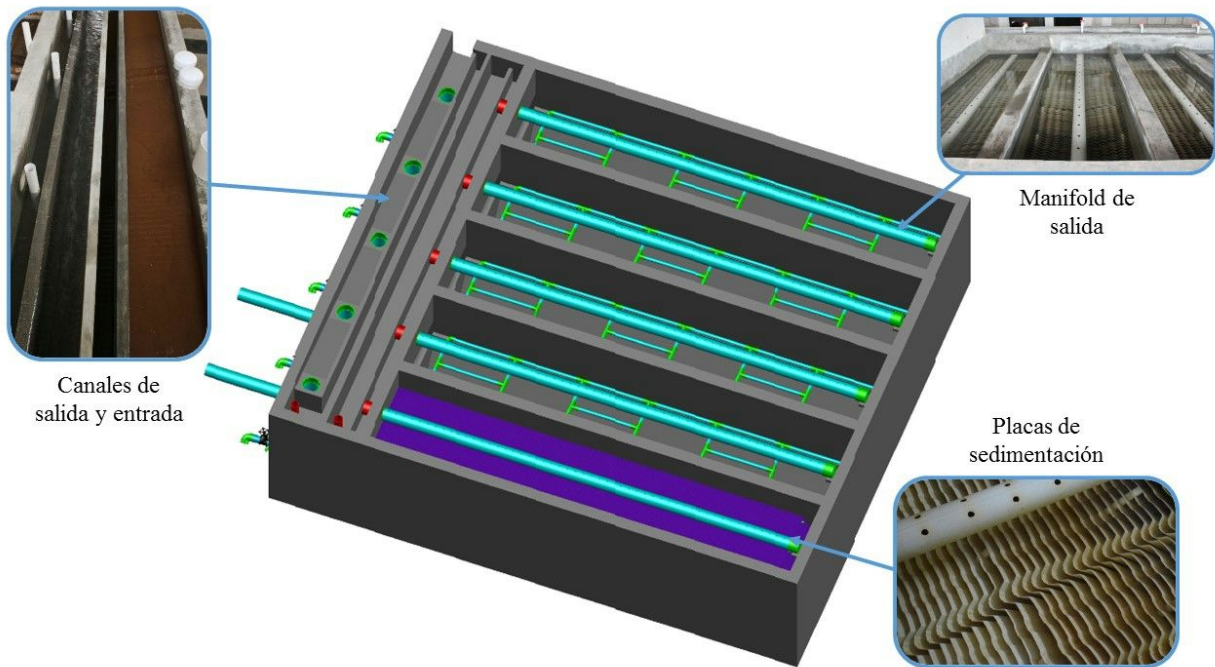


Figure 1: Diagram of the Sedimentation Tank to be included in document

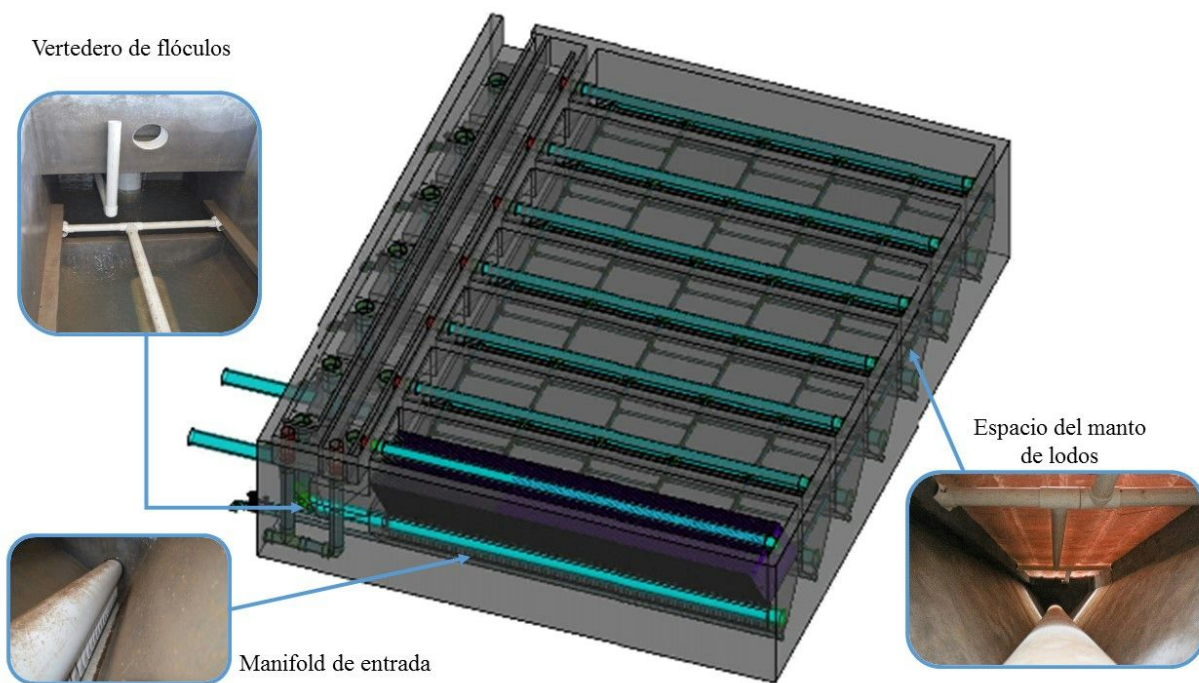


Figure 2: Second diagram of the sed tank that outline more of its internal features.

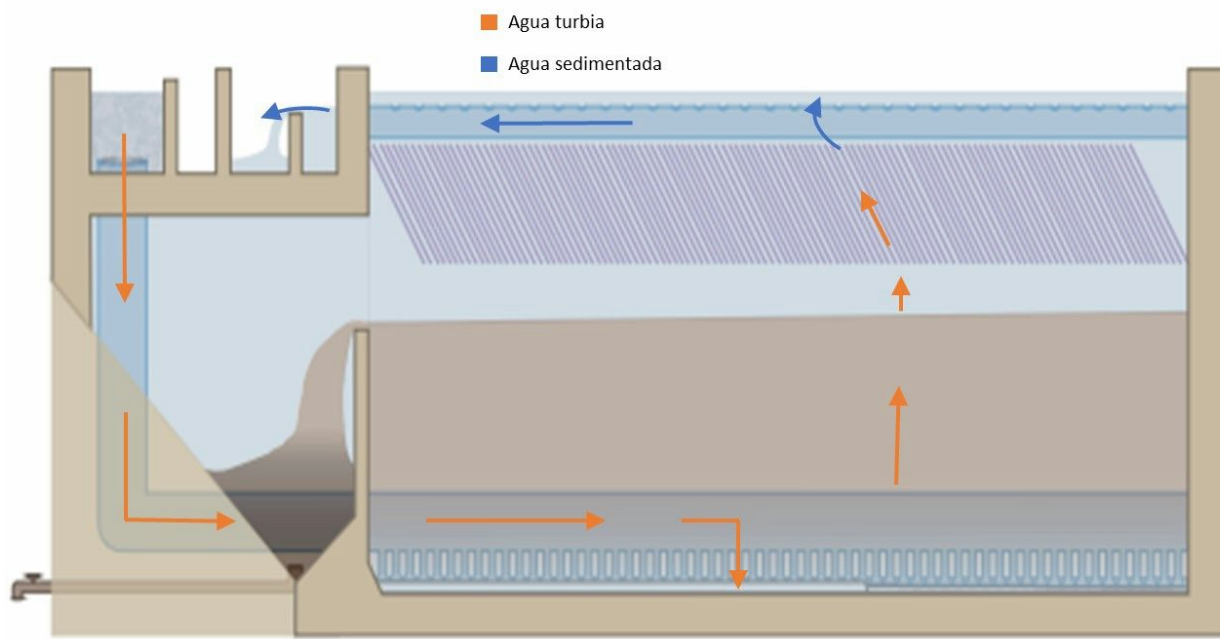


Figure 3: A sketch of the flow of water through the sedimentation tank

The above images also have english versions. Images have also been added into the more detailed sections of the document to help the reader relate what they are reading about to where

the part is included in the plant. The sedimentation section of the document is complete. Drew Hart completed the other parts of the document.

## Future Goals

Throughout the semester, there was an interest in somehow making it possible to update images within the document, such as the plant drawing on the cover page, automatically every time the design server is updated. The design team has found some ways to update images from existing file paths by using the 'link to path' option when inserting an image in Microsoft Word, but this method would not work for our document. To update plant drawings automatically, the Word document would need to interact with Lab View to pull images from a file there. As of right now, the team does not know how to make this interaction work. Future teams could spend time researching and creating a method to make the automatic update happen.

A translated version of the document should be created for the team at Cornell. Once this version exists, it may be beneficial for design team members to continue working on it for each new version of the plant design. Eventually, these updates would need to be added to the Spanish version, so an ongoing plan for how and when to update the two versions needs to be created.