AguaClara

Design Team

Stephanie, Serena, Paroma, and Meghan

Cornell University

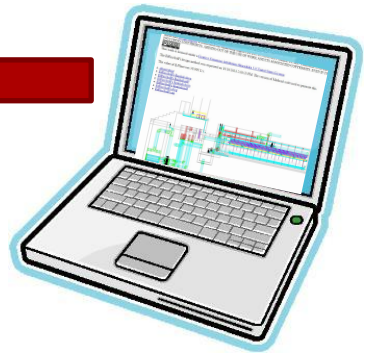
AguaClara

Design in general…

Research Teams

+

The Design Team



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CDC

Serena Takada

Cornell University

Goal

Update Chemical Dose Controller (CDC) AutoCAD drawing to reflect recent updates in the system.

Accomplishments

Updated the Dosing system which includes the Lever Arm and Dosing Tubes.

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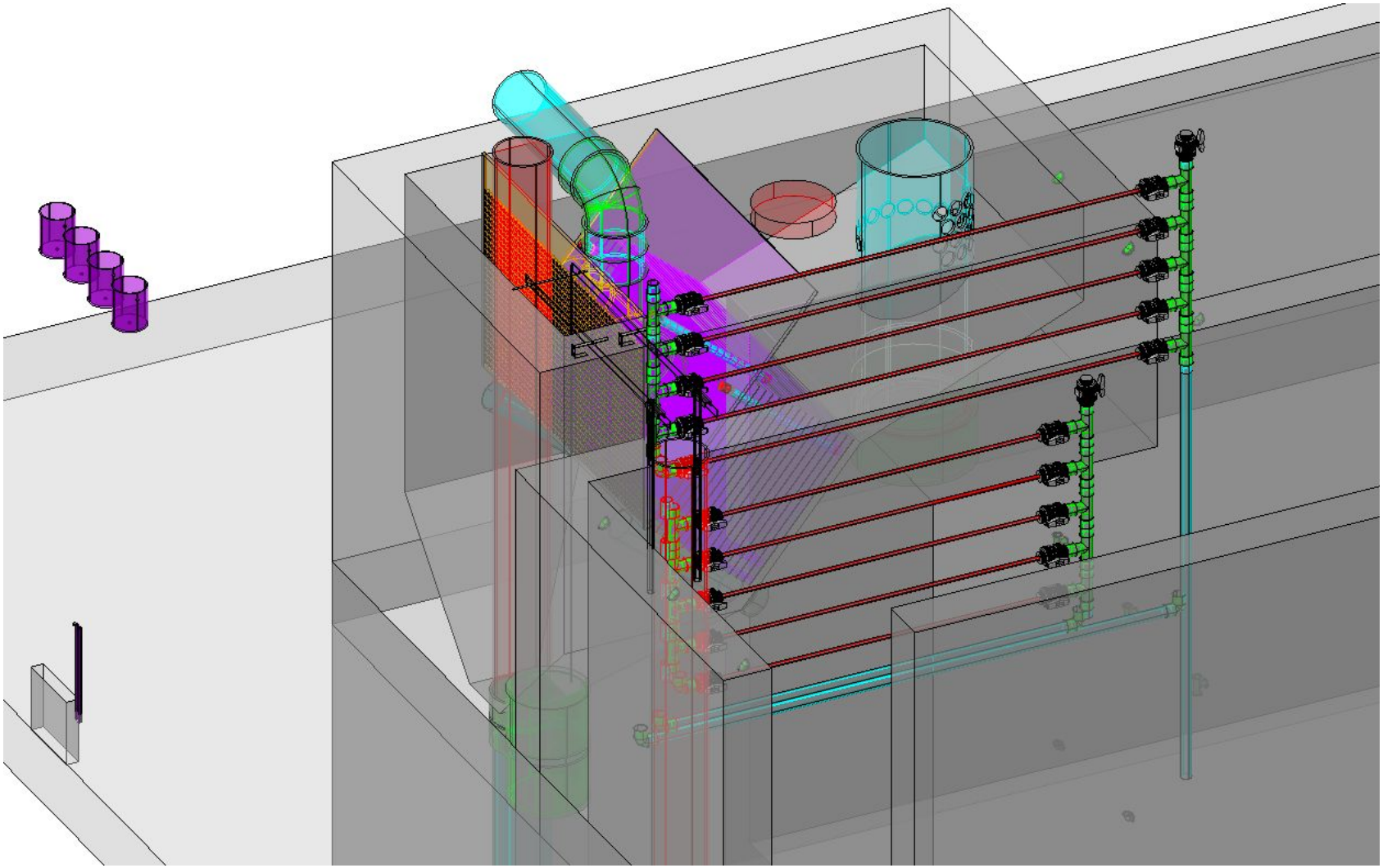
Until September



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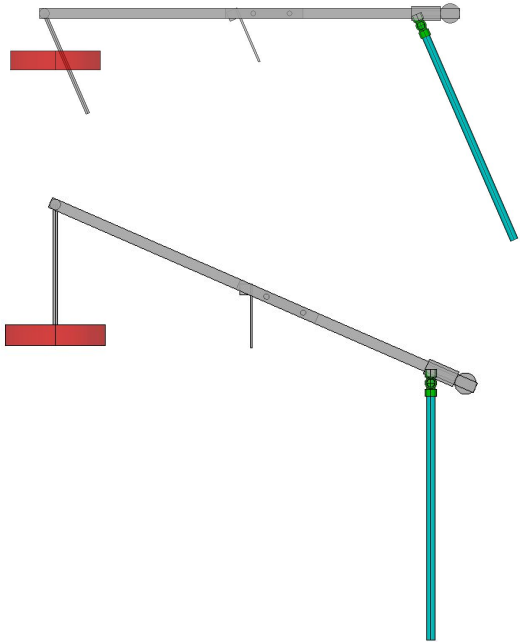
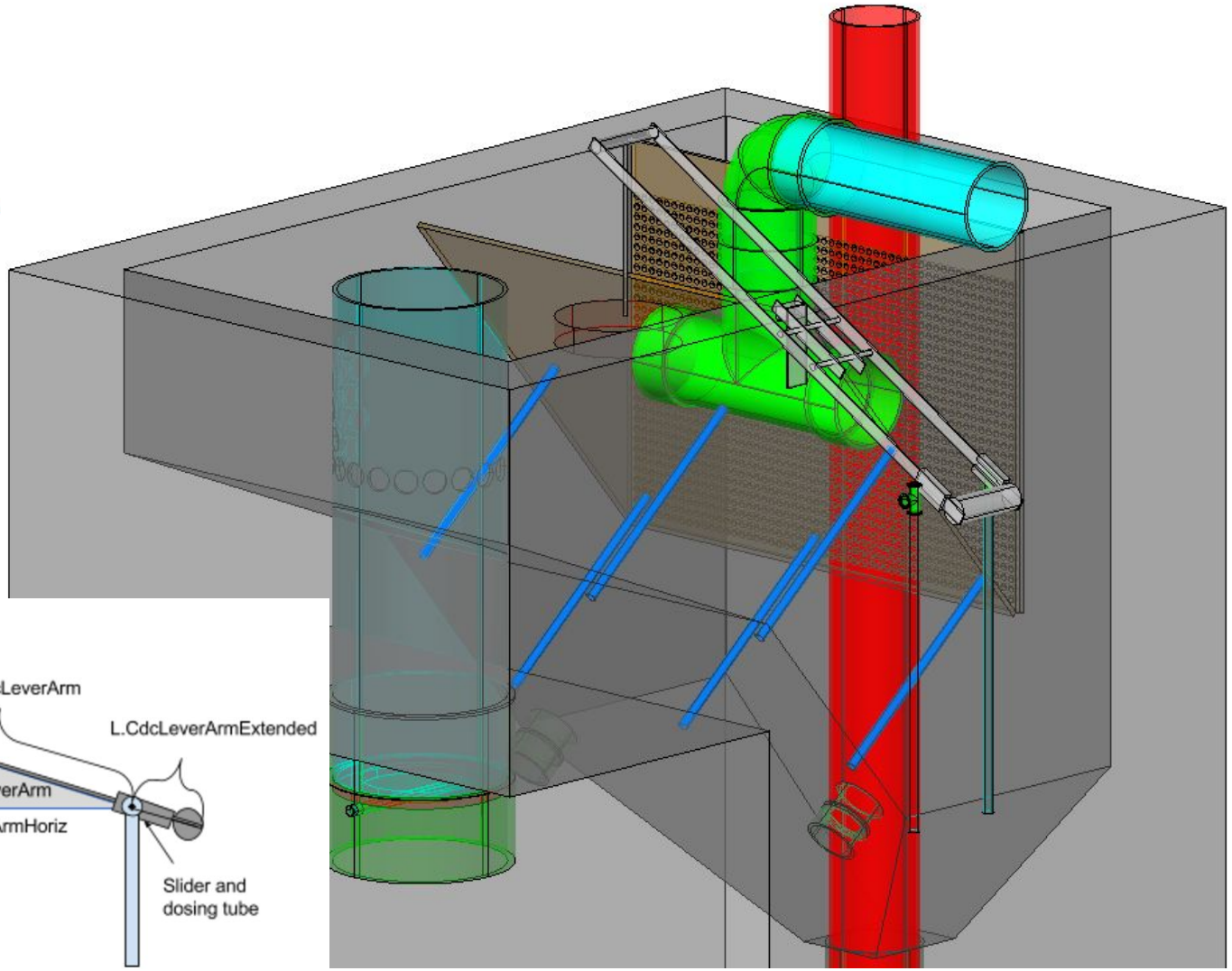
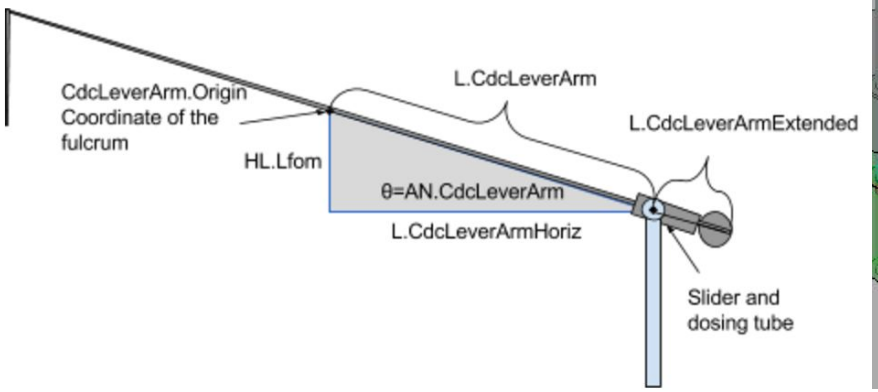
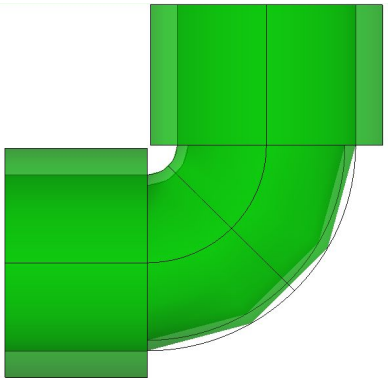
Lever Arm



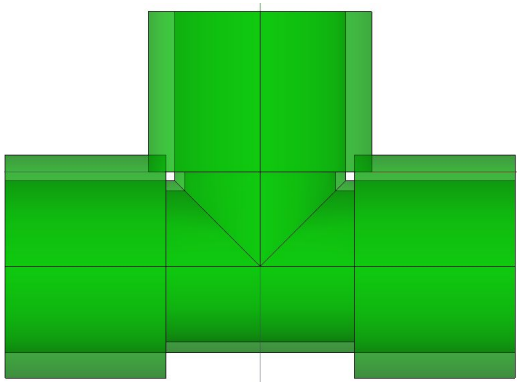


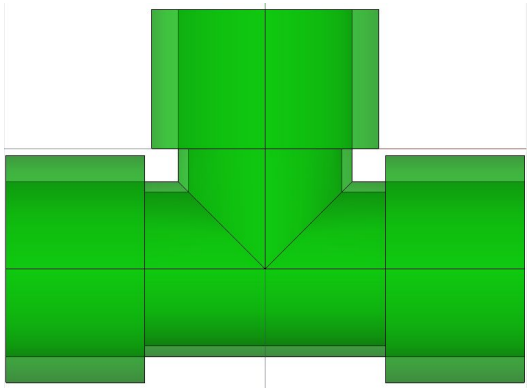


Fittings

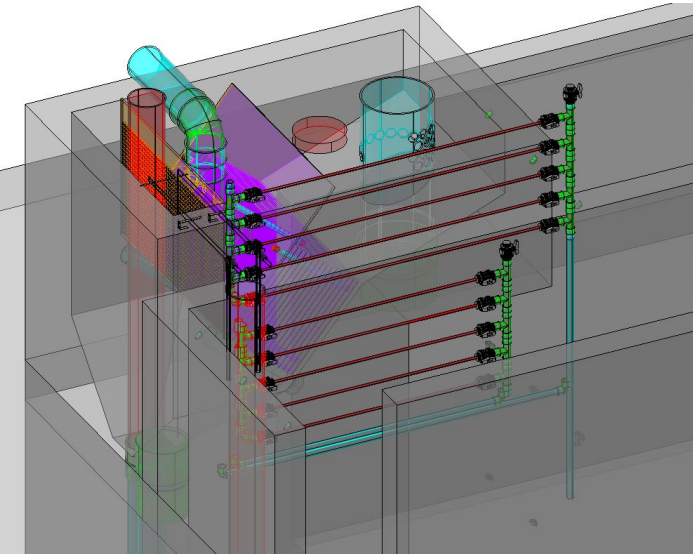


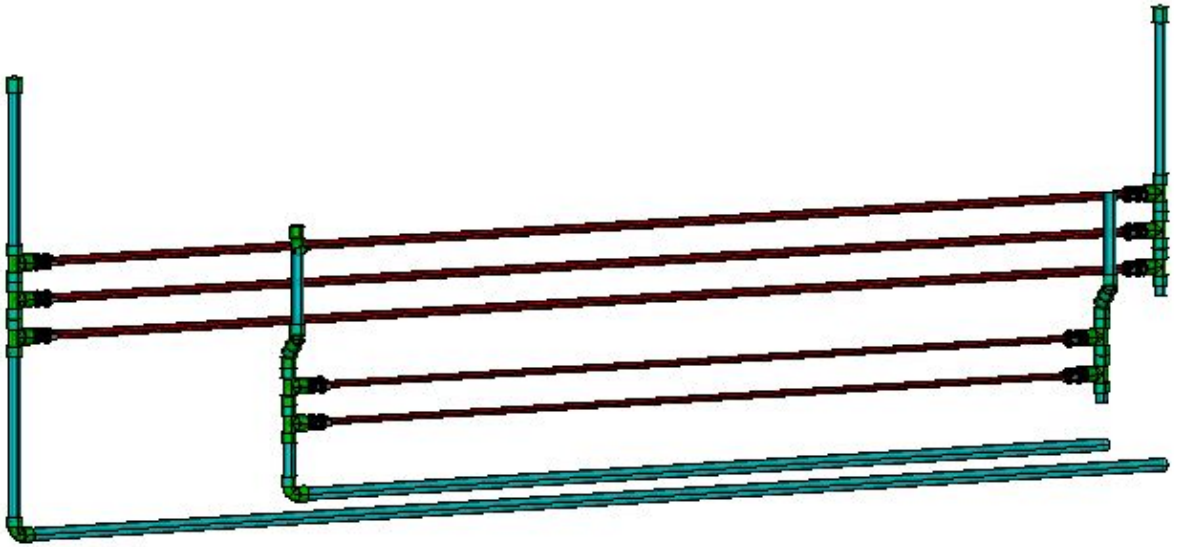
Avoid overlapping of thick sockets





Dosing Tubes





- Move bottom Dosing Tubes closer to the Lever Arm
- Longer tubes go on top
- Add Air Release
- Improved Off Set

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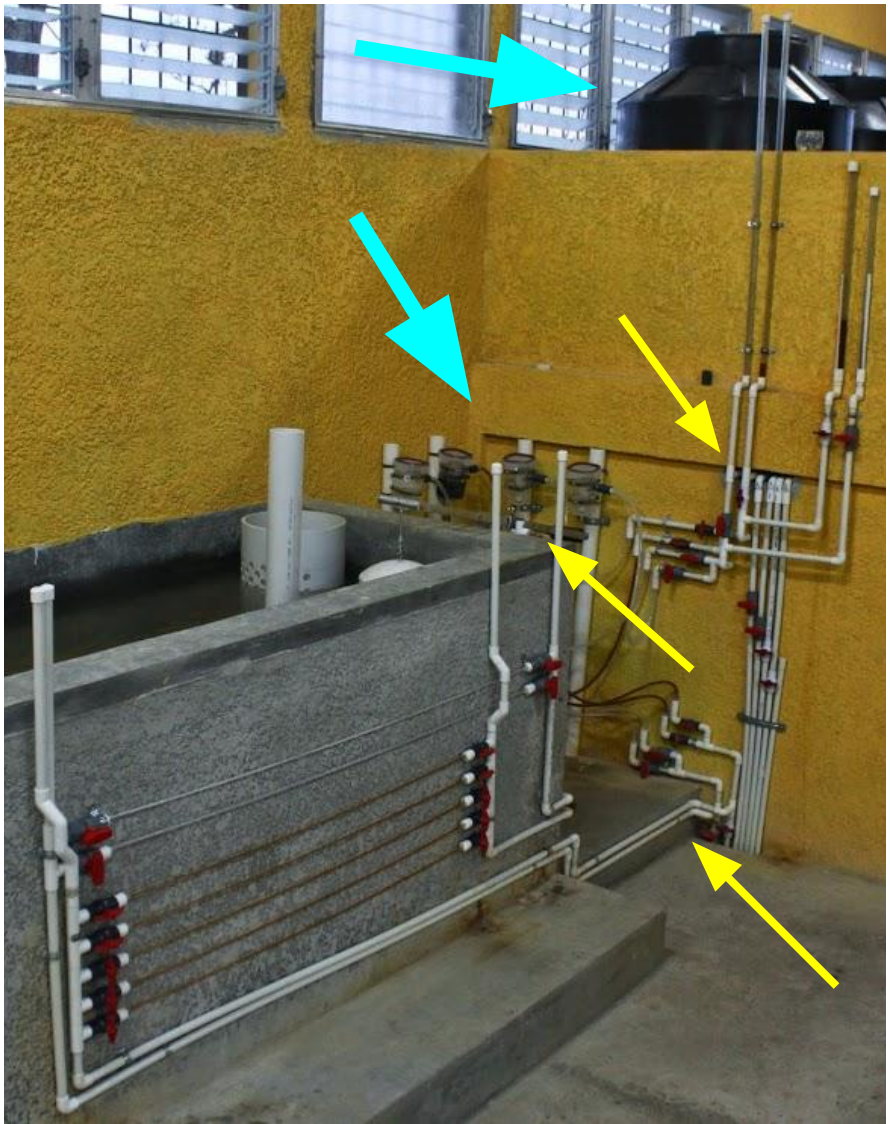
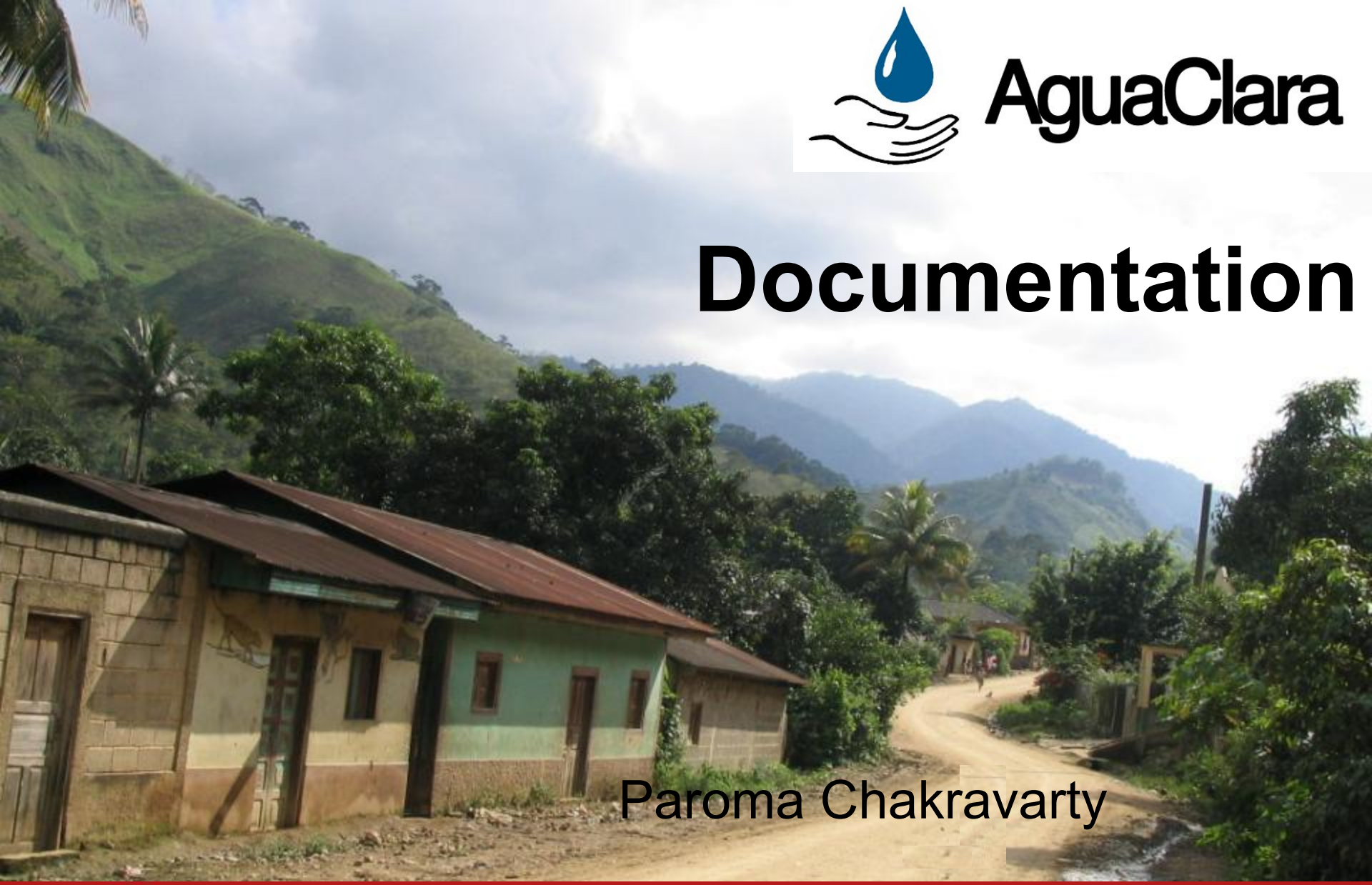
Future Goals

Connect Lever to Chemicals

- Finish Manifolds on Flocculator Wall
- Draw Constant Head Tanks
- Connect Manifolds to Constant Head Tanks
- Draw Stock Tanks that flip orientation at High Flows
- Connect Constant Head Tanks to Stock Tanks





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Documentation

Paroma Chakravarty

Cornell University

Purpose

- Update document that explains AguaClara's design algorithm
- Focus on Sedimentation section

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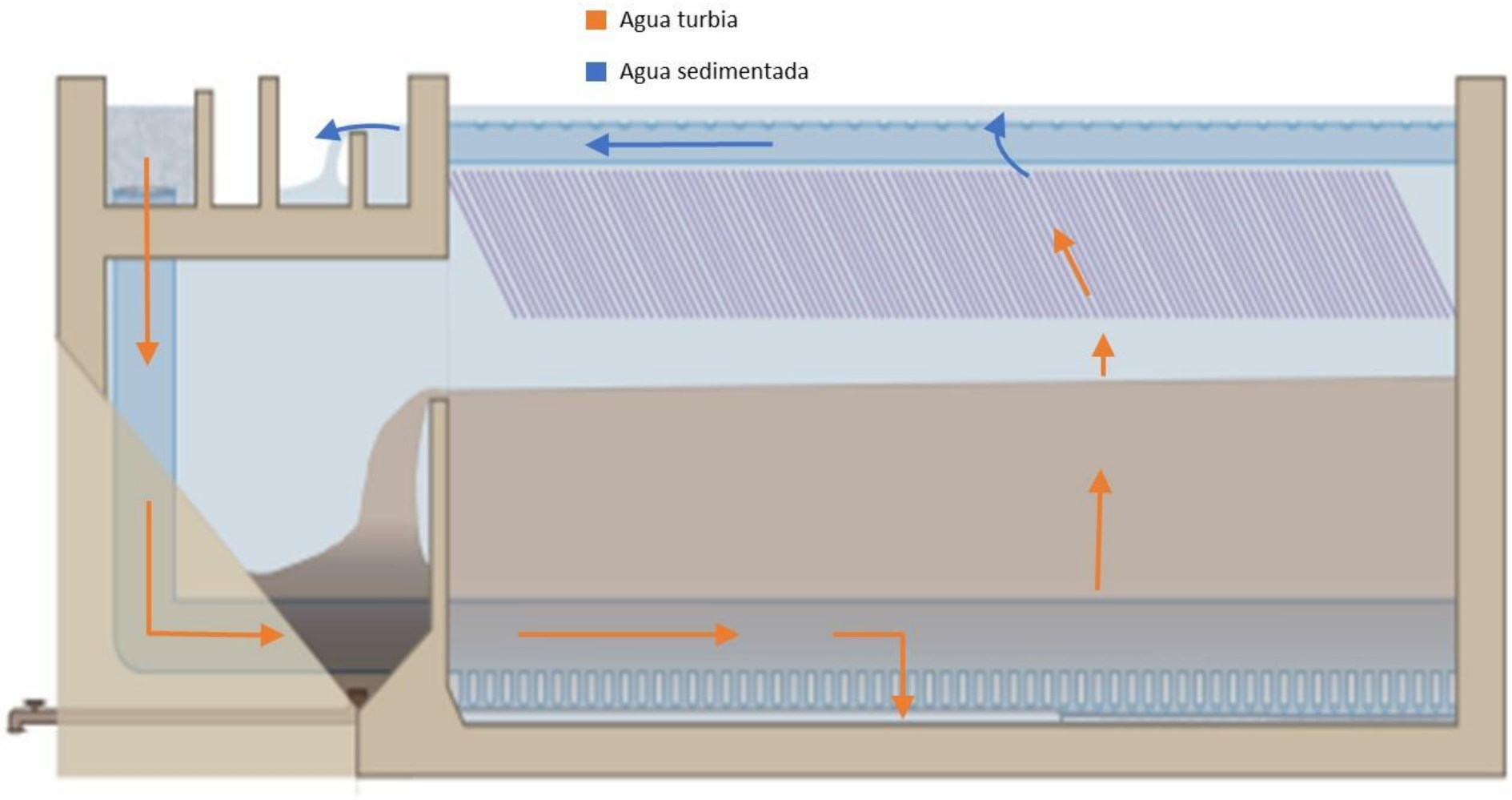
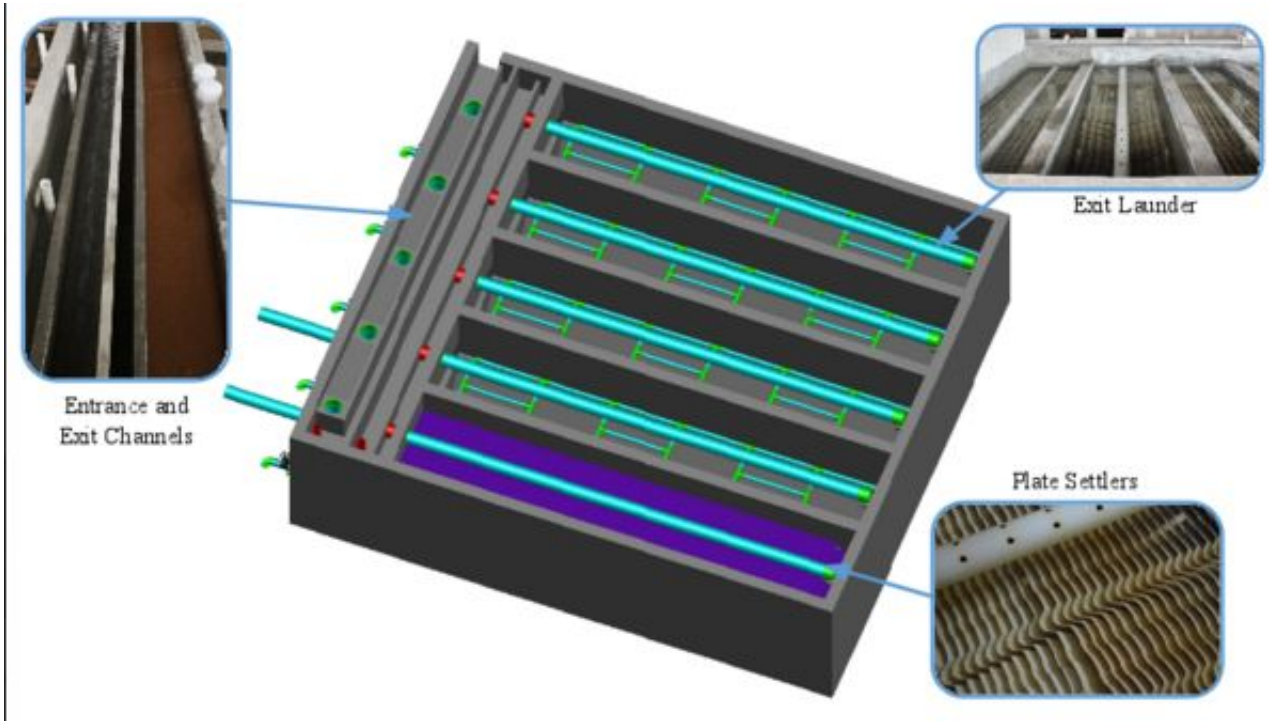
Progress



Future Goals

- Translate document to English
- Possibly figure out way to update images in document automatically



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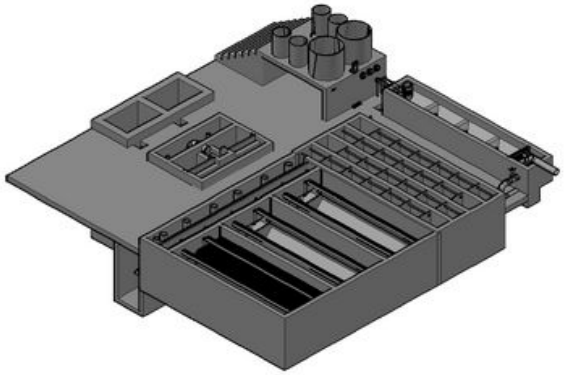
Section Cuts

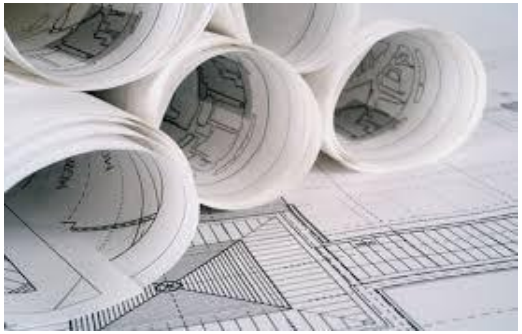
David Gold and Meghan Furton
Design Subteam

Cornell University

Goal

3D → AUTOMATED → 2D





Useful for **construction**

Saves time for partners in the field

Graphics intensive

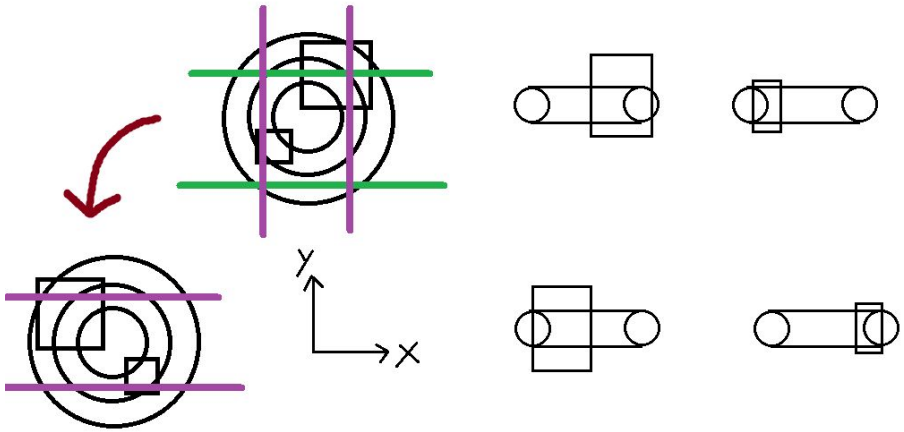
Professional product

Easier to see different plant **components**

Challenge

Dialogue Box vs. Command Line

Small Test Script



Outcomes:

- cut shows all hidden lines
- Longitudinal and transversal cuts do not play well together
- Only two cuts can be made per per drawing
  - AutoCAD crashes even if…
    - cuts are deleted
    - cuts made in new layers/ others are frozen
    - T is rotated 90 degrees

Progress this Semester

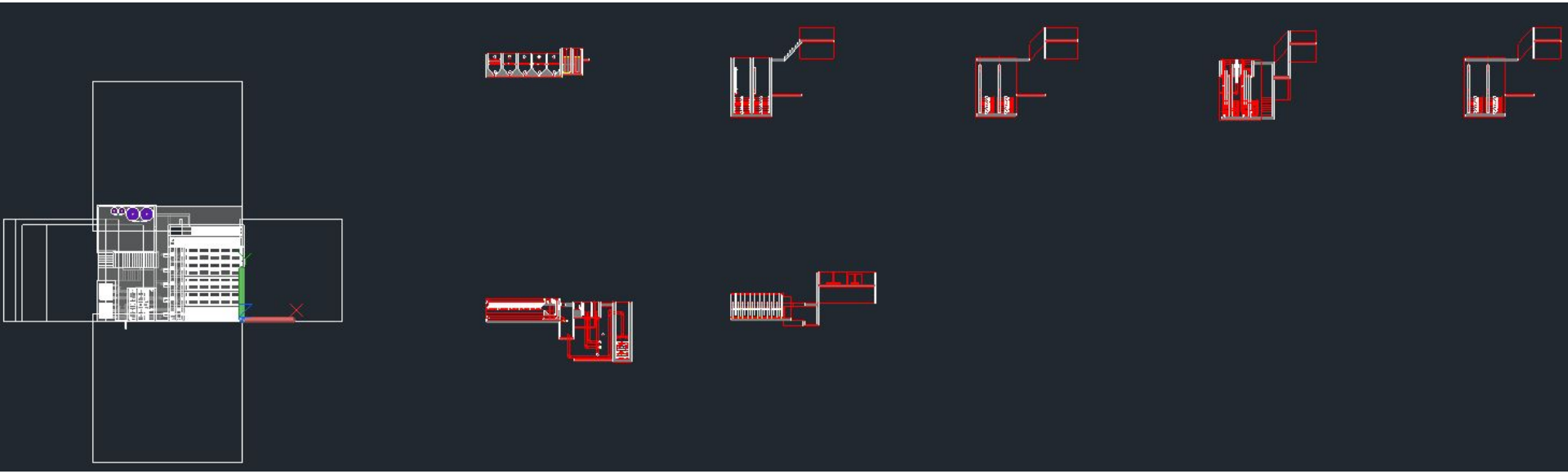
New .ddl as of Monday

No more crashing after 2 cuts

Scary, red hidden lines

Solid grey shapes in the plane of the cut

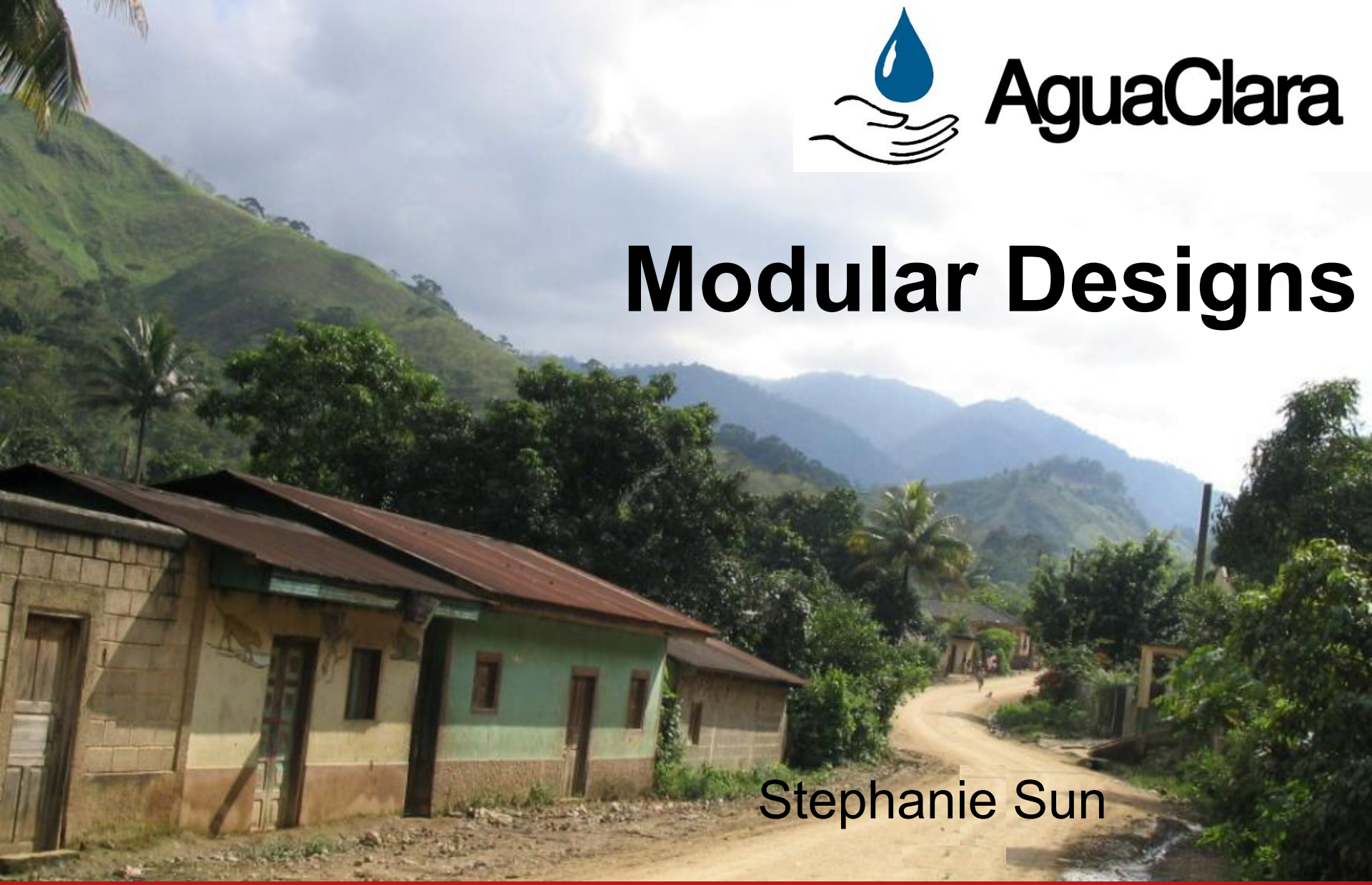
Original layers are **not** preserved



There's Hope!

Next Semester:

- working with Autodesk team to develop efficient, custom commands
  - handling hidden lines well while preserving layers
  - creating a custom 'key' of sections
- creating a finished product that is ready for our partners in the field to add to
  - individuals for each cut
  - organized based on unit process



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Modular Designs

Stephanie Sun

Cornell University

Modular Designs

- Purpose:
  - Create component designs so that individual parts of the plant can be requested separately

Design Methods

AguaClara Plant

The EtFlocSedFi Method creates an AguaClara water treatment plant based on the user input of a desired plant flow rate (Only use for flow rates above 7 L/s).

Request an AguaClara Plant design

Flocculator

The Flocculator Method creates a flocculator based on the user inputs of a flow rate, height and length.

Request a Flocculator design

Sedimentation Tank

The SedimentationTank method creates a sedimentation tank(s) based on a desired flow rate.

Request a Sedimentation Tank design

Linear Flow Orifice Meter

The LFOM method creates a linear flow orifice meter based on the target range of head and flow rate.

Request a Linear Flow Orifice Meter design

http://designserver.cee.cornell.edu/Designs/

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Design Server

Standard designs using the Sedimentation Tank method.

The SedimentationTank method creates a sedimentation tank(s) based on a desired flow rate.

These designs were created with version 7215 of the design code.

- 3Lps
- 6Lps
- 20Lps
- 70Lps

Custom Design

If you would like a custom design that is not available above, you can submit a design request to our design server.

Name:
Email:
Organization:
Country: United States
Project Title:
Project City:
Project State:
Project Notes:

flow rate (L/s): 10
plate settler width (in): 42
maximum inlet manifold diameter (in): 8
upflow velocity (mm/s): 1
capture velocity (mm/s): 0.12
spacing between the plate settlers (cm): 2.5
launder head loss (cm): 4
Sedimentation tank outer wall thickness (m): 0.15
Sedimentation tank dividing wall thickness (m): 0.15
Sedimentation tank channel wall thickness (m): 0.15
Floc blanket depth (slope peak to floc weir) (m): 0.25

Get a Design

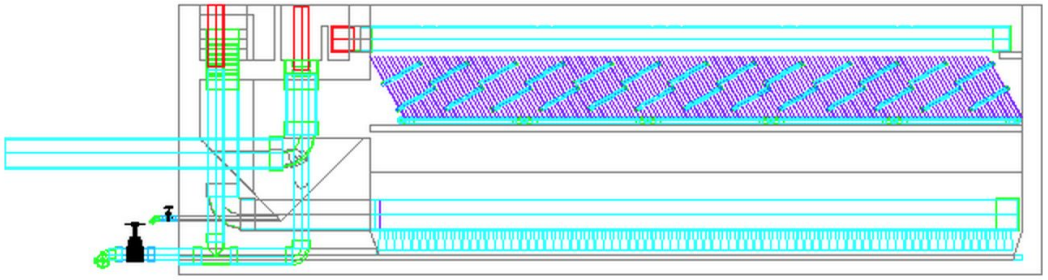
User Inputs

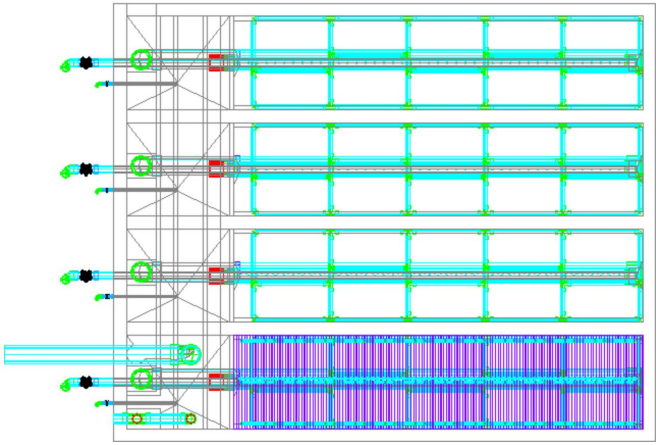
Sedimentation Tank

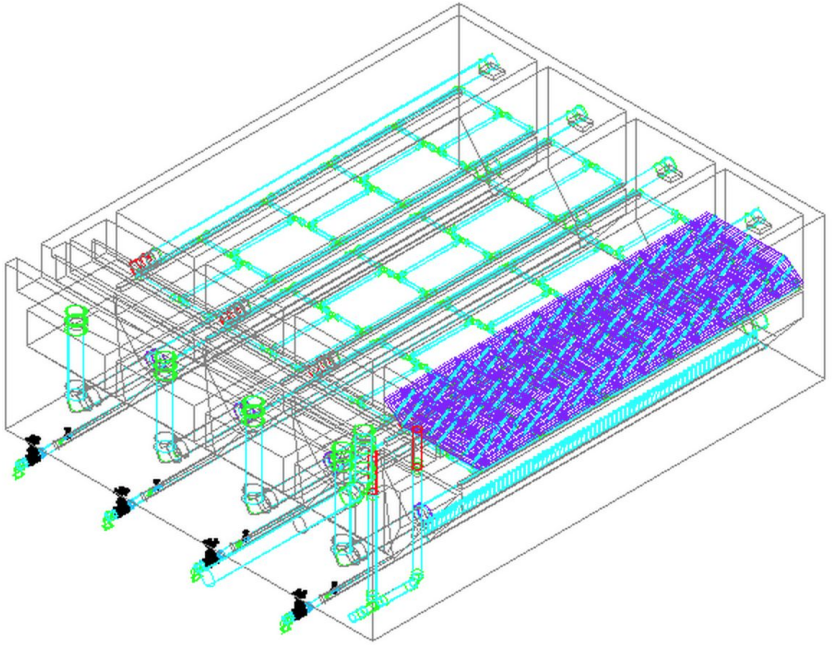
The SedimentationTank method creates a sedimentation tank(s) based on a desired flow rate.

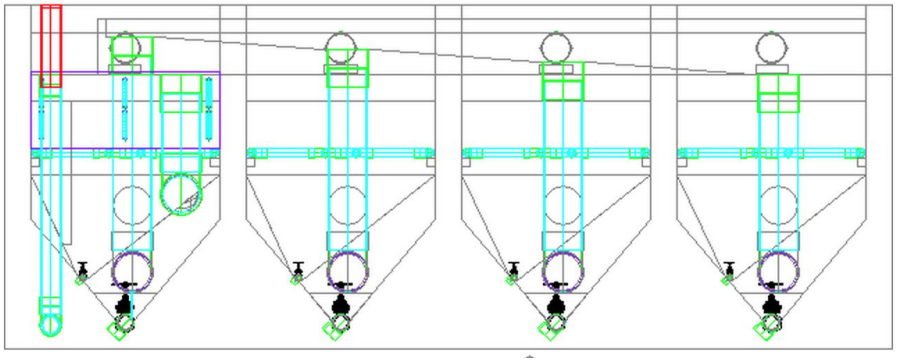
These designs were created with version 7215 of the design code.

- 3Lps
- 6Lps
- 20Lps
- 70Lps



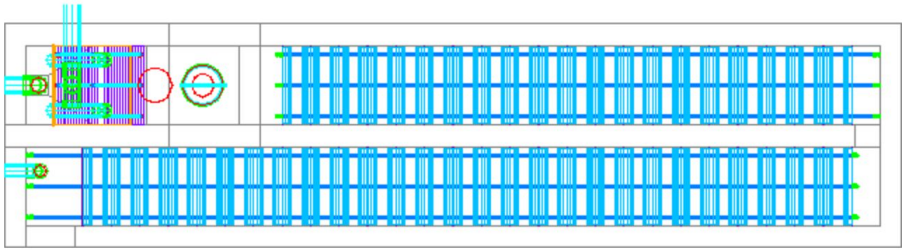


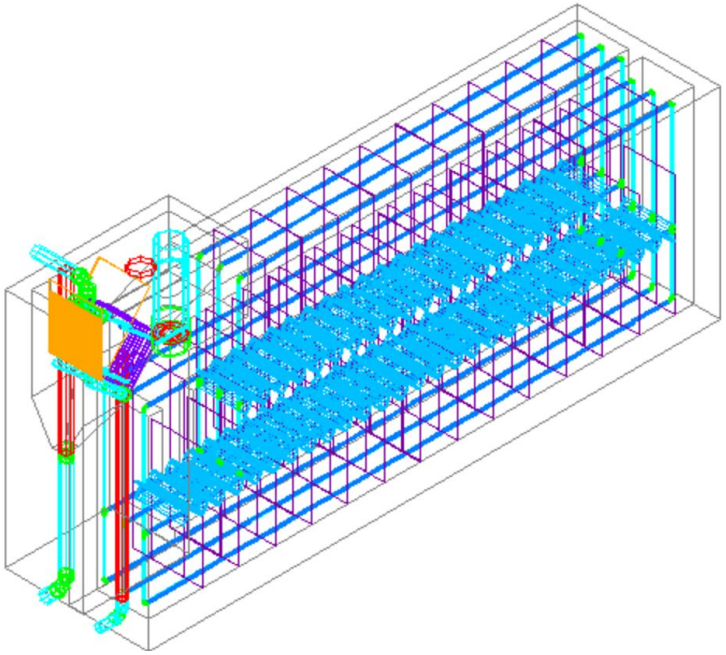


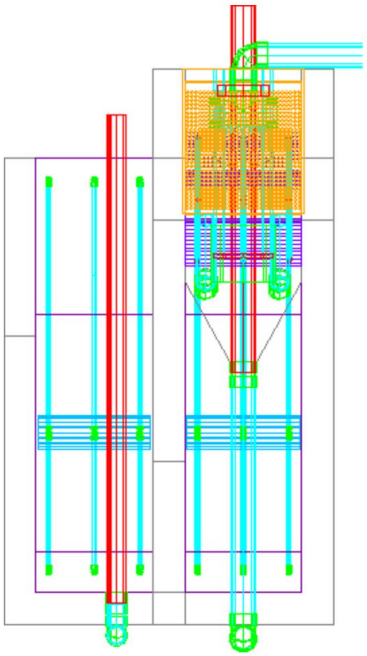


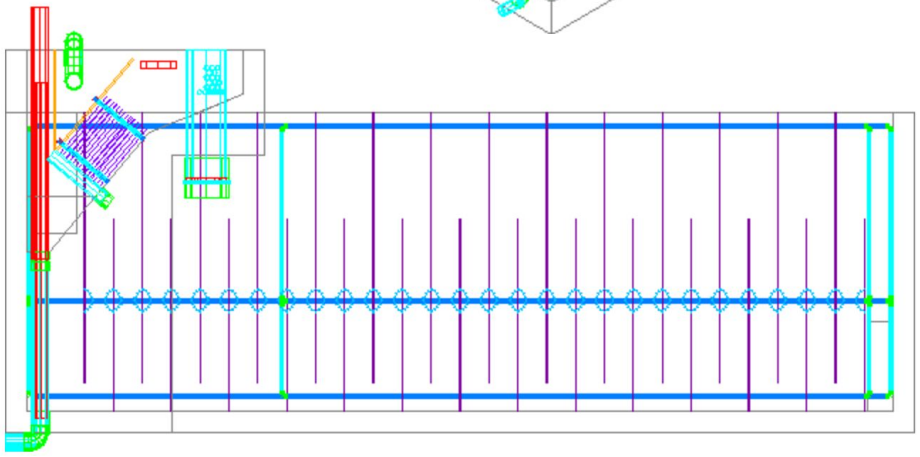
Flocculator & Entrance Tank

Flow rate: 20 L/s



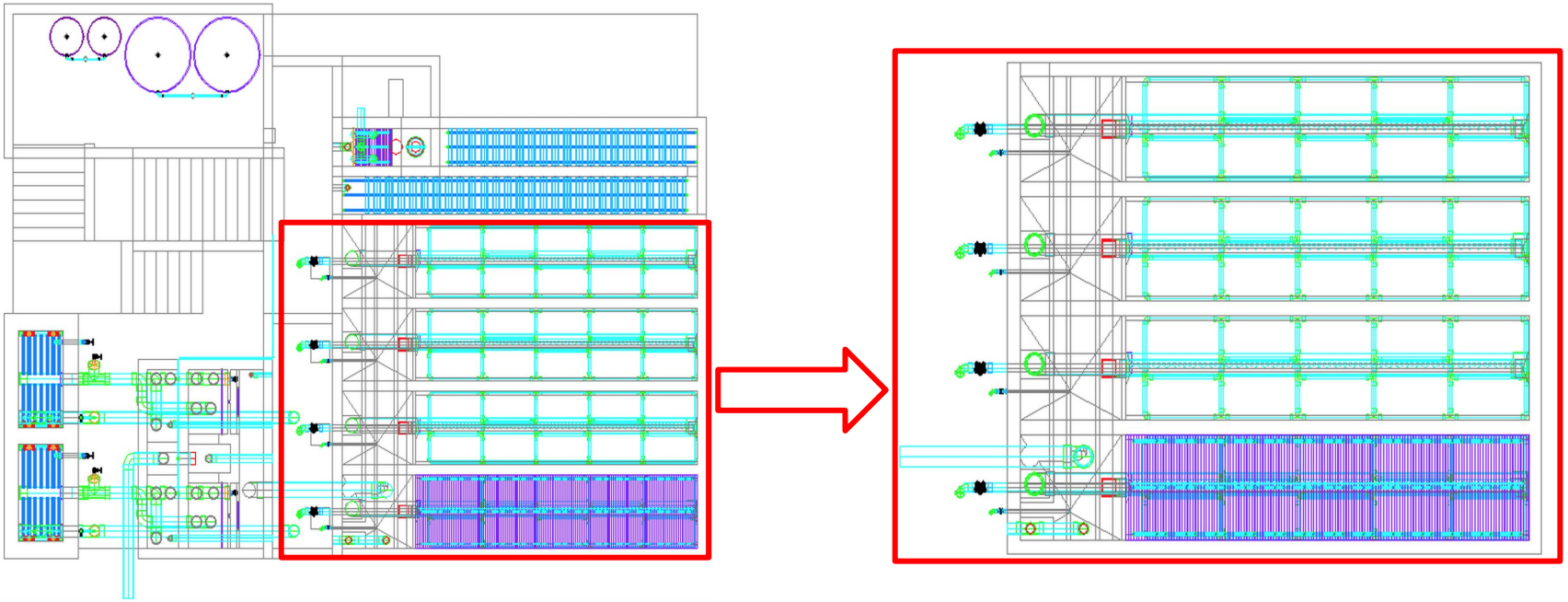






Future Goals

- Investigate the LFOM modular code as it does not yet work on the beta server
- Continue to create modular designs for other plant components



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- Questions?