

System Component Descriptions

A. Inlet Pre-Filtration (Influent Filtration 12-inch, WISY, DN300HD)

- **What it does:** Removes large impurities from the water after it is collected in storm drains on the roof - macrofiltration.
- **How it works:** Rainwater enters the filter container and is widely spread over the filter mesh. The dirt that catches in the filter is washed into the drain with the rinsing water. By this method, more than 90% of the rainwater that enters is filtered and collected. This is a very low maintenance filter - is practically self-cleaning. It can filter at a flow rate of 16 liters/sec.

B. Storage Tank (Cistern)

What it does: Stores 50,000 gallons of rainwater before filtration.

How it works: Acts as a container for pre-filtered water after collection on the roof.

C. 50 Micron Strainer

What it does: Removes smaller particles from the water after it is taken from the cistern to be used throughout the building.

How it works: The water runs upward through a cone-shaped mesh strainer that forces heavier particles downward into a separate reservoir. These particles are then flushed out of the filter. 50 micron filters only filter out particles that can still be seen by the human eye however, these particles can get as small as the diameter of a strand of hair.

D. Calcite Filter

- Whole house acidic water neutralizing system
- Calcite crushed and screened white marble media; can be used to neutralize acidic low pH waters to a neutral, less corrosive effluent

What it does: These filters stop the corrosion of pipes and other metal components within a plumbing system by neutralizing the acidity of the water in the system.

How it works: Typically, the water entering the filter has a pH of less than 7. As this low pH water flows down through the filter bed it reacts with the calcite and dissolves it. This causes the pH of the water to move from an acidic state to a neutral state. It has the added benefit of providing better tasting water for drinking water purposes.

E. 5 Micron Bag Filter

What it does: Removes very small particles from the water after it is taken from the cistern and through the previous two filters.

How it works: This filter consists of a small bag of filtering material, polypropylene in this case, that attaches to a sturdy ring at the opening. The water is passed through the tiny holes in the bag leaving behind unwanted contaminants. 5 micron filters can filter out particles smaller than a typical bacterium.

F. UV Filter

What it does: The final filter in the filtration skid that removes very small, harmful particles left in the water after the previous three filters.

How it works: Water is exposed to different intensity UV lights. The UV light penetrates the cell walls of microorganisms in the water and "inactivates" them by destroying their ability to replicate and infect. These filters have the ability to inactivate nearly 100% of the harmful organisms found in water, such as bacteria, viruses, mold, and algae. This filter is beneficial as it does not introduce chemicals into the water.

Graphic can show filter skid and then will run through the order of each filter and what each filter does

G. Day tank

What it does: Stores water after the filtration skid and before it is sent to the toilets throughout the building.

How it works: A 1000-gallon tank, much smaller than the cistern. It acts as an in between container between the water filtration and the distribution to the rest of the buildings.

H. Flow meter

What it does: Measures the flow of water through a pipe.

How it works: An impeller turns as water flows through it, causing the flow meter to emit a signal that can be used to determine the flow rate. This flow rate is monitored by the university and is being used to produce the water usage data used in this display!

Catchment System:

Storm drains on the roof of the building have sufficient water diverted to the rainwater cistern to be used for rainwater filtration. The rest is diverted to the city waste system, connected under the building.

Cistern:

50,000-gallon cistern. All rainwater is diverted to this cistern and is then pumped on demand? To the filter skid to be used throughout the building.

UV Filter:

One of the main filters to filter out unwanted things in the water on a microscopic scale.

50 Micron Filter:

Filters out things on a very small scale.

Day Tank:

This tank is used to store the rainwater that has just been pumped through the filter skid until it is needed at the fixtures.

Fixtures:

Toilets are using rainwater for flushing. *specify flush amount*

Flow Meter:

This meter is used to get real time data about how much water is being used in the building at any given time. This is a device that gives us our data for the display.