**SUSTAINABLE WATER SYSTEMS FOR BATIPA**

**Project Goal:**
To design a sustainable Rainwater Harvesting (RWH) System for Batipa Field Institute (BFI), while also proposing an eco-friendly, cost-efficient design for local adoption.

**What is Batipa Field Institute?**
An organization that combines science and education for the conservation and sustainable management of natural resources, promoting academic tourism, research, training and entrepreneurship on a private reserve in Western Panama.

**Climate Characteristics of David**
Located on the Gulf of Chiriqui, BFI is in a prime region for rainfall; taking a total of 2405.5mm in 2018 (ETESA) along with plenty of solar irradiation for power needs.

**Basic Rainwater Harvesting Model**

**Table 1: Design expectations for RWH system**

<table>
<thead>
<tr>
<th></th>
<th>Daily Use</th>
<th>Max Short-term Use</th>
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</thead>
<tbody>
<tr>
<td>People</td>
<td>10 people per day</td>
<td>100 people over 3 days</td>
</tr>
<tr>
<td>Water</td>
<td>5-10 m³ per day</td>
<td>100-300 m³ over 3 days</td>
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</tbody>
</table>

**1. Primary Filtration**
Tilted Mesh & First Flush
Captures debris, pollutants, or chemicals accumulated on top of the roof

**2. Storage**
Plastic Cistern
Most popular method of water deposit

**3. Distribution**
DC Pump
High responsiveness, natively compatible with solar power

**4. Water Treatment**
UV Filter
Most effective on-demand filter at the larger scale

**5. Power**
Photovoltaic Cells
Renewable energy source for filtration and distribution

**Table 2: Specifications for Basic RWH Model**

1. Catchment & Conveyance
   PVC Piping and Gutters
   An inexpensive yet effective way to collect water for small to medium scale buildings

2. Primary Filtration
   Tilted Mesh
   Filters out large particles, such as leaves, from the water source. In addition to its low cost, there is little maintenance needed

3. Storage & Second Filtration
   Rain Barrels
   An affordable and practical option for water storage

4. Water Treatment
   Colloidal Silver Filter (CSF)
   CSF is a silver-lined clay pot. As water travels through this porous material, pathogens in the water adhere to the walls, thus filtering it out

**ACKNOWLEDGEMENTS**
This project was able to be completed with the help of our sponsor, Oteima University, and the individuals that helped us along the way. Our team would like to thank Prof. Edmundo Gonzalez, Dr. Francisco Ugel, and Mr. Luis Rios Espinosa.