

Case Study



Fuquene Lagoon Environmental Remediation



Situation

A lagoon high up in the Colombian Andes has been the subject of environmental crimes for the past 200 years. Local farmers have been draining and refilling the lagoon with dirt to increase the size of their crops or cattle pastures. This has decreased the size of the lagoon from 32,000 acres to 7,500 acres. To make matters worse the farmers have also been contaminating the lagoon with the fertilizers and other chemicals used in their operation. This situation has resulted in the decrease of the ecosystem and the growth of and algae called "Buchón". The environmental organization in charge of the area recognized this situation and asked Volant for a remediation plan.



Objectives

- > Determine the Source of Water Contamination.
- > Determine the Concentration of Water Pollutants.
- > Reduce the Risk Associated with Flooding and Contaminated Water.
- > Increase Safety, Security & Environmental Compliance.
- > Identify Illegal Activities Towards the Ecosystem.
- > Quantify the Areas Recovered.
- > Log the Progress of the Remediation Efforts.
- > Alert When a Critical Variable is Present.



Plan

- Step 1:**
Map the lagoon every month to monitor the location and size of the algae.
- Step 2:**
Map the surrounding areas to monitor for illegal land dumping.
- Step 3:**
Install 6 floating pontoons with cameras that use AI to detect people near the shore committing environmental crimes.
- Step 4:**
Install 12 sensor modules to measure water quality including the following variables: 1. pH 2. Dissolved Oxygen 3. Temperature 4. Pressure 5. Flow 6. Level 7. Chlorophyll 8. Nitrates 9. Chlorine 10. Turbidity
- Step 5:**
Install an IoT communication network that sends the data from the sensors to the cloud.
- Step 6:**
Install internet communication equipment to the pontoons to stream the alerts and video feed from the cameras.



Results

The proposed plan will give the environmental agency the information required to monitor and execute a remediation plan. Volant is currently executing the plan and setting up the systems to start collecting data.