Bubble Barrier

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Problem Statement

The Lerma River in Mexico is heavily polluted by plastic, heavy metals, chemicals, and organic waste which has resulted in its degradation.

Aim

Developing an innovative idea to clean the Lerma River of plastic waste and sustainably dispose of the waste in order to restore the water quality and aquatic life.

Location Coordinates: 20.374255667150496, -102.01534216847199

Prototype

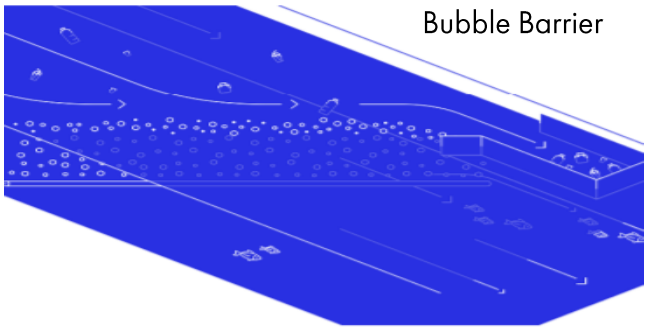
Bubble Barrier

The system works with a tube with holes which is positioned at the bottom of the river.

Bubbles are generated in the water by pumping air through the tube

Rising bubbles create a bubble curtain that forms an upward current pushing submerged plastic waste to the surface.

The diagonal placement of the pipe and the river's flow guides the plastic to the banks, where it is captured with the collection system.



Bubble Barrier

Prototype Findings

- No flow conditions- the system works only as a barrier
- Flow condition- the system works efficiently to collect plastic in the collection system
- Excess air pressure in the pipe results in plastic being pushed back in the reverse direction
- Prototype can be used to identify an ideal pressure and water velocity relation for optimum functioning

Recommendation

- Bubble barrier system should be used along with a surface cleaning system in the Lerma River as it has stagnant water most of the year.
- Social, political and industrial awareness and cooperation are necessary to achieve the revival of the river.