REPORT OF RESULTS USING "BOOMS" DEVICES IN LAKE VILLARRICA, CHILE

Matter of Trust Chile's team installed two "Boom" devices, covered with polypropylene net on August 27, 2023.

Device #1 (a 932 g Boom of human hair covered in cotton and polypropylene) was installed on the municipal floating dock in Villarrica, attached to the dock on the left side, held in place with a 8mm polypropylene rope.

Device #2 (a 748 g Boom of dog fur covered in cotton and polypropylene) was installed in a water outlet, in the "El Lanchón" sector, an area where unauthorized discharges of sewage are carried out, as evidenced in photos, due to the presence of toilet paper. The device is installed perpendicular to the water flow and is secured with a polypropylene rope.

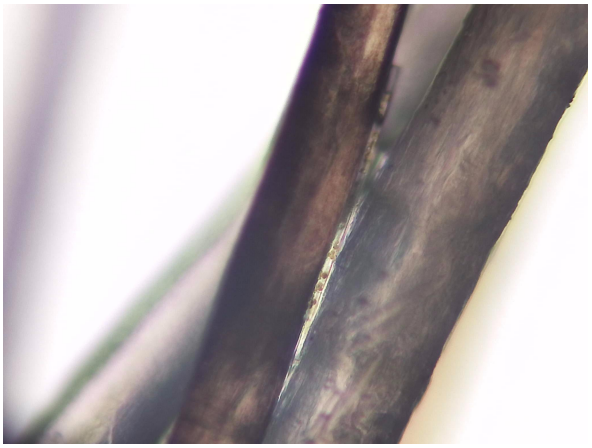
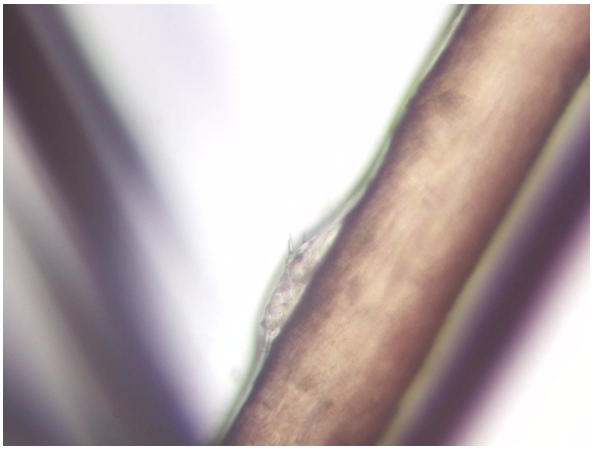
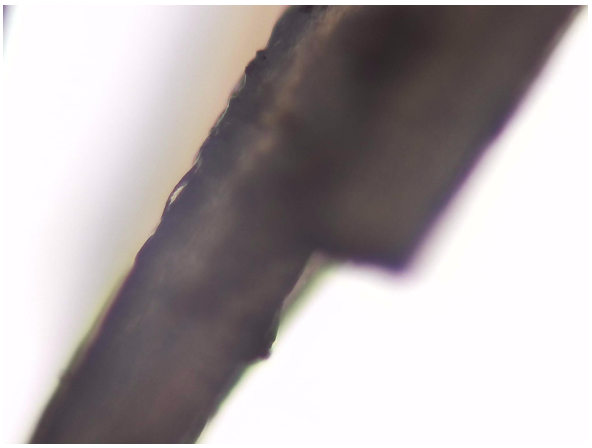
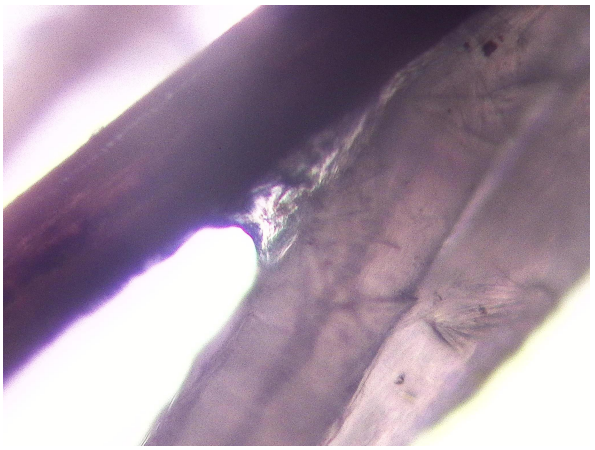
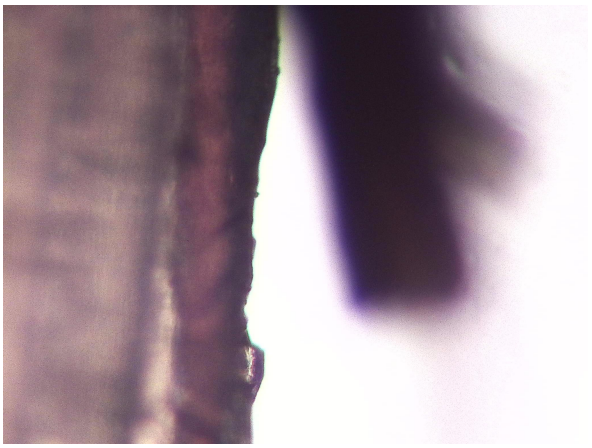
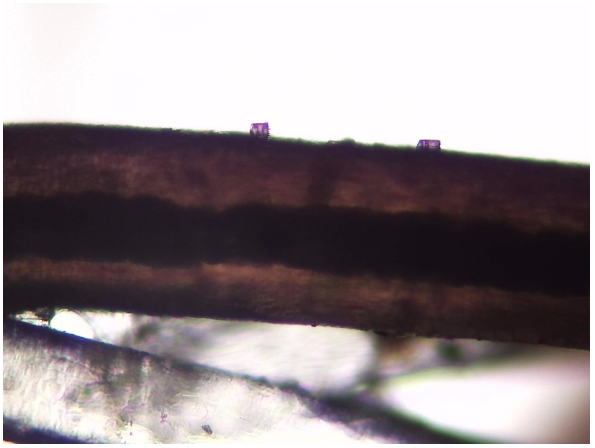
REMOVAL AND PREPARATION OF SAMPLES

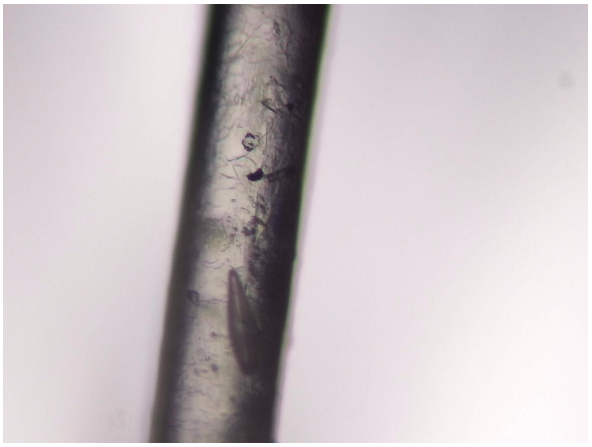
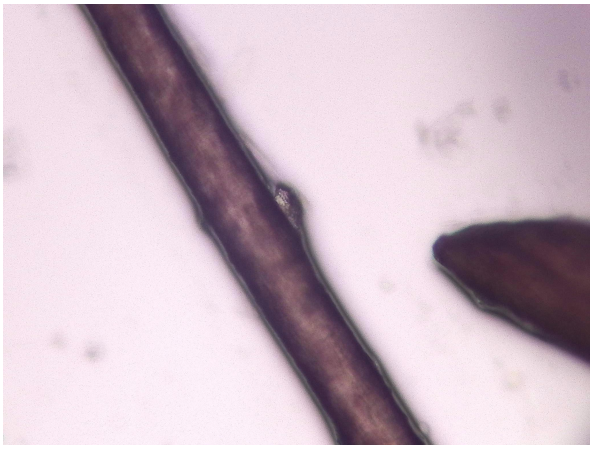
Contaminated devices are removed on Wednesday, October 18, 2023, 52 days after the installation. Devices are sent to Santiago for weighing and analysis.

Device #1 doesn't present any visible damage in its polypropylene cover. Weighing is carried out after drying, registering a weight of 4055 grams. Samples are taken for analysis

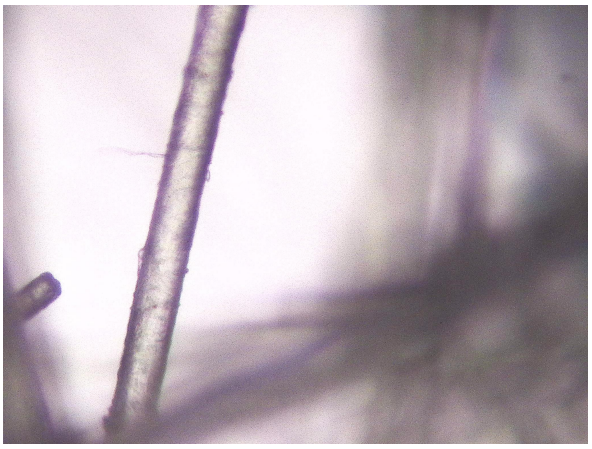
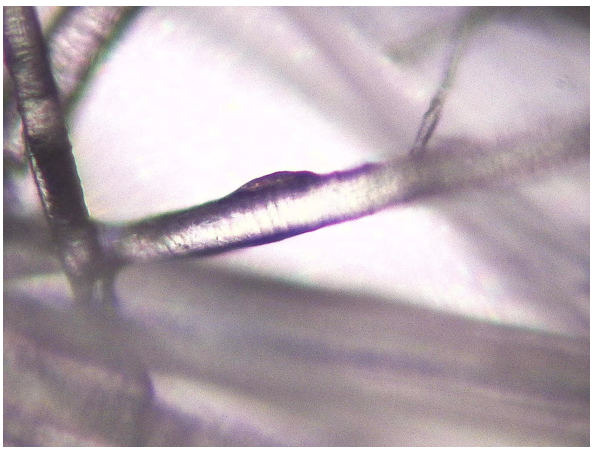
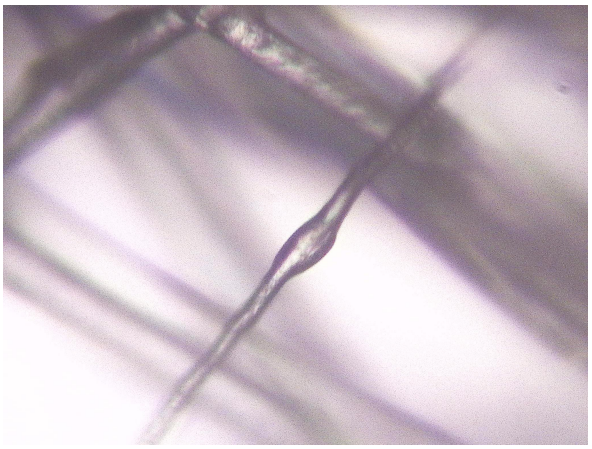
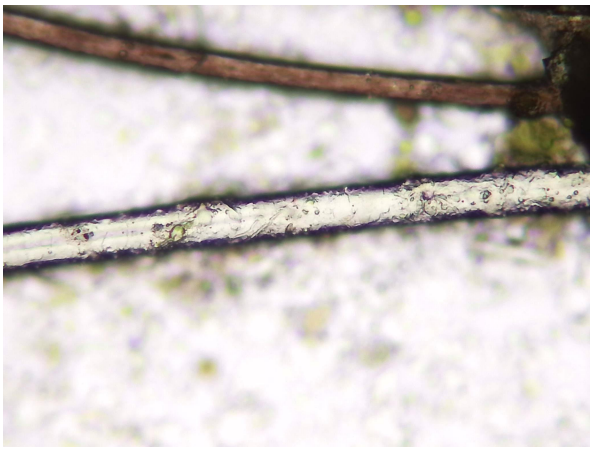
Device #2 doesn't present any visible damage to the polypropylene cover, however the device was moved by unknown persons, leaving it next to the water outlet, parallel to the water flow. The boom registers a green shadow on its surface, evidencing macroscopic growth of photosynthetic organisms. Samples are taken and weighed, recording a weight of 2730 grams.

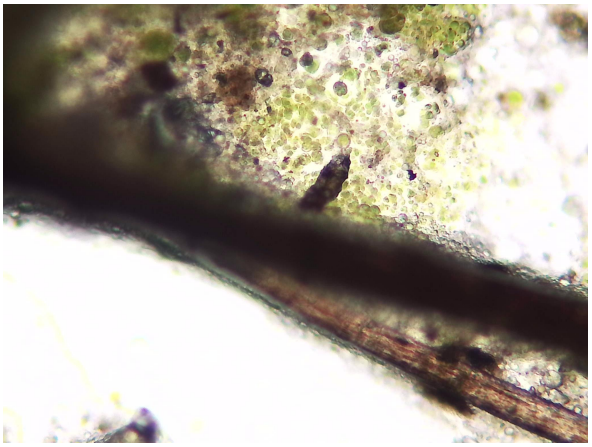
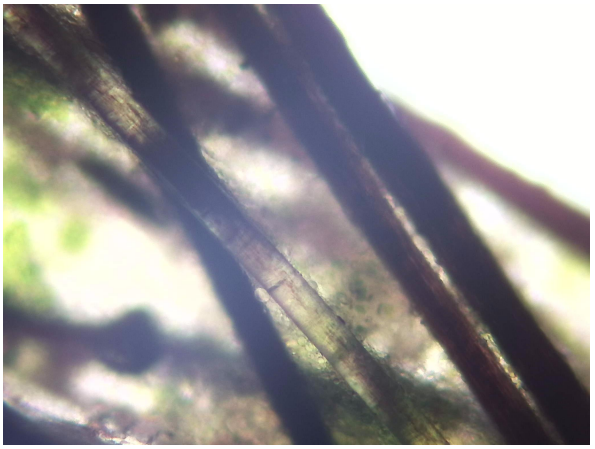
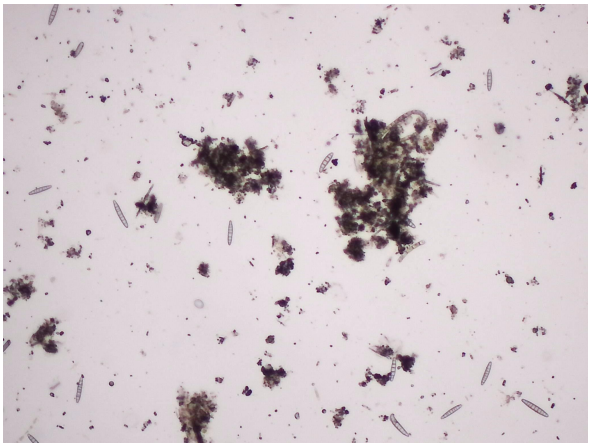
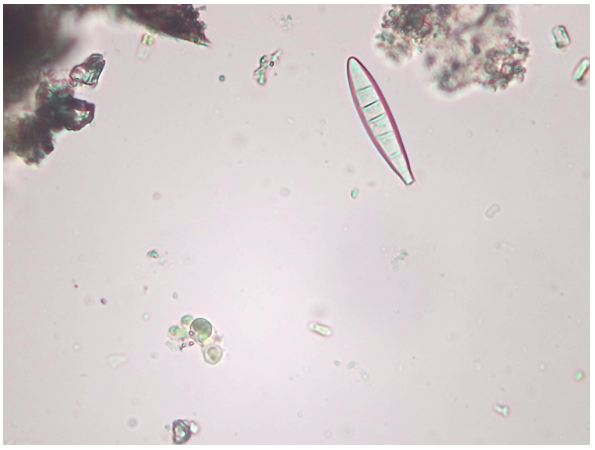
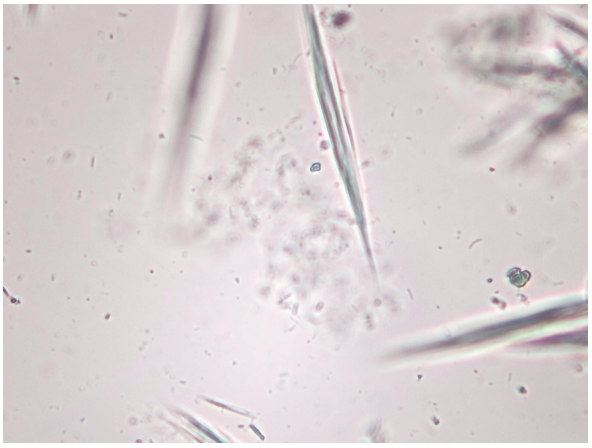
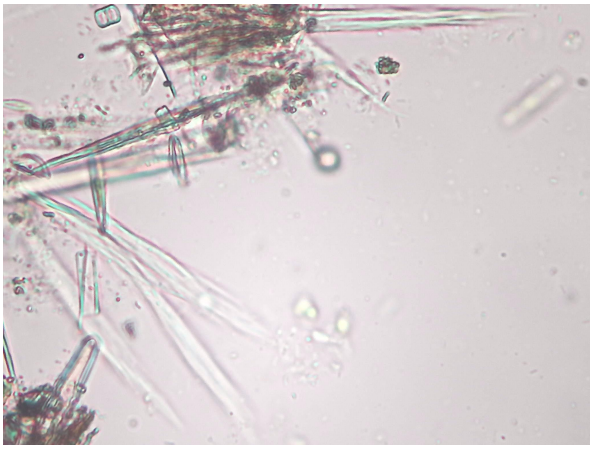
MICROSCOPY STUDY ON DEVICE #1 (DOCK)

MICROSCOPY STUDY ON DEVICE #2 (WATER OUTLET)

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DISCUSSION

Sample #1 (dock) retained a total amount of 3123 grams of contaminants during the 52 days of exposure. In the photographs (microscope) hydrocarbons, oils and charcoal were found adhered to the surface of the hair. Contaminants were held continuously and were removed from the environment.

Sample #2 (water outlet) retained a total amount of 1982 grams of contaminants, during the 52 days of exposure. Hydrocarbons and oils were found adhered to the Boom, however the sample presents a much greater amount of “sludge” type contaminants.

This is organic material from sewage, which remained adhered to the surface of the hair, capturing the excessive nutrients before they reached the lake. In this way, a development of algae (both diatoms and cyanobacteria) was recorded in the device.

The sample also recorded the presence of coliforms.

CONCLUSIONS

Human hair and dog fur “Booms” can be an effective water treatment system for Lake Villarrica:

- Recovering hydrocarbons and oils, which adhere to the hair and are removed from the environment easily and economically

- Recovering “sludge” associated with sewage discharges, soaking up fecal coliforms and nutrients before they reach the waters. Cyanobacteria develop in the device instead of developing in the lake, thus improving water conditions.

This report was developed on October 28, 2023 by Mattia Carenini, COO of Fundación Matter of Trust Chile and Global Hub Manager of Matter of Trust Inc Public Charity, with the advice of Mirta Paredes, CTO of Fundación Matter of Trust Chile