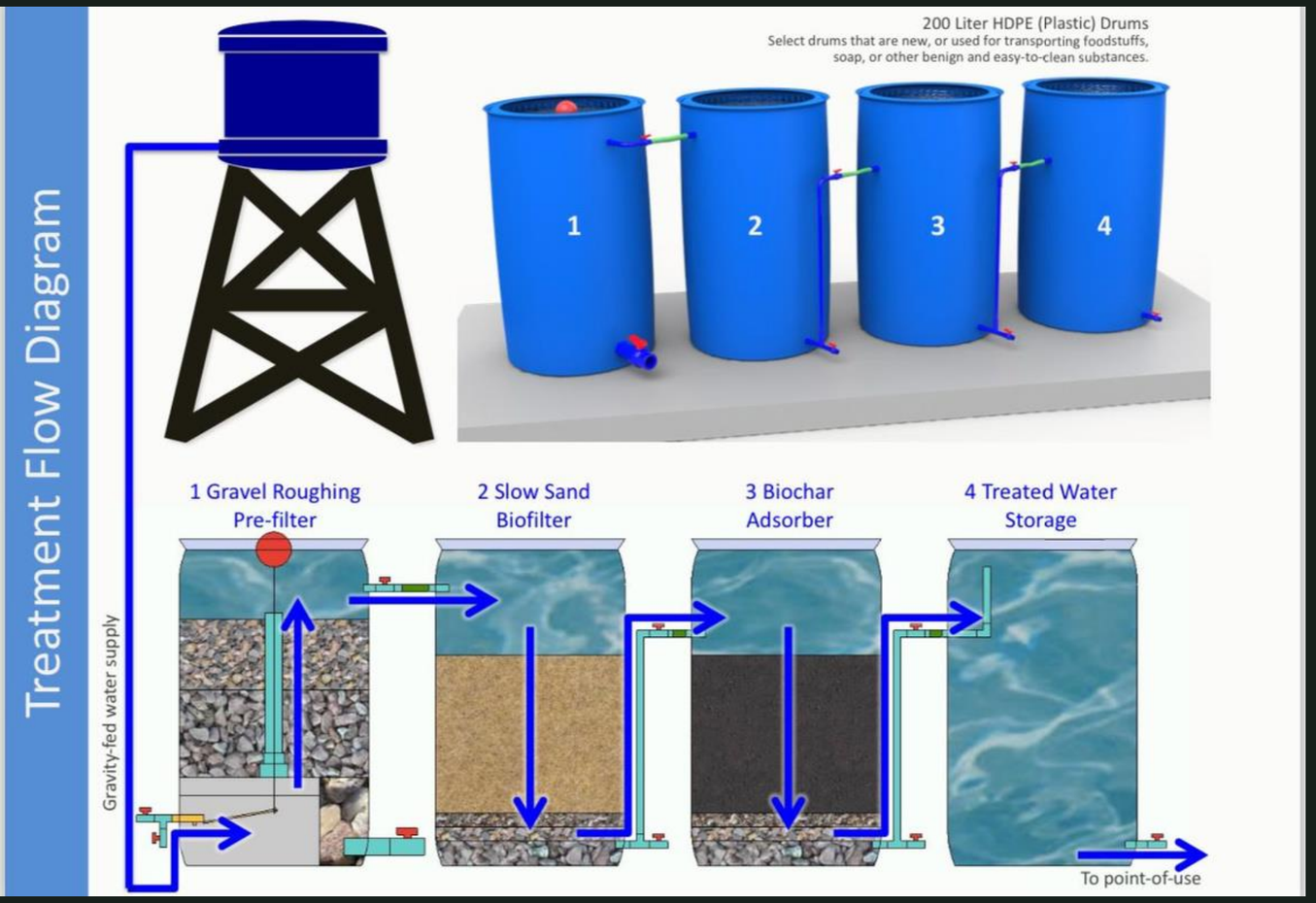

NATURE'S
FILTER



THE BLUE BARREL SYSTEM

200 Liter HDPE (Plastic) Drums

Gravel:

Maintenance: Monthly Backwashing

Sand:

Maintenance: Filter Harrowing

Biochar:

Maintenance: Yearly Biochar Replacement

Results: The system reduced TDS from 750 ppm to 420 ppm, showing some effectiveness but not achieving drinkable quality.

MISSION REPORT

Day One: Wood Collection
Collected wood using a tractor to prepare for biochar production.

Day Two: Biochar Creation
Initiated biochar production by burning the collected wood in a controlled, low-oxygen environment to create charred biomass.

Day Three: Biochar Harvesting
Gathered the cooled biochar from the site for the filtration system.

Day Four: Cleaning Materials
Cleaned biochar and began collecting and washing large rocks and stones.

Day Five: Sand and Stone Preparation
Continued cleaning stones and started preparing sand by removing impurities for the filtration layers.

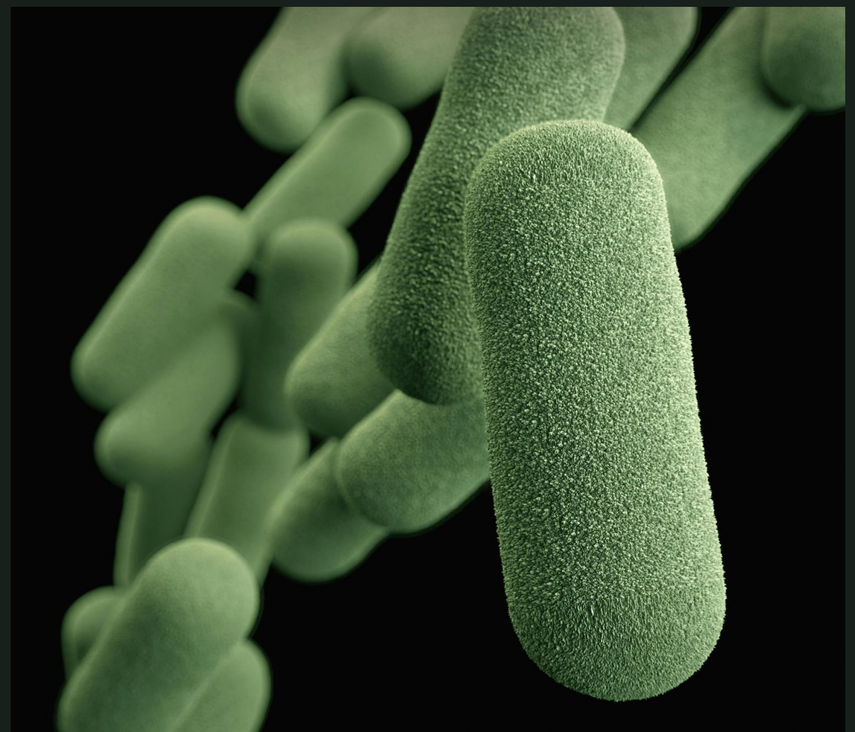
Day Six: Setup Assembly
Finalized cleaning materials, prepared barrels, and began assembling the filtration system with plumbing.

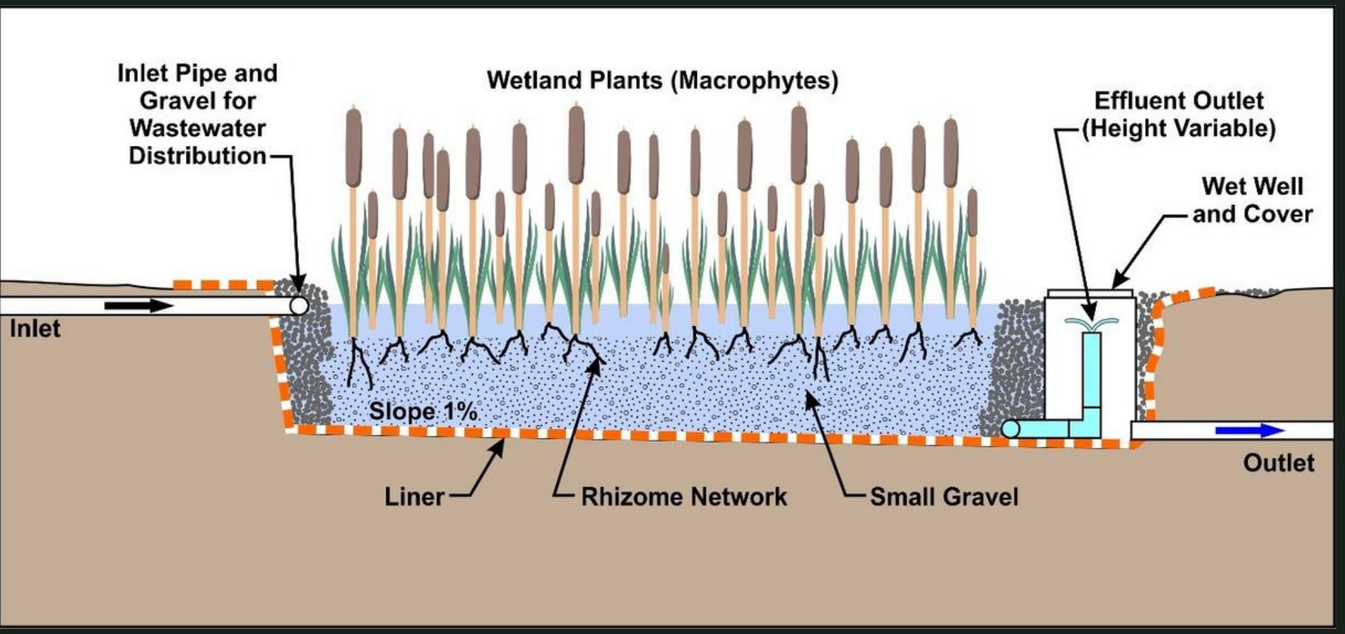
Day Seven: Testing and Evaluation
Conducted tests on the filtration setup. Results showed a reduction in TDS from 750 to 420 ppm.

EFFECTIVENESS

The system worked to some extent, but challenges included:

- Limited TDS reduction.
- Bacteria and pathogens might still be present.





ALTERNATIVE FILTRATION METHODS

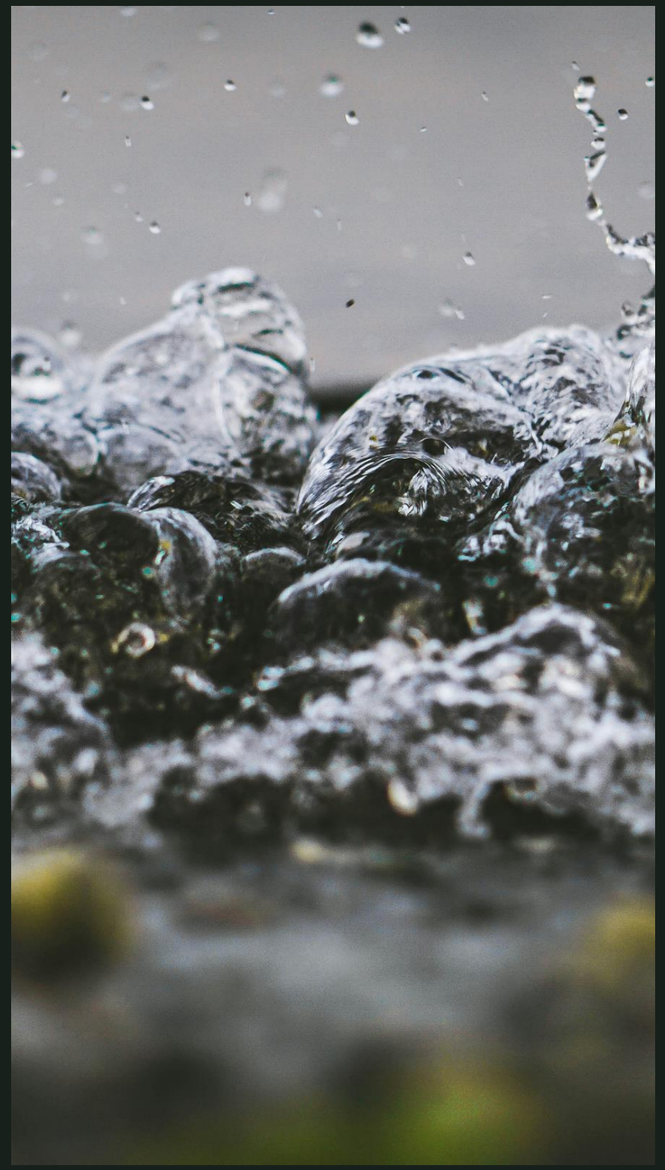
Grey Water Treatment: Constructed Wetlands

- Overview: Use of plant roots for filtration, mimicking natural processes.
- Plants Used: Duckweed, watercress, reeds, etc.
- Benefit: Effective for greywater treatment by using plants' natural filtration abilities.

Black Water Treatment: The Living Machine

- Overview: A combination of anaerobic tanks, plant roots, and aquatic organisms.
- Process: Sequential treatment through sedimentation, anaerobic digestion, and biological activity.
- Benefit: An advanced method for processing sewage water.

CHALLENGES OF TDS AND NATURAL FILTRATION



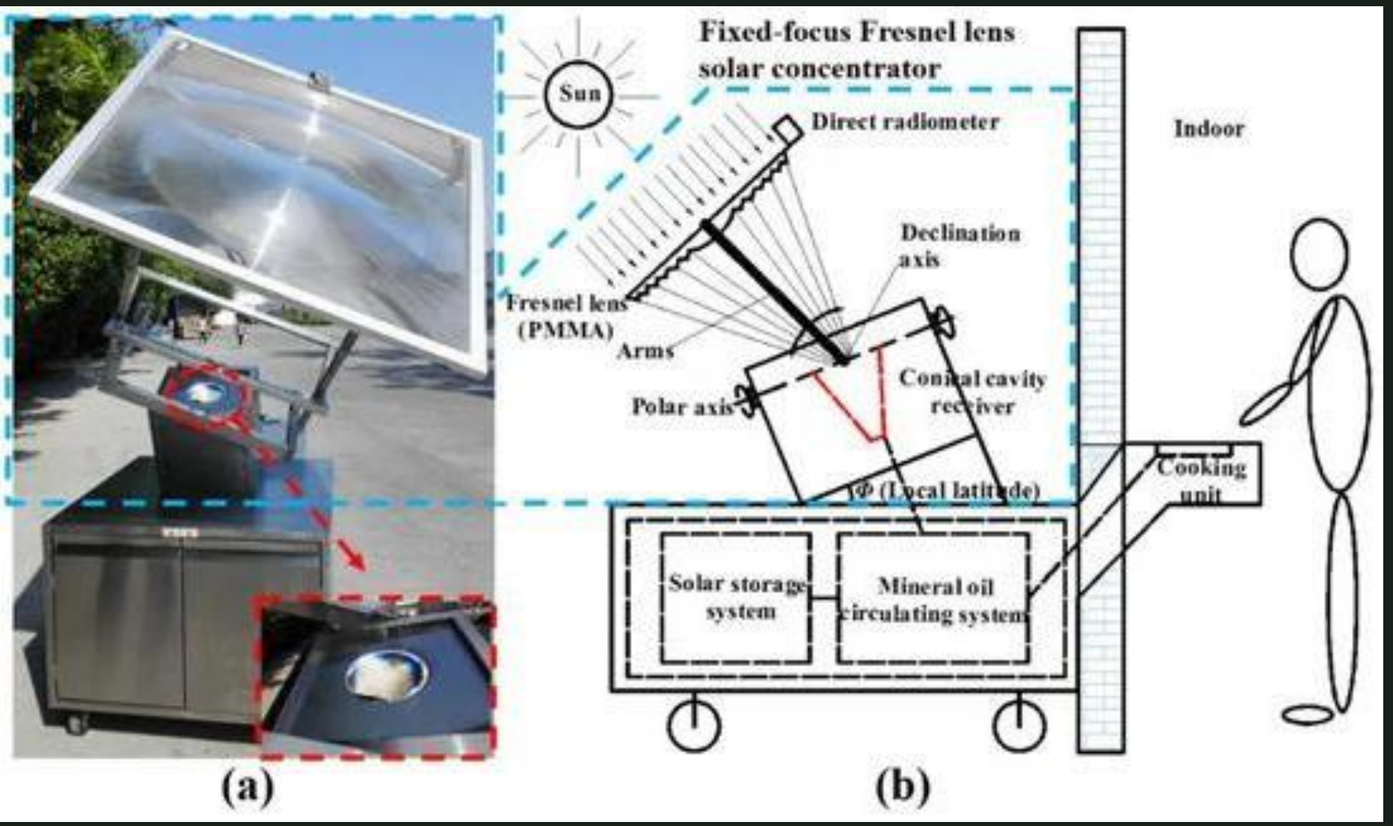
TDS Challenge:

- TDS can be tough to remove with natural methods alone, necessitating additional steps.

Boiling:

- Effective at killing bacteria and reducing TDS through distillation.
- Drawback: Removes beneficial minerals along with contaminants.

THE IMPROVED FILTRATION METHOD (MARK I)



Step 1: Initial Filtration

- Grapevine Filtration: Use grapevines to remove visible impurities and E. coli.

Step 2: Distillation

- Fresnel Lens Setup: Use solar power for large-scale boiling, collecting steam for distillation.

Step 3: Mineral Re-Addition

- Biochar Layer: Absorbs any remaining impurities and adds minerals.
- Gravel Layer: Provides physical filtration and mineral content.
- Sand Layer: Final purification step, adding more minerals.
- Plant Layer: Include plants like watercress and duckweed to further purify and reintroduce beneficial elements.

THANK YOU