WATER FILTRATION - TECHNOLOGY & APPLICATION

CLAY FILTRATION PROCESS

Contaminated water in the reservoir flows from the exterior of the vessel to the interior by means of osmosis as it passively moves from a high water concentration to low water concentration zone.

2 As the water filters through the clay pores they trap contaminants including sediments, bacteria, and protozoan, eliminating approximately 99.88% of water-born disease agents making the water in the vessel potable. There is also the ability to infuse silver nitrate into the clay to strengthen it's filtration capacity.



2. Water is poured into the openings at the tops of each vessel section for irrigation



3. The water is filtered and purified as it is gravity fed through the varioius levels of clay becoming potable

REAL WORLD APPLICATION (POTTERS FOR PEACE)

There are many organizations using passive clay filtration to provide potable water to underserved regions. An example of which is Potters for Peace, a non-profit organization that has taught local communites to make low-tech and cost effective clay filters since 1998. With this proven technology they have helped bring drinking water to over 30 counties around the world.



6. Potable water can then be extracted from the base vessel manually with a water tight container.

POTABLE WATER PRODUCTION

Over the span of a day, one below water vessel can filter enough drinking water for 19 car campers (11L each). This is equal to 56 I gallon (3.8L) bottles.



The embodied CO2 required to create one below water vessel is **46kg**. The CO2 footprint of bottled water for one person's daily consumption is around **0.7 kg**. Therefore we project the amount of time for the vessel to offset it's embodied carbon is approximately **3.5 days** if used at maximum capacity.

4. Reservoir water filters into the lowest vessel through the process of osmosis becoming potable as it moves through the clay wall.



FOOD PRODUCTION - HYDROPONICS & VEGETATION USE

Vegetation Chart for Selected Species

PLANT SPECIES	USE	ater tration food	SUN till till partial shade	SIZE	WATER Ô low Ô(↓ ÔÔÔ high	GROWTH STYLE in vessel on coils
SCALLIONS Vegetable		- uses recycled root from cooking waste to sprout new scallion shoots		300 - 900 mm	6	
LEMONGRASS		- uses recycled root from cooking waste to sprout new lemongrass shoots		900 - 1500 mm		
LEEKS Vegetable		- uses recycled root from cooking waste to sprout new leek shoots		900 - 1800 mm	66	
ROMAINE LETTUCE Vegetable		- uses recycled root from cooking waste to sprout new lettuce leaves		152 - 300 mm		
ALFALFA SPROUTS		- the seeds sprout in a moist, closed container and are ready to harvest in 3-5 days	X X	<152 mm		0
HYDRANGEA Prennials		acidic soil with lower pH renders a blue/lavender bloom alkaline soil with a pH above 7.0 promotes pinks and reds bloom attracts pollinators bees, butterflies, and birds		900 - 1200 mm	000	O
SPHAGNUM MOSS	0.0°	 reduces pH of water inhibits biofilm removes ions like dissolved metals from water 		<152mm	000	0
SPOTTED LIVERWORT	0.0	- filters heavy metals - attracts pollinators bees, butterflies, and birds	* *	<152mm	06	0
GREENSHIELD LICHEN Algae		- filters heavy metals such as lead, zinc, and copper		3-8mm	000	0
Mint Aquatics		 filters bacteria like E. coli and Salmonella planted in container before moved to water bloom attracts pollinators bees, butterflies, and birds 		600 - 900 mm	000	0
BULLRUSH Aquatics	0.0	- absorbs nutrients, oil, E.coli, Salmonella, and heavy metals like copper, nickel, and zinc		1500 3000mm	000	0