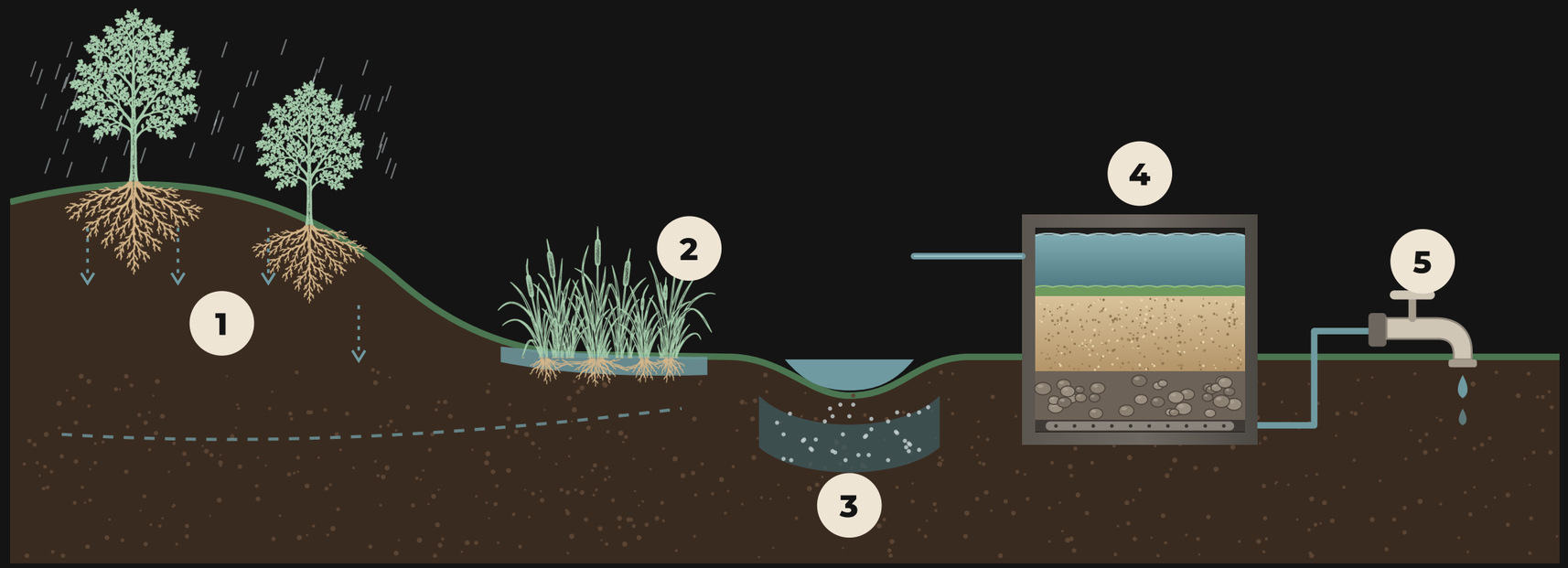
THE LIVING FILTER: HOW LANDSCAPES CLEAN WATER

The best water purifiers are alive. Purifying water began as a partnership with living things.



1 · SOIL AND ROOTS
Rain soaks into soil, where roots and microbes hold back sediment and take up nutrients before the water moves on.

2 · WETLANDS
Wetland plants and sediment slow the water down, so particles settle and nutrients are absorbed. Regulators often call wetlands the kidneys of a watershed.

3 · THE STREAMBED
Beneath and beside a stream, a layer of wet sediment (the hyporheic zone) is packed with microbes that strip pollutants such as nitrate from the water passing through.

4 · THE SAND FILTER
A slow sand filter cleans water with a living film that grows in and on the sand. It needs no chemicals, but it takes weeks to ripen, and it works best on water that is already fairly clear.

5 · NEW YORK'S CHOICE
New York City still supplies most of its water from the Catskill and Delaware watershed without filtering it, because it protects the land that does the filtering. The water is still disinfected.

Natural does not mean safe to drink. A clear mountain stream can carry bacteria and parasites. Living filters help, but they are not a substitute for treated water.

SOURCES
TU Delft, Trikannad et al. (2023): slow sand filters.
PNNL; Scientific American; Lewandowski et al. (2019), Water: the hyporheic zone.
NYC Mayor's Office (2017); NYC Independent Budget Office: Catskill/Delaware watershed.
US EPA; Delaware DNREC: wetlands.

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