CO_2 capture and geological storage *in depth*

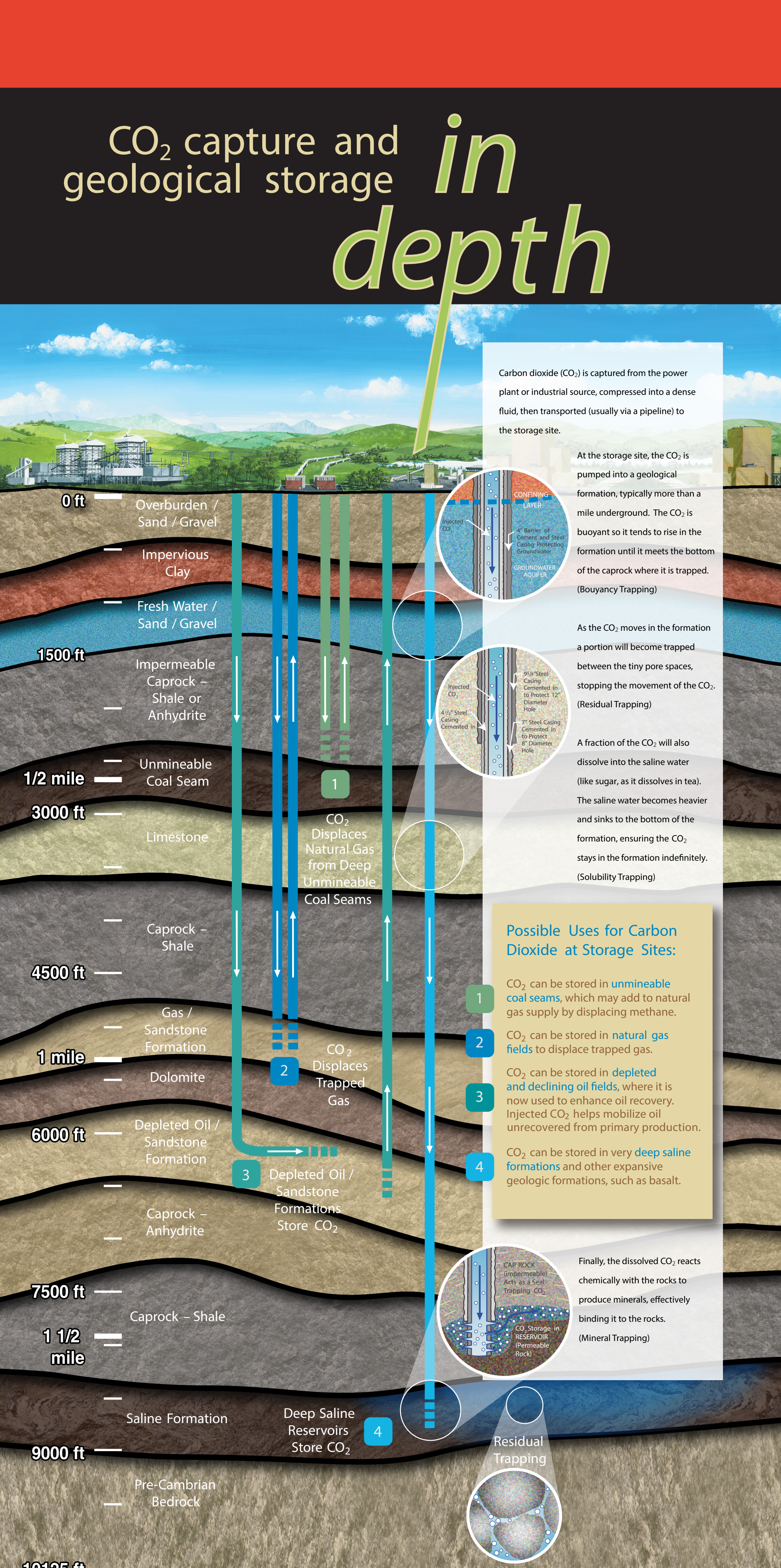
Carbon dioxide (CO_2) is captured from the power plant or industrial source, compressed into a dense fluid, then transported (usually via a pipeline) to the storage site.

At the storage site, the CO_2 is pumped into a geological formation, typically more than a mile underground. The CO_2 is buoyant so it tends to rise in the formation until it meets the bottom of the caprock where it is trapped. (Bouyancy Trapping)

As the CO_2 moves in the formation a portion will become trapped between the tiny pore spaces, stopping the movement of the CO_2. (Residual Trapping)

A fraction of the CO_2 will also dissolve into the saline water (like sugar, as it dissolves in tea). The saline water becomes heavier and sinks to the bottom of the formation, ensuring the CO_2 stays in the formation indefinitely. (Solubility Trapping)

Finally, the dissolved CO_2 reacts chemically with the rocks to produce minerals, effectively binding it to the rocks. (Mineral Trapping)



Possible Uses for Carbon Dioxide at Storage Sites:

1. CO_2 can be stored in unmineable coal seams, which may add to natural gas supply by displacing methane.
2. CO_2 can be stored in natural gas fields to displace trapped gas.
3. CO_2 can be stored in depleted and declining oil fields, where it is now used to enhance oil recovery. Injected CO_2 helps mobilize oil unrecovered from primary production.
4. CO_2 can be stored in very deep saline formations and other expansive geologic formations, such as basalt.

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