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# **Case study of Memsys pilot plant for inland groundwater desalination in Texas, US**

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## Goal & Location

### GOAL

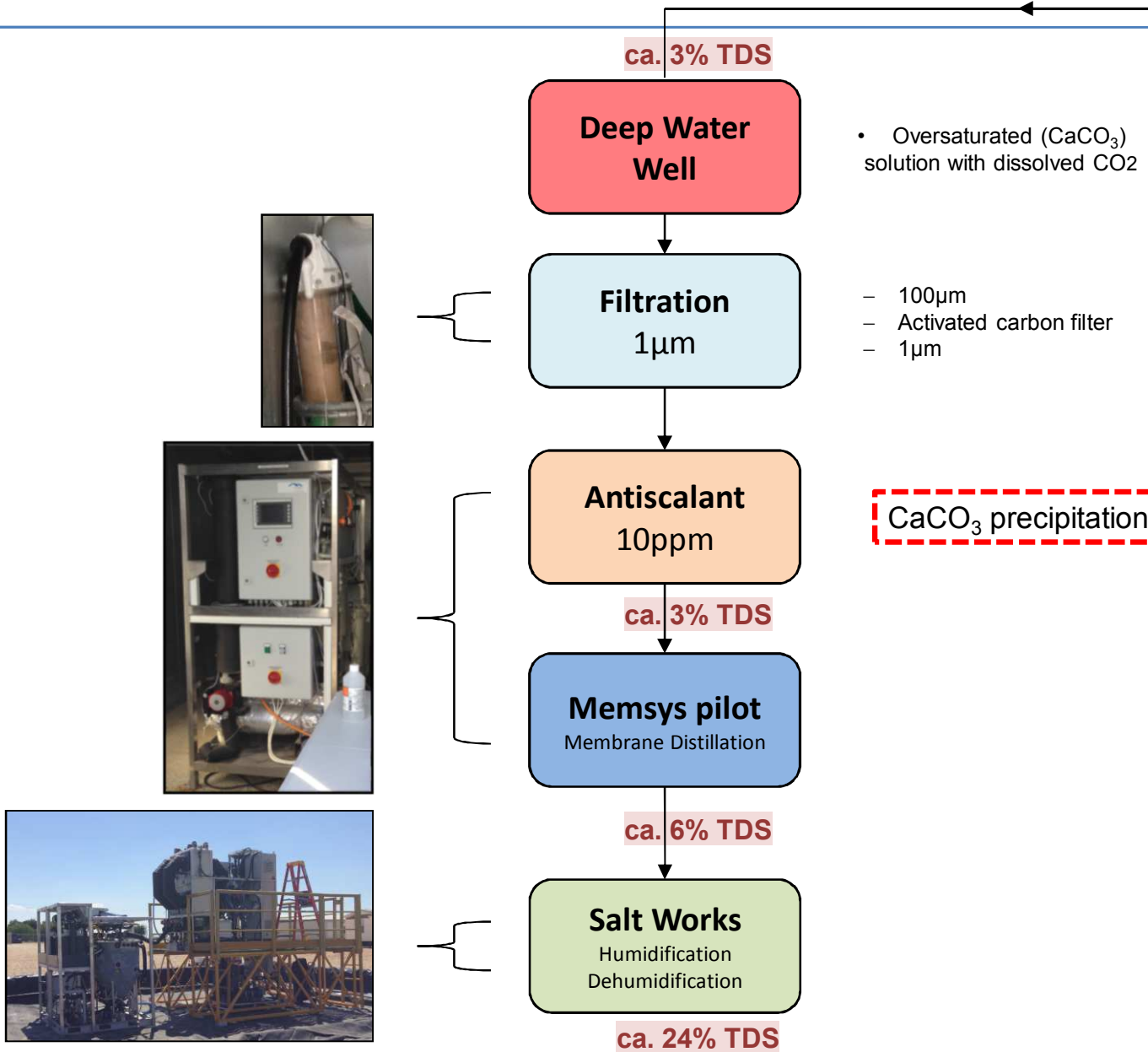
Concentration of deep groundwater close to saturation and generation of drinking water

### LOCATION

- 2 ½ hrs by car from Houston, Texas



# Water treatment process



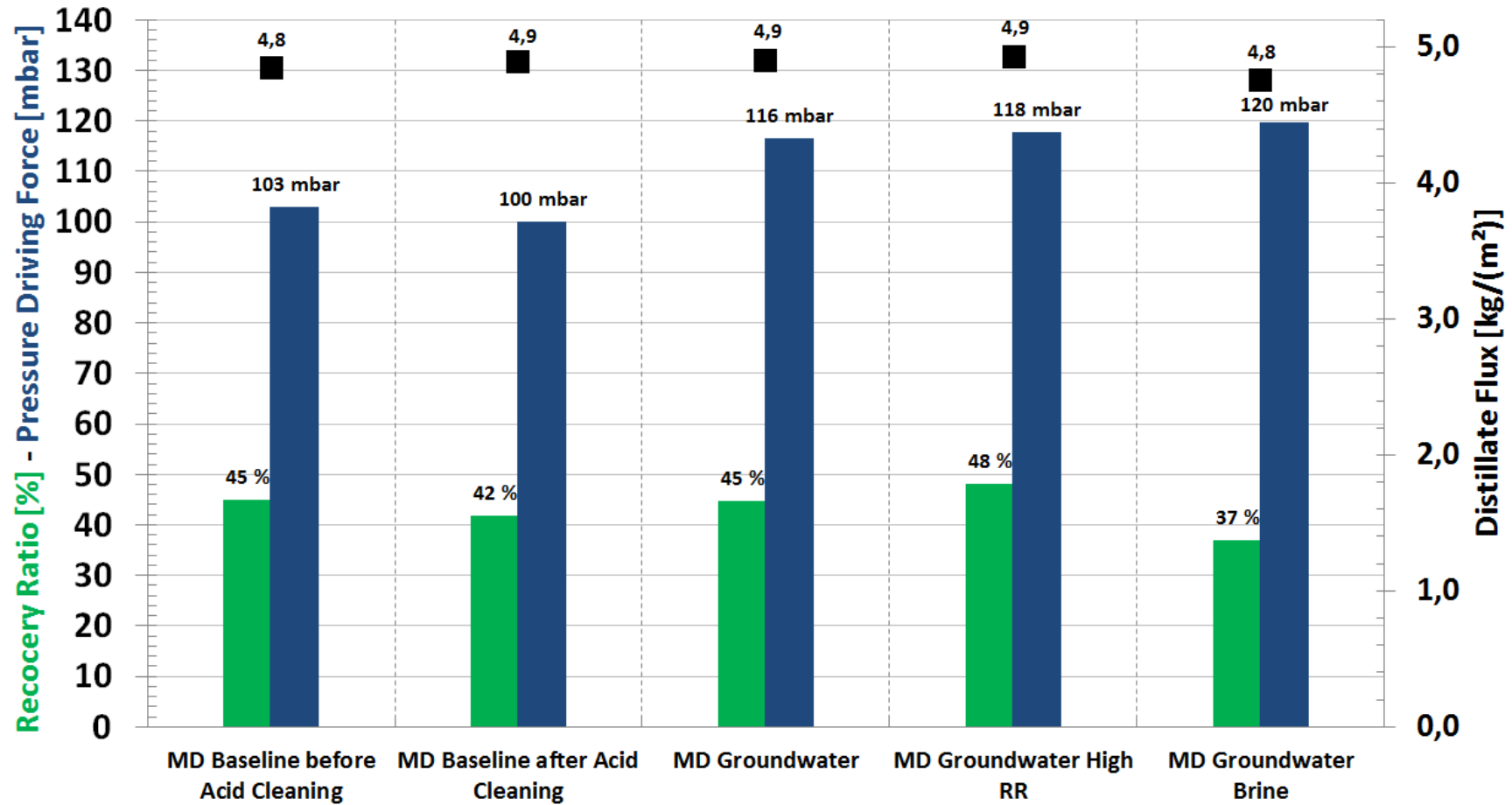
Parameters	Units	Formula	Carrizo Well Sample
<b>Physical Properties</b>			
pH	-		8,1
Conductivity	µS/cm		39.350
Turbidity	NTU		30
Density	g/mL		1,0150
Alkalinity ( as $\text{HCO}_3^-$ )	mg/L	$\text{HCO}_3^-$	1.064
Total Suspended Solids (TSS)	mg/L		85
Apparent Total Dissolved Solids (TDS)*	mg/L		24.040
<b>Organic and Inorganic Carbon</b>			
Total Carbon (TC)	mg/L	C	210
Inorganic Carbon (IC)	mg/L	C	207
TOC Total Organic Carbon (TOC)	mg/L	C	3
<b>Ion Chromatography Analysis</b>			
Fluoride	mg/L	$\text{F}^-$	1
Chloride	mg/L	$\text{Cl}^-$	13.248
Bromide	mg/L	$\text{Br}^-$	43
Phosphate	mg/L	$\text{PO}_4^{3-}$	<1
Nitrate	mg/L	$\text{NO}_3^-$	<2
Nitrite	mg/L	$\text{NO}_2^-$	<1
Sulfate	mg/L	$\text{SO}_4^{2-}$	<1
Thiosulfate	mg/L	$\text{S}_2\text{O}_3^{2-}$	<1
Ammonium ( $\text{NH}_4^+$ )	mg/L	$\text{NH}_4^+$	<1
<b>Inductive Couple Plasma Analysis</b>			
Lithium	mg/L	$\text{Li}^+$	<2
Sodium	mg/L	$\text{Na}^+$	9.185
Potassium	mg/L	$\text{K}^+$	98
Magnesium	mg/L	$\text{Mg}^{2+}$	38
Calcium	mg/L	$\text{Ca}^{2+}$	111
Strontium	mg/L	$\text{Sr}^{2+}$	33
Barium	mg/L	$\text{Ba}^{2+}$	17
Chromium	mg/L	$\text{Cr}^{3+}$	<1
Manganese	mg/L	$\text{Mn}^{2+}$	<1
Iron	mg/L	$\text{Fe}^{3+}$	<2.5
Cobalt	mg/L	$\text{Co}^{2+}$	<2.5
Nickel	mg/L	$\text{Ni}^{2+}$	<1
Copper	mg/L	$\text{Cu}^{2+}$	<1
Zinc	mg/L	$\text{Zn}^{2+}$	<1
Molybdenum	mg/L	$\text{Mo}^{3+}$	<1
Boron	mg/L	B	25
Silicon	mg/L	Si	23
Phosphorous	mg/L	P	<2.5

# Groundwater MD Tests



Fixed Cooling Temp. Inlet 20°C - Heating power 8kW

■ Recovery Ratio ■ Pressure diff. across mod. ■ Dist. Flux



# Memsys test results overview



Fixed Cooling Temp. Inlet 20°C - Heating power 8kW

