

QUICK STUDY GUIDE TO FINDING AND DEVELOPING BRACKISH GROUNDWATER

2025 MULTI-STATE SALINITY COALITION (BEST CONFERENCE EVER)

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Brackish Groundwater is Present in Many Places

Shallow and deep aquifers near coastal areas.

Upper portion of aquifers where irrigation return flow diminishes quality.

Deeper portions of aquifers where groundwater has limited recharge and slow circulation rate.

Aquifers with elevated temperatures that allow more minerals to dissolve.

Geologic units where gypsum, sodium chloride, or potassium chloride were deposited.

- These units may be at various depths and be above or below fresh groundwater aquifers.

Now repeat after me “deeper water is not always more brackish than shallow water!”



Brackish Groundwater in Oil and Gas Wells

Brackish groundwater is often associated with oil and gas wells.

Boreholes often penetrate various geologic units containing water from brackish to saline water that is not produced during oil and gas production.

Water produced as part of oil and gas production is generally injected back into a deep formation.

Recently seeing more desalination of produced water.

Brackish groundwater near Lot's wife?



Drilling Methods for Brackish Water

Rules of thumb, but not absolute

Unconsolidated or moderately consolidated sediments: reverse or direct mud rotary

Consolidated sediments with little fracturing or low permeability: Air rotary or mud rotary

Consolidated sediments with high fracturing and high permeability: Air rotary

Unconsolidated sediments overlying consolidated sediments with high permeability: Mud rotary, set casing to stabilize borehole, then air rotary.

Granite and volcanic rocks: Air rotary

Cobbles and extensive gravel: Air rotary with casing advance.







