

Working Together to find Water: Hydrogeology and Geology

*Jocelyn Keith-Asante, P. Geol.,
CSPG, AAPG*

Summary

How hydrogeology informs geology to execute a subsurface saline water source project will be explored. Presentation will review the iterative process and associated challenges that allow hydrogeological input to inform the geological work in order to execute subsurface saline water production.

Introduction

Now that I have mapped a wet sand body, what are the test criteria? How big does it have to be? What are the expected flow rates? What flow rate is necessary for a successful water source well?

Theory and/or Method

Petrophysical evaluation, geological mapping, hydrogeological and reservoir modelling combined with economic evaluation drive decision making. Various models are used and the inputs and outputs for various disciplines were modified to generate full understanding of potential saline water production viability.

Decision tree was created with input from all disciplines to manage process and determine responsible decision maker and criteria at each potential decision point.

Examples

From a geological perspective after the maps were created and a wet sand body was identified, the petrophysical analysis was done and the porosity and permeability was established. The reservoir engineer calculated a potential flow rate. Now the completions engineer needed to know what a successful test would look like. The hydrogeologist was able to inform the group what rates were necessary. All these disciplines were in the same room and they were able to question each other and learn from the hydrogeologist what a successful saline water source well looked like.

Conclusions

With the addition of hydrogeology to an existing subsurface team and adhering to conventional reservoir parameters the group now becomes a viable saline water source well team.

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team who worked together so seamlessly