

Hydrogeology 101 for the Petroleum Geologist

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An average working career is approximately 30 years; therefore, there have been at least 2 full generations (working careers) of WCSB petroleum geologists since the 1950s. During that time it was not uncommon for petroleum geologists to have limited career focus on water, other than to map and avoid it when targeting well placements. Given that approximately 75% of Alberta's current oil production is water-assisted, and with the significant projected water requirements of emerging markets (e.g., tight oil), it is crucial that the current and next generation of WCSB petroleum geologists increase their knowledge of hydrogeology.

In the presentation, an overview of the following will be provided, with a specific focus on aspects applicable to petroleum geology:

- Hydrogeology 101 (hydraulic parameters, flow rates, aquifer, aquitard, etc);
- Non-saline vs. saline groundwater (and who regulates the use of it);
- Key non-saline and saline aquifers in the WCSB;
- Standard testing to assess long-term source water deliverability;
- New markets/technologies require significant water use (e.g., tight oil and gas fracing);
- Water management - how do we know if there is enough water to go around?; and
- Need to recognize that water is a shared resource (paradigm shift).