

Setting the Stage to Make Informed Decisions Regarding Water Resources in Unconventional Oil and Gas Development – Lessons Learned from Alberta’s Oilsands

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To access unconventional oil and gas reservoirs, a common approach today is multistage hydraulic fracturing via long horizontal wells. Although hydraulic fracturing is a decades old technology this specific approach is relatively new with many learnings still on the horizon. Two key plays in Alberta and British Columbia are the Duvernay and Montney, respectively. One of the characteristics of multistage hydraulic fracturing is it presents many potential surface water and groundwater management problems. Potential problems include reliable source water, water transport, water storage, water treatment, water re-use, water disposal, and environmental concerns. As such, it is key that operators have sound planning (i.e., integrated water management plans) in place to address potential water management issues and mitigate risk. Sound planning allows operators to make informed decisions to ensure long-term success of their projects.

However there are potential roadblocks to sound planning and informed decision making. Road blocks may include the current regulatory environment, negative stigma of hydraulic fracturing and current market conditions. The current regulatory environment for unconventional oil and gas is also in its early stages and is evolving. Many operators see this regulatory uncertainty as a road block to planning. Also despite industry efforts to communicate with the public, there still exists a very vocal and powerful opposition to multistage hydraulic fracturing because of water and environmental issues. Public pressure or lack of social license to operate may cause delays and affect the planning process as well. Current market conditions enhance operator competitiveness and may limit operators to only invest where it adds the most perceived value. Interestingly, from a high level this scenario is analogous to Alberta oilsands development and water issues from a decade or so ago. Oilsands development has many associated water issues, regulations were developing in response industry, there

was heavy competition between operators and this development was in the global spotlight. Lessons learned from oilsands development may prove very valuable for unconventional resource development. Lessons proved that investing in understanding surface water and groundwater resources early in development regardless of current regulatory framework positioned operators in a desirable position. Operators with solid multidisciplinary understanding of water resources had a competitive advantage that allowed them to develop effective water management plans quickly, effectively work with neighbouring operators to establish mutually beneficial industry collaborations, minimize regulatory delays, and communicate with stakeholders.

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He has extensive experience in the oil sands of northern Alberta where he has worked on over a dozen SAGD projects in the area. He has worked on numerous regulatory applications pertaining to hydrogeology in the Peace River, Cold Lake and Athabasca oil sands regions. His specialized oil sands experience includes; environmental impact assessments, regional hydrostratigraphic mapping, aquifer testing, well network design, groundwater diversion licensing, development of conceptual models of groundwater flow and numerical groundwater modeling.