

Water Chemistry of Mannville Coal Beds, Fort Assiniboine, Alberta

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Waters produced during the dewatering of the Mannville coals for methane production in the Fort Assiniboine area were sampled to develop a better understanding of the coal reservoir. Routine water analyses were reviewed, interpreted and classified by water type.

Anomalous water compositions can be the result of contamination introduced during drilling and completion operations. The interpreted formation waters show spatial trends in common ion concentrations that can be correlated to environmental trends at the time of peat accumulation. Formation water trends may be further modified by fluid migration during burial, uplift, and diagenesis. Ions added during the drilling process can be used to characterize flowback behaviour from the natural fracture system of the coal deposit. Depressuring of the coal cleats can be delayed by excessive seepage from deposits encasing the coal seam. Anomalous water compositions can result from the production of non coal seam water where wellbores are not isolated from other porous and permeable deposits.

Water samples can provide valuable data to help characterize wet CBM reservoirs. With an established baseline of water chemistry, further sampling can detect coal-bed water movement and influx from external sources. Integrating water chemistry with other geologic data can also be useful in diagnosing sources of excessive water production.