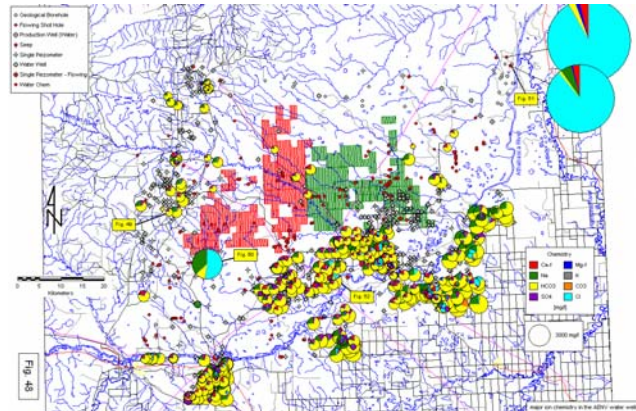


Regional hydrogeological background study for a Deep CBM development prospect in West-Central Alberta

Project Location:	West-Central Alberta
Client(s):	Confidential
Date Completed:	2006
Project Budget:	\$ 75,000



Map showing major ion chemistry in water wells of AENV's Alberta Groundwater Database. Map: propr. program HD.

Project Summary

In the investigated area the depth of CBM wells exceeds 1000 m in places. Most of the wells are located within recharge areas and they reach into the domain of large regional groundwater flow systems. The regional flow systems will be somewhat modified by the necessary pumping of groundwater. The effect will, however, essentially not modify the discharge pattern of the regional flow systems as the produced water is reinjected into the Devonian Wabamun Formation, albeit at greater depth. Chemically, local and intermediate flow systems are characterized by bicarbonate water (yellow pie diagrams in figure above) while the regional system is dominated by chloride water (blue pie diagrams in figure above).

The coals are contained in about 300 m of sandstone-dominated layers. Above the sandstone sequence are about 500 m of a shale-dominated sequence. The presence of the shale sequence should ensure that the pumping activity at the CBM wells will not affect the operation of water supply wells for domestic and rural purposes, in terms of amount of groundwater flow and the occurrence of methane in the groundwater. That would be the case as long as proper seals have been installed in the annuli of CBM wells from the surface to the CBM coal layers, and as long as the annuli of conventional oil and gas wells in the area have been sealed in similar fashion.

Services Provided

- * Assembly of a regional hydrogeological database using data supplied by the client and from the Alberta Groundwater database of Alberta Environment.
- * Evaluation of the hydrogeological database using the proprietary program system HYDRODYNAMIK [HD].
- * Investigation of groundwater flow systems in the area and their chemical fingerprints.

Deliverables or Results

- * Comprehensive report on the findings and the likelihood of disturbance to regional flow system and surface near water supplies by CBM production. The report contained 52 figures.