

DORSEY CONVERTER STATION

Manitoba Hydro

Rosser, Manitoba



Project Description

The Dorsey Converter Station groundwater cooling project is the largest geothermal project ever constructed in Manitoba. KGS Group was retained by Manitoba Hydro in 2003 to provide detailed design and full-time resident construction supervision and contract administration.

The Dorsey Converter Station is the southern terminus of the HVDC transmission lines from the hydroelectric station near Rosser, Manitoba. The Dorsey facility converts the DC current to AC current, with the groundwater cooling system needed for the space cooling resulting from the power conversion. The system is designed for the full cooling requirement of both Bipole 1 and 2, as well as the synchronous condenser buildings. The final system is based on 5 pumping wells and 10 recharge wells with a design peak pumping system capacity of 3000 USGPM, as well as additional redundancy capacity. The system design also includes a winter chiller system that reinjects chilled groundwater back into the aquifer using an open-loop fan coil system in order to thermally balance all energy loads to the aquifer on a seasonal basis.

The final system design was based on field test drilling and pump test analysis coupled with digital geothermal heat flow simulations.