

NICHOLS ENVIRONMENTAL (CANADA) LTD.

STATEMENT OF QUALIFICATIONS



Client:	Confidential Client	Project start date:	Nov. 2000
Location:	Fort McMurray, Alberta	Project end date:	Mar. 2001
Project Type:	Geotechnical	Project Manager:	M. McCormick
Project Value:	\$53,300		

Project Title: **Transmission Powerline – Geotechnical Investigation and Construction Monitoring**

Project Description: Nichols Environmental (Canada) Ltd. was retained to provide geotechnical consulting services for the construction of 20 power line structures. The project involved the construction of a 240kV double loop transmission line that stemmed from the existing Syncrude Aurora power line, extending east towards the new Shell Canada AlbianSANDS facility.

The AlbianSANDS Facility is located approximately 70km north of Fort McMurray, Alberta, east of the Athabasca River. The proposed power line consisted of approximately 17 tower structures, two single pole towers and two three-pole towers. The transmission towers ranged in height from 17 to 39 m. The design considerations included unbalanced loading, high ice loading, and wind loads causing significant uplift forces. Resistivity tests were also conducted for tower grounding.

Nichols Environmental conducted the geotechnical investigation in November 2000, which included drilling test holes at each tower location and providing a comprehensive design report. In January 2001, Nichols Environmental provided foundation monitoring services which included: pile inspection, concrete QA/QC, and reporting. Significant challenges were encountered due to the relatively remote location and cold weather during construction.

The soil conditions generally consisted of a muskeg surface cover which was underlain by lean oil sand. Some surficial sand and gravel fill was found at the surface of several boreholes. The muskeg was a highly organic and saturated stratum, with significant seepage observed in several areas. Casing was required during piling to minimize seepage and sloughing.

Based on the tower loading configuration, the use of cast-in-place concrete straight-shaft or end-bearing piles was recommended. The ATCO design team selected straight-shaft cast-in-place concrete piles.

