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## Executive Summary

In the past decade, the Quill Lakes rose six meters, leaving the surface of the roadway just 0.9 meters above the water. From January to May 2015, the lakes rose another half meter, reaching threatening flood levels and putting the two roadways and other infrastructure at risk.

Tetra Tech was commissioned by Saskatchewan Ministry of Highways and Infrastructure to provide design and construction administration engineering services at two locations on Highway 6 and 16 near Dafoe, Saskatchewan. As spring levels in the Quill Lakes were predicted to reach levels that would threaten flooding to this major highway, improvements to the gradeline were required.

Tetra Tech completed the hydraulic and geometric design, produced tender documents, and provided construction administration for widening and raising the roadway. The engineering solution incorporated techniques to allow for construction within water during late winter and early spring to continue while accommodating traffic through the construction zone. All work required to raise the highway was to be completed prior to spring runoff. Tetra Tech's ability to complete the project within the minimum time possible was essential, as the spring snow melt began earlier than in previous years. The spring snow melt was expected to raise water levels in the lakes and cause overtopping of the existing highway, making completing the project prior to the potential flooding essential.

This project was completed on time and on budget. Tetra Tech worked with the Ministry and Contractor to overcome significant challenges and develop innovative solutions throughout the project.