

Grand Forks Irrigation District

Regional Water Supply Investigation

British Columbia, Canada



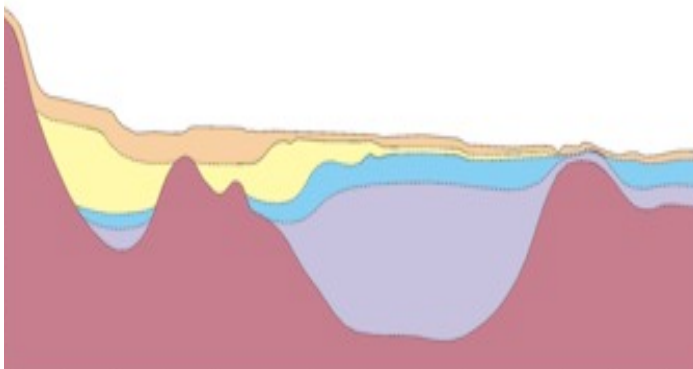
Grand Forks is situated in south-central British Columbia, north of the United States border. In 1896, the population in the region consisted of 200 farmers. In the mid-1990s, the City of Grand Fork's population had reached 4,000 with a regional population exceeding 10,000. Ground water continues to be the only source of water for the City of Grand Forks and the surrounding areas.

As a result of the region's dependence upon ground water, when the Grand Forks Irrigation District wanted to increase its ground water extraction, a regional water supply investigation was undertaken to ensure the availability of supply. This investigation consisted of an extensive well drilling and aquifer testing program across the valley. As part of this regional program, a production well with a sustainable yield of 2,000 gallons per minute was constructed, developed, and tested. Subsequent hydraulic analyses, based upon data collected during the testing of this production well, confirmed the long-term availability of the supply.

Aquifer Delineation and Testing

The Grand Forks aquifer consists of layered alluvial sediments overlying bedrock. The bedrock forms the lateral and lower boundary to the aquifer. The top surface of the aquifer is generally flat. The Kettle River flows from west to east through the valley and is in close hydraulic connection to the aquifer. To determine that a total ground water extraction of up to 2,000 gallons per minute was achievable and sustainable, a ground water supply investigation was strategically designed and included the following components:

- Integration of regional geologic and ground water data to determine an optimal well location
- Design and construction of a 24-inch diameter, 800-foot production well
- Production well logging and delineation of aquifer units
- Design of 48-hour aquifer test
- Management of 5.8 million gallons of test water discharge
- Determination of well interference effects
- Assessment of impact on neighboring wells and the Kettle River



HIGHLIGHTS:

- ✓ **Project completed on schedule and within budget.**
- ✓ **Completed predictive analyses to determine that long-term sustainable water supply was achievable.**
- ✓ **Designed and successfully constructed an 800-ft, 24-inch production well in complex layered alluvial sediments.**

PROJECT

