

Blackfoot & Devonia Drainage Basins - Functional Stormwater Drainage Plan

County of Vermilion River

The County of Vermilion River is located in eastern Alberta, just west of the City of Lloydminster and contiguous to the Alberta /Saskatchewan border. Substantial industrial and residential growth has resulted in development pressures within the County and particularly in the areas surrounding the City of Lloydminster, which are in the Blackfoot and Devonia Drainage basins. These new areas are experiencing intermittent flooding problems due to the increased volumes of storm runoff and poor drainage. Sameng was retained in 2013 to develop a functional stormwater drainage plan to meet the stormwater servicing needs of the Blackfoot and Devonia basins.



Location

County of Vermilion River

Key Team Members

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The following main tasks were completed for this project:

- Identified the Blackfoot and Devonia Drainage Basins and the important physical, hydrological, and meteorological parameters that govern the quantity of the runoff in the basins.
- Identified the existing drainage features and the interconnections; including channels, wetlands and hydraulic structures (culverts, bridges, etc.).
- Identify existing problems, issues and weaknesses in the drainage system including flooding, inadequate conveyance capacity and environmental issues.
- Identify and review development impacts with respects to existing area structure plans; Highway No. 16; Devonia Lake and Wetlands, including the Blackfoot Wetland.
- Using the EPA Storm Water Management Modeling (SWMM) program, develop a computer model that adequately predicts flow volumes and rates along with significant flow channels. The model will be capable of analyzing the impacts of development and mitigation measures.
- Provide guidelines for future developments including stormwater plan requirements, design parameters and protection of aquatic features.
- Include cost estimates and requirements for regulatory approvals.

An EPA SWMM model was created to determine the pre- and post-development runoff and storage parameters in the Blackfoot and Devonia Basins. Conceptual improvements and functional drainage plan were developed to provide adequate drainage routes to the outlets of the basins while controlling discharge from runoff to pre-development. Financing and implementation strategy was also provide to the County.

