



ICE CONTROL ROUTING SYSTEM

Client: Department of Public Works and Parks, City of St. John's

As an initiative of the City of St. John's Geographic Information System implementation strategy, a study was undertaken by **Malone Given Parsons Ltd.** to develop a plan for the implementation of ice control operations within the city of St. John's. This project resulted in a GIS based application system to update and standardize existing datasets, identify the various factors affecting ice control operations, develop and optimize proposed truck routes, and provide reasonable estimates of salt and sand quantities and travel distance and times for the entire City-wide ice control operation.

A GIS dataset for the entity City was generated, linking the City road network to known ice control costs and variables. Algorithms were developed for programming and analysis for the optimization of truck routing and for the monitoring and control of the salt applied to each route by each truck based on considerations such as street priority classifications, salt and/or sand application rates for streets with different priorities and major intersections, effective width of coverage for equipment, truck speed as a function of street priority, traffic information such as location of traffic lights and stop signs. A truck route map is now produced for each defined control area and priorities are given to different streets based on a set of defined evaluation variables. The ice control routing system provided a technical solution for the City's GIS application and provided vital information for the City to manage and control the costly ice operations