

THE GREATER VANCOUVER WATER DISTRICT – AN ECOLOGICAL INVENTORY APPROACH TO FIRE HAZARD ASSESSMENT AND TREATMENT FOR PROTECTION OF WATER QUALITY AND OTHER SECONDARY VALUES

Bruce Blackwell, Robert N. Green and Heather Hedberg
B. A. Blackwell and Associates Ltd., 3087 Hoskins Road, North Vancouver, British Columbia, V7J 3B5,
Canada
Phone: (604) 985-8769
E-mail: bblack@ISTAR.ca

ABSTRACT

In 1992 the Greater Vancouver Water District began an extensive ecological inventory of its three watersheds (53,600 ha) that serve as the drinking water source for the Greater Vancouver Region. The focus of the inventory was to provide watershed managers with a better understanding of the physical and ecological processes within the watersheds, to address concerns regarding management practices and water quality in the watershed, and provide a basis for vegetation management planning. The inventory consisted of six integrated components which included climate and hydrology, terrain inventory and sediment yield, ecosystem inventory, fire assessment, forest health, and development of a GIS-based watershed model. As part of the fire assessment work, an inventory system was developed and implemented to quantify forest fuels within the watersheds. Once the watershed inventory was completed, a comprehensive database was developed linking terrain, ecological, and forest fuel databases in an ARC/INFO GIS system. The GIS was used to develop a forest fire hazard prediction and risk model that operates on a 200 year planning horizon. Model outputs identified current fire hazard conditions and changes in fire hazard related to forest succession over a 200-year period. The model was used to test management options, which included two levels of fire hazard reduction treatment and a control (no treatment) to assess the impacts on water quality and other secondary values over the 200 year period. Additionally, fire hazard data was linked through a disturbance matrix to fire severity (crown class removal and exposed mineral soil). This linkage allowed for an evaluation of the effects of treatment and no treatment on fire severity following a simulated wildfire, and the resultant impacts on sediment yield delivered to the reservoir.