

Evaluate the potential of evapotranspiration covers as a biomass feedstock in urban south-eastern Ontario.

Jaconette Mirck¹ and Warren E. Mabee²

¹ Queen's University, Department of Geography, Mackintosh-Corry Hall, Kingston, Ontario, K7L 3N6, Canada

² Queen's University, Department of Geography and School for Policy Studies, Sutherland Hall, Kingston, Ontario, K7L 3N6, Canada

Shrub willows (*Salix* spp.) and hybrid poplars (*Populus* spp.), that can be used as a renewable energy crop, have great potential to be used in alternative landfill caps. Currently many landfills that are present in the urban areas of southeastern Ontario do not have properly engineered leachate collection systems or covers to prevent deep percolation that can lead to groundwater contamination. The cost to close existing waste sites with conventional covers is often prohibitive. The durability of conventional covers composed of compacted fine-grained barrier layers is often insufficient to ensure long-term reliability. Evapotranspiration covers (ET), that may consist out of fast growing shrub willows and hybrid poplars, do not rely on a barrier layer, but instead manage water storage capacity and ET to reduce percolation rates. Evapotranspiration covers are a cheaper and more durable alternative and can potentially provide an array of other environmental and community benefits. One environmental benefit of ET covers is the potential to use the resultant biomass for bioenergy purposes. A major challenge for bioenergy is the realization of sufficient biomass feedstocks, which can be made available at low costs. ET covers can be part of the solution and function as a source of low cost biomass feedstock. The objective of this study is to designate landfills in southeastern Ontario that can potentially be used for ET cover projects and develop a GIS (Geographic Information System) to 'map' these potential landfills.