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Multi-Model Custodianship: Needs, Development and Challenges

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Abstract: In 2000, the province of Ontario, Canada, embarked on a Source Water Protection program with the objective of providing multi-level protection for drinking water supplies. This initiative was instigated by a tragedy in the town of Walkerton where multiple deaths resulted from ingestion of e-coli contaminated groundwater. As part of the Source Water Protection Program, numerous technically-sophisticated regional-scale hydrological models have been developed. As a result, local government agencies (municipal and conservation authority) have found themselves on a new pathway for water resources management that intends to utilize these numerical models as key tools for understanding and managing water supplies in Ontario.

The numerical models have been built at considerable cost to the public and have resulted in the collection, analysis and interpretation of a wealth of data, knowledge and information, all of which have been synthesized into an understanding of the flow systems across broad parts of the province. Given the rapid pace with which the Source Water Protection program was executed, there was little time and effort spent in planning for the longer term management of the numerical models that were prepared. As a result, the numerical models are at risk of becoming out-dated and orphaned as one-off modelling studies rather than being integrated into an ongoing water resources management system.

Through the Oak Ridges Moraine Groundwater program, a numerical model custodianship program has been developed to manage over fifty numerical models that cover a third of southern Ontario. The models have been built using a multitude of modelling platforms. In developing the custodianship program, a model management guidance manual has been prepared that addresses issues associated with model custodianship. The presentation will discuss some of the key issues involved in managing the models, including intellectual property, model sharing, model upgrading/refinement, legal and governance aspects. The paper highlights the important role public agencies must play to develop and maintain a cost-effective modelling plan when addressing the ongoing challenges involved with water resources management.

Keywords: Model Custodianship; Model Management; Participatory Modelling