

Seeking and climate sensitive watershed management in 2050

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Watersheds are ecosystems and should be managed at the ecosystem scale. However, the future is uncertain due to a range of influences like climate change, demographics, and economics. We cannot predict the future so we must manage adaptively. Globally and locally we need knowledge, tools and people to achieve that adaptive approach to management. A current effort ties together a global capacity development approach to watershed-based ecosystem management, and university classes that use an innovative tool developed by Minnesota DNR (i.e., the Watershed Health Assessment Framework or WHAF).

[The Adaptive Watershed \(TAW\)](#) is a capacity development program developed by the University of Minnesota and the International Institute for Sustainable Development. It is implemented in a 4-day workshop setting, drawing together stakeholders from a wide range of backgrounds, all with a common interest in a single watershed. The workshop consists of 14 modules. The first seven take participants through a series of steps that help them understand the watershed and its people. The next four advance informed decision making for watershed management. The final three help participants take an inclusive approach to management, and commit to future action.

The logic of TAW is brought home in upper level and graduate level water quality classes at the University. Students in groups of four use the WHAF to characterize a specific Minnesota watershed. Each group is then given scenarios intended to represent conditions that sub-basins in their watershed are expected to experience in 2050. The overall question posed is *What should the Board and Manager do in the next 3-5 years to be most ready to adapt to the conditions of 2050?*

Several lessons have emerged from the work to date. 1) Minnesota's WHAF tool is highly innovative, and is a rich resource for planning. 2) Traditional approaches to management planning seek to engage stakeholders and represent the breadth of their interests. However, that practice often fails to recognize or protect vulnerable communities; TAW explicitly addresses that. 3) Climate-sensitive planning traditionally predicts future climate conditions (e.g., mean temperature, precipitation) and uncertainty about those predictions. It is relatively rare and somewhat difficult to predict future extreme events, yet those extremes will control much of the perceived impact. 4) It is uncommon to include demographic and economic predictions in such scenarios.

Weaving together the international aspects of TAW, and the local aspects of the WHAF and university classes advance capacity for innovative, forward looking, climate-sensitive ecosystem management of Minnesota watersheds.

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