Groundwater Forum

Critical Issues

Background

- Groundwater often treated as “blackbox” however it represents 90 % of the available resource.
- Processes occur slowly but hard to reverse?
- Easily overlook “out of site out of mind”.
- Consequential effects on surface water.
- Pressures are land use intensification – quality
- Growing water demand.

Critical Issues facing RC's

1. How can water be effectively and sustainably allocated between competing users?
2. How can defensible groundwater quality targets be set to provide for environmental outcomes and desired landuse?

Optimising Allocation

- Constraint is often social- political and lack of understanding of system

  e.g., priority of use. competing needs in catchment. Energy generation, food production
- 2009 Critical Issue –Managing Primary Production Systems under increasing constrained inputs (Water, land, soil)
- Mechanisms for sustainable water management and efficiency and equity

Critical Allocation Issues

1. Developing allocation model/mechanisms that include economic , cultural and social well beings.
2. Tools for managing cumulative effects and direct effects stream depletion. Current simple analytical solutions based on assumptions and lack of data.
   - Reliance on numerical models
   - Time consuming and data hungry.

Critical Allocation Issues - cont

4. Understanding the effects allocation on groundwater quality.
5. Identifying opportunities to augment supply from artificial recharge in range of N.Z hydrological environments.
6. Characterising aquifer boundaries and flow within and between aquifer systems.

Towards groundwater Quality Targets

- Degradation of groundwater quality a long term threat
- Time lag recently appreciated
- Implications for surface water e.g. Lakes (Taupo & Rotorua Lakes)
- Lags and transformations complicate interpretation and predication.
- Research needed to set targets
- 2009 Identified Critical Issue – “Managing Primary Production Systems under increasing constrained inputs (Water, land, soil)”.

Critical Quality Issues

1. Development of decision support system (based on social and cultural, economic and environmental values) for groundwater quality targets.
   - Catchment approach then matched to desired landuse.
2. Development of predictive models for diffuse contaminate transport that accounts for time lags and transformations (including uncertainty).
3. Migration and attenuation of microbial pathways to protect water supplies. “Capture zones”.