



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003OR37B

Title: Discharge, source areas, and water ages of spring-fed streams and implications for water management in the McKenzie River basin

Project Type: Research

Focus Categories: Water Quantity, Surface Water, Hydrology

Keywords: water resources, springs, groundwater, discharge, McKenzie River

Start Date: 02/15/2003

End Date: 02/14/2004

Federal Funds Requested: \$14440.00

Matching Funds: \$28888.00

Congressional District: Oregon 5th

Principal Investigators: Grant, Gordon

Abstract: Long-term sustainable management of the McKenzie River requires an understanding of sources of water and discharge patterns from tributary streams. The McKenzie River receives water from two distinct geologic provinces: the High and Western Cascades. Preliminary analyses of seasonal and event-based hydrographs demonstrate that High Cascade streams contribute disproportionately to the maintenance of summer flow and cold stream temperatures. Most of this High Cascade water comes from springs fed by deep groundwater systems rather than shallow sub-surface flow, as in the Western Cascades. The dynamics of these springs, however, are poorly understood and the focus of this proposal. This project will combine field measurements of discharge with laboratory analysis of spring water isotopes to improve our understanding of spatial and temporal recharge and discharge patterns of spring-fed streams. We will concentrate our efforts on the largest springs, because they contribute the most flow to the McKenzie River, but will also examine smaller springs, which are important for understanding controls on flow volumes. Our findings will allow us to discuss how water resource management decisions in the McKenzie River basin should account for differences between High and Western Cascade discharge regimes and recharge processes.

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