

FY 2009 RESEARCH PROBLEM STATEMENT

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TITLE

Investigation of Culvert Design Changes based on Flow characteristics adjustments from Climate Change Scenarios

PROBLEM (Description of need)

Responsible culvert design requires knowledge and development of water resources for design of stream crossings. Flood characteristics of streams in Oregon are used to determine design flow rates for culvert sizing at stream crossings. Streams in Oregon may be influenced by climate change. Annual streamflow peaks often result from spring snowmelt and late summer storms, and as the distribution and timing of these events change, the timing, magnitude, frequency, and character of flooding will change as well.

PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

Use existing General Circulation Models (GCM) with 100 years of daily air temperature and precipitation. Use existing regional streamflow model to calculate recharge and runoff in Oregon using downscaled GCM results. Simultaneously, apply a simple +3 °C increase to minimum and maximum temperatures to existing surface-water models (i.e. Precipitation-Runoff Modeling System) to evaluate affects of climate change on water availability and changes in water balance in forested watersheds. Evaluate climate change flood characteristics related to culvert design specifications.

BENEFITS

Responsible and economical culvert design can only proceed with knowledge of flood peaks. Quantifying the timing, distribution and characteristics (snowmelt vs. rainfall) of flood peaks due to climate change will be assed with global climate change models.

CONTACT PERSON:

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