Assessing the Effects of Water Rights Purchases on Stream Temperature and Fish Habitat
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Background
- Warm stream temperatures and low flows limit native trout species in Nevada's Walker River
- Environmental water rights purchases are being considered to increase stream flow and improve habitat conditions
- Previous research has evaluated instream flow changes with water rights purchases

Objective
- Simulate stream temperatures in Nevada’s Walker River, incorporating water quality and fish habitat into water rights purchase decision-making

Methods
Modeling with Tennessee Valley Authority’s River Modeling System (RMSv4)
- Hourly, physically-based hydrodynamic and water quality model
- Modeling for two wet years (2010-2011)

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Study Site
- Walker River Basin ~2.6 M acres (Saxon et al. 2008)
- Historical habitat for Lahontan cutthroat trout

Hypotheses
- High stream temperatures coincide with low flows
- More streamflow increases thermal mass and reduces travel time to maintain colder stream temperatures
- Thermal variability exists, perhaps providing areas of thermal refuge
- Increasing streamflow will improve water quality and trout habitat

Potential Outcomes
- Identify reaches that are thermally suitable habitat for trout species
- Include water quality in water rights purchase decision-making
- Maximize instream flow allocations

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References