

## Basin Report: Truckee River

The Truckee River originates at Lake Tahoe in California and flows over 105 miles north and east into Nevada where it terminates in Pyramid Lake. The Truckee River is a major source of water for western Nevada including the cities of Reno and Sparks. Along with the Carson River, the Truckee River supplies irrigation water to Reclamation's Newlands Project for approximately 57,000 acres of cropland. The Truckee River is also an important recreation resource for residents in California and Nevada, providing boating, rafting, kayaking, fishing, hunting, and camping opportunities. All water in the Truckee River is fully appropriated with a Federal Water Master managing storage in the upper 6 feet of Lake Tahoe and the other 5 Truckee basin reservoirs in California. A new operations regime is proposed in the Truckee River Operating Agreement (TROA) which is expected to be implemented in a few years. TROA is anticipated to significantly improve water management in the Truckee River basin by allowing adaptive management of Truckee reservoirs.



## Future Changes in Climate and Hydrology

Reclamation's 2016 SECURE Water Act Report identifies climate challenges the Truckee River Basin could likely face:

- In the Truckee River Basin the temperature is projected to increase 5–6 °F over the 21st century.
- In the Truckee River Basin precipitation is projected to remain variable with increasing precipitation in the upper portion of the basin by 2070.
- In the Truckee River Basin warmer conditions are projected to transition wintertime snow into rain, decreasing April 1st snowpack and April–July runoff.

## Future Impacts for Water and Environmental Resources

These historical and projected climate changes have potential impacts for the basin:

- Reductions in runoff during the spring and early summer likely translate into water supply reductions for meeting irrigation demands, adversely impacting hydropower operations and increasing wintertime flood control challenges.
- Warmer conditions could result in increased fishery stress, increased electricity demand, increased water demands for instream ecosystems and thermoelectric power production and increased invasive species infestations.
- Increasing temperatures could impact Lake Tahoe's water quality because of increased nutrients from lake sediment which could produce long-lasting impacts on the food web for fish and wildlife.

## Truckee River Basin Water Resource Studies

Adequate and safe water supplies are fundamental to the health, economy and ecology of the United States and global climate change poses a significant challenge to the protection of these resources. Reclamation is taking a leading role in assessing risks to Western U.S. water resources and is dedicated to mitigate risks to ensure long-term water resource sustainability. To accomplish this, Reclamation initiated the Truckee River Basin Study under its WaterSMART program.

**Truckee River Basin Study:** Bureau of Reclamation, Truckee River Flood Management Project, Placer County Water Agency, Truckee Meadows Water Authority, and the Tahoe Regional Planning Agency partnered to conduct the Truckee River Basin Study to identify strategies to meet current and future water demands in the Basin.

### Moving Forward, Adaptation, and Coordination

Where opportunities exist, Reclamation has begun adaptation actions in response to climate stresses as well as land use, population growth, invasive species and others. These activities include extending water supplies, water conservation, hydropower production, planning for future operations and supporting rural water development. Specific examples of next steps for coordination and adaptation in the Truckee River Basin include:

- **Inclusion of the Carson River Basin** - Development of supply, demand, and infrastructure and operational conditions in the Carson Basin upstream of Lahontan Reservoir would benefit water users in this neighboring basin, including the Newlands Project. The refined understanding for the supplies available to the Newlands Project may also refine the understanding for how diversions from the Truckee River may change in the future.
- **Coupled groundwater/surface water model development** - Several communities in the Basin rely on groundwater as a primary water supply. These communities include those in the Lake Tahoe Basin, the California portion of the Truckee Basin, and the upstream Carson Basin. Necessarily, each of these communities would benefit from an improved understanding of how climate change may alter natural processes for groundwater recharge and storage.
- **Economics model for the Truckee Basin** - For communities that rely heavily upon recreational uses of water, such as snow-dependent or lake recreation, the application of a regional socioeconomics model may provide further clarification about the implications of climate change on the goals of each community.