Basin Report: Klamath River

The Klamath River originates in headwater streams of south-central Oregon, eventually flowing southwest through the Cascade Range and picking up runoff from the Shasta, Scott, Salmon and Trinity Rivers in California, before flowing to the Pacific Ocean.

Reclamation's Klamath Project provides irrigation water for approximately 210,000 acres of cropland and is an important recreation area for residents of northern California and southern Oregon, providing myriad boating, water skiing, fishing, hunting, camping and picnicking opportunities. Surplus water from the Trinity River is stored, regulated, and diverted through a system of dams, reservoirs, tunnels, and power plants into the Sacramento River, for use in water-deficient areas of California's Central Valley.

To protect these critical resources, Reclamation and stakeholders must continually evaluate and report on the risks and impacts of climate change and identify appropriate adaptation and mitigation strategies by utilizing the best available science.

Future Changes in Climate and Hydrology

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

- Climate projections indicate temperatures throughout the Klamath River Basin may increase by approximately 5–6 °F over the 21st century.
- In the Klamath River Basin precipitation is projected to remain variable with a slight increase across the basin by 2070.
- Warming is projected to change runoff timing, decreasing April 1st snowpack and April-July runoff in the Klamath River Basin.

Future Impacts for Water and Environmental Resources

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

- Spring and early summer runoff decreases likely translate into water supply reductions for meeting irrigation demands, adversely impacting hydropower operations and increasing wintertime flood control challenges.
- Warmer conditions might result in increased fishery stress, reduced salmon habitat, increased electricity demand, increased water demands for instream ecosystems, and increased likelihood of invasive species infestations.
- Water demands for endangered species and other fish and wildlife could increase due to increased air and water temperatures and runoff timing changes.

Klamath 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 mitigating risks to ensure long-term water resource sustainability. To accomplish this, Reclamation initiated the Klamath River Basin Study under its WaterSMART program.

- **Klamath River Basin Study:** Bureau of Reclamation, Oregon's Water Resources Department, and California's Department of Water Resources are partnering to conduct the Klamath River Basin Study to identify strategies to meet current and future water demands in the basin. The Klamath River Basin straddles the boundary between the states of California and Oregon and covers approximately 12,100 square miles. The basin originates east of the Cascade Mountain Range, Oregon, and extends southwest into California where the Klamath River flows into the Pacific Ocean. The Klamath River Basin has become a focal point for local, regional, and national discussions on water management and water scarcity due to imbalances between water supplies and demands.

  Employing broad stakeholder involvement, the Klamath Basin Study will accomplish the following objectives:

  - Evaluate supply and demand imbalances in the basin, which may be exacerbated by climate change;
  - Identify possible impacts to the basin's agricultural water requirements, hydroelectric facilities, recreational facilities, fish and wildlife habitats, flood control facilities, water storage and distribution facilities;
  - Develop both structural and non-structural adaptive strategies to balance supplies with demands.

  Stakeholder involvement in the study includes a broad spectrum of Klamath tribal governments, water user groups, agriculture associations, and environmental interests.

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 coordination and adaptation in the Klamath River Basin include:

- The Trinity River Fishery Restoration Program is appraising alternatives that would improve the current cold water transmission through the Lewiston Reservoir, therefore increasing the adaptability for future climate change stressors that may impact cold water yield to the reservoir from the drainage basin.