40 YEARS LATER

2018

Water Security in the West

Kristin Sleeper and Kaitlin Perkins

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Yakima River Basin

WATER SECURITY IN THE WEST

Introduction

The Yakima River Basin is a tributary of the broader Columbia River Basin, which spans through seven states and Canada before emptying into the Pacific Ocean. This region is the most productive agricultural area in Washington State and the largest producer of hops in the United States. Irrigation in the Yakima River Basin began in the mid-1800s when the land was taken from members of what is now the Confederated Tribes and Bands of the Yakama Nation.

Three Things You Should Know

i. The Yakima Basin Integrated Water Resource Management Plan is the third phase of the Yakima River Basin Water Enhancement Project. The Plan is a watershed-scale approach to ensure sustainable water supplies for people, farms, and fish.

ii. The Yakima River Basin stakeholders have competing demands, interests, and values, which set the stage for conflicts over water that are often controversial. These complex problems at the interface of people and nature require farmers, scientists, tribal members, federal agencies, the public, and decision makers to come together to build consensus, negotiate tradeoffs, and make decisions across a rapidly changing landscape.

iii. The water rights adjudication process is ongoing in the Yakima River Basin, with the final results expected this spring. The court is substantiating nearly 2,300 water rights for individual properties in 31 tributary watersheds, and for 27 major claimants including irrigation districts, cities, federal projects, and the Yakama Indian Nation.

Summary

- The Yakima River Basin Integrated Water Resource Management Plan (the Plan) has seven elements: Reservoir fish passage, structural and operational changes, enhanced water conservation, habitat/watershed protection and enhancement, groundwater storage, surface water storage, and market allocation (US Bureau of Reclamation 2012).
- The watershed is the ancestral home to the Yakama Nation, and members have a spiritual, cultural, and economic connection with the water, land, and fisheries. Tribes have historically had access to a wider range of the landscape for subsistence harvesting, and still retain the right to their traditional fishing grounds. This connection to the salmon and water set the stage for legal rights to in-stream flows for fish, which competes with irrigation needs (Montag et al 2014).
- The Yakima River Basin (YRB) is over-appropriated, and establishing who has priority water rights is critical to provide certainty for water users. The Yakima River Basin adjudication process is nearing completion after 40 years of negotiation to determine and confirm all surface water rights. The

adjudication prioritizes about 2,300 water rights in the basin and will decide how water is to be allocated during shortages.

- Like many agricultural regions in the United States, the Yakima River Basin faces water scarcity as drought periods intensify. Climate change is a major driver that directly impacts the agricultural sector economically and has increased tensions in the Yakima River Basin (Jenni et al 2014).
- Understanding issues at a watershed scale involves complexity, and the stakeholders relying on the Yakima River Basin for water have varying needs of the natural resources in the region. The Yakima River Basin Integrated Water Resource Plan works to incorporate these needs through stakeholder working groups, public forums, EIS processes, and feedback.
- The Yakima River Basin is impacted economically by climate change due to crop loss and uncertainty of water resources (Vano et al 2010). A cost-benefit analysis of the Yakima River Basin Integrated Water Resource Plan concluded that the projects proposed under the plan are more economically pragmatic when considered individually, and the irrigation benefits from water storage are reduced when considering their interdependence. The study also found that fish passage, while a small percentage of the cost, is responsible for a large portion of the economic benefit (Yoder et al 2017).

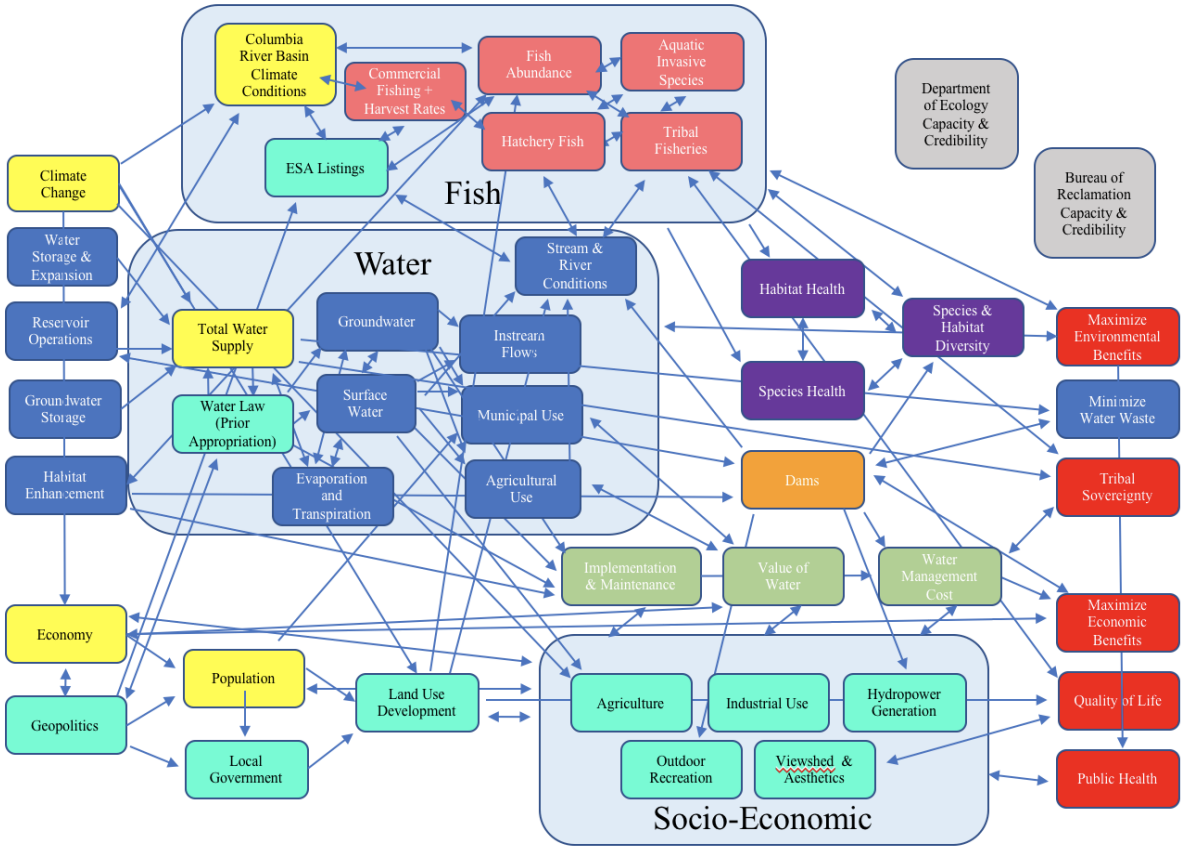

Figure 1. Concept map of the considerations, implications, and stakeholders of the Yakima River Basin Integrated Water Resource Management Plan (adapted from the USGS).

Stakeholder Snapshot

Water is the foundation of the economy in the YRB, and a myriad of stakeholders have been involved in the development of the Plan. The Yakima Basin Integrated Plan Workgroup has 24 members representing a wide range of private, local, tribal, state, federal, and environmental interests.

Bureau of Reclamation (BOR)

The US BOR has been involved with the YRB Water Enhancement Project since 1979, when Congress directed them to conduct a feasibility study. They have collaborated with several key groups, including the Washington State Department of Ecology and the Yakama Nation. The BOR operates the five major reservoirs within the basin to supply water to about 450,000 acres of irrigated land. BOR's goal is to meet the increasing water demands of the Pacific Northwest while protecting the environment and the public's investment.

Farmers and Ranchers

The YRB has the largest agricultural economy in the state. Cherries, apples, wine grapes, hops, corn, and hay are the top crops produced in the Basin, supporting the $4.5 billion agriculture industry. The Plan designed an agricultural water conservation program, which will conserve up to 170,000 acre-feet of water in good water years.

The Confederated Tribes and Bands of the Yakama Nation

The Yakama Nation were coerced into ceding 12 million acres of land to the federal government upon signing of the 1855 Treaty, and white settlers rapidly expanded irrigation practices thereafter. The US Bureau of Reclamation has worked with the Yakama Nation on the Water Resource Plan from the beginning, and their historic right to in-stream flows for fish carries heavy weight in the water adjudication process. Tensions still exist today between tribal members and non-tribal irrigators over water rights.

Residents of the Yakima River Basin

The basin has a population of nearly 400,000 people, and opinions about the Yakima River Basin Integrated Water Resource Plan vary. Municipal water use is a small fraction of overall consumption in the basin, however an important consideration as water quality factors into this use.

Environmental Non-Profits

Environmental groups such as the Sierra Club and Seattle Audubon Society have taken a strong position against the Yakima River Basin Integrated Water Resource Plan. This is primarily due to the construction of two new dams and subsequent flooding of old growth forest, which impacts species conservation.

Outdoor Recreationists

The Yakima River Basin boasts a blue-ribbon trout fishery, thousands of miles of trail systems, and hundreds of thousands of forested acres for hiking, camping, birding, berrying and other outdoor pursuits (Washington State Department of Ecology).

Interview Questions

i. What are your data needs? What information do you need to make better decisions?

ii. How have you communicated the cultural and spiritual significance of the land and fish to the other stakeholders?

iii. We have heard and read quite a bit about the dichotomy between fish and humans. What management strategies have you employed to balance competing demands and negotiate tradeoffs?

iv. How do you build resilience in rural areas and across Yakama Nation?

v. What are some of the barriers to developing a water market and what are you doing to address them?

vi. How and when does science enter the policy and decision-making process? Water law is based on the historical need for certainty, however, given rapid hydrologic change, what are some ways to incorporate flexibility into the legal framework?

References

Fisher, AH. The 1932 Handshake Agreement : Yakama Indian Treaty Rights and Forest Service Policy in the Pacific Northwest. Western Historical Quarterly, Vol . 28 , No . 2 (Summer, 1997), pp . 186-217 Published by : Oxford University Press Stable URL : http://www.jstor.org/stable/970893. 28, 186–217 (2018).

Hand, B. K. et al. A social–ecological perspective for riverscape management in the Columbia River Basin. Front. Ecol. Environ. 16, S23–S33 (2018).

Hatten, J. R., Waste, S. M. & Maule, A. G. Assessing climate-change risks to cultural and natural resources in the Yakima River Basin, Washington, USA. Clim. Change 124, 363–370 (2014).

Healy, D. Yakama Nation History. Available at: http://www.yakamanation-nsn.gov/history3.php. (Accessed: 11th March 2018).

Jenni, K. et al. Identifying stakeholder-relevant climate change impacts: A case study in the Yakima River Basin, Washington, USA. Clim. Change 124, 371–384 (2014).

Kent, C. A. Water resource planning in the Yakima River Basin: development vs. sustainability. Yearb. Assoc. Pacific Coast Geogr. 66, 27 (2004).

Miles, E. L., Snover, A. K., Hamlet, A. F., Callahan, B. & Fluharty, D. Pacific Northwest Regional Assessment: The Impacts of Climate Variability and Climate Change on the Water Resources of the Columbia River Basin. JAWRA J. Am. Water Resour. Assoc. 36, 399–420 (2000).

Montag, J. M. et al. Climate change and Yakama Nation tribal well-being. Clim. Change 124, 385–398 (2014).

U.S. Bureau of Reclamation. Yakima River Basin Integrated Water Resource Management Plan: Framework for Implementation Report. (2012). Available at: https://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/plan/framework.pdf. (Accessed: 11th March 2018).

U.S. Geologic Survey. Effects of climate change on aquatic ecosystem & associated social & economic considerations in the Yakima River Basin. Available at: http://slideplayer.com/slide/4845963/. (Accessed: 11th March 2018).

Vano, J. A. et al. Climate change impacts on water management and irrigated agriculture in the Yakima River Basin, Washington, USA. Clim. Change 102, 287–317 (2010).

Washington State Department of Ecology. Office of the Columbia River. Yakima Basin Integrated Plan Videos. Available at: https://waecy.maps.arcgis.com/apps/MapSeries/index.html?appid=01dba1c63e004ef9b3f43ed0841c7ead. (Accessed: 11th March 2018).

Washington State Department of Ecology. Office of the4 Columbia River. Water for People, Farms, and Fish. Available at: https://waecy.maps.arcgis.com/apps/MapSeries/index.html?appid=2d43dd9b743346729897a4841b40f5d7. (Accessed: 11th March 2018).

Yakima River Basin Water Enhancement Project Timeline Adjudication Began 1977 YRBWEP Phase I - Early Implementation. (2010). https://www.usbr.gov/pn/programs/yrbwep/reports/timeline.pdf

Yakama Nation. Climate Adaptation Plan for the Territories of the Yakama Nation. (2016). Cascadia Consulting Group, SAH Ecologia LLC, University of Washington Climate Impacts Group. http://www.critfc.org/wp-content/uploads/2016/05/Yakama-Nation-Climate-Adaptation-Plan-.pdf

Yoder, J. et al. Benefit-Cost Analysis of Integrated Water Resource Management: Accounting for Interdependence in the Yakima Basin Integrated Plan. JAWRA J. Am. Water Resour. Assoc. 53, 456–477 (2017).