

# **Appendix F**

# **Klamath Basin Report**



# 1 Basin Description

The Klamath River originates in southern Oregon and flows through northern California entering the Pacific Ocean at Requa in Del Norte County, California. Forty-four percent of the 12,680 square mile watershed lies within the boundaries of Oregon while the remaining lies across the state line within the boundaries of California.

The Klamath River basin is of vital economic and cultural importance to the states of Oregon and California, as well as the Klamath Tribes in Oregon; the Hoopa, Karuk, and Yurok tribes in California; the Quartz Valley Indian Reservation in California, and the Resighini Rancheria in California. It provides fertile lands for a rich agricultural economy in the upper basin. Irrigation facilities known as the Klamath Project owned by the U.S. Bureau of Reclamation support this economy as well as hydroelectric power provided via a system of five dams operated by PacifiCorp. Historically, the basin once supported vast spawning and rearing fishery habitat with cultural significance to the local Indian tribes. The watershed supports an active recreational industry, including activities that are specific to the wild and scenic portions of the river designated by both the states and federal governments in Oregon and California. Finally, the watershed continues to support what were once historically significant mining and timber industries.

**Table F-1: 2011 Land use and land cover for each subbasin in the Klamath.**

Subbasin	Watershed Area (km <sup>2</sup> )	% Urban/Roads	% Forest	% Cultivated	% Range/Forest Disturbance	%Other
Butte	29020	0.0	88.0	0.0	11.2	0.8
Lost	3378159	3.3	31.2	23.9	38.8	2.8
Lower Klamath	92	7.8	56.7	0.0	35.2	0.0
Sprague	4170912	0.4	53.1	2.3	39.9	4.3
Upper Klamath	1479907	1.2	65.1	0.1	32.1	1.5
Upper Klamath Lake	1875152	1.8	55.2	13.0	8.2	21.8
Williamson	3725826	0.8	63.2	1.7	24.7	9.6

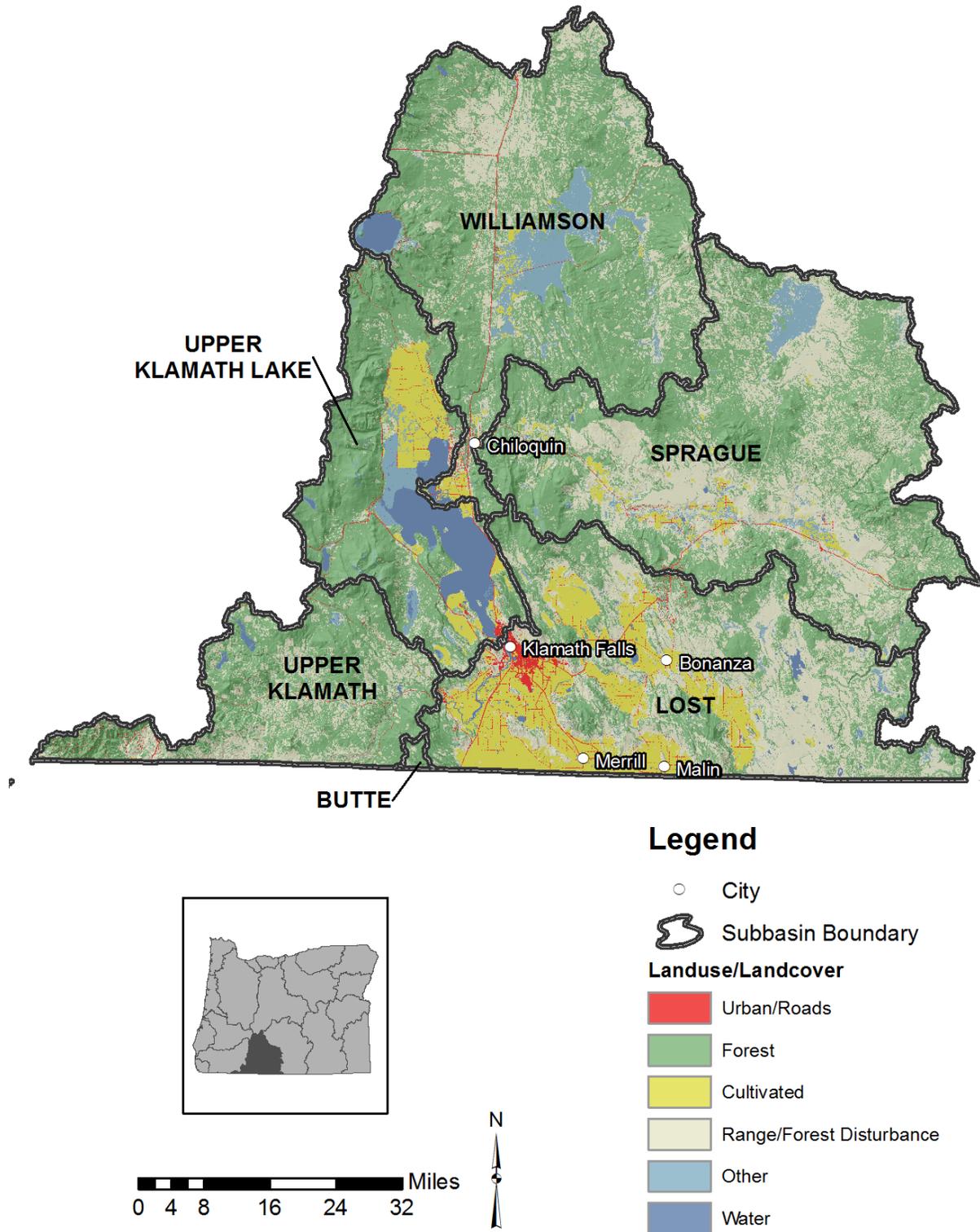


Figure F-1: Landuse in the the Klamath administrative basin.

## 1.1 Basin Contacts

**Table F-2: Oregon DEQ basin contact.**

Administrative Area	DEQ Basin Coordinator
Klamath	Mike Hiatt: 541-273-7022: <a href="mailto:hiatt.mike@deq.state.or.us">hiatt.mike@deq.state.or.us</a>

# 2 Water Quality Impairments and TMDLs

## 2.1 Water Quality Impaired Stream Segments

Under section 303(d) of the Clean Water Act, states, territories and authorized tribes must submit lists of impaired waters. Impaired waters are those that do not attain water quality standards or support all designated uses. The law requires that states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. Table F-3 identifies the number of Klamath Basin waterbody segments impaired by parameter from the 2012 Integrated Report and the number of segments with approved TMDLs. Sources: [ODEQ](#), [USEPA](#)

**Table F-3: Number of impaired stream segments with and without a TMDL as identified in Oregon's 2012 Integrated Report and Assessment database**

Parameter	Segments without a TMDL	Segments with a TMDL
Ammonia	5	0
Aquatic Weeds Or Algae	4	4
Arsenic	3	0
Biological Criteria	4	0
Chlorophyll a	5	4
Dissolved Oxygen	12	5
E. Coli	3	0
pH	9	5
Sedimentation	4	0
Temperature	24	24

## 2.2 Total Maximum Daily Load Watershed Plans

The federal Clean Water Act requires that water pollutant reduction plans, called Total Maximum Daily Loads (TMDLs), be developed for water bodies that are listed in Category 5 of the Integrated Report (303(d) List). TMDLs describe the maximum amount of pollutants that can enter the river or stream and still meet water quality standards.

TMDLs take into account the pollution from major sources including discharges from industry and sewage treatment facilities, runoff from farms, forests and urban areas, and natural sources. TMDLs include a margin of safety to account for uncertainty, and may include a reserve capacity that allows for

future discharges to a river or stream. DEQ typically develops TMDLs on a watershed, subbasin, or basin level and occasionally at the reach level depending on the type and extent of impairments.

The Water Quality Management Plan (WQMP) is the framework for TMDL implementation that is issued by Oregon along with the TMDL (Oregon Administrative Rules 340-042-0040(1)). The TMDL and WQMP serve as a multi-sector plan and provides the blueprint for TMDL related implementation activities. Table F-4 lists the TMDLs that have been approved in the Klamath Basin.

**Table F-4: Approved TMDLs in the Klamath Basin and the impairments addressed by those TMDLs.**

TMDL Document Name	Impairments Addressed
Upper Klamath and Lost River Subbasin TMDL and WQMP	Ammonia, Chlorophyll a, Dissolved Oxygen, pH
Upper Klamath Lake Drainage TMDL and WQMP	Chlorophyll a, Dissolved Oxygen, pH, Temperature

## 3 Implementation Highlights

### 3.1 Section 319 Grants

Federal Section 319(h) funds are provided annually through the EPA to states for the development and implementation of each state’s Nonpoint Source Management Program. In Oregon a portion of 319 grant funding is “passed through” to support community or partner projects that address Oregon’s nonpoint source program priorities. Generally, DEQ requires grantees to report annually on the progress made implementing their grant project. This section highlights those outputs and accomplishments reported to DEQ in 2017. Note this section does not identify or include projects proposed and awarded a grant in 2017. Outputs and accomplishments for those projects will be reported to DEQ in future years once they have been implemented. For a listing of projects proposed and awarded a grant in 2017 see Section 3.6.2 of the main report.

In 2017 there were no 319 projects with reported outputs in the Klamath.

### 3.2 Clean Water State Revolving Fund (CWSRF)

The Clean Water State Revolving Fund loan program provides below market rate loans to public agencies for the planning, design and construction of various projects that prevent or mitigate water pollution. Eligible agencies include federally recognized Indian tribal governments, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and intergovernmental entities. DEQ partners with Oregon communities to implement projects that attain and maintain water quality standards, and are necessary to protect beneficial uses. This section highlights the ongoing projects and the outputs and accomplishments reported to DEQ in 2017.

In 2017 there were no nonpoint source related Clean Water State Revolving Fund projects with reported outputs in the Klamath.

### 3.3 Source Water Protection Grants

The Oregon Health Authority regulates drinking water under state law and the Safe Drinking Water Act and works cooperatively with DEQ on source water protection efforts. Using the Drinking Water Revolving Loan Fund, OHA funds Source Water Protection Grants (up to \$30,000 per public water system) for source water protection activities, monitoring, and planning in Drinking Water Source Areas. In addition, loans are available for improving drinking water treatment, source water protection activities, or land acquisition in source areas. Oregon's Infrastructure Finance Authority is responsible for administering these projects. The loan fund set-asides also fund five Drinking Water Protection positions at DEQ that provide technical assistance to public water systems and communities while they develop and implement strategies that reduce the risk within the delineated source water areas. This section highlights the ongoing projects and the outputs and accomplishments reported to DEQ in 2017.

In 2017 there were no nonpoint source related Safe Drinking Water State Revolving Fund projects with reported outputs in the Klamath.

### 3.4 Drinking Water Provider Partnership Grants

Oregon DEQ participates in the Drinking Water Providers Partnership (DWPP) with USDA Forest Service Region 6, EPA Region 10, the U.S. Bureau of Land Management OR/WA Office, the Washington Department of Health, Geos Institute and WildEarth Guardians. Together, these partners coordinate a competitive grant solicitation and award program for environmental conservation and restoration projects in municipal watersheds across the Northwest. The Drinking Water Providers Partnership made the first of the annual awards in 2016 and most projects have a focus on nonpoint sources of pollution. The goal of the Partnership and the funding is to develop and support local partnerships to restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them. This section highlights the ongoing projects and the outputs and accomplishments reported to the DWPP in 2017.

In 2017 there were no active Drinking Water Providers Partnership projects with reported outputs in the Klamath.

### 3.5 OWEB Grant Funded Projects

The Oregon Watershed Enhancement Board (OWEB) is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands, and natural areas. These grant projects often address nonpoint sources of pollution and are thus included in this report.

Based on the most recent data available in OWEB's Oregon Watershed Restoration Inventory (OWRI) database, there were 23 OWEB funded projects completed in 2016 with a total cash and inkind budget of \$2,567,763. The bar graph in Figure F-2 shows the total cash and inkind budget for the different project types in each Klamath subbasin. Table F-5 describes the projects and the reported outputs.

Learn more about OWEB grant programs at <https://www.oregon.gov/OWEB/grants/Pages/grant-programs.aspx>.

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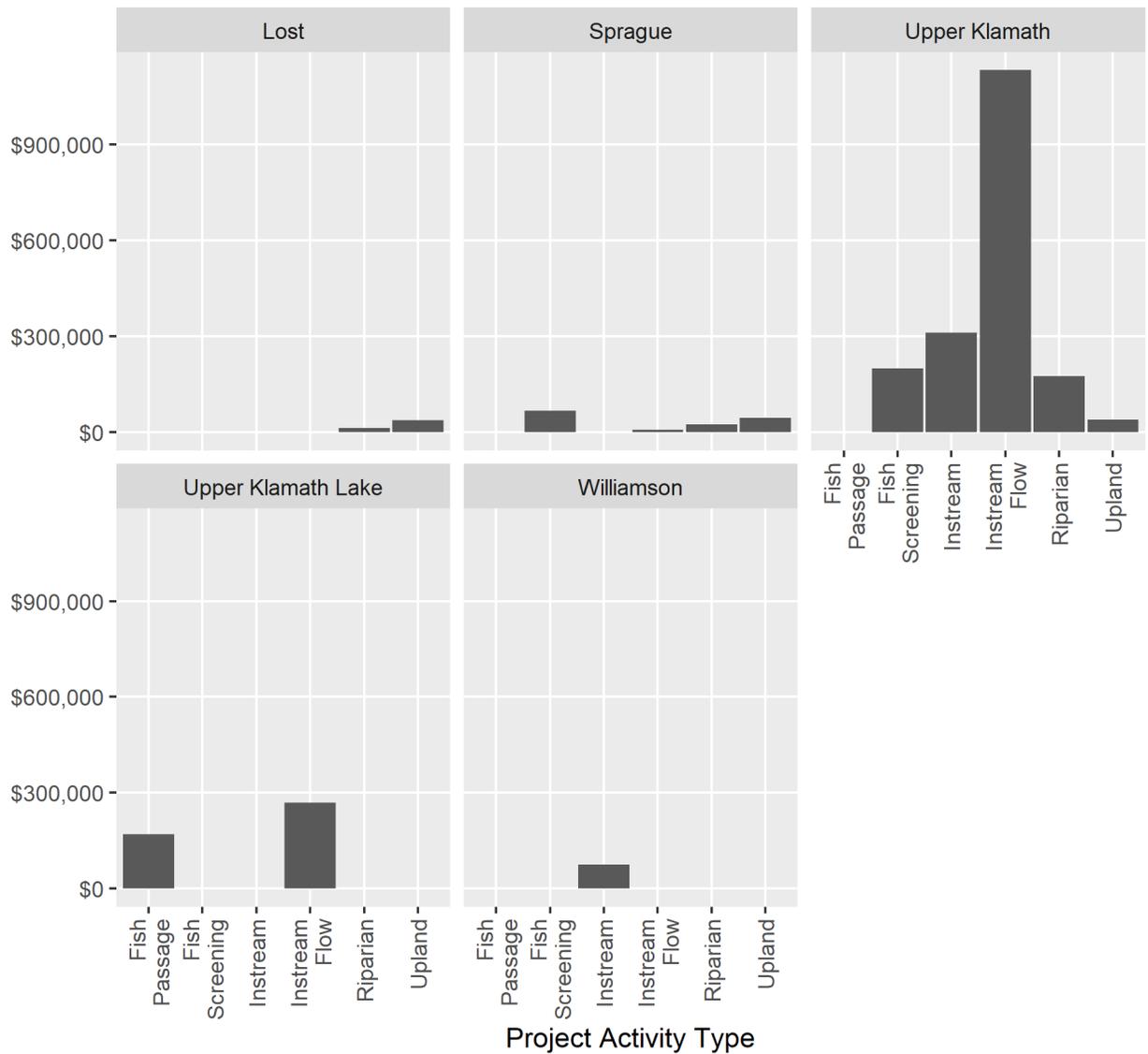


Figure F-2: Cash and in-kind dollars spent in each subbasin for different project types completed in 2016, the most recent year data is available in OWEB's OWRI database.

Table F-5: OWEB grant funded projects completed in 2016, the most recent year data is available in the OWEB OWRI database.

Subbasin	Project Name	Project Type	Project Description	Participants	Reported Outputs
Lost	Tosti Lost River Streambank Protection	Riparian	Riparian fencing; Riparian shrubs or herbaceous vegetation planted/reseeded; Debris/structures removal to allow riparian vegetation growth	Klamath Watershed Partnership, OWEB, Private Landowners	0.15 linear stream miles treated (riparian activities), 1 acre treated (riparian activities)

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Subbasin	Project Name	Project Type	Project Description	Participants	Reported Outputs
Lost	Fairclo Juniper Removal	Upland	Upland treated for juniper by clearing, burning, thinning, or removal	Klamath Watershed Partnership, OWEB, Private Landowners, volunteers: Klamath Falls veterans support network	45 acres treated (upland activities)
Lost	Lost River Barrett	Upland	Upland shrubs or herbaceous vegetation planted/reseeded; Upland treated for juniper by clearing, burning, thinning, or removal	Barrett Livestock, Klamath Watershed Partnership, OWEB	133 acres treated (upland activities)
Sprague	Wayne Ranch Fish Screen	Fish Screening	Existing fish screens replaced, repaired, or modified	OWEB, Private Landowners, Trout Unlimited, USFWS	15 flow rate of water diverted by screens
Sprague	Upper Klamath Basin Water Lease Program	Instream Flow	Instream water right transferred / leased	OWEB, Private Landowners, Trout Unlimited	0.5 stream miles protected for adequate flow, 0.75 water flow acquired
Sprague	Hidden Acres Riparian Habitat	Riparian	Riparian trees planted: hardwood; Riparian shrubs or herbaceous vegetation planted/reseeded	Klamath Tribes, Klamath Watershed Partnership, OWEB, Private Landowners, Trout Unlimited, USFWS	1 linear stream mile treated (riparian activities), 4 acres treated (riparian activities)

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Subbasin	Project Name	Project Type	Project Description	Participants	Reported Outputs
Sprague	Snake Creek Fencing and Off-Stream Watering Project	Riparian, Upland	Riparian fencing; Riparian trees planted: hardwood; Off-channel watering sites developed; Upland fencing; Upland trees planted; Water/sediment control basins installed	Klamath Watershed Partnership, OWEB, Private Landowners	1.7 linear stream miles treated (riparian activities), 100 acres treated (riparian activities), 200 acres treated (upland activities)
Upper Klamath	Deming Creek Flow Restoration	Instream Flow	Instream water right transferred / leased	Deming Land and Cattle, National Fish and Wildlife Foundation, ODFW, OWEB, Trout Unlimited	9.4 stream miles protected for adequate flow, 13.35 water flow acquired
Upper Klamath	Developing Water Transactions in the Klamath	Instream Flow	Instream water right transferred / leased	National Fish and Wildlife Foundation, OWEB, Private Landowners, Ranch and Range Consulting	1.3 water flow acquired, 1.68 stream miles protected for adequate flow
Upper Klamath	Developing Water Transactions in the Klamath	Instream Flow	Instream water right transferred / leased	National Fish and Wildlife Foundation, OWEB, Private Landowners, Ranch and Range Consulting	1.05 water flow acquired, 7.3 stream miles protected for adequate flow
Upper Klamath	Upper Klamath Basin Water Lease Program	Instream Flow	Instream water right transferred / leased	OWEB, Private Landowners, Trout Unlimited	0.5 stream miles protected for adequate flow, 0.92 water flow acquired

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Subbasin	Project Name	Project Type	Project Description	Participants	Reported Outputs
Upper Klamath	Sun Creek Historic Channel Reconnection	Instream, Fish Screening, Riparian	Main stream channel modified / created; Riparian fencing; Riparian shrubs or herbaceous vegetation planted/reseeded; New fish screens installed on diversions (where no screen had existed previously)	National Fish and Wildlife Foundation, OWEB, Private Landowners, Trout Unlimited, USFS, USFWS, Western Native Trout Initiative	2 miles of stream treated (instream activities), 15.5 flow rate of water diverted by screens, 70 acres treated (riparian activities), 1.25 linear stream miles treated (riparian activities)
Upper Klamath	Boersma Ditch Piping Phase II	Upland	Irrigation system improved: converted from dirt ditch to pipeline delivery	Horsefly Irrigation District, Klamath SWCD, OWEB, Private Landowners	0.5 acres treated (upland activities)
Upper Klamath	Graves WQ Fencing Project	Upland	Upland fencing	Klamath SWCD, OWEB, Private Landowners	2 acres treated (upland activities)
Upper Klamath	Shasta Ditch Piping West	Upland	Irrigation system improved: converted from dirt ditch to pipeline delivery	Klamath SWCD, OWEB, Private Landowners	1 acre treated (upland activities)
Upper Klamath	Shasta Way Ditch Piping East	Upland	Irrigation system improved: converted from dirt ditch to pipeline delivery	Klamath SWCD, OWEB, Private Landowners	1 acre treated (upland activities)

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Subbasin	Project Name	Project Type	Project Description	Participants	Reported Outputs
Upper Klamath Lake	Sevenmile Creek Culvert Removal	Fish Passage	Culverts/structures/fords replaced with bridges	7 Mile Creek Ranch, NRCS, OWEB, Trout Unlimited, USFWS	1 road/stream crossing improved for fish passage, 11.5 miles of fish habitat made accessible due to road/stream crossing improvements (e.g. improvement or removal of culverts and other structures), 11.5 miles of habitat opened-previously inaccessible for both adults and juveniles
Upper Klamath Lake	Ausaymas Cattle Company and Hawkins Cattle Company Klamath off-project water lease	Instream Flow	Instream water right transferred / leased	Ausaymas Cattle Company and Hawkins Cattle Company, National Fish and Wildlife Foundation, OWEB, Ranch and Range Consulting	8.16 stream miles protected for adequate flow, 18.9 water flow acquired
Upper Klamath Lake	Harlowe Ranch LLC Klamath off-project water lease	Instream Flow	Instream water right transferred / leased	Harlowe Ranch LLC, National Fish and Wildlife Foundation, OWEB, Ranch and Range Consulting	17.63 water flow acquired, 8.16 stream miles protected for adequate flow

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Subbasin	Project Name	Project Type	Project Description	Participants	Reported Outputs
Upper Klamath Lake	Hawkins Cattle Company Klamath off-project water lease	Instream Flow	Instream water right transferred / leased	Hawkins Cattle Company, National Fish and Wildlife Foundation, OWEB, Ranch and Range Consulting	8.16 stream miles protected for adequate flow, 5.08 water flow acquired
Upper Klamath Lake	Owens and Hawkins Klamath off-project water lease	Instream Flow	Instream water right transferred / leased	National Fish and Wildlife Foundation, OWEB, Private Landowners, Ranch and Range Consulting	13.03 stream miles protected for adequate flow, 0.62 water flow acquired
Upper Klamath Lake	Upper Klamath Basin Comprehensive Agreement - Deming Creek Ranches, South Fork Sprague	Instream Flow	Instream water right transferred / leased	Deming Ranches, Klamath Basin Rangeland Trust, National Fish and Wildlife Foundation, OWEB	7.8 stream miles protected for adequate flow
Williamson	Upper Williamson River Habitat Enhancement	Instream	Large wood placed	OWEB, Trout Unlimited, USFS	30 pools expected to be created by channel structure placement treatments, 60 habitat structures placed in channel, 3 miles of stream treated (instream activities)