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Confederated Tribes of the Warm Springs Reservation of Oregon

Memorandum

To: Deschutes County Commission

From: Chad Croft, PGE Project Manager
Jim Manion, General Manager, Warm Springs Power & Water Enterprises
Megan Hill, PGE Fisheries & Water Quality Manager

Date: October 19, 2015

RE: Pelton Round Butte Hydroelectric Project Update

Summary:

The Federal Energy Regulatory Commission (FERC) issued a new license to Portland General Electric (PGE) and the Confederated Tribes of the Warm Springs (CTWS) Reservation of Oregon for operation of the three-dam, 502-megawatt Pelton Round Butte Hydroelectric Project in 2005. Since then, the co-licensees have made significant progress implementing the terms of the license while complying with state, tribal and federal regulatory requirements.

With respect to the signature initiative stemming from the relicensing process, PGE and CTWS have successfully constructed a system allowing passage of salmon and steelhead around the project for the first time since the early 1960s. Working with local partners, the co-licensees are engaged in an ongoing, long-term, science-based effort to promote successful reintroduction of healthy migratory fish runs by restoring habitat and improving water quality in the Deschutes River basin.

These efforts reflect a commitment to management of the project in a manner that supports the environmental health of the basin while balancing multiple beneficial uses of the resource, including power generation, agriculture, municipal water supplies, fisheries and recreation.

Background:

Deschutes County was one of 22 signers of a relicensing agreement reached with PGE and the CTWS in 2004. The relicensing agreement was the culmination of a collaborative process that included years of research and many months of careful negotiation among the Pelton Round Butte co-owners and numerous local, state and federal agencies as well as non-governmental advocacy organizations. The goal of this process was to identify issues needing to be addressed as the co-owners petitioned FERC for a new license. Reaching agreement among diverse river interests benefited the region while reducing the potential for conflicts characteristic of fish and habitat recovery efforts in other river basins. The relicensing agreement was incorporated into the terms of the new FERC license the next year.

License implementation:

The single largest change required by the relicensing agreement at the Pelton Round Butte project was the construction of the Selective Water Withdrawal (SWW) Tower, which PGE and the CTWS completed in December 2009. The SWW achieves two key requirements of the new FERC license: It allows migratory fish to pass downstream from Lake Billy Chinook by creating surface currents fish can follow to a collection facility at Round Butte Dam, and it allows the project operator to mix reservoir surface and bottom water in the power intake in order to manage water temperatures in the river immediately below the project.

In addition to the SWW and other physical improvements to facilitate fish passage at the project, the relicensing agreement called for creation of a fund to facilitate habitat and water quality improvement projects in the Deschutes Basin. The resulting Pelton Fund was created by PGE and CTWS, with a commitment of more than $21 million to fund projects over the life of the 50-year license.

Results:

Fish passage and restoration: The SWW began collecting migratory fish within hours of being activated in late 2009, and has since facilitated downstream passage of more than 680,000 salmon and steelhead smolts with an average survival rate through the SWW of between 97.9 and 99 percent, exceeding regulatory minimums. PGE and CTWS continue to study the efficiency with which fish are able to navigate currents in Lake Billy Chinook to enter the SWW fish collection facility, and to look for strategies to increase the number of fish collected.

Adult salmon and steelhead have been returning to the project since 2011. In consultation with the Oregon Department of Fish & Wildlife and the CTWS Branch of Natural Resources, PGE and CTWS began transporting returning fish and releasing them above Round Butte Dam in 2012. Since then, a total of more than 830 fish originally released as fry in the upper Deschutes Basin have completed their round trip journey to the ocean and back, with upstream spawning confirmed for all three species – Chinook, sockeye and steelhead. Adult salmon and steelhead are located throughout the basin. For example, Chinook and sockeye have been detected upstream of Camp Sherman in the Metolius River and steelhead have been detected near Bowman Dam on the Crooked River. On average, steelhead returns have been strong while Chinook and sockeye returns have been low. Ongoing research is underway to evaluate possible causes and potential strategies to increase those returns.

Temperature management: The temperature profile targeted with the new capacity created by the SWW is governed by water quality certificates issued by the Oregon Department of Environmental Quality and the CTWS Water Control Board, and requires PGE and CTWS Power & Water Enterprises to manage temperatures immediately below the project to approximate those that would be expected at that point in the river if the three dams were not there. PGE and CTWS use a daily calculation based on rolling average temperature measurements of the three tributaries entering Lake Billy Chinook and a rolling average of ambient temperatures at the Redmond airport to set target water temperatures. The project operators cannot diverge from this protocol without direction from their regulators, but remain in close contact with the regulatory agencies as well as a committee made up of signers to the relicensing agreement to seek input and provide updates on water quality and fish restoration issues including temperature regulation.

Habitat restoration and water quality: As described in Attachments 5 and 6 at the back of this document, PGE and CTWS have issued grants through the Pelton Fund totaling nearly $11 million across dozens of projects pursued by multiple organizations – including irrigation districts, soil and water conservation districts, government agencies, and non-profit entities – to support water quality improvement, fish passage projects and restoration of habitat necessary for the successful reintroduction of migratory fish runs. Pelton Fund grants typically serve as seed money to help create packages that combine multiple sources of funding, with the result that projects with Pelton Fund grants so far have achieved total support exceeding $60 million in the Deschutes basin.

Issues of concern:

It's important to note that the key initiative associated with relicensing – the reintroduction of migratory fish runs to the upper Deschutes Basin – is a long term effort that is in many respects without precedent. To date hundreds of fish that could not have made this journey before 2009 have now done so, and the resulting spawning in the tributaries above Lake Billy Chinook is a promising start. That said, we're a long way from having sustainable, harvestable runs of Chinook, sockeye and steelhead above the dams. That remains our goal, but we expect achieving the goal to take many years if not decades.

In addition, our path to achieving the relicensing agreement goals is part of a much larger and more complex picture of watershed health in the Deschutes Basin, subject to many influences beyond the co-licensees' control, including nutrient loads tied to upstream human activity, drought conditions, extreme weather events and more.

Within that context we and others have observed various issues of concern in the reintroduction effort and the larger environment of the river. Adult fish returns so far are promising, but we'd like to see greater numbers. Percentages of fish released as fry in the tributaries that have found their way to the SWW for collection and downstream passage are not as high as we'd like. And some anglers have expressed concern with observed changes in insect hatches and algal blooms in the Lower Deschutes, as well as questions regarding the impact of our temperature management efforts on the lower river during hot weather events.

Research and analysis:

PGE and the CTWS remain committed to careful scientific monitoring, data collection and analysis to help understand and, where appropriate, address the issues noted above. The Deschutes is a beloved and iconic river as well as a critical environmental and economic resource for central Oregon. The project co-owners share that perspective and understand the importance of the river to surrounding communities and people throughout Oregon and the northwest.

Attachment #4 offers a list of current and recent research projects undertaken by PGE, CTWS and various partner agencies. These include, in particular, a two year study intended to help address questions around algae growth in the larger context of overall water quality in the reservoirs and the lower river. We are also in the final stages of a multi-year macroinvertebrate study to better understand insect populations on the river and the factors that influence their timing and health.

Adaptive management:

Because the work PGE, CTWS and their partner agencies and organizations are doing on the Deschutes is innovative in so many ways, it's important that we remain flexible, keeping our eye on

the long term goals of protecting fish and water quality while maintaining our ability to generate power and continue other beneficial uses of the river.

We do this through application of a concept called adaptive management, which recognizes that we didn't start this effort knowing all the answers. We based our initial efforts on the best science, engineering and collaborative goal setting we could mobilize, and we're still doing that now, by continuing to conduct rigorous scientific monitoring and analysis and reviewing our operations and fish reintroduction efforts regularly with our regulatory agencies and with numerous stakeholder agencies and organizations.

Examples of how this has worked include adaptations we've made, with our regulators' approval, to the temperature management protocols we use in setting target water temperatures at the project outflow. We've done this in order to do a better job of achieving the intended goals set forth in our license of matching temperatures to those that would be expected if our project dams weren't there.

The water quality and insect studies we're conducting will be used in this same process to inform decisions about what, if any, changes we can or should make in our operations to promote the long-term success of fish passage and improve water quality in the river.

Looking forward:

As noted above, PGE and CTWS have made a long term commitment to responsible operation of the Pelton Round Butte Hydroelectric Project. We recognize that while the project offers direct benefits to customers of PGE and Tribal members, it also plays a larger role in the environment and economy of central Oregon. The relicensing process we completed a decade ago was based on that big picture understanding of our role as stewards of the project with an important influence on the health of the Deschutes River and the salmon and steelhead that are such an integral part of the region's identity. Reflective of PGE's stewardship, we were recently advised of project recertification by the Low Impact Hydro Institute (LIHI), whose certification process assesses protection of ecosystem qualities (e.g., river flows, water quality, fish and wildlife) as well as meeting recreation and cultural preservation needs.

We remain dedicated to a collaborative approach to fulfilling our obligations and engaging partners like Deschutes County as well as other governmental and non-governmental stakeholders throughout the region to achieve and support common goals and values to our mutual benefit.

If members of the commission or county staff have questions or need more information regarding the Pelton Round Butte Project, or regarding PGE and CTWS operations and initiatives, we encourage you to contact us.

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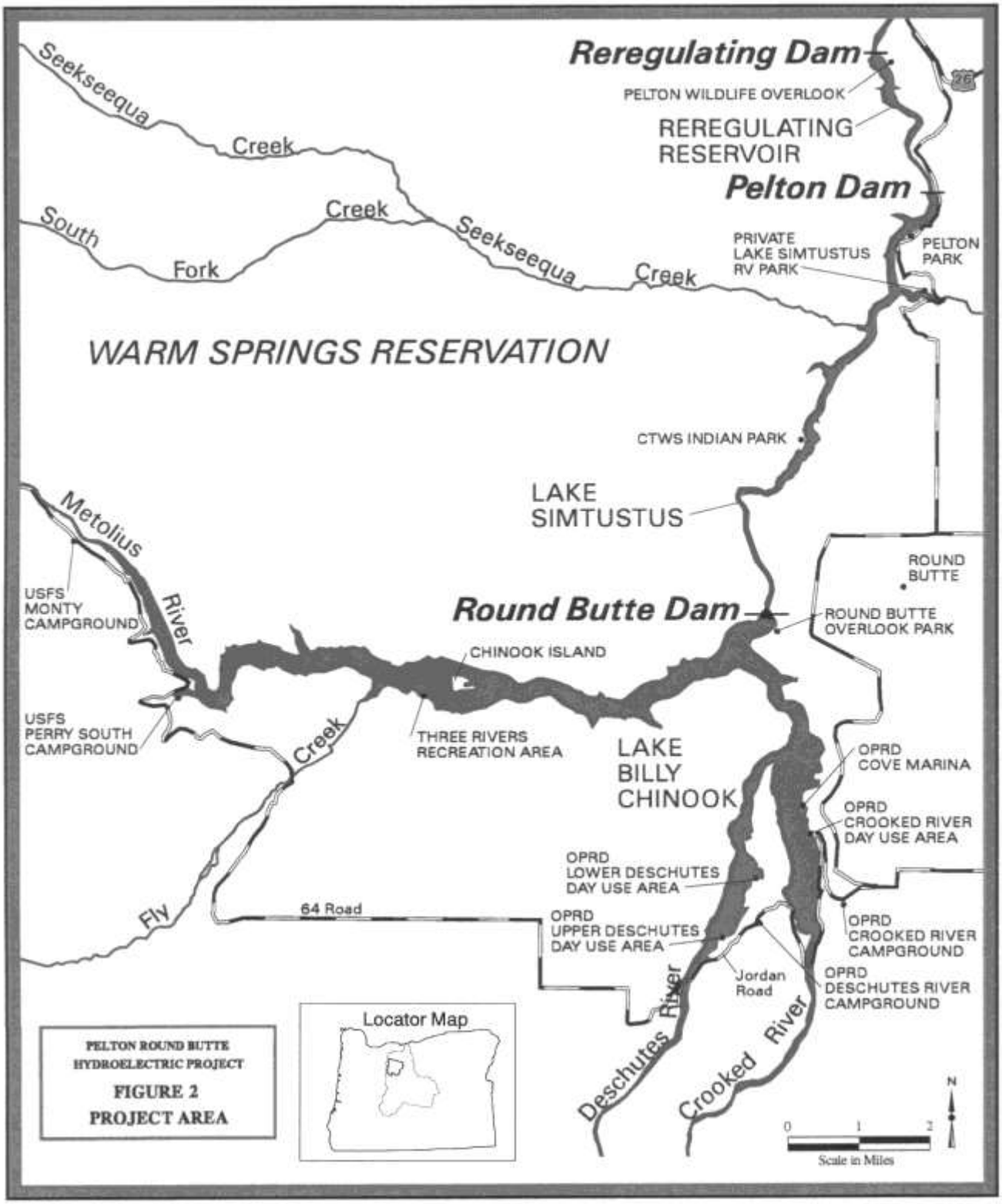
List of attachments:

- Pelton Round Butte Project map
- Pelton Round Butte Project facts
- SWW illustration
- List of current research projects
- List of Pelton Fund projects
- Map of Pelton Fund projects
- Tables showing total downstream fish passage and returns to date

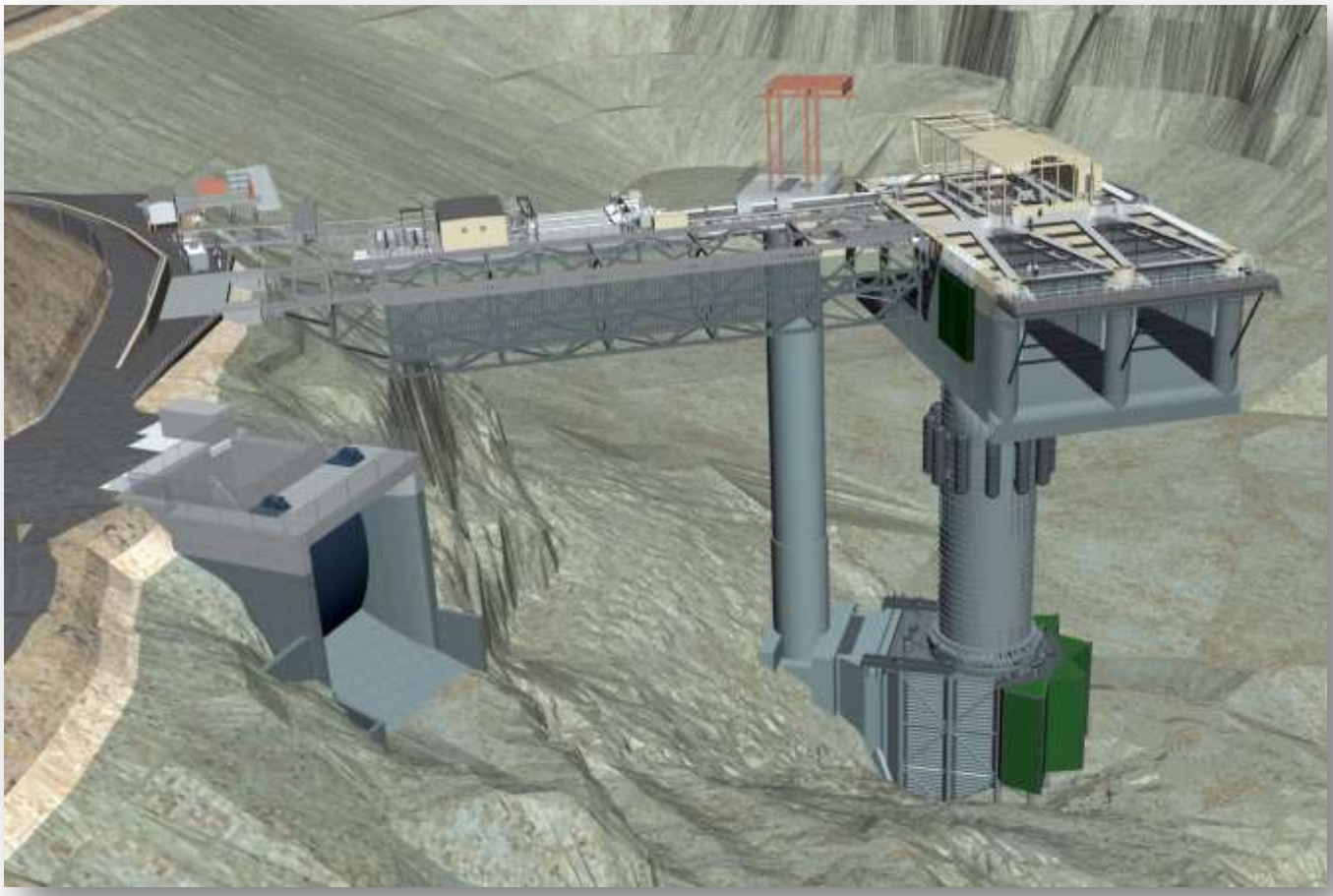
Attachment 1: Pelton Round Butte Hydroelectric Project map



Attachment 2: Pelton Round Butte Hydroelectric Project facts

Current project ownership:	PGE, 66.67 percent; CTWS, 33.33 percent
2019-2021 project ownership:	PGE 51%, CTWS 49 %
Project employment:	60 PGE, and 6 CTWS Power Enterprises (24 PGE employees reside in Deschutes County)
Property taxes paid by PGE and CTWS (total) in 2014:	$3.4 million ($66,000 Deschutes County)
Payments to Jefferson County Public Works for road maintenance in 2015:	$122,000
Support for Jefferson County Sheriff's Department in 2015:	$225,000 (estimate).
Power generation:	Nameplate capacity: 502 megawatts; Average annual production: 1.5 billion kilowatt hours – enough to serve a city the size of Salem.
Investment in relicensing projects:	$130 million (2003 dollars) over license term
Signatories to 2004 relicensing agreement:	22
Duration of FERC license:	50 years, ending in 2055
PGE and Warm Springs Power & Water contributions, sponsorships and grants for entities serving Jefferson, Deschutes and Crook County and Central Oregon .	2014 - $92,000 2013 - $79,000 2012 - $69,900 2011- $75,000 2010 - $41,700 Recipients in the most recent 5 years include: • Air Show of the Cascades • Deschutes River Conservancy • Arts Central • Central Oregon Safety & Health Assoc. • Crooked River Watershed Council • Champions for Children Luncheon • High Desert Education Service District • Jefferson County Special Olympics • Deschutes County Healthy Beginnings • High Desert Museum • The Museum at Warm Springs

Attachment 3: Selective Water Withdrawal Tower



Attachment 4: List of current research projects

- Anadromous Fish Passage and Reintroduction in the Upper Basin and Project Reservoirs
    - ODFW, U.S. Fish and Wildlife Service, National Marine Fisheries Services, U.S. Forest Service, Bureau of Indian Affairs, Bureau of Land Management, ODEQ, NGO (signatories)

- Pelton Fund
    - Governing Board: Signatories (see below) and CTWS Branch of Natural Resources
    - CTWS Water Control Board; USFWS; NOAA Fisheries; BIA; USFWS/BLM (one representative collectively); ODFW; ODEQ; OWRD; and non-governmental organizations American Rivers, Oregon Trout, Trout Unlimited, Native Fish Society, and WaterWatch of Oregon (one representative collectively).

- Native Fish Habitat Monitoring
    - Partners: US Forest Service and Oregon Department of Fish and Wildlife

- Lower River Gravel Study (PGE and CTWS)

- Nutrient and Algae Study (PGE and CTWS)

- Lower Deschutes River Macroinvertebrate and Periphyton Study (PGE and CTWS)

- Large Wood Management (PGE and CTWS)

- Trout Creek Habitat Enhancement (PGE and CTWS, completed 2009)

- Adult Migration, Survival and Spawning (PGE and CTWS)

- Juvenile Migration (PGE and CTWS)

- Physical Reservoir Changes with SWW (PGE and CTWS)

- Salmonid Rearing, Juvenile Density and Habitat (PGE and CTWS)

- Reservoir Survival, Predation, Fishery and Disease (PGE and CTWS)

Attachment 5: List of Pelton Fund projects

The Pelton Round Butte Fund has two funds: the General Fund and the Water Rights Fund. Contributions from these funds will be made over the term of the license and will total $11.5 million (2003$) for the General Fund and $10 million for the Water Rights Fund. Projects that have received funding are listed in Table 1 and Table 2.

As of 2014, $10,046,552.28 ($5,838,026.06/Water Fund and $4,208,526.22/General Fund) has been awarded to various projects that enhance riparian and riverine systems and for acquisition of land, water, and water rights. The next funding year is 2020.

Table 1. Projects that have received funding from the General Fund.

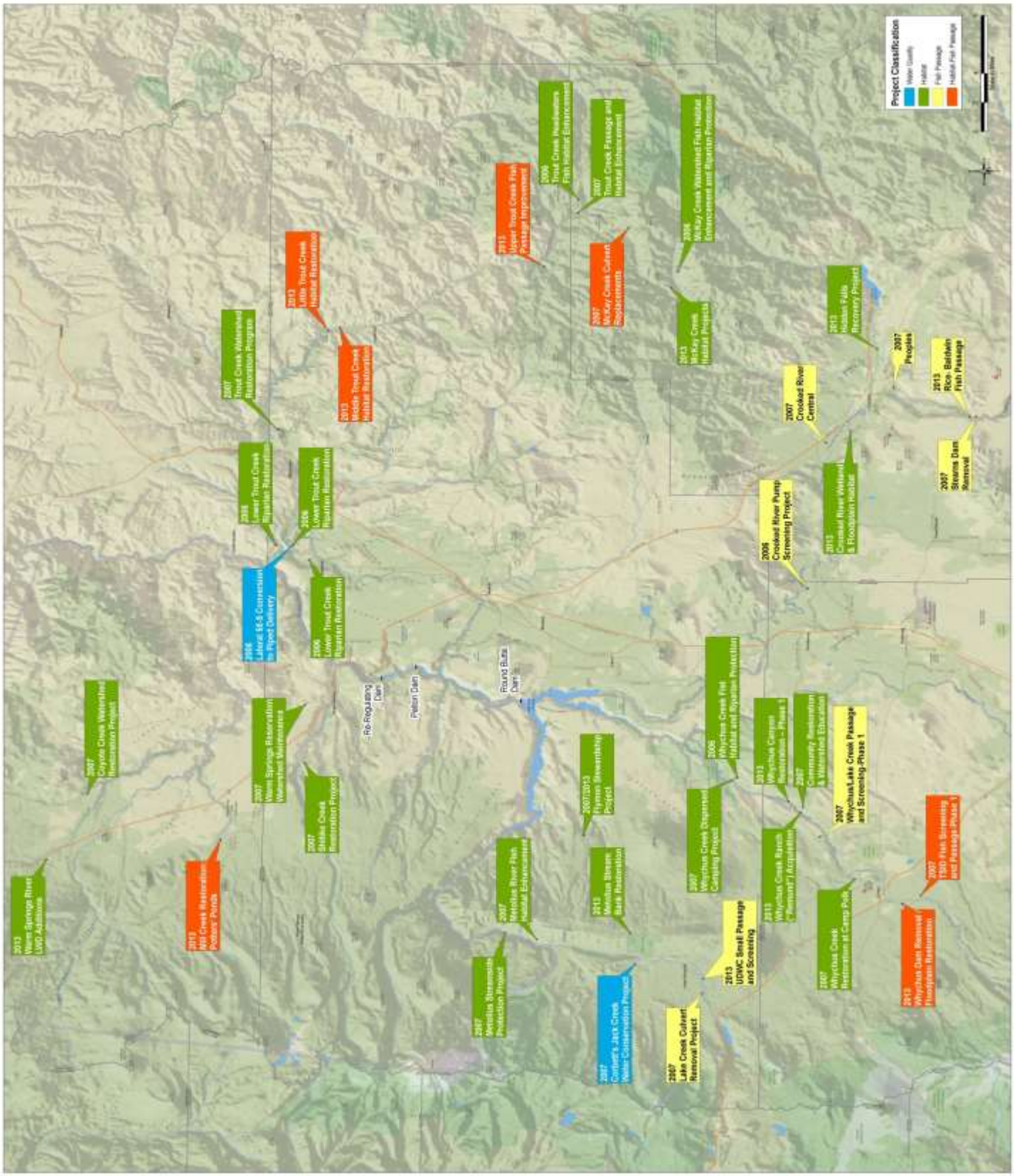
General Fund Project	Amount
2006	
Lateral 58-9 Conversion to Piped Delivery	$27,000
Trout Creek Watershed Restoration Project	$200,000
Trout Creek Watershed Fish Habitat Enhancement	$37,500
Whychus Creek Fish Habitat and Riparian Protection	$17,775
McKay Creek Watershed Fish Habitat Enhancement & Riparian Protection	$21,175
Lower Trout Creek Riparian Restoration	$23,735
Crooked River Pump Screening Project	$107,898
2007	
McKay Creek Culvert Replacements – Crooked River Watershed Council	$105,000
Trout Creek Passage and Habitat Enhancement – Wy'East Resource Council & Lookout Mountain Ranger District	$101,000
Corbett's Jack Creek Water Conservation Project – Jefferson Co. SWCD	$62,325
Flymon Stewardship Program – Deschutes National Forest, Sisters Ranger District	$80,000
Whychus Creek Dispersed Camping Project – Crooked River National Grassland	$29,400
Metolius River Fish Habitat Enhancement – Upper Deschutes Watershed Council	$312,400
Whychus/Lake Creek Passage and Screening-Phase I – Upper Deschutes Watershed Council	$294,100
Whychus Creek Restoration at Camp Polk – Upper Deschutes Watershed Council	$462,000
TSID Fish Screening and Passage-Phase I – Upper Deschutes Watershed Council	$200,870
Lake Creek Culvert Removal Project – Upper Deschutes Watershed Council	$57,650
Metolius Streamside Protection Project – USFS Sisters Ranger District	$22,245

General Fund Project	Amount
Trout Creek Watershed Restoration Project – Jefferson Co. SWCD	$475,000
LCR Fish Passage (Peoples Irrigation District) – Crooked River Watershed Council	$256,175
LCR Fish Passage (Crooked River Central & Golf Course) – Crooked River Watershed Council	$489,920
Stearns Dam Removal – Bureau of Land Management	$81,000
Coyote Creek Watershed Restoration Project – The Confederated Tribes of the Warm Springs Reservation of Oregon	$32,925
Shitike Creek Restoration Project – The Confederated Tribes of the Warm Springs Reservation of Oregon	$200,000
Warm Springs Reservation Watershed Maintenance – The Confederated Tribes of the Warm Springs Reservation of Oregon	$95,000
Community Restoration & Watershed Education – Wolftree, Inc.	$43,792
NUID Crooked River Pump Screening Project – 2006-10 EXT	$95,000
2008 - 2012	
No new projects were funded between 2008 and 2012. General Fund activity consisted of project monitoring of completed and on-going projects.	
2013	
PRB Reintroduction Area	$80,000
Lower Deschutes River Ranch Acquisition	$300,000
Hidden Falls Recovery Project	$98,438
UDWC Small Passage and Screening	$300,000
Whychus Dam Removal / Floodplain Restoration	$550,000
Whychus Canyon Restoration – Phase 1	$250,000
Whychus Creek Ranch (“Remund”) Acquisition	$1,475,630
Metolius Stream Bank Restoration	$115,000
Crooked River Wetland & Floodplain Habitat	$750,000
Flymon Stewardship Project	$30,000
Rice–Baldwin Fish Passage	$145,000
Middle Trout Creek Habitat Restoration	$334,000
Little Trout Creek Habitat Restoration	$217,425
Upper Trout Creek Fish Passage	$263,309
Mill Creek Restoration: Potters’ Ponds	$450,000
Warm Springs River LWD Additions	$500,000
Upper McKay Creek Rehabilitation Package	$263,410

Table 2. Projects that have received funding from the Water Fund.

Water Fund	Amount
2007 Proposal from COID (Central Oregon Irrigation District) was directed from the General Fund to the Water Fund; development of a contract with the Deschutes River Conservancy (DRC) that was finalized in 2006; securing leases on Whychus Creek and the Crooked River; permanent instream transfers on Whychus Creek; initiating the migration of McKay Creek water users to the Ochoco Irrigation District (OID).	$517,317
2008 Contract with DRC that was finalized in 2006; leases on Whychus Creek and the Crooked River; permanent instream transfers on Whychus Creek; beginning to migrate McKay Creek water users to the Ochoco Irrigation District; and currently there is a potential for acquiring senior water rights in Whychus Creek from an undisclosed landowner. There are a number of potential projects that are being evaluated for future use of the Water Rights Fund, including work with the North Unit Irrigation District (NUID).	$624,241
2009 Extension of a contract with the DRC; leases on Whychus Creek and the Crooked River; permanent instream transfers on Whychus Creek; development of a plan for migrating McKay Creek water users to the OID; a senior water right in Whychus Creek was acquired; and funds were allocated to Three Sisters Irrigation District to initiate a canal piping project that will return water to the Deschutes River.	$1,112,323
2010 Extension of a contract with the DRC; restoring water to McKay Creek via water rights exchanges with OID; a potential purchase of senior water rights in Whychus Creek; a System Optimization and Review grant to OID; and evaluation of supply options for NUID that could reduce its use of Crooked River Water.	$330,000
2011 Extension of a contract with the DRC; restoring water to McKay Creek via water rights exchanges with OID; a potential purchase of senior water rights Whychus Creek; and provided funds to the City of Prineville for development of the City's River Wetland Project.	$987,148
2012 Continuation of activities described and agreed to in 2011-2012 contract.	$1,450,000
2013 Most of the Licensee activity in 2013 involved extension of a programmatic agreement with the DRC; restoring water to McKay Creek via water rights exchanges with OID; potential acquisition of senior water rights in Whychus Creek; piping projects on Whychus Creek; and funding NUID for a water conservation project to convert an existing open irrigation canal to a piped system; conserved water will be returned to the Crooked River.	$871,000

Attachment 6: Map of Pelton Fund projects



Attachment 7: Tables showing downstream fish passage numbers and adult returns

Number of juvenile salmon and steelhead entering the SWW and released into the lower Deschutes River.

	2010	2011	2012	2013	2014	2015
Chinook	43,810	31,120	23,688	18,796	19,071	15,072
Sockeye	49,734	225,761	5,126	25,265	155,031	38,112
Steelhead	7,733	10,605	8,877	2,708	2,127	3,677

Number of returning adult salmon and steelhead: These fish were released upstream of Round Butte Dam as fry or smolts, migrated through Lake Billy Chinook to the SWW, spent 1-2 years in the ocean and returned to the Pelton Trap as adults.

	2011	2012	2013	2014	2015
Chinook	171	49	22	24	52
Sockeye	19	86	25	21	35
Steelhead		61	132	50	93