

North Umpqua Hydropower Mitigation Fund Project Nomination Form

Project Name: **2014 Lemolo Water Quality Investigations, Invasive Species Prevention, and Public Health Protection**

Total Mitigation Funds Requested For this Fiscal Year: **\$50,000**

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Type of Project (mark one that applies):

Wetland/stillwater habitat

Vegetation management

Terrestrial species connectivity

Riparian/aquatic species connectivity

Erosion control

Explanation of why this project is time critical:

Water quality in Lemolo Lake declined significantly in 2013 compared to previous years. There is a continued need to document changing conditions to add to our growing understanding of how the lake responds to external influences. Additionally, in 2014, monitoring data is needed to calibrate the water quality model currently under development for the lake that is expected to be completed by June 2014.

Description of hydropower project caused impacts that project is addressing (aquatic, terrestrial and natural resource related including wetland, aquatic & terrestrial connectivity, vegetation management, soil loss/erosion, etc.). Be specific how/what the project mitigates:

Lake habitat has been created by the Lemolo 1 diversion dam for hydropower production. This development has converted a flowing river to still water conditions creating habitat that favors the abundant growth of algae and provides habitat for aquatic invasive species resulting in adverse effects to water quality. Lemolo Lake experiences algal blooms during the late spring and summer primarily composed of the blue-green algae (cyanobacteria) of the genus *Anabaena*¹. This blue-green algae can produce toxins harmful to human health. **This project mitigates; (1)** poor water quality in the lake by supporting water quality investigations and informing the development of adaptive management strategies to improve water quality and reduce or eliminate potentially toxic algae blooms, **(2)** reduces the potential introduction of additional aquatic invasive species that are capable

¹ Bonoff, M. and B. Mattax. 1996. Diel Study of Lemolo Lake, Douglas County, Oregon. Northwest Science 70(2):48-57.

of dominating the lake environment with adverse effects to water quality and native species, and (3) provides for public health protection by surveillance monitoring and toxin analysis.

Point of hydropower induced impact:

Location of proposed mitigation project:

Legal: T26S__ R 5E__ Sect. 11__

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6th field subwatershed: 171003010205__

6th field subwatershed: 171003010205__

5th field watershed: 1710030102__

5th field watershed: 1710030102__

Administrative Unit: Diamond Lake RD__

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Description of project objectives, activities, *measurable* benefits, and expected accomplishments:

Objectives of this project include: (1) improve water quality in Lemolo Lake and downstream in the North Umpqua River, (2) reduce the potential for aquatic invasive species being introduced or leaving the lake, and (3) protecting public health through surveillance monitoring of potentially toxic algae blooms and toxin analysis.

The following activities are in order of priority and could be funded separately.

Task (1) Water Quality Investigations - \$37,000

The Forest Service will contract water quality and biological sampling of Lemolo Lake, May through September, characterizing the 2014 summer. Since 2008, the Umpqua National Forest, PacifiCorp, Oregon Department of Fish and Wildlife (ODFW), and the Oregon Department of Environmental Quality (ODEQ) have worked collaboratively and combined funds to collect water quality, zooplankton, algae, and fish data to investigate water quality and biological conditions. The data will be used to calibrate a water quality model for Lemolo Reservoir currently under development. The expected outcome of this activity is to determine if reservoir management (e.g. lake levels, lake outflow rates, or fish manipulation) could be altered to improve water quality and reduce or eliminate conditions favorable to non-native fish, blue-green algae, or both. Data from previous years will be combined with results from summer 2014 findings and presented in a detailed report with conclusions and adaptive management recommendations.

Task (2) Aquatic Invasive Species Prevention – \$3,000

An invasive species prevention program coordinated with ODFW and the Oregon Marine Board will be implemented to reduce the potential for aquatic invasive species entering or leaving Lemolo Reservoir. The program will include contacts with the public at boat ramps to provide educational materials and collect information using the Oregon Marine Board Aquatic Invasive Species Survey form. This activity will be coordinated with the ODFW Aquatic Invasive Species Prevention Program. The data will be provided to the Oregon Marine Board to be incorporated into their statewide database. The program will also include installation and maintenance of signs at boat ramps and other high use areas.

Task (3) Blue-Green Algae Toxin Monitoring for Public Health Protection – \$10,000

Activities will include surveillance monitoring for high levels of potentially toxic cyanobacteria during the summer recreational use season at developed recreation sites consistent with Forest Service Regional Policy. Educational signs will be posted prior to the recreational use season. When potentially hazardous conditions exist, phytoplankton and toxin samples may be collected and public health caution or advisory signs will be posted after consultation with health authorities. At a minimum, Lemolo Reservoir will be visited weekly, May through September. This activity includes coordination with state and county health agencies and communicating with the public.

Identify any previous work completed (prior year accomplishment of multi-year project, planning, design work, etc.):

- From 2006 through 2013, surveillance monitoring for public health protection has occurred and information shared with state and county health authorities.
- In 2007, the Lemolo Lake Technical Working Group (TWG) formed. The group was tasked to investigate possible causes for the decline in Lemolo Lake water quality and potential management actions to improve conditions.
- An aquatic invasive species prevention and education program has been delivered each summer. Information signs have been posted and public contacts have been made at boat ramps. Data collected in previous years has been shared with the Oregon Marine Board and ODFW.
- Water Quality and Biological Investigations have been performed annually since 2008, with final reports delivered for 2008 through 2012. The draft water quality and biological investigation report for 2013, received in January of 2014, is currently under review and expected to be finalized soon. Delivery of a water quality model for the lake is expected by June of 2014.
- Tui chub trapping and removal has been accomplished each summer, 2008 through 2013.

Proposed budget: FY 2014

<i>Activity</i>	<i>Personnel</i>	<i>Contract/Materials</i>	<i>Vehicles</i>	<i>Total</i>
Planning/NEPA	-	-	-	-
Engineering design & Contract preparation	-	-	-	-
Contract costs (Water Quality Data Collection \$20,000, WQ Report \$5,000, WQ sample analysis \$5,000, toxin analysis \$2,000)	-	\$32,000	-	\$32,000
Contract Administration	\$6,000	-	-	\$6,000
Non-contract implementation (invasive species prevention, coordination with PacifiCorp, Oregon Health Authority and other agencies, public health surveillance monitoring and sample collection)	\$12,000	-	-	\$12,000
Monitoring (included above)	-	-	-	-
Totals	\$18,000	\$32,000	-	\$50,000

Identify other funding (includes appropriated funds) or confirmed, external partnerships of project**Previous Partnership Funding 2007-2013.**

Source	Value of contribution	Description of contribution
PacifiCorp	\$88,000	Water quality investigations, Staff time (North Umpqua TWG coordination, fisheries biologist technical services), tui chub trapping funding and staff time, Phase 1 Lemolo Water Quality Modeling Project
Oregon Dept. Fish and Wildlife	\$40,000	Fisheries biologists consultation/technical services and coordination, R&E Grant for tui chub trapping, Scientific Collection Permit, electrofishing equipment, coordination and assistance with invasive species prevention
Lemolo Resort	\$90,000	Volunteer tui chub trapping/monitoring, personnel and equipment not funded by others
TOTAL	\$218,000	

Proposed project schedule and timeline, including projected date of accomplishment:

April 2014; begin invasive species educational program in cooperation with ODFW and the Oregon Marine Board. The program will include boat operator surveys and continue through the recreation use season.

May 2014; begin surveillance of Lemolo Reservoir for toxic blue-green algae following Forest Service Regional Policy and coordinated with health authorities. Monitoring will be conducted during the recreational use season.

April – October 2014; contract water quality investigations, contract laboratory services, program management will include coordination with ODFW and ODEQ, quality control, and review of findings.

October 2014 - March 2015 document data collected, complete contract administration with laboratories and consultants, and pay invoices for laboratory work. Deliver water quality investigations report with conclusions and management recommendations.

Accomplishment dates:

Public Health Protection surveillance program completion – October 31, 2014

Aquatic invasive species program implementation – September 30, 2014

Water Quality Investigations data collection – October 31, 2014

Water Quality Investigations Report for 2014 – March 31, 2015

