Appendix B-8

LAKE TAHOE RESTORATION PROJECTS
ESTIMATED DIRECT COSTS & KEY MILESTONE DATES

Project Name: Mountain Yellow-legged Frog Recovery Project Agency: USFWS
Prepared by: Chad Mellison Phone: 775.861.6327 EIP #: 593
SNPLMA Project#: ___

Identify estimated costs of eligible reimbursement expenses:

1. Planning, Environmental Assessment and Research Costs	$ 15,000	10	%
2. FWS Consultation & Coordination – Endangered Species Act			
3. Direct Labor (Payroll) to Perform the Project	$ 10,000	7	%
4. Project Equipment (passed to partners – see #7)	$ 30,000	20	%
5. Travel (including per diem where official travel status required to carry out project, such as serve as COR, experts to review reports, etc.)	$ 5,000	3	%
6. Official Vehicle Use (pro rata cost for use of Official Vehicles when required to carry out project)	$ 3,000	2	%
7. Cost of Contracts, Grants and/or Agreements to Perform the Project	$ 57,000	38	%
8. Other Direct Costs (direct labor for agency personnel to do project procurements; COR; PI; personnel assigned as NEPA lead; personnel assigned to review contracted surveys, designs/drawings, reports, etc.; project manager and/or project supervisor; and contracted costs for project manager and/or project supervisor if contracted separately	$ 18,000	12*	%
8. Other Necessary Expenses (See Appendix B-11)	$ 12,000	8	%
TOTAL*:	$ 150,000	100	%

Estimated Key Milestone Dates:

Milestones/Deliverables:	Date:
Complete NFMA and NEPA	July 2009
Conduct VES at Tamarack, Ralston, and Cagwin Lakes	July 2009
Implement Phase 1 fish removal (nets might be left in over winter)	August 2009
Phase 2	June 2010
Phase 3	June 2011

Comments: *Fish and Wildlife will pass through 88% and keep 12%

APPENDIX K
LAKE TAHOE CAPITAL PROJECT PROPOSAL
ROUND 9

Consistency with Lake Tahoe nomination criteria:

Project nominations must qualify as an Environmental Improvement Program (EIP) project and be the responsibility of the federal government (federal share responsibility); and have a willing and ready federal sponsor.

Project nominations must be consistent with one of the focus areas in the June 2006 Federal Vision (pp. 8-9) (http://www.fs.fed.us/r5/ltbmu/documents/ltbec/revised-FV-Final.pdf) and fit into at least one category.

***Capital Focus Area** (as described in the 2006 Federal Vision)*: _____

Circle a minimum of one category:

1. Continued emphasis on fuels reduction in coordination with projects funded under the 2006 SNPLMA amendment (the "White Pine" amendment).

2. Continued implementation of projects approved in Rounds 5 through 8 which implement the EIP. Project proposal should clearly describe the phase/product being produced along with the consequence of not completing the project phase proposed for Round 9.
   List project(s):___SNG079__

3. Project is consistent with and contributes toward TMDL pollutant reductions within the four source categories (atmospheric, urban & groundwater, forested uplands, and stream channel).
   List category(ies):_____

4. Control of aquatic invasive species and prevention of new aquatic invasive species.

Project Name: Mountain Yellow-legged Frog Recovery Project

EIP #: 593

Lead Agency: USFWS **Contact:** Chad Mellison

Threshold: W **Phone Number:** 775.861.6327

Threshold Standard: W2 Wildlife Goal No. 1 **Email: Chad_Mellison@fws.gov**

Funding Requested in this Round: $150,000 **Total Project Cost: $400,000**

Is this a multi-year Project? (If "Yes", describe in the Detailed Project Description below number of years or phases and which year the requested funding will cover) Yes

Project Summary (maximum 200 words): (applicable ONLY to this Round 9 project)

Since the early 1970's mountain yellow-legged frogs (*Rana muscosa*) have declined precipitously in numbers and distribution throughout the Sierra Nevada. Mountain yellow-legged frogs (MYLF) have disappeared from between 70 – 90 percent of their historic range. On February 2000, the Center for Biological Diversity and the Pacific Rivers Council petitioned the Fish and Wildlife Service (FWS) to list the Sierra Nevada population segment of mountain yellow-legged frog as an endangered species. In October 2000 the FWS published their 90-day and found that the petition presented substantial information indicating that listing the species may be warranted. The FWS 12-month petition finding was completed in January 2003, it concluded that the petitioned action is warranted, but precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants. The determination or proposed rule to list the species will be further supported by a formal status review conducted by the FWS and published in the Federal Register. The status review will involve an interagency approach relying on historic and current site-specific data collected throughout the Sierra Nevada.

This project will complete the needed environmental review and implement conservation measures in Desolation Wilderness intended to conserve and enhance existing populations, restoring historic habitats within the basin, and providing for adequate conditions for the species to re-colonize in these habitats.

Detailed Project Description (focuses on what Round 9 is funding; list the number of years or phases the Round 9 requested funding will cover; if phased, briefly describe how this project links into previously phased projects including what remains for Rounds 10 and beyond).

The US Fish and Wildlife Service, in partnership with California Department of Fish and Game, US Forest Service Lake Tahoe Basin Management Unit and El Dorado National Forest intends to implement a Mountain Yellow-legged Frog Recovery Project in identified lakes located in Desolation Wilderness. Implementation efforts will be focused on a series of lakes located on the Lake Tahoe Basin Management Unit (LTBMU) including Tamarack Lake, Ralston Lake, Cagwin Lake, Lake Lucille, Lake Margery and associated ponds and streams. In addition, we intend to continue working with researchers from UC Berkeley on the disease status of Desolation Wilderness amphibian populations.

A number of known and potential range-wide threats affecting MYLF population viability have been identified by the Interagency Mountain Yellow-legged Frog Working Group. These include: disease, introduced fishes and other predators, pollution (acid deposition, airborne contaminants, etc.), livestock grazing, recreational activities, water development and diversion, vegetation and fuels management, and any other activities resulting in habitat loss and fragmentation.

The LTBMU is one of 10 National Forests within Region 5 of the US Forest Service to have known populations of the species. Throughout the Sierra Nevada the species has been documented to inhabit high elevation lakes and ponds with common habitat attributes of deeper water and a combination of well vegetated and open shoreline. MYLFs are also known to use high elevation stream and lake habitats, such as those

found in the Desolation Wilderness. The species is known to have a complex life history, which is much different than that of many other native amphibians. MYLFs have been documented to lay anywhere from 15 – 350 eggs within the shallow water of lakes. The time required to develop from fertilization to metamorphosis is believed to vary between 1 and 3.5 years, while the time to reach reproductive maturity is 3 – 5 years post-metamorphosis. . Due to their complex life history pattern, MYLFs became extremely susceptible to fish predation at early life form stages (eggs, tadpoles, and juveniles).

Non-native game fish were introduced by fish management agencies throughout the 19th century. Many high elevation lakes, ponds and streams, which were historically fishless, were targeted as areas to increase recreational fishing opportunities. Introduced salmonid species (brook trout, brown trout, and rainbow trout) thrived in these environments and soon targeted native amphibians as prey. These fish are considered aquatic invasive species in habitats currently or potentially occupied by MYLF. Surveys conducted in 2006 and 2007 in the identified LTBMU lakes found brook trout of various age classes in all lakes except Lake Margery.

Historic collections and accounts have indicated that MYLF was relatively abundant throughout the Lake Tahoe Basin. Currently within the Lake Tahoe Basin, MYLFs have been documented in the Cagwin Pond (adjacent to Cagwin Lake in Desolation Wilderness) and Hell Hole (located in the headwaters of Trout Creek). A substantial source population is located in Desolation Wilderness lakes located on the El Dorado National Forest but in close proximity to LTBMU lakes and streams. The El Dorado National Forest began recovery efforts (fish removal) on three lakes, Waca, Pyramid, and Geof Lakes, in 2007.

Currently, LTBMU Aquatic Biologists are carrying out chytrid fungus and genetic testing in coordination with the University of California at Berkeley to assist with assessing disease (chytrid), fitness, and genetic integrity. Chytrid results from 2006 and 2007 analysis informed managers that chytrid is present in the Hell Hole and Desolation Wilderness populations. Preliminary monitoring efforts from El Dorado National Forest biologist suggest that the Desolation Wilderness MYLF population is stable even though some frogs are chytrid positive. However, the presence of fish adds a stressor, limiting the overall fitness of all life stages and could eventually cause the population to decline. Interestingly, populations are present on the El Dorado National Forest (Desolation Wilderness) where nonnative salmonids are present yet absent from similar lake habitats found on the LTBMU. The explanation for this is unclear. The removal of fish from currently populated lakes as well as surrounding habitat has been proven successful in increasing population density (Knapp et al 2006) and fitness. By removing fish in lakes adjacent to known populations, we predict that the existing population will eventually disperse to newly restored lakes, ponds, and streams. In addition, we predict that the overall health of the source population will improve. These factors coupled with the recent ESA candidate status constitute the need implement conservation measures in potential lake habitat in Desolation Wilderness.

The proposed project covers three years. This proposal involves implementing Phase 1. This implementation action will play a key role in conservation of the species and is consistent with the Mountain Yellow-legged Frog Interagency Working Group Management Strategy. Additionally, preliminary finding have been presented and implementation actions are supported by Sierra Nevada Amphibian Working Group and Lake Tahoe Aquatic Invasive Species Working Group.

- Phase I (Round 9 $150,000): Complete NFMA and NEPA analysis. Implement fish removal (gillnets and electroshocker) in Tamarack Lake, Ralston Lake, Cagwin Lake, and associate streams until appropriate fish barrier is reached. Continue working with UC Berkeley on current disease status of Desolation Wilderness amphibian population.
- Phase II (Round 10 $150,000): Implement fish removal (gillnets and electroshocker) in Lake Lucille, Lake Margery, unnamed ponds and associated streams until appropriate fish barriers are reached. Continue fish removal efforts at Tamarack Lake, Ralston Lake, Cagwin Lake, and associated stream channels. Continue working with UC Berkeley on current disease status of Desolation Wilderness amphibian population.
- Phase III (Round 11 $150,000): Continue fish removal efforts at all above mentioned lakes, ponds and streams. Continue monitoring disease status of amphibian population. Conduct amphibian surveys at Tamarack Lake, Ralston Lake, Cagwin Lake, associated ponds and streams to determine preliminary outcomes of fish removal (i.e. has the source population expanded into surrounding lakes?). Potentially begin translocations and/or head start program.

Describe the goals and objectives of the project (those applicable ONLY to this Round 9 project): The primary goal of this project is to restore MYLF frog habitat in identified lakes, streams and ponds located in Desolation Wilderness in order to increase population density and fitness of the adjacent population while insuring consistency with other interagency conservation goals, objectives, and efforts throughout the Sierra Nevada.

Primary objectives for this project are:

Complete the appropriate environmental documentation needed to implement fish removal using gillnets and electroshockers in Tamarack Lake, Ralston Lake, Cagwin Lake, Lake Lucille, Lake Margery, and associated ponds and streams.

1. Remove nonnative fish in the above mentioned lakes, ponds and associated streams (or until adequate fish barriers occur).

Describe the "readiness" of this project to move forward (urgency, capacity, capability, environmental documentation etc.):

Identified lakes have been surveyed for existing amphibian, reptile and fish presence, habitat characteristics including: general lake description (maximum lake depth, elevation, water type) and lake characteristics (littoral zone substrate composition, shoreline terrestrial substrate composition, width/depth of inlets and outlets, distance to first fish barrier on inlets and outlets, description of fish barriers, presence of spawning habitat in inlets and outlets, area of in-lake spawning habitat and presence of fairy shrimp) for two consecutive years (Round 7 and 8 SNG079).

An agreement has been established with UC Berkeley to conduct laboratory analysis on swab samples of amphibians potentially infected with the chytrid fungus in Desolation Wilderness and other sites on the LTBMU.

Preliminary findings have been presented to the Sierra Nevada Amphibian Working Group and Lake Tahoe Aquatic Invasive Working Group.

Coordination with California Department of Fish and Game began in 2005 to identify lakes in Desolation Wilderness located on the Lake Tahoe basin where nonnative fish removal would be appropriate.

Describe partnerships for this project. (if applicable, project should identify partner funding [committed/secured] and how it is integrated into the project)

USFS Lake Tahoe Basin Management Unit, University of California-Berkeley (Cost Share Agreement), Pacific Southwest Research Station, Tahoe Regional Planning Agency, California Department of Fish and Game, Nevada Division of Wildlife, Declining Amphibian Population Task Force (DAPTF).

Describe the project monitoring that will be implemented as part of this project including:

1) **The questions the monitoring program is designed to answer:**

   1. How effective are recovery efforts for expanding populations of MYLF?

   2. How efficient and effective were the conservation approaches in attaining desired habitat conditions conducive in fulfilling MYLF life history attributes?

2) **The monitoring approach (describe the methods and strategies [i.e. monitoring, research, or both] that will be used to verify whether the project goals and objectives have been met. A detailed monitoring/research plan is not required, but enough detail must be provided to allow someone that is unfamiliar with the project to understand and evaluate the proposed methods and strategies.)**

   The approach taken has been one of adaptive management. Monitoring results will be applied to future mountain yellow-legged frog management strategies and recovery efforts. Our recovery efforts will be monitored annually to ensure effectiveness.

   Effectiveness monitoring will begin in Phase 2 of this project. Visual encounter surveys for amphibians and reptiles will be conducted at all lakes where fish removal was initiated. These monitoring efforts will be conducted annually in early summer (June/July). Additionally, all MYLF of appropriate size will be pit tagged to determine movement patterns.

3) **Whether this project monitoring fits into a larger monitoring or research program (including how information from the monitoring and research will be used to improve the continued performance of the proposed project or improve future similar projects)**

   Fish removal efforts have implemented throughout the Sierra Nevada for research and management objectives. The Interagency Mountain Yellow-legged Frog Working Group has identified removal of nonnative salmonids as a significant benefit to MYLF populations. Implementation and monitoring of this

project will prove useful in contributing to the understanding of various management actions, specifically fish removal and, potentially, translocation, in the recovery of MYLF.

This project monitoring fits into the mountain yellow-legged frog range-wide strategy plan, current LTBMU Forest Plan objectives, and LTBMU Adaptive Management 5-yr Monitoring Plan. All data collected during and following implementation will be integrated into the monitoring plan.

Describe these two items which will be considered along with the above project monitoring information by the Tahoe Science Consortium related to research and monitoring resource areas and the effectiveness of environmental restoration activities:

1) Describe the specific goals and objectives of the project and describe how fulfilling those objectives will contribute to the achievement of one or more environmental thresholds.

The primary goal of this project is to restore MYLF frog habitat in identified lakes, streams and ponds located in Desolation Wilderness in order to increase population density and fitness of the adjacent population while insuring consistency with other interagency conservation goals, objectives, and efforts throughout the Sierra Nevada

Primary objectives for this project are:

1. Complete the appropriate environmental documentation needed to implement fish removal using gillnets in Tamarack Lake, Ralston Lake, Cagwin Lake, Lake Lucille, Lake Margery, and associated ponds and streams.
2. Remove nonnative fish in the above mentioned lakes, ponds and associated streams (or until adequate fish barriers occur).

The goals and objectives will aid in the fulfillment of Wildlife Threshold Standard W2, which states “a no degradation standard shall apply to significant wildlife habitat consisting of deciduous trees, wetlands, and meadows while providing for opportunities to increase the acreage of such riparian associations.”

Additionally, MYLFs have been identified as a potential special interest species in the Pathway 2007 Technical Supplement document. If they are considered a special interest species in new planning regulations, a minimum number of population sites (areas for reproductive activity or wintering habitat) and disturbance (free) zones would be required to fulfill threshold standards in the future. By implementing and monitoring this project, the USFWS, in collaboration with partners, would be contributing to current and, potentially future environmental thresholds.

2) Describe the risk to the environment from failure of the proposed project (i.e. if the project fails what is the environmental consequence).

MYLFs have disappeared from over 90% of its historic localities due, in part, to the introduction of nonnative salmonids. It has been substantially documented that density and fitness of MYLF is reduced drastically in the presence of fish. If no action

is taken, it is unlikely that the proposed lakes will ever contain a sustainable MYLF population.

Describe how the project results will be communicated and made available to the public.

The information created from this project will be disseminated to three audiences: 1) the general public, 2) Interagency Agency Working Group, 3) the broader scientific community, and 4) other local, regional, and national meetings.

The project results will be communicated to the public through local and regional newspapers as well as the LTBMU and CDF&G websites. Project results will also be communicated by way of presentations to interested conservation and scientific and organizations, as well as government management briefings.

8 ½ X 11 map depicting the project.