ROUND 11 CAPITAL PROJECT NOMINATION FORM
LAKE TAHOE FEDERAL SHARE EIP CAPITAL PROJECTS
APPENDIX K

Project Name:	Phase 5 – Preventing Aquatic Invasive Species Proliferation in Lake Tahoe Using Prevention, Early Detection and Rapid Response and Control and Eradication	**EIP Number: (*Required*)**	339
Federal Agency Sponsor: (*Required*)	U.S Fish and Wildlife Service	**Contact:**	Steve Chilton
Threshold:	Fisheries, Water Quality	**Phone Number:**	(775) 589-5265
Threshold Standard:	Lake habitat, Littorial	**Email:**	steve_chilton@fws.gov
FUNDING REQUESTED IN THIS ROUND:	**$** 3,221,000		

Federal Share EIP Consideration

Select "yes" or "no" for each question. If you have a "yes" response, briefly describe. ***Projects must meet one or more of these 5 items.***

1. **Does the project involve federal land?** — ***Yes*** ☐ ***No*** ☒
   If yes, is the federal land involved important to successful implementation of the project?

2. **Is this project identified in the EIP? If yes, please ensure the EIP number is identified in the above project information box. If no, provide a description of the projects contribution to the EIP program.** — ***Yes*** ☒ ***No*** ☐

3. **Does the project involve the conservation of a federal or regional threatened, rare, endangered, or special interest species?** — ***Yes*** ☒ ***No*** ☐

   Control of AIS will facilitate the recovery of Lahonton Cutthroat Trout by restoring habitats and removing invasive compettitors.

4. **Does the project involve an identified federal interest such as the detection and eradication of non-native invasive species (aquatic or terrestrial)?** — ***Yes*** ☒ ***No*** ☐
   If yes, identify the species?

   Eurasian watermilfoil, curlyleaf pondweed, largemouth bass (Micropterus salmoides), bluegill (Lepomis macrochirus), Asian clam, quagga and zebra mussels, New Zealand mudsnails, and spiny Waterflea (Bythotrephes longimanus). Bullfrog (Rana catesbeiana) is also present in the Region.

5. **Does the project contribute to supporting implementation of capital projects in the EIP? Such projects that fulfill this function would include** — ***Yes*** ☐ ***No*** ☒

technical assistance, data management, and/or resource inventories?

Check all Capital Focus Area(s) that apply:

- ☒ 1. **Watershed and Habitat Improvement**
- ☐ 2. **Forest Health**
- ☐ 3. **Air Quality and Transportation**
- ☒ 4. **Recreation and Scenic**

Check all that apply (must meet a minimum of one category):

- ☐ 1. **Continued emphasis on forest ecosystem health/fuels reduction projects considering the LTBMU Stewardship Fireshed Assessment and Lake Tahoe Basin Multi-Jurisdictional Fuels Reduction and Wildfire Prevention Strategy.**

- ☒ 2. **Continued implementation of projects approved in Rounds 5 through 10 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 10.**

  List Rounds and funding:

  $450,000 in Round 8; $500,000 in Round 9, $985,000 in Round 10

- ☐ *3.* **Project is consistent with and contributes toward TMDL pollutant reductions within the four source categories (atmospheric, urban & groundwater, forested uplands, and stream channel).** ***NOTE: If "yes", then please respond to questions in the accomplishments section of the nomination proposal.***

- ☒ 4. **Control of aquatic invasive species and prevention and/or detection of new aquatic invasive species.**

Project Nomination Proposal Outline

Project Summary (a brief summary which clearly describes the proposed project –maximum 200 words)

- Summarize ONLY this Round 11 project**.**

The proposed project utilizes established goals identified in the nationally recognized Lake Tahoe Region AIS Management Plan and prioritized individual projects within each goal. The four original projects goals remain, but Round 11 adds Early Detection and Rapid Response as part of the larger AIS Prevention, Control and Eradication project. Overall prevention goals will be accomplished through adequate inspection and decontamination procedures coupled with effective and consistent education and outreach. Early detection and rapid response will be accomplished through rigorous monitoring followed by the ability to respond efficiently and aggressively. Control and eradication will be accomplished through tested methodologies including benthic barriers and suction removal. The strategy has been modified from previous phases in response to the proliferation of invasives outside of the Lake Tahoe Region and ongoing research in the Region that indicates connections between existing invasives causing habitat modifications and quagga and zebra mussel survivability. Public education and outreach has been embedded within each individual project.

Project Description

Introduction

- Provide project background which explains the situation and state the problem and how it will be addressed.

Note: *Focus needs to be the project in Round 11 not a history of an ongoing project or program.*

Background:

Lake Tahoe is designated an Outstanding National Resource Water (ONRW) under the Clean Water Act (CWA Section 106) due to its extraordinary clarity. Substantial changes to the Lake Tahoe Region's economy, pristine water quality, aesthetic value, and recreational pursuits are occurring, partly due to the harmful impacts of non-native aquatic plants, fish, invertebrates, and other invaders. These non-native aquatic organisms are considered 'invasive' (or *aquatic invasive species* [AIS] in water) when they threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent upon such waters. AIS are commonly spread by activities such as boating, fishing, hatchery releases, and aquarium dumping. The Lake Tahoe Region is not only threatened by new introductions of AIS to Lake Tahoe from other waterbodies, but also the expansion of existing populations within the lake and even as a source of AIS to nearby waterbodies.

At least 20 non-native species are established in the Lake Tahoe Region, including aquatic plants, fishes, invertebrates, and an amphibian. As examples, Eurasian watermilfoil (*Myriophyllum spicatum*; an aquatic plant) has been spreading around Lake Tahoe over the last 15-20 years, and curlyleaf pondweed (*Potamogeton crispus*; another aquatic plant) has begun to expand dramatically over the last three years. Beds of Asian clams (*Corbicula fluminea*) are larger and more common than previously known, and populations of warm water fishes such as largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus)* are expanding. Moreover, global climate change has resulted in warmer water temperatures, likely facilitating the establishment of non-native plants in the nearshore environment and providing increased spawning areas for warm water fishes that compete with desirable species.

The potential economic impact to the Lake Tahoe Region caused by new AIS introductions such as quagga or zebra mussels (*Dreissena bugensis* and *D. polymorpha*, respectively) or expanding invasive aquatic plant populations would be substantial. The combined economic impacts to recreation value, tourism spending, property values, and increased boat/pier maintenance, when evaluated over a 50 year period, is estimated at $417.5 million (present value), with an average annual equivalent value of $22.4 million per year. The largest estimated impacts would be to property values and lost tourism spending, each accounting for 38% of the total estimated AIS damages. Spending on prevention and early eradication produces a higher benefit to cost ratio than post-infestation control programs such that maximum benefits are realized through early and preemptive action.

Funding Background:
Four simultaneous projects began in SNPLMA Round 8 ($450,000 in Round 8-21; $500,000 in Round 9-8 and $985,000 in Round 10-1).

Round 8 Funding - $450,000:

Based on the GIS maps and the observed behavioral shifts in each species from the first year of assessment, a program was initiated to remove undesirable fish species from critical lake environments in the Tahoe Keys. The methods of removal varied with the specific habitat type and focused on the reproductive segment of the population. Methods included fyke nets, gill nets, electro-shocking, and seining. The effectiveness of each management procedure was evaluated based on its ability to remove invasive species while preserving natives and the time and cost associated with the procedure. The evaluation guided project implementation used in later rounds.

Electroshocking and tagging of non-native fish species in the Tahoe Keys was carried out and showed that large-mouth bass were moving out of the Keys lagoons and into the Lake proper. Additional tracking of these invasives will provide further information on their ability to adapt and survive out of the habitat provided by non-native aquatic weeds in the lagoons. Agencies are designing a pilot project to assess various control and eradication methods on various species of invasive weeds in the Tahoe Keys.

A collaborative team of agencies developed a pilot project to remove Asian clams from various locations in Lake Tahoe during the winter of 2008/2009. Working side-by-side with the Tahoe Environmental Research Center (TERC) and University of Nevada, Reno (UNR), the team sought to determine effective means of removal, taking into account local conditions and the natural history of the species.

Round 8 funded the implementation of a watercraft inspection program. Inspection protocols and partnerships with shore zone property owners and/or managers were formally developed. The boat inspection program is well underway at launch points in the Tahoe Basin. Many inspectors have been trained, including volunteers, marina employees and agency personnel. The project continued at selected launch facilities over the winter while launches without inspectors were closed to watercraft launching.

The public education effort ramped up significantly, with a billboard, changeable highway message signs, a public service commercial run on many television stations, over 5,000 brochures developed and distributed and informational booths set up at various water-related events. Mid-year, the U.S. Fish and Wildlife Service hired a Lake Tahoe Aquatic Invasive

Species Coordinator.

Round 9 Funding - $500,000:

The four identified projects continued with phased implementation aimed at preventing aquatic invasive species proliferation at Lake Tahoe.

Project 1 During fiscal year 2009, a study plan was developed for Evaluation of Methods for Aquatic Invasive Species Management in the Tahoe Keys by Dr. Lars Anderson, USDA-ARS. Implementation of the Plan will compare various strategies and actions (both mechanical and herbicide-based) for suppressing and controlling aquatic weeds and will access the impacts on both undesirable fish (warm water fish) and desirable fish and native plants. The Plan will also include a cost and task analysis of needed control measures for aquatic invasive weeds to determine the cost of a herbicide-based control strategy. It is widely believed that the controlled use of approved herbicides is the most efficient and effective means of removing this source population. The California Water Quality Control Board, Lahontan Region (Lahontan Water Board) is working to adopt procedures for allowing project proposals to come before the Board for review and discretionary authorization of pesticide use. The Lake Tahoe Invasive Species Coordination Committee has been working with the Lahontan Water Board so the proposal for use of herbicides to control invasive weeds in the Tahoe Keys lagoon areas is eligible for review and can be considered for discretionary Board authorization under the forthcoming procedures.

Project 2 utilized the information gained through the initial phase of the Asian clam pilot removal operation and implemented a larger scale removal utilizing diver assisted suction removal and improved bottom barriers. The bottom barriers are proving, with the improved barrier material and the limited technology available for suction removal, to be the best available method to control Asian clams. Approximately 4,000 square feet of the clam populations in Marla Bay and offshore of Lakeside Marina were treated. In addition aquatic invasive weed removal, funded by Reclamation (approximately 9,000 square feet of invasive milfoil and pond weed treated) continued in Emerald Bay and adjacent to marinas in Lake Tahoe. Diver assisted suction and bottom barriers have been the primary means of removal. On-going research will coordinate closely with both removals to actively integrate new information into the removal program.

Project 3 continued implementing the watercraft inspection guidelines developed by the TRPA, 100th Meridian Initiative and incorporated within the then-draft Lake Tahoe Aquatic Invasive Species Integrated Management Plan to prevent the introduction of invasive species. Watercraft inspectors were stationed at each active launch facility serving Lake Tahoe and other large water bodies within the watershed. Watercraft decontamination units and trained operators were stationed around the lake to clean high risk and contaminated boats. Recent regulatory modifications require a launch facility to have watercraft inspectors present during launch operations. During FY 2009, 12,800 watercraft were inspected, 700 watercraft received a partial or full decontamination prior to launching and ten watercraft were quarantined by state fish and game agencies and did not launch based upon a SNPLMA funded inspection.

Project 4 continued to implement the Aquatic Invasive Species Environmental Education Program, including billboards, changeable highway message signs, public service announcements on radio and television, informational brochures, presentations to civic and

government groups and informational signage at marinas and boat ramps. The Service's AIS Coordinator continues to facilitate projects and discussion to prevent aquatic invasive species proliferation at Lake Tahoe.

Round 10 Funding - $985,000:

Round 10 funds will continue the same four projects listed. The Service will pass through 81% of the funds to TRCD and TRPA for project implementation. 19% will be retained for field work, project oversight, reports, project coordination, and administrative costs. Funding expenditures from Round 10 began during the first quarter of FY 2010.

Enforcement of AIS prevention measures available in the Basin include TRPA's Governing Board amended Code of Ordinances requiring that watercraft launch facilities be closed unless there is a qualified watercraft inspector present and conducting inspections. Violations can result in penalties starting at $5,000. The California Fish and Game Code § 2301 allows California Department of Fish and Game (CDFG) designated staff (or other authorized state authorities) to inspect conveyances (e.g. watercraft) suspected of harboring dreissenid mussels, require decontamination, and even impound or quarantine the conveyance. The Nevada Department of Wildlife has similar regulations including prohibited species lists and quarantine provisions.

The AIS effort at Lake Tahoe has expanded substantially in the few, short years since the threat was recognized. In an unprecedented example of cooperation and action, the effort has many substantive accomplishments to its credit and plans for many more. Examples of these accomplishments include:

Development of the Lake Tahoe Region Aquatic Invasive Species Management Plan and adoption of the Plan by the national Aquatic Nuisance Species Task Force
Formation of the Lake Tahoe AIS Working Group (LTAISWG)
Formation of the Lake Tahoe AIS Coordination Committee (LTAISCC)
Development and implementation of a Watercraft Inspection Program at Lake Tahoe
Deployment of portable watercraft decontamination stations
Training and certification of more than 100 Watercraft Inspectors
Hiring an AIS Coordinator through the U.S. Fish and Wildlife Service (USFWS)
Increased monitoring for invasive aquatic plants, invertebrates, and warm water fishes
Use of diver-operated suction and benthic barriers to control invasive aquatic plants
A pilot project to evaluate and develop alternative techniques for the control of Asian clams
Measurement of warm water fish behavior and diets in and around the Tahoe Keys
Increased education and outreach activities
Quagga mussel survivability studies conducted by UNR/UCD

LTAIS Project Goals:

The Lake Tahoe AIS Coordination Committee (LTAISCC), in conjunction with the Lake Tahoe AIS Working Group (LTAISWG), using the LTAIS Management Plan as a basis, has set forth the three goals for Round 11 mentioned earlier (Prevention, Early Detection and Rapid Response and Control and Eradication) and prioritized projects under each. The criteria used by the LTAISCC and the LTAISWG to prioritize projects was:

- Benefit of Action
- Certainty
- Feasibility (Organizational/ Technical Capacity)

- Risk of action
- Previous Investment
- Designated project funding – agency earmarks
- Stakeholder and agency concern and interest in the project

Round 11 Project Proposal:

The proposal utilizes established goals identified in the nationally recognized Lake Tahoe Region AIS Management Plan and prioritized individual projects within each goal. The four original projects from Rounds 8, 9 and 10 (Integrated Tahoe Keys AIS Eradication Project, Lake-Wide Near Shore Habitat Improvement Project, Watercraft Inspection Program and AIS Environmental Education) are incorporated into the proposal and Early Detection and Rapid Response has been identified as a high priority need not previously acknowledged. AIS Environmental Education has been embedded within each project rather than as a separate project.

Each project was scored utilizing the above criteria, scores were added up and projects were placed within the appropriate priority range of high, medium and low. The high priority project needs identified during this process totaled $6,352,000. This Round 11 proposal requests $3,221,000 for those highest priority projects. Members of the LTAISCC and others are seeking additional funding from other sources to fund the difference between these figures.

The table on the following page illustrates the high priority projects identified by the LTAISCC, relation to the four Round 8, 9 and 10 projects (AIS Environmental Education is embedded within each project), total funding needed, the Round 11 request per project, and the agency tasked with implementing the project. Project level scaling was accomplished within the two weed removal projects (nearshore and Tahoe Keys) by FWS to reflect limited SNPLMA Round 11 funding. Other funding sources are being pursued to offset the scaling effect on these projects. The two high priority prevention projects (Quagga mussel survival and reproduction and effectiveness study and planning for entry point inspections) not funded by this proposal, may be funded from other sources such as Round 10 Science and FWS appropriations. Early Detection Monitoring and Watercraft Inspection are annual, ongoing needs for both Round 11 and 12 and show a funding need for both.

Early Detection and Rapid Response

Project Type	Project	Round 11 & 12 Funding Need	Round 11 SNPLMA Request	Implementing Agency
Early detection Monitoring	Early Detection Plan (QZ)	5,000	5,000	TRPA
Early detection Monitoring	Early Detection Monitoring	200,000	100,000	TRPA
Rapid Response Planning	Rapid Response Plan Exercise	20,000	20,000	USFWS

Control and Eradication

Project Type	Project	Round 11 & 12 Funding Need	Round 11 SNPLMA Request	Implementing Agency
Weed Removal	Removal of weeds from nearshore Lake Tahoe (2)	2,035,000	904,000	TRCD
Weed Removal	Removal of weeds from Tahoe Keys (1)	1,600,000	500,000	TRCD
Warm Water Fish Removal	Removal of Warm water fish from nearshore (1 and 2)	482,000	482,000	TRCD
Asian Clams	Deepwater Asian clam recruitment and scaling up removal projects for control, Marla Bay (2)	200,000	0	TRCD
Asian Clams	Asian Clam Removal Emerald Bay (2)	310,000	360,000	TRCD

Prevention

Project Type	Project	Round 11 & 12 Funding Need	Round 11 SNPLMA Request	Implementing Agency
Watercraft Inspection	Watercraft Inspection Program (3)	1,700,000	850,000	TRPA/TRCD
Watercraft Inspection	Quagga mussel survival and reproduction (3)	450,000	0	TRPA
Watercraft Inspection	Effectiveness study and Planning for entry point inspections (3)	300,000	0	USFWS

(Round 8, 9 and 10 Projects: (number shown in parenthesis in "Project" column above)

1) Integrated Tahoe Keys AIS Eradication Project
2) Lake-wide Near Shore Habitat Improvement Project
3) Watercraft Inspection Program
4) AIS Environmental Education Program (embedded within each project))

Prevention

Prevention measures are used to address AIS not yet present as well as to diminish harmful impacts by reducing further spread. Prevention measures that will be conducted include activities such as inspection, quarantine and decontamination of watercraft, enforcement of legal authority, and strengthening the code of conduct for businesses dealing with aquatic organisms. Inspection and decontamination of recreational equipment such as watercraft (including boats, rafts, kayaks, and float tubes), fishing gear, clothing, waders, rope, cooling tanks and live wells prevents the spread of many AIS such as dreissenid mussels, aquatic plants, and other unwanted pests.

Preventing the introduction of AIS to new waterbodies is most desirable and, fortunately, far more cost efficient compared to control efforts. Conversely, the likelihood of eradicating AIS is dramatically reduced once the population(s) is widely established.

Prevention also involves understanding the biology of the target invasive and from that information, strategically placing resources to the best advantage. Quagga mussels have been shown to be highly adaptive and tolerant of water environments foreign to them. Recent research using Tahoe water suggests adult quagga mussel can survive and may be able to reproduce in Lake Tahoe. Laboratory studies with Tahoe water and all stages of the quagga mussel to determine survival and reproductive potential from different locations with varying calcium will be conducted to determine the need for more stringent inspection and decontamination procedures.

Beginning in 2010, the AIS inspection program is moving the primary inspection and decontamination process away from launch facilities on Lake Tahoe. The program will be comprised of at least three inspection and decontamination locations that would be open 7 days a week and an additional two locations that would be open on weekends to handle the additional inspection load. These inspection stations would be located on or as near as possible to the major routes into the Lake Tahoe Basin to better serve the boating public. There are two benefits to this change in the inspection program. The first benefit is quality control. Having inspections occur at 16 private and public launch facilities makes quality control of the inspection process difficult. By having inspections performed at 5 locations by Tahoe RCD personnel (this does not include Echo or Fallen Leaf lakes) the quality of inspection and data collection for effectiveness monitoring will improve. The second benefit of the program is that by co-locating the high pressure/high temperature decontamination equipment with the inspections, we are able to do a complete bilge flush on all vessels not completely cleaned, drained and dry and a full decontamination on all high risk watercraft. This increase in decontamination efficiency will increase the preventative measures of the program.

The request for $850,000 from round 11 SNPLMA would cover only part of the total AIS inspection costs expected in 2011. The total costs expected in 2011 are $850,000 for the off-ramp motorized watercraft inspection program, $450,000 for non-motorized inspections that

are likely to be mandated by recently introduced LTRA legislation (if introduced language remains, the legislation would require inspection of all watercraft, including non-motorized at dispersed as well as established launch areas), and $60,000 in Tahoe Regional Planning Agency costs. This brings the total inspection program cost to $1,360,000. The balance of the program costs totaling $510,000 would be made up in part by Tahoe Regional Planning Agency Inspection Fees. Other funding sources will be pursued as well.

Early Detection and Rapid Response

Following prevention, early detection, containment and control/eradication of new AIS introductions are the second most cost-effective measures to reduce the impacts from AIS. This is accomplished through rigorous monitoring followed by the ability to respond efficiently and aggressively. Response is facilitated by a collaborative effort between numerous agencies, NGO's, researchers, and other stakeholders.

Early detection of invasion by new species requires a comprehensive plan for monitoring of the nearshore and the water column. Round 11 would identify the best methods to detect Dreissenid larvae and other species at low concentrations in plankton samples. State of the art techniques such as microscopy and molecular DNA analysis would be incorporated into a comprehensive early detection and monitoring program.

Implementing an early detection plan requires staffing and equipment for monitoring of the nearshore and the water column. Equipment and staff from appropriate agencies and the research community will be identified as participating in the effort.

A draft Rapid Response Plan has been written and table-top and active effectiveness exercises are needed to gauge comprehensiveness of the Plan. Round 11 would develop and implement rapid response exercises. A knowledgeable group would be assembled to design the exercises, assess the required people and resources, run the exercises and evaluate the results. The project would utilize existing rapid response plans and exercise scenarios and develop alternative detection, containment and eradication examples.

Effective responses to new or newly spreading AIS require adequate resources, personnel and procedures in place. The information gained from the exercises will guide the development of a response team, fully equipped and trained to respond within 24 hours to new AIS pest infestations. Potential storing and staging facilities will be identified and various containment and control options will be evaluated.

Control and Eradication

Projects #1 and #2 from Rounds 8, 9 and 10, included in the control and eradication goal continue in Round 11. This goal can be separated into three taxa, plants (milfoil and pondweed), vertebrates (warm water fish) and invertebrates (Asian clams).

Invasive weeds have been detected in numerous locations in Lake Tahoe. The continued spread of Eurasian watermilfoil and curlyleaf pondweed create severe economic and ecological impacts to Lake Tahoe, both from source and satellite populations. Presence of invasive plants provide habitat for undesirable warm-water fish and impede restoration of native fish populations. Round 11 funding would support a strategy to continue identification, control and monitoring of priority sites. The emphasis would be on eliminating source populations and/or satellite populations. The primary source population is in the Tahoe Keys Lagoons. Round 11 will continue implementation of the study plan

("Evaluation of Methods for Aquatic Invasive Species Management in the Tahoe Keys" by Dr. Lars Anderson, USDA-ARS) developed through Round 9. This included a cost and task analysis of needed control measures for aquatic invasive weeds to determine the cost of a herbicide-based control strategy. Review and possible approval of herbicide use in the Tahoe Keys is on track for 2011 and Round 11 funding will be utilized to both continue implementation of the Plan and to implement a management strategy of herbicide application if said application is approved by the California Water Quality Control Board. (The California Water Quality Control Board, Lahontan Region (Lahontan Water Board) is working to adopt procedures for allowing project proposals to come before the Board for review and discretionary authorization of pesticide use. The Lake Tahoe Invasive Species Coordination Committee has been working with the Lahontan Water Board so the proposal for use of herbicides to control invasive weeds in the Tahoe Keys lagoon areas is eligible for review and can be considered for discretionary Board authorization under the forthcoming procedures.)

During the summer of 2009, divers surveyed a recently discovered population of Asian clams at the mouth of Emerald Bay. The population is football field size and age analysis of individuals indicates that it has been this size for less than two years. Pilot work on controlling Asian clam populations has provided valuable information for designing larger scale control strategies. New populations of Asian clams have been detected, surveyed and control plans are being developed to address those populations. Based on results from the Asian Clam Removal Pilot Project, rubber benthic barriers placed on the Lake bottom will be used to treat the target populations. Results from the first pilot project indicate 100% mortality can be achieved. This Round 11 project will upscale the control approach utilizing larger barrier sections, with a target of using 10 foot by 100 foot rolls of barrier material. It is unknown at this time how many rolls can be safely and effectively laid on the Lake bottom by divers and removed at the end of the treatment. Diver safety is of utmost importance and underwater work at Lake Tahoe's elevation of 6,000 feet is complicated and requires safety procedures that limit the time a diver can stay underwater.

Invasive fish have eliminated some native fish populations and are impacting other native fish diversity and abundance. Bluegill and largemouth bass will be harvested from currently established locations through electroshocking performed throughout the summer (May - October). After removal, the effectiveness of control and recolonization over time will be monitored and tactics will be modified to achieve maximum efficacy.

- Describe what Round 11 is specifically funding; list the number of years the requested funding will cover; briefly describe how this project links into previous and future projects, and identify other round funding.

NOTE: *Focus should be on finishing current/phased projects. If project is new in Round 11, clearly identify if the project is for planning or implementation and how it will be completed with Round 11 funds. Identify if Round 12 or other funds will be needed to complete the project. Please identify total non-SNPLMA funds that are being contributed/dedicated to the proposed Round 11 project and the source of those funds.*

Round 11 will fund Phase 5 of this continuing project. Implementation of the three goals identified earlier and endorsed by the Lake Tahoe AIS Coordination Committee form the foundation for a successful AIS program at Lake Tahoe. It is expected that the funds requested for control and eradication would be spent over 2 years. The funds requested for

prevention and rapid response will be spent within two years. Additional funds from the States of California and Nevada, private individuals and other federal agencies will also be applied to this program. The current calendar year 2010 work plan budget totals $1,593,178, including $969,282 from Round 9 and10 SNPLMA, $286,882 from BOR, $154,000 from Nevada State lands, $7,014 from California Water Quality Control Board and $176,000 from TRPA inspection fees and fines.

Applications will be made to other sources for 2011 as their application cycles open. Anticipated applications include, Bureau of Reclamation, California Water Pollution Clean-Up and Abatement accounts, Nevada License Plate funds and federal FY 2011 appropriations. Inspection fees collected by TRPA are anticipated to be approximately $300,000. If additional funds are approved and/or obtained from these sources, SNPLMA Round 11 needs will be reduced by that amount.

Should any alternate funding be acquired that funds the Watercraft Inspection or Early Detection Monitoring tasks that are part of this project, those funds that are then duplicative would be allocated to fund the tasks related to Control and Eradication, or Watercraft inspection program upgrade regional study tasks. The maximum amount that would be allocated to each individual task is as follows: $1,600,000 to Weed removal from Tahoe Keys, $1,600,000 to Weed removal from nearshore Lake Tahoe, $521,000 to Asian clam removal in Emerald Bay, and $262,000 to Watercraft inspection program upgrade regional study. A significant funding match will be requested from the Tahoe Keys Property Owners Association for the aquatic weed control work to be conducted in the Tahoe Keys area. If that match is not received, funding maybe allocated to other tasks related to weed control.

If detection is made of a new non-native species, Round 11 funds may be diverted to a rapid response to control the new invader. Any rapid response would be in collaboration with the LTAIS Coordination Committee and would follow the procedures outlined in the Lake Tahoe Basin Dreissenid Mussel Rapid Response Plan.

A SNPLMA Round 12 request will be submitted during the Round 12 submittal period.

- Describe the “readiness” of this project to move forward (urgency, capacity, capability, environmental documentation, interagency agreements, etc)

Lake Tahoe is at risk of being invaded by non-native species every day. The prevention, detection, rapid response and control programs will provide a high level of certainty that new invasions will not occur and existing invasive species will be controlled and eradicated if possible. The Lake Tahoe AIS Coordination Committee (LTAISCC) has ramped up its capacity to meet the financial accountability, infrastructure and personnel needs of this nomination and will continue to increase capacity as these programs mature. The Lake Tahoe Region Aquatic Invasive Species Management Plan (Plan) provides direction for fiscal responsibility and identifies the Tahoe Regional Planning Agency (TRPA) as the primary fiscal agent for activities described in the Plan. This nomination is consistent with the goals identified in the Plan. Environmental documentation has progressed on a project basis and all requirements of NEPA and CEQA have been addressed to date. Additional documentation may be required as projects go forward. The FWS currently has contracts with the Tahoe Resource Conservation District and the TRPA for implementation of SNPLMA projects. In addition, the FWS is chair of the LTAISCC that is comprised of federal and state agencies as well as representatives of the science community and is a policy level group that meets once a month to direct and coordinate AIS activities.

- Describe partnerships for this project. (if applicable, project should identify committed/secured partner funding and/or other partner contributions (describe) and how it is integrated into the project)

The Lake Tahoe AIS program has many partnerships including those previously identified with the LTAISCC. The Lake Tahoe AIS Working Group is the group that is involved on a daily basis with implementing the LTAISMP and is comprised of federal, state, local, NGO's and members of the science community. The AIS program has received funding in the past from the Bureau of Reclamation (Reclamation), US Army Corps of Engineers (USACOE), states of California and Nevada, public utility districts, non-profits and private individuals. During the term of Round 11 only funding from Reclamation and private sources is available at this time. Reclamation has awarded funds to TRCD for aquatic weed control through 2011. It is unknown at this time the amount that TRCD will have remaining in 2011 from Reclamation. As additional funding is requested and secured, it will be consistent with the goals of the LTAISMP.

Note: *The form requests information about project goals, objectives, accomplishments, and questions the program is designed to answer across several different sections. These issues are closely linked and your individual responses should provide a cohesive description.*

Goal – Purpose and Need (“larger” statement of future expected outcome – usually not measurable)

The goals of the program are articulated in the Lake Tahoe Region Aquatic Invasive Species Management Plan.

- Prevent new introductions of AIS to the Lake Tahoe Region
- Limit the spread of existing AIS populations in the Lake Tahoe Region, by employing strategies that minimize threats to native species, and extirpate existing AIS populations when possible
- Abate harmful ecological, economic, social and public health impacts resulting from AIS

Objectives (specific measurable statements of action which when completed will move towards achieving the goal)

Note: *Objectives will form the basis for the milestones/deliverables to be identified in Appendix B-8*

- Describe how fulfilling objectives will contribute to the achievement of one or more environmental thresholds (air quality, water quality, soil conservation, vegetation, fisheries, wildlife, scenic, noise, recreation). Provide measures if applicable. For example: acres treated, miles of stream restored for each objective.

The objectives of the Lake Tahoe AIS program as part of this nomination are as follows:

Prevention- The objective is to inspect all trailered watercraft that launch into the waters of the Lake Tahoe region that have last launched into other waters and to inspect as many car-top watercraft as feasible. The target is to inspect 12,000 trailered watercraft.

Early detection – The objective is to implement the early detection monitoring protocol to detect any infestations of invasive invertebrates such as quagga/zebra mussel.

Rapid Response – The objective is to develop rapid response exercises and complete one rapid response exercise.

Control – The objective is to reduce the acres of the Lake Tahoe region infested by Asian Clams, aquatic weeds, and warm water invasive fish. The objective for Asian clams is one acre, for aquatic weeds, 23 acres and for warm water fish, to reduce populations to a maintenance level.

These objectives reflect what can be accomplished given the full nomination request. Should a reduced amount of funding be awarded the objectives would also need to be reduced.

Any scaling down of this proposal should be in concert with the following priority list of Round 11 AIS projects.

Round 11 Proposal Project Priority

Prevention
Early Detection/Rapid Response
Warm Water Fish
Invasive Weeds
Asian Clam

Alternative Scaled-Back AIS Project Request (further reduced subset of total AIS need)

Project	Description	Request in Round 11	Scaled back (minimum request for project work)
Prevention, Early Detection and Rapid Response.	See definitions below	$ 975,000	$ 975,000
Prevention – The objective is to inspect all trailered watercraft that launch into the waters of the Lake Tahoe region that have last launched into other waters and to inspect as many car-top watercraft as feasible. The target is to inspect 12,000 trailered watercraft. **Early detection** – The objective is to implement the early detection monitoring protocol to detect any infestations of invasive invertebrates such as quagga/zebra mussel. **Rapid Response** – The objective is to develop rapid response exercises, complete one rapid response exercise and modify the Rapid Response Plan as needed.			
Control and Eradication	The objective is to reduce the acres of the Lake Tahoe region infested by Asian Clams, aquatic weeds, and warm water invasive fish. • Weed removal from nearshore Lake Tahoe (21ac)	1,000,000 950,000	904,000 500,000

	• Weed removal from Tahoe Keys (59 ac) • Removal of warm water fish from nearshore (15 locations) • Asian clam pilot study removal project for control • Asian clam removal in Emerald Bay (1 acre)	482,000 200,000 360,000	482,000 0 360,000
	Total Round 11 Requested	**$3,967,000**	**$3,221,000**

- Describe how fulfilling objectives will contribute to the achievement of one or more environmental thresholds (air quality, water quality, soil conservation, vegetation, fisheries, wildlife, scenic, noise, recreation). Provide measures if applicable. For example: acres treated, miles of stream restored for each objective.

The presence of AIS in Lake Tahoe negatively affects the water quality of the littoral zone and habitat for native fish. The removal of aquatic weeds, warm water fishes and Asian clams will contribute to achieving water quality thresholds in the littoral zone of Lake Tahoe as well as contributing to lake fish habitat and Lahontan cutthroat trout thresholds.

- Describe the estimated environmental risks from unintended consequences of the proposed project (if applicable)**.**

While the majority of the projects contained in this nomination are not likely to produce adverse impacts, the removal of Asian clams is likely to also result in the removal of the native benthic community. This would be a short term impact that would be outweighed by the long term benefit to the native community from the removal of the clams.

Accomplishments

- Describe the anticipated project accomplishments (i.e. products or identifiable environmental benefits being produced or implemented under this project)

Note: *Differentiate between direct and/or primary project effects and secondary and/or overall watershed effects.*

Prevention- The anticipated accomplishment is to inspect trailered watercraft (approximately 12,000 inspections) that launch into the waters of the Lake Tahoe region and to inspect car-top watercraft at multiple waterbodies in the region.

Early Detection – The anticipated accomplishment is to implement the early detection monitoring protocol to detect any potential infestations of invasive invertebrates such as quagga/zebra mussel during 2011.

Rapid Response – The anticipated accomplishment is to conduct at least one rapid response exercise involving all agencies affected by a new detection utilizing the Lake Tahoe Basin Interagency Dreissenid Mussel Rapid Response Plan (Rapid Response Plan).

Control – The objective is to treat at least one acre of Lake Tahoe infested by Asian Clams within Emerald Bay or as determined by available science and the project prioritization criteria applied by the LTAISCC, 21 acres of aquatic weeds in Emerald Bay and offshore of Ski Run Marina, 59 acres of aquatic weeds in the Tahoe Keys and warm water invasive fish in15 locations on Lake Tahoe (Tahoe Keys (east and west),Taylor Creek, Emerald Bay, Meeks Bay, Obexer's Marina, Sunnyside Marina, Tahoe City Marina, Lake Forest Launch Facility, Star Harbor, Carnelian Bay, Crystal Bay Shores, Sand Harbor, Lakeside Marina, Ski

Run Marina and Timber Cove Marina).

These anticipated accomplishments reflect what can be accomplished given the full nomination request. Should a reduced amount of funding be awarded the objectives/accomplishments would also need to be reduced.

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

The Lake Tahoe AIS program will produce an annual synthesis of findings report that will include the results of projects funded as part of this request. This report will be presented to Lake Tahoe Federal Advisory Committee and the Tahoe Regional Planning Agency Governing Board as part of a noticed public meeting and be posted on the appropriate agency websites for distribution.

- If you checked "yes" for the project being consistent with and contributes to TMDL pollutant reductions please consider and integrate the following in the project description:

a) Describe whether, and how, the project demonstrates advanced, alternative, or innovative practices.

N/A

b) If project includes project level monitoring, describe ability of proposed monitoring strategy to contribute to the state of TMDL knowledge. Also describe if purpose of the capital project is to conduct data collection and/or analysis related to Lake Tahoe clarity.

N/A

c) Describe treatment approach for reducing pollutants and/or measures to address connectivity between pollutant sources and Lake Tahoe or its tributaries. Identify target pollutants, and, to the degree feasible, provide quantitative estimates of project effectiveness at reducing pollutant loads (and/or a commitment to provide post-project estimates).

N/A

d) If appropriate, describe whether, and how, the project can be combined or coordinated with other TMDL implementation projects.

N/A

Monitoring

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

  - List the questions the monitoring program is designed to answer.

One component of the Lake Tahoe AIS program that is included in this nomination is early detection monitoring for quagga/zebra mussels and other invasive invertebrates such as the spiny water flea. Early detection monitoring is needed to rapidly respond to any invasion of these species so that measures can be taken to address that invasion and limit impacts.

In addition to the early detection monitoring, project level effectiveness monitoring will be incorporated into the individual projects that address the Prevention and Control and Eradication goals. Specific effectiveness monitoring will include; effectiveness monitoring of the vessel inspection program, and effectiveness monitoring of individual control and eradication project areas.

  - Describe any coordination with, or input from, the science community on monitoring and adaptive management that has occurred on the development of this nomination and what changes (if any) to the project were made as a result of this input.

The Lake Tahoe AIS program includes input from the science community in all aspects of project planning, including project level effectiveness and status and trend monitoring. While the AIS program to date has not adopted a formal adaptive management system, we have and continue to use the Plan, Do, Check, Act approach for refining future actions. The best example of this is the interaction between the agencies and the science community to address Asian clam removal. Staff from agencies and research community worked hand in hand in planning and carrying out a pilot project to determine the most effective methods to removal Asian clams from Lake Tahoe. In addition the science community was actively involved in the prioritization process for determining the scope and content of this nomination. This is the level of coordination between agencies and the science community that the Lake Tahoe AIS program has continued in the development of this nomination, and will continue in its implementation.

  - 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? (*Note: A detailed monitoring plan and/or research plan is not required, however, enough detail must be provided to allow someone that is unfamiliar with the project to understand and evaluate the proposed methods and strategies.*)

The effectiveness monitoring for the vessel inspection program will be conducted using a blind test of inspector effectiveness at locating AIS on vessels that pass through the inspection station. To accomplish this task, vessels will be sent though that are known to have AIS analogs present. The number of these vessels that are allowed to pass through without detecting the AIS analog will be determined as a measure of effectiveness.

The effectiveness of the early detection monitoring protocol will be determined through an analysis of similar monitoring programs for other water bodies that have proven to be effective.

The rapid response plan exercise will include a lessons learned and critique that will identify the flaws of the exercise and any modifications necessary to the Rapid Response Plan.

The effectiveness monitoring for aquatic weed removal projects will consist of pre-treatment surveys to quantify the weeds present using metrics such as percent cover and/or biomass. Post-treatment surveys will then be conducted using the same metrics immediately after treatment, and revisits conducted at the end of the season and the following season to assess long term effectiveness.

Similar methods will be used will be used for other control and eradication efforts for invertebrates and warm water fishes. The metrics will vary by the taxa to be removed but all projects will look at short term and long term effectiveness.

- Describe whether the monitoring or research associated with this project fits into or is part of a larger monitoring or research program.

The effectiveness monitoring that will be conducted for control and eradication projects will be incorporated into larger status and trend monitoring effort that seeks to track the current status of AIS in the Lake Tahoe region.

- Describe how information from the monitoring and/or research will be used to improve the continued performance of the proposed project or future similar projects.

As part of the process of Plan, Do, Check, Act, the results of the effectiveness monitoring on inspection and control treatments will be used to adjust the methods used to increase the effectiveness of future inspections/treatments or to inform the need for future research. For example, should we learn that the current methods for treating aquatic weeds are ineffective in some areas of the lake we would look to alternative methods to achieve removal of the weeds from that area.

Attachments

- If applicable, include 8 ½ X 11 map depicting the project

Appendix B-8

LAKE TAHOE RESTORATION PROJECTS
ESTIMATED NECESSARY EXPENSES & KEY MILESTONE DATES

Project Name:	Phase 5 – Preventing Aquatic Invasive Species Proliferation in Lake Tahoe Using Prevention, Early Detection and Rapid Response and Control and Eradication	Agency:	U.S. Fish and Wildlife Service
Prepared by:	Steve Chilton	Phone:	775-589-5265
SNPLMA Project #:		EIP #:	339

Identify estimated costs of eligible reimbursement expenses:

1. **Planning, Environmental Assessment and Research Costs** (specialist surveys, reports, monitoring, data collection, analysis, NEPA, etc.)	$ 0	0 %
2. **FWS Consultation – Endangered Species Act**	$ 5,000	.15 %
3. **Direct Labor (Payroll) to Perform the Project**	$ 0	0 %
4. **Project Equipment** (tools, software, specialized equipment, etc.)	$ 0	0 %
5. **Travel** (including per diem where official travel status required to carry out project, such as serve as COR, experts to review reports, etc.)	$ 6,000	.18 %
6. **Official Vehicle Use** (pro rata cost for use of Official Vehicles when required to carry out project)	$ 6,000	.18 %
7. **Cost of Contracts, Grants and/or Agreements to Perform the Project**	$ 2,881,900	89.5 %
8. **Other Direct and Contracted Labor:** Agency payroll for the Contracting Officer to do project procurement, COR, Project Inspector, Sec. 106 Consultation if required, NEPA Lead, Project Manager, Project Supervisor, and subject experts to review contracted surveys, designs/drawings, plans, reports, etc.; Also covered is the cost to contract for a Project Manager and/or Project Supervisor if contracted separately from other project contracts)	$ 0	0 %
9. **Other Necessary Expenses** (see Appendix B-9)	$ 322,100	10.0 %
TOTAL:	$ 3,221,000	100 %

Estimated Key Milestone Dates:

Milestones/Deliverables:	Date:
1)Prevention- Inspect all trailered watercraft that launch into the waters of the Lake Tahoe region that have last launched into other waters and to interdict as many car-top watercraft as feasible.	12/1/2012
2)Early detection – Implement the early detection monitoring protocol to detect any infestations of invasive invertebrates such as quagga/zebra	12/1/2012

mussel.)	
3)Rapid Response – Develop rapid response exercises and modify/ complete the draft Rapid Response Plan as needed.	12/1/2012
4)Control – Reduce the acres of the Lake Tahoe region infested by Asian Clams, aquatic weeds, and warm water invasive fish. .	12/1/2012
These objectives reflect what can be accomplished given the full nomination request. Should a reduced amount of funding be awarded the objectives would also need to be reduced.	
Final Completion Date: 12/1/2012	

COMMENTS: