ROUND 12 CAPITAL PROJECT NOMINATION FORM
LAKE TAHOE FEDERAL SHARE EIP CAPITAL PROJECTS
APPENDIX K

Project Name:	Mobile BMP Implementation on Paved Roadways in the Tahoe Basin	**EIP Number: (*Required*)**	10174, 10109, 10111
Federal Agency Sponsor: (*Required*)	Federal Highway Administration	**Contact:**	Hannah Visser
Threshold:	Air and Water	**Phone Number:**	775-687-5322
Threshold Standard:	WQ-1, WQ-2, WQ-3, WQ-4, WQ-5, AQ-3, AQ-4, AQ-8	**Email:**	Hannah.Visser@dot.gov
FUNDING REQUESTED IN THIS ROUND:	**$** 532,000		

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

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 project's contribution to the EIP program.** — ***Yes*** ☒ ***No*** ☐

High-efficiency street sweepers are included in the EIP Update under the improving air quality action priority although it is recognized that they have multiple threshold benefits. EIP number 10174 is for the purchase and use of high-efficiency street sweepers. EIP number 10109 is for BMP Effectiveness, and EIP number 10111 is for Loading Rates for Stormwater Runoff. The purchase and use of high-efficiency sweepers will result in a reduction of fine sediment particles and nutrient loading from urban roadways and reduce the amount of fine sediment particles that can become airborne. This will result in direct benefits and contribution to the Environmental Improvement Program (EIP) goals of reducing the pollutants that impact air quality and water quality. Additionally the reduction in fine sediment from the roadways will result in reduced Best Management Practices (BMP) maintenance needs over time from less pollutant generation.

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

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

5. **Does the project develop knowledge and/or information to develop future capital projects in the EIP? (such projects that fulfill this function would include technical assistance, data management, and/or resource inventories)** — ***Yes*** ☒ ***No*** ☐

Data Management -- this project will gather and report data regarding abrasives and deicers applied to and/or removed from roadways and rights-of-way in the Tahoe Basin. Databases associated with the Lake Clarity Crediting Program (LCCP) will incorporate the collected data.

Check all Capital Focus Area(s) that apply (as defined in the Federal Vision):

- ☒ 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 and/or completion of projects approved in Rounds 5 through 11 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 12.**

  List Previously Approved Rounds and funding(provide project titles):

- ☒ *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 the Round 12 project (also summarize scaling of funding to be described in more detail in the "Project Description" section below).

This project will result in mobile BMP implementation on paved roadways to reduce fine sediment particle and nutrient concentrations from becoming airborne or impacting water quality. The implementation of this project will require the purchase of 2 high-efficiency sweepers [for California Department of Transportation (Caltrans) and Nevada Department of Transportation (NDOT)]. The use of this equipment will assist the state departments of transportation in the Lake Tahoe Hydrologic Unit (Basin) to significantly increase abrasive recovery effectiveness and pollutant removal from the roadways. The funding requested is $532,000 and there will be an estimated in-kind contribution of $2,450,000 during the life of the 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 12 not a history of an ongoing project or program.*

Advanced methods are needed to meet the Lake Tahoe Total Maximum Daily Load (TMDL), which is expected to have a direct impact on the clarity of Lake Tahoe. Fine sediment particles < 16 microns in diameter transported to Lake Tahoe by stormwater runoff have been identified as a major factor in the loss of clarity in Lake Tahoe. Much of the fine sediment particles are generated from roadways in urban areas. Recent TMDL cost-effectiveness analysis completed for Placer County through a grant from the US Army Corp of Engineers indicates that increased street sweeping is highly cost-effective for removing fine sediment. The Pollutant Load Reduction Model (PLRM) initial estimates of pollutant loading have indicated that modifications to existing programs including winter abrasives applications and sediment recovery from roads via enhanced sweeping may constitute a large portion of potential credits for implementation of the TMDL.

Public entities in the Lake Tahoe Basin are currently hindered by a lack of street sweepers and the use of old/outdated street sweepers and traction application equipment (spreaders). Utilizing the BAT (best available technology) for spreaders would reduce the amount of abrasive applied. Utilizing the BAT for sweepers (above the current PM_{10} compliant standard), as well as increasing sweeping frequency, would increase the amount of fine sediment particles and nutrients recovered. The increased costs associated with sediment and nutrient removal as a result of the EIP and TMDL could be offset by helping the local jurisdictions and associated responsible agencies acquire equipment that will lead to cost effective solutions for meeting load reductions as required by the TMDL and TRPA Thresholds. The new sweepers purchased with funding from this capital proposal will include high-efficiency vacuum sweepers, dedicated solely to Caltrans and NDOT routes in the Lake Tahoe Basin.

The Pollutant Reduction Opportunity Report (2008) estimates that paved roads contribute 44.1% of the total annual fugitive dust emissions, further heightening the importance of controlling this source of atmospheric pollutants. Increasing the number of sweepers operated in the Basin will allow for increased sweeping frequency and will increase removal of fine sediment and nutrient amounts. By increasing the sweeping capacity of each jurisdiction,

meeting the TMDL goal reduction of fine sediment can be more achievable. Existing sweepers are up to 7+ years old. The new high-efficiency sweepers can remove finer (smaller) sediment particles than the current fleet. The Pollutant Reduction Opportunity Report (2008) estimates a range from 8.5 % (bi-weekly sweeping) to 16.7 % (weekly sweeping) reduction of fine sediment from primary roads from the total basin wide atmospheric deposition budget.

To address the current water quality and air quality threshold and pending Lake Tahoe TMDL load reductions for fine sediment particles, phosphorus and nitrogen, the CA and NV stakeholders need to explore alternative products and methods to reduce, minimize, and/or eliminate the use of traction abrasives and enhance recovery effectiveness in the Tahoe Basin.

- Describe what Round 12 is specifically funding; list the number of years the requested funding will cover; briefly describe how this project links into previous projects/rounds (identify and describe other round projects and funding received). Show scaling of project (reduced funding request and associated reduction in accomplishments).

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

The funding requested in this proposal is for sediment reduction/removal and will require the purchasing of two high-efficiency sweepers [for Caltrans (CA) and NDOT (NV)]. This equipment will assist the State departments of transportation in the Tahoe Basin to effectively pick up abrasives from paved roadways. This project is for a 7 year period of mobile BMP implementation on paved surfaces resulting from a one-time purchase of equipment, and will be completed with the Round 12 funds. The Round 12 funding will facilitate expedited implementation of an advanced sweeper program, which will have additional benefits to all EIP Erosion Control Projects on paved roadways from a reduction in pollutant loading. The grant funded sweepers will be used to meet TMDL goals and TRPA Thresholds for fine sediment and nutrient load reductions from atmospheric deposition and stormwater runoff.

All operational and maintenance costs including fuel and material disposal will be paid for by the departments of transportation. It is estimated that the operational and maintenance, fuel and material disposal fees will be approximately $175,000/year for the life expectancy of the sweeper. This project is for a period of 7 years, making the estimated total individual in-kind contribution $1,225,000 and collective in-kind contributions of $2,450,000.

The funding requested in this proposal includes the purchase of the 2 high-efficiency sweepers at a cost of $266,000 each, totaling $532,000. The estimated total in-kind contribution to this Round 12 project is estimated at $2,450,000.

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

This project is ready to proceed upon authorization of funds. With the Lake Tahoe TMDL nearing adoption by both states, there is urgency in securing funding to reduce the fine sediment and nutrients generated from urban roadways. Caltrans and NDOT have fully qualified staff available to carry out the program as anticipated or are prepared to offer training as necessary.

Caltrans District 3 Local Assistance will authorize funds and coordinate interagency

agreements after grant approval.

This project would be categorically exempt from CEQA and NEPA.

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

Caltrans will coordinate procurement and will review equipment specifications and work collaboratively with NDOT. Caltrans will contribute all associated operations and maintenance costs for its sweeper.

NDOT presently has experienced staff and facilities to install, operate and maintain the equipment that will be purchased if this project is approved and allowed to move forward. Funding to support personnel cost for the additional equipment would be from the Nevada Highway Fund.

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)

This project will result in mobile BMP implementation on paved roadways to reduce fine sediment particle and nutrient concentrations from becoming airborne or impacting water quality. This project will greatly assist the state departments of transportation who are responsible for compliance with the Lake Tahoe TMDL in reducing fine sediment and nutrient loads from the road surface during a variety of seasonal conditions, thereby eliminating a large source of the particles of concern (<16 micron sediment particles) from becoming airborne or entering Lake Tahoe and its tributaries. Implementation of this project is expected to reduce the amount of fine sediment in the air and stormwater that originates from the urban roadways linked to TRPA air and water thresholds.

Caltrans and NDOT can achieve this goal by increasing the sweeping fleet capacity, thereby increasing the operating time of sweeping and increased removal with efficient equipment.

There is a need for capital money, and for funds to assist the state departments of transportation to take actions that will benefit air and water quality. The majority of governmental grant programs are focused on site improvements and implementation (design and construction), and there is a need to fund the capital expense of equipment targeted at air and water quality improvement.

Objectives (specific measurable statements of action – Round 12 only - 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.

Air and Water Quality thresholds will be addressed through monitoring application/recovery of abrasives and deicing agents along stakeholder centerline miles as follows:
Caltrans – 68 miles
NDOT – 39 miles

Air quality will be improved by the reduction of fine sediment particulates (beyond PM_{10} compliant) and nutrients. The Pollutant Reduction Opportunity Report (2008) estimates a range from 8.5 % (bi-weekly sweeping) to 16.7 % (weekly sweeping) reduction of fine sediment from primary roads from the total basin wide atmospheric deposition budget for the Lake Tahoe Basin. Water quality will be improved by the reduction of fine sediment particles (<16 micron) and nutrients. It is likely, based on current Pollutant Load Reduction Modeling estimates, that increased sweeping capacity from one high-efficiency sweeper may reduce Placer County's jurisdictional sediment load by 10 – 20 % over a five year period. Having more sweeper units available will increase the frequency and number of miles swept. Using the best available technology will increase amount of abrasive/fine sediment particles and nutrients collected thus increasing the efficiency of street sweeping efforts.

It is estimated that implementation of the high-efficiency sweeper in the Tahoe Basin will result in the collection of 5819 tons of sand and sediment per year (based on a 9 year average of sand and sediment collected by Caltrans in the Tahoe Basin) with approximately 15-20% of the sediment collected being fine sediment particles. As part of the Lake Tahoe TMDL implementation, the jurisdictional baseline average annual load of fine sediment particles will be estimated using the Pollutant Load Reduction Model (or equivalent). Once this baseline estimate is conducted, a plan will be created to demonstrate how actions will achieve pollutant load reduction requirements. As part of this plan, annual average estimates will be generated to quantify the amount of fine sediment reduced from actions taken, which include the implementation of mobile BMPs. This information will be reported annually as part of the Lake Clarity Crediting Program, the Environmental Improvement Program, and as part of this project. This information will help to refine the estimate provided from Caltrans as the high-efficiency sweepers are used in the Tahoe Basin and the associated benefits are tracked and reported.

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

This project would be categorically exempt from CEQA. Without this grant, budget limitations and shortfalls will continue to prevent local entities from using the best available technology for road abrasive recovery. More fine sediment particles and nutrients will have the potential to become airborne and will reach Lake Tahoe further degrading the air quality, water quality, and lake clarity.

By increasing the sweeper fleets in the Basin, more tailpipe emissions would be produced, however, the environmental benefits outweigh this unintentional consequence. If the sweepers are replacing old equipment, then there is no unintentional consequence.

Accomplishments

- Describe the anticipated project accomplishments (i.e. products or identifiable environmental benefits being produced or implemented under this project), and how the project results/accomplishments will be communicated and made available to the public.

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

This proposal will aid in the reduction of fine sediment and nutrients and will contribute to significant load reductions needed with regard to the Lake Tahoe TMDL and TRPA Thresholds for atmospheric deposition and stormwater runoff. Products will include a detailed measured tracking system reporting the tonnage and material type being picked up by the sweeper. These measured results will be summarized with annual accomplishments and be made available to the public through the Lake Clarity Crediting Program and the TMDL Management System. Measured results will then be compared to modeled predictions to ensure anticipated targets are met and its effects on Lake Tahoe clarity realized through improvement in Secchi depth.

It is likely, based on current estimates, that increased sweeping capacity from one high-efficiency sweeper may reduce a jurisdictional sediment load by 10 – 20 % over a five year period. Project accomplishments can be easily quantified for this project, based on the research results for sweeping (hours and recovery percentage) and abrasives studies. It is estimated that implementation of the high-efficiency sweeper in the Tahoe Basin will result in the collection of 5819 tons of sand and sediment per year (based on a 9 year average of sand and sediment collected by Caltrans in the Tahoe Basin) with approximately 15-20% of the sediment collected being fine sediment particles. The reduction in fine sediment particles will be documented through the Lake Clarity Crediting Program, the Environmental Improvement Program, and this project.

According to Duncan et al. (1985) implementation of a thorough sweeping program can reduce emissions from paved roads by approximately one-third. Cowherd (1988) estimated that a range of 33-37% emission reduction rate for particulate matter less than 10 microns from paved roadways was possible with a vigorous sweeping program. Street sweeping is a cost-effective pollutant control practice when compared to structural BMPs (e.g. detention ponds, settling or filtering devices) and prolongs their operational efficiency and reduces the required maintenance needs (Schilling 2005). Additionally, when utilizing street sweeping as a pollutant source control measure, and when combined with other structural and non-structural BMPs, water quality is improved and habitat deterioration is reduced (Schilling 2005).

This project will allow the stakeholders to utilize modern technological products and methods to enhance the effectiveness of traction abrasive recovery in the Tahoe Basin. Abrasive recovery is a measurable activity and will be quantified and reported on an annual basis. Using the best available technology will further aid the collection and documentation of abrasive application and recovery effort and will demonstrate a reduction of fine sediment particles and nutrients reaching Lake Tahoe.

- If you checked "yes" for the project being consistent with and contributing 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.

The project will be demonstrating innovative practices. The new high-efficiency vacuum sweepers are approved by TRPA as an acceptable technology for water quality and air quality improvement. Some high-efficiency sweepers do not have mechanical brooms and do not agitate or pulverize abrasives. It will be an innovative practice for stakeholders from two states to consistently use the best available technology to remove abrasives and deicers applied to the paved roadways in the Tahoe Basin as a coordinated effort.

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.

Monitoring for the sweepers will mainly consist of maintenance record keeping, i.e. hours of operation, types/location of streets, and amount of abrasives applied and recovered.

TMDL monitoring will be jurisdictional-based and not project-based. The TMDL will be monitored through the use of tools available; i.e. PLRM and Road RAM (Rapid Assessment Methodology). TMDL Management System annual reporting and the Lake Clarity Crediting Program will reflect results of the project implementation.

Urban stormwater monitoring will be addressed through stakeholder coordination upon full implementation of the Lake Tahoe TMDL. Data collection and analysis will provide more accurate information which can be utilized in programming specialized equipment for recovery of abrasives and programming/monitoring routes of application/recovery.

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).

Fine sediment particles (<16 microns) and nutrients are the target pollutants. It is likely, based on current estimates, that increased sweeping capacity from one high-efficiency sweeper may reduce a jurisdictional sediment load by 10 – 20 % over a five year period. This project will have a very straightforward objective and measurable impact. The treatment approach of more effective sweeping through high-efficiency sweepers and increased frequency has been shown to be a highly cost-effective method for reducing fine sediment particles. The quantitative estimates of overall urban jurisdiction effectiveness at reducing pollutant loads will be documented through the Lake Clarity Crediting Program, the Environmental Improvement Program, and this project.

As data analysis is combined with geographic information systems (GIS) information

and PLRM information, specific knowledge may be obtained to target reduction or elimination of abrasives in some areas of the Tahoe Basin. However, accurate reductions cannot be assessed until more accurate application and recovery data is collected during this project.

The benefit of the best available technology may document an increase in the amount of material recovered - increased efficiency. It is a prime example of source control and will show an immediate water quality, clarity and air quality benefit.

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

Overall, this proposal will coordinate with other able jurisdictions for the same equipment. The basin-wide TMDL effort will reduce, by a significant amount, a large percent of fine sediment particles and nutrients discharged to the Lake via atmospheric deposition and stormwater runoff.

The purchase of high-efficiency sweepers will provide more accurate data than historic methods and will be critical in annual reporting and crediting. The purchase of this equipment, which is GPS-capable, and data tracking will aid in annual reporting and credit tracking requirements.

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.

There is not a monitoring program that will be implemented as part of this project, however monitoring of urban stormwater is on-going and is expected to help answer the questions related to fine sediment and nutrient load reductions from advanced roadway operations and maintenance.

  - 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.

  - 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.*)

Through the use of stormwater tools developed for implementation of the Lake Tahoe TMDL, including the Road Rapid Assessment Methodology (RAM), BMP RAM, Pollutant Load Reduction Model and the Lake Clarity Crediting Program, load reduction estimates of fine sediment particles and nutrients will be estimated and reported on an average annual basis.

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

The monitoring that is on-going is part of established monitoring programs and some research funding for testing specific hypothesis (i.e. effectiveness of street sweeping). Over time monitoring information generated from urban roadways is expected to be part of a larger Regional Stormwater Monitoring Program (RSWMP).

- 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.

The enhanced ability to recover the amount of abrasives applied through the use high-efficiency sweepers will allow for improved and more efficient paved roadway operations. The information gained through this funding from enhanced roadway abrasive removal will be shared with all urban jurisdictions in the Lake Tahoe Basin through presentations and discussions at the Storm Water Quality Improvement Committee among other venues including the Lake Clarity Crediting Program.

Attachments

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

The map below shows the State Highways in the Lake Tahoe Basin that the mobile BMPs will be used on. Note the roads on the California portion of the Basin belong Caltrans, and the Nevada portions belong to NDOT.

Appendix B-8
LAKE TAHOE RESTORATION PROJECTS
ESTIMATED NECESSARY EXPENSES & KEY MILESTONE DATES

Project Name:	Moblie BMP Implementation on Paved Roadways in the Tahoe Basin	Agency:	Federal Highway Administration
Prepared by:	Hannah Visser	Phone:	(775) 687-5322
SNPLMA Project #:		EIP #:	10174, 10109, 10111

Identify estimated costs of eligible reimbursement expenses:

1. Planning, Environmental Assessment and Research Costs (specialist surveys, reports, monitoring, data collection, analysis, NEPA, etc.)	$		%
2. FWS Consultation – Endangered Species Act	$		%
3. Direct Labor (Payroll) to Perform the Project	$		%
4. Project Equipment (tools, software, specialized equipment, etc.)	$	532,000	100 %
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. Official Vehicle Use (pro rata cost for use of Official Vehicles when required to carry out project)	$		%
7. Cost of Contracts, Grants and/or Agreements to Perform the Project	$		%
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 contract(s)	$		%
9. Other Necessary Expenses (see Appendix B-11): Indirect costs associated with implementing a project, such as support services, budget tracking etc.	$		%
TOTAL:	$	532,000	100 %

Estimated Key Milestone Dates:

Milestones/Deliverables:	**Date:**
Kickoff Meeting -- within 4 weeks of award	11/2011
Interagency Coordination/Agreements - ongoing	11/2011
Authorize Funds - upon completion of Interagency Agreements	2/2012
Purchase and Distribute Equipment	6/2012
Annual Sweeper Use on Identified Roads	7/2012 to 6/30/2019
Final Completion Date: 6/30/2019	

COMMENTS: Milestones/Deliverables were scheduled with an assumed Rd12 approval date of 10/2011.