PROJECT SUMMARY

NATURE LOOP IMPROVEMENT PROJECT

BACKGROUND

The Nature Loop Trail Improvement project was included in Tahoe Donner Association's Trails Master Plan and 5-year Implementation Plan (5YIP). The 5YIP was permitted by the Town of Truckee and Nevada County following a CEQA negative declaration and entitlement approval.

Tahoe Donner Association's Nature Loop Trail Improvement project on Trout Creek will serve to provide sustainable passage for trail users recreating within the Truckee River watershed. The project implementation plan follows the Trails Master Plan, and a negative declaration per CEQA, detailed environmental assessment, structural design plans, and permitting. All project implementation sites are located within sensitive wetland environments and have been degraded due to past and current land use, and recent severe winter impacts.

The project will restore passage across a failing bridge and submerged boardwalk, replace three retaining walls, and elevate tread surfaces above the riparian wetland floodplain surrounding Trout Creek. All trail work is proposed within the existing trail footprint, with only minor expansion associated with turnpike construction.

The project meets TDA Land Management Plan and Trails Master Plan policies and priorities as it improves recreational use and safety, protects and restores mountain meadow ecosystems, enhances water flows and protects habitat.

PURPOSE

The project aims to repair and improve the 3-mile recreational loop trail, known as the Nature Loop.

The project intends to:

- Address and resolve existing areas of impact with a net result of environmental improvement
- Improve and enhance water quality and quantity, wildlife and biological resources
- Avoidance and preservation of historic resources
- Provide a better and safer user experience
- Ensure continued access for forestry activities

This loop is the original trail established by the developer, Dart Industries. The trail and bridge across Trout Creek are the only access points for the Forestry department. The ecological diversity, sites of archaeological significance and ease of access make this trail extremely popular for all user types and skill levels. Interpretive educational signs installed in 2006 make the area appealing to families and the summer day camps. Degradation of the Nature Loop Trail on Trout Creek has occurred over 45 plus years due to increased recreational foot traffic on the trail and from neighboring properties, and severe winter impacts including snow load and flood events occurring January 2017.

Without infrastructure replacement and trail improvement construction techniques, human activity will continue to compromise the hydrologic and ecological health of the watershed. Repairing the failing bridge, boardwalk, retaining walls and tread will protect water quality by minimizing sedimentation of the creek,

reducing soil compaction and protect habitat found within the mountain meadow watersheds surrounding the trail.

PROJECT HISTORY

- **Planning + Design (90% complete):** Preliminary planning phases, permitting excluded, have been completed and funded entirely by the Tahoe Donner Association. The completed Phase I includes: geotechnical surveys, hydrologic studies and floodplain mapping, wetland delineations, wildlife inventory, land surveys, structural and civil engineering plans. TDA has funded approximately $85,000 to date.

- **Permitting:** (not completed) will include regulatory agency permits. Permits that will be submitted and obtained by the applicant shall be issued by: California Department of Fish and Wildlife, Lahontan Waterboard, Army Corp of Engineers, Town of Truckee.

- **Construction:** (not completed) includes the implementation of all construction plans established in and approved. Pre-construction biological surveys will need to be completed as construction approaches.

PROJECT STATUS

All plans are complete and ready to be included for permit submittal along with applications, pending board approval. Agency permit submittal and review is anticipated to take up to 120 days, with earliest approvals issued by late August. Following permits and approved funding, the project will be ready to proceed with construction.

In the best-case scenario: Construction start may be possible in September through October of 2019 (weather dependent), with activities resuming in 2020. Late season construction will allow for Trout Creek water levels to subside, mud to dry, and wetland plants to complete their flowering cycle. Nesting bird surveys will need to be completed two weeks prior to construction if beginning before September 2019. The most likely scenario is that permit review and approval will occur September 2019, with all construction in 2020.

COMMUNITY SUPPORT

This project is widely supported by the membership as evidenced by the frequent inquiries as to the status of repairs and maintaining the trail through emails, trails events feedback, and prior association surveys.

The General Plan Committee and its Trails and Open Space Subcommittee are in support of the project's goals and result of completion of the improvement project.

SIGNIFICANCE OF BENEFITS AND OUTCOMES

The project intends to address and resolve existing areas of impact with a net result of environmental improvement as well as provide a better and safer user experience. Protection of water quality and quantity, wildlife and biological resources, and avoidance of historic resources are key factors. All proposed trail work is planned within the existing disturbed trail footprint, with only minor expansion associated with turnpike construction.

The benefits to the floodplain will be found in long-term protection of hydrologic and ecosystem processes in the Truckee river watershed. Reduced sedimentation caused by erosion and anthropogenic(human) activity will improve the natural benefits found in wetland meadow ecosystems.

In addition to the project's ecological benefits, the replacement of the degraded bridge and boardwalk will provide a safer, more sustainable corridor for trail users within the wetland.

Although it is difficult to quantify expected hydrologic benefits at this stage of the project, the major sites of construction were identified as high priority due to their positioning within Trout Creek and the increasing sedimentation caused by trail users attempting to avoid the degraded structures. Net improvements to the floodplain function are anticipated with the implementation of all components to the Nature Loop repair and improvement project.

ECOSYSTEMS OF THE PROJECT SITE:

Trout Creek is a tributary of the Truckee River draining about 5.1 square miles along the eastern crest of the Sierra Nevada. It originates east of Donner Ridge and north of Donner Lake and flows through the town of Truckee, CA to its confluence with the Truckee River in Nevada County, just west of Highway 267. As Trout Creek passes through the Tahoe Donner Association, it slows through a wetland meadow floodplain where the Nature Loop Trail has existed for approximately 45 years. The 3 mile biologically diverse trail crosses both wetland and upland terrain, and includes significant historical sites, making an ideal location for educational interpretive points of interest.

North American beaver (Castor Canadensis) are prevalent on the project loop and have built significant dams over the past ten years. Beaver were re-introduced to the Tahoe Basin by the CA Department of Fish and Game (CDFG) and the USFS between 1934 and 1949 to prevent stream degradation and promote wetland restoration. Heavy flooding of Trout Creek following the heavy winter of 2017 caused dismantling of the most recent beaver dams, though their activity is currently evident.

As a tributary to the Truckee River, Trout Creek's confluence begins passage through a variety of grant funded restoration projects managed by the Truckee River Watershed Council. The headwaters of Trout Creek begin in Tahoe Donner pass in lands managed by many other property owners before converging with the Truckee River.

CLIMATE VARIATION AND CHANGE

Environmental stressors due to climate change are compounded by population growth, which necessitates closer interaction between the water management, health and protection of ecologically sensitive communities. Disturbances are events, like wildfires, landslides, floods or pest outbreaks that cause marked changes to the impacted area. Stressors, like pathogens or water stress are dynamics that comprise the function or productivity of the ecological system. Disturbances and stressors can have similar effects to the wetland floodplain and surrounding forest function. These events often act quickly but with great impact and thereby can promote changes to the physical structure of the system.

More extreme weather patterns caused by climate change may cause greater impact of weather events, such as flooding that would exacerbate erosion in the project areas. Alternately, extreme drought years will dry creek and meadow areas and allow for ecological stressors caused by human traffic across wetland delineations. Project specific ecological stressors may also be pressures or dynamics that impact the ecosystem's components caused by human and associated activities. Soil compaction, advancement of streambank erosion, and increased traffic across sensitive areas may be impactful at various scales. Stressors may impede or compromise plant or animal performance, productivity or increase susceptibility to other forms of pressures like disease or pests. The wide-ranging effects associated with global stressors such as

climate change may exceed or intensify the effects of local or regional stressors like air pollution or dust impacts.

This project attempts to help mitigate these impacts by clearly defining a sustainable trail tread for recreational visitors within the sensitive ecological project area. Replacing the failing bridge will require footings well out of the streambanks, thereby widening stream channels for more adequate channel flow during high flow years. Replacing the failing boardwalk will keep travelers elevated above flood stage waters as well as out of wetland plant communities during drought years. All other areas of trail tread construction will focus trail users onto sustainable tread surfaces out of the hydrologic flood line.

APPROACH AND SCOPE OF WORK

Project management, implementation and oversight will be the responsibility of Tahoe Donner Association's Trail Department, with assistance and consultation from a team of highly qualified and experienced consultants specializing in habitat restoration and wetland construction projects. Management will be proposing to contract with an experienced trails and restoration contractor to complete the project. Tahoe Donner's trail crew will also complete some of the trail work. TDA's primary contractor will execute the finished project plans and will provide all necessary construction and sub-contracting services following attainment of regulatory permits. TDA staff will be responsible for

1. Progress reporting;
2. Maintaining oversight on schedule and budget;
3. managing quality assurance for all final deliverables; and
4. Final report summarization of the project and accomplishments

Observations, supplemental surveys, monitoring and general counsel to be provided by Micki Kelly Biological Consultant, Gavin Ball Environmental Planning, and NV5 Geotechnical Engineers.

Task 1: Permits and Environmental Documents

Permits to be submitted and obtained by the applicant and hired environmental consultant, Gavin Ball. These are to include California Department of Fish and Wildlife1600, Army Corp of Engineers, Lahontan Regional Water Quality Control Board 401, Town of Truckee grading and building permit.

Task 2: Pre-Construction Services

Further ecological site surveys, such as those evaluating nesting bird habitat and migratory deer, may be required prior to the beginning of construction. Biological consultant, Micki Kelly, will be conducting any special status species surveys if required in the final protection measures for the project.

Task 2 shall include providing all on-site construction administration to ensure the project is constructed in compliance with outlined specifications, budget and schedule. The construction contractor will be responsible for implementing all Storm Water Protection Plan (SWPP) compliance and will be contingent upon the completion of Task 1, above.

Task 3: Project Construction

The project will be completed by qualified and fully licensed contractors as stipulated in the Final Plans, specifications, and bid selection process.

Flow diversion or dewatering of the work zones is not anticipated within the water channel during construction, though biological monitoring will occur in ecologically sensitive project sites.

Construction of structural project components will require the use of heavy machinery, helical screws, and installation of wooden structures. Trail tread through low, muddy portions of the project will be addressed with turnpike or causeway construction, hand built by Tahoe Donner's seasonal trail staff.

Though it is unknown how many subcontractors may be necessary, it is likely that multiple contractors will be needed for: 1.) pre-construction services; 2.) earthwork; 3.) wooden structure installation; and 4.) biotechnical assistance; and 5.) transportation of materials.

A sustainable construction staging area has been selected near the site in a disturbed, upland existing rustic trailhead.

<u>Structure Replacement:</u>

A bridge replacement will provide safe, sustainable passage over Trout Creek and assist with bank stabilization. The bridge will be elevated out of flood stage waters with footing installation well out of the creek channel. Rock placement along streambanks will assist to deflect flow back to channel and stabilize further erosion and sedimentation.

Boardwalk replacement requires the removal of an existing degraded boardwalk. Original boardwalk stringers may be left in the standing floodplain, as their removal may cause further sedimentation. New construction involves using a mini excavator to drill 5-foot sections of helical screws into creek's hydrologic bedrock. A moving platform will be needed for the excavator to install the boardwalk in segmented lengths. Little to no vegetation will be disturbed during the construction process.

Retaining wall replacement above the creek shall be installed by hand, using Tahoe Donner's seasonal trail crew. The exact construction technique is currently unknown. Plans will be evaluated based on long-term durability, ease of installation, cost, and minimizing erosive properties to trail tread.

Task 4: Project Education

Scheduled Reserve Replacement funds will assist with the replacement and installation of educational interpretive signage throughout the project's loop trail. The project hosts ten areas to educate trail users about ecological habitat, biodiversity, native fish passage, wetland ecosystems, and sites of archaeological significance. Signage will be printed on durable materials made for outdoor environments and installed in sites referenced in the Project Plans.

Task 5: Site Revegetation and Restoration

A site revegetation and restoration plan will be developed to replace or rehabilitate vegetation disturbed by project construction. Pre-construction surveys have been completed to determine the status of impact on riparian vegetation, wetland and upland habitats. The plan will be designed to conform to any resource

protection measures stipulated in regulatory permits and will include ecological equivalent restoration measures to the amount of habitat disturbed.

Task 6: Post Construction Monitoring

Tahoe Donner Association will perform post-construction monitoring to measure and assess the function of the project and its impact on Trout Creek's floodplain function. Areas of construction disturbance will be monitored for water quality, streambank stabilization, vegetative regrowth, wildlife habit, and improvement of structure function. This task is contingent on the completion of all construction and restoration efforts.

Task 7: Project Administration

Tahoe Donner staff will oversee coordinating all project administration, budget management, project organization, and permit compliance. On-site staff management will conduct observation and review of contractor's daily operations, work status and project scheduling.