Sierra Nevada Conservancy-Progress Report

Sierra Nevada Conservancy Grant Program
Safe Drinking Water, Water Quality and Supply, Flood Control
River and Coastal Protection Act of 2008 (Proposition 84)

Grantee Name: **Friends of Deer Creek**

Project title: **Nevada City Environs Trail and Restoration Project**

SNC Reference Number: **SNC 080092** **Submittal Date:** **September 1, 2013**

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Check one:

_____ **6-Month Progress Report**
__X__ **Final Report**

6-Month Progress Reports should reflect the previous six months. **Final Reports** should reflect the entire grant period.

A. Progress Report Summary:

The Environs Trail and Restoration Project was developed to improve environmental, recreational, and educational resources within close proximity to the historic downtown of Nevada City. The project incorporated habitat restoration efforts in conjunction with construction of a new, easily-accessible, mixed-use hiking trail—providing an invaluable asset to the local and surrounding regional communities. The project has been extremely successful as a result of the generous contributions of the Sierra Nevada Conservancy and the multitude of volunteers who have donated their time and labor to create this community resource. Over the course of the project hundreds of community volunteers have helped Sierra Streams Institute (formerly named Friends of Deer Creek) to monitor water quality, construct trail, remove invasive vegetation, plant native species, and monitor ecosystem health.

Throughout the course of its implementation, the project has involved numerous project elements and collaborators. During the beginning stages of the project, work typically involved planning aspects of trail construction and habitat restoration. At the same time work was also focused on completing baseline biological and chemical monitoring of Deer Creek (which flows adjacent to the project area) and the surrounding terrestrial areas. This work was supplemented by field surveys for the future placement of the trail and efforts to ensure that all environmental mitigation requirements were met. During this time Sierra Streams Institute formed a partnership with the Nisenan Tribe of the Nevada City Rancheria and began collaborative development of trailside interpretive features.

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Following the initial trail surveys, location improvements were made by securing a minor adjustment of the adjacent property boundary. While the lot-line adjustment process resulted in a delayed commencement of trail construction, work to complete contracts for trailhead construction and water quality monitoring efforts were not hindered. The boundary adjustment, while minor in scale, permitted significant upgrades in the quality of the planned trail—enabling it to move from a steep, easily-eroded slope to a secure, relatively flat surface. After completing the boundary adjustment trail building and habitat restoration efforts were able to proceed without restriction. Fieldwork was coordinated by Sierra Streams Institute and conducted by volunteer groups composed of a wide variety of community members, schoolchildren, and interest-based clubs. Throughout the course of the project over 300 volunteers contributed 1,735 hours of service to protect the Deer Creek Watershed and ensure that the Nevada City Environs trail would become a treasured community resource in perpetuity.

Efforts during the midst of the project were concentrated on implementing trail construction and habitat restoration. While some volunteers worked tirelessly to clear the way for the trail, others removed thickets of invasive English Ivy (*Hedera helix*), bigleaf periwinkle (*Vinca major*), Himalayan blackberry (*Rubus armeniacus*), and Scotch broom (*Cytisus scoparius*) to prepare areas for planting with native vegetation. This work was supplemented with outreach meetings organized by Sierra Streams Institute in collaboration with the City of Nevada City and the Jordan Street Neighbors (property-owners adjacent to the new trail). These meetings ensured stakeholder support while allowing for open communication about concerns of parking and the potential for increased neighborhood traffic. Through these meetings and daily interactions with volunteers working on the trail, the initial concern expressed by project neighbors was quickly replaced by overwhelming support and excitement for the new and easily-accessible recreational resource.

As the Environs Loop Trail began to come into fruition, water and habitat quality monitoring continued on a regular basis to ensure that the project's efforts produced positive environmental impacts. During the active trail construction and restoration phases of the project, Sierra Streams Institute also worked to educate local youth about water quality and watershed conservation. During repeated in-class lessons and field trips to the Environs Trail students from multiple elementary schools learned first-hand about ecological restoration (while helping to propagate native plants), stream ecology and natural history (while assisting with environmental monitoring), and water quality (while touring the adjacent waste water treatment facility).

Through the combined generosity and infallible determination of community volunteers, construction of the trail and restoration of the surrounding habitat were extremely successful. Over the course of the project, 1.5 miles of trail were either constructed or restored and 8.5 acres of habitat were improved. The trail incorporates a main loop that is easily accessed from two main trailheads (as well as a third access point that is ready to connect with the neighboring segment of the Tribute Trail when a pedestrian bridge spanning Deer Creek is completed during the spring of 2014). In addition to the recreational benefits provided by the Environs Loop Trail, five

interpretive signs provide materials for trail-users to learn about the region's original inhabitants and their interaction with the landscape. These signs are the collaborative product of both the Nisenan Tribe of the Nevada City Rancheria and Sierra Streams Institute and are significant in that they provide the first public documentation of the otherwise unwritten history of the tribe.

Following the active construction and restoration phases of the project, work ensued to publicize Nevada City's newest community resource and educate the public about the connections between habitat restoration and water quality. These efforts were bolstered by the creation of a trail map brochure, articles featured within local newspapers, development of a trail-based citizen-science research project, and promotion of the upcoming trail-opening ceremony.

B. Deliverables, Outcomes, or Milestones Achieved:

Approved Quality Assurance Project Plan, monitoring plan, and project assessment and evaluation plan
0.5 mile of existing trail restored
Trail survey and design, 1 mile of new trail constructed, 3 new access points created
Published trail map, interpretive signs installed, and public outreach
Invasive plant removal and native vegetation planting on 8.5 acres
Educational materials for local schools including workplan, curriculum, community course catalog
Monitoring plan data analysis memos

C. Challenges or Opportunities Encountered:

The project encountered a few challenges during initial implementation due to delays during the trail design phase. As previously described, the original trail design directed the trail across a steep, easily-eroded slope (which was subsequently rejected in favor of a more stable trail surface). However, opting to locate the trail along the more desirable path necessitated receiving an approved property boundary adjustment before trail work could commence. While the City of Nevada City was successful in acquiring a lot-line adjustment, construction of the Environs Loop Trail was delayed during the process. Despite the initial challenges associated with the delay in construction, the project timeline was able to successfully adapt after trail work began.

Following completion of the Nevada City Environs Trail and Restoration Project, the trail will have the opportunity to be physically linked with the Deer Creek Tribute Trail system. While the Environs Loop Trail was constructed with the intention of becoming a part of the overall Tribute Trail system, the segments are currently separated by the steep Deer Creek river canyon and the only access between them is through downtown Nevada City. However, during the spring of 2014 a pedestrian bridge will be completed, conveniently linking the two trail segments while also providing creek access.

Construction of the new bridge provides an exciting opportunity for increasing the recreational capacity of the Environs Loop Trail.

D. Unanticipated Successes Achieved:

The overall goal of the Nevada City Environs Trail and Restoration Project was to improve watershed health, and the project's habitat restoration efforts proved to be especially effective. Initial goals included targets of reducing non-native plant cover by 75% and increasing native cover by 50% at restoration sites. Vegetation monitoring revealed that restoration efforts had surpassed both of these goals, ensuring the successful establishment of vegetation planted throughout the duration of the project.

Throughout the course of the project, Sierra Streams Institute was extremely successful in recruiting volunteers and educating local youth. While the original project goal was recruitment of 200 volunteers, in actuality over 300 community members donated their time to help construct trail and implement habitat restoration. Additionally, while the initial goal was to educate 100 local students, over 450 students participated in hands-on watershed conservation while learning about the ecology of Deer Creek through partnerships with Twin Ridges Homestudy, Nevada City Charter, Forest Charter, Grass Valley Charter, Union Hill Homestudy, Grizzly Hill School, Washington School, Lyman Gilmore Middle School, Deer Creek Elementary, Spring Break Camps, and Nevada City Recreation Department Summer Camps.

E. Compare Actual Costs to Budgeted Costs:

PROJECT BUDGET CATEGORIES	Budgeted SNC Dollars	Actual Dollars
Monitoring	$28,080	$28,072
Trail restoration and construction	$86,220	$86,218
Outreach and interpretive signage	$14,000	$13,994
Invasives removal and native vegetation planting	$28,000	$27,990
Educational materials	$15,500	$15,493
Reporting	$8,500	$8,497
Direct administration	$27,045	$27,045
GRAND TOTAL	**$207,345**	$207,297

F. Project-Specific Performance Measures

Please refer to final section of the report for detailed information regarding the project-specific Performance Measures.

G. Relevant Materials:

Please refer to the supplementary materials included with the hard copy of this report.

H. Next Steps:

While the Nevada City Environs Trail and Restoration Project is concluding multiple upcoming events will incorporate the trail. On October 5, 2013 Sierra Streams Institute will host a grand opening ceremony and celebration of the trail. The event is anticipated to draw numerous participants and will feature an event in downtown Nevada City as well as a walk along the Environs Loop Trail.

On September 7, 2013 there will be an opening ceremony in Nevada City for The Sierra Fund's ART OnSite project along the Deer Creek Tribute Trail. During the event, Sierra Streams Institute will distribute brochures featuring the Environs Trail.

Sierra Streams Institute will continue to monitor the ecology of Deer Creek to ensure that water quality is not impacted by future construction along the Tribute Trail. Sierra Streams is partnering with The Sierra Fund to continue monthly and storm water quality at the same locations as were monitored throughout the Environs project. The continued monitoring efforts will provide an evaluation of water quality during construction of a pedestrian bridge which will link the Environs and Tribute Trail segments.

Hands-on watershed science education will continue through partnerships with local schools and Sierra Streams Institute's program offerings. For three days in September 2013, a class of 28 fifth-grade students will study the Environs Loop Trail and create observation-based nature journals. The Eco Explorers Summer Camp (offered by Sierra Streams Institute) will return for a second year of science-based activities along the Environs Trail. In spring 2014, the Sierra Streams Institute's homeschool science program will study the phenology (timing of seasonal events) of plants along the Environs Trail. Through these studies local students will continue to learn about and examine important aspects of the forest ecology surrounding the Environs Trail.

Capacity-Building Results, Collaboration, and Cooperation with Stakeholders:

The Environs Trail was a collaborative effort by Sierra Streams Institute, the City of Nevada City, the Nisenan Tribe of the Nevada City Rancheria, Bear Yuba Land Trust, and the Jordan Street neighbors.

Sierra Streams Institute was founded in 1996 to monitor water quality Deer Creek on behalf of the city of Nevada City during the construction of the Pine Street Bridge. This partnership has remained central to our mission since our founding, and has resulted in many collaborative projects including restoration of Little Deer Creek in Pioneer Park, the city's main recreational facility. We have provided the city with water quality monitoring data to guide management of its waste water treatment facility since 2000. In 2007 we partnered with the city to conduct an assessment of abandoned mine sites on city-owned lands with grant funding from the United States Environmental Protection Agency, which led to further funding for cleanup of two of the assessed sites, at Providence Mine and Stiles Mill in Nevada City. Sierra Streams Institute is a sub-grantee

on these awards, with responsibility for implementation. We are now conducting a forest health assessment of the city's property at Hirschman's Pond, with funding from the Sierra Nevada Conservancy. Our long history of partnership paved the way for successful implementation of the Environs Trail project, which took place exclusively on city land, and required close collaboration with the city to work out the trail placement, finalize easements, and approve signage and brochures.

Our new partnership with the Nisenan Tribe of the Nevada City Rancheria was critical to the success of the project. Prior to this award, we had not partnered with the tribe, whose long history in our area has been largely overlooked and unknown in recent years. Through this project, we were able to give a voice to the tribe, providing an opportunity to tell their own story in their own words through the interpretive signage installed along the trail. Since beginning this project, we have partnered with the tribe on several more projects, with funding from a variety of sources including Cal Humanities and Sierra Health Foundation. The partnership has greatly advanced the capacity of both organizations, with a critical increase in outreach and awareness for the tribe, and many opportunities for us to incorporate native culture and stewardship practices into our work.

Bear Yuba Land Trust (formerly Nevada County Land Trust) was responsible for much of the trail construction, building on our prior partnership working with them on the Tribute Trail. We have now signed a three-year memorandum of understanding with them for assessment and restoration of their newly acquired conservation properties, and have begun developing proposals for funding together. With many new properties recently acquired or in the process of being acquired by Bear Yuba Land Trust, there is an explicit need for our partnership in order to provide land management guidance.

The trail system includes Jordan Street, a quiet residential street in Nevada City. Development and construction of the trail allowed us to develop relationships with the neighborhood, who have not otherwise formally organized in any way. Despite initial concerns regarding parking, these neighbors have become supporters and advocates, assisting with restoration and planning, making donations to our organization, and collaborating as partners in the Tribute Trail Forum.

Project Accomplishments:

1. Most Significant Accomplishment

The Environs Trail and Restoration Project has greatly improved environmental, recreational, and educational resources within close proximity to the historic downtown of Nevada City. The project incorporated habitat restoration and construction of a new, easily-accessible, mixed-use hiking trail—providing an invaluable asset to the local and surrounding regional communities. With over three miles of new trail added to the Deer Creek Tribute Trail, the Environs Loop greatly expands public access to the natural beauty of the creek's forested canyon. During the course of the project invasive vegetation was removed and native species planted in restoration efforts spanning 8.5 acres, simultaneously reducing catastrophic wildfire risk while promoting habitat conservation. Over 450 local schoolchildren assisted restoration efforts and studied the ecology of the Deer Creek watershed. The project has been extremely successful due to the generous contributions of both the Sierra Nevada Conservancy and over 300 volunteers who have donated their time and labor to help create this community resource.

2. WOW Factor

While the Nevada City Environs Trail and Restoration Project succeeded in achieving the original objectives (to restore habitat and construct trail), it was also extremely successful in engaging public support and creating environmental education opportunities. During the course of the project 310 community volunteers contributed 1,735 volunteer hours—assisting with trail construction, invasive vegetation removal, native species planting, habitat health and water quality monitoring. Additionally, over 450 local schoolchildren participated in hands-on habitat restoration while also learning about watershed conservation. Both of these figures exceed the original project goals (200 volunteers reached and 100 students educated).

3. Design and Implementation

Successful recruitment of dedicated volunteers has greatly benefited Sierra Streams Institute's ability to restore habitat, build trail, and monitor water quality. The importance of gathering community support and volunteer assistance is especially evident when considering the work involved in implementing habitat restoration projects. In order to improve watershed health, it is important to manually remove invasive vegetation instead of applying herbicides (as these can produce adverse impacts in riparian ecosystems). However, while manual removal of vegetation is the preferred method, it typically requires a substantial time investment to implement and often results in prohibitive labor costs. Successful recruitment of community volunteers, organized "work parties," and school restoration projects can help to ensure effective project implementation. Incorporating the support of community volunteers has the potential to benefit any project, regardless of scope.

4. Indirect Impact

With the overall goal of improving watershed health and water quality, the restoration work that has been implemented during this project will be continued through the work of two Tribute Trail Forum partner organizations. American Rivers and The Sierra Fund will be implementing healthy forest management objectives throughout the Deer Creek canyon and will be working to improve habitat quality throughout the Environs Loop Trail. The project will reduce the risk of catastrophic wildfires by removing invasive vegetation and ladder fuels, thereby reducing the risk of erosion into the adjacent creek.

The interpretive Nisenan heritage signage that is featured along the Environs Loop Trail has inspired development of creative art opportunities incorporating the Tribute Trail system. The ART OnSite project features artwork that has been produced by several professional artists and is publicly installed along the Tribute Trail. Additionally, Sierra Streams Institute is partnering with Filmsight Productions to create a documentary film titled "The Rush for Gold: Stories from the Trail" which interprets stories which fall outside of the traditional Gold Rush narrative. This project is supported by a Cal Humanities Community Stories grant and utilizes both the Environs and Tribute trails to weave together mining-era stories of Chinese immigrants and the native Nisenan.

5. Collaboration and Conflict Resolution

Tribute Trail Forum American Rivers, The Sierra Fund, Bear Yuba Land Trust, Jordan Street Neighbors, Greater Champion Neighborhood Association, Bicyclists of Nevada County, Nevada County Walkers, Forest Trails Alliance	The Tribute Trail Forum provides an organized venue for discussion of trail maintenance and development. It facilitates collaboration between project stakeholders. During project implementation it provided the opportunity to resolve initial concerns of parking and increased traffic due to trail development.
Bear Yuba Land Trust (formerly Nevada County Land Trust)	Provided trail building expertise throughout the duration of the project.
City of Nevada City	Project site is located on city-owned land; close collaboration during planning and implementation stages ensured project success.
Nisenan of the Nevada City Rancheria	Developed interpretive signage with cultural and natural history narratives. Sign development fostered a collaborative partnership with Sierra Streams Institute.
California Conservation Corps	Volunteer invasive species removal.
Sierra Nevada AmeriCorps Partnership	Provided volunteer invasive species removal and trail building services.

6. Capacity-Building

Since the Nevada City Environs Trail and Restoration grant was awarded in 2009, we have undergone significant expansion as an organization, including a move from a small 700sf office to a larger facility with a classroom and expanded lab. The organization has also changed names—from Friends of Deer Creek to Sierra Streams Institute—to reflect our increasingly regional focus. With thirteen staff members (including AmeriCorps service members), we are currently working on 25 grant-funded projects from a total of 17 different state, federal and foundation funders, and have greatly increased our private donation base as we have grown. With our new regional focus we have expanded beyond the Deer Creek watershed, and were hired by the state to conduct trainings in watershed stewardship to state employees and watershed groups from San Diego to Santa Rosa. We have also added a focus in human health, with two current research projects funded by California Breast Cancer Research Program looking at social and environmental causes of breast cancer. We are currently working on expanding the board to keep pace with our organizational expansion, and are actively recruiting members beyond the local area.

7. Challenges

The only significant challenges that the project faced resulted from the previously described property boundary amendment. Trail construction was delayed while the lot-line adjustment was under review, causing subsequent delays in the habitat restoration efforts. While the decision to pursue a lot-line adjustment caused minor delays in the initial stages of project implementation, it has ultimately ensured creation of a more sustainable and safer trail. The Sierra Nevada Conservancy provided assistance by granting an extension of the project completion date, which subsequently provided Sierra Streams Institute with the opportunity to fully develop the project's education and outreach potential. Together both of these actions have contributed to an improved overall project outcome.

8. Photographs

Please refer to the supplementary materials included with the hard copy of this report; photographs are included on the CD.

9. Post Grant Plans

Following completion of the Nevada City Environs Trail and Restoration project, Sierra Streams Institute will continue watershed conservation and public education efforts throughout the Deer Creek watershed. Planned public outreach events include the upcoming Environs Trail opening ceremony (October 5, 2013) and the ART OnSite premier along the Deer Creek Tribute Trail (September 7, 2013). Over the upcoming school year, Sierra Streams Institute's watershed education efforts will teach hands-on lessons about the ecology of Deer Creek to students from the 5-8th grades at Yuba River

Charter School with curriculum and resources derived from the project's environmental library. In the spring of 2014 the Sierra Streams Institute homeschool science course will engage students in grades 3-8 in the study of plant biology and restoration science. During the summer of 2014 the EcoExplorers summer camp will return for science-based activities along the Environs Trail.

Sierra Streams Institute is working with the Environmental Protection Agency to implement brownfield clean-up projects at multiple Gold Rush-era abandoned mine sites within close proximity to the Environs Loop Trail. While the trail has been purposefully routed away from the contaminated soils of the mine sites, a spur trail will be constructed following successful implementation of the clean-up project. This new project will continue efforts to improve the ecosystem health and water quality of Deer Creek while also increasing the recreation and education resources of the Environs Trail.

Despite completion of the Nevada City Environs Trail and Restoration Project, Sierra Streams Institute will continue to monitor the chemical and biological quality of Deer Creek. Monthly and storm water quality monitoring will continue in the same locations as were sampled during the Environs project. This data will be collected in partnership with The Sierra Fund to ensure protection of water quality during construction of the pedestrian bridge (which will connect the Deer Creek Tribute Trail with the Environs Loop Trail).

10. Post Grant Contact

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SNC-approved Performance Measures:

Number of People Reached

General Public	1,379	Conservation groups	7
Sierra Nevada Residents	1,005	Landowner groups	3
Youth	450	Resource professionals	15
Recreational users/tourists	310	Government officials	4
Users of Sierra Nevada Resources	1,052	Other	Nisenan Tribal Members: 7

Dollar Value of Resources Leveraged for the Sierra Nevada

Funds from other sources	**Source**	**Description**	**Amount**
	American Hiking Society	Directional signage	$1,500
	California Conservation Corps	Hours conducting vegetation removal and restoration	$29,996
	Cal Humanities	Funding to create a documentary video featuring the trail that interprets regional history	$10,000
	Environmental Protection Agency	Brownfields cleanup grants for remediation of abandoned mine sites within close proximity to trail	$400,000
	National Endowment for the Arts	Grant received by ART OnSite to feature art installations along trail	$25,000
	California Natural Resources Agency	Grant received by The Sierra Fund to construct a pedestrian bridge linking the Environs trail with the Deer Creek Tribute Trail	$563,000
Volunteer hours	**Total volunteers**	**Total hours**	**Total Value***
	310	1,735	$42,941.25

*A rate of $24.75/hr was used (Value of volunteer time in CA: http://www.independentsector.org/volunteer_time)

Number and Type of Jobs Created

Occupational Group	Number of people employed	Length of employment (weeks)	Average number of hours per week	Total FTEs	Season of employment
Construction	9	32	6	0.15	Spring/Fall

Occupational Group	Total FTEs directly attributable to this SNC-funded project	Expected to exist one year after the project has ended	Expected to exist three years after the project has ended
Professional, Scientific, & Technical Services	0.45	Yes	Yes

Number of New, Improved, or Preserved Economic Activities

Type of product/service	Total number of new, improved, of preserved products and services	Quantity of each product or service provided, per year	Est. Dollar value of new or improved products and services
Recreation: public hiking trail	1	1	Not quantifiable

Number of New Recreation Access Points

Type of access point	Number of new access points	New or increased recreational capacity (units per day)
Trail	1	200 users
Trailhead	2	200 users

Acres of Land Improved or Restored

Acres treated	Site importance or priority rating	Source of prioritization or importance rating	Purpose
8.5	Not rated	N/A	Natural Resource protection, Water Quality, Habitat Resource Management, Recreation

Feet of Trail/Patch Constructed or Improved

Total feet of trail and path length of new construction	Total feet of trail and path length improved as a result of the project
5,000 ft	3,000 ft