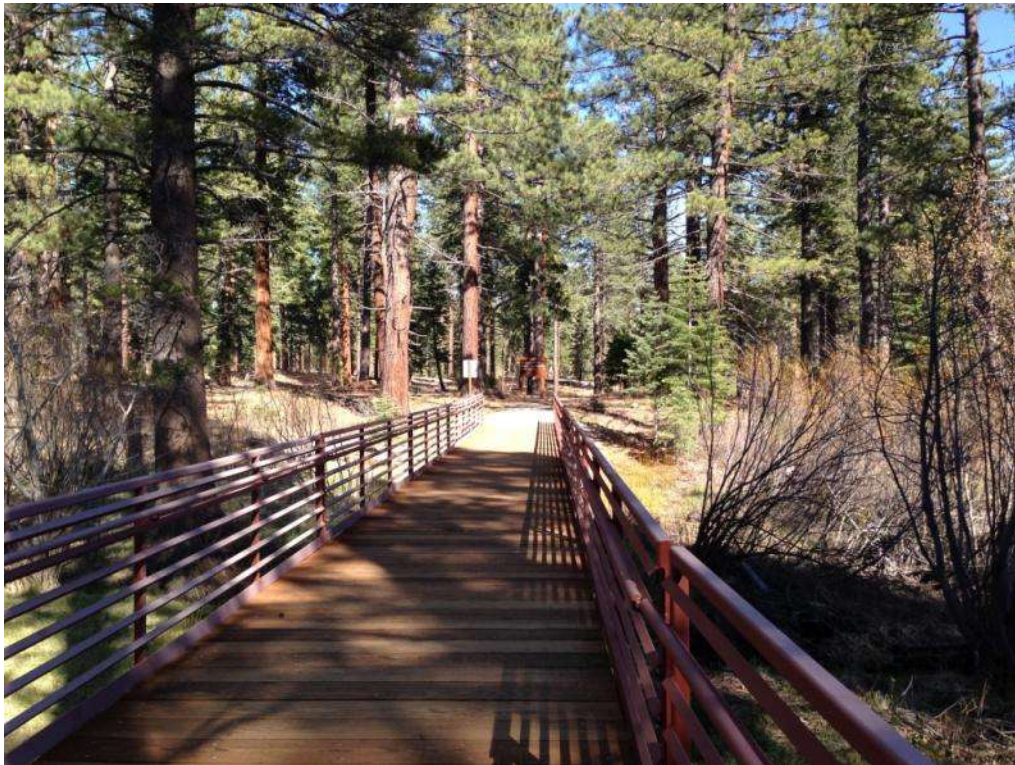


MAY 2016

SNOW CREEK STREAM ENVIRONMENT ZONE (SEZ) RESTORATION PROJECT

North Lake Tahoe, Placer County, CA

Envision® Platinum Award



ZOFNASS PROGRAM
FOR SUSTAINABLE INFRASTRUCTURE

Graduate School of Design
Harvard University

TABLE OF CONTENTS

- 1 BACKGROUND – OVERVIEW..... 3
 - 1.1 Project Summary..... 3
 - 1.2 Project History..... 4
 - 1.3 Acquisition of Land by Placer County..... 5
 - 1.4 Lake Tahoe Environmental Improvement..... 6
- 2 PROJECT DEVELOPMENT..... 7
 - 2.1 Project Description..... 7
 - 2.2 Project Team 8
 - 2.3 Planning Process..... 8
 - 2.4 Finances..... 9
 - 2.5 Project Completion 10
- 3 APPLICATION OF ENVISION® 11
 - 3.1 Envision® Process 11
 - 3.2 Meeting the Criteria 11
 - 3.2.1 Quality of Life (Purpose – Well-being – Community)..... 12
 - 3.2.2 Leadership (Collaboration – Management – Planning) 15
 - 3.2.3 Resource Allocation (Materials – Energy – Water) 18
 - 3.2.4 Natural World (Siting – Land and Water – Biodiversity) 21
 - 3.2.5 Climate and Risk (Emissions – Resilience)..... 24
 - 3.2.6 Envision® Rating Results 25
- 4 CONCLUSION 26
- EXHIBITS 28
- ABBREVIATIONS 31

Olga Tzioti prepared this case study under the supervision of Prof. Spiro N. Pollalis as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation or a project. It is part of a series of case studies on projects having received Envision® certifications.

The authors would like to thank Suzanne Wilkins and Stefan Schuster from CDM Smith Inc. This case study has been developed by the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design <http://research.gsd.harvard.edu/zofnass/>. The program’s mission is to develop and promote methods, processes, and tools that quantify sustainability for infrastructure. Its goal is to facilitate the adoption of sustainable solutions for infrastructure projects and systems, and expand the body of knowledge for sustainable infrastructure. The Institute for Sustainable Infrastructure (ISI), and the Zofnass Program for Sustainable Infrastructure, through a joint collaboration have produced the Envision® Rating system for Sustainable Infrastructure, which provides a holistic framework for evaluating and rating the community, environmental, and economic benefits of all types and sizes of infrastructure projects. www.sustainableinfrastructure.org.

Copyright © 2016 President and Fellows of Harvard College. To order copies, call: (617) 495-9939, or write to: Prof. S. N. Pollalis, Harvard University, 48 Quincy Street, Cambridge, MA 02138. No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means – electronic, mechanical, photocopying, recording, or otherwise – without the written permission of Prof. S. N. Pollalis. ISI has been granted permission to reproduce and disseminate the case for its own use.

1 BACKGROUND – OVERVIEW

1.1 Project Summary

The Snow Creek Stream Environment Zone (SEZ) project restored a brownfield site that had been used as a concrete plant since the 1950s, and constructed a multi-use trail connecting two existing trails providing recreational benefits. The site had been purchased by Placer County, which hired CDM Smith Inc. (CDM Smith) to provide planning and design services to restore the site. CDM Smith is a global water, environment, transportation, energy and facilities firm with experience in improving the environment and public infrastructure.¹



Fig.1: Snow Creek restoration sign



Fig.2: Envision® Platinum award

The project incorporated various sustainable practices, so CDM Smith identified it as a promising candidate for an internally funded research and development (R&D) project to assess having it evaluated with the newly released Envision® infrastructure sustainability rating system. The R&D concept was proposed to Placer County, and the application of Envision® was approved for the Snow Creek project to meet the following objectives:

- Mutual commitment to produce a truly sustainable project,
- Building knowledge and experience in planning sustainable infrastructure projects,
- Promoting sustainability planning with tools such as Envision®,
- Sharing experiences in planning a sustainable infrastructure project,
- Verifying of the Envision® assessment by a third-party reviewer.

The project earned an Envision® Platinum award – the highest level attainable in the Envision® rating system. Snow Creek was the second project to receive an Envision rating.²

¹ <http://cdmsmith.com/en/Discover-Us/About-Us/Values-and-vision.aspx>

² CDM Smith files, "Accreditation Workshop – Appendix L – B5 Snow Creek Press Release 20131115.pdf"

1.2 Project History

Snow Creek, a tributary of Lake Tahoe, is located in the community of Tahoe Vista in North Lake Tahoe, California. Snow Creek and its associated meadow and wetlands comprise a scenic area bordering residential neighborhoods, commercial and industrial properties, and recreational land. The project site is located about one-half mile from Lake Tahoe's north shore and is directly adjacent to Snow Creek, having an area of approximately 6 acres.



Fig.3: Lake Tahoe's Location (source: CDM Smith files)



Fig.4: Snow Creek located near the north coast of Lake Tahoe (source: CDM Smith files)

Since the early 1950s, the land uses surrounding the project area consisted of industrial, commercial, and residential activities including low-income housing in the form of a densely populated trailer park. In the 1950s, a concrete batching facility was constructed over a portion of the meadow by placing fill and rerouting an ephemeral drainage channel. The concrete plant supported the rapid development of North Lake Tahoe, triggered in large part by the 1960 Winter Olympics in Squaw Valley. The land of the industrial site was privately owned and the plant operated over the next 50 years, during which large amounts of debris and by-products were dumped on the property, affecting local soils and storm water runoff to Snow Creek and Lake Tahoe. Large amounts of concrete waste materials were disposed of in unlined pits, and leaking underground fuel storage tanks impacted the site soils with elevated pH levels and hydrocarbon contamination. A substantial amount of fill material placed on the site also impacted the sensitive SEZ and wetlands and contributed sediment-laden storm water runoff to

nearby Snow Creek. The natural storm water runoff courses that had provided natural treatment had been altered, transporting pollutants to Snow Creek and Lake Tahoe.

The plant's location was next to a meadow with wetlands, and over the years the facility expanded by pushing more and more fill and concrete material over this area.



Fig.5: The site before restoration (source: CDM Smith files)



Fig.6: Debris from concrete production (source: http://www.epa.gov/brownfields/pdfs/EPA_OBLR_SuccessStory_Region9_OpenSpace_v2_508.pdf)

1.3 Acquisition of Land by Placer County

In the 1990s the Tahoe region started developing community plans. For this specific area, it was the community's vision to remove the cement plant and to restore at least one acre of SEZ and wetlands. As the environmental regulations in the basin kept getting more stringent, the plant owners decided to close the facility. Placer County bought the land under the condition that the previous owners would clean the property. The property owners did the due diligence, cleaned the site, performed exploratory soil borings throughout the site, and managed to receive a clean bill of health from the state of California before Placer County finalized the purchase. However, while they cleaned up the site from hydrocarbon contamination, this did not extend to concrete contamination. After the owners sold the property to Placer County, they relocated to Truckee, 13 miles northeast, outside of the Lake Tahoe basin, where they currently operate.

Before the Snow Creek Project, CDM Smith was already under contract to Placer County for another project, which was part of the Lake Tahoe Environmental Improvement Program (EIP). The scope of the project was about controlling erosion and protecting Lake Tahoe's water quality. The area of the project was large and included the Snow Creek site. In 2003, during that project, CDM Smith identified the Snow Creek site, noticed that it was for sale, and recommended the property to Placer County. Placer County saw the opportunity and got a grant from the Sierra Conservancy to purchase the land. The process of purchasing and cleaning up the land took about two years and was finalized around 2006. CDM Smith had already done a lot of work for the previous project and helped Placer County with the acquisition of the land and continued their contract with Placer County for the Snow Creek project.

1.4 Lake Tahoe Environmental Improvement Program (EIP)

Lake Tahoe is a scenic and ecological treasure, and its basin is an important recreational resource. It has been internationally recognized as a natural resource of special significance, and it is also recognized by the EPA as an Outstanding National Resource Water under the Federal Clean Water Act. Lake Tahoe is very highly regulated with respect to its environmental protection by several federal, state (Nevada and California), and local agencies. The Tahoe Regional Planning Agency was created by a bi-state compact solely for the protection of the Lake Tahoe basin. A few lakefront residences around the lake pump and drink the water without any treatment; however, water agencies that provide public water to the vast majority of the residents and visitors around the lake are required by state law to treat surface water (although many locals consider it to be the best-tasting tap water around). Lake Tahoe receives approximately three million visitors every year. The restoration and protection of the lake's natural beauty and environmental importance are central to the local communities and the economy of the area. It has been observed that the lake's outstanding clarity had decreased by 30% since 1968 due to phytoplankton (algae) and fine sediment particles, which are the main pollutants. The EPA and the states of California and Nevada have set a goal for Lake Tahoe to restore its historic deep water transparency to 30 meters or 100 ft (annual average Secchi depth) by 2076.³



Fig.7: View of Lake Tahoe from the site (source: Prof. Pollalis)

In the 1990s, sustainability was not a common term. However, at that time it was decided that Community Plans would be developed throughout the Lake Tahoe region (which spans two states, five counties, and one incorporated city). The Tahoe Vista Community Plan in Placer County described the need to restore one acre of the stream environment zone next to the meadow and Snow

Creek for environmental benefit. At the time of the development of the Community Plan, the concrete plant was still operating and surrounded on three sides by other commercial, industrial, and residential uses. Shortly after the Community Plan was completed, President Clinton held the first Lake Tahoe Summit, which launched the Lake Tahoe Environmental Improvement Program (EIP) in 1997. Since the start of the EIP, over \$1.69 billion has been invested in more than 400 projects in the Lake Tahoe basin to protect water quality, watershed, and habitat; improve air quality, transportation, recreation, and scenic resources; and provide for forest management and applied science.⁴ The lake's clarity has increased from 2011 to 2013 by over 10%.

³ <http://www.epa.gov/region9/water/watershed/tahoe/index.html>

⁴ http://en.wikipedia.org/wiki/Lake_Tahoe

2 PROJECT DEVELOPMENT

2.1 Project Description

The initial vision for the project began in the 1990s with the development of the Placer County Tahoe Vista Community Plan. The Snow Creek SEZ Restoration Project became a subject of regional planning with the project's inclusion in the Lake Tahoe Environmental Improvement Program Master List of projects. The main vision for the site was to restore the stream zone habitat and encourage public access to an aesthetically improved public open space.

After realizing the additional opportunities of the site, however, Placer County and CDM Smith implemented a multi-objective plan. Overall, "the project included restoring sensitive environmental areas, storm water treatment, trail improvements and educational and wayfinding signage. Approximately 7,000 cubic yards of fill soils and debris, placed on the property over several decades, were removed. Portions of this material were screened onsite to salvage sand, gravel, cobble and boulder-sized materials for reuse. The area was re-graded and a new channel was constructed to restore the site's predevelopment hydrology and the SEZ habitat. The restored area was re-vegetated with native wetland and upland plant species, using existing plants from the undeveloped portion of the project area."⁵ About 3.1 acres of riparian area were restored and about 0.25 acre of wetlands reestablished to mitigate the disturbance caused by the concrete plant.

Since the site is located between two existing recreational trail systems both connecting to existing and planned trails, the local community and planners saw an opportunity for connecting the existing trails with a new trail, facilitating the development of future trails. A 1,800-foot multiuse trail, sidewalks, and educational signage were planned to invite visitors to the new public open space and link to other nearby trails used for cross-country skiing, hiking, and access to Kings Beach. The new trail includes a raised boardwalk and a bridge utilizing a recycled railroad flat car to cross over sensitive areas. Through a cooperative agreement between the EPA and Placer County, the Snow Creek Stream Environment Zone Restoration Project also supported new storm water treatment facilities and other water quality improvements, as well as efforts to increase biodiversity and native landscaping. A pretreatment forebay, an infiltration basin and a new channel that is routed through constructed wetland areas prevent sediments from flowing to Snow Creek and eventually to Lake Tahoe.

In addition to the restoration and trail design, CDM Smith coordinated the federal, state, and local permits for the project and prepared a joint environmental document in accordance with the California Environmental Quality Act (CEQA) and the Tahoe Regional Planning Agency environmental requirements, as well as documentation in accordance with the National Environmental Policy Act (NEPA). These documents identified potential project environmental impacts and mitigation measures to reduce potential impacts to a less than significant level.⁶

⁵ <http://cdmsmith.com/en/Solutions/Water/Snow-Creek-Stream-Restoration.aspx>

⁶ <http://cdmsmith.com/en/Solutions/Water/Snow-Creek-Stream-Restoration.aspx>

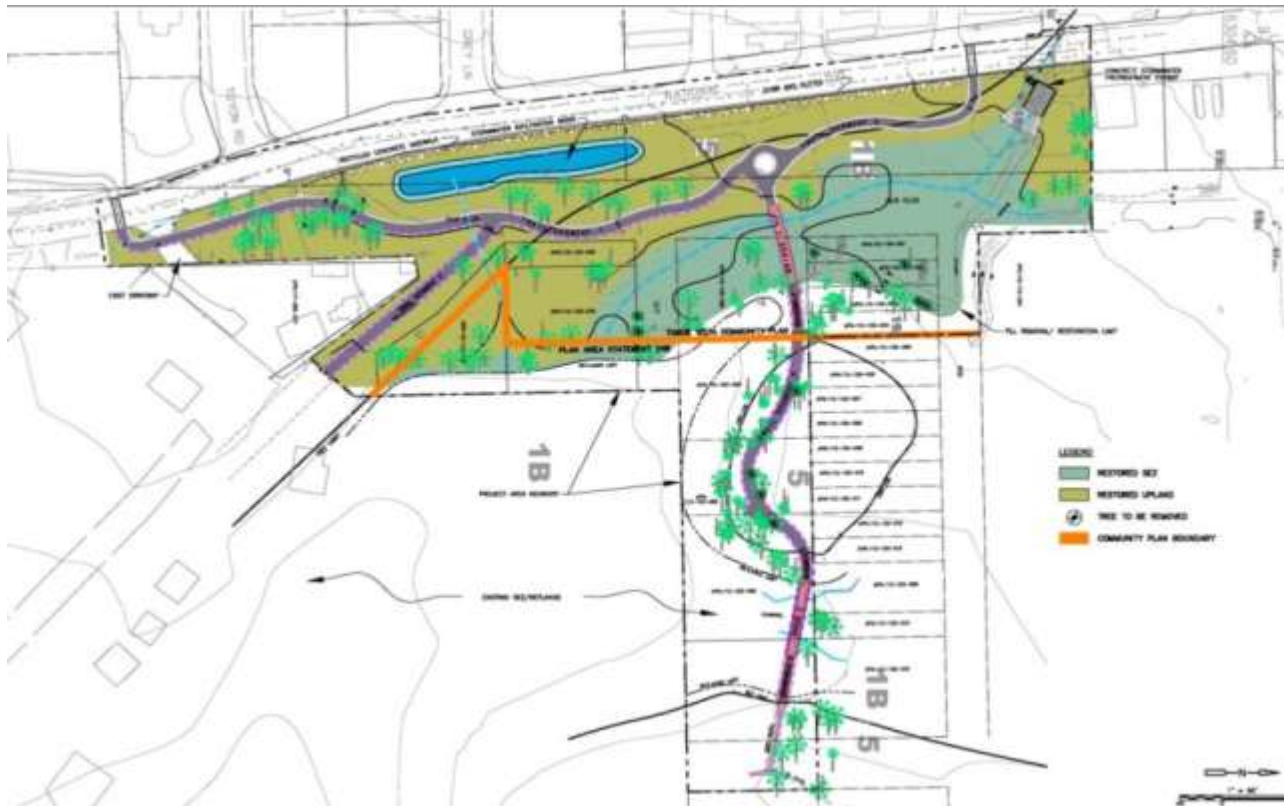


Fig.8: Snow Creek Restoration Plan (source: CDM Smith files)

2.2 Project Team

The Snow Creek restoration is part of Lake Tahoe’s Environmental Improvement Program and is owned by the Department of Public Works of Placer County, California. Placer County is responsible for other transportation and storm drainage projects in the portion of the Tahoe Basin within Placer County. Placer County received grant funding from federal, state, and local agencies for the design and construction of the project. CDM Smith was the design and planning consulting firm hired by the Placer County Department of Public Works. The preparation of the Envision Rating System application was a CDM Smith internally funded research and development project managed by CDM Smith Inc. Geotechnical support was provided by Kleinfelder, another engineering firm. The contractor of the project was the Nevada corporation Burdick Excavating Co. Inc.,⁷ which completed the construction of the project with a cost of \$1.8 million.⁸

2.3 Planning Process

“At the project level, a Technical Advisory Committee (TAC) comprised of local, state, and federal agencies and organizations was developed and involved with the site improvement planning and design. The Committee provided reviews of the plans and studies through a well-defined process consisting of

⁷ <http://www.placer.ca.gov/upload/bos/cob/documents/sumarchv/2014/141007A/22c.pdf>

⁸ “02 – Snow Creek Stream Environment Zone Restoration,” ISI Envision™ Verified Project Case Study Report.

several steps including: existing conditions analysis, formulation and evaluation of alternatives report, recommended alternative project report, and final design report. The Committee meetings were held during the entire process to provide comments at each step of the process. Placer County also conducted several public meetings through the California Environmental Quality Act (CEQA) process and met with neighboring property owners to address their concerns.”⁹

According to the project specifications, the reuse of existing materials found on site was a requirement during construction. Luckily, many construction materials were found on site such as boulders, fill soil, wetland soil, sod, concrete base, and plants. All this material was stockpiled and then used for storm water channels, soil stabilization, crushed concrete trail base, and revegetation.

As part of the local public outreach effort, the County partnered with the environmental education program of a local nonprofit, the Sierra Watershed Education Partnership (SWEP). Eighty-three 5th graders from a local elementary school visited the Snow Creek site when the project was still at the planning stage. The purpose of the visit was for the kids to be educated about the watershed, the environment, and their importance to the local community and the water quality of Lake Tahoe. During this program the kids designed and provided artwork for interpretive signage, which was an idea identified by Envision®. This was considered really important for improving the community’s quality of life, so Placer County provided additional funding. Wayfinding signage is also provided on the site, funded by a grant from the North Lake Tahoe Resort Association. The kids also did some revegetation and some monitoring in order to record data about the newly planted vegetation and then returned a few months later to revisit the plants and record new data for comparison in the classroom.



Fig.9: Wayfinding signage



Fig.10: Artwork provided by 5th grade students at Glenshire Elementary in collaboration with Sierra watersheds collaboration partnerships

2.4 Finances

A \$600,000 grant from the EPA Brownfields Program, along with funding from California’s Cleanup and Abatement Account, helped finance the cleanup of the fill material and implement the project. Additional grants from the Bureau of Reclamation with the Department of the Interior, the State of California Resources Agency, the Tahoe Regional Planning Agency Water Quality Mitigation Fund, and

⁹ CDM Smith files, “Accreditation Workshop – Appendix L – B1 Snow Creek Case Study.pdf”

the North Lake Tahoe Resort Association went toward constructing trails and other recreational elements on the property.¹⁰

2.5 Project Completion



Fig.11: The new trail connections marked in green. The Snow Creek site limit is shown in red (source: CDM Smith files)

The restoration work was completed in 2014. The reduced impacts from traffic, noise, and visual disturbances became obvious. The open space was increased, offering recreation and nonmotorized transportation. The water quality improvements that were constructed included low-impact development (LID) storm water treatment and conveyance to Snow Creek meadow and a revegetated area with wetland and upland plants. The Class 1 bicycle trail constructed connects to an existing Class 1 trail. The two ends of this trail lead to other multimodal sites with recreation areas and to other existing mountain biking trails respectively. The project also included the construction of a new pedestrian walkway along busy National Avenue, providing a needed safety improvement for local residents.¹¹

¹⁰ http://www.epa.gov/brownfields/pdfs/EPA_OBLR_SuccessStory_Region9_OpenSpace_v2_508.pdf

¹¹ CDM Smith files, "Accreditation Workshop – Appendix L – B1 Snow Creek Case Study.pdf"

3 APPLICATION OF ENVISION®

3.1 Envision® Process

The ISI Envision® Sustainability Rating System was applied as part of an internal research and development program. The Snow Creek project was chosen for Envision® and ISI rating because it already included significant sustainability components. Eventually, adherence to the Tahoe Vista Community Plan and other local and regional plans proved instrumental in the project's attaining an Envision® Platinum Award. Envision® was applied during the planning and design phase. Three people from CDM Smith's technical staff were accredited as Envision® sustainability professionals (ENV SP).

Initially the Envision® self-assessment checklist was used for a quick review of the project's sustainability. Through the checklist, the project team had the opportunity to insightfully reassess features or approaches that could be modified or added to the project to improve sustainability.

After the self-assessment, the web-based Envision® tool was used to rate the project. Right after the application was completed and submitted to ISI, verification was conducted by an independent third party and authenticated by ISI staff to confirm the scoring. Initially, CDM Smith submitted the documentation on behalf of Placer County and received the first feedback by verifiers and the achieved Envision® score. In response to the feedback, they improved their deliverables and submitted once again with additional documentation. During this period they were working closely with the Envision® Quick-Response team who, according to CDM Smith, were very helpful. Through this feedback process, the project team managed to get a higher final Envision® score.

CDM Smith's ENV SPs prepared the application and were primarily responsible for all planning aspects of the project, including environmental documentation, public meetings, and permitting. They were also responsible for the design and engineering of the project. Eventually CDM Smith submitted to Envision® almost 70 attachments as relevant documentation of the Snow Creek project. For information regarding the credits, CDM Smith used the web-based Envision® platform, which can track and tabulate the score. This platform was also used to upload the required documentation in support of the scores entered.¹²

3.2 Meeting the Criteria

Envision® measures the sustainability of infrastructure projects based on 60 criteria organized into five categories: Quality of Life (QL), Leadership (LD), Natural World (NW), Resource Allocation (RA), and Climate and Risk (CR). The overall credits measure the positive social, economic, and environmental impacts of an infrastructure project. The tool is applied in the planning, design, construction, and maintenance stages. Envision® provides a solid framework for comprehensive sustainability analysis of projects, and guidance for achieving either an Improved, Enhanced, Superior, Conserving, or Restorative rating for each of the 60 credits.

¹² CDM Smith files, "Accreditation Workshop – Appendix L – B1 Snow Creek Case Study.pdf"

CDM Smith highlighted the importance of appropriate documentation to submit to Envision® for evaluation. In this section, the basic strategies incorporated in the project are presented for each credit category, together with examples of the documentation and justification of the Envision® score.

3.2.1 Quality of Life (Purpose – Well-being – Community)

The Quality of Life category evaluates infrastructure projects in terms of purpose, well-being, and community. The Purpose subcategory addresses the project’s impact on functional aspects of the community such as growth, development, job creation, and general improvement of quality of life, as well as the project’s contribution to community education, outreach, and knowledge creation regarding specific sustainable features and processes. Well-being addresses individual comfort and health in terms of safety, minimization of nuisances, and mobility (alternative modes of transportation, equal access, availability and quality). The Community subcategory seeks to ensure that the project respects and maintains or improves its surroundings through context-sensitive design. While infrastructure is driven primarily by engineering parameters, its visual and functional impacts should be considered during design, in terms of integration.

The Snow Creek restoration improved the community’s Quality of Life by introducing new multi-use trails (walking/biking) that connect to existing trails and reduce dependency on car travel while restoring views and local character. It also contributed by making aesthetic improvements in the area and by providing educational opportunities for local students. Another action important in this Envision® category is the introduction of wayfinding signage, which facilitates navigation throughout the site.

In the Envision® Quality of Life category, the project scored 77% (114 earned points out of 149). The following tables show an example of credit justification in Quality of life.

Table 1. Envision® evaluation criteria and documentation for Quality of Life

ENVISION®				
QL1.1 IMPROVE COMMUNITY QUALITY OF LIFE				
LEVELS OF ACHIEVEMENT				
IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
<p>(2) Internal focus. The project team has located and reviewed the most recent and relevant community planning information. Some, but not systematic outreach to stakeholders and decision makers has taken place. Some relatively easy, but not particularly important or meaningful changes made to the project. No significant adverse community effects are caused by the project (A, B, C)</p>	<p>(5) Community linkages. More substantive efforts to locate, review, assess and incorporate the needs, goals and plans of the host community into the project. Most potential negative adverse impacts of the project on the host community are reduced or eliminated. Key stakeholders are involved in the project decision-making process. (A, B, C)</p>	<p>(10) Broad community alignment. All relevant community plans are reviewed and verified through stakeholder input. The project team works to achieve good project alignment with community plans, recognizing that the scope of the project is a limiting factor. Potential negative impacts on nearby affected communities are reduced or eliminated. (A, B, C)</p>	<p>(20) Holistic assessment and collaboration. The project makes a net positive contribution to the quality of life of the host and nearby affected communities. The project team makes a holistic assessment of community needs, goals and plans, incorporating meaningful stakeholder input. Project meets or exceeds important identified community needs and long-term requirements for sustainability. Remaining adverse impacts are minimal, mostly accepted as reasonable tradeoffs for benefits achieved. The project has broad community endorsement. (A, B, C)</p>	<p>(25) Community renaissance. Through rehabilitation of important community assets, upgraded and extended access, increased safety, improved environmental quality and additional infrastructure capacity, the project substantially reinvests in the host and nearby communities. Working in genuine collaboration with stakeholders and community decision-makers, the project owner and the project team scope the project in a way that elevates community awareness and pride. Overall quality of life in these communities is markedly elevated. (A, B, C, D)</p>
EVALUATION CRITERIA AND DOCUMENTATION				
<p>A. Has the project team identified and taken into account community needs, goals, plans and issues?</p> <p>1. Lists and examples of documents obtained and reviewed, minutes of meetings with key stakeholders, community leaders and decision-makers, letters and memoranda.</p>				

- B. Has the project team sought to align the project vision and goals to the needs and goals of the host and affected communities as well as address potential adverse impacts?*
- 1. Comprehensive impact assessments conducted, identifying and evaluating the positive and negative impacts of the project on affected communities. Planned actions for mitigating adverse impacts.*
 - 2. Minutes of meetings, letters and memoranda with key stakeholders, community leaders, and decision makers for obtaining input and agreement regarding the impact assessment and planned actions.*
- C. To what extent have the affected communities been meaningfully engaged in the project design process?*
- 1. Reports and documented results of meetings, design charrettes, and other activities conducted with representatives of affected communities.*
 - 2. Evidence of project processes for collecting, evaluating, and incorporating community input into the project designs. Demonstration of the thoroughness of the evaluation and incorporation into the designs.*
 - 3. Evidence showing the extent to which options were identified, and needed and reasonable changes to the project were made in accordance with community needs and plans.*
 - 4. Acknowledgments and endorsements by the community that the design participation process was helpful and that their input was appropriately assessed and incorporated into the project design.*
- D. Have the project owner and the project team designed the project in a way that improves existing community conditions and rehabilitates infrastructure assets?*
- 1. Plans, designs, meeting minutes with community stakeholders and decision makers demonstrating an understanding of community conditions and assets, and substantive efforts to rehabilitate.*
 - 2. Evidence of community satisfaction and endorsement of plans.*

Table 2. Snow Creek credit justification in Quality of Life¹³

Quality of Life	Evaluation Criteria and Documentation Available	Current Score	Max. Points Possible
<p>QL1.1 Improve Community Quality of Life</p>	<p>A.1. The project team (Placer County Department of Public Works and consultant team) has accounted for community needs, goals, plans and issues as described in Attachment A – Lake Tahoe Regional Planning Document, which was reviewed for project planning purposes. The issues important to the community are described and addressed within the Joint CEQA/TRPA Environmental Document, Public Draft Initial Study/Mitigated Negative Declaration and TRPA Initial Environmental Checklist (Attachment C, Section 1 [uploaded under QL2.2]). A Community Relations Plan (Attachment D) was prepared and approved by the EPA according to their Brownfields Grant Guidelines. The project team has met with key stakeholders and decision makers who are members of the Technical Advisory Committee (TAC): North Tahoe Public Utility District (NTPUD), North Lake Tahoe Resort Association (NLTRA), California Tahoe Conservancy, California Resources Agency, and U.S. Army Corps of Engineers (USACE). TAC meeting minutes are included in Attachment B. Placer County advertised and held public meetings in order to receive additional community input from residents near the project area (Attachment E).</p> <p>B. The project team has considered the community needs and goals addressed within the various planning documents identified above to create a project vision and goals that are aligned with the community needs and goals for the project area and the region.</p> <p>B.1. A comprehensive impact assessment was conducted and documented in the Joint CEQA/TRPA Environmental Document (Attachment C [uploaded under QL2.2]) where adverse impacts and mitigation measures are identified. The initial kickoff meeting with the project team also identified key project issues and community needs and are documented in the Kickoff Meeting Minutes (Attachment N).</p> <p>B.2. The Community Relations and Public Involvement Plan</p>	<p>25</p>	<p>25</p>

¹³ CDM Smith files, extracted from “Envision notes with authentication responses, October 2013.xlsx.”

	<p>(Attachment D) documents the community involvement process for the project planning phase. TAC meetings during the design and planning process and meetings with other stakeholders are documented in Attachment B. The California Tahoe Conservancy is a property owner within the project area and also a partner with Placer County for acquisition of the proposed restoration area (former concrete plant). Their staff recommendation (Attachment J) to provide funding so Placer County could purchase the property explains the goals for water quality improvement.</p> <p>C.1. Several public meetings have been advertised and held throughout the entire process, starting at property acquisition through design and planning (Attachment E). Many of the members on the TAC also represent the public and regular TAC meetings have been conducted throughout the design and planning process (Attachment B).</p> <p>C.2. The Community Relations and Public Involvement Plan (Attachment D) describes the project processes for collecting input about the project. The Joint CEQA/TRPA Environmental Document Response to Comments (Attachment HH) describes public comments and responses to all comments, and the Preliminary Design Alternatives Report (Attachment R, Section 3) provides evidence of evaluation and incorporation of TAC member input and incorporation into the project plans.</p> <p>C.3. The Preliminary Design Alternatives Report (Attachment R) describes the various project alternatives considered and revisions made to the project in accordance with community needs and plans. The Final Design Report (Attachment PP, Section 3.2 [uploaded under QL2.4]) further describes revisions to the project design throughout the planning process.</p> <p>C.4. The Joint CEQA/TRPA Environmental Document Response to Comments (Attachment HH) describes public comment received about the project and resolution of those comments.</p> <p>D.1. The project design (Attachment F – Project Plans [uploaded under QL2.3]) improves existing community conditions for aesthetics, air quality, biological resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use compatibility, noise, recreation, transportation and traffic, and utilities and service systems. The project rehabilitates storm water facilities, restores stream environment zone (SEZ) and wetlands, and reestablishes the site’s historic hydrology and habitat. The project also provides needed trail connections to enhance existing recreation areas and alternative transportation facilities (transit, multi-use trails, public boat ramp) (Attachment C, Sections 2 and 3 [uploaded under QL2.2]).</p> <p>D.2. TAC meeting minutes (Attachment B), California Tahoe Conservancy Staff Recommendations to Purchase the Property and Restore (Attachment J), and the Joint CEQA/TRPA Environmental Document Response to Comments (Attachment HH) all provide evidence of community satisfaction and endorsement of plans for the project.</p>		
--	--	--	--

3.2.2 Leadership (Collaboration – Management – Planning)

The Leadership category addresses sustainability through its three subcategories of Collaboration, Management, and Planning. The Leadership category objectives emphasize how a project's sustainable performance is also a result of teamwork and communication among a variety of stakeholders that contribute ideas and different perspectives. This type of collaboration requires a new kind of leadership and commitment from the project team, and new ways of managing the process. Sustainable management requires identifying and pursuing synergies between systems, either within a project or among larger infrastructure systems, and understanding the project as a whole. Planning needs to consider the long term and address future trends and ways of extending a project's useful life.

The Snow Creek project had already incorporated all the regional sustainability policies related to restoration, environment, trails construction, etc. The regulations of the area are relatively strict, and considerable documentation was already prepared. Thanks to the region's strict regulations and numerous reports and documents required for the project to be approved, CDM Smith had already covered a large portion of the Envision® documentation requirements. They had already gone through alternative evaluation processes and met with a technical advisory committee with representatives from various agencies. Thus, meeting notes were already available and became extremely useful when the team had to submit the same documents for Envision® evaluation. This preparation was a very good asset for CDM Smith and contributed significantly to a high score for the project. The only thing needed was to organize all this material appropriately as requested. Among the existing documents, CDM Smith had already developed three environmental impact studies. The main one was the CEQA (California Environmental Quality Act). These studies proved very useful when applying for Envision®, as they helped in answering about 25–30% of the Envision® criteria. They included documentation to which the project team referred quite often when completing the Envision® application. In addition to the environmental impact studies, CDM Smith had to go through the SWQIC (Storm Water Quality Improvement Committee) process, which applies to storm water projects for the Lake Tahoe basin. This process, which included a very comprehensive analysis of existing conditions, contamination issues, and groundwater and geotechnical studies, also contributed to documentation for the Envision® application. Other material used included concepts of the low-impact development manual that Placer County had developed for the area and incorporated in Lake Tahoe's sustainability plan (TRPA)

Finally, the project had very strong stakeholder engagement, as they organized several meetings to update the public and also for educating children. Public outreach efforts have also been organized.

In the Envision® Leadership category, the project scored 48% (58 earned points out of 121). The following tables show an example of credit justification in Leadership.

Table 3. *Envision® evaluation criteria and documentation for Leadership*

ENVISION®				
LD1.1 PROVIDE EFFECTIVE LEADERSHIP AND COMMITMENT				
LEVELS OF ACHIEVEMENT				
IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
<p>(2) Limited commitment. General sustainability policy statements can found in organizational literature, but are not extensive. Existence of public statements by the organization's leadership about their commitment to sustainability, but not related to the specific project. A few substantive examples of how that commitment to sustainability principles translates into actual practice. (A)</p>	<p>(4) Better clarity and commitment. Commitment to sustainability has moved beyond general statements to more specific statements. Organizational demonstration of commitment is backed up by several, but not extensive, examples of activities undertaken and performance achieved. (A)</p>	<p>(9) Walking the talk. Significant commitment across the organization with a few exceptions. Programs to improve are underway. Organizational demonstration of commitment includes various examples of activities undertaken or performance achieved focused on this project. Commitment is backed up by numerous and wide-ranging examples of activities undertaken and performance achieved. Sustainability performance of the organization is reported regularly through annual reports. (A)</p>	<p>(17) Sustainability is a core value. Sustainability is a core value of the organization and the project team as demonstrated by their policies, activities and performance. Apparent full commitment by all parties to address all aspects of the triple bottom line as they apply to the project. Understanding of the issues and problems associated with sustainability. Explicit recognition of the need for action to address the consequences of operating in a non-sustainable environment. (A)</p>	

EVALUATION CRITERIA AND DOCUMENTATION

A. *To what level and extent have the project owner and the project team made public commitments, both organizational and project-specific, to improving sustainable performance?*

1. *Public statements by the leadership in the project owner's organization and the leadership of the project team regarding their commitment to the principles of sustainability.*
2. *Written commitment by the project owner and the project team to address the economic, environmental, and social aspects of the project at each project stage. For large projects, evidence that a chartering session was conducted that included the project owner, designer, contractor, and operator, with a charter document agreed to and signed by all parties.*
3. *Examples of published sustainability reports, and organizational principles and policies regarding sustainability.*
4. *Examples of past or ongoing significant actions taken to improve sustainable performance.*

Table 4. *Snow Creek credit justification in Leadership*¹⁴

Leadership	Evaluation Criteria and Documentation Available	Current Score	Max. Points Possible
LD1.1 Provide Effective Leadership and Commitment	<p>A.1. Placer County has publicly stated in a Brownfields 2010 Cleanup Grant Fact Sheet (Attachment Z [uploaded under QL3.3]) that they are cleaning up a contaminated site and providing a sustainable project. This has also been stated in the Joint CEQA/TRPA Environmental Document (Attachment C, Section 1.1 [uploaded under QL2.2]) approved by Placer County with an adopted resolution (Attachment LL [uploaded under QL3.3]). Placer County recently completed the Placer County Low Impact Development (LID) Guidebook (Attachment AA), as an organizational guidebook, which describes LID techniques for storm water and water quality management. The LID Guidebook “provides planning and design guidance to promote and encourage the application of appropriate and cost effective LID principles and strategies for new and redevelopment projects in the Sierra Nevada.”</p> <p>A.2. The County publicly stated in their California River Parkways Grant Program and Urban Streams Restoration Grant Program Application (Attachment T, Section C-4: Organizational Capacity and Project Sustainability, page 12 [uploaded under QL1.2]) commitments addressing</p>	9	17

¹⁴ CDM Smith files, extracted from “Envision notes with authentication responses) October 2013.xlsx.

	<p>economic, environmental and social aspects of the project during the design and planning stages.</p> <p>A.3. As stated in A.1 above, Placer County recently completed the Placer County Low Impact Development (LID) Guidebook (Attachment AA), as an organizational guidebook, which describes LID techniques for storm water and water quality management. Placer County has general terms and conditions for all contracts, which reflect some policies related to procurement. These policies (Attachment AG) include: Local Vendor Preference – application of a 5 percent credit for Placer County businesses when evaluating bids for supplies, equipment, materials and services; and Recycled Product Preference – a 10 percent preference will be given to bids for products meeting a definition of recycled products cited in Public Contract Code Sections 12161 and 12200. Placer County prepared the Economic Development Board Roadmap in 2009 (Attachment AH, pp. 1 and section 3.6), which is a supplemental document to their 30-year-old economic development program. The objective of the roadmap document is to “help support and add to the existing efforts with new opportunities, stronger collaboration and prioritize and focus the efforts of the County’s Economic Development Board.” Section 3.6 of the document discusses Sustainable Economic Development. The objective for sustainable economic development focus is to “support the development of a sustainable Placer County economy that stewards the health of our human communities and natural resources and protects and enhances the quality of life for future generations and aligns with the California Strategic Growth Council.” Some of the actions outlined in Section 3.6 are being realized by implementation of the project, which provides for a new recreation area, public open space and trails. Use of local suppliers and vendors will be encouraged through the procurement process. Sustainable practices for storm water improvement and restoration are being implemented that will help to foster a sustainable community.</p> <p>A.4. The components of the Snow Creek SEZ Restoration Project (Attachments C, Section 2.2 [uploaded under QL2.2] and F [uploaded under QL2.3]) include: storm water capture, treatment and conveyance infrastructure along a restored drainage channel and stream environment zone; created wetlands along the restored channel; a Class 1 paved multi-use trail connecting to two existing trails, a trail system, recreation areas, public boat ramp and bus stop; a pedestrian walkway constructed of recycled concrete; and use of other recycled materials onsite (soil, vegetation). This project is a benefit to the surrounding community and the tourist economy by increasing recreation capacity and providing safe public areas to recreate for the nearby residential community (Attachment C, Section 2.2.4 [uploaded under QL2.2] and Attachment I – Vision Statement and Project Context, page 11 [uploaded under QL1.2]). The project also transforms a former industrial site into a pleasant public recreation area that will help to reduce congestion, improve air quality, reduce noise, improve public health and safety, improve water quality, increase native vegetation and control invasive weeds, and improve wildlife habitat (Attachment C, Section 2.1.3 [uploaded under QL2.2]).</p>		
--	---	--	--

3.2.3 Resource Allocation (Materials – Energy – Water)

Resource Allocation is the category that addresses the issue of sustainable use of resources both for the construction and operation of infrastructure projects. Materials, Energy, and Water comprise its three subcategories, referring directly or indirectly to natural resources use.

The project team benefited from the former use of the site, as they managed to reuse a large amount of the construction materials that were stored there over the years. They found deposits of gravel and rock material, which they used as recycled material. Bridges were used as bicycle trails over sensitive areas, one of which was a converted old railroad car. They added railings on the railroad car (flat car), empowered its structural strength and adjusted its length. The material used as a foundation for the bike trail bridge was gravel and concrete found on site. Rock boulders found on site were salvaged and reused in order to reconstruct the new channel under the bridge. Consequently the project team managed to eliminate the disposal of old material found on site and also minimize the purchase of new materials, thus contributing to the Resource Allocation category.



Fig.12: The new bridge made of a recycled railroad flat car

In addition, “the construction of the project minimizes water use and protects water resources. Willows planted near the natural storm water channel will provide shade for water temperature control, and the project will reduce sediments within storm water, allowing more clean water to reach Snow Creek. Reducing sediments and unwanted phosphorus and nitrogen will improve Lake Tahoe’s water quality.”¹⁵

In the Envision® Resource Allocation category, the project scored 34% (38 earned points out of 111). The following tables show an example of credit justification in Resource Allocation.

¹⁵ CDM Smith files, “Accreditation Workshop – Appendix L – B1 Snow Creek Case Study.pdf”

Table 5. *Envision® evaluation criteria and documentation for Resource Allocation*

ENVISION®				
RA3.1 PROTECT FRESH WATER AVAILABILITY				
LEVELS OF ACHIEVEMENT				
IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
<p>(2) No immediate negatives. The design team determines how much fresh water will be used by the project both during construction and operations. Look for opportunities for reuse, and its effects on local surface water and groundwater including groundwater flows and quality. Consider peaks in short-term usage. Some estimates regarding long term impacts, but mostly extrapolations of current estimated usage. (A, B)</p>	<p>(4) Good water management. Design the project to access and control water usage over average maximum conditions, with plans to offset peak withdrawals during lower water need periods. Institute water reuse. More comprehensive assessment of long term needs. (A, B, C)</p>	<p>(9) Wise water management. Design the project to solely access water that can be replenished in quantity and quality. Control water usage over average maximum conditions, with plans to offset peak withdrawals during lower water need periods. Determine impacts of fresh water withdraw on receiving waters current and historic aquatic species. (A, B, C)</p>	<p>(17) Total water management. Design delivery and operations maintained such that there is no net impact on water supply volumes, including managing runoff to recharge local groundwater and surface water supplies in a manner that offsets withdrawals. Freshwater supplies are replenished at source. Discharges to receiving waters meet quality and quantity requirements of historic high value aquatic species. Methods may include closed loop recycling of water within the project. (A, B, C)</p>	<p>(21) Positive impact. Replenishes the quantity and quality of fresh water surface and groundwater supplies to an agreed upon undeveloped, native ecosystem condition. Discharges to surface waters of fresh water after use, meets historic pre-development seasonal cycles of quality and quantity, including temperature. (A, B, C, D)</p>
<p>EVALUATION CRITERIA AND DOCUMENTATION</p> <p><i>A. To what extent have the owner and project team conducted a water availability assessment?</i></p> <ol style="list-style-type: none"> <i>Design documents indicating the location, type, quantity, rate of recharge, and quality of water resources available to the project.</i> <p><i>B. Have the project team assessed project water requirements?</i></p> <ol style="list-style-type: none"> <i>Estimations of average peak demands and long-term needs.</i> <i>Report on the long-term availability and replenishment or recharge of freshwater supply.</i> <i>Inventory of opportunities for water reuse or groundwater recharge on site.</i> <i>Calculations of the volume of freshwater discharge after use.</i> <i>Location of discharge and impact of discharge on receiving water quality and quantity, including temperature and salinity.</i> <p><i>C. To what extent has the project team incorporated design features to minimize the long-term negative net impact on ground and surface water source quality and quantity or to achieve a net positive impact on water sources?</i></p> <ol style="list-style-type: none"> <i>Design documents of all features intended to reduce negative water impacts.</i> <i>Rationale as to how the integrated systems of the project will work together to mitigate overall negative impacts or achieve net positive recharge.</i> <i>Inventory of any water impacts which the project is not able to mitigate.</i> <p><i>D. Does the project achieve a net positive water impact replenishing the quantity and quality of freshwater surface and groundwater supplies?</i></p> <ol style="list-style-type: none"> <i>Calculation showing the project has a long-term net positive impact and does not significantly alter natural fluctuation in flow in receiving waterway ecosystems.</i> 				

Table 6. *Snow Creek credit justification in Resource Allocation*¹⁶

Resource Allocation	Evaluation Criteria and Documentation Available	Current Score	Max. Points Possible
<p>RA3.1. Protect Fresh Water Availability</p>	<p>A. A minimal amount of water is needed to construct the project. The project would only use water during construction (3 months) for dust control and irrigation of newly revegetated areas for approximately two growing seasons (Attachments PP, Section 3.2.3 [uploaded under QL2.4] and O, Section 10-1.32 [uploaded under QL2.2]).</p> <p>A.1. The project specifications (Attachment O, Section 10-1.32 [uploaded under QL2.2]) and Final Design Report (Attachment PP, Section 3.2.3 [uploaded under QL2.4]) describe water needs and availability. Irrigation water is available from the North Tahoe Public Utility District water system. A service line exists at the project site. The quantity needed for irrigation is approximately 33,000 gallons per week for 16 weeks (June through September) for two years. No irrigation will take place between October through May during the two-year plant establishment period. Approximately 420 gallons per week is needed for containerized plants (6 gallons x 70 containerized plants = 420 gallons/week) and 32,584 gallons per week is needed to irrigate the restored SEZ area with overhead spray (27,154 gallons [1 acre inch of overhead spray] x 1.2 acres = 32,584 gallons per week (Attachment O, Section 10-1.32 [uploaded under QL2.2]). Water from dewatering will be available for dust control or will come from the public water system (Attachment K, Section 3.4 [uploaded under QL2.1]). Approximately 2500 gallons per day will be needed for dust control over a 30-day period during grading activities. The remaining 40 days of construction will require less water per day for dust control, approximately 1875 gallons per day. Water for dust control will infiltrate into the ground or evaporate. Equipment cleaning will not be conducted on-site. Irrigation water will be taken up by plants and infiltrate, helping to recharge the groundwater. The water quality of the irrigation water is good potable water and the water quality after infiltration and plant uptake will meet discharge standards. Dewatering water will be of good quality although it may include sediment. However, this water will infiltrate and be treated through natural processes before it meets with groundwater or is discharged to surface waters.</p> <p>B.1. The project will only require water for irrigation of restoration and revegetation areas for two summer and fall seasons, and for dust control for 70 days. The estimated quantity of water needed for irrigation during the plant establishment period is described above in A.1. Storm water will provide irrigation in the spring and after plants are established. During construction approximately 2500 gallons per day will be needed for dust control during the grading activities, which will be about 30 days. The amount needed for dust control after grading is completed will be reduced by approximately 75 percent until the end of construction (40 days) (Attachment K, Section 3.4 [uploaded under QL2.1]).</p> <p>B.2. The storm water improvements from the project will help to replenish groundwater supply through infiltration and treat the storm water through natural filtration processes prior to discharge to surface waters (wetlands and Snow Creek), which eventually flow to Lake Tahoe</p>	<p>21</p>	<p>21</p>

¹⁶ CDM Smith files, extracted from "Envision notes with authentication responses) October 2013.xlsx.

	<p>(Attachments C, Sections 2.2.2, 3.8.4 [uploaded under QL2.2] and 4.1.3 [uploaded under QL3.3] and F, Sheet C-03). The volume of freshwater discharged from the project will be based on the amount of water received during storm events and from snowmelt, which varies greatly from year to year. One hundred percent of the water discharged from the site will be freshwater.</p> <p>B.3. After construction, storm water entering the site will be pre-treated in the concrete forebay with gabions prior to entering a restored drainage channel, SEZ, and wetlands where it will infiltrate or receive further treatment (polishing) prior to discharge to Snow Creek and then Lake Tahoe. Infiltrated water will help to recharge groundwater (Attachment PP [uploaded under QL2.4]). Freshwater supply in the Tahoe Basin is provided by groundwater or surface water from Lake Tahoe.</p> <p>B.4. All of the water discharged from the site will be freshwater that has been treated through the various mechanisms described in the project description (Attachment PP, Section 3.2.4 [uploaded under QL2.4]).</p> <p>B.5. Treated storm water will discharge to the Snow Creek meadow and eventually Snow Creek, which is a tributary to Lake Tahoe. A beneficial impact to receiving water quality will result from the project because storm water improvements will reduce the sediment load within storm water compared to existing conditions. Also more water will reach Snow Creek than under existing conditions because physical barriers have been removed (berm). Some storm water will flow into a basin that will infiltrate into the groundwater. Willows will be planted near the newly created natural storm water channel to provide shade for water temperature control (Attachment C, Sections 2.2.2, 3.8.4 [uploaded under QL2.2] and 4.1.3 [uploaded under QL3.3]).</p>		
--	---	--	--

3.2.4 Natural World (Siting – Land and Water – Biodiversity)

This section addresses how to understand and minimize the negative impact infrastructure projects may have on the natural world – the habitats, species, and nonliving natural systems. The project’s siting within these systems as well as the new elements it may introduce interact with natural systems, negatively or positively. These types of interactions and impacts are divided into the three subcategories of Siting, Land and Water, and Biodiversity to address sustainable performance.

The Snow Creek project reached the highest Envision® score in the Natural World Category. The main strategies that are related to this category are the restoration of habitat, the improved water quality, and the creation of a buffer adjacent to the meadow and Snow Creek. The project protects wetlands and surface water, which buffers, enhances, and restores wetlands and other water bodies. Also, native plants have been selected to eliminate pesticide and fertilizer use – preventing surface and groundwater contamination and controlling invasive species.

The site has always received runoff from a snow storage site located upstream, and snowmelt and storm water runoff from all adjacent commercial and industrial areas within this watershed are collected on the site during the various seasons. The water flows to the adjacent meadow and Snow Creek, and from there to Lake Tahoe. So before the Snow Creek restoration, polluted storm water flowed through the site to Lake Tahoe. The Snow Creek project has therefore incorporated actions toward improved water quality.



Fig.13: *The water channel*

CDM Smith’s design has incorporated a pre-treatment forebay, which receives storm water and cleans it from the heavier pollutants to protect the wetland downstream. After passing through the forebay, runoff enters the low-flow channel and constructed wetland area and receives additional treatment as it passes through the rocks and the vegetation growing in the channel. According to the project planner, Suzanne Wilkins (CDM Smith): “A flow splitter is designed so that runoff from smaller storms will be routed through a pre-treatment forebay, while

flows from the larger storms will be bypassed to avoid resuspension and flushing out of accumulated sediment and other materials from the forebay.”

The channel and meadow system that was constructed provides much improved water treatment to the area compared to before the restoration. It is a low-flow channel designed to overflow into the adjacent flatter, floodplain areas during periods of higher flows. Only the lowest flows will stay in the rocks of the channel. As the water level goes higher, it will flood the adjacent meadows, enhancing the wetlands where the dense vegetation will again filter the water, removing pollutants, before it reaches Snow Creek. Some of the water will be infiltrated into the ground and some of it will be evaporated. Therefore, the chances of polluted storm water directly contacting Snow Creek and Lake Tahoe are substantially minimized.

Additionally, to protect Snow Creek from storm water coming directly from the commercial/industrial area, a buffer has been created between these areas, which functions as a transition zone. Earlier, the industrial zone was right next to the meadow, allowing polluted storm water to flow directly into the creek and later to Lake Tahoe.

In the Envision® Natural World category, the project scored 92% (163 earned points out of 177). The following tables show an example of credit justification in Natural World.

Table 7. *Envision® evaluation criteria and documentation for Natural World*

ENVISION®				
NW2.1 MANAGE STORMWATER				
LEVELS OF ACHIEVEMENT				
IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
	<p>(4) Increased storage capacity. Project employs low impact development (LID) measures to reduce generation of storm runoff to pre-development conditions. The target water storage capacity for greyfields, 30% improvement in water storage capacity. For brownfields, 20% improvement. Greenfields site maintains 100%. (A)</p>	<p>(9) Extended storage capacity. Project employs low impact development (LID) measures to reduce generation of storm runoff to pre-development conditions. The target water storage capacity for greyfields, 60% improvement in water storage capacity. For brownfields, 40% improvement. Greenfields site maintains 100%. (A)</p>	<p>(17) Sustainable stormwater management. Project employs low impact development (LID) measures to reduce generation of storm runoff to pre-development conditions. The target water storage capacity for greenfields is the pre-development water storage capacity. For greyfields, 90% improvement in water storage capacity. For brownfields, 60% improvement. (A)</p>	<p>(21) Enhanced stormwater management. Project employs substantial low impact development (LID) measures to reduce generation of storm runoff. Runoff is maintained on site and/or exceeds undisturbed climax ecosystem. Stormwater management programs and storm water handling structures are designed to capture and repurpose more than 100% of storm water on-site as part of overall water management regime. (B)</p>
EVALUATION CRITERIA AND DOCUMENTATION				
<p>A. What percentage improvement for a grayfield or brownfield site does the site’s proposed water storage, infiltration, evapotranspiration, and/or water harvesting capacity achieve, or does the site maintain a greenfield site water storage capacity?</p> <p>1. Documentation of the initial, final post-development, and target water storage, infiltration, evaporation, water harvesting and/or cistern storage capacities using TR-55 CNs or other continuous simulation modeling methods to describe site conditions.</p> <p>B. Is 100% of the target water storage capacity is achieved for grayfield and brownfield sites, or does the greenfield site exceed 100% target water capacity so as to mitigate the impact of adjacent developed sites?</p> <p>1. Documentation of the initial, final post-development, and target water storage, infiltration, evaporation, water harvesting and/or cistern storage capacities using TR-55 CNs or other continuous simulation modeling methods to describe site conditions.</p>				

Table 8. *Snow Creek credit justification in Natural World¹⁷*

Natural World	Evaluation Criteria and Documentation Available	Current Score	Max. Points Possible
NW2.1 Manage Storm water	<p>A. The pre-project condition of the site did not include any provisions for the management of storm water runoff. 100% of the site was covered either with concrete or other impervious paving, or with highly compacted soil fill. The project will remove the entire impervious surface to completely restore the pre-development hydrology. Additionally, storm water run-on to the site will be managed by the storm water improvements and the restored land.</p> <p>A.1. The EPA’s SWMM was used to design all storm water improvements including conveyances, storage, and treatment controls. (Attachment R, Section 3.1.2 [uploaded under QL1.1] and Attachment PP, Section 3.2.2 [uploaded under QL2.4]).</p> <p>B. The post-project restored greenfield will exceed the 100% capacity and will mitigate the impacts of adjacent development that discharge into the site.</p> <p>B.1. The EPA SWMM model was used to calculate the peak flows and runoff volumes for the 20-year, 1-hour water quality design storm, the 10-year conveyance design storm, and the 100-year flood event. (Attachment R, Section 3.1.2 [uploaded under QL1.1] and Attachment PP, Section 3.2.2 [uploaded under QL2.4]).</p>	21	21

¹⁷ CDM Smith files, extracted from “Envision notes with authentication responses) October 2013.xlsx.”

3.2.5 Climate and Risk (Emissions – Resilience)

Regarding the Climate and Risk category, Snow Creek’s stream environment zone restoration was designed to prepare for short-term hazards and increase resilience and long-term recovery prospects from natural and man-made short-term hazards, including wildfire, flooding, soil erosion, and drought.

The project contributed to reducing emissions just by changing the land use of the site from an industrial area with environmental impacts to a natural public open space with environmental benefits. CDM Smith designed the project to be resilient to large storms by stabilizing channels and soils with rock and vegetation. The additional wetland vegetation also increases resiliency to wildfire by reducing the amount of dry, upland-type vegetation that is much more flammable.

In the Envision® Climate and Risk category, the project scored 45% (55 earned points out of 122). The following tables show an example of credit justification in Climate and Risk:

Table 9. Envision® evaluation criteria and documentation for Climate and Risk

ENVISION®				
CR2.4. PREPARE FOR SHORT- TERM HAZARDS				
LEVELS OF ACHIEVEMENT				
IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
<p>(3) Hazards assessment. Thorough analysis of likely natural and man-made hazards in the project area, including analysis and projections for at least the next 25 years. (A)</p>		<p>(10) Preparation for 1 in 50 year hazards. Plans and designs have been created and implemented to prepare for short-term hazards that have a 1 in 50 year or better chance of occurring, including direct and indirect impacts. Designs may limit the hazard itself, fortify against the hazard, or allow the project to adapt to the direct or indirect impacts of the hazards. (B)</p>	<p>(17) Preparation for 1 in 100 year hazards. Plans and designs have been created and implemented to prepare for short-term hazards that have a 1 in 100 year or better chance of occurring, including direct and indirect impacts. Designs may limit the hazard itself, fortify against the hazard, or allow the project to adapt to the hazard. (B)</p>	<p>(21) Restore environments that reduce risk. Many hazards may be worsened by degraded environments. Restore and rehabilitate natural systems to minimize risks of natural hazards, such as restoring wetlands to accommodate flooding or lessen the effects of hurricanes. (C)</p>
EVALUATION CRITERIA AND DOCUMENTATION				
<p>A. Has the project team considered which types of natural and man-made hazards are possible in the region, and researched how the frequency and severity of these disasters may change over the life of the project?</p> <p>1. Provide a list of expected natural hazards in the area and their predicted frequency and severity, including but not limited to:</p> <ul style="list-style-type: none"> -Wildfires -Floods -Tornadoes -Hurricanes -Earthquakes -Tsunamis -Man-made hazards <p>B. Has the project team incorporated design strategies into the project to safeguard against these natural hazards?</p> <p>1. Explanation of the strategies included in the project to cope with each event and how they surpass existing codes and regulations.</p> <p>C. Does the project restore habitats in a way that reduces the impacts of future short-term disasters?</p> <p>1. Documentation of strategies used and how they minimize the risk of future hazards using environmental restoration.</p>				

Table 10. Snow Creek credit justification in Climate and Risk¹⁸

Climate and Risk	Evaluation Criteria and Documentation Available	Current Score	Max. Points Possible
CR2.4. Prepare for Short- Term Hazards	<p>C. The project will restore habitats that will reduce impacts of future short-term hazards including wildfire, flooding, soil erosion, and drought.</p> <p>C.1. The restoration of the site will help to reduce impacts (Attachment PP, Section 3.2.7 [uploaded under QL2.4]) from 1) Wildfire – by restoring the former concrete plant site to SEZ and wetlands including a low-flow channel, helping to restore hydrology conveyance to the adjacent meadow; the risk of wildfire is reduced during the spring and early summer months because this area will be wetter than under existing conditions. 2) and 3) Flooding and soil erosion – the restoration project would help to reduce soil erosion during flood events by constructing storm water improvements including creating a new low-flow channel that can convey water up to the 100-year design flow rate, reducing flow volumes and frequencies of surface runoff. 5) Drought – use of native plants for revegetation increase survivability of plants during drought conditions</p>	21	21

3.2.6 Envision® Rating Results

Table 11. Snow Creek Project Envision® Score¹⁹

Credit Category	Applicable Points	Earned Points	Percentage of Applicable Points
QUALITY OF LIFE	149	114	77%
LEADERSHIP	121	58	48%
RESOURCE ALLOCATION	111	38	34%
NATURAL WORLD	177	163	92%
CLIMATE AND RISK	122	55	45%
TOTAL POINTS	680	428	63%

The project was given the Envision® Platinum Award because it scored higher than 50%.

¹⁸ CDM Smith files, extracted from “Envision notes with authentication responses) October 2013.xlsx”

¹⁹ CDM Smith files, extracted from “Schuster No 328 Final.pptx”

4 CONCLUSION

According to CDM Smith, the Envision® Award had multiple benefits, summarized below:

The Envision® sustainable infrastructure rating system helped the project team address the projects' life cycle economic, social, and economic aspects. The tool was useful in guiding decisions about investment of scarce resources and addressing community and environmental priorities.

"Envision® served as an excellent resource for the project team in focusing on sustainable principles and practices important to Placer County and project stakeholders." Tom Pedersen, CDM Smith Senior Vice President and Director of Sustainability.

"The Envision® rating categories helped guide the project team in providing quality of life and natural world benefits, while also reducing risks to the new storm water infrastructure and trails." Suzanne Wilkins, CDM Smith Project Planner and Envision® Sustainability Professional.²⁰

With regard to the tool's contribution to sustainability, CDM Smith stated that "the use of the Envision® toolkit spawned ideas among project team members of how to increase a project's sustainability components and contribute to local and regional sustainability goals. The sustainable approach to project planning and design may help to expand funding opportunities in the future as more state and federal policies are developed to encourage projects, which benefit the community, economy and environment."

"The project team found the Envision® tools and resources to be useful for consideration and evaluation of sustainability design components of the project. The Snow Creek project's planning processes spanned many years, with regional and local community involvement contributing to strong leadership related to sustainability."²¹

The experience of CDM Smith with the Envision® toolkit has provided important feedback and information regarding both the contribution of Envision® to sustainable planning as well as the practical aspects of the tool.

CDM Smith staff have shared their advice on how to proceed when aiming toward a high Envision® score. First, they suggest that **addressing multiple objectives** is a key aspect of Envision® sustainable intents. In the Snow Creek project they had a triple target of restoration combined with improved transportation and recreation. Another suggestion is to always try to **integrate with existing infrastructure** so that the project functions properly as part of a larger system and improves the existing conditions. In the case of Snow Creek the new trails were tied in with the existing and planned trail systems. Envision® insists on **stakeholder and public engagement**, which has proved very important during the planning and the execution of the Snow Creek project. The planners and the owners were in contact with the public, understanding their needs and aspirations, which were taken into consideration in the final design. Also, **providing for long-term operations and maintenance** should always be the goal when planning for sustainable infrastructure. Envision® insists on this, and high scores can be obtained only if this has been studied. As already mentioned, Envision® requires **compatibility with regional or agency sustainability programs and policies**. The required documentation should be identified early,

²⁰ CDM Smith files, "Accreditation Workshop – Appendix L – B1 Snow Creek Case Study.pdf."

²¹ CDM Smith files, "Accreditation Workshop – Appendix L – B1 Snow Creek Case Study.pdf."

because this contributes both to improving project sustainability and to achieving a strong Envision® rating.

CDM Smith Staff realized that **early application of Envision® is a key** to high performance. Suzanne Wilkins, project planner, CDM Smith, believes that Envision® is a really good planning tool. “It’s a good tool to use early in the planning process. Especially when you are starting a new project. If you start early you can develop your planning documents and design documents so you can start incorporating this information early rather than having to go back later. You should keep track, because gathering the documentation and discussing it is the most time-consuming part of the application process.”

Throughout the planning process and the Envision® application process, it is suggested to work closely with ISI. CDM Smith confirms that ISI was very helpful. They explored interesting questions and points regarding the project, giving the opportunity to enrich the documentation or improve it.

Envision® **can also increase the opportunities for grant funding**. CDM Smith were able to identify some funding opportunities during the whole Envision® process, like the one for the informative signage.

The most important benefit from the use of the Envision® tool was definitely the opportunity to understand sustainability in depth and therefore **increase the project’s sustainable performance**. The planners were able to enhance the project by some of those ideas that were integrated into Envision® tools.

The project team also stated that an Envision® high rating does not necessarily require increased expenses for the project. They stated that in general aiming for a high Envision® score did not affect the cost of the project.



EXHIBITS

Exhibit A: Snow Creek Credits

Credit	Subcategory	Credits	Comments	Points Awarded	Level of Achievement
QUALITY OF LIFE	PURPOSE	1.1	Improve community quality of life	25	Restorative
		1.2	Stimulate sustainable growth and development	2	Enhanced
		1.3	Develop local skills and capabilities	0	
	WELLBEING	2.1	Enhance public health and safety	0	
		2.2	Minimize Noise and Vibration	11	Restorative
		2.3	Minimize light pollution	11	Restorative
		2.4	Improve community mobility and access	14	Conserving
		2.5	Encourage alternative modes of transportation	15	Restorative
		2.6	Improve site accessibility, safety, and wayfinding	15	Restorative
	COMMUNITY	3.1	Preserve Historic & Cultural Resources	Exclude	
		3.2	Preserve Views & Local Character	14	Restorative
3.3		Enhance Public Space	13	Restorative	
Innovation Credit	0.0	Innovate or Exceed Credit Requirement	Exclude		
LEADERSHIP	COLLABORATION	1.1	Provide Effective Leadership & Commitment	9	Superior
		1.2	Establish A Sustainability Management System	0	
		1.3	Foster Collaboration & Teamwork	4	Enhanced
		1.4	Provide for Stakeholder Involvement	14	Conserving
	MANAGEMENT	2.1	Pursue By-Product Synergy Opportunities	1	Improved
		2.2	Improve Infrastructure Integration	16	Restorative
	PLANNING	3.1	Plan For Long-Term Monitoring & Maintenance	10	Conserving
		3.2	Address Conflicting Regulations & Policies	1	Improved
		3.3	Extend Useful Life	3	Enhanced
	Innovation Credit	0.0	Innovate or Exceed Credit Requirements	Exclude	
	RESOURCE ALLOCATION	MATERIALS	1.1	Reduce Net Embodied Energy	0
1.2			Support Sustainable Procurement Practices	0	
1.3			Use Recycled Materials	0	
1.4			Use Regional Materials	0	
1.5			Divert Waste From Landfills	Exclude	
1.6			Reduce Excavated Materials Taken Off Site	0	
1.7			Provide For Deconstruction & Recycling	0	
ENERGY		2.1	Reduce Energy Consumption	Exclude	
		2.2	Use Renewable Energy	Exclude	
		2.3	Commission & Monitor Energy Systems	Exclude	
WATER		3.1	Protect Fresh Water Availability	21	Restorative
		3.2	Reduce Potable Water Consumption	21	Restorative
		3.3	Monitor Water Systems	Exclude	
Innovation Credit	0.0	Innovate or Exceed Credit Requirements	Exclude		
NATURAL WORLD	SITING	1.1	Preserve Prime Habitat	18	Restorative
		1.2	Protect Wetlands & Surface Water	18	Restorative
		1.3	Preserve Prime Farmland	Exclude	
		1.4	Avoid Adverse Geology	Exclude	
		1.5	Preserve Floodplain Functions	14	Conserving
		1.6	Avoid Unsuitable Development on Steep Slopes	Exclude	
		1.7	Preserve Greenfields	23	Restorative
	LAND + WATER	2.1	Manage Stormwater	21	Restorative
		2.2	Reduce Pesticide & Fertilizer Impacts	9	Conserving
		2.3	Prevent Surface & Groundwater Contamination	18	Restorative
	BIODIVERSITY	3.1	Preserve Species Biodiversity	2	Improved
		3.2	Control Invasive Species	11	Restorative
		3.3	Restore Disturbed Soils	10	Restorative
		3.4	Maintain Wetland & Surface Water Functions	19	Restorative
Innovation Credit	0.0	Innovate or Exceed Credit Requirements	Exclude		
CLIMATE & RISK	EMISSIONS	1.1	Reduce Greenhouse Gas Emissions	0	
		1.2	Reduce Air Pollutant Emission	12	Conserving
	RESILIENCE	2.1	Assess Climate Threat	0	
		2.2	Avoid Traps & Vulnerabilities	2	Improved
		2.3	Prepare For Long-Term Adaptability	16	Conserving
		2.4	Prepare For Short-Term Hazards	21	Restorative
		2.5	Manage Heat Island Effects	Exclude	
Innovation Credit	0.0	Innovate or Exceed Credit Requirements	Exclude		

Exhibit B: Project Partners and Funding²²

Placer County has developed a complex interagency partnership on this project. Among the public entities financially committed and honorably supporting the project:

Sierra Nevada Conservancy The SNC awarded Placer County an acquisition grant through Proposition 50 in September 2006, for a total amount of \$1,820,000. The grant was to purchase eight parcels within the project site and perform environmental due diligence. Escrow on the property closed on August 14, 2008. This grant agreement is closed.

Tahoe Regional Planning Agency The TRPA awarded \$13,500 in water quality funds to this project in Fall 2008. These funds will be used for maintenance on the property, cleaning culverts, soil stabilization, and paying water connection costs. The TRPA fully endorses the project, and the project is included in the Environmental Improvement Program (EIP) No. 391.

U.S. Bureau of Reclamation The Bureau awarded Placer County a grant in the amount of \$250,000 for CEQA environmental documentation and preliminary design. The grant was awarded in 2008 and is still active. Current work is proceeding, utilizing funds from this grant.

US Environmental Protection Agency EPA awarded \$600,000 in brownfield monies to the project in 2010. Work covered under this grant includes community outreach, a Cleanup Plan, Sampling and Analysis Plan, NEPA documentation, and design.

California Natural Resources Agency The NRA awarded Placer County a \$1,000,000 grant from the Proposition 84 River Parkways Program in 2010. This grant will be used to fund construction of the recreational (Class I multi-use trail) components of the project.

The following agencies have not granted any monies to the project, but are considered partners: Lahontan Regional Water Quality Control Board (RWQCB), US Forest Service, and the California Tahoe Conservancy (Recreation and Access).

The North Tahoe Public Utility District (NTPUD) is an additional partner in the project. The recreational project improvements will be maintained by NTPUD, including Class I bike trail maintenance. Placer County Department of Public Works will maintain and operate the water quality improvements that will be constructed, similar to the maintenance performed on other EIP-type projects. Additionally, Placer County will utilize the Sierra Watershed Educational Partnerships to facilitate the involvement of schoolchildren from the Tahoe-Truckee Unified School District, with a science-based learning program.

Exhibit C: Project Costs

Cost for land acquisition: \$1,820,000

Cost for planning and design services: \$524,018

Cost for construction: \$1,700,000

²² https://fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5318984.pdf

Exhibit D: Project Timeline

1996	Tahoe Vista Community Plan published
1997	Lake Tahoe Environmental Improvement Program launched
2003	Concrete plant closed
	Placer County DPW applies for Sierra Nevada Conservancy grant
2004	North Lake Tahoe Tourism and Community Investment Master Plan published
Sept 2006	Sierra Nevada Conservancy awards \$1,820,000
Early 2007	Phase 1 and 2 Environmental Site Assessments conducted for property sale due diligence
End of 2007	Building demolition is completed
	Site cleanup of USTs and soil contamination is completed
Aug 2008	Property purchased by Placer County
Fall 2008	Tahoe Regional Planning Agency (TRPA) awards \$13,500
End of 2008	Property leased to Caltrans construction contractor until 2012
2009	Lahontan RWQCB approves case closure for UST and soil cleanup
Early 2010	Brownfields grant acquisition for additional cleanup and redevelopment planning
2010	US Environmental Protection Agency (EPA) awards \$600,000
	California Natural Resources Agency awards \$1,000,000
	Lake Tahoe Region Bicycle and Pedestrian Plan published
End of 2010	Planning and Design Process and Envision Evaluation process initiated
Early 2011	Construction grant acquisition completed
End of 2011	CEQA clearance completed
Early 2012	CTC easement acquired
End of 2012	Land use conversion from industrial to open space / recreation completed
2013	Planning and design process completed
June 2013	DPW starts bidding process for contractor; “notice for bidders” is published
Aug 2013	Burdick Excavating Co., Inc. signed as the contractor; contract period: 1 year
End of 2013	Grading, restoration, and winterizing completed
Aug 2014	Project construction completion
Mid of 2014	Beginning of first year of seasonal irrigation, monitoring and maintenance until late fall
Nov 2014	Project receives the Envision Platinum award
Mid of 2015	Beginning of second year of seasonal irrigation, monitoring and maintenance until late fall
End of 2015	Project completed
	Post-project monitoring and maintenance begins

ABBREVIATIONS

CR	Climate and Risk
Envision®	Envision® Rating system for Sustainable Infrastructure
ENV SP	Envision® Sustainability Professional
ISI	Institute for Sustainable Infrastructure
LD	Leadership
NW	Natural World
QL	Quality of Life
RA	Resource Allocation
CEQA	California Environmental Quality Act
CTC	California Tahoe Conservancy
EIP	Environmental Improvement Program
EPA	Environmental Protection Agency
LID	Low-impact development
R&D	Research and development
RWQCB	Regional Water Quality Control Board
SEZ	Stream environment zone
TAC	Technical Advisory Committee
UST	Underground storage tank