



Green Infrastructure & Stormwater Management CASE STUDY

Vernal Pool Restoration on the Interstate 80 and California Highway 113 Interchange

Location: Davis, CA

Client: Caltrans

Design Firm(s): KJ Dawson Associates

Landscape architect/Project contact: Kerry J Dawson, ASLA

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ASLA Chapter: Georgia

Project Specifications

Project Description: This project combined stormwater management, highway landscaping, endangered species mitigation and research. An interchange at the intersection of Interstate 80 and Highway 113 in Davis, California was selected because of the need to slow stormwater drainage entering the Putah Creek Nature Reserve; because Caltrans had started a policy of replacing exotic highway landscaping with natives; because vernal pools in California contain the greatest concentration of (and more) endangered flora and fauna than any other native California landscape; and because, being the first large scale installation of vernal pools on a Caltrans project, there was a need to document design, construction and monitor the project to determine the success of new construction techniques and which species were most successful in adapting to a constructed landscape and which were least successful.

Project Type:

Transportation corridor/streetscape

A retrofit of an existing property

Design features: Bioretention facility and bioswale.

This project was designed to meet the following specific requirements or mandates:

State statute, Federal statute

Impervious area managed: greater than 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? No

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$100,000-\$500,000 (Public funding: State)

Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space to the overall costs of the site

design/development project: Surprisingly, natives are more cost effective than exotics even with a project as complex as the Vernal Pools on Interstate 80. Because natives are adapted to the local environment, their cost, energy inputs and environmental impact are reduced both short term and long term. Although a grassland ecosystem, vernal pool species are low growing and don't need mowing. The cascading drainage system shown in the LAM article for the pools serve to slow and store stormwater without the need for new drainage systems nor irrigation. Exotics do not slow or store stormwater and, they require massive amounts of irrigation. In addition, exotics typically require fertilizer, herbicides and landscape management such as pruning and disease control. The California natives of these vernal pools require no environmental or maintenance input.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly reduced costs (10% or greater savings).

Number of jobs created: 5

Job hours devoted to project:

Planning and Design: 300
Construction: 600
Annual Maintenance: 0
Other: 9,000 (research and education)

Performance Measures

Stormwater reduction performance analysis:
20%

Community & economic benefits that have resulted from the project:

- Restoration techniques now applied state-wide

- Training workshops for engineers
- Vernal pool ecosystem inside the Davis community for enjoyment and education
- Minimal long term maintenance costs
- Preservation of Endangered Flora and Fauna

Project Recognition

Research Merit Award, ASLA (1989); Research Honor Award, California Council of ASLA (1989)

Additional Information

Links to images: Landscape Architecture Magazine (LAM). American Society of Landscape Architects. Washington, D.C., Vol. 79, No. 9, November 1989. p. 106.

Last Fall, I took an early retirement incentive as Vice President with the Hudson River Park Trust in Manhattan (NYC). Previously, I was a professor for twenty years at a number of universities, mostly the University of California (UC). The project took place in the late 1980s and early 1990s while I was with UC. I apologize that I don't have immediate access to project information but can provide more details, images, updates, etc if the project is selected.

This project has provided 25 years of outstanding stormwater management; aesthetics for the Interstate 80; habitat for endangered species; and, countless hours of education, research and public service opportunities for K-12, university, adult and community members. The Vernal Pools of the Interstate 80 and Highway 113 interchange look and perform beautifully these days!