



# Green Infrastructure & Stormwater Management CASE STUDY

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## Oak Glen Creek Detention Basins

**Location:** Yucaipa, CA

**Client:** City of Yucaipa

**Design Firm(s):** David Evans and Associates, Inc., L & L Environmental, Inc., West Consultants, Inc., Converse Consultants

**Landscape architect/Project contact:** Kim Rhodes - Landscape Architect/ Jeff Rupp - Project Manager and Civil Engineer

**Email:** [jkr@deainc.com](mailto:jkr@deainc.com)

**ASLA Chapter:** Southern California

### Project Specifications

**Project Description:** The Oak Glen Creek Detention Basins are multipurpose basins. The site is 30 acres in size and consists of three detention basins which hold just under 50 acre-feet of water. The basins provide multiple benefits including providing flood protection, improving downstream water quality, promoting infiltration of storm water, facilitating groundwater recharge, thus providing a model of integrated watershed management. The park site also provides passive recreational trails for use by walkers, joggers, equestrians, and bicyclists. Landscaping consists of re-establishment and protection of natural plant and animal habitat. In addition, the site has educational kiosks and signage which provide an outdoor classroom.

**Project Type:**

Open space - park

A retrofit of an existing property

**Design features:** Bioretention facility, bioswale.

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

State statute, county ordinance, local ordinance, to meet funding criteria

**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?** Not applicable.

## Cost & Jobs Analysis

**Estimated Cost of Stormwater Project:** >\$5,000,000 (Public funding: Federal, state, regional, local)

**Related Information:** \$6.1 million

**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:** The entire project consists of open space so this is not applicable. However, we did work the design of the detention basins around existing oak trees and sycamore trees and critical habitat areas. Conserving habitat areas had very little impact on the costs.

**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). This is a unique project where we designed detention basins to reduce downstream flooding. The alternative would have been to build bigger conveyance facilities including widening bridges downstream. So the project will save millions of dollars in construction of downstream infrastructure conveyance facilities which are no longer necessary thanks to the detention basins.

**Number of jobs created:** during construction 100, after construction 5

**Job hours devoted to project:**

Planning and Design: 5,000

Construction: 50,000

Annual Maintenance: 5,000

## Performance Measures

**Stormwater reduction performance analysis:**

The project reduced stormwater peak flows by the following for various storm events: for the 2-year storm event the peak storm flow is reduced by 27%, the 5-year storm event the peak storm flow is reduced by 6%, the 10-year storm event the peak storm flow is reduced by 15%, the 25-year storm event the peak storm flow is reduced by 12%, and the 100-year storm event the peak storm flow is reduced by 19%.

**Community & economic benefits that have resulted from the project:** The project provides increased flood protection for properties downstream of the basin. Depending on the flood event, the project could save millions of dollars in flood damage in every major storm. The park site provides passive recreational trails for use by walkers, joggers, equestrians, and bicyclists. Landscaping consists of re-establishment and protection of natural plant and animal habitat. In addition, the site has educational kiosks and signage which provide an outdoor classroom. All these items benefit the community and surrounding property owners.

### **Project Recognition**

A Merit Award from the ASLA (2010); ASCE Riverside/San Bernardino County Project of the Year Award - Honorable Mention (2010); APWA Project of the Year Award for the Inland Empire Chapter (2009); The Integrated Project of the Year Award from the Santa Ana Watershed Project Authority (SAWPA) (2010)

### **Additional Information**

Links to images: <http://www.yucaipa.org/cityProjects/index.php>