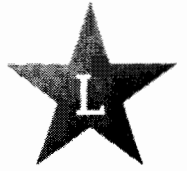


---

**World Water Forum College Grant Program  
2007 Grant Proposals**

---



**College**

Cal Poly Pomona (1)

**Faculty**

Gerald Taylor, ASLA

**Project**

Landscape Irrigation Water Conservation  
Project

---

**Proposal for the World Water Forum's  
Innovative Conservation Research and Technology  
College Grant**



*Jackie Higgin*

***Proposal Team:***

Kai L. Craig

Sunny Tsou

Scott Kleinrock

Lee Krusa

Jackie Higgins

Gil Del Rosario

***Faculty Advisor:***

Gerald Taylor, ASLA



*01/11*

**A.**

College	Cal Poly Pomona
Address	3801 West Temple Avenue
City, State, Zip Code	Pomona, CA, 91768
Website	www.csupomona.edu
Make Check Payable To:	Cal Poly Pomona

**B.**

First Time, Local Project. Project is a conservation prototype with a communications component.

**C.**

Student Project Manager	Kai L. Craig
Undergraduate or Graduate	Graduate
Department	Landscape Architecture
School Address	3801 West Temple Avenue Pomona, CA, 91768
Telephone	(562)391-1622
Mobile Phone	(562)489-4558
Email Address	kai.craig@gmail.com
Home Address	1532 E. Appleton St. Long Beach, CA 90802

**D.**

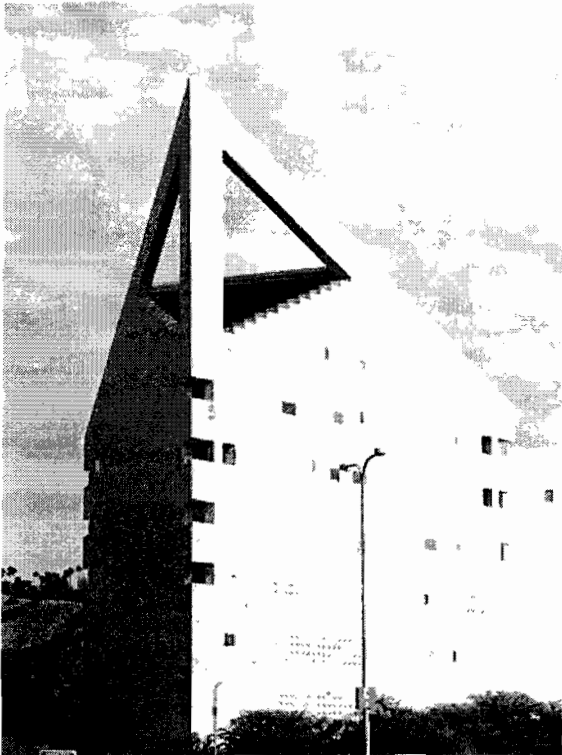
Faculty Project Manager	Gerald Taylor, ASLA
Department	Department of Landscape Architecture
School Address	3801 West Temple Avenue Pomona, CA, 91768
Telephone	909-869-6891
Mobile Phone	N/A
Email Address	jotaylor@csupomona.edu

## **E. Organizational Background**

### ***Cal Poly Pomona***

Cal Poly Pomona's mission is to advance learning and knowledge by linking theory and practice in all disciplines, and to prepare students for lifelong learning, leadership and careers in a changing multicultural world.

Cal Poly Pomona opened in the fall of 1938 as the Voorhis Unit of the California Polytechnic School. The campus was located on the 150-acre site of the former Voorhis School for Boys in San Dimas. In 1949, breakfast cereal magnate W.K.Kellogg deeded 813 acres of land located three miles south of the Voorhis campus to the State of California. In 1966, Cal Poly Pomona separated from the San Luis Obispo campus to become California's 16th state college. University status was granted in 1972.



*Cal Poly Pomona is committed to a 'learning by doing' philosophy.*

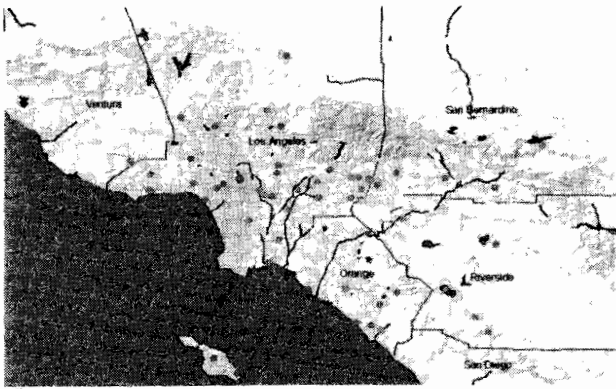


*The Department of Landscape Architecture is working to make Los Angeles a more sustainable region.*

### ***Department of Landscape Architecture***

The Department of Landscape Architecture at Cal Poly Pomona recognizes the serious challenges facing human kind in the 21st century: Rapidly expanding population pressures in the context of finite, non-renewable resources; and an increasingly multicultural society. We believe that these issues are fundamental, placing concepts of regeneration, livability, justice and sustainability at the forefront of the environmental design agenda.

In many respects, the Los Angeles region is a bellwether, an early indicator of issues, patterns and processes that will become prevalent in many parts of the world during

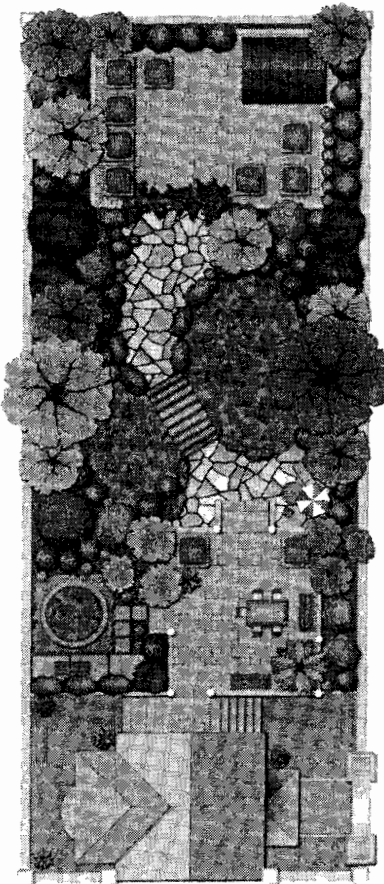


LA 606 Projects in Los Angeles Region, 1976-2003  
 Department of Landscape Architecture  
 California State Polytechnic University, Pomona

*Third year students in Cal Poly's MLA program take on real world projects throughout the region.*

this century. As such, the Department is uniquely situated to be a leader in "Re-Generating L.A.," and educating future landscape architectural professionals to meet these challenges.

The agenda of Re-Generating the Los Angeles region requires a keen awareness of issues in the region, on the part of faculty and students; it requires an educational approach which is based on student-driven inquiry and grounded in real case studies, in real communities; it requires a design process which emphasizes community engagement, field interpretation, multiple spatial and temporal scales; and it requires careful analysis and monitoring of results to inform and refine practices.



*Landscape design has a significant impact on water resources.*

Within the undergraduate and graduate curriculum, there is a conscious effort to integrate this vision into design studios as well as support courses. Design problems actively engage issues facing the region and local communities, and carefully consider the repercussions of proposed design actions; the flexibility of topical studios and modules week allows for the exploration of contemporary issues; all courses instill essential technical skills, while at the same time fostering critical and principled thinking concerning the role and responsibilities of landscape architects in society.

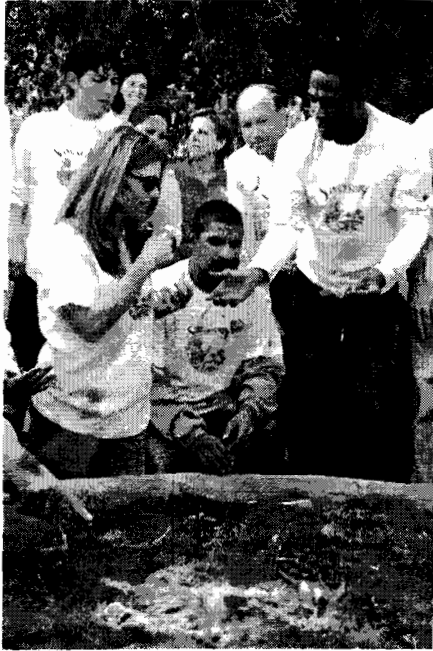
The explicit integration of this vision into the Department curriculum is essential to accomplish our mission of preparing students to resolve the ecological and social challenges of the 21st century.



## F. Project Description

### *Overview*

The Sanctuary Garden at Locke High School officially opened in 2006 with a ceremony featuring Maria Shriver as a keynote speaker. Its mission, funded by the School Garden Network, is to raise awareness of food security, the environment, and healthy child nutrition. It was also conceived as a way to provide respite from gang violence and other problems associated with an inner city school. In one of the most economically challenged school districts of Los Angeles County, the garden represents a rare green, open space in an urbanized environment, mostly covered with impermeable surfaces and few trees.



*Maria Shriver presides over the 'extreme garden makeover'.*

Approximately one third of the 1 acre garden is actively producing vegetables and herbs for the local community. The remaining portion, however, is an underutilized landscape that has fallen into disrepair. In an effort to keep existing vegetation green and alive, staff moves a portable sprinkler by hand throughout the site, an inefficient practice that leaves some areas overwatered and others dry. The plants here are relics of another era when tropical plants were favored and little effort was made to use native, locally adapted plant species. In the midst of this planting scheme is a mid-sized coast live oak, with the potential to serve as a centerpiece for a more responsible, water efficient landscape.



*Only a portion of the garden was improved, in this case for vegetable production.*

At Locke High School, there is an opportunity for this landscape to become a medium for communication. As a teaching tool, the site can demonstrate the full range of water conservation strategies and their integration into a functional space: efficient irrigation technologies, native plant palettes, and stormwater management. In concert with

the existing agricultural use, the water efficient landscape will serve as a model for the ever-growing number of school garden programs to include a water efficiency and water quality component.



*The rest of the garden provides shade but little else.*

One of the features that will distinguish this school garden project from most is the inclusion of a bio-swale and retention basin. Runoff from the site and adjoining parking lot will be collected in what was previously a small fountain at the center of the site. The water will be filtered through the roots of semi-aquatic plants before it infiltrates into the local aquifer, instead of flowing untreated to stormdrains. Adapting the proven technology of biological water treatment to this semi-public space will be one of the most exciting areas of applied research for this project.

The other focus of the garden will be a re-design of the existing planting plan to include areas representing various California plant communities. Native yarrow will be used in low-traffic areas to replace turf, and a variety of irrigation techniques will be demonstrated, including subsurface, bubbler, and low-volume spray emitters.



*Water builds up in the walkways after irrigation and rains.*

While the garden represents an important step in building awareness of how to conserve water and manage runoff in urban areas, its influence would be limited if it stopped there. All too often, school gardens exist in isolation from the greater public. Only students, teachers, and their families are exposed to the lessons they have to offer. For this reason, a website will be developed in parallel with this program to document the process of design and construction, and then to serve as a teaching tool and a living, interactive maintenance document. The value of landscape as a means of demonstrating



*Students cleaned up the site, preparing it for future improvements.*

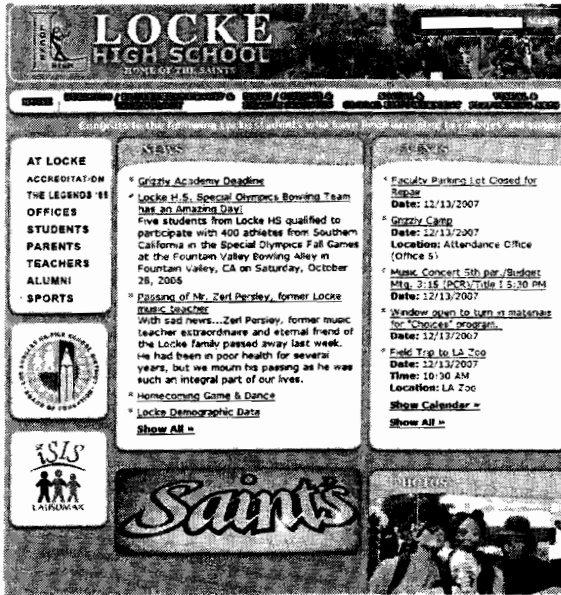


*The site needs updating to reflect current landscape values.*

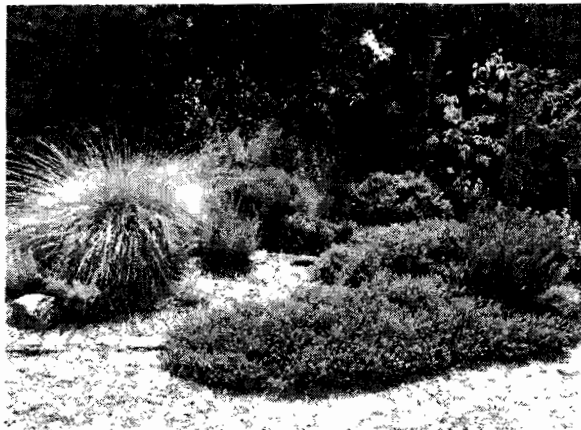
interconnected principles of conservation and stewardship can be leveraged with the capability of the worldwide web to spread that message.

Access to photographs, planting plans, water usage and water quality data, weather information, maintenance schedules, and event calendars will be featured on the website. By doing so, the website is a valuable resource for the school to manage the garden. Eventually maintained by students, the website also links computer skills to outdoor education and ecology. Links to other websites dealing with water conservation, native plants, and municipal programs help the wider community learn how to start or improve their own water efficient landscapes at home, school, or work.

The benefits of school gardens has been well documented. Building knowledge and pride in the native landscape helps foster community and collaboration amongst students and teachers. Exposure to natural processes and ecology contributes to a less chaotic perception of the world and alleviates the symptoms of nature deficit disorder. A garden that combines these benefits with water conservation and stormwater treatment techniques will increase awareness of regional water issues in everyone who comes in contact with it. A website will effectively communicate the value, beauty, and benefits of a landscape that goes beyond water efficiency.



*The garden website will be accessible from the school website.*



*Native plants create local identity and use less water.*



*A swale and bio-retention basin will treat stormwater. Source: Water by Design*

## Project Activities:

### Website

- Register domain (website address)
- Web design- layout and content
- Go live with basic functionality to document garden design and construction
- Install web cam to provide public viewing and discourage vandalism during afterschool hours
- Add features as project progresses: photo gallery, calendar, live weather data, water usage
- Include student participation in maintenance

### Native Plant Garden

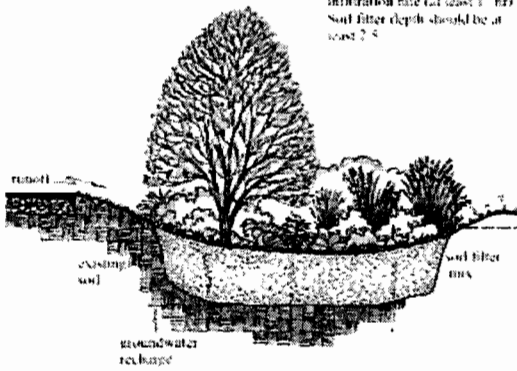
- Site Analysis: slopes, soils, solar access, wind, etc.
- Survey: enlist help of students and their opinions
- Create a planting plan which represents native chapparal, coastal sage scrub, and grassland plant communities
- Create an irrigation plan demonstrating 3 water efficient technologies
- Some site grading to define plant zones
- Install irrigation system with Smart Controller
- Plant according to design

### Stormwater Treatment: Bioswale and bio-retention basin

- Design stormwater capture system
- Create a planting plan for the the water treatment area
- Some site grading to direct runoff to treatment area
- Install substrate and soil amendments
- Plant according to design

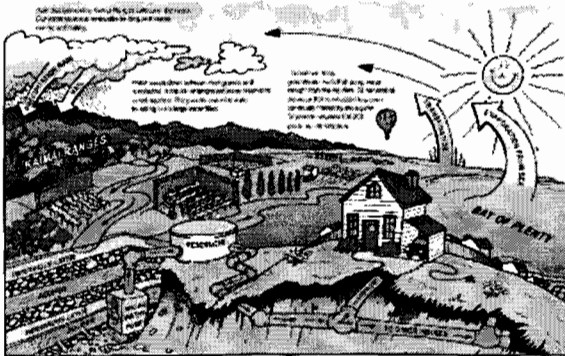
**GROUNDWATER RECHARGE FACILITY**

In-situ soils should have a high infiltration rate (at least 1" per hour)  
Soil filter depth should be at least 2-3'



*Water conservation, on-site water purification and local groundwater recharge are the immediate goals of the project.*

*Source: Low Impact Development Center, Inc.*



*A healthy water cycle regionally is the ultimate goal.*

*Source: Western Bay of Plenty District Council*

**Anticipated Outcomes**

**Short Term Goals:**

- The immediate benefits of a native garden and water treatment area
- A website that communicates these benefits:
- Improved water quality
- Increased groundwater recharge on site
- Decreased runoff and resulting pollution to nearby surface waters
- Educational opportunities for students
- Increased environmental awareness and stewardship
- A higher quality educational setting
- A better understanding of how to incorporate constructed wetlands into public spaces

**Long Term Goals Addressed:**

- Increased awareness of stormwater management and water conservation techniques (irrigation, planting design, biofiltration)
- Wider adoption of water conservation and stormwater management practices in school gardens, public spaces, and residences
- Higher rates of groundwater recharge regionally
- Reduced pollution of regional water bodies and nearshore environment
- Increased acceptance of California native landscapes
- Reduced water usage for landscaping region-wide

**Project Schedule:**

	<b>Phase I: Inception</b>	<b>Phase II: Groundwork</b>	<b>Phase III: Infrastructure</b>	<b>Phase IV: Habitat</b>
<b>Website</b>				
Basic format online w/ plans	March 31			
Install WebCam		June 23		
Full features: calendar, weather, gallery, student access, links, etc.			August 23	
Turn over management of website to students/ faculty				Dec. 16
<b>Native Garden</b>				
Site Planting Plan	March 31			
Site Irrigation Plan	March 31			
Site Grading		July 23		
Irrigation Systems Installed			August 23	
Initial Planting (yarrow lawn)				Sept. 22
Final Planting (all natives)				Nov. 28
<b>Bio-Swale and Basin</b>				
Design	March 31			
Build feature		July 23		
Plant bio-filtration area				Oct.23
<b>Evaluation</b>				
Project Report				Dec 2008

## G. Project Management Team

	Name	Title	Address	Phone & Email
1	Kai L. Craig	Project Manager/ Aquatic Technician/ Web designer	1532 E. Appleton St. Long Beach, CA 90802	(562) 391-1622 kai.craig@gmail.com www.kaicraig.com
2	Sunny Tsou	Community Outreach Coordinator	19505 Flavian St. Unit B Torrance, CA 90503	(310) 357-7035 sun.tsou@gmail.com
3	Scott Kleinrock	Sustainability Expert	341 E. Kingsley Ave. Pomona, CA 91767	(818) 970-2785 scott.kleinrock@gmail.com
4	Lee Krusa	Construction Manager	341 E. Kingsley Ave. Pomona, CA 91767	(631) 935-4588 leekrusa@aol.com
5	Gilbert DelRosario	Communications Spe- cialist	11 Rue de Nicole Foothill Ranch, CA 92610	(949) 878-7371 giloutwest@yahoo.com
6	Jackie Higgins	Irrigation Specialist	1021 Scott St. #237 San Diego, CA 92106	(619)218-4148 higgiej@hotmail.com

With the exception of Sunny Tsou, all project participants are second-year graduate students in the Cal Poly Landscape Architecture program. Sunny Tsou is a philosophy undergraduate with an interest in water resources.




**I. SIGNATURE BLOCK**

	<b>NAME</b>	<b>SIGNATURE</b>	<b>DATE</b>
Faculty Project Manager	Gerald O. Taylor Jr., ASLA, RLA	Gerald O. Taylor Jr. <small>Digitally signed by Gerald O Taylor Jr.  DN: cn=Gerald O. Taylor Jr., c=US, o=Cal Poly Pomona, ou=Dept. of Landscape Architecture, email=gtaylor@calpoly.edu  Date: 2007.12.13 15:30:43 -08'00'</small>	13 <sup>th</sup> December 2007
Student Project Manager		Kai Craig <small>Digitally signed by Kai Craig  DN: cn=Kai Craig, c=US, email=kai.craig@gmail.com  Date: 2007.12.14 14:40:40 -08'00'</small>	
Member Agency Representative <sup>1</sup>			

*Note: On a voluntary basis, the Member Agency, has agreed to serve as the local partner for the college / university. As a non-fiscal partner, the Member Agency is not required to provide financial assistance for the Project. At their discretion and strictly on an as-needed basis, the Member Agency will provide in-kind resources and technical assistance for the college / university, pending availability of requested resources or personnel (subject matter experts). Excerpt from MWD-College Funding Agreement*

<sup>1</sup> For a list of local water agencies (member agencies), log onto [www.mwdh2o.com](http://www.mwdh2o.com) or you may contact the Project Coordinator, Benita Lynn Horn at [waterforum@mwdh2o.com](mailto:waterforum@mwdh2o.com) or (888) 42-WATER.

I. SIGNATURE BLOCK

	NAME	SIGNATURE	DATE
Faculty Project Manager			
Student Project Manager			
Member Agency Representative	Cindy Dechaine Three Valleys Municipal Water District		12/13/07

*Note:* On a voluntary basis, the Member Agency, has agreed to serve as the local partner for the college / university. As a non-fiscal partner, the Member Agency is not required to provide financial assistance for the Project. At their discretion and strictly on an as-needed basis, the Member Agency will provide in-kind resources and technical assistance for the college / university, pending availability of requested resources or personnel (subject matter experts). *Excerpt from MWD-College Funding Agreement*

<sup>1</sup> For a list of local water agencies (member agencies), log onto [www.mwdh2o.com](http://www.mwdh2o.com) or you may contact the Project Coordinator, Benita Lynn Horn at [waterforum@mwdh2o.com](mailto:waterforum@mwdh2o.com) or (888) 42-WATER.