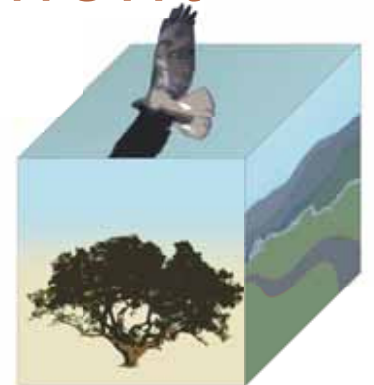


Calleguas Creek Cooperative



Waterholes above Simi Valley (Andrews 2009)

Watershed Management Vision Plan



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Dr Susan Mulley, Department of Landscape Architecture, CSU Pomona

Prepared for: Henry Graumlich, Manager of Special Projects
Calleguas Municipal Water District

November 1, 2009

Jason Andrews
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Thousand Oaks, CA. 91362

November 23, 2009

Henry Graumlich
Manager of Special Projects
Calleguas Municipal Water District
2100 Olsen Road
Thousand Oaks, CA 91360-6800

Dear Mr. Graumlich,

I am pleased to submit the following proposal for the Calleguas Creek Cooperative Watershed Management Vision Plan.

The proposed project presents an opportunity to explore the connections between issues faced by stakeholders in the watershed as they strive to collaborate on multipurpose solutions that manage the watershed for the protection of biological diversity and ecosystem function. Solutions presented are expected to be accessible to a variety of levels of users within the watershed and to enlighten agencies throughout the region about the cooperative approach being taken to address interconnected issues within the Calleguas Creek Watershed.

The 606 Studio will vote on proposals that have been approved by the Department of Landscape Architecture faculty on December 3, 2009. Approximately four projects will be selected, and will then move on to contract approval. Work on selected projects would begin immediately thereafter.

I look forward to an opportunity to work with you. Please feel free to contact Dr. Susan Mulley or myself if you have any questions.

Best regards,

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Executive Summary

The Calleguas Creek Watershed has seen tremendous development in two generations, growing from a collection of small towns in a primarily agricultural county to a sprawling mini-metropolis. Stakeholders within the Calleguas Creek Watershed, for more than a decade, have been building a cooperative social ecosystem from within which they are able to discuss and work toward resolution of the issues that most directly affect their particular organizations. While specific issues may be the purview of particular members of subcommittees or organizations, all understand the broad implications these issues have on the natural ecosystem and appreciate the ramifications of failing to protect the remarkable level of biodiversity in an increasingly urban watershed.



Figure 1: Bard Reservoir and the Transverse Range (Andrews 2009)

Through cooperative efforts, stakeholders have done significant work to address a variety of concerns created by human activity. Alterations to the landscape have resulted in issues associated with sedimentation and its effects on Mugu Lagoon and flood control, water quality and its effect on aquatic habitat and ground water, and connections between remaining areas of open space for human and animal use. Many of these issues are indicators - evidence of systemic alterations to biological function and watershed health that no one single-agency can manage. The interrelated nature of the issues requires multipurpose, multifunction projects that take advantage of efficiencies in solutions and incorporate overlapping concerns. The members of the Calleguas Creek Watershed Cooperative can articulate these efficiencies and describe the interrelationships between issues through a comprehensive vision plan for the watershed.

The Department of Landscape Architecture at Cal Poly and Studio 606 has the experience and institutional wisdom necessary to investigate and integrate previously acquired knowledge into a comprehensive, visionary document for the 21st century. We propose to conduct an extensive study that will explore examples for interagency cooperation and highlight opportunities for mutually beneficial solutions. Design recommendations will be included for both the watershed and site scale. The resulting vision plan will connect the issues in the watershed and address individual concerns of involved agencies through solutions that further the overall goal of increasing biodiversity and ecological function.

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Introduction

Biodiversity: The full range of variety and variability within and among living organisms, and the ecological complexes in which they occur. Biodiversity encompasses diversity at all scales from genetic, through the population and the community to the landscape (Peck, 1998).

This is a proposal to create a vision plan that will address the biological diversity and ecosystem complexity within the Calleguas Creek Watershed by exploring the interconnections between issues and proposing multipurpose, integrated solutions that further the goal of protecting the biological diversity and ecosystem function in the watershed.



Figure 2: Santa Monica Mountains (Andrews 2009)

The Calleguas Creek Watershed is a 341 square mile watershed in Ventura County, on the edge of one of the world's largest metropolitan areas, Los Angeles. Over the last 50 years the watershed has seen significant urban development, growing from a group of disconnected small towns into a bustling mini-metropolis of small cities, while actively working to maintain its agricultural roots and its essentially natural heart.

This urban development in the midst of one of the world's biological "hot spots" of diversity has created some unique concerns (Wilson, 1992). Resource agency managers, residents and concerned parties are contending with topics of surface water quality, sedimentation and nutrient pollution in channelized sections of the watershed's creeks. Point Mugu marine estuary struggles under issues related to sediment and perennial flows generated by upstream development. Open space areas of considerable size and biological diversity are fragmented, leading to unnecessary issues of wildlife mortality, and the entire region faces the problem of how to contain invasive species choking the waterways.

In order to address these concerns, a diverse group of stakeholders have banded together to create a cooperative planning structure involving multiple agencies with the intention of identifying resource management objectives. For more than a decade, the subcommittees formed under the auspices of

the Calleguas Creek Watershed Management Plan (WMP) Steering Committee have been working cooperatively to identify emerging issues and propose solutions for the watershed.

Ecosystems: Social and Natural

Ecosystem: The organisms living in a particular environment and the physical part of the environment that impinges on them. The organisms alone are called the community (Wilson, 1992).

The WMP Steering Committee subcommittees of Flood Protection/Sedimentation and Habitat/Recreation have for nearly 15 years worked to create a healthy “social ecosystem,” within which overlapping and individual concerns of the members can be discussed and addressed. This functional social ecosystem, created through the cooperative efforts of the participants, is the ideal vehicle for the creation of a vision plan for the Calleguas Creek Watershed that will study, evaluate and outline the steps necessary to create a functional natural ecosystem in a landscape altered by human activity. To date there has been significant work done within the watershed on the issues of maintaining biological diversity and ecosystem complexity through studies related to water quality, wetlands restoration, open space connectivity, the development of riparian buffers, biological planning and habitat and species mapping. These studies however have not yet been integrated into a comprehensive document which provides an interface for continued human engagement through solutions to ongoing ecologic and water management issues in a functional natural system.

Cal Poly Pomona’s Dept. of Landscape Architecture and 606 Studio

With over 30 years of experience in evaluation and designing for the human-nature interface through the creation of regional vision and watershed master plans, The Department of Landscape Architecture’s 606 Studio brings a wealth of experience to the development of effective strategies for creating healthy natural ecosystems. The Masters of Landscape Architecture Program at Cal Poly Pomona consists of highly qualified graduate students and professors of landscape architecture and environmental planning. Through extensive investigation of existing cultural, biological and material resources, we propose to develop a vision plan for the stakeholders in the Calleguas Creek Watershed. This vision plan will investigate the relationships between the issues faced in the natural ecosystem and explore the interconnectivity of solutions being developed by the social ecosystem.

Background

Ecosystem management: The integration of ecological, economic, and social principles to manage biological and physical systems in a manner that safeguards the ecological sustainability, natural diversity, and productivity of the landscape (Peck, 1998).

Subcommittee Missions

In the mid-nineties, a broad coalition of watershed stakeholders came together to form a cooperative alliance with the purpose of furthering discussions and solving issues within the Calleguas Creek Watershed. The result of this effort is the Calleguas Creek Watershed Management Plan and Steering Committee, which is responsible for overseeing direction, development, and policy recommendations as well as funding the subcommittees who are responsible for specific issues within the watershed.

The mission of the subcommittee on Flood Protection and Sedimentation is to protect the health and safety of the public, prevent property damage, protect and preserve habitats associated with surface water and protect the groundwater supply (Calleguas Creek Watershed Management Plan, 2009).

The mission of the subcommittee on Habitat and Recreation is to assure the health, education and quality of life for the people living in and around the watershed, preserve biological diversity and the watersheds most valued natural resources and create opportunities for high-quality outdoor recreation (Calleguas Creek Watershed Management Plan, 2009).

Though their interests overlap, the subcommittees have distinct but related missions related to their particular areas of interest. Ensuring public health and safety, as well as the protection of property are paramount concerns, while the preservation of habitats and biological diversity are overlapping areas of concern for both groups.

Subcommittee Goals

The goals of the subcommittees are to develop recommendations to facilitate development in the watershed while protecting, enhancing and restoring biological and cultural resources. The realities and dynamics of the subcommittees have resulted in parallel goals that can be distilled into a single list:

1. Establish an open space network
2. Address potential endangered species conflicts in the watershed using an overall comprehensive conservation strategy that coordinates with a comprehensive land use policy
3. Expand on existing data on biological resources, land use, resource

management within the watershed

4. Investigate effects of hydrologic modifications on habitat in the watershed
5. Develop best management practices for habitat management and educational materials to promote compatible land uses along the urban/wildlife interface
6. Implement a continuous trail system (14 miles) that provides coastal access through the Santa Monica Mountains along Calleguas and Conejo creeks
7. Protection of public health and safety and the prevention of property damage by addressing storm and surface water flows
8. Facilitate beneficial uses for storm and surface water including recreation, fish and wildlife habitat, aquifer recharge, aesthetic enjoyment and open space
9. Manage storm and surface water as a limited resource
10. Regulate and manage urban development and redevelopment as it relates to storm and surface water

(Calleguas Creek Watershed Management Plan, 2009)

These goals express a concern for the future viability of plant and animal species coincident with human interaction and the thoughtful management of resources for both human and animal use. This desire to actively manage human interactions within the biological framework of the watershed for the benefit of both over time represents a desire to promote biodiversity through ecosystem management and an appreciation that each part of an ecosystem is related in numerous ways to other living and non-living systems.

Issues faced in the Watershed

Functional systems are composed of interacting elements, and while the following list is not a comprehensive account of the challenges to the social and natural ecosystems in the Calleguas Creek Watershed, direct linkages between human modifications and resulting impacts can be drawn.

Sedimentation and Mugu Lagoon

Since the first efforts to channelize creeks in the Oxnard plain more than 120 years ago, the deposition of sediment from the upper portions of the watershed in Mugu Lagoon has been an issue (Calleguas Creek Watershed Management Plan, 2009). Mugu Lagoon, located at the mouth of Calleguas Creek, is a critical link in the Pacific Flyway and is one of the best-preserved and largest coastal wetland systems in California. As a result of widespread

upstream urban development, the associated runoff and farmland conversion, erosion and sedimentation rates in the lagoon have increased to the point that valuable lagoon salt marshes are being converted to upland (Calleguas Creek Watershed Management Plan, 2009).

Sedimentation and Creek Function

The urban development of the last 50 years has resulted in additional channelization in the upper watershed resulting in increased transportation of sediments to the lower stretches of Calleguas Creek. This urban



<http://www.cnsm.csulb.edu/departments/geology/people/bperry/AerialPhotosSoCal/MuguLaggonPtHueneme.htm>

development has reduced the level of percolation within the watershed and reduces stormwater detention resulting in greater flow rates and volumes during storm events. This leads to increased levels of channel scoring and debris loading. The resulting reduced capacity of the creek increases the risk of flooding in the lower watershed plains (Calleguas Creek Watershed Management Plan, 2009).

Land use

The conversion of land from open space to agricultural or urban land has resulted in increased stormwater runoff resulting in bank and streambed erosion. While agriculture has been the lifeblood of the area since the first European settlers began farming, operations on steep slopes within the region have severely eroded much of the watershed (Calleguas Creek Watershed Management Plan, 2009).

Water Quality

Surface and groundwater resources in the watershed have also been identified as impaired due to nonpoint source pollutants. Nitrogen, algae, sediment and toxic pollutants prohibit most of the surface waters within

the watershed from beneficial uses as drinking water, aquatic habitat and recreation. Nitrogen compounds and toxic pollutants have also been identified as point sources for surface and groundwater pollution and many of the basins within the watershed contain high levels of mineral salts. Additionally, due to over-pumping, other groundwater basins are subject to saltwater intrusion (Calleguas Creek Watershed Management Plan, 2009).



Figure 4: Calleguas Creek (Andrews 2009)

Loss of Riparian Habitat

Approximately half of the watershed is composed of native habitat, including coastal sage scrub, chaparral, oak savanna, riparian and saltwater marsh (Calleguas Creek Watershed Management Plan, 2009). However, riparian habitat in the watershed is now approximately 0.2% of the total natural habitat remaining in the watershed compared to 1% for Los Angeles County and 10% for the state (Calleguas Creek Watershed Management Plan, 2009). These riparian plant communities function as natural filters for sediment carried through the channel as well as provide aquatic habitat supporting a broad range of fish and amphibians. Wetland plant and riparian plant communities also function to break down contaminants in the water (Bentrup, 2008).

Fragmentation of Open Space

Encroaching development into open space results in habitat reduction and fragmentation, changing local ecosystems and altering the ecological processes that take place within them. Fragmented landscapes limit the movement of wildlife populations and reduce opportunities for interaction between animals with remaining populations becoming isolated or confined to patch habitats. This isolation results in populations within each fragment becoming increasingly prone to extinction.

These issues of habitat and hydrologic function reflect changes in the natural landscape brought on by human interaction, and while change is constant in

nature, dramatic modifications over short periods of time can have a greater impact than other more “natural” disturbances. Radical changes may affect the distribution and responses of living organisms within an ecosystem to such an extent that ecosystems are pushed over sustainable thresholds, thus making an ecosystem management approach especially vital in impacted areas. Plans for management of natural areas cannot, however, be based exclusively on the natural ecology and biodiversity concerns; historic, social and economic concerns also determine appropriate responses to ecological modifications.

Goal

We propose to create a vision plan will map the complex environment created between the natural ecosystem and the human-influenced landscape in order to articulate the value of the remaining biological diversity within the watershed during the course of ongoing human activity. The vision plan will describe relationships linking current challenges in the watershed, record the ongoing efforts to address those challenges and provide modern, integrated solutions to the issues.

Objectives

Open space network

- Identify possible open space areas for inclusion in watershed-wide network
- Identify opportunities for increased biodiversity and implications to flora and fauna
- Identify opportunities to promote awareness of local issues related to biodiversity and open space connectivity

Coordinated trail system

- Explore the development a continuous trail system linking the upper watershed to the coast
- Assess land use/ownership conditions related to public access and management requirements
- Assess local private resources for inclusion in trail system
- Identify issues of public safety and public access

Development of wildlife corridors – the reduction of wildlife mortality

- Explore opportunities to coordinate riparian buffers, and wildlife corridors
- Evaluate opportunities to integrate surface water/stormwater management facilities with wildlife corridors and impacts to biodiversity

Address conflicts between endangered species and human land use activities

- Assess the status of endangered and special status species in the watershed
- Explore opportunities to coordinate habitat preservation/creation with surface water management

Explore the implications of hydrologic modifications on habitat

- Assess the impacts of water quality on riparian and lagoon habitat
- Assess the impacts to property as a result of past modifications and future developments
- Investigate the dynamics of local aquifers including the effects of introduced water and its interaction with watershed aquifers
- Investigate the nature and source of pollutants in the watershed and their impacts on biodiversity

Scope of Work

Stage 1. Research and Precedents:

The first stage of the project will focus on gathering and evaluating existing data previously collected regarding the watershed. Many agencies and organizations have looked into aspects of the watershed ranging from habitat restoration to urban and agricultural runoff and irrigation effects on the watershed. A significant task of the 606 team will be to gather and review the existing body of work on the Calleguas Creek Watershed to determine what further research needs to be done and how to integrate the information into the vision plan. A review of existing policies and planning precedents along with available GIS data will also be important in this first stage of research.

A second important goal of this stage will be to establish relationships with existing stakeholders in order to gain a contextual understanding of the site. During this phase of the project, stakeholders will be contacted and interviewed, and the groundwork will be laid to ensure community support and participation. Obtaining community buy in and bringing stakeholders into the process to understand their concerns will be essential in formulating any solutions or design recommendations.

Stage 2. Regional & Cultural Inventory

A significant amount of time will be devoted to investigating and understanding the biophysical and sociocultural characteristics of the Calleguas Creek Watershed. An essential component of the site inventory for this particular project is a thorough understanding of the geomorphology and hydrology of the watershed. Water quality, ecological zones, vegetation patterns as well as land use and development patterns will be fundamental components of the site inventory. Political boundaries and their policy implications within and outside of the Calleguas Creek Watershed will also be investigated.

A thorough understanding of the historic significance of the Calleguas Creek Watershed including how past and present populations use the land will inform future design recommendations. Efforts will be made to understand stakeholders' relationships to the watershed in order to minimize potential insensitivities. Current demographics and projected trends will also be gathered. The current and projected human land use patterns will also be examined for their effects on the ecological and hydrologic function within the watershed. Data from the regional and cultural inventory will be analyzed and any gaps in the data will be identified and filled.

Stage 3. Program

The purpose of this stage is to develop an understanding of the site through the stakeholders' concerns and needs and how those concerns and needs

relate to the site. Local knowledge and previously gathered data will provide insight into the relationships between people, the land, animals and hydrologic functions in the watershed. Cultivating an understanding of how people, flora and fauna interact in the watershed will inform the latter development of concepts that will address the issues faced by people, plants and animals in the region.

Stage 4. Analysis

Analysis of the inventory data will result in landscape analysis and process models. The human impact on the Calleguas Creek Watershed and biological diversity will be examined and lead to an opportunities and constraints matrix for the project. During the analysis phase, the key issues will emerge, enabling a thorough understanding of the challenges presented within the watershed. Models and maps will be developed as needed to inform the analysis process.

Stage 5. Synthesis and Concept Development

This stage of the process will focus on the development of a unified plan for the Calleguas Creek Watershed. Issues identified in the preceding analysis will be addressed and a plan of action will begin to coalesce. The team will begin to develop means of disseminating the collected information and continue to seek community and stakeholder input.

Stage 6. Final Design and Vision

A final document will be prepared to provide a long range vision plan addressing the overall goals and objectives of the project. The final plan will reflect solutions distilled from a thorough analysis of the site as well as community input. The final vision plan will contain solutions that address the overall goal and objectives of the project and be presented to the client in a forum that will make dissemination across a broad level of stakeholders and user groups possible.

Deliverables

The project will produce a professionally printed and bound document that includes all relevant findings, guidelines and recommendations. This document will include research and findings at a number of scales concerning all appropriate stakeholders. Design recommendations will be included for a variety of scales, including site specific designs, municipal policy and facility recommendations and regional policy guideline suggestions.

A significant component of the project will involve site visits and community input. Public meetings and interviews with concerned stakeholders will be held in order to determine appropriate responses to issues presented during investigation and analysis.

Final PowerPoint presentations will also be made available along with digital versions of all graphics in order to facilitate high quality reproductions in whole or in part. Final editorial document decisions will be made by California State Polytechnic University, Pomona, the Department of Landscape Architecture and Studio 606 in order to maintain academic integrity.

Summary

The Calleguas Creek Cooperative Watershed Management Plan represents a unique opportunity to describe a cooperative, ecosystem based management approach to addressing contemporary issues in an urban watershed.

Using the existing social ecosystem developed through cooperation and the institutional understanding of the stakeholders involved, this proposal endeavors to outline the steps that will be taken to apply the qualities of the healthy social ecosystem to the construction of a vision plan describing a functional natural system. We propose to conduct an extensive survey of the watershed, beginning with a focus on existing studies and identification of key issues being addressed by members of the social ecosystem, ultimately leading to a system of interacting solutions.

Managing the Calleguas Creek Watershed for biodiversity begins with understanding the character of this diverse landscape. An appreciation of the hierarchy of function within the watershed and an awareness of the relationships between species within the watershed is important. However, a complete picture of the landscape and the biodiversity within would come only after an investigation of interactions between elements over time.

This study will be conducted during the 2009-2010 academic year with an estimated budget of approximately \$60,000. All clients will provided a professionally prepared document detailing the findings of this study in print and digital formats, as well as relevant digital images as deemed appropriate.

Schedule of Work

	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Jan-11
Funding Secured	█									
Project Selection	█									
Data Collection and Research			█							
Site Inventory			█	█	█					
Site Visits			█	█	█		█			
Stakeholder Meetings				█		█				
Community Meetings				█		█				
Analysis: Opportunities & Constraints				█		█				
Synthesis and Design						█	█	█	█	
Community Presentations									█	
Publication									█	
End of project										█

Preliminary Budget

The estimated total cost for the Calleguas Creek Watershed Vision Plan is approximately \$60,000. This cost accounts for travel for the Studio 606 team to and from site, printing and production costs of bound full report, and the expenses associated with hosting community meetings. Additional expenses include fees for services such as consultants, GIS data, photography, maps, office supplies, and equipment as needed to complete research for the Calleguas Creek Watershed Vision Plan.

References

Bentrup, G. (2008). *Conservation Buffers: Design Guidelines for Buffers, Corridors and Greenways*. Asheville: U.S. Dept of Agriculture .

Calleguas Creek Watershed Management Plan. (n.d.). *Welcome to the Calleguas Creek Watershed*. Retrieved October 01, 2009, from Welcome to the Calleguas Creek Watershed: <http://www.calleguascreek.org/ccwmp/index.asp>

Calleguas Municipal Water District. (n.d.). *Calleguas Municipal Water District*. Retrieved October 01, 2009, from Calleguas Municipal Water District: <http://www.calleguas.com/ccbrochure/habitat.html>

Peck, S. (1998). *Planning for Biodiversity: Issues and Examples*. Washington DC: Island Press.

Wilson, E. O. (1992). *The Diversity of Life*. New York: W. W. Norton & Co.

Appendix A - Cal Poly Pomona's Department of Landscape

Architecture 606 Studio

Since 1976 the 606 Studio in the Department of Landscape Architecture at California State University, Pomona has developed multiple projects each year, covering a wide variety of topics. Projects result in professionally printed documents that promise significant benefit to the public. Past clients have included federal, state, and local agencies, as well as for-profit and non-profit organizations.



Transforming Urban Environments for a Post-Peak Oil Future: A Vision Plan for the City of San Buenaventura

Projects ranging from watershed master plans and open space/habitat management to green way planning and park design have addressed significant issues concerning resources and the physical environment through an understanding of principles of ecology in relation to biodiversity and human uses.

The Department of Landscape Architecture provides exceptional value to organizations in search of a partner in the creation of documents of substance and worth. Working in teams of three to four students, over the course of ten to 12 months, 606 Studio provides thousands of hours of work, guided by an institution with a proven record of creating vision plans. A cost breakdown results in an average per hour cost of less than \$9.5/hour. For example, a team of four members: (40 hours/week) * (40 weeks) * (four students) for \$60,000 results in a cost of \$9.38/hour.

Recent projects include:

2009

The Santiago Creek Watershed: From Peaks To Creeks
Santa Clara River Parkway Public Access Plan
A Vision Plan For The Ormond Beach Wetlands Reserve

2008

Signal Hill North Slope Vision Plan

Klamath River Corridor

The Emerald Horseshoe

2007

Public Space as Catalyst for the Regeneration of South Los Angeles for the Community Redevelopment Agency of Los Angeles

Kids in the Creek: Planting the Seeds of Stewardship in Chollas Creek for Groundwork San Diego

Transforming Urban Environments for a Post-Peak Oil Future: A Vision Plan for the City of San Buenaventura

Urban Ecotones: Vision Plan for a Healthy Future for California Resource Connections, Inc.

2006

Master Plan for R-Ranch in the Sequoias for R-Ranch

Green Linkages for the city of West Covina

Del Rey Lagoon and Parkway - Gateway of Ballona Watershed for the City of Los Angeles

2005

Carmel River Parkway Vision Plan for The Big Sur Land Trust.

Hahamongna Park Vision Plan for the City of Pasadena

2004

Lakeside River Park Conceptual Plan for the San Diego River Lakeside Conservancy

Watershed Design Guidelines for the San Diego Creek and Upper Newport Bay for the County of Orange, California

2003

Carr Lake Regional Park for the City of Salinas, California

Long Beach Riverlink: Connecting City to River for the San Pedro Bay Estuary Project

Tecate River Park: A Framework for an Urban River Environment in Tecate, Mexico for the Fundacion La Puerta

Appendix B - Contract and Payment Schedule

Payment schedule and the final project contract will be negotiated through and managed by the Cal Poly Pomona Foundation, Inc. The foundation is a private, non-profit organization of the Cal Poly Pomona Campus.

This project is part of the requirements for graduation from the Department of Landscape Architecture Master's Degree Program and, as such, students are not paid for their time and services. However, the typical contribution to a project of this nature is at least 30 hours per student per week with a range of 1800 to 2000 hours per group.

There is no guarantee that this project will be selected by the students of the 606 Studio for implementation. The students will decide on projects in November 2009 and if selected, clients will be notified immediately to begin the process for funding.

Appendix C - Faculty Qualifications

Dr. Susan J. Mulley, Assistant Professor of Landscape Architecture at California State Polytechnic University, Pomona, teaches in both the graduate and undergraduate programs with a focus on environmental design and planning, advanced landscape design, community design, research methods and historic landscapes. Her research deals with design for human health, ecological function of designed landscapes, conservation and stewardship behavior in landowners, and participatory action research. Her students have won the top national level awards in research and design from the American Society of Landscape Architecture (ASLA). She has a BSc in Environmental Science, a MA in History, a MLA, and a PhD in rural planning.

Phil Pregill is a full Professor in the Landscape Architecture Department at California State Polytechnic University, Pomona and Director of the Landscape Architecture in Italy program. He also teaches design, history, construction, and graphics in both the graduate and undergraduate programs. He is co-author of *Landscapes in History*, and is currently conducting research on abstraction in the design process. Phil is also an accomplished painter, and his works have appeared in numerous juried competitions. He received his Bachelor of Arts and his Master of Landscape Architecture degrees from the University of Oregon.

Professor Karen Hanna is a Professor of Landscape Architecture at Cal Poly Pomona. From 2003 through 2008 she served as the Dean of the College of Environmental Design at Cal Poly, and during this time was awarded the Educator of the Year by the Los Angeles Chapter, AIA. In 1998 she served as a Fulbright Scholar at Wageningen University in the Netherlands. Professor Hanna has written two books on the application of GIS in design, and has taught this approach for many years at both the regional and the site scale. Prior to her academic experience she was a practicing landscape architect in California and maintains her registration in that state.

Andy Wilcox, ASLA, is a CA registered landscape architect and assistant professor in the department of landscape architecture. He teaches in both the graduate and undergraduate programs where he runs design studios and coordinates the construction sequences. He received his B.S. in Landscape Architecture from Cal Poly Pomona and M.L.A. from the University of Southern California. Academically, Andy is interested in the contemporary application of topography, the means by which we communicate landscape and issues of materiality and site. Additionally he is still interested in the practice of the discipline of landscape architecture by exploring ideas through both competitions and built work. Andy has built and been associated with numerous projects, one of which was awarded a 2007 ASLA Honor Award for residential design. Andy is interested in expanding the terrain of landscape architecture and views landscape as all-inclusive and without specific boundaries.

Appendix D - Student Qualifications

Jason Andrews is a 3rd year Masters of Landscape Architecture candidate at California State Polytechnic University, Pomona. He received his B.S. from Eastern Michigan University with a major in Mechanical Engineering Technology. Jason grew up in a small suburb outside Salt Lake City, Utah and spent formative time between high school and college exploring the canyons and rivers of the Southwest. This experience galvanized an appreciation of the harsh fragility of the desert and continues to inform an ongoing concern over land and water use in the West. Prior to graduate school, Jason worked as a residential construction project manager in Ann Arbor, MI and at a landscape architecture firm in Southern California.

Merilee Atkinson is a 3rd year Master's candidate in Landscape Architecture. A California native, she grew up on a Central Valley ranch which has informed her lifelong interest in ecological systems. She holds an undergraduate degree in Psychology and utilizes this background to apply principles of behavior and motivation to the context of landscape. Prior to entering graduate school, Merilee worked in diverse fields including city government and as a professional pastry chef, a career which satisfied her need to combine art and science in much the same way as landscape architecture practice. During her studies at Cal Poly, Merilee had the opportunity to study abroad in Italy and in conjunction with this was able to travel extensively in Europe. During the study abroad term, she was a member of a student team working with local practitioners to develop an urban redesign proposal for a socially and environmentally degraded area of Ostia, a district of Rome. Merilee's interests include behavior in the landscape, land use history and planning, urban agriculture, and habitat preservation and restoration.

Nisreen Azar has a passion for art, adventure, craftsmanship, foreign language, environmental and physical health, and experiencing international culture. Nisreen is currently pursuing her Master's degree in Landscape Architecture from Cal Poly Pomona. Her passion for nature combined with art was the catalyst for Nisreen to merge into the field of landscape architecture. She was born in Saudi Arabia and raised in the Pacific North West. Her international background and extensive travel informs her artwork, life perspective, and career interests in sustainable international development. Nisreen has worked in sustainable community building and permaculture workshops in diverse global regions ranging from Nicaragua to Seattle. She graduated from Scripps College in Claremont, CA with a B.A. in Studio Art. Since then, Nisreen has lived and worked in Lebanon, Indonesia, Costa Rica, and Santa Cruz, CA. She is interested in the role of landscape architecture in cultural sustainability and the implications of globalization on traditional design throughout the international community. In her spare time, Nisreen volunteers at Ranch Santa Ana Botanical Gardens in the Seed Conservation Program, surfs, travels, and makes art.

Rajan Leonardo Brown is currently pursuing a Masters degree in Landscape Architecture at California Polytechnic University Pomona. He

received a Bachelors of Arts in Law and Society from the University of California at Santa Barbara. He entered the field of landscape architecture and environmental planning to pursue his interests in creating more sustainable and livable cities. Rajan works with the California Coastal Commission in habitat restoration design and planning, and he is currently employed by the Municipal Water District of Orange County as a Landscape Water Use Efficiency Intern.

Karen Chieng is currently pursuing her Master's degree in Landscape Architecture at California State Polytechnic University at Pomona. She received a Bachelor of Science degree in Business Administration and minor in Asian Studies from the University of California, Riverside. Prior to entering graduate school, Karen worked as a marketing coordinator in Irvine, California where she gained valuable experience in planning, strategizing and executing tradeshows and major events. While attending graduate school, Karen works as an interior design assistant where she is exposed to different aspects of design for living spaces. Her interests include urban revitalization, sustainable design, habitat restoration and international development.

Ieszic Formeller is a candidate for the degree of Masters of Landscape Architecture from California State Polytechnic University, Pomona for 2010. He holds a Bachelor's of Business Administration from the University of San Diego from which he graduated with high honors. Ieszic's professional background includes several years of successfully managing Internet advertising operations and production for the second largest independent yellow pages publisher in the United States. Having chosen to change careers to pursue his passions in landscape, Ieszic's primary areas of interest include the ecological health of developed land, conservation and protection of natural resources, design for human health, and development of environmental stewardship in landowners and policy makers. Ieszic's landscape related studies have included landscape design, theory and methodologies; landscape research methods; landscape planting design; landscape construction methods; urban and regional planning theory; environmental analysis; ecological processes; stream restoration and hand graphics. Ieszic has traveled extensively through the United States, Caribbean, Mexico, South America, and Europe, including a study abroad program in Italy, in an ongoing pursuit to discover and study the world's cultures and landscapes.

April Garbat is a third year Master of Landscape Architecture candidate at California State Polytechnic University, Pomona. She holds a Bachelor of Arts degree in History from Gordon College in Wenham, MA, as well as a single subject teaching credential. Her work experience includes teaching history and French at an international school in West Africa, tutoring in group homes, leading mental enrichment classes in convalescent centers, and working as a student landscape architect for the Angeles National Forest. Informed by the experience of growing up in rural Pennsylvania, cities and villages in West Africa, and the greater Los Angeles area, her interests in landscape architecture include environmental justice, cultural landscape preservation,

landscapes and health, safe routes to school, dark skies, habitat restoration, and incorporating local plants and indigenous knowledge into sustainable systems.

Scott Goodman is in pursuit of his Masters Degree in Landscape Architecture from Cal Poly Pomona and attained his B.A. in History from UCSD. He is an 8th generation Southern Californian who is motivated to become a leader in the advancement of restoring California's degraded natural landscapes through sustainable and ecological design. He currently holds two internship positions: one with the Rancho Santa Ana Botanical garden in Claremont, where he works in the Seed Conservation Program; the other with Orange County Parks, where he manages a project that focuses improving water quality through turf removal in exchange for native plants. His interests center on restoring landscapes toward a native ecology to create environments where humans, flora and fauna can coexist harmoniously. Having spent his life near the ocean, Scott is interested in the intertidal zone which lies between the land and the ocean. His goal is to understand the role of landscape architecture in serving this delicate ecosystem that is inextricably linked to the health of both our oceans and our landscapes.

Megan Leigh Juric is currently pursuing a Master of Landscape Architecture degree at California State Polytechnic University, Pomona. She earned a Bachelor of Science in Design of Architectural Studies, as well as a Minor in Landscape Studies, from Arizona State University. Megan has lived in the Southern California region for most of her life but has traveled quite extensively throughout the country. Her current interests in landscape architecture include creating sustainable urban and suburban environments, use of native and non-native drought tolerant vegetation in planting designs, habitat restoration and green building design with a strong interest in green roof design.

Douglas Kent has been working in California's landscapes for over 30 years. He has designed countless landscapes, worked on many public education campaigns, and has collaborated with communities throughout the state. Kent has a BA in Environmental Policy, an MS in Regenerative Studies, has had over 50 articles published, and is author of four environmental landscaping books. Kent is the principal of an environmental design firm.

Tyrone LaFay is currently pursuing his Master's degree in Landscape Architecture at California State Polytechnic University, Pomona. He received a Bachelor of Science degree in Environmental Science from Huxley College of Environmental Studies at Western Washington University in Bellingham, Washington. He also holds qualifications in Permaculture and Ecovillage Design from USA, Australia and New Zealand. Over the past ten years, Tyrone has been very active in the sustainable communities movement teaching ecological design and sustainable living skills in Canada, New Zealand, Australia, and the west coast of the US. For the past six years, he has been an Associate Faculty member with the Village Design Institute and coordinated the establishment of O.U.R. Ecovillage's Permaculture and Sustainable Community Design Programs from 2004 – 2006. While

in graduate school, Tyrone has had the opportunity to study abroad in Italy while working on a sustainable urban development plan for the city of Sorso on the island of Sardinia, research for Cal Poly Pomona campus greenhouse-gas emissions and planning strategies for the potential of carbon sequestration of its landscapes, and work with a local non-profit for the ecological design of an AIDS orphanage village in Mozambique, Africa. His interests include participatory processes in sustainable community development, local food security, conservation design, eco-cities, green infrastructure, and transition town planning for resilience in response to peak oil and climate change.

April Marshburn began her study of three-dimensional form exploring the nuances of textiles and received a Bachelor of Arts in Consumer Studies and Clothing Design from San Francisco State University. However, her concern for environmental degradation and her interest in human engagement with the landscape compelled her to shift her professional direction. Intrigued by the tapestry landscape architecture weaves between creative expression and pragmatism + the land and human cultures, she is pursuing a Masters of Landscape Architecture at Cal Poly Pomona. Finding inspiration through service, her volunteer experiences have included domestic and international efforts in food security, habitat restoration, and urban forestry. A California native, she has lived across the state in rural, suburban, and urban landscapes and has traveled to over 30 countries. These experiences have profoundly shaped her perspective, giving her a balanced appreciation for the vibrant rhythm of a city and the serenity of a wild landscape. Her interests lie in creating environmentally, socially, and economically sustainable human landscapes which restore habitat and regenerate natural resources.

Kyle McEnroe Growing up on my family's farm immersed me into the farming culture, which I have since been using as a profession as well as a hobby. I worked on different divisions of my family's organic integrated agriculture system throughout high school and college. As a senior in high school, I decided to pursue a career in landscape development and committed to the Ornamental Horticulture program at SUNY Cobleskill. As I focused on my school work in and out of the classroom, I used the men's lacrosse team as a recreational outlet on the field. After receiving an Associate degree in Ornamental Horticulture from SUNY Cobleskill, I decided to pursue a degree in Plant Science at Cornell University.

I quickly adjusted from a technical, "hands on" approach at SUNY Cobleskill to a research based program at Cornell. I took full advantage of the university's services by playing intercollegiate football, pursuing interests in many different clubs, creating networking opportunities and challenging myself academically before graduating with a Bachelor's of Science in Plant Science with a concentration in vegetable production and a minor in Agricultural business.

Re-injuring my lower back was the decision making factor for me to pursue a master's of landscape architecture. I decided to attend the distinguished graduate program at Cal Poly Pomona because of their hands

on approach and affiliation with the agricultural industry.

I once again find myself taking full advantage of the all amenities Cal Poly has to offer. I am an active member of the Agricultural Education Club, played an interactive role on the intercollegiate horticulture team and have been working on a landscape development plan that physically links the hospitality college to a gourmet garden through an outdoor laboratory concept.

I have now directed my attention toward my master's thesis, "Linking Agritourism and Agricultural Education to the Landscape: A True Integrated Agricultural System." I am passionate about the subject and feel confident that I am well prepared to take on the challenge.

Katherine McNeil is a 3rd year master's candidate in Landscape Architecture at Cal Poly Pomona. She received her Bachelor of Arts from the University of California, Berkeley in Psychology with two minors; one in Fine Arts and the other in Landscape Architecture. After taking landscape design and identification courses at Merritt College in Oakland, California, she was excited about pursuing a Master's in Landscape Architecture. She recently traveled to Italy for the Landscape Architecture Study Abroad Program which helped solidify her design skills in culturally significant landscapes and help improve her sketching skills. She has also travelled abroad to Canada, the Czech Republic, England, France, Germany, Greece, Guatemala, Holland, Ireland, Italy, Scotland, and Spain. Her proficient work experience includes professional gardening and installation work, drafting and design work for a Landscape Design/Build firm in San Jose, and assistant teaching for a Landscape Design and Maintenance course at Washington State University. Her interests involve food, nature, and swimming. As a result, she loves implementing edibles and figuring out how to incorporate water for play in her designs. Katherine's projects focus on ecological conservation, environmental and community planning, sustainable landscapes, and urban revitalization.

Superna Datta Mehta is currently a second year Master of Landscape Architecture candidate at California State Polytechnic University, Pomona. She has Bachelors degree in Architecture from Sushant school of Art and Architecture, India. While pursuing her education in architecture she got selected for an educational exchange trip to Greece and Italy This further enlivened her passion for art and design and she pursued one-year course in fine art and sculpture. After working for several years with architects specializing in different fields, she found herself relating the most to the field of landscape architecture. Her desire to learn and innovate, to combine technical knowledge and creativity while giving something positively back to the earth and its people could be best satiated through landscape architecture. Her interests include sustainable landscapes, revitalization of neglected public spaces, community participation, social and environmental justice to provide a healthy and a sustainable society.

Greg Moeser is currently pursuing a Master of Landscape Architecture degree at California Polytechnic University, Pomona. He received his

Bachelor of Science in Resource Development from the University of Rhode Island, majoring in Environmental Management with a minor in Resource Economics. He has over 10 years of business experience, including seven years in the music business. His interests in the field of landscape architecture include sustainable design, mixed-use development, urban revitalization, and ecological design.

Toni Pogue entered graduate school in Landscape Architecture to return to her first love, nature. A graduate of Occidental College with a BA in English and Comparative Literature, Toni later spent several years at environmental nonprofit Heal the Bay and City of Hope Cancer Center. Her experiences in volunteer development, environmental writing and graphic design led to a desire for a major career change where she could use these skills in service to the natural and built environments, and the people that interface with them. A Los Angeles native, Toni has a particular familiarity with the area's challenges and treasures. She is particularly interested in urban design to promote environmental justice, regenerative designs that "feed" themselves, urban and school agriculture, and community design that encourages active living.

Chris Tiffany is currently pursuing a Masters of Landscape Architecture degree at California State Polytechnic University, Pomona. He received his undergraduate degree in Global Studies from the University of California at Santa Barbara analyzing the socioeconomic and cultural systems that make up the global community. He was brought to the field of landscape architecture by a desire to improve the quality of the built and natural environment through intelligent design and resource management. His interests in landscape architecture lie in sustainable design from site to regional scales, water resource management, and ecological restoration.