



Master Plan

for the San Luis Obispo Botanical Garden



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A special thanks to Robert Ornduff for his knowledge and expertise of mediterranean flora and his willingness to assist in the Master Planning process.



Chilean wildflowers

ACKNOWLEDGEMENTS:

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**SLO County Board of Supervisors
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Ruth Brackett
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"We are creating a living legacy for generations to come. Trees planted today will tower over our grandchildren."

— Gaby Levine, October 1997

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OBJECTIVE

The primary objective of the Botanical Garden is to nurture a sense of wonder and curiosity about the natural world. The Garden will employ the best practices in all areas, including teaching styles, design, programs and interpretive materials. Whether for leisure or education, a visit to the Botanical Garden will be fun, engaging and inspiring.



MISSION

Our mission is to establish a world-class botanical garden. The Garden will provide opportunities for education, recreation, conservation and research using plants of the mediterranean climate zones of the world. The Garden, through its programs and facilities, will promote the understanding and appreciation of the relationships between people and nature.

UNIVERSAL DESIGN STATEMENT

The principles of universal design will be incorporated into every aspect of the Garden, making all environments fully accessible to the greatest range of human capability.



Avenales Refuge, San Luis Obispo County



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EXECUTIVE SUMMARY

1. Executive Summary

I. Introduction

The San Luis Obispo Botanical Garden is located on 150 acres in El Chorro Regional Park, on Highway One, in San Luis Obispo County, approximately half way between Los Angeles and San Francisco. On completion, it will be one of the largest botanical gardens in the western United States and is unique in being exclusively devoted to the ecosystems and plants of the five mediterranean climate regions of the world. Once fully developed, more than 250,000 people are projected to visit the Garden each year, making it a destination attraction for visitors from California and beyond.



Fremontodendron californicum

A visionary plan has been created to place the San Luis Obispo Botanical Garden among the top ranked botanical gardens in the world. The Garden will use the best practices in all areas, including design, programs and interpretive materials. It will also be a model of accessibility and of resource conservation.

II. Objectives

A prime objective of the Botanical Garden is set out in its mission statement: To nurture a sense of wonder and curiosity about the natural world.

This will be accomplished by:

- ❑ Comparing the plants and ecosystems of the five mediterranean climate zones, particularly as they relate to the area most visitors know best: California.
- ❑ Exploring the relationships among the landscape, flora and cultures of the five mediterranean regions of the world.
- ❑ Developing plant collections and demonstration gardens that offer learning opportunities for all ages and for a wide range of users, including homeowners, garden-

ing enthusiasts, students and researchers.

- ❑ Developing a facility that provides partnering opportunities with other regional organizations and learning institutions with related interests.
- ❑ Becoming one of the cultural resources of San Luis Obispo County by exploring the interrelationship between cultural developments and the natural landscape.
- ❑ Providing opportunities for recreation, renewal and appreciation of beauty.

III. Means

These objectives will be accomplished through a variety of means: the Garden's facilities, plant collections and interpretive programs.

In order to best use the site's landforms, the Garden's design has clustered the major structures in the most accessible area. The major buildings are:

- ❑ The Visitor Center, featuring an orientation center and exhibit gallery, auditorium, gift shop and an 8,000 square foot tiled terrace.
- ❑ The Education and Research Center, with classrooms, laboratories, library and herbarium.
- ❑ The Propagation Center, including greenhouses and outdoor growing areas.

Much of the Garden's infrastructure will be part of the interpretive story, including facilities designed to conserve water and energy and make use of alternative and historical building techniques.

A network of trails and tram paths connects the Visitor Center complex to the surrounding gardens and the outdoor amphitheater. The amphitheater, which is designed to accommodate 500 people, provides a venue for a variety of cultural events.

Adjacent to the Visitor Center are the Gardens of Exploration and Landscape Demonstration Gardens. These gardens will highlight the features and interpretive stories of the Botanical Garden collection by featuring special exhibits, plant introductions, plant species of particular interest and homeowner demonstration gardens which will show the visitor practical uses of plants in a home garden setting.

Beyond the Gardens of Exploration are the Mediterranean Signature Landscapes, representing the five mediterranean climate zones of the world; the Mediterranean Basin, the Cape Region of South Africa, Southern and Southwestern Australia, Central Chile and Central and Southern California. Each of the Signature Landscapes will range in size from five to forty acres. Each collection is sufficient in size to create a natural setting or “signature landscape” representing plant communities and ecosystems.

Interpretive programs will make the Garden come alive for visitors. These programs, which will change from season to season, will cover topics such as basic botany, historical relationships between humans and the mediterranean land-

scapes, adaptations and evolution, cultural influences and the role of agriculture in mediterranean climate zones.

IV. What’s Next

The Master Plan is now in place, including estimates of staffing requirements, operational budgets and estimates for capital development investments related to each of the five major phases of the Garden’s development.

To ensure that fund raising and development proceed forward as part of a strategic implementation plan, components of the Master Plan Development are divided into five separate phases. Each capital project phase is aggregated into funding and construction amounts ranging from \$2.0 million to \$5.6 million. The estimated investment for construction and related costs for all five phases is \$19.0 million. Note that these figures do not include any allocation for endowment necessary to support operating and other ongoing expenses.



Views of Cerro Romualdo and Chumash Peak

V. Development Phases

Set out below is a summary of the major features that will be built in each of the five phases and the associated projected capital investments.

These estimates cover capital costs only, and do not include any endowment or other source of income to cover the garden's ongoing operating costs. Certain features appear in more than one phase, since their development will be extended over time. For further details in each phase, see Appendix D.

Phase One

Cost \$5,856,294

Major Features:

Visitor Center
Chumash Circle
Orientation & Exhibit Gallery
Mediterranean Garden Terrace
Gardens of Exploration and Demonstration
Parking, Roads, Paths & Utilities*
Entry Display Grove & Collections

Phase Two

Cost \$4,307,859

Major Features:

Propagation Center & Collections
Support Facility*
Amphitheater
Tram
Mediterranean Signature Landscapes
Interpretive Station

Phase Three

Cost \$3,779,777

Major Features:

Administration Building
Mediterranean Signature Landscapes
Interpretive Station
Agricultural Display Areas

Phase Four

Cost \$3,770,537

Major Features:

Education and Research Building (w/ class rooms, laboratories, library, herbarium)
Mediterranean Signature Landscapes
Interpretive Station

Phase Five

Cost \$2,176,727

Major Features:

Complete Signature Landscapes, Interpretive Stations, Roads, Trails & Support Facilities

* *Expansions will be included in each phase.*

Funding is expected to be raised primarily from the local community, with additional support from outside funding sources, such as grants, major donors, community fund raising drives, etc.



Castilleja exserta

In Summary

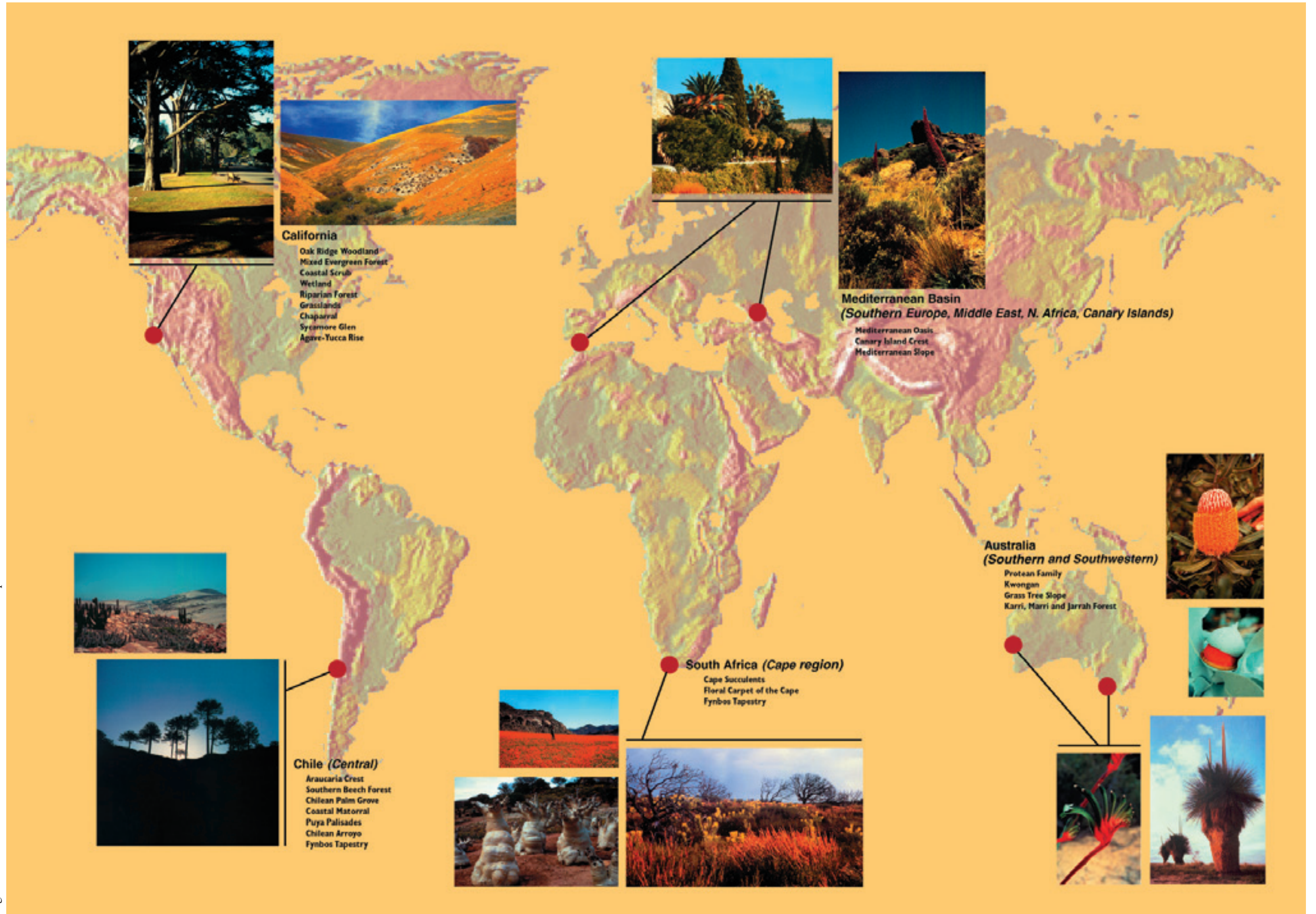
The Master Plan has set new standards and approaches, and outlined a detailed strategy for a facility which will be the model for botanical gardens in the 21st Century.





Ericameria linearifolia & *Quercus douglasii*

Fig. 1. Mediterranean Plants of the Northern & Southern Hemispheres





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PROJECT GOALS

“Enter the forest and the boundaries of nations
are forgotten.”

— Enos Mills

2. Project Goals

As a key tourist destination and regional attraction, the SLO Botanical Garden will be concerned with the aesthetic, horticultural and scientific role of the living systems from the world's mediterranean regions in both natural and urban landscapes. Its exhibits, displays, education programs, public service activities and research efforts shall reflect this focus.

SLO Botanical Garden goals relate to plants and ecosystems of the five mediterranean climatic zones. The Garden will nurture a sense of wonder and curiosity about the natural world through the following goals:

Education

- ❑ Become one of the premier educational and scientific gardens in California.
- ❑ Provide opportunities to learn about plants, the natural environment, conservation, and horticultural practices.
- ❑ Provide community and school outreach programs.
- ❑ Develop a docent program.
- ❑ Become a regional natural history resource and referral center.
- ❑ Acquire, grow and display plants, both ornamental and those of scientific interest.
- ❑ Demonstrate sound horticultural practices and principles.

Conservation

- ❑ Develop the Garden's infrastructure and facilities to be a working model of sound conservation practices.
- ❑ Instill ecological literacy.
- ❑ Promote stewardship of the natural world.
- ❑ Serve as an information resource for habitat restoration, conservation and preservation of rare plant species.

Research

- ❑ Provide facilities and support for scientific

research.

- ❑ Provide a documented collection of plants available for study.
- ❑ Provide a repository for the introduction of plants from other mediterranean climate regions to the Central Coast.

Aesthetics

- ❑ Create an inviting and aesthetically pleasing garden setting.
- ❑ Highlight the seasonal qualities of mediterranean plants: spring and summer bloom, fall color and winter plant form.
- ❑ Present the collection in a natural, plant-community-based design scheme.

Recreation

- ❑ Provide a place for passive recreation: reflection, reading, painting and photography.
- ❑ Actively promote the facility as a venue for outdoor events: weddings, plays, festivals and concerts.

Design

- ❑ These goals shall be achieved through the application of the principles of universal design, incorporating inclusive operational criteria within its design to be fully accessible to the greatest range of human capability.
- ❑ The principles of sustainable design will be incorporated to provide the capability for both natural and cultural systems to maintain themselves over time; recognizing the impacts of design choices on the natural and cultural resources of local, regional and global environments.





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M MASTER PLANNING METHODOLOGY

“Land is immortal for it harbors the mysteries of creation.”
— Anwar Sadat, IN SEARCH OF IDENTITY

3. Master Planning Methodology

Development of the master plan for the San Luis Obispo Botanical Garden has involved six major steps:

- ❑ Mission statement and goals
- ❑ Site inventory and analysis
- ❑ Facilities and program development
- ❑ Interpretive themes and concept development
- ❑ Preparation and consideration of design options
- ❑ Preparation of the final master plan and implementation strategies

Early in the planning process, the team worked closely with the Master Planning Committee to build consensus among the participants and reaffirm the San Luis Obispo Botanical Garden mission statement and goals. The mission and goals provided the basis for defining the facility program and physical design layout of the master plan. The MPC met with potential users and interest groups from the community e.g., Sierra Club, Audubon Society, California Native Plant Society, local theater groups, University of California, California Polytechnic State University-San Luis Obispo, Cuesta College, etc., to identify potential partnering



Mediterranean garden plants

Note: Throughout this document, when the word Mediterranean is capitalized it denotes the region surrounding the Mediterranean Sea. The lower-case word, mediterranean, refers to the climatic condition found within the five regions discussed in the Master Plan.

opportunities, while determining programs and facilities they could use at the Botanical Garden. Additional community meetings, public presentations and a public site tour were conducted to solicit comments to further define key issues that formed the basis for the planning process, facility program and design. These included visitor access, programs, visitor facilities, collections, interpretive themes, accessibility, infrastructure and circulation.

The final component of the planning process upon the completion of the master plan will be to develop a well-thought-out implementation strategy including a marketing analysis and fund raising plan which will provide a clear and strong framework for development of the Botanical Garden into the next century.

Master Plan Document

The master plan document provides a framework for a variety of plant displays including mediterranean signature landscapes and exploratory, exhibition and demonstration gardens to be developed and changed over time. The plan was developed in five phases, with the consultant team and MPC being given an opportunity to respond and suggest refinement. As proposed, the phased implementation of the plan allows for staged development to occur over several years as funding becomes available.

The plan was developed in collaboration with architects, landscape architects, interpretive planners, exhibit designers, environmental planners, a plant ecologist, a horticulturist, a botanist, an archaeologist and civil engineers.

Planning for the Botanical Garden's future produced three reports:

PART ONE

The Executive Summary Brief - provides a synopsis of the findings of the Botanical Garden Master Plan and describes in detail the vision and goals and proposed development of the master plan.

PART TWO

The Botanical Garden Appendix - provides a summary of the site inventory and analysis, and a comprehensive description of the interpretative and exhibit outline, facility program and cost for development.

PART THREE (under separate cover)

Includes the detailed site inventory and analysis study.

Taken together, these three documents articulate the two-year planning process of assessing the site opportunities and constraints, preparing the facilities program and designing the visitor facilities and garden collections as a framework to development.

The following is a summary of the major points of the SLO Botanical Garden Master Plan:

- ❑ Develop a plan that explores and expresses the relationship between the landscape and flora of the five mediterranean regions of the world and the cultures of those regions.
- ❑ Develop a plan that will be a part of the cultural infrastructure of San Luis Obispo County along with museums, interpretation and environmental learning facilities,

libraries and theaters. The Garden will be a prime educational and recreational resource for the county residents, as well as out-of-town visitors.

- ❑ Develop plant collections and demonstration gardens that offer learning opportunities for all ages and a wide range of users including homeowners, gardening enthusiasts, plant nursery growers, K-12 students, college students and researchers.
- ❑ Develop a facility that provides partnering opportunities with other regional organizations which can use the Botanical Garden.
- ❑ Create a comprehensive, accessible loop trail system that is easy for a wide range of visitors to use.
- ❑ Create an economically viable plan that is achievable and self-sustaining.

The plan provides the Board and Friends of San Luis Obispo Botanical Garden with a means to achieve their goal of a reputation as a world-renowned facility known for its mediterranean plant collection, horticultural education and research, and as a place for contemplation and passive recreation in a beautiful garden setting.



Toscana, Italy



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DESIGN CONCEPT

“When one tugs at a single thing in nature, he finds it attached to the rest of the world.”

— John Muir

4. Design Concept

The Botanical Garden design expresses both the awe and reverence of the natural landscape that surrounds us and our desire to use plants to form and enhance our cultural landscape, environmental setting and place of habitation. To explore and express this concept, the design of the Botanical Garden is organized into five mediterranean “biogeographic zones” highlighting themes of ecological adaptation and change of both the natural and cultural landscapes and our understanding of the living world.

The primary plant collections and displays are the Mediterranean Signature Landscapes, Gardens of Exploration, and Landscape Demonstration Gardens.

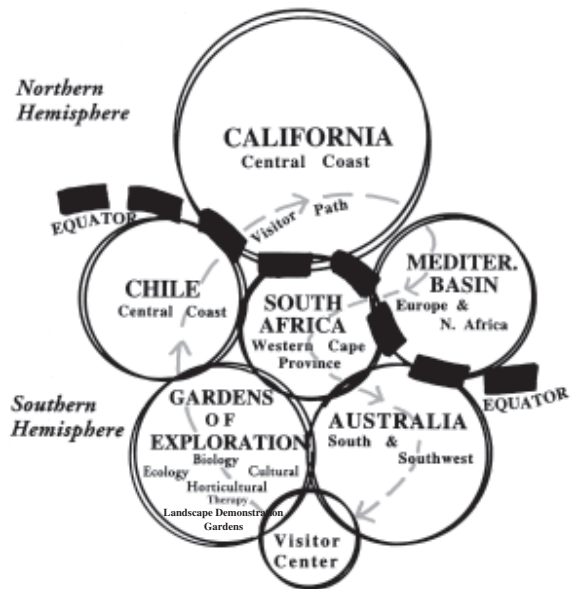


Fig. 2: SLO Botanical Garden Concept Diagram

Mediterranean Signature Landscapes

The northern extent of the Botanical Garden will exhibit a diverse plant community comprised of mediterranean plants native to the Central Coast of California. Here the visitor can explore the unique beauty and contrast of the California mediterranean plants found in grasslands, chaparral, coastal oak woodlands and riparian and wetland areas. The California plant collections will

be arranged to reflect the Botanical Garden’s inherent natural attributes, including differences in topography, aspect, soil, geology and microclimate. A portion of this area may be managed using controlled fires to sustain and invigorate the grassland community and provide opportunities for ecological interpretation.

The central portion of the site will consist of areas including woodlands, understory shrubs, grasses and herbaceous plants from the other four mediterranean climate zones of the world. Each of the signature landscapes will range in size from five to forty acres. Each collection is sufficient in size to create a natural setting or “signature landscape” representing individual plant communities and ecosystems.



Garden water sculpture

Water, the precious life-giving source of nature, follows the drainage ways through the site from north to south. Several small, intermittent streams bisect the site, flowing down the slope, creating several small pools surrounded by riparian plants and forming several marshes and wet-



Vernal pool

lands frequented by a variety of species of wildlife. At several locations along the hillside, water cisterns will be buried as part of the water system to collect and store water from winter rains to be used in water features and to irrigate plants during the dry summer months.

Gardens of Exploration

The Gardens of Exploration are located adjacent to the Garden Visitor Center. While semi-formal in spatial character, they will provide the visitor a Garden overview highlighting the features and stories of the Botanical Garden collection. Here, Garden visitors who have limited time can enjoy and explore the beauty and intimacy of the Garden's plant collections while learning about the complexity and diversity of mediterranean plants and how they adapt and change according to different environmental conditions.

Landscape Demonstration Gardens

Gardens in and around the Garden Visitor Center are more highly designed and detailed including special exhibits, plant introductions, homeowner demonstration areas, and display gardens



Horticultural Demonstration Garden

featuring plant species of special interest. The many uses and stories told by these plant collections will attract a large, diverse audience to the Botanical Garden. Of great interest are the California native plant cultivars and demonstration gardens showing the visitor practical uses of plants in a home garden setting. In conjunction with this area are the design competition gardens dedicated to creativity and experimentation through a mixed medium of art, horticulture and botany, within a changing garden setting.



Gardens of Exploration





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SITE PLANNING & DESIGN

“Beauty and benefit,
Performance and pleasure,
Science and imagination...
Allied to enhance
our understanding of Nature.”

— Adapted from Virgil’s GEORGIES

5. Site Planning & Design

The principles of universal design will be incorporated into every aspect of the Garden, making all environments fully accessible to the greatest range of human capability.

— Universal Design Statement 1997

The Botanical Garden Master Plan sought to meet the following design principles and guidelines:

- ❑ Where feasible, preserve existing site features and vegetation.
- ❑ Where practical, use the existing site conditions as the basis for creating plant collections and signature landscapes, e.g., geology, soils, slope, aspect, hydrology, views, microclimate and landform.
- ❑ Provide a variety of settings and environmental conditions to maximize the display of mediterranean plants.
- ❑ Provide exhibit areas that portray the spatial qualities of culturally and environmentally significant mediterranean landscapes.
- ❑ Demonstrate the changing character of water in the mediterranean landscapes.
- ❑ Provide a variety of opportunities and experiences for the visitor.
- ❑ Provide a comprehensible circulation hierarchy of visitor trails which subtly directs the visitor through the Garden and where feasible meets ADA (Americans with Disabilities Act) requirements.
- ❑ Provide interpretation facilities throughout the Botanical Garden, using both didactic and subliminal forms of learning.
- ❑ Provide visitor conveniences that encourage extended stays, e.g., café, amphitheater, outdoor terrace, indoor exhibit gallery, library, etc.
- ❑ Provide destination points which draw the visitor to explore the whole Garden.
- ❑ Integrate art work which complements and

extends the message of the Garden.

- ❑ Integrate architectural structures within the Botanical Garden to convey the messages of sustainability.
- ❑ Create architectural expressions that reflect the climate and cultural influences from each mediterranean region.
- ❑ Be a model of energy efficiency and conservation, and utilize renewable sources of energy e.g., solar and wind power, and water cisterns to store storm runoff for irrigation and use in water features.
- ❑ Minimize the impact of service vehicles and infrastructure on the visitor experience.
- ❑ Maintain a 'living fence' vegetation buffer around the perimeter of the Garden to protect the collections and to blend into the adjacent open space.

The Botanical Garden will serve as a model of accessibility for members and visitors, and will provide for the greatest range of human capabil-



Monolopia lanceolata, Temblor Range

ity. The buildings, site development and layout will exemplify leading accessibility standards and design solutions to provide maximum access for visitors of all ages including individuals with physical or mental disabilities. Persons with disabilities,

including those from retirement facilities, hospitals and care centers, will have the chance to visit the garden landscapes and demonstration gardens as a means to stimulate and improve overall health. Ultimately, the Garden can be used to achieve psychological, physical, social and cognitive benefits for individuals of all disabilities.

A series of hierarchical loop trails traversing the garden hillside will provide a range of experiences and challenges to the visitors as they move through the Botanical Garden. Basic design principles include the following:

- Trails will be constructed to meet Americans with Disabilities Act (ADA) guidelines including no slopes that exceed five percent.
- A five foot minimum clearance will be left around all structures to allow wheelchair and walker access.
- All primary and secondary trail surfaces will be accessible to wheelchairs.
- Trails will accommodate visitor use all year round.
- Trails will include shaded waysides, interpretive stations and exhibits throughout the Garden displays and collections which will provide protection from direct sunlight for visitors sensitive to heat and light.
- Raised beds will allow for working in demonstration planting beds from wheelchair height.
- Sensory opportunities will be provided whenever possible to stimulate all the senses. Experiences will provide diverse scents, intriguingly textured plants and building materials, many differing colors and hues, the sound of water and of wildlife and the ephemeral qualities of weather and the seasons.
- A multitude of visual garden experiences will be available, from intimate spaces to broad expanses with distant views.



Kangaroo Paws, Australia

Visitors will view the Botanical Garden on foot or by a tram car that links the core collections along a series of stops while providing convenient access to the visitor center, amphitheater, mediterranean signature gardens and demonstration gardens. Visitors will find exciting and informative self-guided interpretation, exhibits, displays and signage along the trail system that also addresses the needs of the physically disabled. Exhibits and horticultural demonstration areas will also provide hands-on interpretation opportunities for the physically and mentally disabled.





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P

REFERRED PLAN SUMMARY

"Since the beginning, each generation has fought nature. Now, in the life-span of a single generation, we must turn around 180 degrees and become the protector of nature."
— Jacques Yves Cousteau

6. Preferred Plan Summary

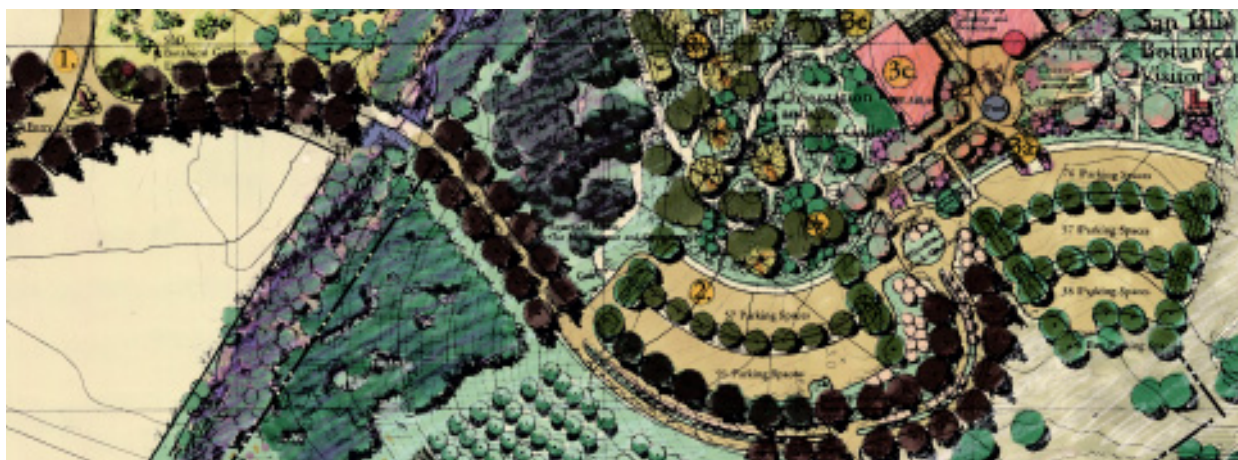


Figure 4. Garden Entry & Parking Lot

The preferred plan for the San Luis Obispo Botanical Garden was prepared as a hybrid of several optional site plans reviewed during the master plan process. The preferred plan combines the key features of several conceptual plans to form a physical layout that organizes the program elements to best utilize the site's landforms and natural features while minimizing site impacts from development. The following description outlines key elements of the master plan features and improvements.

Botanical Garden Entry Road & Parking

Visitors are greeted at the main entry by a beautiful metal gate sculpted with a mediterranean floral motif. As the visitors drive along the entry road, they are embraced on both sides by a row of majestic Italian Cypress and broad-leaf evergreen trees forming an allée that frames a distant view of Cerro Romualdo. The drive along the roadway is accentuated by plants displaying an array of seasonal color. As the visitors arrive at the vehicle roundabout they get a panoramic view of the picturesque landscape, a vast tapestry of plants forming the core of the Botanical Garden. In the foreground is the viewing tower (also a cistern used to store water from roof runoff) marking the entry to the Garden Visitor Center. Depending on the day, visitors can park in the eastern parking lot adjacent to the Garden Visitor Center, or if it is fully



Tuscan landscape

occupied, they can drop-off their passengers and park in the western visitors' parking lot. Both parking lots are a short walk from the Chumash Circle and Garden Visitor Center entry.



Monolopia lanceolata

A limited-access road connecting Dairy Creek Road to the amphitheater will be controlled by a gate at the property line. Only vehicles with special permits will be allowed on the road and in the parking lot adjacent to the amphitheater.

Chumash Circle

Prior to entering the Botanical Garden Visitor Center, the visitor passes through the Chumash Circle reception courtyard, a foyer to the main entry. Here the visitor can admire the artistry of the Chumash Indians through colorful pictographs and petroglyphs inscribed in the courtyard paving. On peak visitation days and during special events, the Chumash Circle is spacious enough to accommodate large groups waiting to purchase garden admittance tickets or meeting up with friends or family.



Figure 5: Chumash Circle

Garden Visitor Center

The major hub of the Garden, as proposed by the master plan, will include the Visitor Center, the Orientation and Exhibit Gallery, the Research Center and the Mediterranean Garden Terrace with the Santa Lucia coast mountain range forming a backdrop to expansive views of the signature gardens. This central area is the first formal point for orientation to the Garden collections, exhibits and services.

At the Garden Visitor Center, the visitor will be introduced to the mission of the Garden, view the Exhibit Gallery and Theater, sign up for a do-



Figure 6: Garden Visitor Center

cent tour or workshop, use the food services or rest rooms, and buy a book, T-shirt, souvenir or plant at the Garden Shop.

Exhibit Gallery

This gallery presents concepts through an orientation theater and a series of interactive exhibits and small displays of the mediterranean regions covering topics of each region's plants, animals and people.

Mediterranean Garden Terrace

A large gathering area, the terrace provides an orientation to the Botanical Garden and is the departure point into the Gardens of Exploration, Signature Landscapes and Demonstration Gardens. Clearly marked visitor trails emanate from the terrace to all reaches of the Botanical Garden.

Outdoor Amphitheater

Sculpted into the hillside on a protected south-east facing slope with wonderful views of Cerro Romualdo in the background, the Amphitheater will



Figure 7: Outdoor Amphitheater

provide an ideal setting for outdoor entertainment. The amphitheater can be used for a variety of events from Botanical Garden presentations to theatrical groups, live concerts, dance performances and special events.

Garden Circulation

The circulation plan provides for a variety of visitor trail systems to access all Garden collections and displays. The trail system was developed using a hierarchy of trails to create a recognizable loop system of trails that are accessible and easy to follow, particularly for new visitors. A comprehensive directional map will aid visitors as they explore the garden collections. The trails will provide a variety of routes to visitors as follows:



Visitor trams

- ❑ **Tram Service** - For a nominal fee, a small rubber-wheeled tram (battery operated) with attachable passenger cars will provide access along a .8 mile-long loop trail from the Garden Visitor Center through the center of the Botanical Garden. Seven tram stops (or waysides) will occur at regular intervals along the main trail providing access to the amphitheater and signature gardens. During special events, the tram can serve as a shuttle to move people from the amphitheater to the visitor parking lot.
- ❑ **Primary Garden paths** - These paths will provide visitor access to the main features of the Botanical Garden.
- ❑ **Secondary paths** - Most of the visitor trails will be Americans with Disabilities Act (ADA) accessible with the exception of several paths located at the highest elevations of the Botanical Garden in the California signature garden. Due to the steep slopes and soils, visitors with physical disabilities are unable to access some of the collections in this area.

- ❑ **Tertiary paths** - These are a system of intricate, winding trails, intended particularly for those visitors who seek a challenging hike or are connecting to primary and secondary trails. The trails provide access to the northern reaches of the Botanical Garden where the slopes are excessive and



Native flora, Santa Barbara Botanic Garden



Platystemon californicus

grades exceed ADA requirements.

- ❑ **Accessibility** - All primary and secondary paths will meet ADA guidelines for accessibility, including slopes that do not exceed five percent and pathway surfacing that accommodates use year round.
- ❑ **Service Access** - This access will occur along primary and secondary visitor paths and on designated limited-access roads. Paths will provide maintenance, operations and emergency vehicle access throughout the Garden.

Signature Garden Collections

To provide a unique visitor experience, the Botanical Garden plant collection is divided into five “signature landscapes” that display plants from the five mediterranean regions of the world. Each signature garden will be large enough to re-create the biogeographic zone of the mediterranean region that it represents (Figure 9). The equator will be represented by the maquis (a thick shrub planting) that traverses the site from east to west, thus defining the limits of the Northern Hemisphere

(California and Mediterranean Basin) from the Southern Hemisphere (Chile, South Africa and Australia) plant collections. The signature gardens are further organized in a clockwise order starting from the Visitor Center with the Americas, including the west coast of Chile and central coast of California, followed by Europe (the Mediterranean Basin) to the Cape region of South Africa and ending in Western and Southwestern Australia. Each signature landscape will display the living plants as an ecosystem of biodiversity with glimpses of the culture and heritage from each region.

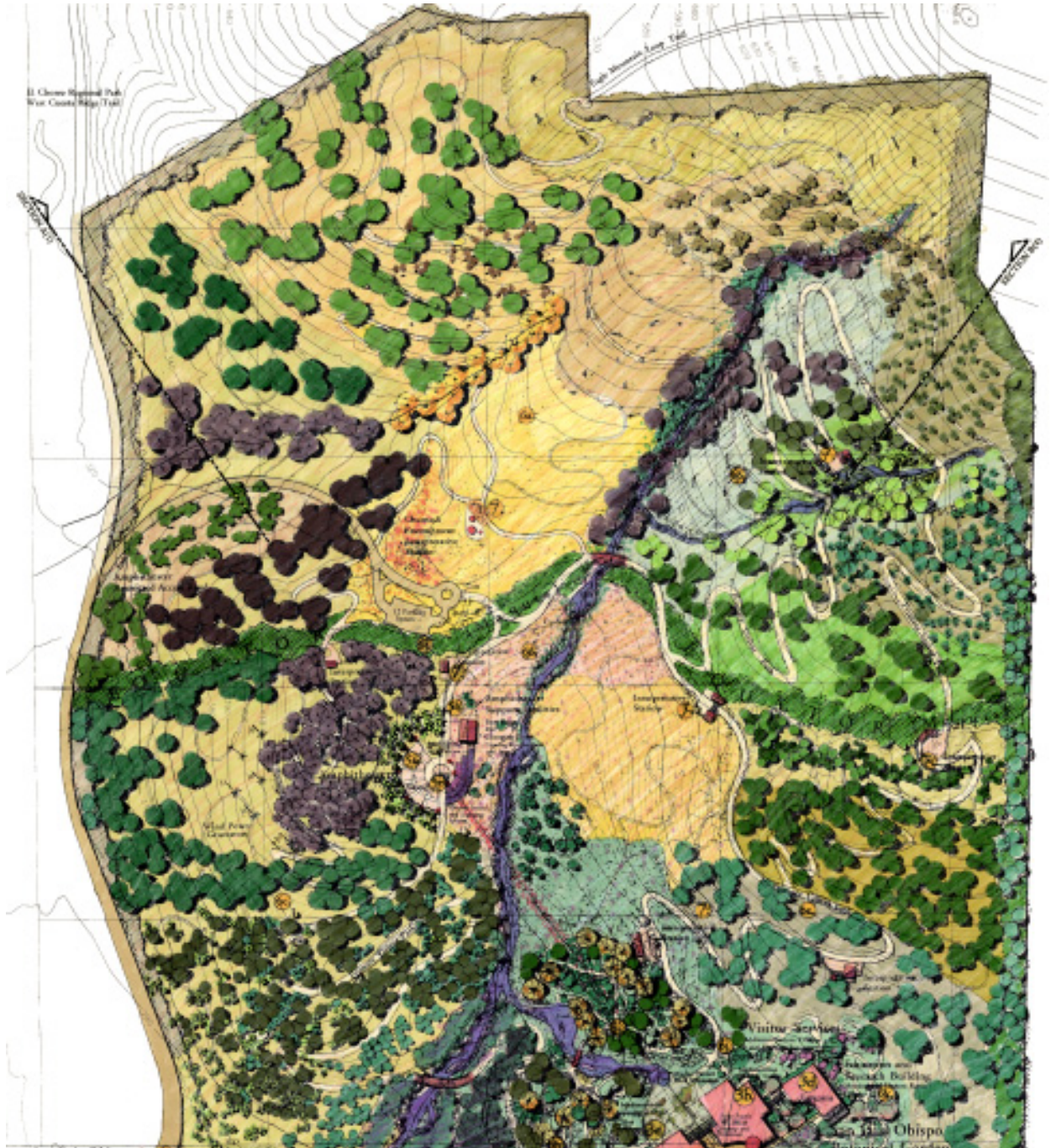


Figure 8: Signature Landscapes

Gardens of Exploration

- ❑ **Ecology Garden** - Understanding the relationships among organisms and between them is the basis for examining the effects of human activities on the natural environment. This garden helps to identify the concepts and principles of ecology and how they affect the development, formation and preservation of mediterranean regions.
- ❑ **Horticultural Therapy Garden** - This garden explores the interrelatedness of human nature and green nature. Plants and nature reconnect us to the past and instill feelings of tranquillity and harmony while offering a multitude of opportunities to stimulate the human senses.
- ❑ **Biology Garden** - This garden explores how plants adapt and change under different environmental conditions through the study of plant anatomy (plant structure), plant physiology (plant functions) and plant evolution. Here the visitor makes the connections between mediterranean climate conditions and plants' abilities to develop unique leaf types, colors, adaptations and conservation functions for survival.



Figure 9: Gardens of Exploration

- ❑ **Cultural Influence Garden** - Cultures evolve from the environment in which they develop. The natural environment determines how people live, what they eat and how they sustain life within its parameters. This garden also offers the opportunity to explore how cultures have influenced the evolution of the landscape, and the land and conservation ethics which they have adopted in each of the five mediterranean regions of the world.

Landscape Demonstration Gardens

Horticultural opportunities abound in the mediterranean climate, a paradise for growing a wide range of plants from southern temperate climates to sub-tropical climate regimes. The Horticultural Landscape Demonstration Gardens offer a study of horticultural introductions as well as successful gardening practices for landscape maintenance and management.

- ❑ **Home Demonstration Gardens** - These gardens will provide the visitor with a wide variety of applications, designs and techniques for home use. The demonstration gardens will include topics like planters, courtyards, native plants, water conservation techniques, color, texture, bulbs, grasses, vines, groundcovers, planting techniques, drought tolerance, wind-breaks, etc.



Garden water sculpture

- ❑ **International Garden Design Displays** - One aim of the Garden is to draw upon the creativity of artists and design professionals from around the world. Each year a jury will choose a theme that explores new directions in garden design through the use of plants, art and building materials. The best and most creative design entries will be constructed and displayed. The design solutions may be applied to new ideas in aesthetics, or to illustrate ecological or cultural expressions, or to

explore the use of materials, assemblage techniques and new mediterranean garden styles. The gardens should strive to be inventive and create a sense of Wow! that is highly interactive and engaging to the visitor's senses. The gardens should be thematic, including such topics as water, reign of color, science, style and materials, structures, stories, humor, etc.

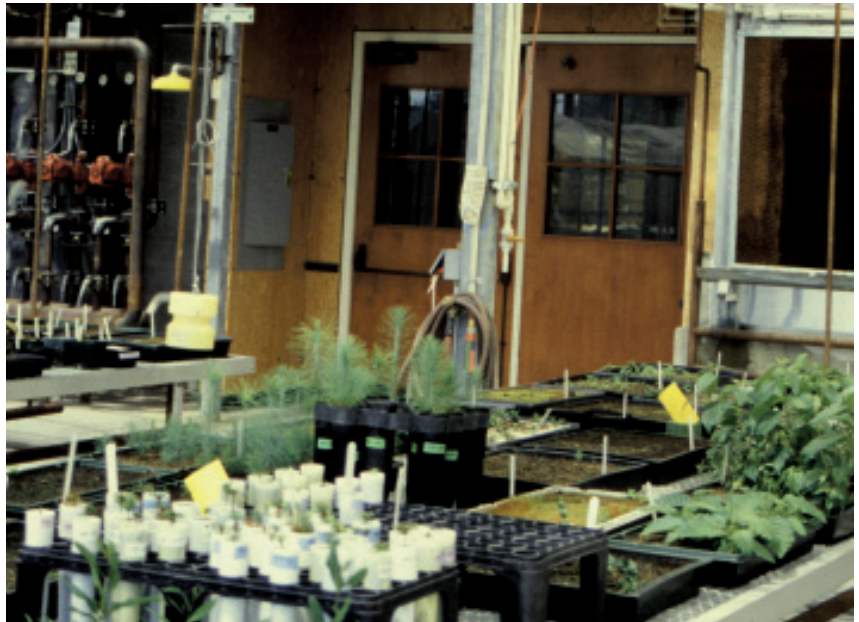
- ❑ **California Cultivar Garden** - This garden exhibits the wealth of plant additions to the nursery trade that come from our own 'backyards.' Here, plant nurseries and plant enthusiasts alike can display their favorite contributions to the landscape and witness the seasonal wonders that our native plants have to offer.



Figure 10: Propagation Center

Propagation Center

This complex of greenhouses, lathhouse, headhouse, operations offices and maintenance buildings is located in close proximity to the Garden Visitor Center. It is accessible from the main Garden Visitor Center by turning right at the main road on the limited-access service road. The Propagation Center buildings can be seen nestled into the gently sloping hillside surrounded by seasonal color and an abundance of new plants in the nursery and trial garden plots. Parking for Botanical Garden staff is located in front of the building courtyard and a one-way service road provides secondary access to the Propagation Center from Highway One at the southeast corner of the site.



Research Center Laboratory

Research Center

The Research Center is adjacent to the vine-covered main Garden Visitor Center and con-

nected by a trellis walkway. The building provides designated space for research staff, including a laboratory, herbarium, small research library, offices, dual purpose room for classes or meetings, and restrooms.



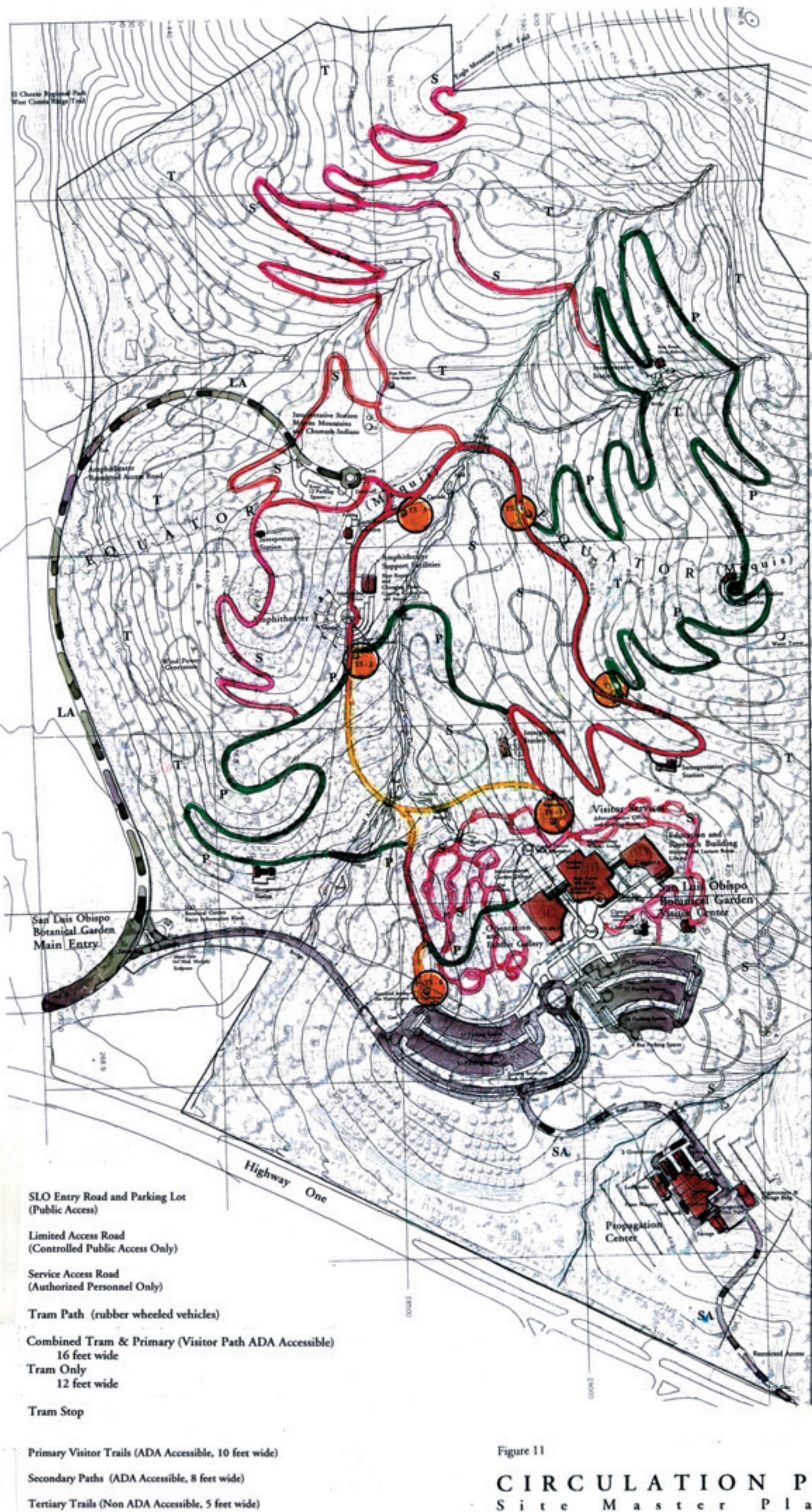


Figure 11

CIRCULATION PLAN
 Site Master Plan
 San Luis Obispo Botanical Garden

ILLUSTRATIVE Site Master Plan

Site and Building Improvements:

1. San Luis Obispo Botanical Garden Entry
2. Parking Lot (319 auto parking & 4 bus spaces)
3. San Luis Obispo Botanical Garden Visitor Center
 - 3a. Chumash Entry Court
 - 3b. Visitor Center Building
Administration Offices, Meeting Rooms, Gift Shop, Plant Sales, Tea/Coffee and Snack Bar, Restrooms
 - 3c. Orientation and Exhibit Gallery Building
Orientation Theater and "Hands On" Exhibits
 - 3d. Education and Research Building
Meeting, Lecture Room, Library & Herbarium
 - 3e. Mediterranean Garden Terrace
Tile Mosaic Portraying the 5 Mediterranean Regions of the World
4. Propagation Center
 - 4a. Greenhouse
 - 4b. Lathhouse
 - 4c. Headhouse
 - 4d. Maintenance Building
 - 4e. Materials Storage
 - 4f. Nursery
5. Outdoor Amphitheater
 - 5a. Seating (for 500 people)
 - 5b. Catering Food Preparation Area, Restrooms and Changing Area
 - 5c. Performance Stage and Removable Bandshell
6. Signature Plant Collections and Gardens

Northern Hemisphere

 - 6a. Central California Coast
 - 6b. Mediterranean Basin
(includes Europe, Africa, Asia, Canary Islands)

Southern Hemisphere

 - 6c. Central Chile
 - 6d. South Africa - Cape Province
 - 6e. South and Southwest Australia
 - 6f. Equator
(the Maquis)

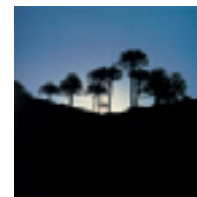
Gardens of Exploration

 - 6g. Horticultural Therapy
 - 6h. Ecology

- 6i. Biology
- 6j. Cultural Influences
- 6k. Horticulture/Landscape Demonstration
Garden Design Competition Displays
California Native Plant Cultivars

7. Interpretive Stations
8. TS = Tram Stops
9. C = Water Cistern





- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
- Preferred Plan Summary
- **Visitor Experience & Interpretive Plan**
- Mediterranean Plant Collections
- Implementation Strategies
- Staffing & Operations
- Appendices



VISITOR EXPERIENCE & INTERPRETIVE PLAN

"When we see land as a community to which we belong, we may begin to use it with love and respect."

Aldo Leopold, LAND ETHIC ESSAY

7. Visitor Experience

& Interpretive Plan

Interpretive Objective

The primary objective of the Botanical Garden is to nurture a sense of wonder and curiosity about the natural world. The Botanical Garden will employ the best practices in all areas, including teaching styles, design, programs and interpretive materials. The interpretive programs should be relevant to the lives of our visitors, conveying more than just facts. Interpretive programs should link the subject to the visitors' experience, enhancing their appreciation and understanding of the natural world. As appropriate, topics should be presented incorporating different points of view. Whether for leisure or education, a visit to the Botanical Garden should be fun, engaging and inspiring.

Interpretive Topics

The range of topics that will be covered include geology and climate; plant and animal adaptations; morphology, relationships and symbiosis; human use, and impact and change to the world's five mediterranean regions. Across the site, visitors rediscover that plants are inextricably connected to the soil that nurtures them, the air that surrounds them, the quality of the sunlight, and the purity of the water they receive. Amazed at the variation and adaptability of plants throughout a long history, visitors will never look at plants in quite the same way again.

A Walk-Through of the Gardens

As travelers drive along Highway One, they will be able to catch glimpses of the unique colors, plantings and buildings of the San Luis Obispo Botanical Garden. It's obvious something interesting is going on here and travelers' curiosities are piqued. Approaching the entry, they're well prepared to discover that this is a botanical garden to which they are not only welcome, but also anticipated, guests.

Arrival and Parking

As visitors enter the site and approach the parking and drop-off areas, they drive through a cultivated mediterranean orchard that greets them with seasonal shows of blossoms and fruit. Italian Cypress and a meadow of naturalized annuals also flank the driveway, providing shade and color to the scene. The parking lot is planted with a display of plants that can be used for hedges, screens and buffers. Coming around the brow of the hill, views of the botanical garden unfold before the visitors' eyes.

The Front Door

"It's the Water"

The visitors' imagination is immediately captured through a series of linked water elements that extend from the parking and drop-off areas into and through the Visitor Center to the Gardens beyond. The formal quality of these elements - pools with reflective surfaces, gentle fountains, a storm water cistern and running rills of water passing between paving stones underfoot - combined with landscapes of drought-adapted plantings recall the juxtaposition of what the natural cycles of water offer and how plants... and human beings ... can adapt to its scarcity.



Garden water feature

Near the Garden Visitor Center, the water is captured and contained within a runnel composed of handmade tiles and natural stone. Walking beside the water, visitors observe the play of sunlight across the water's surface and, looking

closer, they see that each pool is lined with small mosaic tiles; the warm earthen tones transition to shades of mediterranean blue, and small glints of sparkling gold stand out amid a palette of renaissance oranges and ochres. Children, mesmerized by the movement and colors, pause to dabble their fingers in the glistening flow.

Farther along, images cast into larger tiles tell a story about the history of water and people's interaction with it: simple and poetic, they recall the dependence of plants, animals and humans on water in all its forms and phases. Visitors understand the message: here, a small amount of precious water is set off in a jewel-like landscape, and here they will learn about this important interrelationship. This subtle introduction helps them make the important connection between mediterranean landscapes and the natural water cycles that regulate life in these regions.

At this point, visitors actually "arrive." Forgetting their daily routines, they're caught up in the sights and scents of the entry area, and are ready to be immersed in the experience of the Gardens themselves.

The "Chumash Circle"

The final pool is aligned with the Garden Visitor Center's entrance and is central to a large, circular plaza that contains seating. Based on the Chumash Indian belief in 'the circle of life,' the plaza serves as a gathering and orientation space. People arriving by tour or school bus collect here before continuing, others wait for someone who lingers in the gift shop, and still others have agreed to meet here before having lunch at the Terrace Cafe or before returning to their cars. Observant eyes discern quiet messages from the Chumash, the graphic images in the paving or those incised into stones or on benches, and are reminded of



Chumash pictographs

these earlier peoples.

Following the runnels of water into the building portal, visitors may enter the Visitor Center, or they may elect to be led on through the arbored center to emerge in the Gardens beyond.

By whatever route, when they do enter the Gardens, visitors observe that water in various forms continues to have a presence and play a role. Formal structures become modified and, by degree, the water takes on the character of the Gardens through which it passes. This continues the visitors' subtle orientation to the function of water in mediterranean regions, inextricably connecting the human-built landscape to the natural environment that surrounds it.

The Garden Visitor Center

Entering the Garden Visitor Center, visitors find all the main themes for the Gardens presented as introductory exhibits within the Orientation and Exhibit Gallery. These exhibits introduce and explain the key topics that visitors will find in more detail - and exemplified by specific plantings - as they tour the full extent of the Gardens. The format is extremely flexible insofar as it encourages exploration at either the beginning or the end of individual visits to the Gardens.

Across the trellised central walkway in the building immediately adjacent to the Gallery, visitors can find restrooms where water use and resource recycling issues are interpreted through changing wall-mounted exhibits; the Garden Shop,



Figure 13: SLO Visitor Center

highlighting recycled products, and gardening and natural sciences books and products; as well as the administration facilities that form the hub for staff-related activities.

The Globe

Visitors are drawn to a focus exhibit: a Giant Earth Globe where the mediterranean regions are depicted in bas-relief and visitors can discover geofacts, artifacts, images and text about the plants, climates and people of each region. Moving images of light outline the earlier landmasses of Pangaea and Gondwanaland and demonstrate their tectonic migration over time. Early explorers' routes that affected the development of mediterranean regions are marked by ancient sailing ships, and contemporary research locations are similarly identified. Banding the center of the globe is the equator with icons of ancient and contemporary measurement devices, suggesting the importance of this feature in terms of sun angles, temperature, humidity and ocean currents.

Five Regional Signature Exhibits

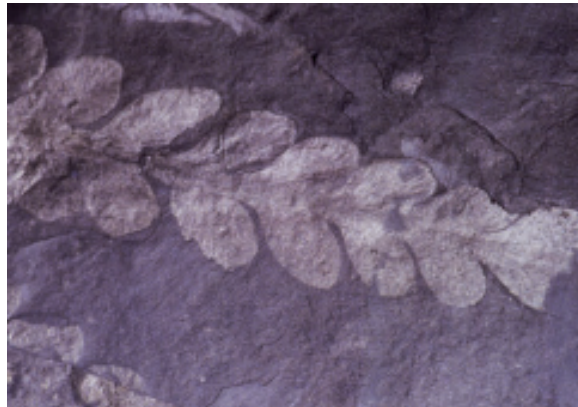
Diffuse natural light floods the periphery of the Garden Center providing framed views into the site. Farther towards the core of the building, this light transitions into exhibit settings that employ theatrical lighting effects. These settings recreate for visitors the mood, color, sound and scent of each of the five mediterranean regions, and also act as backdrops from which an array of graphic and interactive exhibits beckons.

Within one of these settings, for example, visitors find a large mural landscape of each region, overlaid with images of its plants, animals and people. The scene is lit in ways that recall the natural colors and patterning of the region, by spreading color and pattern across the exhibit. This gives the visitor a sense of the heat and dryness, and the culture of the people who have lived there. Artist's renderings of plant specimens catch the colored light, hanging as shimmering banners overhead, and dried herbarium specimens are mounted alongside for reference. Children discover a variety of toys and easily recognizable common implements made out of plant materials. The overall impact is one of beauty and richness of detail.

A larger-than-life, touchable soil profile stands before the landscape murals, with models of bacteria, plant decomposers, various root types, fungal webs, insects and small mammals. Children crawl through sections of the soil to discover the

activities and interrelationships within. Nearby, a cutaway plant puzzle invites them to assemble its parts, or they can dissect a giant flower to understand how it reproduces, or move a pollinator from one plant to another and watch the resulting hybrid appear on a computer screen.

As part of the setting, visitors also find a small research counter where hands-on experiments invite them to observe the real materials under video-microscopes or as touchable, smell-able specimens. They're amazed at the beauty of minute fungi, the many odors, the science-fiction-like appearance of nature's smallest plants and critters, and they're equally infatuated with the amplitude



Gondwanaland: a fossilized plant

of unseen life that surrounds their daily existence. People handle live plants, study hydroponics in small containers, assemble grafts or prepare dried specimens. They look up answers in reference materials, find sites on world maps, view the region from a satellite or add to an on-going database. Upon entering their 'most-frequently-asked questions,' they receive answers and suggestions about where to learn more.

At a simulated "real time" computer link, visitors exchange information with people in other regions, and "hear" them talk about the role of plants in their country and the implications for their past and future heritage. Visitors listen in as "scientists" discuss the means by which plants adapt to ensure their survival and the odds against some species surviving.

Fossilized plant remains can be handled and visitors can trace a plant through prehistory to the present, finding its uses as animal food, human food, basket material, shelter or furnishing material, medicinal treatment or cultural ornament. Real artifacts and touchable reproduced artifacts - such as tapas or baskets - offer additional ways to explore the topic.

The setting has space for small informal groups to gather, where docents conduct programs or give demonstrations by using the images, objects and interactives as a basis for their talk.

An audio component provides background sounds and visitors hear people speaking or singing in dialects, sap moving deep inside trees, birds



Orientation and Exhibit Gallery Theatre

calling, bees humming, crickets rasping, frogs peeping, raptors giving a triumphant cry, the sounds of wind blowing across landscapes, and wild waters running.

Through exhibits such as these, visitors are introduced to the concepts of regional variation and similarity, plant niches and adaptation, change through time, human influences, and scientific methods for inquiry. Later, visitors will encounter these topics again, threaded throughout the site.

Nature's Exchange

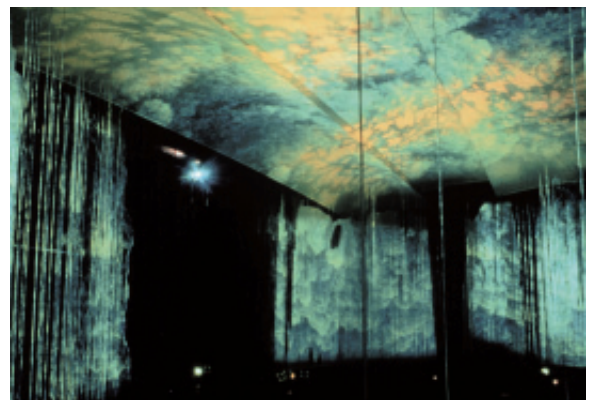
In a quiet corner of the Visitor Center, children and their parents will discover an exciting opportunity to share their love of discovery and collecting. Here, they can view the Center's collections and share their enthusiasm with a trained staff person who helps them understand the ethics and methodology of collecting. At the same time, they can engage in the process of collecting and gaining knowledge by bringing in and exchanging their own collectibles that are evaluated by the staff and assessed points for knowledge and quality. These points can be exchanged for objects within the collection so that they can take something home with them or "banked" for future exchanges, thus encouraging their continued active inquiry into the natural world around them.

"Weather" Theater

Beyond the five regional exhibit settings, visitors are drawn through a stand of tree trunks into a darkened area. As they move between the trees, sounds of wind and rain are heard and patterns of wind-whipped leaves and clouds encircle them. They enter into a theatrical space with artificial lighting.

The 16-minute program includes special effects and three-dimensional objects, as well as a large video projection on an 8'x12' screen. The story follows a not-quite-24-hour cycle in a mediterranean region, beginning at twilight when the sun is setting, touring briefly through the night when nocturnal animals are about and nocturnal plants are blooming, through the sunrise of the following morning and into the heat of the day.

In the theater, visitors learn how the placement of land and ocean masses creates weather, which in turn sculpts the land and shapes what can grow or live on it. They're transported back in time to circle the globe and watch as the continents of Pangaea and Gondwanaland break apart, to see isolated plant communities carried toward new climatic conditions and new adaptive niches. They see capsulated versions of the settlement and influences of human culture groups, and experience the affection for the land that these groups display. Viewers see human populations



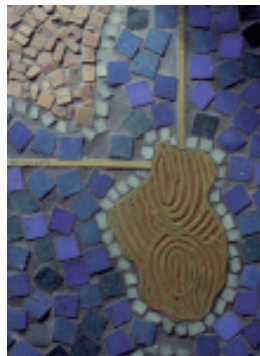
Mediterranean Weather A.V. Theatre

grow and spread across continents, with resulting changes to plant life and ecosystems. They watch time-lapse plant growth, follow the land through a round of seasons as plants bloom, reproduce and die, and return to the "day" on which their journey began.

As the show proceeds, theatrical equipment releases mist and fog, creates a sense of changing weather by changing the color of the space, and alters the mood of the room to reflect the heavy heat of noon or the respite of an evening. As the story unfolds, cloud, leaf, sun and rain patterns are projected on floor, walls and ceiling, and sounds of nature and weather fill the space. When visitors “return” to the day of their journey, the screen rises to reveal the day awaiting them outside. They exit into the revealed landscape to find themselves in the Gardens where the principles they’ve just learned are demonstrated.

Mediterranean Terrace

The key feature of the Mediterranean Terrace, located at the end of the trellised walkway, is a large mosaic map of the world’s mediterranean regions, as laid out within the Gardens. The materials and colors in the mosaic recall the water elements that connect through the Garden Visitor Center to the parking areas. The same use of renaissance colors, sparked with glints of gold, carries through the scheme and thoroughly grounds the experience in the mediterranean region.



Mediterranean tile pattern

Immediately prior to their embarkation into the Gardens, visitors will be issued a “passport” swipe-card that activates exhibits around the site, keeps records of the things that they are interested in, and results in a final print-out and reward being available for them at the end of their stay.

Education and Research Building

Standing amidst the sights and sounds of the Chumash Circle, visitors notice that there is another building immediately to the right of the Garden Visitor Center. This is the Education and Research Building where all of the more focused education, outreach and research facilities are located. With its direct access from the parking and drop-off area, it’s an easy place to find whether it’s to use the services of the walk-in Master Gardener Plant Evaluation Clinic or to arrive for an evening class or event.

Classroom and Lab Facilities

On-going, topical education is an essential component of the Gardens. In this adjoining facil-

ity, passing visitors are able to see education in process as they view classrooms and labs where scheduled classes and events are conducted. Although they may not use these facilities, visitors do “borrow” from them in the sense that the Botanical Garden is an active participant in the community and is a vital leader in education.

Mediterranean Weather Station

A series of weather-measuring, predicting and tracking devices are located in an interpretive node outside the Education and Research Building. Used by people in the classrooms, the equipment also functions as a stand-alone exhibit for the visiting public where microclimates around San Luis Obispo can be tracked, and real-time weather readouts from each of the worldwide mediterranean regions can be compared. Children and their parents can sign up with a docent to become an EcoMate, providing ongoing microclimate and soil data to the Garden’s database. Instructions for use of the equipment, and provocative, interactive examples of the influences of weather on plants provide intriguing experiences for the visitors.

The Gardens of Exploration

To the right, visitors encounter the Gardens of Exploration where they have the opportunity to take an intimate, hands-on approach to experiencing and understanding the various uses and adaptations of mediterranean plants within the San Luis Obispo region. It is divided into five thematic areas where the topics of Horticultural Therapy, Ecology, Biology, Cultural Influences and Landscape Demonstrations can be explored with a programmatic and interpretive focus on environmental changes over time and plant adaptation.



Mediterranean grass

Visitors begin their tour of these gardens equipped with an artfully illustrated booklet and/or an audio tape (which can be purchased at the bookstore). Their tour leads them through each of the garden areas where changing displays of plants and settings investigate topical issues and questions such as:

- 1) How does the role of fire in maintaining mediterranean ecosystems manifest itself in plant community structure?
- 2) How are indicator species determined and why are they important?
- 3) Why do certain animals coexist with certain plant communities?
- 4) What is the value of a particular plant to the economic health of a region or the physical health of an individual?

Smaller identification tags point out culinary and medicinal herbs, and offer remedies, recipes or lore pertaining to the history of the plant. In each case, the topic is discussed in terms of

change and adaptation, questions are posed, and visitors are urged to relate the information to their own daily lives.

The Landscape Demonstration Garden will be of particular interest to many visitors. Here they will find changing landscape design solutions and a chance to try their hand at plant propagation, pruning and potting. They can espalier a fruit tree and visit with docents at the plant introductions trial plots to discuss the relative merits of various plants and techniques. Visitors study companion plantings and take home literature that will help them practice what they've seen and learned. In addition, design competitions will offer an interactive component of changing garden exhibits by artists, professionals and plant enthusiasts.

Exploring the Main Collections

Upon returning to the Mediterranean Terrace and equipped with their expanded knowledge of the mediterranean plants and ecosystems, visitors are ready to head out to explore and enjoy the main collections. The mosaic map makes it apparent how the Gardens are laid out and what visitors can expect to encounter along the way. For instance, a shimmering band appears to bisect the site. Upon closer investigation, it is found to be an iconographic "equator" that organizes the Garden's Northern and Southern Hemisphere collections.

Arrayed on both sides of this symbolic centerpiece are the areas that represent the five mediterranean regions of the world, starting in the Southern Hemisphere with Chile and South Africa's Cape region; then moving across the "equator" to the Northern Hemisphere and the California and Mediterranean Basin Collections; and then back across the "equator" to round out the walk with the Australia Collections. Within each of these areas are sheltered interpretive stations where more focused learning about each region can take place, as well as frequent rest areas and drinking fountains.

Chile Collections

Plant Groupings

As visitors wend their way along the gently sloping pathway they find that playful patterns and textures of natural stone from the various regions helps to highlight the important plant groupings,

views or vistas within each area. Within the Chilean area, the appearance of basalt provides a constant reminder of the land's volcanic history. Visitors, immersed in the sounds and scents of the rapidly maturing plantings, ascend the Garden's southeast facing slope, encountering the following plant groupings as they go. (Please reference Plant Associations & Location for a more detailed listing of plant species.)

❑ Chilean Mixed Forest:

This bosque of woody species is representative of the diversity of tree species within Chile. The dominance of evergreen species offers shade and windscreen to the surrounding areas.

❑ Chilean Arroyo:

The ephemeral stream within this area provides the ideal location for a riparian community of plants well adapted to streams in the coastal regions of Chile. The plants display a diversity of leaf forms and morphological adaptations to wet/dry conditions.

❑ Puya Palisades:

This signature planting merits its own area to show off a variety of leaf forms and the species' ability to colonize. The floral display of pink, purple and red is a color fiesta a visitor is not apt to forget. (Interpretive Station 1 is located within this zone. See description below.)

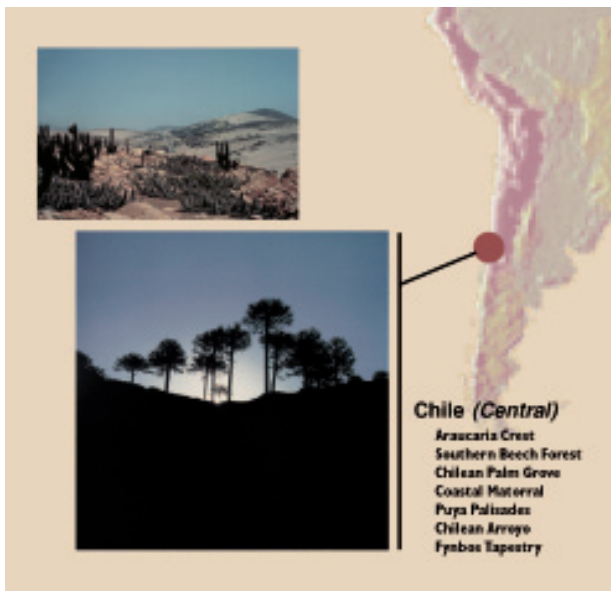
- ❑ Coastal Matorral:

This representative community is found throughout the coastal terraces and foothills of Chile. In spring it offers herbaceous floral display while its framework of woody shrubs provides structure throughout the seasons.
- ❑ Southern Beech Forest:

This hillside forest provides year- round interest with a textural display of leaf variation, mottled bark, a rich understory and splendid fall color amidst the contrast of rocky outcroppings.
- ❑ Araucaria Crest:

*The forest's location accentuates the drama of the form and character of this tree species. Varying heights and ages will provide an impressive canopy, with a seasonal display of *Alstroemerias* below.*
- ❑ Chilean Palm Grove:

The palm grove offers a striking backdrop to the Amphitheater with the strong columnar trunks of various sizes providing shade and drama throughout the year.



Central Chile; between the mountains and the sea

- ❑ The Maquis:

As visitors approach the equatorial dividing line between the Southern and Northern Hemispheres they encounter a vegetative feature that will reoccur in slightly different formats each time they cross this line. The Maquis is a dense buffer planting that represents the perceived density of vegetation near the

“equator,” as well as a chance to highlight the many plants from Chile that offer functional qualities for screen barriers while providing textural contrast and seasonal color. These shrubs are sure to attract both birds and insect pollinators for added interest.

Interpretive Stations

Interpretive Station 1

Interpretive Theme: Ecological Imperialism

This station is situated on the far side of the arroyo within the Puya Palisades area. Its emphasis is on the nature of the cultural exchanges that occurred between Chile and Europe which led to wholesale changes in Chilean ecosystems that continue today. The station is furnished with objects of European heritage where visitors can trace cultural exchanges back to primarily the Mediterranean Sea Basin. They can leaf through diaries and examine introduced plant specimens in order to see the New World through the eyes of European explorers and developers, and to observe the degree of change that resulted from colonization. Visitors can find individual “stories” about native plant species routed by aggressive competitors, and they can trace the migration of Chilean plants back to Spain as well.

Interpretive Station 2

Interpretive Theme: Botanical Balance

This smaller station is located at the juncture of Araucaria Crest with the “equator.” It is furnished with hand-crafted Chilean items, and its topics are devoted to understanding the unique attributes and adaptations of Chilean plants and their ecosystems, with a special emphasis on the interaction of the Humboldt Current with the equator.

Plant migration maps and botanical genealogies trace the rise and fall of plant species as they are influenced by world climatic changes as well as international markets. Visitors experiment with various resource allocation scenarios in order to understand the effects of shifting patterns on a region’s botanical balance.

The Amphitheater

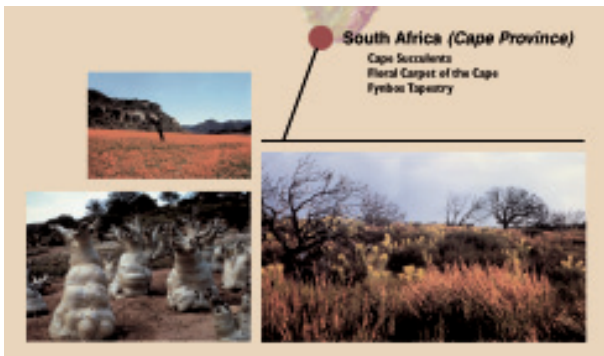
The Amphitheater, located within a protected cradle of the southeast facing hillslope, provides a venue for theater groups which perform outdoor plays written for and set within mediterranean regions, such as *Romeo and Juliet*, *Two Gentlemen of Verona* and *Merchant of Venice*, packaged with accompanying lectures/discussions about how the plays were originally staged and how they reflected their landscapes, climates, etc. The Amphitheater offers opportunities for Mozart Festival events and other concerts throughout the year. Plantings around the Amphitheater include fragrant herbs such as rosemary - the herb of remembrance - to stimulate memory and add to visitors' multi-sensory experience of the twilight sky, warm air and the smells and color of night-blooming flowers. Distant views to Cerro Romualdo provide a memorable backdrop for any event.

South Africa

Cape Region Collection

Plant Groupings

Visitors encounter the South African Collection cascading down the lower slopes of the Amphitheater. With its warm, sheltered location mid-



Plants of the Cape of Good Hope, South Africa

way up the Garden's slopes, this Collection provides a colorful center-point for the Northern and Southern Hemisphere Collections that radiate out from it.

- ❑ Cape Succulents:
The Cape is home to the richest succulent flora in the world. This garden displays the diversity of species and morphological characteristics of these unique plants.
- ❑ Floral Carpet of the Cape:
"The Cape Floral Kingdom owes its status to

the very high numbers of species, genera and families endemic to it." **Fynbos** by Cowling & Richardson.

- ❑ Fynbos Tapestry:
The beauty of the tapestry is most valued by close viewing of the plants that weave the diverse vegetation into a shrubland of varied shapes and sizes.

Interpretive Station

Interpretive Station 3

Interpretive Theme: Pollination - The Process of Life

This station is located immediately off the main pathway that wanders through the "Equatorial Maquis." Its emphasis is on the exploration of the various ways in which mediterranean plants are pollinated with an emphasis on many of the unique insect/plant associations that occur in South Africa.

Visitors have a chance to investigate a collection of diverse and amazing South African insects and compare them with insects found locally. Camouflage, mimicry and plant symbiosis are some of the themes that are touched on. In some cases, visitors must look closely to discern the insects that pose as plants. By playing an "insect removal" game, people are surprised to see how many plants go away when their pollinators are gone ... thus coming to understand how critical insect survival is to the ultimate survival of many of the world's plant species.

California Collection

Plant Groupings

Immediately on the far side of the "equatorial maquis" lies the first of the Northern Hemisphere collections... California! Visitors experience the California Collection from the highest points on the site where the views to adjacent oak woodlands and forested hills are the best.

The plant collections within this area reflect a rich range of native communities from vernal pools, through grasslands, chaparral and oak woodlands. For a complete description, see Mediterranean Plant Collections, Section 8.



Central Coast of California

Interpretive Station

Interpretive Station 4

Interpretive Theme: The Morros and Using the Land - The Chumash Lifeways

Before taking off across the brow of the hill, visitors find a Chumash “encampment” off to the west of the trail. The encampment, which would have been used seasonally by the early Chumash, is quite simple. Its few structures, baskets, tools and utensils are made of indigenous materials and are clearly intended to be removed or recycled. At a nearby tented enclosure, visitors learn that this is a recreated encampment, built as part of a living history reenactment program. The project has brought together people from the local historical society, schools and the surviving Chumash tribes.

Inside the tent, a video made during the reenactment shows native Chumash explaining to San Luis Obispo children how their predecessors lived on the land, using the natural resources available to them, and how they found everything they needed for their shelter, food, clothing, medicine, utensils and spiritual needs. They describe how the round of seasons took their people into all the zones of California’s mediterranean region, and how the limited amount of water available was sufficient for their needs and the needs of plants and animals.

In the process of making the film, the Chumash engage the children in similar activities and the results are recorded. In one

scene, the Chumash discuss the medicinal uses of certain plants growing in the area with a noted California herbologist.

Furnishings in the canvas headquarters tent convey the project’s aspects of research and public outreach, through camera equipment, cue cards, scripts, a dressing room mirror, stray articles of clothing and still photos taken during the shoot. Illustrations made by children during the program are posted on the walls.

Visitors - feeling they are being permitted to go behind the scenes - examine pelts, dried fish and plant materials, Indian foodstuffs and lithic tools. They take a turn at weaving a row on a basket, grinding flour from grain or creating a small figure from sticks and twine. At a photo op location, they pose for pictures of their own. A guessing game asks visitors to match various plant specimens with the products made from them. They smell the collection of dried herbs and medicinals, and examine the plants used to cure, treat or prevent physical ailments. They match species that grow together, where one is antidote to the toxins of another. As they do this, ambient Chumash music provides a background.

A spotting scope standing in front of the tent permits a close-up view of the Morros as they recede into the distance, and a booklet of Chumash and pioneer legends and stories about the Morros is tethered to a nearby camp stool, where a visitor can lean back for a moment of contemplation.

Afterwards, using a brochure, visitors continue upslope throughout the represented plant communities, looking for the plants that were part of the pre-contact lifeways.

At scheduled times, the Botanical Garden Education Department holds summer overnights at the encampment, as well as demonstrations of flint-knapping, basketry and pottery making, atlatl spear throwing, and music making, along with the sale of baskets, herbs, etc.



The Mediterranean Basin from island to inland plateau

Mediterranean Basin Collection

Plant Groupings

The Mediterranean Basin Collection begins the downward swing of the pathway. The pull of the distant glint of water at the Visitor Center is mitigated by the visitors' sensory immersion in a three-dimensional world of smells, as represented within the following groupings:

- ❑ Mediterranean Oasis:
Silhouettes of stately palms against the sky will serve as a beacon for the Mediterranean Basin plantings. A series of pools linked by a meandering stream will offer visitors tranquil refuge from the hot sun.
- ❑ Canary Island Crest:
This area offers an opportunity to display the wealth of vegetation that comes from this small, isolated area in the Atlantic Ocean.
- ❑ Mediterranean Slope:
The hillside terraces remind the visitor of the important history and origin of many familiar plants we value for their aesthetic and economic contributions.

Interpretive Station

Interpretive Station 5

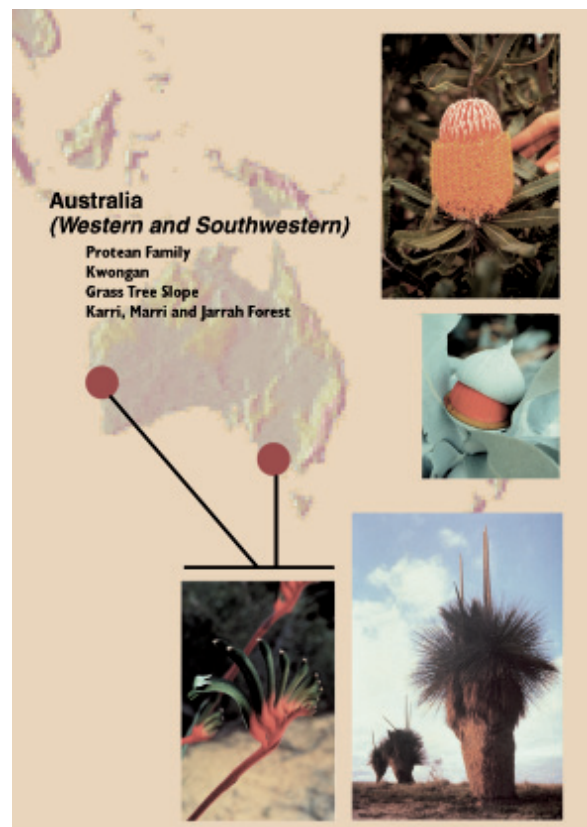
Interpretive Theme: Human Impacts - Past, Present & Future

Moving higher up the slope, visitors wander through a "true" mediterranean landscape, with its distant views and sunny, grassy slopes. In a small stucco building full of pastel colors and sunlight, visitors walk in on a

hot debate. Although the room is empty, the voices of the villagers still hang in the air, and the materials they were talking about still lie on the table, around which many chairs are drawn up. The topic under discussion was reforestation and land restoration. As visitors walk in, the voices of villagers, historians, developers and tourists are still competing for attention.

Open on the table are an economic impact study, a large map showing areas originally forested, books of trees and shrubs common to the region, an anthropology book open to a pictorial essay on the early inhabitants whose need for fuel removed the forests, and a travel guide to the region. A graph speculates on the length of time it would take for the area to ever become a forest again. Views from the window range to the far horizon. As visitors sit at the table or move about the room to examine the materials, the voices rage around them and the issues in the dilemma become apparent.

On a side table, someone has arranged a display of culinary herbs, along with snapshots of dishes prepared with them, recipes and ar-



Southern & Southwestern Australian plant forms

ticles about the health-giving aspects of mediterranean cookery. The scents of the herbs fill the room. A similar array of olives invites attention.

At a nearby bridge, a small graphic panel demonstrates how the scene might have appeared when it was forested and illustrates the plant communities that the forest supported.

Southern and Southwestern Australia

Plant Groupings

Passing once again into the Southern Hemisphere, visitors encounter the varied and ancient communities of Australia, nestled along the lower ridge of the Gardens. Established plantings bring home the truly different qualities of the various groupings represented below:

❑ Protean Family Garden:

The garden displays and demonstrates the Australian genera of this exotic plant family, contrasting and comparing leaf and flower morphology.

❑ Kwongan:

Small groupings of Eucalyptus woodland occur on lower ground with thickets of sclerophyllous shrubs and woody vines covering the ground plane to form a signature landscape of the winter rain and dry summer cycle of Southwestern Australia.

❑ Grass Tree Slope:

This dramatic display is not only visually memorable but identifies a highly evolved member of the sclerophyll community. Seasonal color from an herbaceous floral understory will add interest throughout the year.

❑ Karri, Marri and Jarrah Forest:

These majestic giants rank among the tallest trees in the world rivaling the California redwoods. A walk amidst the stately groves uncovers the detail of the mottled and dappled colored bark that ranges from a smooth silky surface to a rough flaking texture.

Interpretive Stations

Interpretive Station 6

Interpretive Theme: Science & Plants

On the trail through the Australian collection,

visitors find a research station where a team of archaeologists, biologists, etc., has been stationed. From materials lying about, it's clear the scientists have gone on ahead to a remote dig site.

Furnishings include aboriginal art of plants from *dream time*, contemporary fine art plant photography, dried plant specimens, preserved specimens of huge spiders, beetles and poisonous snakes, and a collection of small commercial products made from Australian plants. The station is equipped with models of Australian plants to "dissect," growth rate charts, and studies on the effects of acid rain on Australian habitats. A video monitor shows time-lapse footage of plants surviving seasonal inundations of mud and other survival strategies.

Along with botanical maps of Australia, visitors study snapshots and field notes of the team examining plants, and identifying, evaluating and recording new species. Visitors chart the effects of sheep on land and plants, and use microscopes to view plants that disburse their seeds by hitching a ride on sheep. They test plant dyes on sheep's wool, and perform microscopic studies of pollens, then get the "answers" from the national center for pollen data in Springfield, Illinois.

Interpretive Station 7

Interpretive Theme: Migrations

Farther along the trail, visitors encounter a tented dig site, where it seems that the European and aboriginal Australian scientists have just gone into town for supplies, leaving their dig available for investigation. Furnishings include an illustrated record of extinct Australian plants, plus threatened or endangered plants found within layers of the dig.

Visitors explore the camp and walk down the inclined ramp into the dig, where they find a map of Gondwanaland overlaid on a current map of Australia. On tables are dating devices that include fossil plant materials, fossilized fungi and desiccated samples of current fungi from association with *Nothofagus*. Visitors identify fossil or relict food plants from the dig's trash midden and compare fossil specimens to current plants to study adaptations from pre-

history to the present. At an interactive game, they move the continents together and apart while transforming some plant communities but not others.

Listening at a headset, visitors hear radio transmissions of interviews between archaeologists and elder aboriginal Australians, as they record the lore and legend of plants from the past. They watch a video reenactment of a sacred ceremony using plant materials growing at the site.

The Conclusion of the Visit

Arriving back at the Garden Visitor Center, the visitors can choose to relax at the Mediterranean Garden Terrace and reflect on their worldly plant exploration while enjoying cool refreshment from

the food concession stand. They can stroll over to the mediterranean world mosaic map and reference the journey they experienced in the gardens. Visitors may decide to re-visit the Garden Visitor Center interpretive exhibit gallery or look up information on a specific plant species in the library, or head to the Garden Shop in pursuit of a special gift for a relative or unusual mediterranean plant for the home garden. Taken together, the exploratory display gardens, signature mediterranean landscapes, interactive exhibits and programs create a memorable experience portraying the beauty, grandeur and diversity of the five world mediterranean regions. Visitors will be eager to share their botanical garden adventures with friends, relatives, and other interested individuals, compelling others to visit the unique and wonderful collections at the San Luis Obispo Botanical Garden.

Interpretive Outline Summary

The following summary outline provides an overview of the primary interpretive content themes used in the development of the interpretive plan. For a more detailed Interpretive Concept Outline refer to Appendix C.

Geographic Mediterranean Regions

□ Overview:

The Central Coast of California is representative of other mediterranean climatic regions around the world. The winter rain cycle with the summer drought cycle results in sclerophyllous woodlands. There are five geographic regions of the world with these unique climatic conditions: the Mediterranean Basin of Europe, California, Central Chile, Southwestern South Africa, and Southwestern Western Australia, and Southern South Australia. Each of these regions is located between latitudes 30-40 in both the northern and southern hemispheres.

□ Premise for Exploration:

Compare and contrast the flora, plant communities, and ecosystems of the five mediterranean regions of the world. Compare and contrast the impacts of human habitation on all five regions.

Interpretive Themes on Adaptation & Change; Gardens of Exploration

□ Biological Adaptations

1. Overview:

An understanding of plant anatomy and physiology will be the basis for exploring how plants adapt and change under different environmental conditions.

The climatic conditions of each of the mediterranean regions have a profound effect on their flora and fauna. Adapting to prolonged periods of summer drought requires plants to develop interesting morphological characteristics and reproduction adaptations. Life cycles vary as a result of climatic conditions from annual to multi-year cycles.

The concept of plant communities becomes the basis for discussing plant life, distribution patterns and relationships to physical habitat. The principles of ecology are rooted in the understanding of plant communities.

2. Premise for Exploration:

Identify how plant and animal life have evolved within the biological cycles of the

mediterranean climatic regions. Explore how natural history is influenced by adaptation, change and evolution.

❑ **Ecological Adaptations**

1. Overview:

Understanding the relationships between plants and animals becomes the basis for examining the effects of human activities on the natural environment.

2. Premise for Exploration:

Identify the concepts and principles of ecology and how they affect the development, formation and preservation of the mediterranean regions.

❑ **Cultural Influences on Adaptation & Change**

1. Overview:

Cultures evolve from the environments in which they develop. The natural environment determines how people live, what they eat and how they sustain life within its parameters. Conversely, the environment is altered by human development causing long term effects on its evolution as a habitat for plant and animal life.

California's history has had a profound effect on the evolution of cultural perspectives of plant values and land use. There are remnants of the Mission period and European influences, as well as agriculture and military uses. Understanding the influences of how the evolving cultures perceived and managed the land provides an interdisciplinary story of plants and people. Cultural influences tell compelling stories of the profound effects civilizations have on the adaptability of the vernacular landscape.

2. Premise for Exploration:

Interpret how landscapes and land use ethics have evolved within all of the mediterranean regions in the world. Describe how multiple cultures have influenced these changes over time.

❑ **Horticultural Therapy**

1. Overview:

Exploring the influences of western culture on our perceptions of nature offers a unique opportunity to explore the interrelatedness of human nature and green nature. Plants reconnect us to the past recalling feelings of tranquillity and



*In response to long dry periods, *Cyphostemma juttae*, from the Cape of South Africa, have developed water reservoirs in their thick truncated stems.*



Geissorhiza rochensis (Cape region)

harmony. This phenomenon becomes especially important in our technological world.

2. Premise for Exploration:

Identify how human well being is related



to its attraction to plants and nature. Explore how economic considerations influence human interest in plants.

□ **Landscape Demonstration Gardens**

1. Overview:

The mediterranean climate of central California offers a horticultural paradise for growing a wide range of plants, from southern temperate climes to sub-tropical climatic regimes. This presents opportunities to explore and experiment with practical applications such as composting, water conservation, erosion control, garden practices, and irrigation technology, while also exploring the functional qualities of plants in garden design.

2. Premise for Exploration:

To teach the skills of gardening through demonstration and garden displays. To offer visitor and members a 'hands-on' opportunity to test their own ideas on the principles and practices of gardening with mediterranean plants.

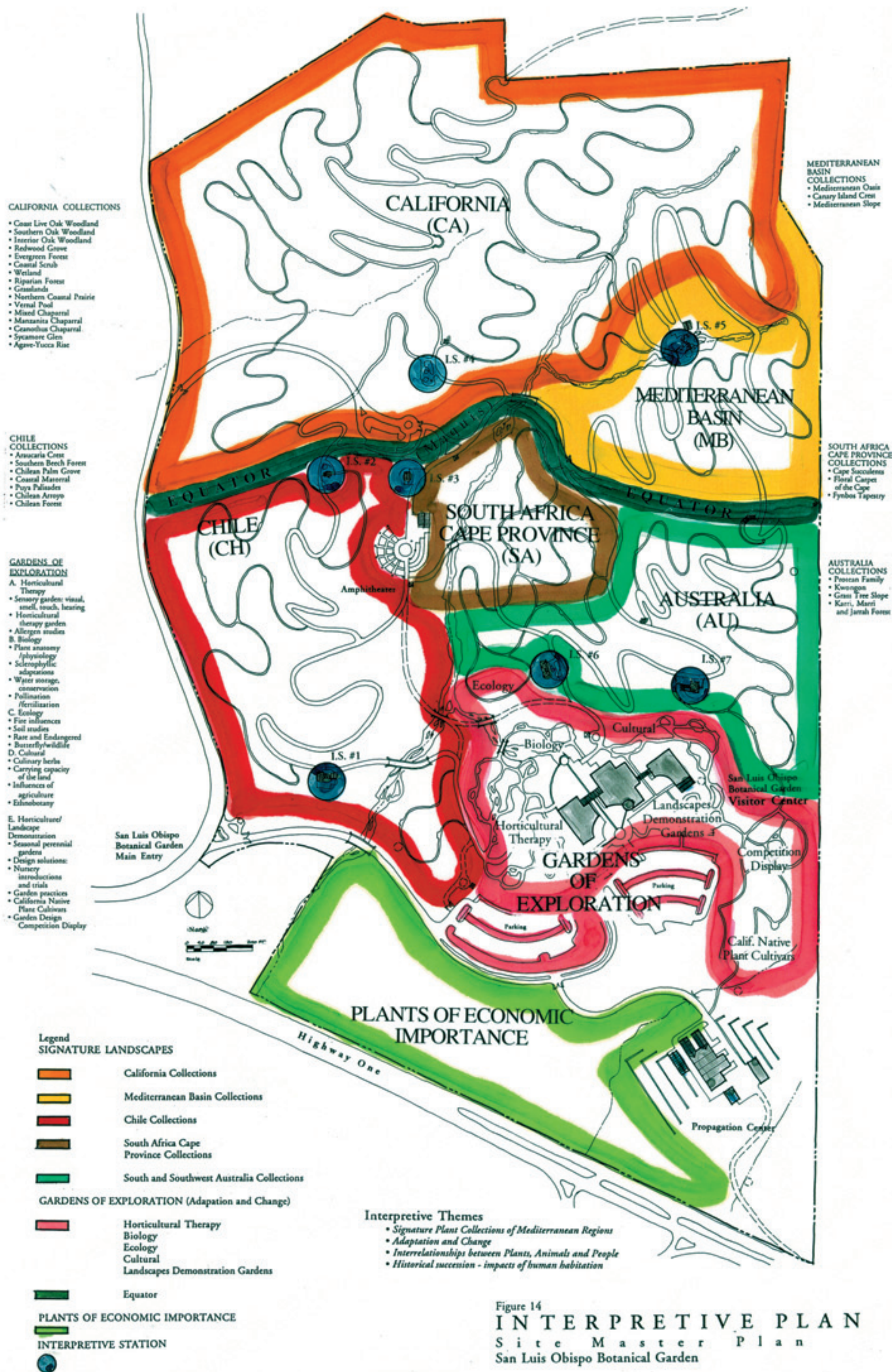


Figure 14
INTERPRETIVE PLAN
 Site Master Plan
 San Luis Obispo Botanical Garden



- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
- Preferred Plan Summary
- Visitor Experience & Interpretive Plan
- **Mediterranean Plant Collections**
- Implementation Strategies
- Staffing & Operations
- Appendices



EDITERRANEAN PLANT COLLECTIONS

"A true conservationist is a man who knows that the world is not given by his fathers but borrowed from his children."

— Audubon

8. Mediterranean Plant Collections

Mediterranean Climate Locations

Mediterranean climates are generally located on the western edge of continents. The summers are generally hot and dry. The winters are cool and wet.

California

The mediterranean area of California extends from the western side of the peninsular ranges in Baja California northward to a point about half way between San Francisco and Eureka. North of these regions, the winters are wetter and last longer. It extends inland to about 2,000 feet in elevation on the western side of the Sierra Nevada including the intermediate valleys south of the transverse ranges (Sierra Madre, San Gabriel and San Bernardino mountains) of Southern California. The lower part of the San Joaquin Valley is too hot and dry to be considered true mediterranean.

Chile

Mediterranean climate exists in approximately the middle third of Chile. It extends from about Valdivia in the south at 40 degrees, to about Coquimbo at near 30 degrees south. It extends inland about 60 miles to the lower elevations of the Andes.

Australia

Here the mediterranean climate reaches from about Geraldton south to Cape Leeuwin, east to approximately Caiguna in Western Australia; Southern Australia from about Penong to an area around Adelaide. An arm extends into New South Wales northwest of Melbourne.

Mediterranean Basin

The Mediterranean Basin region extends along the north and south shores and contains over half the total area of the world mediterranean climates. It encompasses the south side of Morocco, northern Algeria, northern Tunisia, and the Tripoli and Benghazi area of Libya. On the eastern end of the Mediterranean Basin, it includes the coasts of Israel, Lebanon and Syria to the head of the Persian Gulf. From there, it extends along the

northern coast of the Mediterranean Sea, including the southern parts of Turkey, Bulgaria, Greece, Albania, the former Yugoslavia, most of Italy, the Riviera area of France, most of Spain and all of Portugal.

South Africa

The South African mediterranean region includes a narrow strip around the Cape of Good Hope from about George on the east to about Klawer on the north.

Regional abbreviations and numbers correspond to areas identified on the collections plan (see Figure 12). Botanical resources and taxonomical references are listed in the Bibliography.

Northern Hemisphere

CALIFORNIA (CA)

TOTAL: 47.40 acres

1. Oak Woodland

A. Coast Live Oak Woodland

(Central Coast phase) - 4.6 acres

This broad-leaved woodland displays the rich



Quercus agrifolia - Coast Live Oak

understory of vegetation along the Central Coast range. The varied flora brings seasonal wonder and ethnobotanical stories of Native Californians.

Quercus agrifolia - Coast live oak
Heteromeles arbutifolia - Toyon
Symphoricarpos mollis - Snowberry
Pteridium aquilinum - Bracken fern
Rhamnus californica - Coffeeberry
Salvia spathacea - Hummingbird sage
Salvia mellifera - Black sage
Mimulus auranticus - Monkeyflower
Ribes speciosum - Fuchsia-flowered
gooseberry

B. Southern Oak Woodland

(southern woodland phase) - 2.8 acres

The oak-walnut community typically spreads over coast-facing or north-facing slopes with scattered groupings of oaks mixed with occasional walnuts. This threatened community is worthy of conservation and preservation.

Quercus engelmannii - Mesa oak
Juglans californica - California black walnut
Quercus agrifolia - Coast live oak
Rhus integrifolia - Lemonadeberry
Rhus ovata - Sugar sumac
Ceanothus spp. - Ceanothus
Arctostaphylos spp. - Manzanita

C. Interior Woodland

(interior oak woodland transition to desert areas - eastern SLO County and southern transmontane areas) - 2.5 acres

This community has a richness of vegetation whose by-products offered ethnobotanical importance to Native Californians.

Quercus wislizenii - Interior live oak
Quercus turbinella - Desert scrub oak
Quercus douglasii - Blue oak
Aesculus californica - California buckeye
Pinus sabiniana - Gray pine
Eriogonum fasciculatum - Buckwheat
Adenostema fasciculata - Chamise
Ceanothus spp. - Ceanothus
Arctostaphylos spp. - Manzanita

2. Mixed Evergreen Forest

A. Redwood Grove

2.6 acres

The northern coastal forest is dominated by the grand Coast Redwood, well adapted to coastal fog. Consistent moisture levels determine the understory that prefers damp, rich,

organic soil conditions.

Sequoia sempervirens - Coast redwood
Oxalis oregana - Rewood sorrel
Aralia californica - Spikenard
Asarum caudatum - Wild-ginger
Woodwardia fimbriata - Giant chain fern
Polystichum munitum - Western
sword fern
Rubus parviflorus - Thimbleberry
Gaultheria shallon - Salal

B. Evergreen Forest

(southern phase) - 3.0 acres

The typical irregular canopy of this forest has features displaying the grandness associated with the California forest flora: long-needled pines, massive cones and a rich mixture of primarily needle and broad leaf evergreens.

Pseudotsuga macrocarpa - Big-cone fir
Pinus coulteri - Coulteri pine
Quercus agrifolia - Coast live oak
Quercus chrysolepis - Canyon live oak
Pinus ponderosa - Ponderosa pine
Arctostaphylos glauca - Big-berry
manzanita
Acer macrophyllum - Big-leaved maple

C. Evergreen Forest

(central phase) - 3.0 acres

Away from the wet coastal mountain, is the dryer inland forest, more open in character where the sun reaches the continuous cover of broad-leaved trees and shrubs below.

Lithocarpus densiflora - Tanbark oak
Umbellularia californica - California bay-laurel
Arbutus menziesii - Madrone
Acer macrophyllum - Big-leaved maple
Quercus kelloggii - Black oak
Chrysolepis chrysophylla
Quercus chrysolepis
Rubus ursinus - Pacific Dewberry
Vaccinium ovatum - Huckleberry

3. Living Fence/Maquis

6.2 acres

California native vegetation offers many alternatives for providing natural screens and barriers.

Myrica californica - Pacific wax myrtle
Prunus lyonii - Catalina cherry
Rhus integrifolia - Lemonadeberry
Heteromeles arbutifolia - Toyon
Rhamnus californica 'Eve Case' - Coffeeberry
Berberis aquifolium - Oregon grape
Berberis nevinii - Nevin's barberry

Ceanothus spp. - Ceanothus
Garrya elliptica - Silk tassel bush

4. Coastal Scrub

A. Southern phase

(Existing on site) - 2.6 acres

This open community is dominated by low-growing evergreen and drought resistant deciduous shrubs two or three feet in height. Leaves are broad or narrow, soft to the touch, and often have showy flowers that attract a wide variety of pollinating insects.

Artemisia californica - Coastal sagebrush
Salvia mellifera - Black sage
Mimulus aurantiacus - Sticky monkeyflower
Lotus scoparius - Deerweed
Baccharis pilularis - Coyote bush
Toxicodendron diversilobum - Poison-oak
Epilobium canum - California fuchsia

B. Northern phase

- 1.6 acres

This dense two-story mosaic is a collection of shrubs, vines, herbs and grasses. Coyote bush dominates the upper story, as the herbs weave a textural layer of groundcover below.

Baccharis pilularis var. consaguinea - Coyote bush
Lupinus arboreus - Tree lupine
Eriophyllum staechadifolium - Coastal golden-yarrow
Gaultheria shallon - Salal
Mimulus aurantiacus - Sticky monkeyflower
Achillea millefolium - Yarrow
Anaphalis margaritacea - Pearly everlasting
Rubus ursinus - Pacific Dewberry
Vaccinium ovatum - Evergreen huckleberry

5. Wetland

0.5 acre

The wetland community is being threatened by development at an astounding rate. The vegetation is in need of conservation as it provides food and nesting sites for Pacific Coast birds and has historically had great biological, economic and cultural value.

Carex spp. - Sedges
Juncus spp. - Rushes
Eleocharis spp. - Spike-rushes
Scirpus spp. - Bulrushes
Typha spp. - Cattails
Mimulus guttatus - Common monkeyflower
Nuphar polysepalum - Yellow pond lily

6. Riparian Forest

2.1 acres

In this generally dry arid climate, streams and riverlets give rise to deciduous trees, shrubs and herbs that are found only along the water courses. The size and distribution of the community is reflected in the size of the water body that supports it.

Populus fremontii - Fremont cottonwood
Salix spp. - Willows
Acer negundo - Box elder
Populus trichocarpa - Black cottonwood
Platanus racemosa - Sycamore
Alnus rubra - Red alder
Rosa californica - Wild rose
Rubus spp. - Blackberry
Clematis spp. - Virgin's bowers
Lonicera spp. - Honeysuckles
Carex spp. - Sedges
Juncus spp. - Rushes
Equisetum spp. - Horsetails
Mimulus spp. - Monkeyflowers

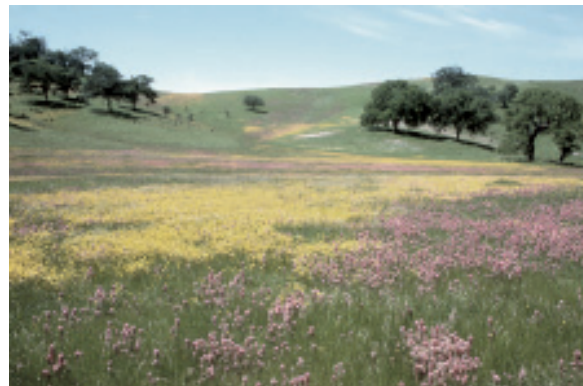
7. Grasslands

A. Valley Grassland

2.5 acres

This community has been greatly reduced in size in the last century as a result of the land being transformed for agricultural purposes. The community is made up of perennial bunch grasses and showy annuals.

Muhlenbergia rigens - Basketgrass
Nassella pulchra - Purple needlegrass
Nassella lepeda - Foothill needlegrass
Sporobolus airoides - Rushgrass
Poa scabrella - Malpais bluegrass
Elymus multisetus - Big squirreltail
Leymus triticoides - Creeping wildrye
Amsinckia spp. - Fiddleneck
Cryptantha spp. - Cryptantha
Gilia spp. - Gilia



Orthocarpus hispidus - Owl's Clover

Lasthenia californica - Goldfields
 Linanthus spp. - Linanthus
 Lupinus spp. - Lupine
 Orthocarpus - Owl's clover
 Phacelia spp. - Phacelia
 Plagiobothrys nothofulvus - Popcorn flower
 Sidalcea spp. - Checkerbloom

Interpretive Station

Interpretive Theme: The Morros and Using the Land - The Chumash Lifeways

Before taking off across the brow of the hill, visitors find a Chumash “encampment” off to the west of the trail. At a nearby tented enclosure, visitors learn that this is a recreated encampment, built as part of a living history re-enactment program.

Botanical Theme: Ethnobotany

The study of the interaction of plants and people, including the influence of plants on human culture is the focus of the interdisciplinary study.

B. Northern Coastal Prairie 1.6 acres

A rich assortment of showy grasses and broad-leaved herbs mark this community. Bunch grasses are interspersed with spring color from flowering annuals, while a medley of textures is striking year round.

Deschampsia holciformis - Hairgrass
 Festuca idahoensis - Idaho fescue
 Festuca rubra - Red fescue
 Koeleria cristata - June grass
 Nassella pulchra - Purple needlegrass
 Danthonia californica - California oatgrass
 Calamagrostis foliosa - Cape Mendocino reedgrass
 Calamagrostis nutkaensis - Reedgrass



Iris douglasiana - Douglas Iris

Iris douglasiana - Douglas iris
 Sisyrinchium bellum - Blue eyed grass
 Grindelia spp. - Gumplant
 Carex spp. - Sedges
 Juncus spp. - Rushes

C. Vernal pool

0.3 acres

This unique habitat is composed of native annuals that are able to survive in shallow basins that form above hardpan soils. In the spring they create a riot of color and upon closer inspection reveal a wealth of species.

Downingia cuspidata - Downingia
 Lasthenia spp. - Lasthenia
 Boisduvalia glabella - Boisduvalia
 Deschampsia danthonioides - Hairgrass
 Callitriche marginata - Water starwort
 Juncus bufonius - Toadrush
 Limnathers douglasii - Meadowfoam
 Mimulus tricolor - Tricolored monkeyflower
 Veronica peregrina - Speedwell

8. Chaparral

A. Mixed Chaparral

4.2 acres

This community is dominated by a dense growth of broad-leaved, evergreen shrubs that are hard, stiff, and twiggy in texture. The sclerophyllous shrubs are generally less than six feet in height and often create a dense impenetrable thicket.

Adenostoma fasciculatum - Chamise
 Arctostaphylos spp. - Manzanita
 Ceanothus spp. - Ceanothus
 Cercocarpus betuloides - Mountain mahogany
 Prunus ilicifolia - Holly-leaved cherry
 Rhamnus crocea - Redberry
 Quercus dumosa - Scrub oak
 Heteromeles arbutifolia - Toyon
 Adenostoma sparsifolium - Red shanks
 Salvia mellifera - Black sage

B. Manzanita Chaparral

2.06 acres

The abundance of manzanita within the chaparral explains the importance of this shrub to the Native Californians. Uses of the berries were widespread from cider to ground meal for flour and bread making.

Arctostaphylos pilosula - Manzanita
 Arctostaphylos obispoensis - Manzanita
 Arctostaphylos luciana - Manzanita
 Arctostaphylos cruzensis - Manzanita
 Arctostaphylos pechoensis - Manzanita

Rhamnus crocea - Redberry
 Prunus ilicifolia - Holly-leaved cherry
 Adenostoma fasciculatum - Chamise
 Heteromeles arbutifolia - Toyon
 Salvia mellifera - Black sage

C. Ceanothus Chaparral
(Blue Chaparral) - 2.4 acres

This diverse group of evergreen shrubs offers a splendid show of predominately blue flower clusters from late winter to late spring depending on the species. The combination of broad-leaved evergreens provides a textural fusion that is unique to the California landscape.

Ceanothus foliosus - Ceanothus
 Ceanothus impressus - Ceanothus
 Ceanothus papillosus - Ceanothus
 Ceanothus griseus - Ceanothus
 Rhamnus crocea - Redberry
 Quercus dumosa - Scrub oak
 Prunus ilicifolia - Holly-leaved cherry
 Fremontodendron spp. - Flannel bush
 Salvia mellifera - Black sage

9. Sycamore Glen

1.4 acres

A portrait of the riparian woodland is displayed along the ravine where water tables are the highest. Here, the majestic species are allowed to line the banks within a park-like setting.

Platanus racemosa - Sycamore
 Rhamnus californica - Coffeeberry
 Quercus agrifolia - Coast live oak
 Quercus chrysolepis - Canyon live oak
 Carex spp. - Sedges
 Ribes sanguineum glutinosum - Flowering current
 Ribes speciosum - Fuchsia-flowered gooseberry
 Calycanthus occidentalis - Western spice bush

10. Agave-Yucca Rise

1.5 acres

In the southern part of the state, succulent species are an important part of the vegetative cover. Some species provide a dramatic effect from a distance while others offer delicate intricacies upon close inspection.

Agave spp.
 Dudleya spp.
 Agave shawii
 Opuntia littoralis
 Opuntia oricola
 Adenostoma sparsifolium

MEDITERRANEAN BASIN (MB)

TOTAL: 11.5 acres

1. Mediterranean Oasis

1.8 acres

Silhouettes of stately palms against the sky will serve as a beacon for the Mediterranean Basin plantings. A series of pools linked by a meandering stream will provide visitors tranquil refuge from the hot sun.

- a. Phoenix canariensis - Canary Island Palm (primary species)
 Chamaerops humilis - Fan Palm
 Phoenix theophrasti - Mediterranean Phoenix Palm
- b. Platanus orientalis - Oriental Sycamore (secondary species)



Alhambra, Granada, Spain

Interpretive Station

Interpretive Theme: Human Impacts - Past, Present & Future

Moving higher up the slope, visitors wander among a “true” mediterranean landscape, with its distant views and sunny, grassy slopes. In a small stucco building full of pastel colors and sunlight, the topic under discussion is reforestation, land restoration and reclamation.

Botanical Theme: Plant species survivability

Understanding how plant species survive the test of time offers insights into the history of native plants of the Mediterranean Basin and their ability to survive thousands of years of development and human impact.

2. Canary Island Crest

2.5 acres

This area offers an opportunity to display the wealth of vegetation that comes from this small isolated area in the Atlantic Ocean.

Aeonium arboreum
A. helichrysum
A. tabuliforme
A. manriqueorum
Agyranthemum
Dracaena draco
Echium wildpretii
E. simplex
E. pininiana
Euphorbia aphylla
E. atropurpurea
E. canariensis
E. handiensis
E. regis-jubae
Geranium canariensis
Limonium brassicifolium
L. macrophyllum



Echium wildpretii

3. Living Fence / Maquis

1.7 acres

Laurus nobilis - Bay Laurel
Nerium oleander
Olea europea - Olive Tree
Pinus canariensis - Canary Island Pine
Pinus pinea - Italian Stone Pine

4. Mediterranean Slope

5.5 acres

The hillside terraces remind visitors of the important history and origin of many familiar plants we value for their aesthetic and economic contributions.

Culinary Herbs

Salvia spp.
Lavendula spp.
Rosmarinus officianalis
Laurus nobilis
Achillea spp.
Teucrium spp.
Thymus spp.
Santolina spp.
Allium spp.

Trees and Shrubs of Economic Importance

Capparis spinosa - Caper
Certonia siliqua - Carob Tree
Quercus suber - Cork Oak
Olea europea - Olive Tree

Trees of Ornamental Value

Cedrus libani
C. atlantica
Pinus spp.
Fagus sylvatica
Quercus robur

Bulbs of Ornamental Value

Narcissus spp.
Iris spp.
Paeonia broteri
Tulipa saxatilis

Late-blooming Perennials

Dianthus caryophyllus
Delphinium gracile
Bupleurum fruticosum
Verbascum sinuatum
Pancratium maritimum
Cyclamen spp.

Southern Hemisphere

CHILE (CH)

TOTAL: 20.43 Acres

1. Araucaria Crest

2.85 acres

The forest's location accentuates the drama of the form and character of this tree species.

Varying heights and ages will provide an impressive canopy, with a seasonal display of *Alstroemerias* below.



Araucaria araucana

- a. *Araucaria araucana* (primary species)
- b. *Alstroemeria aurantiaca* (understory)
 - A. haemantha*
 - A. ligtu*
 - A. pulchra*
 - Adesmia emarginata*
 - Pernettya pumila*
 - Senecio julietii*

Interpretive Station

Interpretive Theme: - Botanical Balance

This smaller station is located at the juncture of Auracaria Crest and the "Equator." It is devoted to understanding the unique attributes and adaptations of Chilean plants and their ecosystems, with a special emphasis on the interaction of the Humboldt Current with the Equator.

Botanical Theme - Adaptation and Change

Plant migration maps and botanical genealogies trace the rise and fall of plant communities as they are influenced by world climate as well as world markets. Understanding the concept of plant communities leads to the exploration of distribution patterns and ecological relationships.

2. Southern Beech Forest

5.0 acres

This hillside forest provides year-round interest with a textural display of leaf variation, mottled bark, a rich understory and splendid fall color amidst the contrast of rocky outcroppings.

- a. *Nothofagus obliqua* (primary species)
 - N. obliqua* var. *macrocarpa*
 - N. dombeyi*
 - N. glauca*
 - N. alpina*
 - Crinodendron patagua*
 - Cryptocarya alba*
 - Quillaja saponaria*
 - Schinus montanus*
- b. *Chusquea coleu* (understory)
 - Aristolelia chilensis*
 - Gaultheria phyllyreaefolia*
 - Lomatia dentata*
 - L. hirsuta*

3. Chilean Palm Grove

0.7 acre

The palm grove offers a striking backdrop to the Amphitheater with the strong columnar trunks of various sizes providing shade and drama throughout the year.

- a. *Jubaea chilensis* (primary species)
 - Lithrea caustica*
- b. *Colliguaja odorifera* (understory)
 - Schinus polygamus*
 - Baccharis linearis*
 - Chusquea cumingii*
 - Peumus boldus*

4. Coastal Matorral

6.0 acres

This representative community is found throughout the coastal terraces and foothills of Chile. In spring, it offers a layered herbaceous floral display while its framework of woody shrubs provides structure through the seasons.

- Adesmia microphylla*

Cassia coquimbensis
 Bahia ambrosioides
 Flourensia thurifera
 Lobelia polyphylla
 Proustia cuneifolia
 Fuchsia lycioides
 Ophryosporus triangularis
 Stipa plumosa
 Trichocereus chilensis
 T. coquimbana
 Opuntia miquelii



Trichocereus chilensis

5. Living Fence / Maquis

1.7 acres

Many plants from Chile offer functional qualities for screen barriers while providing textural contrast and seasonal color. These shrubs are sure to attract both birds and insect pollinators for added interest.

Aristotelia chilensis
 Azara integrifolia
 A. microphylla
 A. lanceolata
 Buddleia globosa
 Escallonia pulverulenta
 E. rubra
 Fuchsia magellanica
 F. lycioides

6. Puya Palisades

1.16 acre

This signature planting merits its own area to show off a variety of leaf forms and the species' ability to colonize. The floral display of pink, purple and red is a color fiesta a visitor is not apt to forget.

Puya chilensis
 P. berteroniana
 P. venusta
 P. violacea



Chilean wildflowers

Interpretive Station

Interpretive Theme: Ecological Imperialism

This station is situated on the far side of the arroyo within the Puya Palisades area. Its emphasis is on the nature of the cultural exchanges that occurred between Chile and Europe which led to wholesale changes in Chilean ecosystems that continue today.

Botanical Theme: Rare and Endangered Plant Species

Identifying the impacts of cultural intervention on the environment provides an opportunity to explore the needs for developing seed banks, germ plasma repositories and other resources in order to maintain the biodiversity that is critical for ecosystem survival.

7. Chilean Arroyo

1.02 acres

The ephemeral stream provides a riparian community of plants well adapted to streams of coastal regions in Chile. The plants display the diversity of leaf forms and morphological adaptations to wet/dry conditions.

- a. Gunnera tinctoria (primary species)
 Chusquea quila
 Juncus procerus
 Luma apiculata
- b. Blepharocalyx diverisifolia (secondary species)
 Drimys winteri
 Persea lingue

8. Chilean Mixed Forest

2.0 acres

The bosque of woody species is representative of the diversity of tree species within Chile. The dominance of evergreen species offers

shade and windscreen to the surrounding areas.

- a. Austrocedrus chilensis (primary species)
 - Abutilon vitifolium
 - Azara petiolaris
 - A. microphylla
 - Avena barbata
 - Crenodendron patagua
 - Gevuina avellana
 - Quillaja saponaria



Nothofagus hillside

- b. Lomatia hirsuta (understory)
 - Maytenus boaria
 - Aristolitelia chilensis
 - Chusquea coleu
 - Colletia spinosa
 - Fragaria chiloensis

SOUTH AFRICA (SA)

TOTAL: 7.63 acres

1. Cape Succulents

2.0 acres

The Cape is home to the richest succulent flora in the world. This garden displays the diversity of species and morphological characteristics of these unique plants.

- a. Cyphostemma jutae
- b. Kniphofia uvaria
- c. Aloe arborescens
- A. plicatilis

- A. striata
- A. nobilis
- A. candelabrum
- d. Crassulas
- e. Ice Plants:
 - Lampranthus
 - Maleophora
 - Carpobrotus
 - Drosanthemum
- f. Portulacaria afra
- g. Euphorbia bupleurifolia
 - E. bubalina
 - E. cereiformis

Interpretive Station

Interpretive Theme: Pollination - The Process of Life

This station is located immediately off of the main pathway that wanders through the Equatorial Maquis. Its emphasis is on the exploration of the various ways in which mediterranean plants are pollinated with an emphasis on many of the unique insect/plant associations that occur in South Africa.

Botanical Theme: A Study of Flowers

The study of flower anatomy offers an exploration of color, scent and structure as a means for seed production and species survival.

2. Floral Carpet of the Cape

3.46 acres

"The Cape Floral Kingdom owes its status to the very high numbers of species, genera and families endemic to it" (**Fynbos** by Cowling & Richardson).

- Babiana
- Cyrtanthus
- Dimorphotheca
- Gazanias
- Geissorhiza rochensis
- Gladiolus
- Gorteria
- Haemanthus
- Helichrysum
- Heliophila
- Homeria
- Lachenalia
- Ornithogalum miniatum
- Osteospermum barberae



Fynbos

Oxalis
Sparaxis
Tritonia
Ursinia
Watsonia

3. Fynbos Tapestry

2.17 acres

The beauty of the tapestry is most valued by close viewing of the plants that weave the diverse vegetation into a shrubland of varied shapes and sizes.

Aulax
Erica baccans
E. capensis
E. cruenta
E. decipiens
Leucadendron
Leucospermum nutans
L. reflexum
Protea compacta
P. cynaroides
P. scolymocephala
P. pulchella
Restio

WESTERN AND SOUTHWESTERN
AUSTRALIA (AU)

TOTAL: 12.53 acres

1. Protean Family Garden

2.3 acres

The garden displays and demonstrates the Australian genera of this exotic plant family, contrasting and comparing leaf and flower morphology and form.

Banksia ashbyi
B. robur
B. coccinea
B. media

Hakea elliptica
H. varea
H. marginata
Grevillea bipinnatifida
G. eriostachya
G. wilsonii

Interpretive Station

Interpretive Theme: Migrations

Farther along the trail, visitors encounter an anthropological dig site. Records of extinct Australian plants plus threatened or endangered plants can be found within layers of the dig.

Interpretive Theme: Comparative Flora from Southern Hemisphere Regions

Studying taxonomic similarities between mediterranean plants of the Southern Hemisphere tells the story of Gondwana and the continental drift that dispersed plants throughout the continents as we know them.

2. Kwongan

3.2 acres

Small groupings of Eucalyptus woodland occur on lower ground with thickets of sclerophyllous shrubs and woody vines covering the ground plane to form a signature landscape of the winter rain and dry summer cycle of Western Australia.

Trees

Eucalyptus cladocalyx
E. megacarpa
Acacia cowleana
Melaleuca huegelii

Understory

Anigozanthos manglesii - Kangaroo Paw
Boronia heterophylla .
Callistemon macropunctatus



Eucalyptus macrocarpa

Hardenbergia
Hibbertia
Kennedia

3. Grass Tree Slope

2 acres

This dramatic display is not only visually memorable but identifies a highly evolved member of the sclerophyll community. Seasonal color from an herbaceous floral understory will add interest throughout the year.

- a. Xanthorrhoea quadrangulata - Grass Tree (primary species)
- b. Cephalopterum (understory)
Helipterum



Xanthorrhoea quadrangulata - Grass Tree

Interpretive Station

Interpretive Theme: Science & Plants

Furnishings include aboriginal art of plants from *dream time*, contemporary fine art plant photography, dried plant specimens, preserved specimens of huge spiders, beetles and poisonous snakes, and a collection of small commercial products made from Australian plants.

Botanical Theme: Plant Adaptations to Mediterranean Climates

How do plants withstand the sun, heat and drought periods of the mediterranean cli-

mate? Here we begin an exploration of the relationships between plant form and plant survivability.

4. Karri, Marri and Jarrah Forest

3.6 acres

These majestic giants rank among the tallest trees in the world rivaling the California redwoods. A walk amidst the stately groves uncovers the detail of the mottled and dappled colored bark that ranges from a smooth silky surface to a rough flaking texture.

Eucalyptus diversifolia - Karri gum
E. marginata - Jarrah gum
E. calophylla - Marri gum
Melaleuca ericifolia - Paperbark

5. Living Fence / Maquis

1.4 acres

Acacia spp.
Hakea suaveolens
Melaleuca cordata
Agonis flexuosa
Casuarina cristata
C. corniculata
C. campestri
Grevillea spp.

ORCHARD, VINEYARD AND ENTRY
PLANTINGS

TOTAL: 11.75 acres

1. Mediterranean Muse and Wildflower Garden (plantings along Highway 1)

An orchard arrangement of plants of economic importance is displayed along the entry slope of Highway One. A naturalized sweep of flowering annuals inter-planted with representative species of each of the five mediterranean regions identifies the Botanical Garden location from any direction.

Orchard and Vineyard Crops:

Juglans - Walnuts
Malus - Apples
Olea europaea - Olive
Pistacia vera - Pistachio
Pinus pinea - Italian Stone Pine
Vitis vinifera - Grapes



Vitis vinifera - Grapes

Naturalized Wildflowers and Signature plants from Mediterranean regions

Australia

- Banksia robur
- Xanthorrhoea quadrangulata - Grass Tree

California

- Lupinus arboreus - Tree lupine
- Epilobium canum - California fuchsia

Chile

- Trichocereus chilensis - Chilean cacti
- Stipa plumosa

Mediterranean Basin

- Echium wildpretii
- Euphorbia characias

South African Cape Province

- Cyphostemma jutae
- Aloe arborescens

2. Entry Road Allee - 2400 linear feet

A sentinel allee of Italian Cypress intermixed with a broad-leaf evergreen canopy lines the entry drive directing visitors to parking and the Visitor Center.

- Cupressus sempervirens - Italian Cypress
- Pinus canariensis - Canary Island Pine
- Pinus pinea - Italian Stone Pine
- Eucalyptus citriodora - Lemon-scented Eucalyptus
- Eucalyptus maculata - Spotted Gum
- Lyonothamnus floribundus var. asplenifolius - Ironwood

3. Gardens of Exploration

Groupings of demonstration gardens surround the Visitor Center, reflecting the important role of adaptation within the mediterranean climate regions. Five general areas of interpretation on adaptation have been identified for exploration: Horticultural Therapy, Ecology, Biology, Cultural Influences, and Horticultural Opportunities.

A. Horticultural Therapy

Human nature / green nature

1.0 acre

- Horticulture Therapy
- Sensory Garden
- Allergy Garden

B. Ecology

2.24 acres

- Soil/mulch studies
- Rare and endangered species
- Fire influences
- Food chain
- Plant adaptations
- Plant communities

C. Biology

2.2 acres

- Plants with underground storage structures: bulbs, corms, rhizomes, stolons, tubers, tuberous roots etc.
- Sclerophyllous adaptations to climate conditions
- Water storage and conservation
- Pollination-fertilization
- Gondwana - plant continental distribution

D. Cultural Influences

1.0 acre

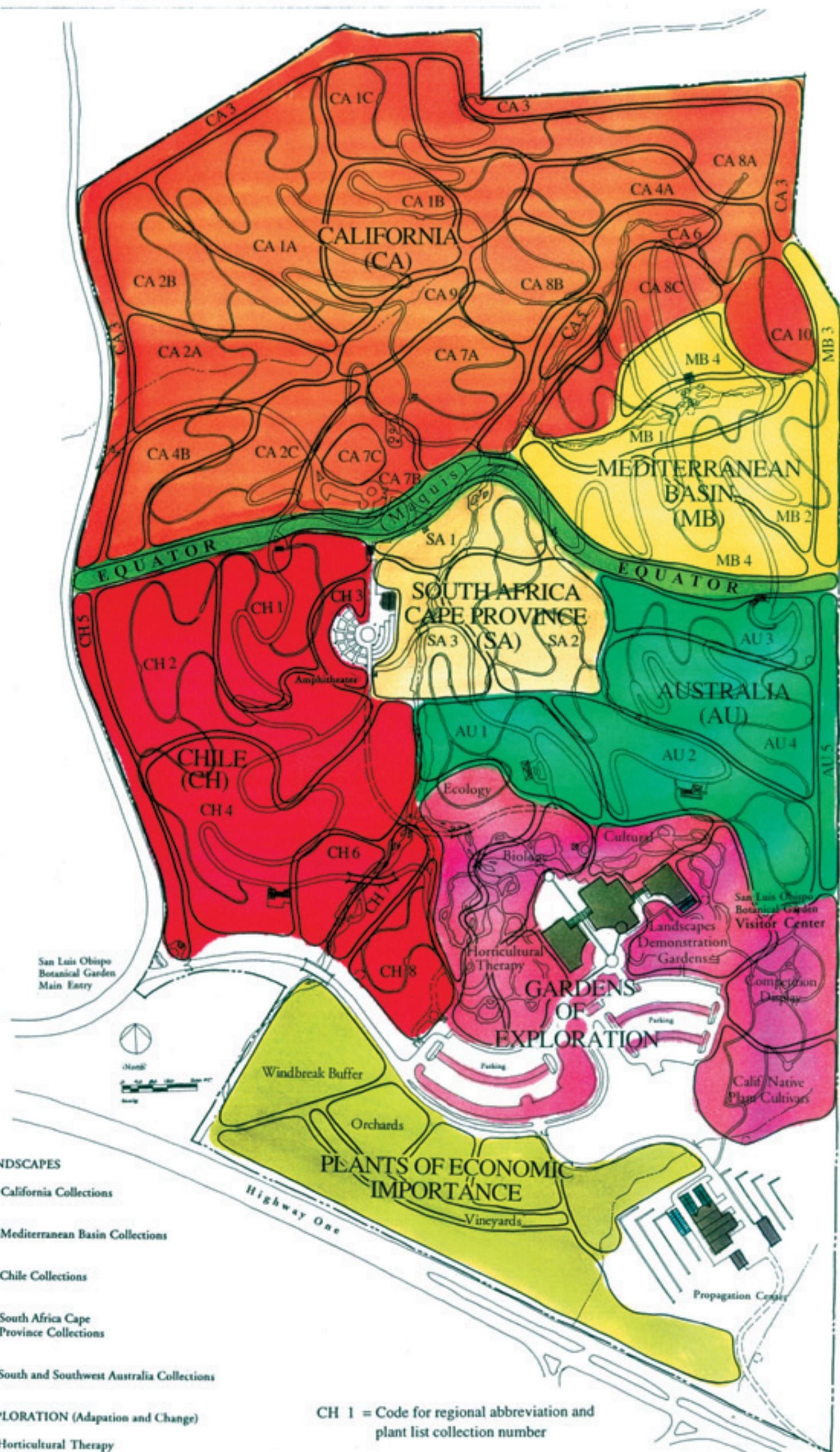
- Carrying capacity of land
- Land management and stewardship practices
- Agricultural influences
- Economically important plants
- Ethnobotanical display
- Water conservation

E. Landscape Demonstration Gardens

6.7 acres

1. Home Demonstration Gardens
 - Perennial border
 - Landscaping design solutions: edges, boundaries, screens, backdrop, form, etc.
 - Butterfly Garden
 - Gardening for Wildlife
 - Weed identification
 - Garden practices: cultivation of soil, planting techniques, pruning, propagating, mulching
 - Horticultural introductions - trial plots
 - Pesticide and fertilizer studies
 - Groundcover trials
2. California Native Plant Cultivars
3. Garden Design Competition Displays





- Legend**
- SIGNATURE LANDSCAPES**
- California Collections
 - Mediterranean Basin Collections
 - Chile Collections
 - South Africa Cape Province Collections
 - South and Southwest Australia Collections

- GARDENS OF EXPLORATION (Adaptation and Change)**
- Horticultural Therapy
 - Biology
 - Ecology
 - Cultural
 - Landscapes Demonstration Gardens
 - Equator (Maquis)
 - PLANTS OF ECONOMIC IMPORTANCE

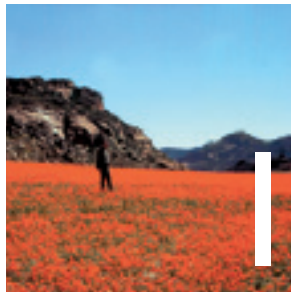
CH 1 = Code for regional abbreviation and plant list collection number

Figure 15
PLANT COLLECTIONS PLAN
 Site Master Plan
 San Luis Obispo Botanical Garden



- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
- Preferred Plan Summary
- Visitor Experience & Interpretive Plan
- Mediterranean Plant Collections
- **Implementation Strategies**
- Staffing & Operations
- Appendices

- A. Capital Improvement Estimate of Probable Construction Costs
- B. Project Phasing



IMPLEMENTATION STRATEGIES

The heart of creativity
is not genius or intellect,
but courage.
It's the willingness to risk the tried and true,
to commit in the faces of unpredictable outcomes,
to lead when
the solution is uncertain
or unknown.

— The Portico Group, 1995

9. Implementation Strategies

Project Costs

A detailed budget estimate has been prepared for the improvements proposed in the Master Plan. These improvements are summarized in the list below. The budgets reflect the Master Plan's balance of fiscal prudence and bold new approaches to creating a new, world class Botanical Garden.

The proposed capital improvements will use existing utilities systems wherever possible for the new development. The Master Plan was designed to work with the existing dramatic site topography, to minimize site disturbance, grading costs, ex-

pensive roads and utilities, and steep pedestrian access routes.

A number of new buildings are proposed by the Master Plan: the Garden Visitor Center, Orientation and Exhibit Gallery, Amphitheater, Education and Research Building, and Propagation Center. These facilities will provide the visitor conveniences and support facilities necessary for San Luis Obispo Botanical Garden to grow into an internationally renowned facility.

I. Garden Visitor Center:

Administration Building	\$355,000
Orientation and Exhibit Gallery & Visitor Services	\$1,653,950
Botanical Garden Shops	\$176,900
Mediterranean Garden Terrace	\$268,400

II. Other Buildings:

Education and Research Building	\$814,875
Propagation Center & Collections Support Facility	\$980,500
Amphitheater	\$331,900

III. Site Work:

Roads and Circulation	\$1,668,743
Water Features	\$223,750

IV. Landscape Signature Gardens and Collections:

California Signature Garden	\$1,041,000
4 Mediterranean Signature Gardens	\$3,041,136
Entry Display Grove and Collections	\$272,500
Open Space & Buffer Areas	\$155,000
Gardens of Exploration, California Cultivars and Garden Competitions	\$1,239,000
Interpretive Signs & Plant Labeling	\$225,000
Major Tree Groves in Signature Gardens	\$100,000
Parking Lot with Horticultural Displays	\$70,000
Agricultural Display Gardens	\$217,500

<u>V. Utilities:</u>	\$892,162
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<u>VI. Interpretation Stations:</u>	\$836,000
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<u>VII. Site Furnishings:</u>	\$291,950
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Subtotal (maximum allowable construction costs)	\$14,855,266
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Design & Construction Contingency @ 15%	\$2,228,290
Surveys, Environmental Permits & Studies @ 3%	\$445,658
Design Fees	\$1,782,632

Total Costs in 1997	\$19,311,846
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1998 Escalation Factor @ 3%	\$579,356
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Total Costs in 1998	\$19,891,202
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Development Phasing:

The phasing and implementation of the Botanical Garden will be influenced by three principal factors: the attractiveness of individual improvements to donors, granting agencies and the internal wishes of the Friends of the San Luis Obispo Botanical Garden and Board of Directors. However, several of the improvements must be developed in sequence to initiate a logical and cost effective implementation of the Master Plan. Detailed cost breakdowns are located in the Appendix of this report.

To ensure that fund raising and development occurs as part of a strategic implementation plan, components of the Master Plan development are broken into five separate phases. Each capital project phase is aggregated into funding and construction amounts ranging from \$2.0 million to \$5.6 million. The first three phases place the highest priority on those improvements that establish the Botanical Garden's sense of place, by establishing plant collections and firmly establishing the Garden Visitor Center and Exploratory Gardens as the core of the Botanical Garden.

Phase One

To market the Botanic Garden as a destination visitor attraction, the initial phase of development needs to include several components to be successful, including: entry road, parking and arrival court, garden displays and collections, visitor services, orientation and exhibit gallery, gardens of exploration, a portion of the garden shop, infrastructure, nursery and propagation facilities.

The estimated construction cost to implement phase one is \$5,856,294.

Phase Two

The second phase of fund raising and development will create the major components of the Master Plan and will increase total visitation capacity as well as length of visits resulting in increased revenues. Improvements will include the Amphitheater, completing the Garden Gift Shop and Plant Sales facility, Mediterranean Garden Terrace, relocating and expanding the Propagation Center and signa-

ture gardens, displays and exhibits, roads, parking and pedestrian circulation, and site interpretive stations. This phase of construction will require additional development of at least portions of utility systems including electrical, water and sewage.

The estimated construction cost to implement phase two is \$4,307,859.

Phase Three

The third phase of development includes expanding the Propagation Center, parking, roads and visitor trails, Administrative Building, garden collections, utilities, site furnishings and outdoor interpretive wayside stations.

The estimated construction cost to implement phase three is \$3,779,777.

Phase Four

As the plant collection grows, the Propagation Center will need to be expanded to ensure continued excellence.

The estimated construction cost to implement phase four is \$3,770,537.

Phase Five

The final phase of development will include expansion of the Signature Gardens, demonstration areas, propagation facilities and outdoor interpretive stations.

The estimated construction cost to implement phase five is \$2,176,727.

The estimated investment for construction and related costs for all five phases is \$19.8 million.



Eschscholzia californica





- Executive Summary
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- Appendices



STAFFING & OPERATIONS

“During the few years allotted to each of us, we are the guardians of the earth - we are the custodians of our heritage and of the future.”

— James Michener

10. Staffing & Operations

Introduction

For a successful Botanical Garden, it is essential that staffing and facility operations address the financial consequences of implementing and operating the master plan. It is vital to have enough staff to maintain and improve the appearance and health of the gardens and sustain the longevity of the collections. This section addresses the maintenance requirements at full build-out of the project development.

Projections for staffing and operations should be considered representative of the costs of implementing the master plan. Botanical Garden staff will need to refine staffing needs and budget projections as the plan is implemented, using current knowledge of employee skill levels, facility needs, and volunteer and donor programs, as well as changes in financial and organizational factors.

Staffing and Budget Considerations

This budget analysis focuses on the time when the improvements are completed, thus providing an illustration of the maintenance and operating costs. The budget goal is to cover maintenance costs through anticipated revenues (See Table C, p.56). For the purposes of this analysis, the Botanical Garden improvements are broken down into the staffing categories based on five garden maintenance zones (See Table A, p.54), each representing a different level of maintenance commitment.

The level of staff required to maintain and operate the facility will increase as the Garden is developed. The following outline defines each zone of the Garden by type, size and tasks required and full time equivalents (FTE's) per acre.

General maintenance work tasks include the following:

- ❑ Tree care: water, prune and mulch
- ❑ Shrub bed maintenance: weed, prune, mulch, and amend soil

- ❑ Planters: install seasonal plants in containers and pots
- ❑ Hard surfaces: sweep pavement, litter control and path maintenance
- ❑ Irrigation system: annual maintenance check and replacement parts
- ❑ Pest management: insects, animals, birds
- ❑ Annual requirements: plant additions and removals
- ❑ Invasive species control: remove weeds and undesirable exotic plants
- ❑ Utility systems: regular maintenance for water, telephone, and electrical systems

Zone 1: Buildings, Amphitheater & Parking Lot:

Estimated FTE per acre: 0.75

This zone has the highest concentration of visitor use in the Botanic Garden. Their first and last memories of the garden displays and facilities are based on the visitors' visual experience as they enter and leave the Garden facilities. This area requires the greatest amount of care to maintain an immaculate and showy garden display and collection for the visitors.

Zone 2: Gardens of Exploration, Landscape Demonstration Gardens:

Estimated FTE per acre: 0.50

The Demonstration and Gardens of Exploration are located around the Garden Visitor Center. This area consists of dense planting beds with orchard plantings, vineyard, trees, shrubs, groundcovers, site furnishings, structures, water features, interpretive exhibits and signage, and visitor circulation paths and requires a high level of maintenance.

Zone 3: Signature Garden Landscapes:

Estimated FTE per acre: 0.10

The Signature Gardens consist of individual specimens and semi-woody areas of trees,

shrubs, ground covers, grasses and forbs from the mediterranean regions including: the European Mediterranean Basin, Central Chile, South Africa Cape Province, South and South-west Australia and the Central Coast of California. The planting displays, including the one between Highway One and the entry road, will emphasize large areas of informal plant specimens rather than highly formal, landscaped planting beds.

Zone 4: California Collections

Estimated FTE per acre: 0.05

The Central Coast of California will include naturalized areas of chaparral, native meadow

grasses and wildflowers, shrubs, trees and riparian vegetation areas. Management practices will include no mowing and may include controlled use of fire to sustain a healthy and viable plant community.

Based on our calculations for staff amounts, we estimate that a staff of 21.0 Full Time Equivalent Employees (FTE's) will be needed to operate the facility at total build-out. This translates to 7 acres per maintenance FTE. Botanical Garden specialists, including plant curators, horticulturists and propagators are specialists needed to run a successful facility.

TABLE A

Collection and Ground Staffing Requirements (at phase 5 full build-out)

<i>Zone</i>	<i>Maintenance Category</i>	<i>Description</i>	<i>Number Acres</i>	<i>Level (FTE/Ac)</i>	<i>Staff FTE's</i>
1	Intensively Managed	Visitor Garden Center	5	0.75	3.8
2	Special Collections	Exploratory & Demonstration	13	0.5	6.5
3	Core Collections	Signature Landscapes	83	0.1	8.3
4	Naturalized	California	48	0.05	2.4
TOTAL (Acres and FTE's)			150		21.0



Namaqualand daisies

Other Administration and Program Staffing

An estimate of administrative staff requirements and operations budget was prepared to illustrate the staff size and cost to effectively operate the Botanical Garden in the future. The staffing needs will include a number of functions such as administration, marketing and fundraising, membership, programs, ticketing, retail, etc. In particular, hiring a director and fund raiser in the early stages of development will be important to provide leadership, to seek donations and expand membership to generate capital funds and operating revenues.

The following Table B projects the number of staff required to successfully operate the Botanical Garden.

TABLE B
Phase 5 Projected Staffing and Budget Analysis

<i>Staff Position Description</i>	<i>FTE</i>	Projected Staff & Budget	
		<i>Salary Level</i>	<i>Salary Amount</i>
<i>Administrative Staff</i>			
Garden Director	1.0	\$90,000	\$90,000
Development Officer	1.0	\$60,000	\$60,000
Marketing & Public Relations			
Development (fundraising)	0.5	\$20,000	\$20,000
Membership (recruitment/retention)	0.5	\$20,000	\$20,000
Financial Support	1.0	\$50,000	\$50,000
Support/Clerical/Reception	2.0	\$25,000	\$50,000
Retail Staff	3.0	\$18,000	\$54,000
Food Concession	4.0	\$18,000	\$72,000
1.0 Subtotal	14.0		\$466,000
<i>Program Staff</i>			
Education Director	1.0	\$45,000	\$45,000
Educational Programming Staff	2.0	\$35,000	\$70,000
Docent & Volunteer Coordinator	1.0	\$30,000	\$30,000
2.0 Subtotal	4.0		\$100,000
<i>Collections, Maintenance & Operation Staff</i>			
Specialist/Horticulturists	2.0	\$45,000	\$90,000
Supervisor	1.0	\$40,000	\$40,000
Maintenance/Grounds & Collections	12.0	\$22,000	\$264,000
Security	2.0	\$25,000	\$50,000
Seasonal Grounds	2.0	\$20,000	\$40,000
Propagator	2.0	\$25,000	\$50,000
3.0 Subtotal	21.0		\$534,000
1.0 - 3.0 TOTAL	39.0		\$1,100,000

Preliminary Operating Budget

The estimated project operating budget was calculated based on a series of assumptions and was checked against other comparable facilities. Marketing costs are included to let the public know what is happening at the Botanical Garden. The revenue projections at the completion of Phase V amount to \$2,869,000 per year. Revenues are adequate to match operating costs for the budget amount. See Table C for a more detailed breakdown of revenue and expenses.

For the purpose of this analysis, the projected visitation is 250,000 visitors per year and an endowment of \$7,000,000 in an interest bearing account at 6.0 percent. Admission pricing is projected at \$6.50 per person entrance fee. Note: the pro forma assumes no carry forward to future periods of unspent revenue or interest.

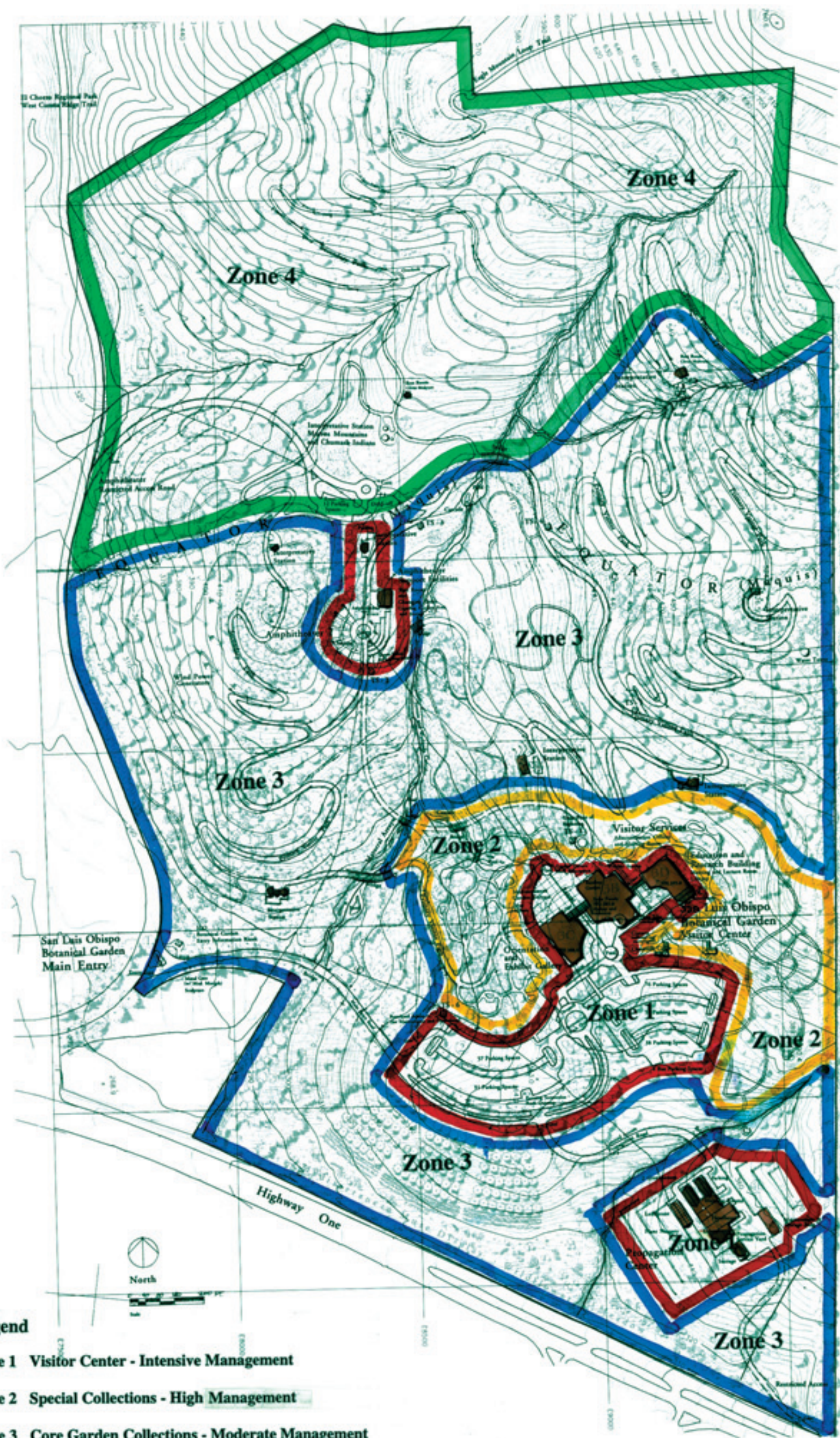
TABLE C
Revenue and Expense Projections

Pro Forma Operating Projections at Buildout:	Projected Amount
REVENUE	
Membership Fees Per Capita Revenue 5,000 members @ \$35.00 annual dues	\$175,000
Admission Fees 220,000 visitors per year @ \$6.50 person	\$1,430,000
Snack Bar Concession Income	\$275,000
Large Visitor Center event fees	\$12,000
Small Visitor Center event fees	\$4,000
Grants/Contributions	\$100,000
Donations	\$60,000
Giftshop Retail Sales	\$275,000
Events Income	\$50,000
Amphitheater Income	\$18,000
Education Fees	\$25,000
Research Contracts	\$25,000
<hr/>	
Subtotal	\$2,449,000
Endowment Interest Income	\$420,000
Total Revenue	\$2,869,000
EXPENSES	
Staff Labor	\$1,100,000
Labor overhead/benefits	\$320,000
Administration & Office Expenses (w/ Publications)	\$214,000
Operating Expenses (garden collection & utilities)	\$420,000
Retail Sales Purchases	\$190,000
Food Service	\$210,000
Maintenance supplies	\$165,000
Grounds Equipment	\$70,000
Marketing	\$180,000
Total Operating Expenses	\$2,869,000

Revenue Assumptions:

1. Projections are based on project total build-out at Phase 5.
2. Total membership at Phase 5 estimated to be 5,000 members.
Membership dues estimated at \$35.00.
3. Snack bar concession estimated at \$1.25 per visitor.
4. Amphitheater rental for major events at \$500.
5. Projected endowment of \$7.0 million at 6.0% annual interest.
6. Revenue and expenses estimated in 1997 dollars.





Legend

- Zone 1** Visitor Center - Intensive Management
- Zone 2** Special Collections - High Management
- Zone 3** Core Garden Collections - Moderate Management
- Zone 4** California Collection - Low Seasonal Management

Figure 16

GARDEN STAFFING PLAN
 Site Master Plan
 San Luis Obispo Botanical Garden



- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
- Preferred Plan Summary
- Visitor Experience & Interpretive Plan
- Mediterranean Plant Collections
- Implementation Strategies
- Staffing & Operations
- **Appendices**



A PPENDIX A: SITE INVENTORY & ANALYSIS SUMMARY

APPENDIX A. SITE ANALYSIS & CONSTRAINT SUMMARY

I. The Natural Environment

A. Geology¹

Lands at the west of the site (Golf Course) have been described as containing six geologic units: three bedrock units (Franciscan melange, graywacke and Cambrian felsite) and three surficial deposits each with soil forming the uppermost portion (colluvium and two ages of alluvium).

- ❑ Alluvium on the garden site appears limited to the southwest corner of the site near the park ballfields.
- ❑ Colluvial deposits would be expected to occur on the site at the base of steep hillsides, and gentler slopes that merge with drainage ways. Surface observations indicate cobbles and larger rock fragments which appear to be unconsolidated in these areas.

Colluvial deposits are generally unsuitable for foundations and would require engineered recompaction.

- ❑ Cambrian felsite occurs in resistant outcrops and is of volcanic origin. Soil derived from this material is generally a silty or clayey sand, and as the site soils tend to be loamy this may be an indication that this bedrock unit is not extensive on the site.
- ❑ Franciscan melange is characterized by highly sheared rock with exotic blocks of harder rock scattered throughout. The matrix is typically graywacke sandstone transformed to claystone. The exotic blocks form outcrops; one such may occur in an obelisk form near the southern end of the site.

The matrix material is marginally suited as fill material due to expansiveness, but is suitable for foundation subgrade.

- ❑ Franciscan graywacke is a sandstone that often forms weathered, relatively rounded outcrops. The sandstones are generally dark green-brown to green-gray. Most of the surface rock on the site noted in field observations appears brown to yellow which suggests that the Franciscan melange may be more prevalent on site than the graywacke.
- ❑ Surficial failure is possibly evident on the lower slopes of the Eagle Rock formation, however, this slide appears ancient and inactive. Further investigation is probably warranted before any construction.

Colluvial deposits can become unstable on slopes over 20 percent. The bedrock units are generally stable.

B. Soils²

¹Envicom Corporation, Final EIR for the El Chorro Golf Course, 1994.

²Soil Conservation Service, Soil Survey for San Luis Obispo County Coastal Part.

Seven soil types occur on the site (see **Map 3-Soils and Hydrology**, p.73). The predominant soils, occurring over the central and easterly portions of the site, are closely related Los Osos loam soils. A small area of clay occurs in the southwest corner of the site. The west-facing slopes along the park are loamy sands/sandy loams.

- ❑ Cropley clay 0 to 2% slopes—deep, moderately well drained on alluvium to 36 inches deep underlain by a calcareous silty clay loam. The profile is neutral in the surface and becomes alkaline as depth increases.
- ❑ Briones-Pismo loamy sands 9-30% slopes—moderately deep and excessively drained soil formed from weathered soft sandstone. The surface layer is 26 inches underlain by pale, loamy sand and sandstone at 32 inches. The profile is slightly to moderately acid.
- ❑ Briones-Tierra complex 15 to 50% slopes—a moderately deep, well-drained soil formed in residual material weathered from sandstone. Typically, the surface layer is gray loamy sand about 26 inches deep, underlain by 6 inches of pale loamy sand. Soft, fractured sandstone is at a depth of about 32 inches. The soil is slightly to medium acid. In the Tierra series the subsoil can have more clay content, where the pH becomes more alkaline as depth increases. Permeability is slow.
- ❑ Los Osos loam 5-9% slopes—a moderately deep, well-drained soil weathered from sandstone or shale. The surface layer is 14 inches underlain by clay or clay loam to about 32 inches. The underlying material is sandy loam to a depth of 39 inches. In some areas a clay loam surface layer exists. Permeability is slow and available water capacity is low or moderate. The clay subsoil restricts the uniform movement of water and penetration of plant roots. Deep rooted grasses penetrating the clay may remain green through June.
- ❑ Los Osos loam 9-15% slopes, 15 to 30% slopes and 30 to 50% slopes—in most respects these soils are the same as above occurring on steeper areas. (Complete soil descriptions included under separate cover.)
- ❑ Lodo clay loam 30 to 50% slopes—a shallow, steep soil, with a dark brown clay loam about 12 inches thick. The soil is underlain by fractured, hard sandstone. Some areas can be gravelly.

C. Hydrology

The site is a smaller sub-basin of a significant watershed draining into Chorro Creek across Highway 1 to the west. The Chorro Creek watershed has been the subject of considerable study in recent years and management programs have been implemented to reduce silt generation which ultimately flows from Chorro Creek to the Morro Bay Estuary about six miles west. The estuary has recently been designated a National Estuary.

- ❑ The site drains to the west to Dairy Creek and to the south under Highway 1 to Camp San Luis. **Map 3-Soils and Hydrology** (p.73) identifies the drainage areas and conveyances present.
- ❑ The site contains at least two springs and general smaller seeps as shown on Map 3 (p.71). The seeps and one spring occur roughly at the same elevation along the hillside.

The upper spring area contains a significant stand of riparian vegetation but does not appear to sustain the same water flow as the lower seep. The actual flow rates of these springs are unknown, although at least the lower seep is known to flow year round.

- ❑ The immediate watershed (60 acres) flowing to the spring/main swale area is expected to produce peak flows of 30 to 50 cfs at the 2 and 10 year storm events. The secondary swale flowing west to the park would carry substantially less storm water. This swale is dry by May in a normal rainfall season.

D. Wildlife³

The analysis in the Golf Course EIR concludes that overall the development of the botanical garden site would not contribute to adverse cumulative impacts on regional wildlife. The EIR notes that loss of grassland habitat would occur.

Development of the garden would be likely to be beneficial to wildlife in general provided certain sensitive species are accommodated and protected on the site. The reason a net benefit would be expected is that 1) significant acreage of native plant communities will be created, 2) overall plant diversity will increase, and by extension, 3) insect, bird, rodent, raptor diversity would increase. Sensitive species include:

- ❑ Red legged frogs (recently listed as threatened by the Federal government) are present in Dairy Creek and are likely to be present in and around the springs. This will constrain any changes contemplated for these areas.
- ❑ California horned lizard (a California Species of Special Concern) probably occurs in dry grassland areas.
- ❑ White tailed kite (protected in California) has been observed in the vicinity and probably forages the grassland. Suitable nesting habitat occurs in the oaks at the north end of the site.
- ❑ Cooper's hawk (a California Species of Special Concern) forages the area but probably does not nest on the site.
- ❑ American badger (a California Species of Special Concern) is probably present on the site and would be a species which may be extirpated with development and human activity.
- ❑ Wildlife movement — The site adjoins prime grassland punctuated by corridors of riparian woodland habitat and oak woodland, extending north and east to the summit of the coastal ranges, an area unlikely to ever develop. Wildlife movement across the site is relatively uninhibited up to Highway 1, which presents a significant barrier. The land uses south and west also constitute barriers.
- ❑ A list of wildlife species probably using the site is listed under separate cover.

E. Vegetation

³Envicom, Final EIR for the El Chorro Golf Course.

- ❑ San Luis Botanical Garden site is located on rolling to steep hillsides that are mostly covered by coastal valley grassland. This grassland is a mixture of introduced and native plants and does support some of California's native bunch grasses which are scattered over the hillsides. Coast live oaks and valley oaks have been planted in places on grassland covered slopes near the drainages.
- ❑ There is a series of three drainages that traverse the site and support riparian and freshwater marsh vegetation. Much of the riparian corridor is dominated by a narrow band of aquatic and semi-aquatic rushes, spike rushes, and sedges; however, there are some scattered trees and shrubs and in places the riparian woodland is well developed. Additional plantings of sycamores have occurred in several areas along the drainages and appear to be doing well.
- ❑ Freshwater marsh vegetation extends up the hillsides from the drainage channels in some places on the site. There are also a couple of small, low areas where water accumulates and is fed by seeps. These areas also support small stands of freshwater marsh vegetation. Species composition of these freshwater wetlands varies from place to place but is mostly comprised of species of rushes, spike rush, and umbrella sedge. A diversity of other species are also found in these wetlands.
- ❑ Coastal scrub communities cover a relatively small portion of the site, but there is a fairly large stand on the steep hillsides in the northeastern portion of the site. Coastal scrub typically occurs on steep, dry, rocky soils most of which are in the northeastern corner of the site. Smaller stands occur in the northwestern and western sections of the site and also along the drainages.
- ❑ Some significant stands of coast live oak woodland occur to the north of the site, but only a small portion of these extend onto the botanical garden site (northwestern corner).
- ❑ There are three species of rare plants on the site. Blochman's dudleya and Club-haired mariposa lily grow next to one another in the northeastern portion of the site near the fence line. Cambrian morning glory occurs in scattered areas of the grassland especially along the drainage in the northwestern portion of the site. These plants should be incorporated into the development of the botanical garden.
- ❑ Rock outcrops are scattered over the site and can be used for special plantings and for illustrations of primary succession. Blochman's dudleya and Club-haired mariposa lily are associated with rocky outcrops on the hillside.
- ❑ Eucalyptus groves should be managed or removed to make way for plantings of native vegetation. One of the largest groves occurs along the main drainage near the southern boundary of the site. These could be removed and a riparian woodland restored in this area.
- ❑ A detailed discussion of the site's vegetation is included under separate cover.

F. Climate

- ❑ The climate of coastal San Luis Obispo County exhibits typical mediterranean climate characteristics, with cool, moist winters and warm, dry summers. The proximity of the ocean assures that the El Chorro Regional Park experiences moderating maritime

influences, which reduce the respective hot and cold summer and winter temperature extremes.

- ❑ The growing season, as measured by days with temperatures above 32 degrees F., is 338 days at San Luis Obispo (elevation 320'), an officially recognized weather element measurement station.
- ❑ The 30 year average precipitation normal at the Cal Poly station is 23.0", and the temperature normal is 70.5 degrees F.
- ❑ Precipitation is seasonally concentrated in the winter months with arid conditions prevailing in the summers. A characteristic feature of the Mediterranean climate type is that the amount of precipitation received annually can be erratic, and periods of extended drought are not unusual.
- ❑ The potential "open pan" evaporation (from a Class A Weather Bureau evaporation pan) for the study area ranges from 60 to 65 inches per year, an amount that considerably exceeds typical precipitation levels. The result of this precipitation and "potential evaporation" imbalance is that irrigation water must be made available during the driest months to ornamental landscapes and most agricultural crops.

II. CULTURAL ENVIRONMENT

A. Historic Uses

Approximately 1,000 Chumash were baptized at San Luis Obispo Mission between A.D. 1772 and about 1805. No mission period villages have yet been identified in the Chorro Valley.

Agricultural activity in the El Chorro Regional Park vicinity has been dominated by cattle raising since the mission and rancho periods. The cattle herds of the area made San Luis Obispo one of the more successful missions in California. By the late 1830s most of the mission lands had been divided into ranchos by the Mexican authorities. The present-day park occupies portions of two of those ranchos, El Chorro and San Luisito.

The project area is included in the original land grant of Rancho San Luisito granted to Guadalupe Cantua in 1841 (4,389 acres) and Rancho El Chorro granted to John Wilson and James Scott in 1845 (3,167 acres). Wilson bought the San Luisito rancho in 1859 and built the Hollister adobe (now restored at Cuesta College) as headquarters for both ranches.

Cattle raising remained the primary agricultural activity after California was ceded to the United States of America, and cattle hides remained the primary commercial product. Economically viable markets for beef and/or other cattle products had not been developed as they were typically too distant. A severe drought lasting from 1862 through 1864 decimated cattle herds and hastened the breakup of the ranchos.

A wealthy dairyman, E.W. Steele, and his brothers established dairy industries on four ranchos south of El Chorro and San Luisito in the Pismo and Arroyo Grande areas. They introduced hundreds of dairy cattle there, and soon began marketing cheese in San Francisco. Other dairymen followed and by the 1870s there were several cheese factories

operating in the vicinity. Swiss, Italian, and Portuguese immigrants arrived after the 1880s and expanded dairying throughout the coastal San Luis Obispo County area.

After the 1880s several Swiss-Italian families started the dairy at Dairy Creek, which was active until the outbreak of World War II. At that time local dairy farmers were given a week to vacate their lands which were converted into an infantry and artillery base for Camp San Luis Obispo from about 1941 to 1955. The foundation and structural remnants of several houses, a dairy barn, sheds, a cistern, and dairying facilities, formerly belonging to the Gilardi and Guidetti families, are present within the interior portion of the proposed golf course envelope, near mature eucalyptus and pine trees planted close to dairy Creek. Dairying persisted in the coastal area until the 1940s when labor shortages and marketing difficulties contributed to their general decline. However, the local market for fluid milk was increased in the Chorro Valley area by demand generated by the Army's operation of Camp San Luis Obispo. As the dairy industry declined further during the post-World War II period, the beef cattle industry resumed to occupy a more prominent agricultural role. Despite extensive legal action by the original dairymen, they were not able to buy their lands back and San Luis Obispo County obtained the land from the Army in 1972. In 1980 the County opened El Chorro Regional Park to the public.

The 720-acre El Chorro Regional Park was conveyed to San Luis Obispo County in April of 1972 through the Department of Interior, with the mandate that it be used for open public recreational purposes in perpetuity. While the mandate under which Park land was conveyed to the County specifies using park land for "open public recreational uses," the property abuts equivalent open space rangeland where cattle grazing is practiced. The County has granted a low density grazing license on park lands since its acquisition, until such time that the park's Master Plan could be fully implemented.

B. Hazardous Materials

- ❑ From 1928 to 1965 the site was part of Camp San Luis Obispo, a U.S. Army training facility, which included the use of small arms, artillery and land mines. Because of the potential for unexploded ordnance (UXO) to remain at the surface and in the soil, there have been a number of sweeps of the area to find UXO. At least five sweeps occurred. It is not clear whether the 150 acre botanical garden site was included in all these sweeps, but records show the site was cleared of UXO in 1992.

C. Traffic and Circulation

- ❑ Regional access to the proposed project will be provided by State Highway 1, located along the southern perimeter of El Chorro Regional Park. State Highway 1 near the project area is a four lane (two lanes each direction) divided multi-lane highway in a rural environment.
- ❑ The current entrance/exit to El Chorro Park is signalized. The opposite leg across Highway 1 is an entrance/exit to Cuesta College and a secondary access for Camp San Luis. Left turn lanes and protected left-turn phasing is provided for both directions of travel on State Highway 1 at this intersection. In addition, right turn deceleration lanes on Highway 1 are provided for the entrance to both Cuesta College and to El Chorro Regional Park. Visibility from both roadways which intersect Highway 1 at this intersection is good.

- ❑ Dairy Creek Road is the “park road” which begins at the Hollister Road/Dairy Creek Road intersection with Route 1 at the park entrance and provides access within the park to the campground, day use, and other park facilities. It is a 24-foot wide 2-lane asphalt roadway with a 15 mph speed limit. This roadway is gated about 0.5-0.6 mile from Route 1, preventing vehicle access further along this roadway after the day use park closes at dusk.
- ❑ According to the Golf Course EIR traffic analysis, the operation of the park entry at Route 1 will be at LOS B at peak hour with golf course development and with development of the Botanical Garden and other projects in the vicinity.
- ❑ In the EIR, trip generation for the botanical garden site was based on the Santa Barbara Botanical Garden (65 acres extrapolated to 150 acres) and came to 50 peak hour trips or about 500 ADT.

D. Day Use Park and Trails

- ❑ Visitation at El Chorro Regional Park in 1994 was 107,315. Of these, about half are non-paying day use visitors, 10% were with groups renting barbecue areas, about 30% were associated with major events such as the Renaissance Fair and the Garden Festival and 10% used the overnight campground.
- ❑ The trails in the park include the El Chorro Regional Park to West Cuesta Ridge Trail, the route of which follows existing roadways into and through the park, interior park trails including the Three Bridges Trail, which parallels and crosses portions of the proposed golf course envelope, the Eagle Mountain Loop Trail, and the Eagle Mountain Trail to Eagle’s Perch. These trails are shown on **Map 8-Trails**, p.76.

E. Archaeology

- ❑ The El Chorro Park area was the site of significant Native American activity. In addition to numerous isolated artifacts that have been discovered that evidence fairly widespread prehistoric human activity, the vicinity includes seven recorded archaeological sites.
- ❑ Recorded archaeological sites included seasonal camps, areas where stone for tools was quarried, and a bedrock mortar area used for grinding acorns.
- ❑ The nearest site, SLO-557 is located about 30 meters north of the San Luis Obispo Botanical Garden (SLOBG) site’s northerly boundary (see **Map 6- Cultural Resources**, p.76). A detailed description of cultural resources is included under separate cover.
- ❑ The SLOBG site was surveyed by the archaeologist and no evidence of cultural resources was found. The site is not constrained by any cultural deposits.

F. Utilities and Infrastructure

- ❑ Water system requirements for the facility can be addressed in three categories; fire system requirements, potable water requirements and reclaimed water uses.
- ❑ The California Department of Forestry reviews and approves fire plans for projects in the County of San Luis Obispo. The Uniform Fire Code is used for code issues.
 1. Fire flow requirements for a single story structure in the over 5,000 square foot range will be about 500 gpm with a storage capacity of approximately 30,000 gallons.
 2. Structures over 5,000 square feet are required to be sprinklered.

- ❑ Potable water for the project falls under the jurisdiction of the County of San Luis Obispo Health Department.
- ❑ An existing storage reservoir with a capacity of approximately 20,000 gallons is on the site with a 4" service line serving the day use portion of the regional park.
- ❑ 25 afy of reclaimed effluent is available for irrigation uses per the Chorro Park Golf course EIR.
- ❑ On site sewage disposal will be required to conform with the requirements of the Uniform Plumbing Code, the County of San Luis Obispo Health Department and the Regional Water Quality Control Board.
- ❑ The Regional Water Quality Control Board Septic System Design Standard 83-12 governs the design of septic systems. The processing time with the regional board can be from 6 months to a year.
 1. Disposal fields are limited to areas with a slope of 20% or less.
 2. Disposal field are not allowed within 50 feet of a drainage course.
 3. Disposal fields are not allowed within 100 feet of a water well.
 4. An expansion area equivalent to 100% of the disposal field area will be required.
- ❑ The Southern California Gas Company is the natural gas purveyor in the San Luis Obispo area. An existing 4" medium pressure natural gas main traverses the site with sufficient capacity to service the project.
- ❑ The Pacific Gas and Electric Company is the electric purveyor in the San Luis Obispo area. Overhead electric service currently runs along the Highway 1 frontage opposite the site. This is a primary service with a capacity of 12,000 volts. At some point north of the site the service crosses the highway to serve the regional park and new golf course.
- ❑ Pacific Bell telephone service is connected to the new golf course and can be extended to the project site.
- ❑ Cable television service is not available in this area. Satellite microwave television service is available through several purveyors.

G. Land Use and Zoning

- ❑ The project site is located in the San Luis Obispo Planning Area. The land use designation is Recreation. No combining designations exist on the site.
- ❑ An area planning standard calls for sites with varied terrain to concentrate development on moderate slopes, retaining steeper slopes visible from public roads undeveloped.
- ❑ The Land Use Element identifies botanical gardens as a museum/library use under the broader category of cultural, education and recreation. The garden is a special use in the Recreation Zone, subject to special standards and/or processing (under separate cover). Retail sales (book store), although allowed in some zones, are not mentioned as allowed in the recreation zone.
- ❑ A caretaker residence is conditionally allowed (details included under separate cover).
- ❑ Parking required for a botanical garden is not defined in the ordinance. Pursuant to section 22.04.166 the amount of parking is determined by the County Planning Commission.
- ❑ General parking standards are as follows:

1. Standard spaces are 9' x 18'.
 2. In parking lots over 20 spaces 20% of the total may be 8' x 14' compact spaces.
 3. Handicap space requirements are included under separate cover.
 4. Public assembly areas (amphitheater) require a drop-off area (turnout).
- ❑ Signage cannot exceed 100 square feet. Directory signs, kiosks and historical markers are allowed subject to size limits (22.04.300).
 - ❑ A designated trash pickup area is required (22.04.280).
 - ❑ Outdoor storage areas must be screened (22.04.190).
 - ❑ The maximum building height is 35' in the Recreation Zone. Building height is measured as shown; see document under separate cover.

H. Noise⁴

- ❑ The primary noise source on the site is vehicular traffic on Highway 1. **Map 5- Views/Noise/Microclimate**, p.75, shows the noise level contours based on a traffic noise model. Calibration of these modeled contours was performed along Highway 1 that show cases where measured values to be both less and more than values predicted by the model. These values are shown in parentheses on the modeled contour.

For topography that rises above the roadway, such as on a hillside overlooking the roadway, it was found that the model generally overpredicted noise exposure at distances of approximately 100-200 feet from the center of the roadway and somewhat underpredicted noise exposure at distances greater than 400 feet. The greatest amount of underprediction was found to occur in instances where the observer was elevated significantly above the roadway and there was a clear view of the entire roadway surface.

- ❑ Noise levels over 60 dBA L_{dn} and up to 65 dBA L_{dn} are generally considered marginally acceptable exterior levels in residential areas. In a natural garden setting these levels may be unacceptable to the user depending on the context.
- ❑ Highway 1 noise is audible throughout the site. Based on site observation distance decreases the noise level, although elevation increases seem to allow for less noise decrease than in the center of the site where distance from the source is accompanied by less vertical change. Any topographic interruption of the line of sight to the highway seems to create noticeable noise decreases, e.g., about 3 to 5 dBA.
- ❑ Ambient noise levels beyond the noise contours shown on Map 5 would be expected to decrease to 40 dBA at the north end of the site. Ambient noise levels in rural/suburban areas of the county in proximity to highways are rarely below 40 dBA to 45 dBA L_{dn}.
- ❑ The L_{dn} noise level is a 24 hour average. Instantaneous noise events such as large trucks, horns, or aircraft will create higher noise levels on the site which may be noticeable depending on the context.
- ❑ Site observations show that considerable “white noise” masking occurs when birds are active in the eucalyptus grove. Insect sounds also seemed to mask traffic noise.

⁴County of San Luis Obispo Noise Element, Vol. 2 Technical reference Document, 1993.

III. Horticultural Constraints and Opportunities

The observations and opinions included here are based on landscape and nursery experience on the Central Coast over the last twenty years. Specific site observations come from experience gained developing various gardens and landscapes including the California Collection in the Leaning Pine Arboretum on the Cal Poly-San Luis Obispo campus. The Leaning Pine Arboretum (LPA), which contains Mediterranean and Australian collections as well as California natives, offers a clear view of constraints and opportunities that can be anticipated on the SLOBG site. The Leaning Pine Arboretum has many similarities with the SLOBG site including climate, slope aspect and orientation, soil types, topography, vegetation, wildlife and geology.

A. Climatic Considerations

❑ Temperature

1. Low temperatures will not be a limiting factor. Most of the site will drain air to lower areas. Lowest temperatures on the slopes would probably be in the lower twenties and could be expected on a ten to fifteen year interval. The lower areas might experience temperatures in the high teens during the coldest episodes.
2. Most established plants from Mediterranean regions will handle these temperatures without significant damage. Plants that are more sensitive would probably be damaged but if well established many could be expected to recover.
3. Care should be taken to locate temperature-sensitive plants in sloping areas with good air drainage.
4. Summer temperatures will be moderate due to a strong maritime influence. High summer temperatures can be expected in the 70 to 85 degree range. These modest summer temperatures could present cultural difficulties with species from the hottest inland portions of Mediterranean climates, but these constraints should be minimal.
5. Summer fog will be common and provides a moderating effect on both summer and winter temperatures. Some disease problems such as leaf spots and mildew can be anticipated with plants from the hotter, dry portions of Mediterranean climates from persistent summer fog. Locating sensitive plants on warm, south-facing slopes with good air circulation would minimize these concerns.

❑ Wind

1. Prevailing winds come from the west/northwest and are a common afternoon feature on the site. These winds should pose no significant horticultural impact beyond required staking of young trees.
2. Winter storms will bring strong southerly winds to the site.
3. These winter storms combined with saturated winter soils can have significant impact on arborescent plants, especially if they are planted as single specimens or planted in proximity to the ridges. The prominent ridge to the south across Highway 1 does provide some protection from these winter winds. Susceptible genera such as *Fremontodendron*, *Cupressus*, and *Pinus* should be grouped in areas that offer some protection from these winds.
4. Hot, dry easterly winds can occur any time of the year but are most common in the fall. These winds are associated with strong high pressure in the Great Basin and are known in southern California as Santa Ana winds. The severity of these winds is moderated by the south/southwest facing nature of the site.

❑ Precipitation

1. Annual precipitation will occur from October to May with December, January and February usually providing the greatest amounts. It is unusual for any significant precipitation to occur from May to October.
2. Average annual precipitation is approximately 20 to 25 inches but can range widely from perhaps 5 to 50 inches. Extended periods of drought are common.
3. The annual May to October drought combined with the variable nature of the annual precipitation mandates a permanent set irrigation system throughout developed areas of the garden. Failure to install a reliable irrigation system would result in a severely stressed garden and compromise aesthetic values of many species.

❑ Evapotranspiration

1. Evapotranspiration rates on the site will exceed the average annual precipitation significantly (see Part 1–Climate).
2. Irrigation of the garden is essential for any measure of success beyond simple restoration efforts.
3. Non-irrigated, restored native plant communities are possible. Conversion of the existing annual exotic grassland to perennial native grasslands, oak woodlands, chaparral or coastal scrub could be achieved with temporary irrigation systems. These irrigation systems could be removed after the communities are established (3 to 5 years).

B. Physical Features

□ Slope/Aspect

1. General orientation of the site faces south and southwest.
2. Until significant plantings have been established very little shade is available on the site.
3. Winter shadow will not be a horticulturally significant factor on most of the site. The western-most drainage will provide some north-facing exposure with winter shadow.
4. Slopes are generally modest and pose few horticultural constraints. Steeper slopes with Briones-Tierra soils might limit plant and community selection to the most drought adapted categories.

□ Soils

1. Soil types are suitable for a wide range of Mediterranean plants and plant communities. The soil types found on the site have successfully sustained Mediterranean landscapes in many areas of the Central Coast for years.
2. Lower portions of the site have a thick, heavy clay that will require careful plant selection, but this is a relatively small portion of the garden site.
3. PH values do not present any significant limitations.
4. The variety of soils present on the site offer a range suitable to most Mediterranean plants whether they occur in moist riparian habitats or on dry upland sites.

□ Topography/Vegetation

1. Three distinct drainages provide natural divisions for the various Mediterranean regions.
2. Steep slopes with existing native vegetation (primarily coastal scrub) should be left undisturbed and managed as a natural system.
3. The central valley area provides unique opportunities, especially the bowl area between the two springs. This area would be particularly suitable for a large native grassland. A native grassland would represent a community that once covered as much as thirty percent of California that has been reduced to small remnant stands. Remnant species such as *Nasella pulchra* and *Muhlenbergia rigens* currently exist in this area and conversion to this plant type would offer a vision of California before European cultures altered the landscape.
4. This central valley area also offers one of the few areas with an internal viewshed. This is the heart of the site.

C. Wildlife






- ❑ Deer, ground squirrels and pocket gophers will pose significant horticultural challenges.
- ❑ Protection for new plantings will be required. A consistent control program for gophers and ground squirrels will be necessary for the life of the garden.
- ❑ The garden will create a wide range of habitats that will result in greater structural diversity of the vegetation. This will provide a wider array of bird habitats on the site and the bird population and diversity should increase as a result.
- ❑ Development of water features in the garden will also increase wildlife visitation.

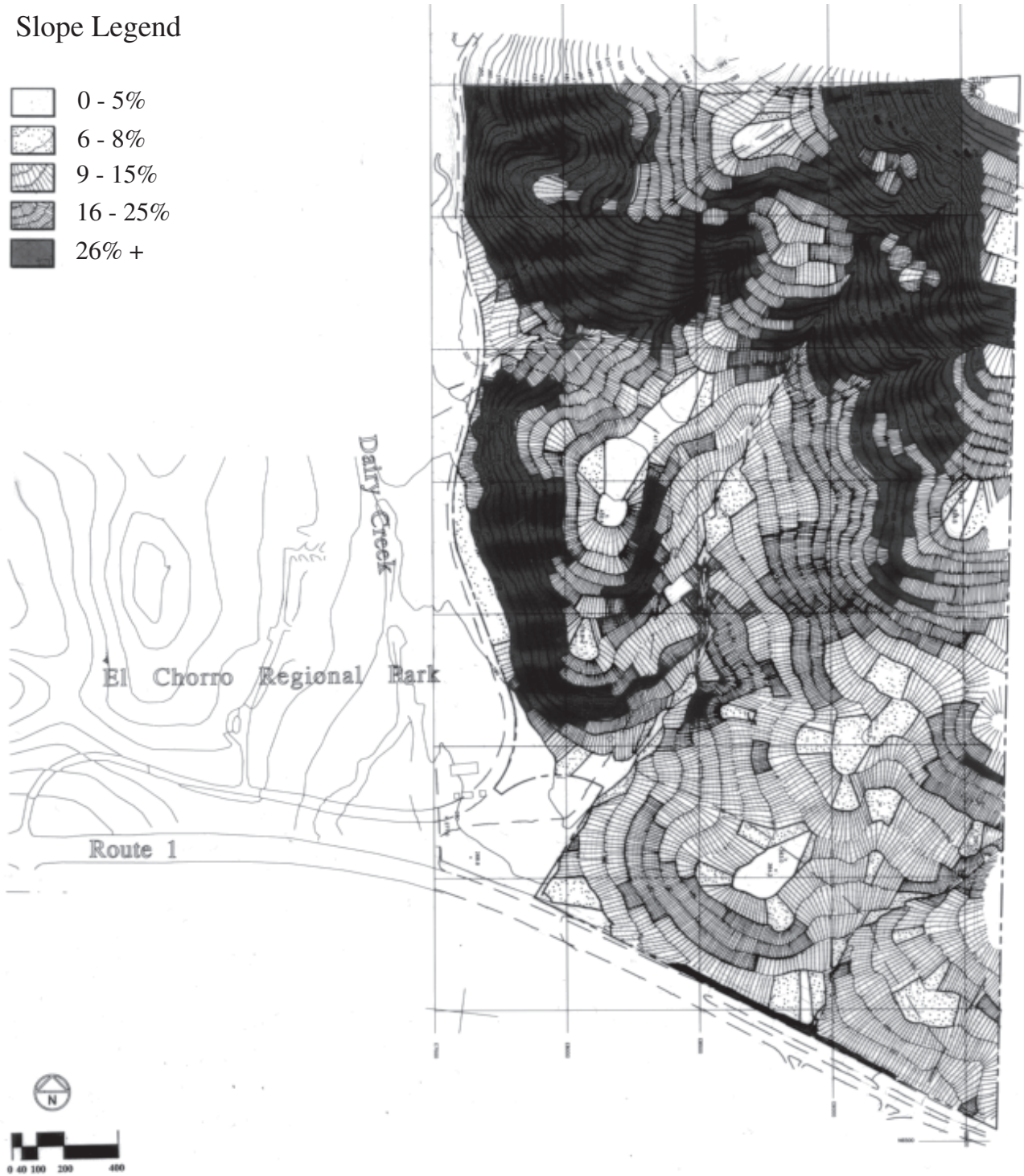
D. Observations from the Leaning Pine Arboretum (LPA) on the Cal Poly Campus Relative to the SLOBG Site

- ❑ A wide range of mediterranean plant materials can be used with confidence on the site. Mediterranean, Australian, Californian, Chilean, and South African species have been used with consistent success not only in the LPA but across most of coastal California.
- ❑ On well-drained sites, above average life expectancy can be anticipated with native genera such as *Arctostaphylos* and *Ceanothus*. The genus *Ceanothus*, in particular, has demonstrated remarkable longevity in the LPA. This is not a common occurrence with *Ceanothus* used in California gardens and is indicative of the advantages of the SLOBG site. Plants from dry sclerophyllous forest and scrub communities typical of Mediterranean climatic areas can be expected to perform in a similar manner.
- ❑ Native grasslands can be established quickly and sustained with low maintenance requirements.
- ❑ Oak woodlands can also be established with relative ease. A healthy five gallon oak tree can be expected to produce a tree fifteen feet high with a ten foot spread in about five years. The caliper would be eight to ten inches.
- ❑ Transition plant communities that don't fall into classic Mediterranean core climatic zones such as Redwood Forest, Mixed Evergreen Forest, Desert Woodland and Desert Scrub from Mediterranean climatic fringe areas could be developed in the garden to demonstrate the context of Mediterranean climates.
- ❑ Native plants from cooler, more moist plant communities (than the Mediterranean core) such as the Redwood and Mixed Evergreen Forest communities will grow exceptionally well on the site, especially with supplemental water.
- ❑ Species from cool, moist fringe areas such as the Redwood communities, or hot dry fringe regions like desert woodlands with poorly developed Mediterranean climates, will require special consideration. For example, redwood community species will require additional water. Desert species will require the warmest sites with good air circulation to prevent mildew in the cool coastal climate. Some desert species will prove to be difficult in this climate.
- ❑ The three drainages present similar habitats in three venues allowing for comparison of the various floras.

- ❑ Some Australian species have exhibited nutrient disorders on the LPA site that can be anticipated on the SLOBG site. This is usually associated with an excess of phosphorus and is expressed by chlorosis, leaf burn and necrosis of the older leaves. Phosphorus toxicity is most common in the Proteaceae family, especially among members of *Grevillea*, *Hakea* and *Banksia*.
- ❑ Phosphorus toxicity is difficult to correct and often results in the death of plants. Selected soil tests and consultation with Brett Hall at the University of California, Santa Cruz, can help resolve some of these constraints.

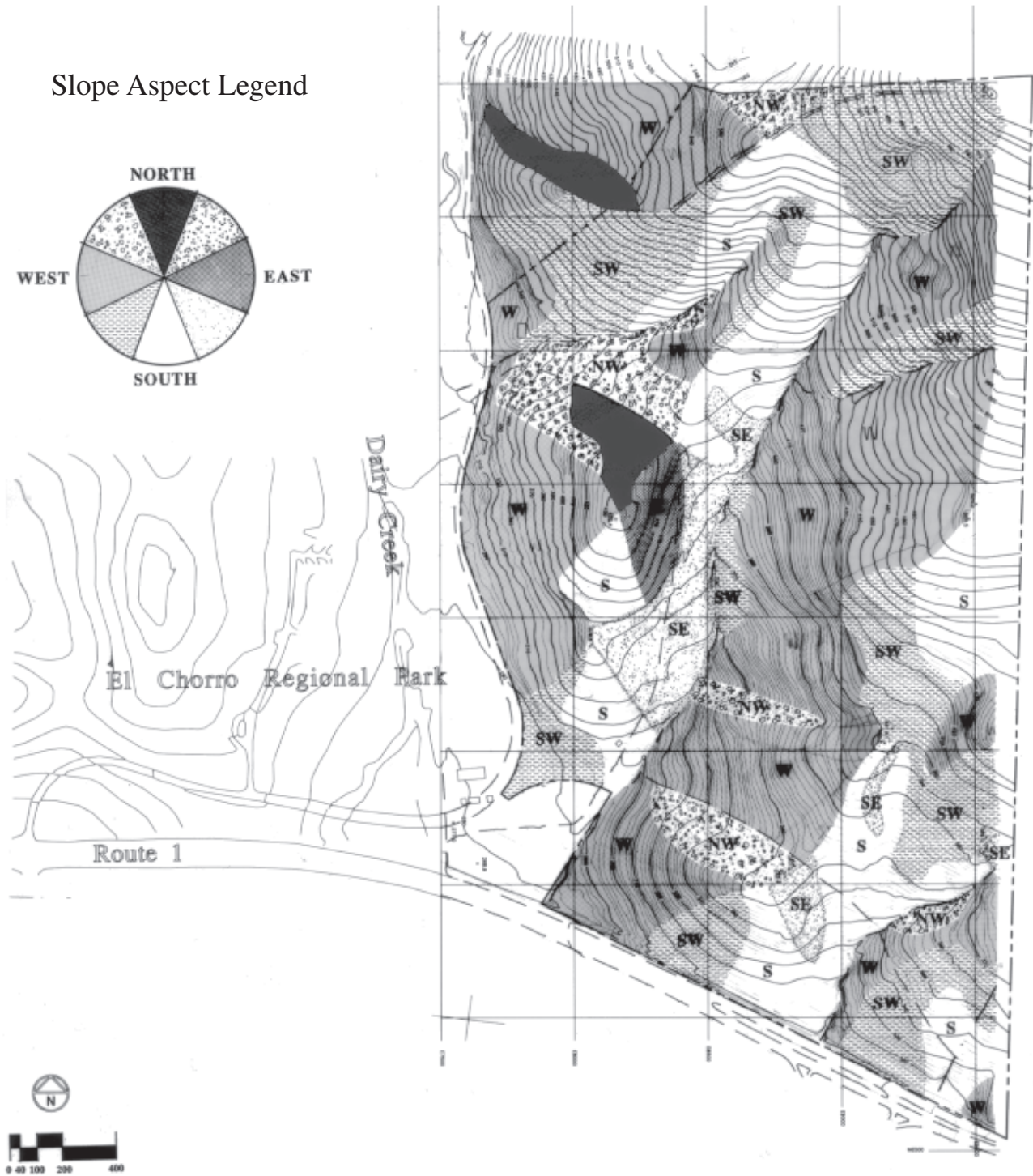
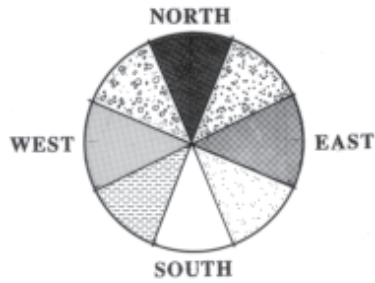
Slope Legend

-  0 - 5%
-  6 - 8%
-  9 - 15%
-  16 - 25%
-  26% +



Map 1: Slope

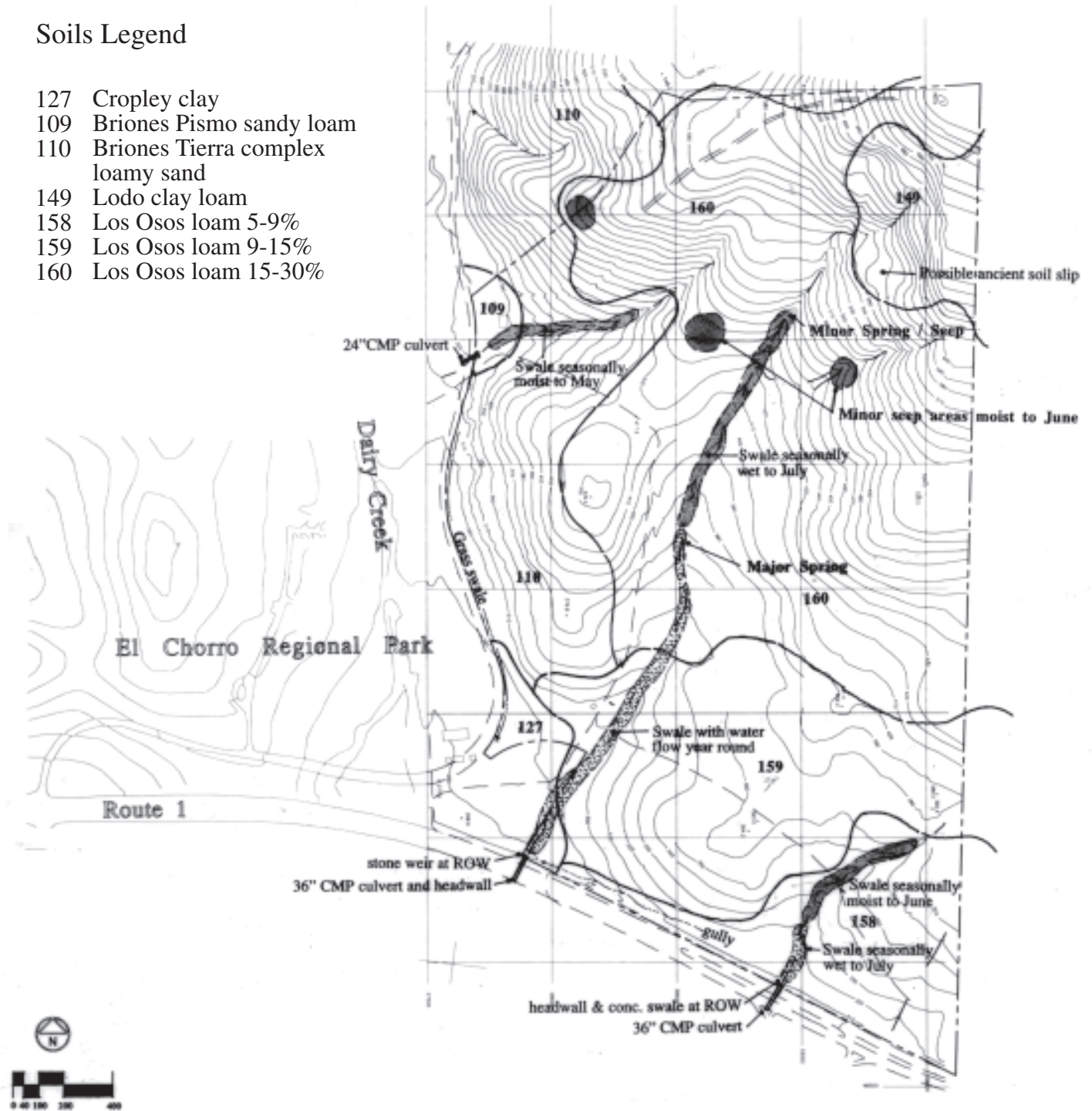
Slope Aspect Legend



Map 2: Slope Aspect






Soils Legend

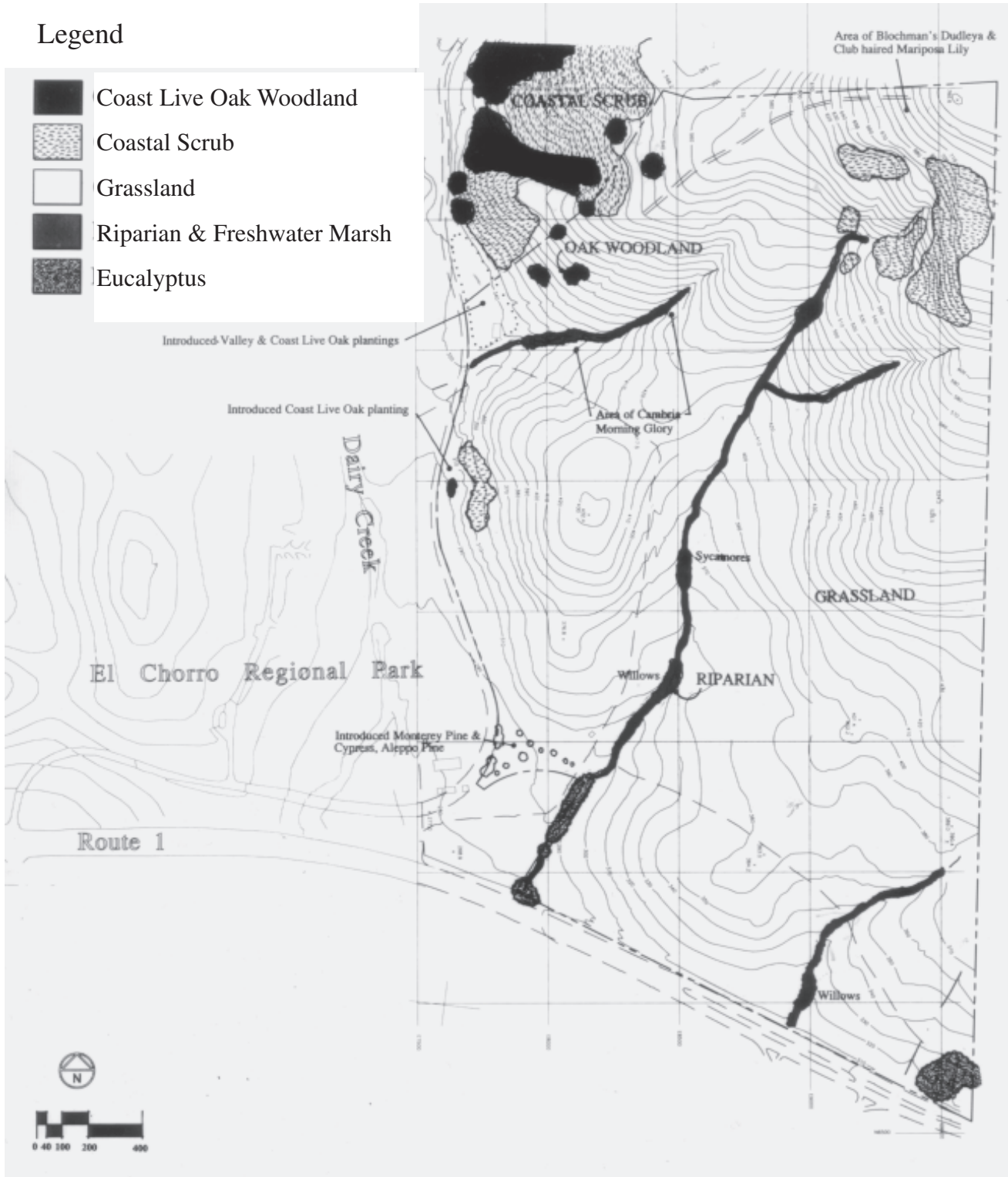
- 127 Cropley clay
- 109 Briones Pismo sandy loam
- 110 Briones Tierra complex loamy sand
- 149 Lodo clay loam
- 158 Los Osos loam 5-9%
- 159 Los Osos loam 9-15%
- 160 Los Osos loam 15-30%



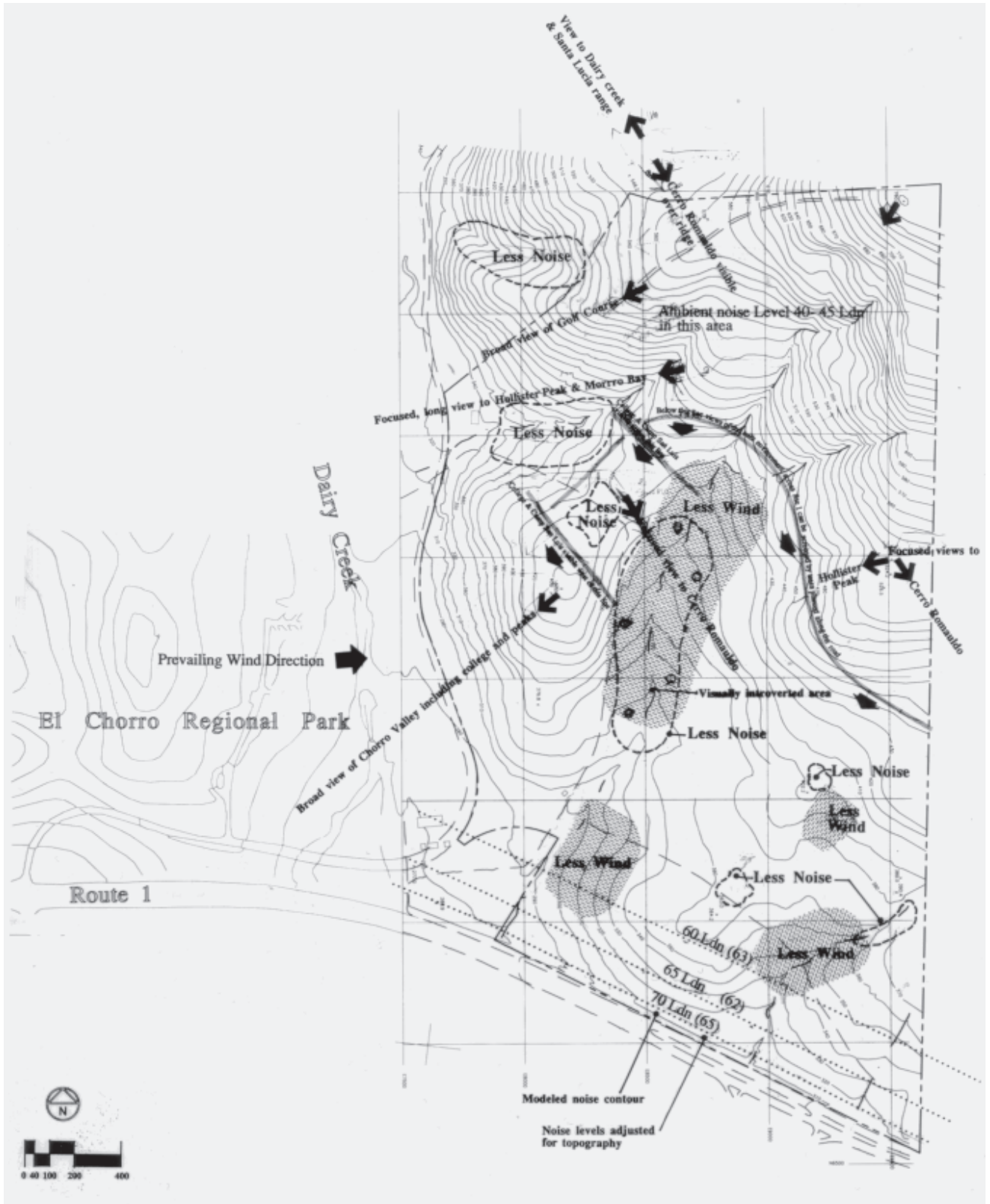
Map 3: Soils & Hydrology

Legend

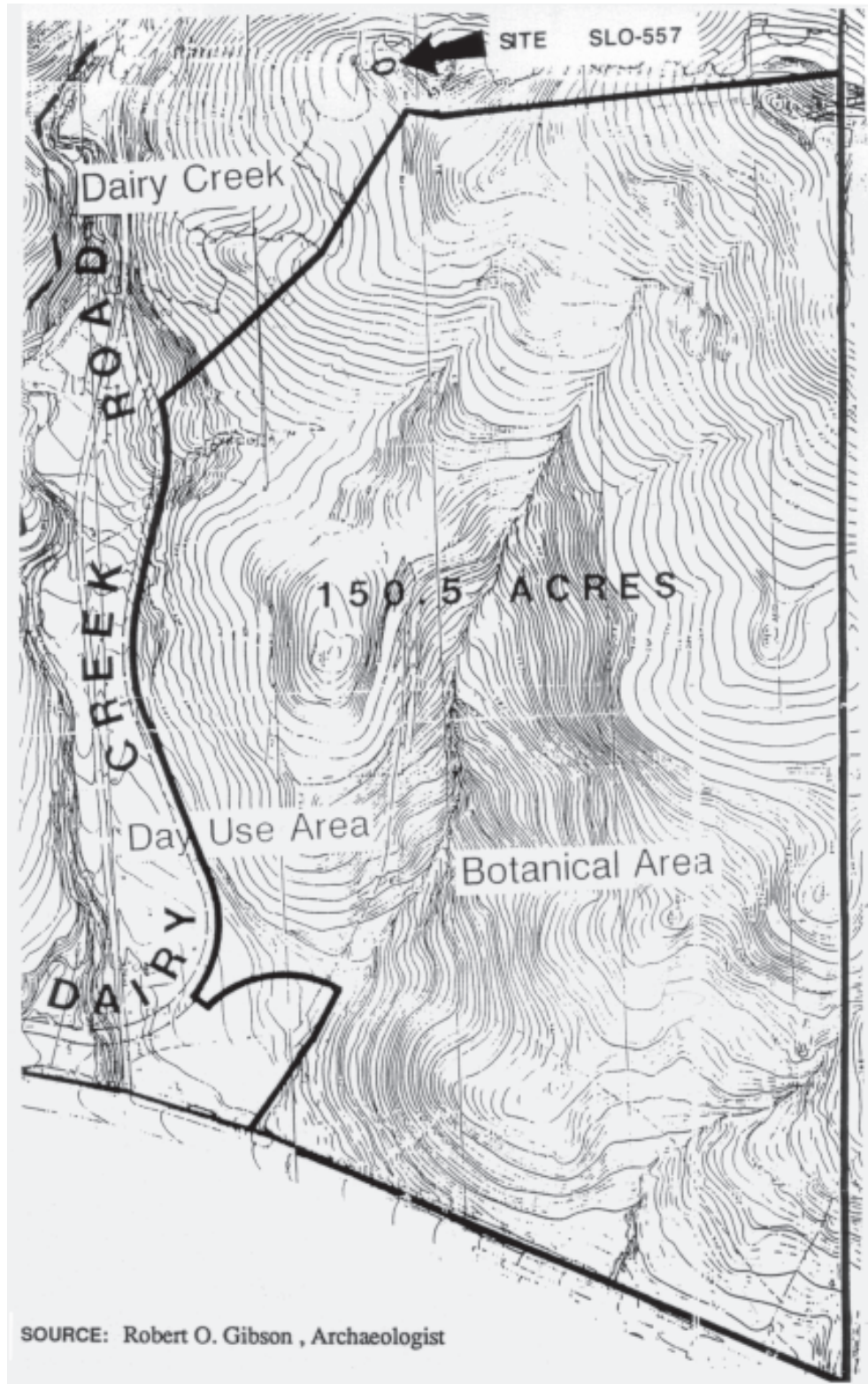
-  Coast Live Oak Woodland
-  Coastal Scrub
-  Grassland
-  Riparian & Freshwater Marsh
-  Eucalyptus



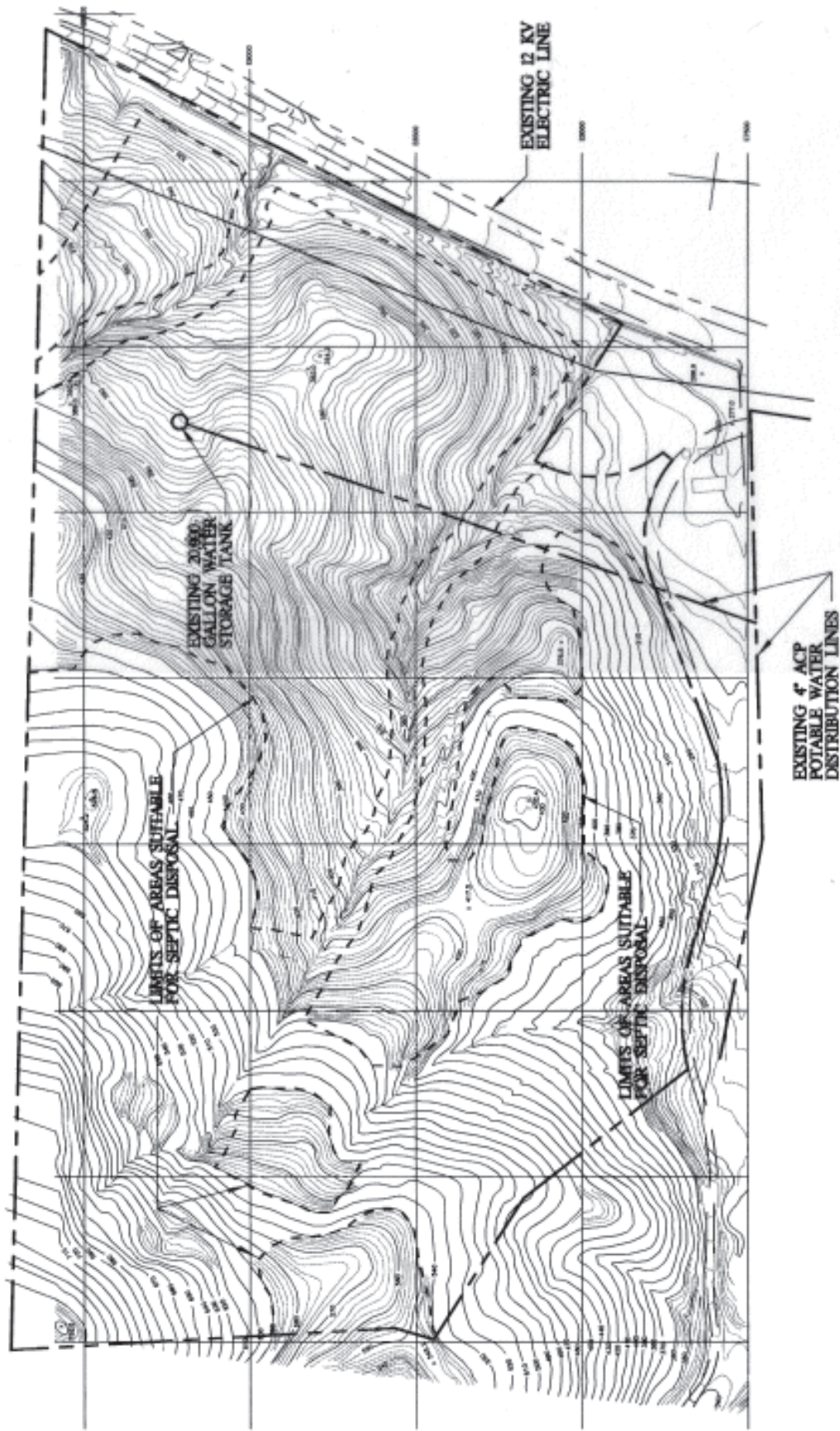
Map 4: Vegetation



Map 5: Views, Noise & Microclimate



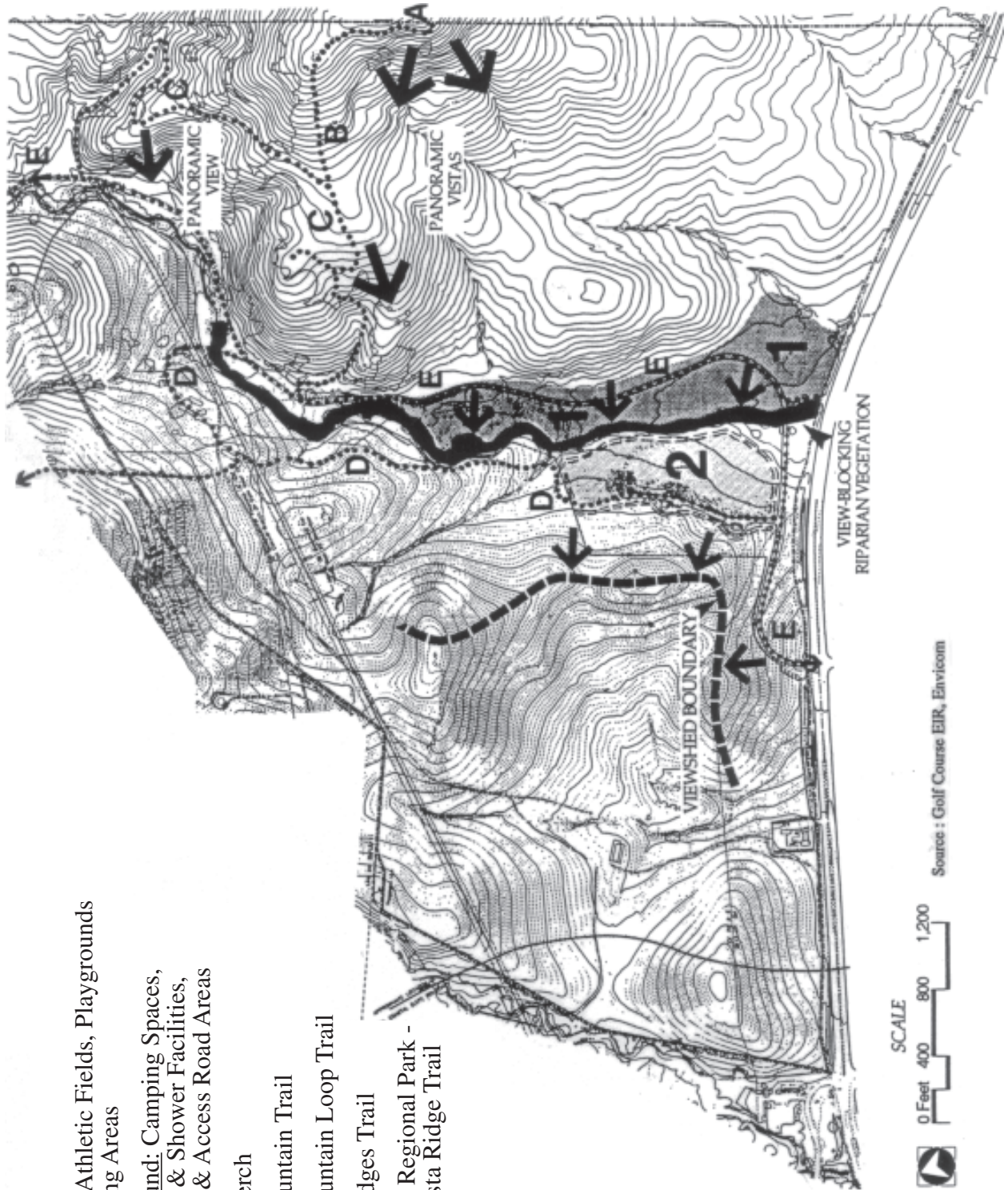
Map 6: Cultural Resources



Map 7: Utility Analysis

User Areas

- 1 Day Use: Athletic Fields, Playgrounds & Picnicing Areas
- 2 Campground: Camping Spaces, Restroom & Shower Facilities, Trailhead & Access Road Areas
- A Eagle's Perch
- B Eagle Mountain Trail
- C Eagle Mountain Loop Trail
- D Three Bridges Trail
- E El Chorro Regional Park - West Cuesta Ridge Trail



Map 8: Trails



- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
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- **Appendices**



APPENDIX B: FACILITIES PROGRAM OUTLINE

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The following program outlines the physical facilities (buildings and site) required to serve, operate, and maintain the Botanical Garden facilities for visitors and staff. Note: all facilities to be fully accessible per ADA standards.

I. Preliminary Site and Building Facilities Program:

A. Administration Building.....Total 2,750 s.f.

- Administration and Botanical Garden Staff Offices 900 s.f.
- Board room 450 s.f.
- Computer space 150 s.f.
- Restrooms 750 s.f.
- Storage and Locker Room 150 s.f.
- Docent Program Office/Meeting Room 250 s.f.
- Workspace and reprographic areas 100 s.f.

B. SLO Botanical Garden Visitor Center.....Total 28,700 s.f.

(Located adjacent to/part of the Administrative Bldg.)

Building:

- Entrance and Reception Lobby Area 250 s.f.
- Visitor information area: directional, informational signs 800 s.f.
- Snack bar
 - Food preparation area..... 200 s.f.
 - Storage area 100 s.f.
- Restrooms 750 s.f.
- Orientation and Exhibit Gallery Building 3,000 s.f.
 1. Visitor information includes: directional, programs and interpretation, and calendar of events
 2. Indoor plants, photo murals, graphic panels and limited interactives
 3. New arrival and blooming plants notices posted
 4. Gardening Calendar of monthly gardening and horticultural programs
 5. Plants for in-home use
 6. Changing exhibits for returning visitors
 7. Donor recognition area (floor or wall space)
 8. Holiday plant displays
- Rooftop and Garden Terrace (not included in total s.f.)..... 750 s.f.

- ❑ Visitor Center walks (not included in total s.f.).....12,800 s.f.
- ❑ Chumash Circle Entry Courtyard (not included in total s.f.)5,250 s.f.
- ❑ Orientation Theater with seating for 50 people.....800 s.f.
 1. Audiovisual “object theater”
 2. Showcase for what to see at the Botanical Garden as well as off-site activities
 3. Highlight plants using computer lighting effects with video images and voice narration
 4. Provide experience for visitors who wish not to tour the site.
- ❑ Interior Exhibit and Display Area3,800 s.f.
- ❑ Multi-purpose space200 s.f.
- C. Mediterranean Garden Terrace8,000 s.f.**

The Terrace will provide a central gathering point for garden users located next to the Visitor Center. The terrace can be used for outdoor seating, weddings, special events, displays, and plant sales, etc. The terrace will accommodate up to 800 visitors and could accommodate a tent structure to provide shade and protection from inclement weather.

 - ❑ Portable food concession (stands or carts) 20 to 40s.f. each
- D. SLO Botanical Garden Shop.....Total 2,310 s.f.**
 - ❑ Garden shop and bookstore 1,210 s.f.
 1. Sales area 800 s.f.
 2. Cashier and receiving 150 s.f.
 3. Inventory 800 s.f.
 4. Storage area 80 s.f.
 5. Stroller rental and storage 80 s.f.
 6. Sales office 100 s.f.
 - ❑ Plant shop 1,100 s.f.
 1. Plant sale exterior display area 1,000 s.f.
 3. Storage area 100 s.f.
- E. Education and Research Facilities.....Total 6,900 s.f.**
 - ❑ Dual use meeting and lecture hall with classrooms/meeting room.....3,600 s.f. (seating for 100 people with central retractable dividing wall)
 - ❑ Library with display areas, bulletin board, seating, books, computer stations, periodicals, etc. 1,200 s.f.
 - ❑ Herbarium 300 s.f.
 - ❑ Research and education staff offices 400 s.f.

- ❑ Laboratory & research greenhouse..... 1,400 s.f.

F. Propagation Center & Collection Support Facilities.....Total 77,300 s.f.
(Limited public visitation - special tours only):

- ❑ Propagation Facilities Buildings..... 1,400 s.f.

1. Employee (Full Time and Seasonal Staff) Program Requirements:
 - a. Offices and meeting rooms 400 s.f.
 - b. Small meeting and multiple use room for staff 300 s.f.
 - c. Lunchroom area, rest room, shower and changing area 700 s.f.
2. Lathhouse(1) - 2,000 s.f.
3. Headhouse - (1) for propagation, soils storage, potting and growth areas and area for cleaning and disinfecting. Space to include growth chambers, cold rooms, and mechanical room. 3,000 s.f.
 - a. Laboratory 400 s.f.
 - b. Propagation Greenhouses - (2) , greenhouses connected to the headhouse building (computer controlled for general propagation, collections and research). 3,000 s.f.
 - c. Heating and moisture systems.
 - d. Seed bank storage room 100 s.f.
 - e. Equipment storage 200 s.f.

- ❑ Propagation Site Support Facilities

1. Trial plots..... 1,000 s.f.
2. Propagation Service Yard..... 4,000 s.f.
3. Material Storage Area..... 1,800 s.f.
 - a. Gravel, topsoil, and mulch bins
 - b. Composting bins, chipper
 - c. Recycling glass, paper and metal - dumpster container
 - d. Hazardous materials and pesticides storage to standards
4. Plant nursery — exterior propagation area..... 60,000 s.f.

- ❑ Maintenance, Storage and Service Facilities

1. Vehicles, Equipment and Tool Storage..... 1,600 s.f.
 - a. Three service/vehicle bays
 - b. Shop for fabrication, repair and maintenance
 - c. Equipment and tool storage
2. Staff parking (see parking study)
3. Fuel storage and pumps meeting current EPA standards
4. Trash transfer area

G. Amphitheater10,550 s.f.

1. Planned use for outdoor events accommodating up to 500 people for special celebrations, e.g., weddings, cultural events, performances, etc..... 5,000 s.f.
2. Provide for day and evening events
3. Lighting and sound system
4. Portable screens and backdrops
5. Stage area 1,600 s.f.
6. Restrooms, changing and storage area 900 s.f.
7. Food preparation area 200 s.f.

8. Storage area300 s.f.

- ❑ Other site support facilities
 1. Outdoor eating area and special events facilities shelter (available for rental)
 2. Rest / Shelters (with protection from sun, rain and wind)

H. Architecture Design Guidelines

- ❑ Building Style:
 1. Blend of architectural vernacular from all five Mediterranean regions. Major structures to be in California mission style with other buildings to express other mediterranean climate architectural styles, from Australian ranch to South African and Western Chilean. All buildings to be crafted and artfully constructed using native construction materials.
 2. Promotes sustainability i.e.,
 - a. Energy efficient
 - b. Wind and/or solar power
 - c. Passive solar energy
 - d. Self-composting toilets (e.g. manufacturer - Clivus Multrum)
 - e. Soft (permeable) drainage systems, recharge, etc.

I. Security

- ❑ Fencing:
 1. Use hedgerow plants as a living fence green barrier
 2. Use native stone walls or wood
 3. Gated main Botanical Garden entry road
- ❑ Alarm system:
 1. Security alarm system in all buildings

J. Botanical Garden Accessibility

- ❑ Visitor Access Entry Road:
 1. Visitor access road - (2) 12 foot wide driving lanes, with asphalt concrete pavement
 2. Comply with all CDF access and turnaround requirements
 3. Provide emergency access throughout the Gardens.
- ❑ Garden Visitor Pedestrian Paths and Trails:

Hierarchy of trails (primary and secondary) and directional signage system informing the visitor as to the degree of challenge throughout the Botanical Garden.

 1. Visitor Paths
 - a. Primary Paths, ADA accessible, 10 feet wide for visitors and service access throughout the Botanical Garden
 - b. Secondary Paths, ADA accessible, 8 feet wide
 - c. Tertiary Trails, non ADA Accessible 5 feet wide
 - d. Loop trail system layout
- ❑ Garden Visitor Tram:
 1. Garden Visitor Tram Service - provides access to the main areas of the Garden displays and exhibits. Tram cars are battery operated rubber wheeled with cars carrying six to eight person per car.

- a. Combined tram and primary path (ADA accessible). Width 16 feet wide, with two way access.
- b. Tram only path, closed to public and used only for tram service. Width 12 feet wide, with two way access.
- c. Tram stops with shade shelter located at locations along the tram circulation route.
- d. Tram queuing located adjacent to the Garden Visitor Center.

K. Utilities

- Potable water - from the State water mainline
- Irrigation - reuse of the 35,000 gallon storage tank
- Fire protection - verify flows required during schematic design
- Storm water collection and conservation (use of water cisterns)
- Natural gas - use existing line at the site
- Provide sanitary sewage septic drain fields and self composting Clivus Multrum toilets in remote interpretive stations
- Provide electricity (use solar or wind powered generators to augment electrical demand)
- Provide telephone
- Site lighting - in areas for night use
- Fiber optics - plan for future uses

II. Potential SLOBG Public Outreach Programs

- Adult education
- Horticulture answering service
- Flower and horticulture shows and competitions
- Children summer programs (dealing with environmental issues)
- Home demonstration - "how-to" programs
- Nursery and garden center outreach
- Master gardener classes and training
- Garden hotline question answer service
- Daytime classes - propagation, pruning, maintenance, hybridizing, grafting, etc.

- Parent / grandparent classes
- Therapy programs and facilities
- School and community outreach programs (plant science curriculum units and prepared unit package)
- SLO Botanical Garden scholarship programs
- SLO Botanical Garden web page
- Work study programs
- Establish networks and alliances with other international botanical garden facilities and learning institutions including the following:
 1. European Mediterranean Basin
 2. Central Chile
 3. Cape region of South Africa
 4. Southern & Southwestern Australia

III. Income Generation & Operations

The following list represents potential ways to generate revenue to maintain and operate the Botanical Garden facility. The gate admission fees represent an average cost for similar facilities on the West Coast of the United States at 1997 rates.

A. Membership Fees

- Annual Memberships Fees
(to vary based on level of development)
 1. Inventory of West Coast Facilitieslow \$20.00 to high \$50.00
- Group rates available.....to be determined

B. Gate Admission Fees

(collected at entry gate or VC entrance)

- Adults.....\$6.50
- Seniors and Students.....\$4.00
- Children 5-12.....\$2.00
- Children under 5.....Free

C. Potential Sources of Revenue Generation

- Garden Shop
Featuring extensive collection of books, cards, clothing, collectibles, crafts, film, memorabilia, posters, plant slides, trade name items, videos, etc.
- Food Concessions
 1. Ethnic foods tied to world gardens
 2. Prepared Food Deli/Concession

3. Tea Garden Terrace

- ❑ Garden Growers Plant Sales Area
(adjunct to the nursery complex)
Emphasis on native California and Mediterranean plants and seeds
- ❑ Annual Events and Celebrations:
 1. Garden Festival
 2. Mediterranean cultural events and celebrations
 3. Holiday events and displays
- ❑ Special Events Rental Facilities
 1. Amphitheater - music, theater, special celebrations and gatherings
 2. Garden area rentals - weddings, anniversaries, family reunions, etc.
- ❑ Meeting Rooms and Conference Facilities
Rental of rooms based on an hourly or daily rate
- ❑ Donations and Memorials with an endowment program
- ❑ Grants

VI. Operational Hours

The following list represents potential hours of operation based on similar facilities in California. Hours of operation may vary based on the season of the year and weekday versus weekend.

- ❑ Garden Hours:

Weekdays	9:00a.m.-4:00p.m., November - February
	9:00a.m.-5:00p.m., March - October
Weekends	9:00a.m.-6:00p.m., November - February
	9:00a.m.-7:00p.m., March - October

Special evening event hours to be determined.

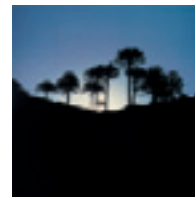
- ❑ Garden Food Concession Hours:
To be determined with food concession management

VII. Potential SLO Botanical Garden Affiliations

- ❑ Nature Conservancy
- ❑ California Native Plant Society
- ❑ Sierra Club
- ❑ Audubon Society

San Luis Obispo Botanical Garden Master Plan

- ❑ Central Coast Natural History Museum
- ❑ Land Conservancy
- ❑ County Historical Society
- ❑ SLOBG should consider joining or affiliating with the following national programs:
 1. The Center for Plant Conservation - national organization dedicated to preserving rare and endangered plants.
 2. The Center for Development of Hardy Landscape Plants - national organization supporting the breeding and development of quality landscape plants tolerant of environmental and biological stresses.
 3. American Association of Botanical Gardens and Arboreta (AABGA).



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APPENDIX C: INTERPRETIVE OUTLINE

APPENDIX C. INTERPRETIVE CONCEPT OUTLINE

The following outline provides a scope of the interpretive stories that can be developed on the site. The order of the information relates only to interpretive content and does not reflect visitor sequence on the site. References and resources used in developing the Interpretive Outline are cited in the bibliography.

I. Geographic Mediterranean Regions

A. Overview

The Central Coast of California is representative of other mediterranean climatic regions around the world. The winter-rain cycle with the summer-drought cycle results in sclerophyllous woodlands. There are five such geographic regions of the world with these unique climatic conditions: the Central Coast of California, the Mediterranean Basin of Europe, Central Chile, the Cape region of South Africa, Southwestern and Southern Australia. Each of these regions is located between latitudes 30-40 in both the northern and southern hemispheres.

B. Premise for Exploration

Compare and contrast the flora and plant communities of the five mediterranean regions of the world. Compare and contrast the interaction of human habitation and the natural world in all five regions.

C. Educational/Interpretive Objectives

- Communicate the rich and complex stories of the five mediterranean botanic realms of the world
- Identify and describe the influence of water cycles and temperature variations on mediterranean plant communities
- Compare and contrast the geologic and botanical histories of each of the regions and the influences of plate tectonics within the southern hemisphere
- Compare and contrast visual characteristics of plants from the five mediterranean regions
- Identify parallels and differences of biogeography, climate, ecology, micro climates and habitats between regions

D. Interpretive Stories

- Plant distribution patterns
 1. Contemporary plant distributions result from a combination of speciation, migration, dispersal, various events resulting from continental movement, extirpations, extinctions, etc.
 2. Southern Hemisphere floras bear strong taxonomic similarities because of their Gondwanan origins: *Myrtaceae*, *Proteaceae*, *Nothofagus*
 3. Northern Hemisphere: the floristic similarities that exist between California and the Mediterranean region are largely due to common origins from a widespread boreal

Tertiary flora that occurred across North America and Eurasia: *Quercus*, *Pinus*, *Juglans*

- ❑ Geology and land forms: compare and contrast geomorphology of regions
 1. Chile and California bear the strongest similarity in topography: a central valley flanked by high mountains to the east and by lower mountains and the Pacific Ocean to the west.
 2. The Mediterranean region has a diverse topography, with some very high mountains, particularly in Morocco and Spain; the Cape region has significant mountains in its northern portion; mediterranean Australia has only a few, isolated very low mountains.
 3. Identify the geologic history (serpentine rock) and formation of the Morros.
- ❑ Soil conditions within regions
 1. Soil type can override the effects of climate, altering flora found in specific areas. Example: In parts of California where the climate supports oak woodlands but serpentine outcrops favor chaparral
 2. The evolution of soil types that have developed from the particular parent rock identified within the regions
Example: Clay-sand types evolving from serpentine rock

E. Exhibitory

Major

- ❑ California natural history :
 1. Flora: plant communities
 2. Fauna: animal populations as they relate to vegetation type
- ❑ Wildflower meadows from each region:
 1. California - Poppies, *Delphinium*, *Camas*, *Lasthenia*, *Gilia*, *Lupinus*, *Clarkia*, *Orthocarpus*
 2. Mediterranean - *Centaurea*, *Linum*, *Papaver*, *Echium*
 3. Central Chile - *Clarkia*, *Schizanthus*, *Malesherbia*
 4. Cape region of South Africa - *Heliophila* , misc. composites and sunflowers
 5. South and Southwestern Australia - *Helipterum*, *Cephalopterum*, *Brachycome*
- ❑ Synoptic Garden: signature plants providing a distinctive view of all five regions:
 1. California - *Quercus agrifolia*, *Quercus wislizenii*, *Aesculus californica*, *Juglans californica*, *Sequoia sempervirens*, *Ceanothus*, *Arctostaphylos*
 2. Mediterranean - *Pinus pinea*, *Phoenix theophrasti*, *Olea europaea*, *Quercus suber*, *Chamaerops humilis*, *Ceratonia siliqua*
 3. Central Chile - *Araucaria*, *Trichocereus*, *Nothofagus*, *Puya*, *Jubaea chilensis*, *Crinodendron patagua*
 4. Cape region of South Africa - *Aloe*, *Crassula*, *Protea*, *Leucadendron argenteum*
 5. South and Southwestern Australia - *Eucalyptus*, *Agonis flexuosa*, *Banksia*, *Casuarina*, *Xanthorrhoea*

- ❑ Geophytes:
 1. California - *Fritillaria*, *Zygadenus*, *Brodiaea*, *Calochortus*
 2. Mediterranean - *Narcissus*, *Asphodelus*, *Gladiolus*, *Ornithogalum*, *Iris*
 3. Central Chile - *Alstroemeria*, *Tropaeolum* *Conanthera*, *Rhodophiala*, *Streptosolen*
 4. Cape region of South Africa - *Lachenalia*, *Ornithogalum*, *Oxalis*, *Amaryllis*, *Boophone*, *Gladiolus*
 5. South and Southwestern Australia - terrestrial orchids

- ❑ Genera or families in common:
 1. *Clarkia* - Chile, California
 2. *Carpobrotus* - Chile, Australia, South Africa
 3. *Fragaria* - Chile, California
 4. *Araucaria* - Australia, Chile
 5. *Restionaceae* / *Proteaceae* - Australia, South Africa, Chile
 6. *Myrtaceae* - Chile, Australia, California
 7. *Calandrinia* - California, Chile, Australia
 8. *Platanus* - Mediterranean, California

F. Potential Contributors

California Polytechnic State University-San Luis Obispo
University of California

II. Interpretive Themes on Adaptation and Change - Gardens of Exploration

A. Overview

An understanding of plant anatomy and physiology will be the basis for exploring how plants adapt and change under different environmental conditions.

The climatic conditions of each of the mediterranean regions have a profound effect on their flora and fauna . Adapting to prolonged periods of summer drought requires plants to develop interesting morphological characteristics and reproduction adaptations. Life-cycles vary as a result of climatic conditions from annual to multi-year cycles.

The concept of plant communities becomes the basis for discussing plant life, distribution patterns and relationships to physical habitat. The principles of ecology are rooted in the understanding of plant communities.

B. Premise for Exploration

Identify how plant and animal life has evolved within the biological cycles of the mediterranean climatic regions. Explore how natural history is influenced by adaptation, change, and evolution.

C. Educational/Interpretive Objectives

- ❑ Define and explain plant growth patterns, seasonal behavior, anatomy, physiology, pollination/fertilization
- ❑ Increase biodiversity through seed conservation
- ❑ Identify the relationship between climate, plant life and animal life
- ❑ Identify plant morphological adaptations to the wet-dry-cycle of the mediterranean climate
- ❑ Develop geologic timelines of geographic regions and explore paleobotany as it relates
- ❑ Identify plant communities and the flora and fauna of each
- ❑ Identify taxonomic relationships between geographic regions
- ❑ Explore natural plant reproduction methods as well as propagation techniques for production use

D. Interpretive Stories

- ❑ Physiognomic conditions
 1. Vegetation of the mediterranean region of Chile and the Mediterranean Basin most resembles the California mediterranean region
 2. All five geographic regions are located within the 35-40 degree latitude in both hemispheres
- ❑ Plant communities:
 1. Shrub-scrub :
 - a. California (chaparral)
 - b. Mediterranean (macchia, garrigue)
 - c. Central Chile (matorral)
 - d. Cape region of South Africa (fynbos)
 - e. South and Southwestern Australia (kwongan, mallee)
 2. Coastal Scrub:
 - a. California (coastal scrub, coastal sage scrub)
 - b. Mediterranean (garrigue)
 - c. Central Chile (coastal matorral)
 - d. Cape region of South African (fynbos-thicket mosaic)
 - e. South and Southwestern Australia (sand heath, kwongan)
 3. Woodlands:
 - a. California (Oak woodland)
 - b. Mediterranean (Oak woodlands)
 - c. Central Chile (Austrocedrus-Schinus)
 - d. South and Southwestern Australia (Eucalyptus)
 4. Forests:
 - a. California (Mixed evergreen)
 - b. Mediterranean (Oak, pine)
 - c. Central Chile (Southern beech)
 - d. Cape region of South Africa: (Evergreen forest of the Cape Peninsula)
 - e. South and Southwestern Australia (Eucalyptus)

5. Grasslands:
 - a. California - coastal prairie, valley grassland
 - b. Mediterranean - no remnants remain
- Plant adaptations to mediterranean climates:
 1. Sclerophyllous leaves have one or more of the following conditions: e.g. tough, hard, recessed stomates, heavy cuticle, vertical leaf orientation, pubescence, gray coloration
 2. Dimorphic leaves: larger, softer leaves in winter; smaller, drought-resistant leaves in summer
 3. Annual life cycles (drought evaders)
 4. Bulbs or other underground storage organs
 5. Specialized seed germination requirements: rainfall, temperature, leachate from charred wood, smoke
 6. Root growth patterns: seedlings and adults
 7. Proteoid roots, mycorrhizae, root nodules, insectivory, associations with poor soils
 8. Xerophytic characteristics: drought deciduous, succulent leaves for water retention
- Regional examples of plants displaying morphological characteristics adapted to climate conditions:
 1. Leaf morphology:
 - a. California : *Arctostaphylos*, *Adenostoma*
 - b. Mediterranean : *Erica arborea*, *Rosmarinus*
 - c. Central Chile: *Lithraea caustica*
 - d. Cape region of South Africa: *Protea*, *Leucadendron*, *Erica*
 - e. South and Southwestern Australia : *Eucalyptus*, *Banksia*
 2. Drought deciduousness :
 - a. Californian : *Salvia mellifera*
 - b. Mediterranean : *Calicotome villosa*
 - c. Central Chile: *Fuchsia lycioides*
 - d. Cape region of South Africa: *Pteronia nitida*
 - e. South and Southwestern Australia: none known
 3. Water retention (Succulent leaves and stems)
 - a. California: *Dudleya*, *Agave*, *Cactaceae*
 - b. Mediterranean: uncommon except on Canary Islands, Atlantic coast of Morocco.
 - c. Central Chile: *Carpobrotus*, *Calandrinis*, *Cactaceae*, *Oxalis gigantea*
 - d. Cape region of South Africa: *Crassula*, *Aloe*, and other members of the *Aizoaceae*, *Euphorbia*, *Cyphostemma*
 - e. South and Southwestern Australia: not common but *Carpobrotus* is present
 4. Pollination and fertilization:
 - a. Endemic bird pollination: California, Chile, the Cape region, and Australian plants have adapted to pollination by birds distinct to each region.
 - b. Hummingbird pollination: bird pollination in California and Chile is predominately associated with hummingbirds, e.g. *Proteaceae*
 - c. Insect pollination: California, Mediterranean, Chile, S. Africa and Australia
 5. Pangaea - Gondwanan elements:
 - a. Northern Hemisphere - Laurasia: *Fagaceae*, *Pinaceae*, *Ulmaceae*
 - b. Southern Hemisphere - Gondwana:
 - Central Chile: *Proteaceae*, *Nothofagus*, *Myrtaceae*, *Restionaceae*, *Tecophileaceae*
 - Cape region of South Africa: *Proteaceae*, *Restionaceae*, *Tecophileaceae*

South and Southwestern Australia: *Proteaceae*, *Nothofagus*, *Myrtaceae*,
Restionaceae

6. Plant protection from herbivory via essential oils, latex or spines:
 - a. California - *Trichostema*, *Salvia*, *Isomeris*
 - b. Central Chile - *Trichocereus*, *Opuntia miquelia*
 - c. Cape region of South Africa - *Euphorbia*, *Aloe*
 - d. South and Southwestern Australia - *Eucalyptus*, *Melaleuca*

E. Exhibitory

- Activity station providing interactive models for understanding plant anatomy and physiology
- Walk through plants displaying adaptations to high light and temperatures and low water availability, i.e. color, leaf shape, pubescence, flower type etc.
- Activity station describing plant reproduction
- Pollinators garden path: identifying plants and their method(s) for pollination
- Leaf morphological adaptations to climate conditions
- Meteorology Garden: weather station, weather effects on the garden, news you can use, and tower camera comparing the four other world zones
- Develop programs for the conservation of germ plasm
- Develop seed bank resource for plants of mediterranean regions
- Plant demonstration garden identifying plant protection from herbivory from oil or latex production or spines

F. Potential Contributors

California Polytechnic State University-San Luis Obispo
University of California
Center for Plant Conservation
The National Wildflower Research Center

II-B Ecological Adaptations

A. Overview

Understanding the relationships among organisms and between them becomes the basis for examining the effects of human activities on the natural environment.

B. Premise for Exploration

Identify the concepts and principles of ecology and how they affect the development, formation and preservation of the mediterranean regions.

C. Educational/Interpretive Objectives

- Stages of ecological consciousness: conservation, preservation, protection, survival
- Ecological realms: ecosystem, community, population, organism
- Understanding the food chain
- Understanding the carrying capacity of the land
- Identifying limiting factors as they relate to ecological balance
- Identifying local habitats and their associated flora and fauna
- Explore the relationship between fire and ecological adaptations
- Understand how natural systems are products of evolution
- Understand how biomass affects climate and thus quality of life
- How can we change our management practices to minimize human impacts on ecological systems?

D. Interpretive Stories

- What are the influences of seasonal fires on vegetation adaptations?
 1. Flora of the Cape region, Australia, and California have developed:
 - a. woody fruits or cones that open after the heat of a fire, i.e. *Cupressus*, *Banksia*, *Hakea*, *Actinostrobus*
 - b. induction of flowering in herbaceous and woody species
 - c. induction of germination of annuals following fire
 - d. obligate seeders
 - e. lignotubers
 - f. microscopic plant realm, e.g. oxygen from plankton
 - g. symbiotic relationships, e.g. moths' relationship with yucca
- How do plants respond to fire in each of these areas?
 1. Underground storage organs
 2. Fruit or cone development and seed dispersal: *Pinus attenuata*, *Cupressus*, *Hakia*, *Banksia*, *Actinostrobus*, *Callitris*

3. Closed cones or woody fruits
 4. Crown sprouting in shrubs and trees:
 - a. California: manzanitas, toyon, chamise
 - b. Central Chile: *Trevoa trinervia*
 - c. Cape region of South Africa: *Protea* spp.
 - d. Southern and Southwestern Australia: *Eucalyptus* spp.
- Collections of rare and endangered species:
 1. California: Blochman's dudleya, Club-haired mariposa lily, Bishop pine, Chorro bog thistle, Morro manzanita
 - What are the concepts of ecology and ecological balance?
 1. Balancing ecological components
 2. Identifying limiting factors
 3. Principles of the food chain
 4. Carrying capacity of the land
 - Examples of plant relics and their conditions:
 1. *Pinus muricata* (Bishop Pine) fire dependency for germination, California native with limited distribution

E. Exhibitory

- Demonstrate the effects of fire through controlled burning
- Identify the benefits and use of fire management techniques of Native American cultures.
- Identify plants that require fire for seed germination
- Interpret the food web for each of the mediterranean regions
- Demonstrate ecological conservation and restoration techniques
- Composting and recycling exhibits (worm bins)
- Vernal pools of California
- Rare and endangered species from all regions
- Pond, riparian or aquatic garden along stream with California trees on one side and Mediterranean trees along the other for comparison
- Butterfly gardens
- Live animal exhibits: badgers, amphibians, reptiles, insects, fish and birds
- Develop a natural preserve and habitat restoration area
- Activity station identifying the delicate balance of relationships in maintaining an ecological balance. Explore the concepts of carrying capacity of the land and limiting factors within the study.

- ❑ Interpret the genesis of organic matter in soil development: decomposition, nitrogen cycle, influences of fungi and bacteria

F. Potential Contributors

The Nature Conservancy
The Audubon Society
California Native Plant Society
National Wildlife Federation

II-C. Cultural Influences on Adaptation and Change

A. Overview

Cultures evolve from the environments in which they develop. The natural environment determines how people live, what they eat and how they sustain life within its parameters. Conversely, the environment and its resources are altered by human development causing long term effects on its evolution as a habitat for plant and animal life.

California's history has had a profound effect on the evolution of cultural perspectives regarding plant values and land use. Understanding the influences of how the evolving cultures perceived and managed the land provides an interdisciplinary story of plants and people. Cultural influences tell compelling stories of the profound effects civilizations have on the adaptability of the vernacular landscape.

B. Premise for Exploration

Interpret how landscapes and land use ethics have evolved within all of the mediterranean climatic regions in the world. Describe how multiple cultures have influenced these changes over time, and how technology has influenced the cultural impacts on the land.

C. Educational/Interpretive Objectives

- ❑ Identify native tribes that inhabited the mediterranean regions of California, e.g. the Chumash people lived along the mid-coast of California for many thousands of years. These people had a rich and complex history, utilizing a wide variety of plant and animal resources in the ocean and on the land. The Chumash nation relied more on plants than any other single item. Multiple parts of plants were used for food, medicines and religious value, as well as for their technomic uses (tools, building, material functions). Since plant life-cycles are closely tied to the availability of water and temperature, seasonal influences determined plant collecting, processing and storage, and regulated the Chumash lifeways.
- ❑ How have our perceptions of the environment changed over time?
- ❑ What cultural influences remain an important part of today's vernacular landscapes?

- ❑ What aspects of plant and land values have been lost through changes in cultural influence?
- ❑ What influence have agricultural uses had on land value and perceptions?
- ❑ What plants of economic importance today originated in mediterranean climates?
- ❑ Identify plant introductions in relationship to agricultural development, e.g. grapes, fruit trees, landscape ornamentals

D. Interpretive Stories

- ❑ Changing perceptions of land use:
 1. California - agriculture activity had been dominated by cattle raising and grazing activities until the land was ceded to the United States. Dairy industries became an important agricultural industry in the second half of the 19th century.
 2. Most of the mediterranean regions are currently subject to alien plants dominating over the native flora, development of land for capital gain and agriculture uses, urban sprawl, soil removal, and eco-tourism, each having detrimental effects on the landscapes. Sources of revenue for conservation and preservation are limited.
 3. Western Australia - Throughout the 1960's a great surge of agricultural development occurred, removing trees and ploughing up the land without the awareness of floral devastation. By the 1980's, an increase in environmental awareness and governmental organization provided protection and conservation efforts. Threats remain from the competitive spread of agricultural weeds and *Phytophthora* root disease.
- ❑ Impacts of agriculture on the landscape: grazing, field crops, orchard fruits:
 1. Australia - 250 years of cultivation
 2. California - 200+ years of cultivation
 3. Europe - 3000 years of cultivation
 4. Chile - 200+ years of cultivation
 5. South Africa - ? years of cultivation
- ❑ Architectural character: - **European settlement**
 1. California - Spanish Mission adobe style
 2. Mediterranean - diverse, e.g., Hellenic, Roman, Arabic
 3. Central Chile - Thatched roofs on wooden structures
 4. Cape region of South African - Cape Dutch thatched restios, open walled A-frames, kapstylhuise, with thatched restios roofing built by the native Khoi-khoi
 5. South and Southwestern Australia - Tin roofed ranch houses with wide porches and verandahs
- ❑ Indigenous people:
 1. California - Chumash plus other tribes
 2. Mediterranean - diverse from northern Africa, to Spain, France, Italy, Greece, and Turkey in the north and to western Saudi Arabia in the east
 3. Central Chile - Mapuche
 4. Cape region of South African - Khoi-khoi
 5. South and Southwestern Australia - non-sedentary aboriginal groups
- ❑ Economic plants of Mediterranean origin:

1. Carob, olives, pine nuts, cork, grapes, grains, legumes for forage, garlic, artichokes, nuts, culinary herbs, safflower, grasses for cattle grazing

E. Exhibitory

Major

- Ethnobotanical displays representing the Chumash Indian's use of native and cultivated plants for food, medicine, religious ceremony, shelter, transportation, technomic uses, clothing and resource management
- Poisonous plant display identifying poisonous parts and deleterious effects
- Chumash village, demonstrating collecting, processing, storing and technomic uses
- Reconstructed adobe shelters of early Spanish and Mexican cultures
- Physical timeline, a "California walk through history"
- Architectural representation from each of the geographic regions
- Agricultural value gained from plants of mediterranean regions
- Exploring the use of chemicals in agriculture and their effects on the environment and on pollination
- Exploring concepts of sustainability and stewardship
- Activity station identifying pollinators, e.g. rodents, birds, insects and wind. Provide a visual exploration of the domestication of the honeybee.
- Identify how mediterranean weeds have had damaging effects on agricultural crops
- Activity station comparing and contrasting the impacts of 3000 years of agriculture in Europe with 200 years in California

Minor

- Identify cultural influences from other mediterranean climatic regions
- Develop cultural timelines from the other geographic regions
- Explore ethnobotanical displays from other cultures

F. Potential Contributors

California Historical Society
San Luis Obispo County Archeological Society
San Luis Obispo County Historical Society

II-D. Horticultural Therapy

A. Overview

Exploring the influences of western culture on our perceptions of nature offers a unique opportunity to explore the inter-relatedness of human nature and green nature. Plants reconnect us to the past recalling feelings of tranquility and harmony. This phenomenon becomes especially important in our technological world.

B. Premise for Exploration

Identify how human well being is related to an attraction to plants and nature. Explore how economic considerations influence human interest in plants.

C. Educational/Interpretive Objectives

- To identify what aspects of the physical characteristics of a garden influence human development and well-being.
- To explore the relationships between human nature and green nature
- To understand the basic senses of vision, smell, touch and hearing
- To explore the value of Horticulture Therapy

D. Interpretive Stories

- Explore the symbiotic relationships of plants and people
- How can gardens be designed to enhance the therapeutic value of the experience?
- Demonstrate how plants can expand our world-wide connections to other cultures and landscapes

E. Exhibitory

- Horticultural Therapy Garden designed to accommodate the physically impaired: planting tables, paths no greater than 5%, minimum 5' clearance around all structures, narrow raised planting beds accessible from all sides, specialized tools for gardeners with physical limitations. Exhibits should address the varying needs for visually, physically, mentally or physically challenged gardeners.
- Sensory Garden of mediterranean plants
- Activity center with interactive displays and panels that raise questions like:
 1. Why do gardeners delight in the germination and growth of a seed?
 2. Why are our spirits lifted by flowers, our feelings of tension allayed by a walk in a forest or park?
 3. What other positive and negative influences can nature have on humanity or humanity have on nature? e.g. Seasonal Affective Disorder (SAD), Allergies
 4. How does color affect the rods and cones within our vision?
How do other animals perceive flowers and plants?

F. Potential Contributors

National Council for Therapy and Rehabilitation through Horticulture - California Chapter
University of Michigan, *Psychological Effects of the Urban Forest*, Rachel and Stephen Kaplan
American Horticultural Society's People/Plant Program

II-E. Landscape Demonstration Gardens

A. Overview

The mediterranean climate of Central California offers a horticultural paradise for growing a wide range of plants from southern temperate climes to sub-tropical climatic regimes. This presents opportunities to explore and experiment with practical applications such as composting, water conservation, erosion control, garden practices, and irrigation technology, while also exploring the functional and aesthetic qualities of plants in garden design.

B. Premise for Exploration

How can gardening principles and practices used for mediterranean plants influence the public's perceptions of the landscape? Apply current research, garden practices and design through demonstrations and displays. Offer evolving examples to test ideas and theories.

C. Educational/Interpretive Objectives

- ❑ To teach people how to garden
- ❑ To provide a visual expression of the functional importance and value of landscape plants in the environment
- ❑ To demonstrate the diversity of plants successfully grown in this climate
- ❑ To provide horticultural introductions to the nursery trade by growing unique or signature plants that are representative of the five mediterranean regions.
- ❑ To work cooperatively with the nursery industry and other botanical gardens, to explore new plant introductions
- ❑ To identify and demonstrate sound gardening practices that are environmentally sensitive to the local mediterranean climate and support the concept of sustainability
- ❑ To explore the history of landscape gardening
- ❑ To apply current research and garden practices in the field
- ❑ To develop theme gardens of landscape value: perennial gardens, groundcovers, wildlife gardens etc.

D. Interpretive Stories

- ❑ Identify signature tree and shrub species representative of the five mediterranean regions. Explore their influences on the local economy and potential for horticultural distribution.
 1. Australia - *Eucalyptus*, *Casuarina*, *Agonis*, *Banksia*, *Acacia*
 2. South Africa - *Aulux*, *Ericas*, *Leucadendron*, *Protea*
 3. Europe - *Pinus*, *Quercus*, *Cupressus*, *Juniperus*
 4. California - *Pinus*, *Quercus*, *Umbellularia*, *Cupressus*, *Platanus*
 5. Chile - *Presopis chilensis*, *Peumus boldus*, *Cryptocarya alba*, *Drimys winteri*, *Nothofagus*, *Araucaria*, *Austrocedrus*, *Rhaphithamnus spinosus*, *Luma chequen*
- ❑ Identify the origins of mediterranean plants currently grown and propagated in the horticultural industry:
 1. Mediterranean - *Quercus*, *Pinus*, *Cistus*, *Daphne*, *Narcissus*, *Cytisus*, *Lavendula*, *Arbutus*
 2. Australia - *Banksia*, *Callistemon*, *Ardenbergia*, *Eucalyptus*, *Melaleuca*
 3. South Africa - *Protea*, *Leucadendron*, *Ornithogalum*, *Osteospermum*, *Euryops*
 4. Chile - *Crinodendron*, *Araucaria*, *Eucryphia*, *Alstroemeria*, *Fuchsia*, *Ugni*, *Escallonia*
 5. California - *Ceanothus*, *Arctostaphylos*, *Garrya*, *Berberis*, *Ribes*, *Eschscholzia*, *Lupinus*, *Romneya*
- ❑ Identify functional uses for mediterranean plants such as hedging and screening opportunities:
 1. Mediterranean - *Laurus nobilis*, *Nerium oleander*, *Artemisia arborescens* A. *abrotanum*, *Arbutus unedo*, *Myrtus communis*
 2. Australia - *Banksia*, *Callistemon*, *Ardenbergia*, *Eucalyptus*, *Melaleuca*
 3. South Africa - *Protea*, *Leucadendron*, *Ornithogalum*, *Osteospermum*, *Euryops*

4. Chile - *Crinodendron*, *Araucaria*, *Eucryphia*, *Alstroemeria*, *Fuchsia*, *Ugni*, *Escallonia*
 5. California - *Ceanothus*, *Arctostaphylos*, *Garrya*, *Berberis*, *Ribes*, *Eschscholzia*
- Display California native plant cultivars to increase awareness of their availability and to provide a resource for new trials
 - Explore garden design with display competitions to encourage creative adaptation and change in the use of plants and building materials

E. Exhibitory

- California mediterranean native demonstration garden
- Visual expressions and functional display of plants used for: defining visual corridors, creating physical barriers, directing circulation and climate, noise and erosion control. (These gardens could be evolving and change over time, or be the result of design competitions on specific topics.)
- Home Demonstration Gardens: Vine and trellis walk, rockery, fragrance, ground covers, border plants, shade garden, water gardens, turf grasses, native roses, herbaceous borders, color gardens, herb gardens, succulents, drought tolerance, gardens for the north county, gardens for the south county, coastal gardens
- Landscape design gardens using plants for demonstrating design principles: line, form, color, texture, repetition, balance, masses and scale
- Issues of urban forestry: street tree plantings, creating plant communities within the city, effects of pollution, management of resources: soil, water, and energy, use of chemicals and pesticides
- Water-wise gardens adapted to low water use
- Trial plots of nursery introductions
- Horticultural practices: soil preparation, composting, mulching, integrated pest management, integrated plant management, drip irrigation, subsurface irrigation, areas for new irrigation technology
- Seasonal displays of plants to enhance year-round interest
- Historic perspective of garden development
- Wildlife demonstration garden
- Demonstration garden of plant repellents for deer, gophers, and other pests
- Hardscape - garden courtyards, cisterns and patios
- Origins of introduced weed species and methods of seed dispersal

- ❑ Garden design competition displays - individually defined spaces provide a palette for fun, whimsical and evolving designs that explore plants and building materials from new perspectives
- ❑ California native plant cultivars - displays native plant cultivars that have been introduced to the nursery industry for their landscape value. The display also serves as a trial garden for the introduction of new cultivars.

F. Potential Contributors

California State Nursery and Landscape Association
California Native Plant Society
International Society of Arboriculture - Southern California Chapter
Master Gardeners
Center for the Development of Hardy Plants
American Horticultural Society
California Historical Society
California Chapter - American Society of Landscape Architecture

G. Regional Botanical Institutions and Resources

- ❑ California:
 - California Native Plant Society
 - Santa Barbara Botanical Garden
 - University of California - Berkeley Botanical Garden
 - Santa Cruz Arboretum
 - Harold Koopowitz - UC Irvine, Horticultural Introductions
 - East Bay Regional Parks(Tilden)
 - Strybing Arboretum, Golden Gate Park
 - Theodore Payne Foundation
 - Rancho Santa Ana Botanic Garden
- ❑ Mediterranean Basin:
 - Barcelona Botanical Garden
 - Naples Botanical Garden
 - Nice Botanical Garden
- ❑ Chile:
 - Vina del Mar Botanical Garden, Maria Ricci-Director, CONAF Supported
 - University of Chile and Catholic University in Santiago
 - Universities in Concepcion and La Serena
- ❑ Cape Region of South Africa:
 - Harold Porter Botanical Garden Reserve, East Cape Town
 - Kirstenbosch and satellite gardens - Steve Hopper, Director
- ❑ South and Southwestern Australia:
 - King's Park Botanical Garden in Perth
 - National Botanic Garden
 - Silverhill Seeds

- ❑ South Australia:
 - Royal Botanic Garden, Adelaide and satellite facilities



- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
- Preferred Plan Summary
- Visitor Experience & Interpretive Plan
- Mediterranean Plant Collections
- Implementation Strategies
- Staffing & Operations
- **Appendices**



APPENDIX D:

DETAILED COST ESTIMATE

APPENDIX D: Summary Estimate of Probable Construction Costs Phases 1-5

MASTER PLAN PROJECT PHASING

Revised 6/11/98

Item No.	Description	TOTAL COSTS	Phases 1-5 Subtotal Cost	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
A.	Administration Building	\$355,000	\$355,000			\$355,000		
B.	Visitor Center	\$1,653,950						
	Visitor Services (with small library)		\$383,950	\$383,950				
	Orientation and Exhibit Gallery		\$1,270,000	\$1,270,000				
C.	Mediterranean Garden Terrace	\$268,400	\$268,400	\$80,520	\$187,880			
D.	Botanical Garden Shop	\$176,900						
	Gifts and Books		\$156,900	\$62,760	\$94,140			
	Plant Shop		\$20,000	\$20,000				
E.	Education and Research Building	\$814,875	\$814,875				\$814,875	
F.	Propagation Center & Collections Support Facility	\$980,500	\$980,500	\$50,000	\$310,167	\$310,167	\$310,166	
G.	Amphitheater	\$331,900	\$331,900		\$331,900			
H.	Roads and Circulation	\$1,668,743						
	Visitor Access Paved two way A/C entry roads		\$221,375	\$221,375				
	Parking Lot (322 total spaces - Ph 1 50, Phs 2-5, 68 per phase)		\$466,538	\$72,894	\$98,411	\$98,411	\$98,411	\$98,411
	Propagation Center Road and Parking		\$60,500		\$60,500			
	Combined 2-Way Tram & Primary Visitor Trails (16' wide)							
	Southern and Northern Hemisphere		\$206,500		\$103,250	\$82,600	\$20,650	
	Path/Tram Only 12ft wide		\$28,350		\$14,175	\$14,175		
	Path/Visitor Trail 10 ft wide		\$108,000		\$54,000	\$54,000		
	Tram (rubber wheeled - battery operated 1st car)		\$100,000		\$100,000			
	Secondary trails 8 feet wide (decomposed granite)							
	Chile		\$15,360		\$15,360			
	Propagation Center Trail		\$5,760		\$5,760			
	Tertiary Trails 5 feet wide (decomposed granite)							
	California Signature Garden		\$24,000			\$24,000		
	Gardens of Exploration Trails (decomposed granite)		\$70,860	\$70,860				
	Main SLOBG Entry Road Bridge		\$127,500	\$127,500				
	Visitor Path Bridges		\$234,000	\$20,000	\$60,200	\$60,200	\$46,800	\$46,800
	H. Phase Subtotal Roads and Circulation		\$1,668,743	\$512,629	\$511,656	\$333,386	\$165,861	\$145,211
I.	5-Mediterranean Signature Gardens & Collections	\$6,361,136						
	#1 Central and Southern California Garden Collection		\$1,041,000		\$260,250	\$260,250	\$260,250	\$260,250
	#s 2-5 Mediterranean Signature Garden Collections		\$3,041,136		\$760,284	\$760,284	\$760,284	\$760,284
	Entry Display Grove and Collections		\$272,500	\$68,125	\$122,625	\$81,750		
	Open Space and Buffer Areas		\$155,000		\$38,750	\$38,750	\$38,750	\$38,750
	Gardens of Exploration, Demonstration & CA Cultivars		\$1,239,000	\$1,239,000				
	Horticultural Displays - Parking lot		\$70,000	\$14,000	\$14,000	\$14,000	\$14,000	\$14,000
	Major Tree Groves in the Signature Gardens		\$100,000	\$100,000				
	Interpretative Signs		\$175,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
	Plant Labeling		\$50,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
	Agricultural Display Areas		\$217,500			\$217,500		
	I. Med. Signature Gardens and Collections Subtotal		\$6,361,136	\$1,466,125	\$1,240,909	\$1,417,534	\$1,118,284	\$1,118,284
J.	Natural Water Features	\$223,750	\$223,750	\$35,000	\$47,186	\$47,188	\$47,188	\$47,188
K.	Utilities	\$892,162	\$892,162	\$267,649	\$267,649	\$133,824	\$133,824	\$89,216
L.	Interpretation Stations	\$836,000	\$836,000	\$200,000	\$159,000	\$159,000	\$159,000	\$159,000

APPENDIX D: Summary Estimate of Probable Construction Costs Phases 1-5

MASTER PLAN PROJECT PHASING

Revised 6/11/98

Item No.	Description	TOTAL COSTS	Phases 1-5 Subtotal Cost	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
M.	Site Furnishings	\$291,950	\$291,950	\$25,000	\$66,736	\$66,738	\$66,738	\$66,738
SUBTOTAL (Maximum allowable construction costs)		\$14,855,266		\$4,373,633	\$3,217,221	\$2,822,836	\$2,815,935	\$1,625,636
	<i>DESIGN & CONSTRUCTION CONTINGENCY @15%</i>	<i>\$2,228,290</i>		<i>\$656,045</i>	<i>\$482,583</i>	<i>\$423,425</i>	<i>\$422,390</i>	<i>\$243,845</i>
	<i>Surveys, Environmental & Permit Studies & Permit Costs @ 3%</i>	<i>\$445,658</i>		<i>\$131,209</i>	<i>\$96,517</i>	<i>\$84,685</i>	<i>\$84,478</i>	<i>\$48,769</i>
	<i>DESIGN FEES @ 12%</i>	<i>\$1,782,632</i>		<i>\$524,836</i>	<i>\$386,067</i>	<i>\$338,740</i>	<i>\$337,912</i>	<i>\$195,076</i>
	TOTAL COSTS IN 1997 \$	\$19,311,846		\$5,685,722	\$4,182,387	\$3,669,687	\$3,660,715	\$2,113,327
	Escalation Factor @ 3%	\$579,356		\$170,572	\$125,472	\$110,091	\$109,821	\$63,400
	TOTAL COSTS IN 1998 \$	\$19,891,202		\$5,856,294	\$4,307,859	\$3,779,777	\$3,770,537	\$2,176,727

NOTES:

- Excludes SLOBG Administration, project management, operations and maintenance costs
- Excludes escalation costs for development beyond 1998
- Excludes endowment operating costs

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
A.	SLO BOTANICAL GARDEN ADMINISTRATION BUILDING (Phase 3)				2,750			\$355,000
	Administration and Staff Offices	900	SF			\$80	\$72,000	
	Board room	450	SF			\$125	\$56,250	
	Computer room	150	SF			\$100	\$15,000	
	Rest rooms	750	SF			\$125	\$93,750	
	Storage and Locker room	150	SF			\$75	\$11,250	
	Combined Docent offices and meeting room	250	SF			\$75	\$18,750	
	Workspace and reprographic area	100	SF			\$60	\$6,000	
	Rooftop Garden Terrace - paving and plantings	1,200	SF			\$35	\$42,000	
	Furnishings - tables, chairs, file cabinets, tack boards, task lights	1	Allow			\$15,000	\$15,000	
	Office Equipment - Phone, fax, 3 computers, printer, copier	1	Allow			\$25,000	\$25,000	
B.	SLO BOTANICAL GARDEN VISITOR CENTER (Phases 1)				28,700			\$1,653,950
	Visitor Center Reception and Orientation Area							
	Visitor Services Building (Phase 1)			2,100				
	Entrance & Reception Lobby	250	SF			\$100	\$25,000	
	Visitor Information Area and Displays	800	SF			\$150	\$120,000	
	Snack Bar - food preparation area	200	SF			\$125	\$25,000	
	Snack Bar Storage Area	100	SF			\$50	\$5,000	
	Rest rooms	750	SF			\$135	\$101,250	
	Visitor Services Outdoor Areas			18,800				
	Rooftop Garden Terrace - paving and plantings	750	SF			\$35	\$26,250	
	Earthwork (grading, fill)	800	CY			\$25	\$20,000	
	Visitor Center Walks (concrete)	12,800	SF			\$3	\$35,200	
	Chumash Circle Entry Courtyard (enriched paving treatment)	5,250	SF			\$5	\$26,250	
	Interior Botanical Garden Exhibits and Displays (Phase 2)			7,800				
	Orientation and Exhibit Gallery	3,000	SF			\$125	\$375,000	
	Orientation Theater (50 people)	800	SF			\$125	\$100,000	
	Interior Exhibit and Display Area	3,800	SF			\$200	\$760,000	
	Multi-purpose Space	200	SF			\$75	\$15,000	
	A.V. Equipment - projectors, sound system and screen	1	Allow			\$15,000	\$15,000	
	Furnishings, chairs, tack boards, tables & misc.	1	Allow			\$5,000	\$5,000	
C.	MEDITERRANEAN GARDEN TERRACE (Phases 1&2)				8,000			\$268,400
	Outdoor seating and gathering area							
	Terrace Walls	280	LF			\$80	\$22,400	
	Paved tile mosaic interpreting the 5 Med. Floristic regions	8,000	SF			\$22	\$176,000	
	Earthwork (grading, fill)	2,000	CY			\$35	\$70,000	

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
D. BOTANICAL GARDEN SHOP (Phases 1 & 2)					2,310			\$176,900
	Giftshop and Bookstore (Phases 1&2)			1,210				
	Sales area	800	SF			\$100	\$80,000	
	Cashier and receiving	150	SF			\$90	\$13,500	
	Inventory	800	SF			\$30	\$24,000	
	Storage area	80	SF			\$65	\$5,200	
	Stroller rental and storage	80	SF			\$65	\$5,200	
	Sales office	100	SF			\$90	\$9,000	
	Store Furnishings, Fixtures and Office Supplies	1	Allow			\$20,000	\$20,000	
	Plant Shop (Phase 1)			1,100				
	Plant sales - exterior display area	1,000	SF			\$15	\$15,000	
	Storage area	100	SF			\$50	\$5,000	
E. EDUCATION & RESEARCH FACILITIES (Phase 4)					7,025			\$814,875
	Dual Use Meeting and Lecture Room	3,600	SF			\$100	\$360,000	
	Meeting and Lecture Room (accommodating 90 people)							
	Furnishings - tables, chairs, file cabinets, etc.	1	Allow			\$5,000	\$5,000	
	Library	1,200	SF			\$115	\$138,000	
	Library Books and References (2,000 books)	2,000	Each			\$40	\$80,000	
	Research Greenhouse	1,400	SF			\$60	\$84,000	
	Herbarium	300	SF			\$75	\$22,500	
	Research and Education Staff Offices	400	SF			\$90	\$36,000	
	Furnishings - tables, chairs, file cabinets, lab equipment, etc.	1	Allow			\$20,000	\$20,000	
	Restroom	125	SF			\$135	\$16,875	
	Earthwork (grading, fill)	1,500	CY			\$35	\$52,500	

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
F. PROPAGATION CENTER & COLLECTION SUPPORT FACILITIES (Phases 1-4)					77,300			\$980,500
	Employee (full time and seasonal) Requirements			1,400				
	Offices and Meeting Rooms	400	SF			\$100	\$40,000	
	Multiple Use Room	300	SF			\$90	\$27,000	
	Lunchroom, rest room, shower and changing area	700	SF			\$75	\$52,500	
	Furnishings	1	Allow			\$4,000	\$4,000	
	Propagation Facilities							
	Buildings			10,100				
	Maintenance, Storage Service Facility	1,600	SF			\$80	\$128,000	
	(1) Lathhouse	2,000	SF			\$45	\$90,000	
	(1) Headhouse	3,000	SF			\$75	\$225,000	
	(1) Laboratory	400	SF			\$110	\$44,000	
	(2) Propagation Greenhouses	3,000	SF			\$60	\$180,000	
	Seed bank storage room	100	SF			\$60	\$6,000	
	Equipment Storage	200	SF			\$55	\$11,000	
	Furnishings	1	Allow			\$5,000	\$5,000	
	Site Improvements			65,800				
	Earthwork (grading and fill)	600	CY			\$35	\$21,000	
	Plant Nursery - exterior propagation area	60,000	SF			\$2	\$120,000	
	Propagation Service Yard	4,000	SF			\$5	\$18,000	
	Material Storage Area	1,800	SF			\$5	\$9,000	
G. AMPHITHEATER (Phase 2)					10,550			\$331,900
	Amphitheater			10,550				
	Seating Area (accommodating 500 visitors)	5,000	SF			\$10	\$50,000	
	Stage area	1,600	SF			\$4	\$6,400	
	Paving	2,000	SF			\$3	\$6,000	
	Terrace Walls	450	LF			\$50	\$22,500	
	Columns	100	LF			\$50	\$5,000	
	Food staging area	200	SF			\$90	\$18,000	
	Restroom and Changing Area	900	SF			\$125	\$112,500	
	Storage Area	300	SF			\$55	\$16,500	
	Light and sound system	1	allow			\$25,000	\$25,000	
	Earthwork (grading, fill)	2,000	CY			\$35	\$70,000	

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
H. ROADS & CIRCULATION (Phases 1-5)				562,810				\$1,668,743
	Visitor Access Paved two way A/C entry roads	80,500	SF			\$3	\$221,375	
	Parking Lot (320 spaces)	143,550	SF			\$3	\$466,538	
	Propagation Center Road and Parking	22,000	SF			\$3	\$60,500	
	Combined Tram and Primary Visitor Trails (16' wide)							
	Southern and Northern Hemisphere	59,000	SF			\$4	\$206,500	
	Path Tram Only (12' wide)	10,500	SF			\$3	\$28,350	
	Primary Visitor Trails (10' wide)							
	Southern and Northern Hemisphere	48,000	SF			\$2	\$108,000	
	Tram Vehicle (rubber wheeled car - battery operated)	100,000	allow			\$1	\$100,000	
	Secondary trails 8 feet wide (decomposed granite)							
	Chile	15,360	SF			\$1	\$15,360	
	Propagation Center Trail	5,760	SF			\$1	\$5,760	
	Tertiary Trails 5 feet wide (decomposed granite)							
	California	24,000	SF			\$1	\$24,000	
	Gardens of Exploration							
	Horticultural Therapy	7,040	SF			\$2	\$10,560	
	Ecology	11,000	SF			\$2	\$16,500	
	Biology	10,000	SF			\$2	\$15,000	
	Culture and Horticulture	19,200	SF			\$2	\$28,800	
	Main SLOBG Entry Road Bridge	1,700	SF			\$75	\$127,500	
	Visitor Path Bridges							
	B-1	1,800	SF			\$45	\$81,000	
	B-2	900	SF			\$45	\$40,500	
	B-3	400	SF			\$45	\$18,000	
	B-4	800	SF			\$45	\$36,000	
	B-5	800	SF			\$45	\$36,000	
	B-6	500	SF			\$45	\$22,500	
I. MEDITERRANEAN COLLECTION & GARDEN DISPLAYS (Phases 1-5)				5,665,240				\$6,361,136
	L-1 California (Central and Southern) Signature Garden Collection #1	1,735,000	SF			\$1	\$1,041,000	
	L-2 Mediterranean Signature Garden Collections #'s 2-5	2,172,240	SF			\$1	\$3,041,136	
	Major Tree Grove in Signature Gardens	1	Allow			\$100,000	\$100,000	
	Interpervive Signs	5	Allow			\$35,000	\$175,000	
	Plant Labeling	5	Allow			\$10,000	\$50,000	
	L-3 Entry Display Grove and Collections	545,000	SF			\$1	\$272,500	
	L-4 Open Space and Buffer Areas	620,000	SF			\$0	\$155,000	
	L-5 Gardens of Exploration, Landscape Demonstration & CA Cultivars	413,000	SF			\$3	\$1,239,000	
	L-6 Parking Lot w/ Horticultural Displays	35,000	SF			\$2	\$70,000	
	L-7 Agriculture Display Areas	145,000	SF			\$2	\$217,500	

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
J. WATER FEATURES - Streams & Ponds (Phases 1-5)				113,600				\$223,750
	St-1 Stream Corridor - California	21,600	SF			\$1	\$27,000	
	St-2 Stream Corridor - Mediterranean Basin	16,000	SF			\$1	\$20,000	
	St-3 Stream Corridor - South Africa and Australia	36,000	SF			\$2	\$81,000	
	St-4 Stream Corridor - border between the Chile & So. Africa collections	23,000	SF			\$3	\$57,500	
	St-5 Stream Corridor - Chile	17,000	SF			\$2	\$38,250	
K. UTILITIES (Phases 1-5)								\$892,162
	Water							
	Fire Water Storage	30,000	Gal			\$1	\$29,700	
	Fire Booster Pump	1	LS			\$75,000	\$75,000	
	6" Fire Line	2,600	LF			\$18	\$46,800	
	Fire Hydrant Assembly	3	EA			\$3,450	\$10,350	
	2" Domestic Water Service Assembly	2,800	LF			\$11	\$29,400	
	Fire Department Connection	3	EA			\$525	\$1,575	
	4" Domestic Water Service Line	3,200	LF			\$12	\$38,400	
	Cisterns	6	EA			\$6,000	\$36,000	
	1-1/2" Water conservation recovery system	3,000	LF			\$11	\$31,500	
		Subtotal Water					\$298,725	
	Sewer / Sanitary Systems							
	Clivus multrum (composting toilet)	2	EA			\$100,000	\$200,000	
	1000 Gallon Septic Tank	2	EA			\$3,300	\$6,600	
	1200 Gallon Septic Tank	1	EA			\$3,900	\$3,900	
	4" ABS Laterals	700	LF			\$12	\$8,400	
	Leach Fields	3	EA			\$3,750	\$11,250	
		Subtotal Sewer / Septic System					\$230,150	
	Storm Drain							
	Construct Drainage Ponds	3	EA			\$10,500	\$31,500	
	24" CMP Storm Drain	300	LF			\$42	\$12,600	
		Subtotal Storm Drain					\$44,100	
	Electrical and Gas							
	Solar Energy system	1	Allow			\$90,000	\$90,000	
	Electrical, Telephone & Cable	5,400	LF			\$34	\$186,250	
	2" Gas Line	1,600	LF			\$20	\$32,000	
	Electrical Transformer	1	EA			\$7,812	\$7,812	
	Gas Meter	1	EA			\$3,125	\$3,125	
		Subtotal Electrical and Gas					\$319,187	

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
L. INTERPRETIVE STATIONS (Phases 1-5)								\$836,000
S-1	Building		SF		700	\$65	\$45,500	
	Site Development		SF		3,500	\$20	\$70,000	
	Interpretive Elements		Allow		500	\$125	\$62,500	
S-2	Building		SF		300	\$65	\$19,500	
	Site Development		SF		1,800	\$20	\$36,000	
	Interpretive Elements		Allow		300	\$125	\$37,500	
S-3	Building		SF		400	\$65	\$26,000	
	Site Development		SF		1,000	\$20	\$20,000	
	Interpretive Elements		Allow		400	\$125	\$50,000	
S-4	Building		SF		500	\$65	\$32,500	
	Site Development		SF		2,500	\$20	\$50,000	
	Interpretive Elements		Allow		300	\$125	\$37,500	
S-5	Building		SF		300	\$65	\$19,500	
	Site Development		SF		2,250	\$20	\$45,000	
	Interpretive Elements		Allow		300	\$125	\$37,500	
S-6	Building		SF		300	\$65	\$19,500	
	Site Development		SF		2,250	\$20	\$45,000	
	Interpretive Elements		Allow		500	\$125	\$62,500	
S-7	Building		SF		500	\$65	\$32,500	
	Site Development		SF		2,500	\$20	\$50,000	
	Interpretive Elements		Allow		300	\$125	\$37,500	
M. SITE FURNISHINGS & FEATURES (Phases 1-5)								\$291,950
	Benches	40	EA			\$500	\$20,000	
	Garden Concession - tables and chairs	24	EA			\$800	\$19,200	
	Gates							
	Main SLOBG Gate (by commissioned artist)	1	EA			\$20,000	\$20,000	
	Facility Security Gates	5	EA			\$2,500	\$12,500	
	Fencing	3,000	LF			\$8	\$24,000	
	Tables and chairs	20	EA			\$1,400	\$28,000	
	Bike racks	4	EA			\$500	\$2,000	
	Trash Receptacles	25	EA			\$500	\$12,500	
	Drinking Fountains	6	EA			\$2,500	\$15,000	
	Water Features							
	Pools	900	SF			\$40	\$36,000	
	Jets	6	Ea			\$1,000	\$6,000	
	Runnel	450	SF			\$15	\$6,750	
	Filtration System	1	Allow			\$40,000	\$40,000	
	Signage (informational and directional)	1	Allow			\$50,000	\$50,000	

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS	
								Preliminary Estimate of Total Costs	\$14,855,266
								Design and Construction Contingency @ 15%	\$2,228,290
								Surveys, Environmental Permits & Studies, Permit Fees @ 3%	\$445,658
								Architecture, Engineering and Exhibitory Design Fees @12%	\$1,782,632
								GRAND TOTAL 1997 \$	\$19,311,846
								Escalation Factor @ 3%	\$579,356
								GRAND TOTAL 1998 \$	\$19,891,202

Estimated in 1998 \$'s. Escalate construction cost based on future estimate of phased development.

APPENDIX D: Detailed Estimate of Probable Construction Costs

Revised 6/11/98

Item	Description	Unit Breakdown Square Feet	Unit	Subtotal Square Feet	Total Square Feet	SF Costs	Subtotal Costs	TOTAL COSTS
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- Executive Summary
- Project Goals
- Master Plan Methodology
- Design Concept
- Site Planning & Design
- Preferred Plan Summary
- Visitor Experience & Interpretive Plan
- Mediterranean Plant Collections
- Implementation Strategies
- Staffing & Operations
- **Appendices**



APPENDIX E:

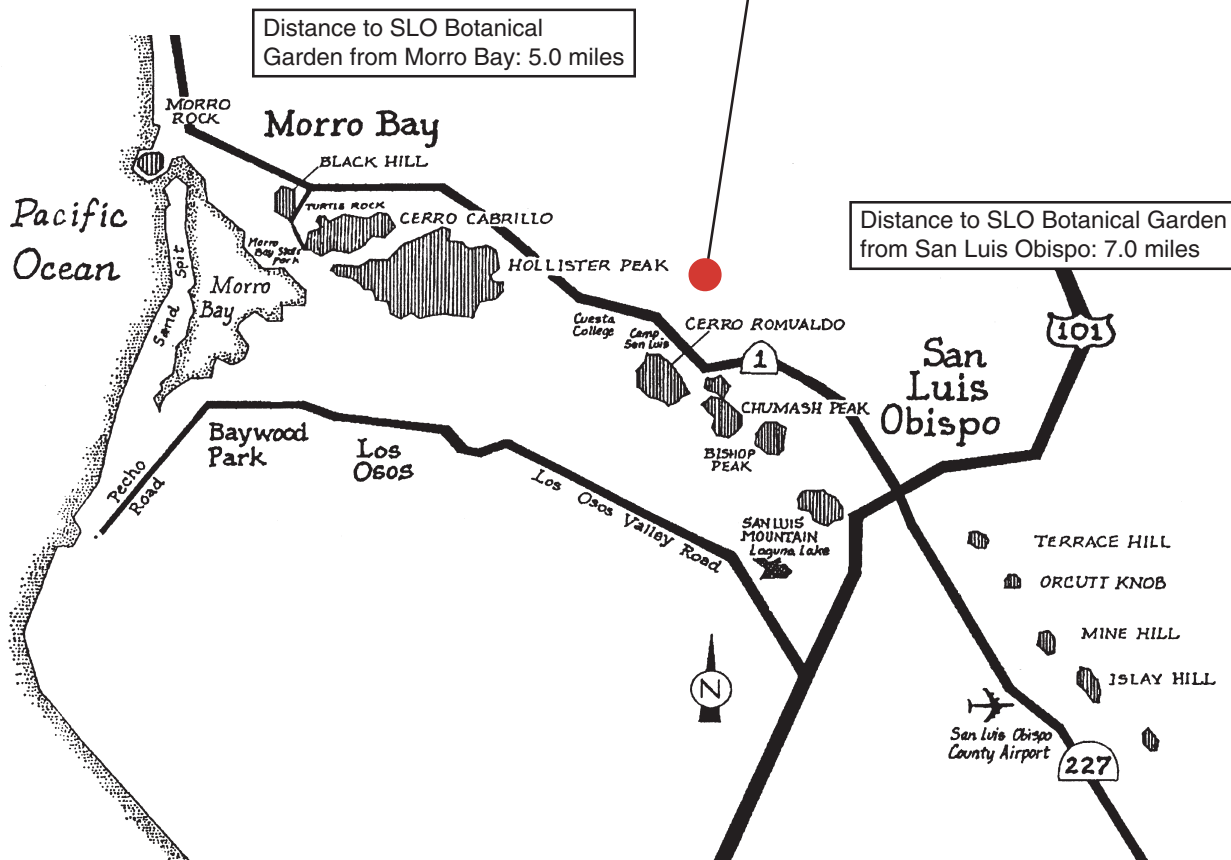
SITE LOCATION MAPS

APPENDIX E. SITE LOCATION MAPS



SLOBG Regional Vicinity Map

The map on the left shows San Luis Obispo's location on the Central California Coast. Below is local vicinity map of the area, showing the coastline, neighboring communities and the distance from both San Luis Obispo and Morro Bay to the Botanical Garden site. Neither map is drawn to scale.



SLOBG Local Vicinity Map



- Executive Summary
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APPENDIX F: BIBLIOGRAPHY

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APPENDIX G: PHOTO CREDITS

APPENDIX G: PHOTO CREDITS

Page no.	Description	Photo credit
Front cover		
(small-top)	<i>Auracaria auracana</i> on ridge, Chile	Pablo Valenzuela Vaillant
(small-mid)	California wildflower meadow	Robert Ornduff
(small-bottom)	<i>Pinus pinea</i> , Mediterranean	Richard Coomber
(large)	Cerro Romualdo, SLO County	David Holmes
Back cover		
(small-top)	Namagualand daisies, South Africa	Robert Ornduff
(small-mid)	<i>Eucalyptus macrocarpa</i> , Australia	Robert Ornduff
(small-bottom)	<i>Protea repens</i> , South Africa	Robert Ornduff
Section dividers		
(small-left)	<i>Protea repens</i> , South Africa	Robert Ornduff
(small-mid)	<i>Eucalyptus macrocarpa</i> , Australia	Robert Ornduff
(small-right)	<i>Auracaria auracana</i> on ridge, Chile	Pablo Valenzuela Vaillant
(sect. 1, 4)	<i>Pinus pinea</i> , Mediterranean	Richard Coomber
(sect. 2, 5, 8, Appendices)		
(sect. 3, 6, 9)	Namagualand daisies	Robert Ornduff
(sect. 7, 10)	Fynbos, South Africa	Robert Ornduff
3	Chiléan wildflowers	Pablo Valenzuela Vaillant
4	Avenales Refuge, SLO County	Craig Cunningham
7	<i>Fremontodendron californica</i> 'Glory'	Eva Vigil
8	Cerro Romualdo	David Holmes
9 (top right)	Castilleja exserta	Malcolm McLeod
9 (mid right)	Aerial view of SLOBG site	Malcolm McLeod
10	<i>Ericameria linearifolia</i> & <i>Quercus douglasii</i>	Craig Cunningham
12	Oak woodland, California	Craig Cunningham
13	Mediterranean border plants	Portico, Mike Hamm
14	Toscana, Italy	Sandro Santioli
15 (mid right)	Garden water sculpture	Portico, Mike Hamm
15 (lower right)	Vernal pool	Portico, Mike Hamm
16 (top right)	Horticultural Demonstration Garden, Munich	Portico, Mike Hamm
16 (bottom)	Gardens of Exploration, France	Portico, Mike Hamm
17	<i>Monolopia lanceolata</i> , Temblor Range	Craig Cunningham
18	Kangaroo Paws, Western Australia	Robert Ornduff
19 (mid right)	Tuscan Landscape, Italy	Paolo Busato
19 (bottom right)	<i>Monolopia lanceolata</i> - close up	Malcolm McLeod
21 (top left)	Visitor trams, Missouri Botanic Garden	Portico, Mike Hamm
21 (top right)	<i>Platystemon californicus</i>	Malcolm McLeod
21 (bottom)	Native flora, Santa Barbara Botanic Garden	Eva Vigil
23	Garden water sculpture	Portico, Mike Hamm

24 (mid right)	Center for Urban Horticulture, Seattle	Portico, Mike Hamm
25	International Garden Exhibition, Europe	Portico, Mike Hamm
26 (top)	Chumash Indian Pictograph	"Rock Paintings of the Chumash"
27	Dicoridum fossil, Australia	"Greening of Gondwana"
28 (upper left)	Dickenson Interpretive Center, Illinois	Portico, Jan Coleman
28 (middle right)	Dickenson Interpretive Center, Illinois	Portico, Jan Coleman
29 (mid left)	Mediterranean mosaic tile pattern	Portico, Mike Hamm
29 (mid right)	Mediterranean grass	Portico, Mike Hamm
37	<i>Cyphostemma juttae</i> , Cape of South Africa	Robert Ornduff
38	<i>Geissorhiza rochensis</i> , Cape of South Africa	Robert Ornduff
39	<i>Quercus agrifolia</i> , California	Supplied by SLOBG
41	<i>O. hispidus</i> - Owl's Clover at Shell Creek	Craig Cunningham
42	<i>Iris douglasiana</i> - Douglas Iris	Eva Vigil
43	Alhambra, Granada, Spain	Portico, Mike Hamm
44	<i>Echium wildpretii</i> , Canary Islands	Robert Ornduff
45	<i>Araucaria auracana</i> , Chilé	Robert Ornduff
46	Coastal cactus, Chile	Robert Ornduff
47	<i>Nothofagus</i> hillside	Pablo Valenzuela Vaillant
48 (top left)	Fynbos, Cape of South Africa	Robert Ornduff
48 (lower right)	<i>Eucalyptus macrocarpa</i> , Australia	Robert Ornduff
49 (mid left)	<i>Xanthorrhoea quadrangulata</i> - Grass Trees	Robert Ornduff
50	<i>Vitis vinifera</i> - Grape vines	Robert Ornduff
52	<i>Eschscholzia californica</i> - California poppy	Malcolm McLeod
54	Namagualand daisies, South Africa	Robert Ornduff



Prepared by The Portico Group, Seattle, USA, for the
San Luis Obispo Botanical Garden