Planning Home

University of Oregon

Sustainable Development

A University Sustainable Development Plan. AUA 2001 Case Study Award.

Campus Sustainability Tour: View a copy of the campus sustainability tour.

Sustainable Development Plan: A primary new "Sustainable Development" pattern has been added to the Long Range Campus Development Plan (LRCDP) to describe the overall concept of sustainable development. The Sustainable Development Plan (below) is a special-purpose study that will accompany the LRCDP, describing in more detail the intent of the Level 1 "Sustainable Development" pattern. *To download a pdf version of the Sustainable Development Plan, click here.*

If you would like additional information (including a hard copy of the document) or have any questions, please contact Christine Thompson at the University Planning Office (E-mail: cthomps@oregon.uoregon.edu or phone: (541) 346-5572). To download a pdf version of this document, click on the link at the top of this page.

Other Campus Sustainability Efforts: The University of Oregon is engaged in many sustainable efforts beyond the sustainable development plan. To learn more about the recognition the University of Oregon has received for its efforts in sustainability click here.

Sustainable Initiatives Summary: View a copy of the Sustainable Initiatives Summary.

Sustainable Development Plan

University of Oregon

October 5, 2000

1999-2000 Development, Policy, Implementation, and Transportation Subcommittee

University Planning Office

University of Oregon

1999-2000 Development, Policy, Implementation, and Transportation Subcommittee of the Campus Planning Committee (CPC): Dean Livelybrooks, chair, Physics; Sarah Alexander, Student Representative; Jane Brubaker, Facilities Services (CPC); Tom Dyke, Vice Provost for Research; Michael Fifield, Architecture; Cynthia Girling, Landscape Architecture; Lynn Kahle, MarketingScott Kolwitz, Student Representative Randall McGowen, History Robert Melnick, Architecture and Allied Arts Nancy Slight-Gibney, Library System Greg Stripp, Public Affairs and Development Terry Takahashi, Biology

Staff: Christine Taylor Thompson, University Planning

University Planning Director and Architect: Chris Ramey

To download a pdf version of the Sustainable Development Plan, click here.

Sustainable Development Plan

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Introduction

Purpose:

The purpose of the Sustainable Development Plan is to describe the intent and implementation of the Long Range Campus Development Plan (LRCDP) "Sustainable Development" pattern:

(q) Sustainable Development

> **The development, repair, maintenance and operations of the University of Oregon today have an impact on the local environment and the ability of future generations**

to thrive. The physical environment of the University - landscape and buildings - must also support and enhance the excellence of our academic programs.

Therefore: The University will strive to become a national leader in sustainable development. All development, redevelopment, and remodeling on the University of Oregon campus shall incorporate sustainable design principles including existing and future land use, landscaping, building, and transportation plans. Sustainable endeavors will support the University's missions of teaching, research, and public service.

The university's physical environment has a substantial impact on the quality of the environment:

o More than 60% of all electricity used and more than 30% of all energy consumed in the United States are used in buildings.

o More than 35% of all municipal solid waste produced comes from building construction and operations. Current construction practices create 2 to 2 1/2 pounds of solid waste per square foot.

o Buildings consume 40% of raw stone, gravel and sand, and 25% of virgin wood.

o 25% of all water is used in buildings

As a result, there are substantial environmental benefits to practicing sustainable design on campus. In addition, to environmental benefits, there are economic and health/safety benefits associated with sustainable design:

o Conservation of energy is one of the most significant aspects of environmentally conscious design. An energy efficient design reduces the amount of raw materials consumed, annual operating costs and the amount of carbon dioxide produced.

o It has been shown that the improved comfort, performance, and aesthetics of environmentally conscious buildings result in lower operating costs. Recent studies show that making a building environmentally responsive can increase worker productivity by 6% to 15% or more.

o Recycling demolition materials can substantially reduce the amount of solid waste produced and reduce landfill fees.

o Building restoration, historic preservation, renovation, and adaptive reuse offer the greatest opportunity for conservation of embodied energy - the amount of energy required to produce, transport, construct, install, maintain, and dispose of a material - in a building.

o Using building materials with low embodied energy preserves natural resources and can strengthen

local industries.

o Reduced water usage and increased on-site storm water drainage preserves water quality and reduces operating costs.

(Data from: The U.S. Green Building Council and The Ecology of Architecture by Laura Zeiher, 1996 which includes statistics from Rocky Mountain Institute's Primer on Sustainable Building).

This Sustainable Development Plan was prepared by the 1999-2000 Development, Policy, Implementation, and Transportation (DPIT) Subcommittee of the Campus Planning Committee. The process for developing the plan is described in Appendix C.

Sustainable Development Patterns

The plan consists of 13 patterns grouped into seven categories addressing sustainable design:

Planning and Design Process: Performance Standards, Project Management, Living Design and Connection to the Environment

Land Use/Transportation: Use What We Have Wisely and Car-less Commuting

Sites/Landscaping: Site Benefits, Healthy Ecosystems, and Campus Trees

Water: Water

Energy: Save Energy

Materials and Resources: Life Cycle Costs

Indoor Environmental Quality: Local Occupancy Control

Each pattern is followed by a series of approaches and examples designed to serve as a guide for their implementation. The Long Range Campus Development Plan (LRCDP) contains many patterns and policies that address sustainable design principles. References to these existing policies and patterns are included in the approaches and examples.

Planning and Design Process

Project Management

Effective sustainable development begins when the project is conceived. Management of the project design and construction process will affect the overall success of sustainable development.

Therefore: Integrate sustainable practices into the entire design and construction process.

Approaches/Examples:

o Require project Request for Qualifications to include a section asking potential architects to explain their experience in environmentally sustainable design.

o Ensure user involvement in the development process (supported by basic LRCDP principle of participation and user groups, page 12, #e). This participation allows individuals to inject their own values (including concepts of sustainable growth) into the decision-making process.

o Revisit completed buildings to determine which systems are working.

Performance Standards

Sustainable principles must be measured and enforced by a defined set of standards to ensure effective implementation.

Therefore: All new construction projects that are required to comply with the State Energy Efficiency Design (SEED) program shall be rated according to the LEED Green Building Rating System.* These projects shall achieve the equivalence of the base level of LEED certification (and strive for a higher level) unless there is a compelling reason why this is not possible.

*The LEED Green Building Rating System, created by the U.S. Green Building Council, is a set of performance standards where credits are earned for satisfying each criteria. The standards are based on accepted energy and environmental principles and strike a balance between known effective practices and emerging concepts. Different levels of green building certification are awarded based on the total credits earned.

Approaches/Examples:

o Review the required standards at the onset of a project. Refer to Appendix A for additional information on the LEED Rating System. The LEED Rating System covers many, but not all of the concepts addressed on the sustainable patterns listed below.

Living Design

The people who occupy, operate, and maintain the completed building/site will determine whether sustainable principles embodied in the building/site design are successful over time.

Therefore: Design the building/site to encourage the people who occupy, operate and maintain the building/site to practice environmentally sustainable methods.

Approaches/Examples:

o Keep it simple. Avoid complicated high cost systems that are difficult to operate, maintain, and repair.

o Prepare an environmentally sound building/site management and maintenance plan. Train faculty, staff, and students to observe standards of care for the building/site to maximize efficient use.

Connection to the Environment

When people feel connected to and are knowledgeable about their environment, they will take better care of it. The University provides an ideal setting for sharing this knowledge.

Therefore: The campus development process and resulting designs/policies will provide opportunities to educate people about the University's cultural and environmental features.

Approaches/Examples:

o Ensure user involvement in building/site development process and land use development policy making (supported by basic LRCDP principle of participation and user groups, page 12, #e)

o Encourage participation of students (i.e. class projects such as environment restoration and monitoring, design projects, etc.) and integrate environmental knowledge into courses.

o Use campus environments and building/site projects as educational tools to demonstrate the importance of the environment and sustainable design concepts. (i.e. integrate informational displays such as plaques indicating the design parameters - daylighting, foot-candles, and occupancy - in each classroom or provide an energy use "real time" display).

Land Use/Transportation

Use What We Have Wisely

New construction uses up limited land and valuable natural resources on and off campus. In addition, green open spaces, landscape features, and historic resources help define the University's cultural character and are vital to providing a stimulating intellectual environment.

Therefore: All new campus growth should promote efficient development and, whenever beneficial, make use of existing facilities to preserve valuable open space and historic resources.

Approaches/Examples:

o Priority shall be given to maintaining and renovating existing buildings and to retrofitting existing buildings to their maximum energy efficiency (supported by LRCDP policy, page 34, #2). Conduct an analysis to determine the viability of reusing existing structures by taking into account the environmental and cultural benefits of doing so.

o Preserve, complete and/or extend the fundamental open space framework (LRCDP policy, page 13, #1 and page 37, #8).

o Promote efficient development within the established open space framework, four storey limit and maximum allowed densities according to the LRCDP.

o Justify space needs on the basis of demonstrated need (LRCDP, page 29, #1).

Car-less Commuting

Even the most energy efficient, state-of-the-art green campus will carry a significant environmental burden if people get in their cars each day to get to campus. If ways can be found to make it easier and cheaper to get around without a car, people will leave their cars at home.

Therefore: The University will provide incentives for walking, bicycling, busing, and ride sharing, will discourage the use of single-occupancy cars, and will strive to link transportation planning to land-use planning.

Approaches/Examples:

o Apply all existing transportation patterns and policies (LRCDP pages 42-48). Implement Transportation Demand Management (TDM) strategies contained in the Transportation Plan and 1996 Transportation Study recommendations.

o Maximize walk-able or bike-able housing options for students, staff and faculty (Transportation Plan and Student Housing Distribution pattern, page 18)

o Contain the instructional core within a six- to seven-minute walking circle to allow for pedestrian travel (LRCDP, page 14, #3 and University Shape and Diameter pattern, page 18).

Sites/Landscape

Site Benefits

Every site is unique and has local environmental qualities which can be used to enhance the sustainability of development.

Therefore: All new development will site and orient the building and landscape features to take advantage of site conditions and context within the parameters of the established organizational framework of the campus.

Approaches/Examples:

o Orient buildings to make optimal use of site conditions such as solar, airflow, lighting, soil, vegetative, and topographic conditions (supported by LRCDP Site Repair pattern, page 15).

o Make usable outdoor spaces (supported by Positive Outdoor Space and South Facing Outdoors and Accessible Green LRCDP patterns, page 15).

o Select and position landscape materials to aid in achieving energy efficiency (LRCDP policy, page 36, #2). Take advantage of trees to reduce cooling loads and use hedge rows or shrubbery to block cold winter winds or help channel cool summer breezes into the building.

Healthy Ecosystems

Ecologically healthy landscapes are essential to long term maintenance of local ecosystems and biodiversity. Each site consists of interconnected living systems, all linked to the environment beyond the site's boundaries.

Therefore: All development will protect the existing ecosystems to the greatest extent possible.

Approaches/Examples:

o Protect parks, forests, wetlands, wildlife habitats, agricultural land, and watersheds to the greatest extent possible.

o Consider how the landscaped areas are linked to one another creating corridors for plants and animals. Integrate animal food sources and shelter. Tie these corridors in with the established open space framework.

o Use native or well-adapted species for landscaping when appropriate while recognizing the importance of a variety of plant materials necessary for instructional use (LRCDP policy, page 36, #3).

o Maintain an Integrated Pest Management approach which carefully considers plant selection and design instead of using herbicides, pesticides and fertilizers and irrigation whenever possible (supported by LRCDP policy, page 36, #4).

o Preserve the integrity of the site, in particular trees, significant plant materials, and topsoil (supported by LRCDP policies, page 36, #5-8). Develop on previously disturbed areas.

o Maximize noise containment of building systems. o Minimize night lighting within safety parameters (LRCDP policy, page 38, #1,2,3 & 8). Selection of exterior lighting standards should be consistent with energy conservation concerns (LRCDP policy, page 37, #1 & 7).

o Make underground systems easily accessible. Use vaults where possible to avoid tearing up the landscape.

Campus Trees

The University's trees provide significant defining features on campus and are vital components of

the local ecosystems.

Therefore: Development will preserve and protect existing trees to the maximum extent possible and plan for continued enhancement of the campus' forest.

Approaches/Examples:

o Preserve and protect the integrity of trees (supported by LRCDP policies, page 36, #5-8).

o Prepare and implement a Campus Tree Forest Plan.

o If proposed development requires removal of a tree, provide funds to replace the tree either on the development site or elsewhere on campus, as determined by the Forest Management Plan.

o Consider whether the massing and shape of proposed development provides adequate space for large-canopy trees, a defining feature of the campus' landscape.

Water

Water

Oregon's water is one of the state's most precious resources. Every building site is in a watershed connected to waterways and wetlands.

Therefore: All development will protect and augment natural drainage, and treat storm water runoff on site to the maximum extent possible.

Approaches/Examples:

o Maximize on-site storm water management. Focus on filtering run-off resulting from rainfall events that are equal to 1" or less (about 80% of all rainfall events in Eugene). Limit off-site drainage whenever possible.

o Use plant material and terrain to slow and absorb runoff, filter sediments, and facilitate infiltration. When appropriate, consider overland flows and ponds to temporarily impound water and allow a slower rate of infiltration.

o Maximize pervious surfaces to permit water infiltration where possible. Make use of the existing pathway network, design paving to serve multiple purposes, and minimize the building footprint.

o Minimize use of landscape irrigation. Establish high and low maintenance landscaping zones - group plants with similar water-use needs - and tie into the irrigation systems. High maintenance zones should be around major building entries and high traffic areas.

o Use natural drainage ways wherever possible. o When appropriate, make use gray water and water-saving devices.

Energy

Save Energy

The ongoing energy use is probably the single greatest environmental impact of a building. Decisions made during the design and construction of a building will affect the environmental performance of that building for decades to come through its energy consumption.

Therefore: Retrofitting existing buildings and designing new buildings for low energy use shall be a priority. Designs will maximize use of passive systems and take advantage of the interactions between separate building elements, such as windows, lighting, and mechanical systems.

Approaches/Examples:

o Give top priority to the University's commitment to a vigorous program of energy conservation as stated in the LRCDP (page 50, #10).

o When possible, retrofit existing buildings to their maximum energy efficiency while preserving their historic character (LRCDP policy, page 50, #10(b)).

o Reduce thermal loads entering the building from the exterior as much as possible. Consider the building envelope design carefully including glazing selection, window and door shading, wall construction, roof color, and building shape.

o Make use of thermal mass to absorb heat and shift peak heating to off-peak hours. Design floor and ceiling surfaces to take advantage of thermal mass.

o Integrate a well controlled daylighting system with other building systems and the overall building design - footprint, surface reflection, location of windows and other openings, light distribution.

o Maximize plug-in unit efficiencies (i.e. use flat panel vs. CRT computers, occupancy sensors on power strips, etc.)

o Maximize lighting efficiencies and reduce heat gain - design for specific tasks, maximize room cavity optics, provide effective control. Light the minimum area for the minimum time (i.e. use occupancy sensors).

o Use properly sized and efficient heating and ventilating systems. Use of a mechanical air-conditioning system shall be avoided if at all possible.

o Take advantage of passive cooling and ventilation (supported by LRCDP Operable Windows pattern, page 16) and tie into the HVAC system.

o Take advantage of passive solar energy and, when possible, active solar energy.

Materials and Resources

Life Cycle Costs

Most of the environmental impacts associated with construction materials have already occurred by the time the materials are installed. The longer a building or constructed landscape and associated materials last, the longer the environmental impacts from the building can be amortized.

Therefore: Consider the full range of life cycle costs for materials (source extraction, manufacturing, and shipping) and in the building/site design. Maximize longevity and reduce material use, reuse, and recycle (in that order of priority) to the greatest extent possible.

Approaches/Examples:

o Do more with less. Reduce the amount of materials as long as the durability and structural integrity of the building or constructed landscape is not compromised (supported by LRCDP policy, page 34 #1).

o Make the building/site design adaptable (supported by LRCDP policy, page 30, #4). o Reduce the overall building footprint and design building dimensions to optimize material use and reduce cut-off waste and simplify the building geometry.

o Use recyclable products and those with recycled material content. o Reuse materials, components, equipment, and furnishings.

o Use materials with low embodied energy costs associated with them.

o Avoid materials that generate ozone-depleting chemicals (VOCs, HCFCs, etc.) during manufacture and/or use, are made from toxic or hazardous constituents (benzene, arsenic, etc.) and/or that unduly deplete limited natural resources, such as old-growth timber.

o Avoid the need to maintain an extensive inventory of a variety of similar parts (LRCDP policy, page 34, #3).

o Maximize reuse and recycling of construction waste and demolition debris. Sort waste for recycling.

o Provide recycling/waste collection areas that are easily accessible by the occupants, accommodate collection needs specific to the project, and meet the recycling program's standard design parameters.

o Consider providing filtered drinking water in the building to minimize waste associated with bottled water.

Indoor Environmental Quality

Local Occupancy Control

Every building serves a different purpose and every occupant has a different comfort level. Often users are willing to accommodate a greater range of interior temperature, thus reducing demand on the HVAC system, if they have some degree of local control. Also, comfortable spaces increase occupant productivity.

Therefore: Design systems to accommodate the intended occupancy use patterns. Maximize the flexibility and control of the occupant's local environment (i.e. office) to the greatest degree possible so the efficiency of the entire system is not taxed by or superseded by differing individual needs.

Approaches/Examples:

o Determine how and when the building is in use and determine the acceptable range of interior temperature and light levels. Design the interior environmental systems to function within these parameters keeping in mind the need to be adaptable (supported by LRCDP user group involvement process). Focus on reducing energy use during no or low use periods (i.e. overnight).

o In the absence of compelling reasons to the contrary, make all exterior windows operable (LRCDP Operable Windows pattern, page 16).

o Maximize local thermostat and lighting controls to the greatest extent feasible. When using occupancy sensors, integrate local control overrides.

o Avoid materials that generate ozone-depleting chemicals (VOCs, HCFCs, etc.) during manufacture and/or use, are made from toxic or hazardous constituents (benzene, arsenic, etc.).

o Flush the building prior to occupancy when necessary to reduce toxic emissions.

Future Work

Benchmarks and Evaluation - Overall, the policies and patterns contained in this plan should be periodically reviewed to determine their effectiveness. In addition, there should be a focus on ways to increase sustainable efforts. Specifically, consider the feasibility of increasing the required level of LEED certification. In order to conduct periodic evaluations, establish benchmarks which can be tracked over time.

Comprehensive Sustainable Effort - Sustainable development plays an important role in the University's overall effort to become environmentally sustainable. While this plan focuses on implementing sustainable measures for campus development, it is the Campus Planning Committee's desire that other departments and offices will implement sustainable measures in other areas of campus operations as supported by the University of Oregon Comprehensive Environmental Policy Statement (see Appendix B). For example, reduced energy use associated with a new building will ultimately depend upon educating the buildingÕs occupants and securing their commitment to developing energy saving habits. Staffing &

Staffing and Funding Support - Although sustainable efforts will result in cost savings for the university over time, there are up-front costs associated with effective implementation. In particular, funding is needed to establish a staff position who would serve as the manager for campus-wide sustainability efforts and be responsible for training and educating staff, faculty and students (similar to Kurt TeichertÕs role as Environmental Coordinator at Brown University - see Appendix C). This manager, whom would ideally be part of administration, would work with all university units to develop a comprehensive sustainable approach on campus as described above and perform periodic evaluations. In addition, the manager would develop some expertise in energy efficient and environmentally sustainable design and construction. This expertise would be available to user groups, for example, who must make design choices based on both initial cost and life-cycle costs.

Campus Tree Forest Plan - One specific action noted in the approaches/examples for the "Campus Trees" pattern requires preparing and implementing a Campus Tree Forest Plan as recommended by the Campus Planning Committee (March 6, 2000 meeting) and approved by the president.

Incentives - The Campus Planning Committee encourages the university to develop incentives for implementing energy conservation measures to enhance sustainable efforts. Currently, building users do not pay for energy use or building maintenance. Therefore, they do not have any incentive to operate the building efficiently or to pay for energy efficient features or more durable building materials. It would be ideal to link maintenance and operations costs to building design decisions. Individual departments and the University as a whole should share the benefits of energy conservation and improved building maintenance/operations.

Appendices

APPENDIX A

For additional information, refer to the U.S. Green Building Council web page: http://www.usgbc.org, or contact the University Planning Office at (541)346-5562.

LEED Green Building Rating System Summary

APPENDIX B

Comprehensive Environmental Policy Statement

For The

University of Oregon

Comprehensive Environmental Policy

Effective Date: July 1, 1997

Approved Spring, 1997 by:

Council of Deans

Faculty Advisory Council

President’s Small Executive Staff

Issued by: Vice President for Administration

Note: For additional information, refer to the Environmental Issues Committee web page.

4.1 Environmental - General

The University of Oregon establishes this policy to identify general goals and strategies for a commitment to environmental responsibility. Through enacting and implementing the vision of this policy the University of Oregon will be a positive example and play a significant role in the advancement of environmental stewardship on the campus and in the local and greater community.

Policy:

As established in the Mission Statement, "The University of Oregon strives to enrich the public that sustains it through the acceptance of the challenge of an evolving social, political and technological environment by inviting and guiding change...." In keeping with this vision and to maintain the campus effectively while also working to preserve the rights of future generations, the University affirms its commitment to environmental excellence and actively promotes the public’s right to a healthy, quality environment. The University of Oregon will work toward the goal of balancing fiscal and environmental responsibility in making decisions and in general University practices. The University acknowledges its role and responsibility to provide educational, social, and financial leadership to achieve the goals of the policy.

Goals and Strategies:

A. The University commits to assuring that the University community is aware of the Comprehensive Environmental Policy and understands its roles in its implementation.

B. The University recognizes its academic role in fostering leadership by educating the university community about environmental responsibility and will continue to support environmental education in the curriculum.

A. The University acknowledges that environmentally responsible purchasing choices will

help create and sustain markets for environmentally responsible and recycled content products.

B. The University commits to the goal of making environmentally and fiscally responsible purchasing choices that consider life cycle costs, long-term implications, and relative environmental harm of products.

C. Purchasing policies will encourage obtaining products that minimize waste products, have high recycled content, use environmental production methods, demonstrate maximum durability or biodegradability, reparability, energy-efficiency, non- toxicity, and recyclability.

III. Efficient Use and Conservation of Energy, Water, and Other Resources. The University recognizes the importance of conservation efforts and efficient use of resources as the primary method to be used to reduce resource consumption.

A. The University commits to minimizing the consumption of energy, water, and other resources by eliminating wasteful practices and promoting efficient use.

B. The University strives to maximize energy efficiency in existing buildings, renovations, and new construction.

C. The University commits to exploring and implementing well- considered and feasible conservation measures in existing buildings, renovations, and new construction.

D. The University will explore the application of developing technologies for energy systems and use of resources, as well as the potential for use of renewable energy resources.

IV. Minimize Solid Waste Production. The University recognizes the importance of minimizing solid waste generation by the community. The University will establish policies and processes that will reduce solid waste generation; first through reduction, secondarily through reuse, and finally through recycling.

A. The University commits to waste source reduction, especially at the point of purchase.

B. The University supports reuse of materials to maximize fiscal, environmental, and energy efficiency.

C. The University supports development of food waste composting and bio-mass resource recovery programs.

D. The University commits to a comprehensive recycling program as the final step in solid waste reduction and as a means to transform waste into a resource.

V. Minimize Hazardous Waste and Toxic Materials On Campus. The University acknowledges the importance of safe management of hazardous and toxic materials and will continue to establish policies and processes to maintain efficient use, tracking, storage, and disposal of hazardous and toxic materials.

A. The University commits to keeping the presence of toxic materials on campus and the generation of hazardous waste within the university community at reasonable levels for work and research on campus.

B. The University supports environmentally responsible disposal of hazardous waste.

C. The University commits to keeping the presence of radioactive materials used on campus at reasonable levels as needed for research and supports environmentally responsible disposal of radioactive waste from within the university community.

V. Environmentally Responsible Campus Design and Planning Principles. The University recognizes the importance of environmentally responsible practices in developing the physical characteristics of its community. The University will consider environmental implications in the development, construction, and operation of campus infrastructure, grounds, and buildings.

A. The University will strive to balance sound fiscal practices and environmental responsibility in the maintenance and further development of the planning and building of campus facilities.

B. The University will work toward the goals of providing landscaping and grounds maintenance practices that use vegetation compatible with the local environment and that use integrated pest management techniques.

C. The University has an ongoing commitment to facilitating pedestrian travel, bicycle use, and other modes of transportation that minimize environmental impact.

Follow Up, Review, and Update Units, as determined by University administration, are required to prepare their own sub-policies based on the framework established in this Comprehensive Environmental Policy within one year from the date of ratification of this policy. Subsequent plans for implementation shall be developed within one year from the date of ratification of the policy and following sub-policies.

The Office of Environmental Health and Safety shall be responsible for administering and monitoring this policy. All members of the university community are invited to support the University’s effort to

meet the goals of this policy by contacting the Office of Environmental Health and Safety and offering comments and suggestions for improvement. With the support and advice of the Environmental Issues Committee, the Office of Environmental Health and Safety will supervise the biannual review of this policy statement and give recommendations for updates as needed.

Clarification of the University's Political Position

The University of Oregon maintains a neutral political position and has a long-standing policy that it will not implement policies or undertake practices that would be generally understood to be political in character. The phrases "environmental responsibility" and "social leadership" in this policy shall not be interpreted to compromise, conflict with, or violate this neutral political position.

APPENDIX C

Process:

The Sustainable Development Plan was prepared by the 1999-2000 Development, Policy, Implementation, and Transportation (DPIT) Subcommittee of the Campus Planning Committee as directed by the University president at the committee's request. Attached is a copy of the memo sent by the Campus Planning Committee to the president as well as a copy of the response from Dan Williams on behalf of the president.

The DPIT subcommittee began work on the Sustainable Development Guidelines in Winter 1999/2000 by reviewing a wide variety of guidelines from other universities and organizations. After developing the first draft guidelines, the guidelines were widely distributed in Spring 2000 to interested parties for review and comment. In addition,

Kurt Teichert, Environmental Coordinator for Brown University, visited the University of Oregon in April 2000 to meet with the DPIT Subcommittee and Facilities Services staff. He shared ideas about how to improve environmentally sustainable practices and how to integrate ideas into the draft guidelines. The DPIT Subcommittee also sponsored a panel discussion on campus sustainable development with Kurt Teichert, Charlie Stephens (Oregon Department of Energy), Rob Pena (sustainable architect), Frank Vignola (solar energy), and Mike Russo (sustainable business). This event was part of the April 2000 H.O.P.E.S. conference, coordinated every year by Architecture and Allied Arts students to focus on ways to integrate sustainable solutions into design practices.

In addition, a group of graduate students participating in the Spring 2000 Sustainable Architecture class were invited to critique the draft guidelines. This resulted in a comparison study of other Universities as

well as an analysis of how the current Gilbert Hall Additions and Alterations project would be affected by the proposed guidelines. In July 2000, the DPIT Subcommittee considered all comments and suggestions prior to preparing a final draft for full Campus Planning Committee Review.

On October 5, 2000, the Campus Planning Committee held a public hearing to amend the Long Range Campus Development Plan to include the Sustainable Development Pattern. At that meeting, the Campus Planning Committee also reviewed and approved the Sustainable Development Plan. The Campus Planning Committee sent a memo to the president explaining the need for staff support to implement a comprehensive sustainable approach across campus (refer to attached). On February 15, 2001, the University received notice that the City of Eugene had determined that the plan is consistent with the Area Metro Plan.

COPY

MEMORANDUM

TO: Dave Frohnmayer

President, University of Oregon

FROM: Dean Livelybrooks, Acting Chair

on behalf of the Campus Planning Committee

RE: University of Oregon Sustainable Policy Improvements

VISION: The University of Oregon should be a world leader in creating and maintaining an environmentally sustainable institution. The University should set examples in the design, construction, and operation of the campus, the management of its fiscal and human resources and the actions of its faculty, staff, and students.

RATIONALE: The University has in place policies (Long Range Campus Development Plan, University of Oregon Comprehensive Environmental Policy Statement) which generally support the idea of

sustainability, and has done a credible job on many fronts. However, the policies lack strong enforcement measures and specificity, and have not always led to state of the art or innovative implementation of these policies.

Future generations may well remember the late 20th and early 21st century as a period of critical, perhaps irreversible, activity that defined the environmental character of the biosphere. The State of Oregon has often been on the cutting edge of environmental policy and many university faculty are internationally known for their contributions to creating and disseminating knowledge about sustainable structures and processes.

Because of its special position within a milieu that values the environment and its concentration of intellectual resources, the university has an obligation to the people of the state to lead the way in the creation of a sustainable world.

RECOMMENDATION: The Campus Planning Committee (CPC) recommends that the university adopt more rigorous policies that require state of the art sustainable structures and processes, and encourage and reward innovation that extend our knowledge and capabilities beyond the state of the art. These policies should be backed with measurable goals and accompanied by a plan of action, timetable and the resources necessary to achieve these goals. The CPC recommends that the president direct the 1999/2000 CPC undertake, as a priority, the creation of guidelines which include quantifiable goals for developing buildings and landscape that are environmentally sustainable.

University of Oregon

Campus Planning Committee

Environmental Policy Position Paper

Background Report

September 27, 1999

Current Practice:

> University of Oregon planning efforts have been particularly successful with regard to energy efficiency. All of the campus buildings built within the last ten years have received energy awards for their energy efficient design. Recent award winners include the Moshofsky Indoor Practice Center, the Knight Law Center, and the Student Recreation and Fitness Center.

In the last ten years the university has become nationally know for its innovative and successful promotion of alternative methods of travel to the campus. Currently it is estimated that over 60 percent of all who come to the campus arrive by alternative methods of travel. In comparison, in the remainder of the Eugene- Springfield metropolitan area, only 25 percent use alternative modes to get to their destinations.

Individuals concerned with the environment can have a great effect by simply choosing, whenever possible, methods of travel other than cars. The university has several programs in place to encourage this, including the Lane Transit District (LTD) bus pass system where all University of Oregon employees and students ride for free; the comprehensive system of available bicycle storage such as covered racks and secured covered bicycle parking areas; the availability of housing on and near campus; and the tandem taxi alternative.

Supportive Policies:

The Long Range Campus Development Plan (June 1991):

The Long Range Campus Development Plan (LRCDP) already contains a number of general policies that promote energy conservation in land development, building maintenance, landscape design and the transportation plan.

The University of Oregon planning philosophy that guides campus design requires that individual members of the university community have a meaningful voice in planning its physical aspects. This participation allows individuals to inject their own values (including concepts of sustainable growth) into the decision-making process. The most important step individuals and departments can take toward a sustainable future is to be active participants in the planning processes for new buildings and spaces on campus.

The LRCDP refers to a series of patterns to guide development of the campus. Some of these patterns encourage the creation of a sustainable environment, including those related to operable windows, bike racks and paths, and providing alternative modes of transportation within a local transport area.

Transportation policies are set by the Campus Planning Committee and are articulated in the Long Range Campus Development Plan. Policies within the plan include accommodating the travel needs of campus users, with special emphasis of encouraging travel by means other than the car. In addition, the Land Development Policies state that the University's instructional core should be contained within a six- to seven-minute walking circle to allow for pedestrian travel.

Building maintenance policies specify that new buildings and remodels should use high

quality, durable, and low maintenance materials.

Landscape policies specify that landscape materials should be selected and positioned to aid in achieving energy efficiency. In addition, selection of exterior lighting standards should be consistent with energy conservation concerns.

With regard to utility systems, policy #10 states that the University is committed in principle and in practice to a vigorous program of energy conservation. This commitment is expressed in ongoing research and development in several disciplines and in many of the policies articulated in the LRCDP. To this end, the University will pursue funding for projects that will enhance the University's ability to co-generate electricity. In addition, the University shall insist that the design of new developments and of major remodeling projects clearly and positively respond to the Oregon Legislative Assembly's policy declarations related to the conservation of energy (ORS 469.011 and ORS 276.900). Finally, the University shall require preparation of an acceptable life cycle cost analysis for all new construction and major remodeling projects as provided by ORS 276.915 and shall observe applicable provisions of the maximum lighting standards for public buildings, promulgated by the Oregon Department of Commerce as Chapter 814, Division 22 of the Oregon Administrative Rules.

University of Oregon Comprehensive Environmental Policy Statement (July 1, 1997):

Note: For additional information, refer to the complete statement in Appendix B.

Sections III and VI of the University of Oregon Comprehensive Environmental Policy Statement provide a clear interest, on the part of the University, to pursue measures leading to a more sustainable environment.

Section III: Efficient Use and Conservation of Energy, Water, and Other Resources.

The University recognizes the importance of conservation efforts and efficient use of resources as the primary method to be used to reduce resource consumption.

A. The University commits to minimizing the consumption of energy, water, and other resources by eliminating wasteful practices and promoting efficient use.

B. The University strives to maximize energy efficiency in existing buildings, renovations, and new construction.

C. The University commits to exploring and implementing well-considered and feasible

conservation measures in existing buildings, renovations, and new construction.

D. The University will explore the application of developing technologies for energy systems and use of resources, as well as the potential for use of renewable energy resources.

Section VI: Environmentally Responsible Campus Design and Planning Principles.

The University recognizes the importance of environmentally responsible practices in developing the physical characteristics of its community. The University will consider environmental implications in the development, construction, and operation of campus infrastructure, grounds, and buildings.

A. The University will strive to balance sound fiscal practices and environmental responsibility in the maintenance and further development of the planning and building of campus facilities.

B. The University will work toward the goals of providing landscaping and grounds maintenance practices that use vegetation compatible with the local environment and that use integrated pest management techniques.

C. The University has an ongoing commitment to facilitating pedestrian travel, bicycle use, and other modes of transportation that minimize environmental impact.

Approach for Additional Efforts:

Sustainability concepts can be implemented through systematic innovation in facilities as well as through human resource and transportation policies.

Sustainable development guidelines (and references to existing related policies established since the creation of the LRCDP) can be included in future revisions of the Long Range Campus Development Plan.

Refer to the Draft Sustainable Development Guidelines for more information on work in progress.

COPY

November 29, 1999

MEMORANDUM

To: Jerry Medler, Chair

Campus Planning Committee

From: Dan Williams

Vice President for Administration

Subject: Environmental Policy Position Paper

I have reviewed the Environmental Policy Position Paper prepared by the Campus Planning Committee that recommends that the president direct the 1999/2000 Campus Planning Committee to undertake, as a priority, the creation of guidelines which include quantifiable goals for developing buildings and landscapes that are environmentally sustainable.

I commend the committee for its work and support its efforts to create and maintain an environmentally sustainable institution. I accept the committee's recommendation and, therefore, ask you to work with University Planning Office staff and the Campus Planning Committee to develop guidelines to be considered for incorporation into the Long Range Campus Development Plan.

As the committee goes about its work, it needs to keep in mind that such efforts must fit into the existing context of the university. The creation of new policies must support the institution's missions in teaching, research, and service to the State of Oregon. Furthermore, new policies should fit into the existing framework of policies and patterns of the Long Range Campus Development Plan. Also, it is important to remember that proposed actions should be attainable with the limited staff time and resources currently available.

Therefore, the university may be able to adopt more rigorous policies (as guidelines) as recommended in the Environmental Policy Position Paper, but it may not be able to fully attain the stated goals of "requiring" state of the art sustainable structures and processes and measurable goals.

Thank you for your continued efforts providing leadership for this important university committee. I look forward to the results of this effort.

cc: Dean Livelybrooks

Association of University Architects
2001 Case Study Awards Program

The University of Oregon's Sustainable Development Plan

A sustainable endeavor which supports the mission of a research University

University of Oregon
Chris Ramey, Director and Architect, University Planning
April 27, 2001

*Why is it that our country can put an electric car on the moon but not on the streets of Los Angeles? -- **Paul Hawkin***

Fun facts about sustainability

- *More than 60% of all electricity and more than 30% of all energy consumed in the United States are used in buildings.*
- *More than 35% of all municipal solid waste comes from building construction and operations. Current construction practices create 2 to 2-1/2 pounds of solid waste per square foot.*
- *Buildings consume 40% of raw stone, gravel and sand, and 25% of virgin wood used each year.*
- *25% of all treated water is used in buildings.*
- *Recent studies show that making a building environmentally responsive can increase worker productivity by 6% to 15% or more.*
- *Recycling demolition materials can substantially reduce the amount of solid waste produced and lower landfill fees.*
- *Building restoration, historic preservation, renovation, and adaptive re-use offer the greatest opportunities for conservation of embodied energy - the amount of energy required to produce, transport, construct, install, maintain, and dispose of a material - in a building.*
- *Reducing water usage and increasing on-site storm water drainage preserve water quality and lower operating costs.*

Data from: The U.S. Green Building Council and The Ecology of Architecture by Laura Zeiher, 1996, which includes statistics from the Rocky Mountain Institute's Primer on Sustainable Building.

Introduction and Vital Statistics

Designs which address environmental concerns have moved beyond the level of philosophical musings in journals and classrooms and into the reality of practice. Because universities are often the first places to explore new initiatives, university campuses are being asked to incorporate environmentally sustainable ideas into the methodologies employed for their development. On campuses, such ideas present a progressive image, can unify faculty, students and staff around a common goal, and often result in operational savings.

The University of Oregon's Campus Planning Committee requested that the University, through its president, charge them with creating a process that allows the university to become

> "…a world leader in creating and maintaining an environmentally sustainable institution. The University should set examples in the design, construction, and operation of the campus, the management of its fiscal and human resources, and the actions of its faculty, staff, and students."

The Sustainable Development Plan was developed by the University's Campus Planning Committee and its Planning Office staff over the course of two academic years (1998-1999 and 1999-2000). The plan is a 24-page document utilizing the principals set forth by Christopher Alexander's book (*The Oregon Experiment)* and codified by the 1991 Long Range Campus Development Plan which call for the direct involvement of the users and the use of a shared language in the development of planning practices.

The result is a bottom-up, process-based plan containing one primary pattern and 13 secondary patterns dictating a realistically achievable implementation of sustainable development practices on the campus.

The Story

The initiative for developing a program for sustainable campus development began during a Campus Planning Committee review of a project when a member asked a simple question: "Why can't that huge roof be used as a solar collector?" The ensuing discussion, with staff encouragement, grew to include concerns that the committee, and by extension the University, should be doing more to promote sustainable practices in design. The outcome of that conversation became a memorandum from the chair of the committee to the University's president which included the following statement:

> "Future generations may well remember the late 20th and early 21st century as a period of critical, perhaps irreversible, activity that defined the environmental character of the biosphere. The State of Oregon has often been on the cutting edge of environmental policy and many university faculty are internationally known for their contributions to creating and disseminating knowledge about sustainable structures and processes.
>
> Because of its special position within a milieu that values the environment and its concentration of intellectual resources, the university has an obligation to the people of the State to lead the way in the creation of a sustainable world."

In accepting the committee's call for action the Vice President for Administration charged the committee as follows:

> "As the committee goes about its work, it needs to keep in mind that such efforts must fit into the existing context of the university. The creation of new policies must support the institution's missions in teaching, research, and service to the State of Oregon. Furthermore, new policies should fit into the existing framework of policies and patterns of the Long Range Campus Development Plan. Also, it is important to remember that proposed actions should be attainable with the limited staff time and resources currently available.
>
> Therefore, the university may be able to adopt more rigorous policies (as guidelines) as recommended in the Environmental Policy Position Paper, but it may not be able to fully attain the stated goals of 'requiring' state-of-the-art sustainable structures and processes and measurable goals."

One of the goals of the committee in creating the plan was to have measurable standards by which the sustainability of proposed developments could be judged. The committee settled on the LEED Green Building Rating System as the basis for measurement. The plan recognizes that the system is imperfect with regard to the unique aspects of campus buildings, but utilizes the system as the benchmark for measurement.

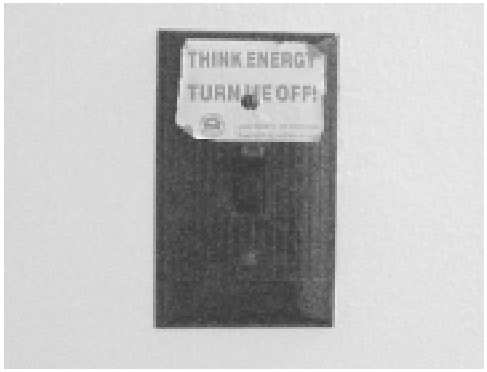
A Summary of the Plan

In keeping with the principles of the Long Range Campus Development Plan, the document is organized around 13 patterns of sustainable practice identified by the committee.

The patterns are arranged into seven categories.

Each pattern is followed in the plan by a series of approaches or examples of how the pattern might be applied in the develpment of the campus.

User involvement in the development process allows individuals to inject their own values (including concepts of sustainable growth) into the decision-making process.



Keeping it simple avoids complicated high cost systems that are difficult to operate, maintain, and repair.

Planning and Design Process:

- **Performance Standards**

Sustainable principles must be measured and enforced by a defined set of standards to ensure effective implementation.

Therefore: All new construction projects that are required to comply with the State Energy Efficiency Design (SEED) program shall be rated according to the current LEED Green Building Rating System. These projects shall achieve the equivalence of the base level of LEED certification (and strive for a higher level) unless there is a compelling reason why this is not possible.

- **Project Management**

Effective sustainable development begins when the project is conceived. Management of the project design and construction process will affect the overall success of sustainable development.

Therefore: Integrate sustainable practices into the entire design and construction process.

- **Living Design**

The people who occupy, operate, and maintain the completed building / site will determine whether sustainable principles embodied in the building / site design are successful over time.

Therefore: Design the building / site to encourage the people who occupy, operate and maintain the building / site to practice environmentally sustainable methods.

- **Connection to the Environment**

When people feel connected to and are knowledgeable about their environment, they will take better care of it. The university provides an ideal setting for sharing this knowledge.

Therefore: The campus development process and resulting designs / policies will provide opportunities to educate people about the university's cultural and environmental features.

A habitat tree in the midst of campus illustrates how the campus environment can become an educational tool to demonstrate the importance of the environment and sustainable design concepts.

Land Use / Transportation:

- **Use What We Have Wisely**

New construction uses up limited land and valuable natural resources on and off campus. In addition, green open spaces, landscape features, and historic resources help define the university's cultural character and are vital to providing a stimulating intellectual environment.

Therefore: All new campus growth should promote efficient development and, whenever beneficial, make use of existing facilities to preserve valuable open space and historic resources.

The new recreation center which included a significant remodel of the former PE complex demonstrates the cultural, environmental and energy saving benefits that occur when priority is given to maintaining and renovating existing buildings.

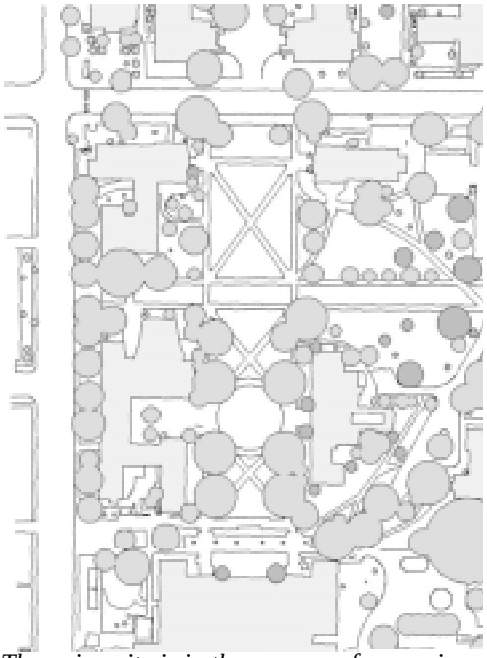
- **Carless Commuting**

Even the most energy efficient, state-of-the-art green campus will carry a significant environmental burden if people get in their cars each day to get to campus. If ways can be found to make it easier and cheaper to get around without a car, people will leave their cars at home.

Therefore: The university will provide incentives for walking, bicycling, busing, and ride sharing, will discourage the use of single-occupancy cars, and will strive to link transportation planning to land-use planning.

A graduate housing project underway on the campus will help to maximize housing options within walking and biking distance for students.

Small landscaped areas are linked to one another creating a corridor for birds from the river through the campus. These plantings are within designated open spaces and create a connection from shelter on campus to food at the river's edge.



The university is in the process of preparing and implementing a Campus Tree Management Plan.

Sites / Landscaping:

- **Site Benefits**

Every site is unique and has local environmental qualities which can be used to enhance the sustainability of development.

Therefore: All new development will site and orient the building and landscape features to take advantage of site conditions and context within the parameters of the established organizational framework of the campus.

- **Healthy Ecosystems**

Ecologically healthy landscapes are essential to long term maintenance of local ecosystems and biodiversity. Each site consists of interconnected living systems, all linked to the environment beyond the site's boundaries.

Therefore: All development will protect the existing ecosystems to the greatest extent possible.

- **Campus Trees**

The university's trees provide significant defining features on campus and are vital components of the local ecosystems.

Therefore: Development will preserve and protect existing trees to the maximum extent possible and plan for continued enhancement of the campus' forest.

Water:

- **Water**

Oregon's water is one of the state's most precious resources. Every building site is in a watershed connected to waterways and wetlands.

Therefore: All development will protect and augment natural drainage, and treat storm water runoff on site to the maximum extent possible.

A bioswale filters runoff from a parking area (right) and delivers it to an open water way (left). Plant material and terrain slow and absorb runoff, filter sediments, and facilitate infiltration. When appropriate, we consider overland flows and ponds to temporarily impound water and allow a slower rate of infiltration.

Energy:

- **Save Energy**

The ongoing energy use is probably the single greatest environmental impact of a building. Decisions made during the design and construction of a building will affect the environmental performance of that building for decades to come through its energy consumption.

Therefore: Retrofitting existing buildings and designing new buildings for low energy use shall be a priority. Designs will maximize use of passive systems and take advantage of the interactions between separate building elements, such as windows, lighting, and mechanical systems.

The new business school addition will require half the energy of a typical campus building. Passive ventilation and cooling strategies are integrated into the design.

Materials and Resources:

- **Life Cycle Costs**

Most of the environmental impacts associated with construction materials have already occurred by the time the materials are installed. The longer a building or constructed landscape and associated materials last, the longer the environmental impacts from the building can be amortized.

Therefore: Consider the full range of life cycle costs for materials (source extraction, manufacturing, and shipping) and in the building/site design. Maximize longevity and reduce material use, reuse, and recycle (in that order of priority) to the greatest extent possible.

Indoor Environmental Quality:

In the absence of compelling reasons to the contrary, we make all exterior windows operable.

- **Local Occupancy Control**

Every building serves a different purpose and every occupant has a different comfort level. Often users are willing to accommodate a greater range of interior temperature, thus reducing demand on the HVAC system, if they have some degree of local control. Also, comfortable spaces increase occupant productivity.

Therefore: Design systems to accommodate the intended occupancy use patterns. Maximize the flexibility and control of the occupant's local environment (i.e. office) to the greatest degree possible so the efficiency of the entire system is not taxed by or superseded by differing individual needs.

Lessons Learned

Leadership: It is hard to be a knowledgeable design professional these days without being interested in sustainable design issues. However, this personal interest needs to be tempered by recognizing when the rest of the campus is ready to follow the lead of the campus architect on new initiatives. In this instance my interest in sustainable design goes back several years before the committee expressed an interest. By being patient and supporting their interest when it arrived, I was able to create a climate where the initiative for change came from the community itself and not from the administration.

Breadth of sustainable practices: What one quickly finds when studying sustainability is that almost all parts of an organization need to be included if the organization itself is to become sustainable. For facilities alone, operations and maintenance over the life of a building can be more important than the initial design. It has been important to continuously remind the committee of its scope of influence. In the end the committee urged the university president to create a centralized "sustainability czar" who would advocate for sustainable practices across campus.

Knowledge of the mission: The committee also needed to be reminded that whatever guidelines they adopted would not be effective if they threatened the ability of the university to carry out its mission. For example, the desire to become a national leader in sustainable development could not impede the desire to develop the nation's leading research programs.

Measuring success: A rational way to measure the sustainability of a proposed design was identified early as a necessary tool for the committee and the design professional alike. Unfortunately, and in spite of significant research efforts by our staff, we were unable to find good models to follow. The LEED System was not developed with the campus in mind, but for now, it is the best benchmark for us.

Self Guided Tour
Campus Sustainability Initiatives

We invite you to discover some of the exciting sustainability initiatives and projects at the University of Oregon.

Sustainability is no stranger to the university. Since the early 1970s the university's active and progressive recycling program has been the recipient of numerous national awards. Since the mid-1970s the university's transportation plan has guided the development of a system that is nationally recognized for its transportation innovation.

In 1990 the Environmental Issues Committee was created. More recently the university established policies on paper use and adopted a sustainable development plan for the physical development of its campus. The University of Oregon's long-standing commitment to environmental responsibility was reaffirmed by the adoption of the university's ***Comprehensive Environmental Policy Statement*** (1997).

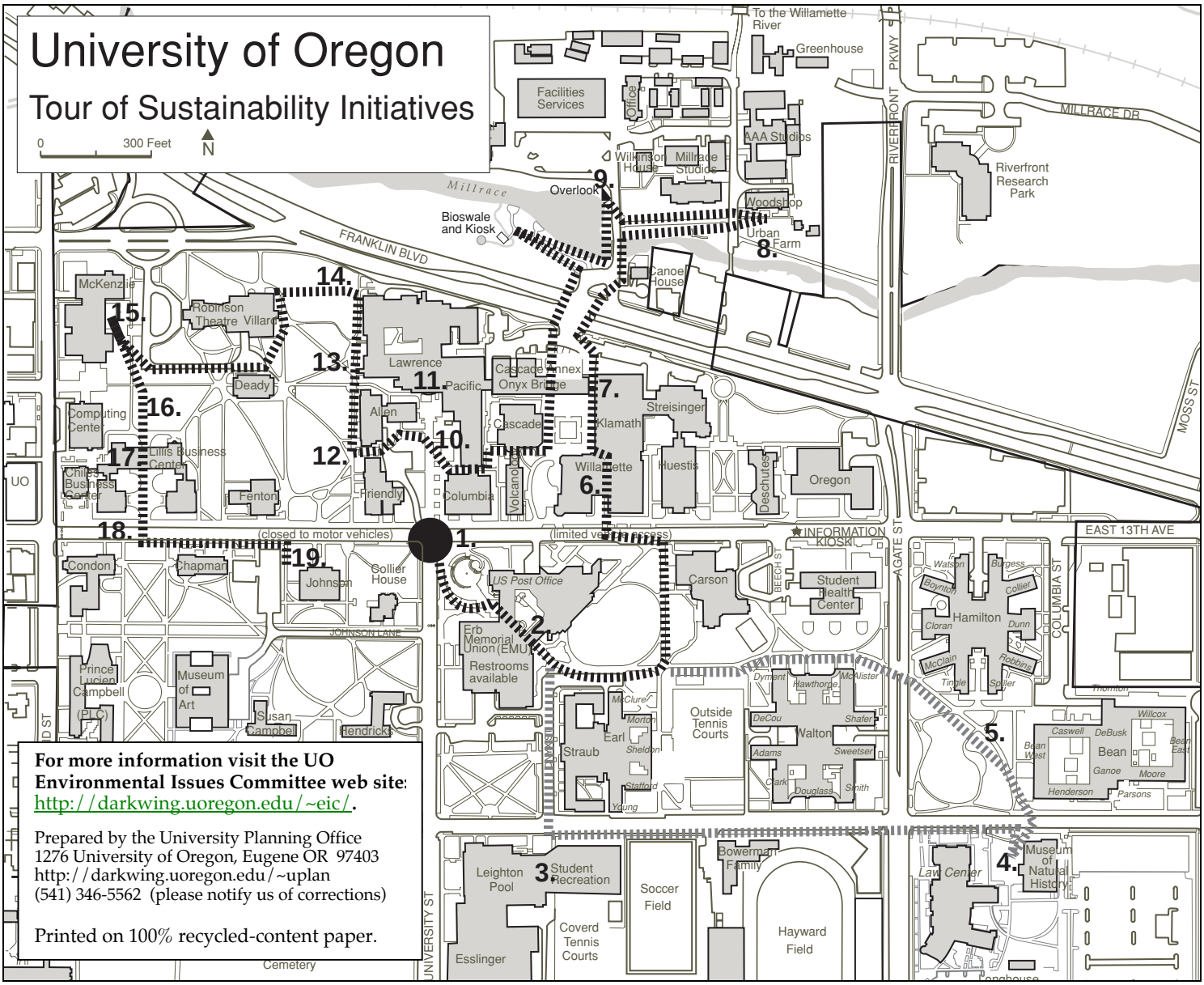
University of Oregon
Sustainability Initiatives Tour

University Planning Office
September 2003

This self-guided tour will introduce you to a few of the University of Oregon's numerous environmentally sustainable practices. For more information about UO sustainability initiatives visit the UO Environmental Issues Committee web site at http://darkwing.uoregon.edu/~eic/.

The tour should take about 1 1/2 hours to complete (the full route is about 2 miles long).

Begin at the green recycling bins in front of the Erb Memorial Union (EMU) at the intersection of 13th Avenue and University Street (refer to # 1 on the map).



For more information visit the UO Environmental Issues Committee web site:
http://darkwing.uoregon.edu/~eic/.

Prepared by the University Planning Office
1276 University of Oregon, Eugene OR 97403
http://darkwing.uoregon.edu/~uplan
(541) 346-5562 (please notify us of corrections)

Printed on 100% recycled-content paper.

1. **Campus Recycling Program - Campus Recycling Bins**
Sustainable efforts often begin with a recycling program. The university's nationally recognized, comprehensive Campus Recycling Program was established in the early 1970s. Today it services more than 2,000 collection sites and annually recycles about 1,300 tons (equal to about 40% of the campus's total waste). A more recent food composting program has reduced waste at major campus celebrations by up to 80%. In addition, more than 60% of the copy paper used and distributed by university printing services is at least 50% recycled-content (100% recycled-content is the desired default). Proceed to the other side of the EMU through the outdoor lower walkway.

2 **Alternative Energy Sources - EMU PV Panel Student Project**
Look up at the "solar umbrellas" on the EMU 's east balcony. These are the first stage of an ambitious student-led and funded project (Ecological Design Center). The second stage will include an impressive array of roof-mounted photo voltaic panels that will produce 72,577 kWh/yr. or an annual value of about $4,000.

Optional Side Trip (#3-5):

3. **Energy Conservation through Design - Student Rec Center**
All recently completed major projects ($60 million worth of work) including the Student Recreation Center (1999) have been awarded the regional Energy Smart award. This means that energy conservation is greater than the 20% reduction required by the energy code for state-owned buildings.

4. **Native Plants – Museum of Natural History Courtyard**
Visiting this courtyard is an excellent way to become familiar with many of Oregon's native plants. It demonstrates the inherent benefits of using hardy native plants in landscape design. Inside the museum visitors can learn about ecosystems, habitats, native trees and animals, and Oregon geology and archaeology. A new Many Nations Longhouse, soon to be constructed nearby, will extend the use of native plants in the landscape and on the planted roof.

5. **Efficient Cut-off Outdoor Lighting – New Campus Fixtures**
Although the fixtures along this walkway look like typical historic fixtures, they actually possess advanced lighting features designed to be energy efficient and to direct light downward to ensure that the night sky is not lit. Features include an efficient metal-halide light source (does not interfere with a plant's dormancy cycle), a special interior shield/reflector, and a prismatic globe. These fixtures are the new prototype for all future campus fixtures.

6 **Sustainable Building Design/Reuse - Willamette Atrium**
As you enter the Willamette atrium through the recessed entry on 13th Avenue, imagine this site as it once was - a jumble of box-like science buildings. Rather than demolishing the old buildings, they were reused and linked with the new ones creating a favorite area on campus. The exterior face of one of the original buildings is evident inside this efficient atrium that is neither air conditioned or heated. Sustainable building design and the collaborative design process began on campus with Christopher Alexander's *The Oregon Experiment* in 1975. The university's long-range plan contains many "patterns" that recognize the importance of integrated landscape design, user-friendly buildings, and sustainable design.

7. **Reduce Toxic Solvents/Teach Green - Green Chemistry Lab**
If you peer in through the large glass windows at the very north end of Klamath Hall (past the double doors), you will see the first instructional green organic chemistry lab in the country, now in its third successful year. Students learn chemistry using less toxic solvents and reagents, causing less harm to themselves and to the environment. Reaction products are recycled into future experiments, and waste air is reused in the ventilation system (without jeopardizing strict environmental and safety regulations). Other nearby labs have employed innovative measures to reduce the required ventilation resulting in substantial energy savings.

8. **Environmental Education - Urban Farm**
   The Urban Farm, in operation since 1976, is used as an applied research facility (e.g. to study bee populations) and as an outdoor classroom to teach organic gardening (through Landscape Architecture). It is one of the many academic programs beyond the Environmental Studies Program that address environmental issues in design, community planning, business, law, the sciences, and literature. These equate to hundreds of classes.

9. **Water Quality - Millrace Bioswale/Bank Stabilization**
   A series of student Landscape Architecture design-build projects provide excellent examples of on-site drainage and habitat restoration. Proceed to the overlook, which made of recycled-content material. It is a good place to view the native species planted along the Millrace banks to decrease erosion and increase wildlife habitat. Follow the concrete sidewalk (which contains fly-ash extender) across the bridge and walk toward the small wooden kiosk in the grassy area to your right (a future interpretive center built from downed trees from a recent storm). Here you will see a highly effective bioswale that cleanses and absorbs storm water from Franklin Boulevard and nearby parking lots before it reaches the Millrace. On-site drainage is becoming a standard approach whenever possible on campus to reduce and cleanse storm water that drains into the Millrace and the Willamette River, both of which flow through university lands. Follow the map to #10 until you see a covered bike parking area.

10. **Alternative Modes of Transport - Bike Facilities & Free Bus Service**
    Bike riding is strongly supported on campus. In fact, there are more bike parking spaces than car parking spaces on campus (the university has half of the auto parking expected of a typical university). The university is nationally recognized for its transportation innovation. Fewer than 40% of all trips to and from the university are made by automobiles, compared to 74% of trips made in the surrounding community. Incentives to ride the bus include free bus passes for all faculty, staff, and students and easy access to on-campus transit stations. Lane Transit District provides bio-fuel shuttle night service through campus.

11. **Environmental Education**
    The main walkway in front of you terminates at Lawrence Hall. It houses the School of Architecture and Allied Arts, home base for the Ecological Design Center, the Institute for a Sustainable Environment (located in Hendricks Hall), and the annual H.O.P.E.S. sustainable design conference. There are many other special projects and events on campus including the Environment Law Conference and the Sustainable Business Symposium.

12. **Well-adapted and Compatible Plants - Old Campus Quad**
    If you toured the campus ten years ago, the beautiful planting areas in the nearby boggy site and under the trees would have been ugly mud puddles or scraggily grass. Today they demonstrate how simple it is to use well-adapted and compatible plants to create a more sustainable and attractive landscape. All campus grounds are maintained using an Integrated Pest Management Program. In addition, all new landscape projects use a weather based irrigation system to reduce water use and runoff, all yard waste is composted and used on campus, and pervious paving is used where appropriate.

13. **Wildlife Habitat - Old Campus Quad Bird Corridor**
    This conifer quadrangle is well loved by students and wildlife alike. Native undergrowth that is particularly attractive to many species of birds was intentionally planted to create a bird corridor that extends from the Millrace to the Pioneer Cemetery. Tree snags are purposefully left throughout campus to provide wildlife habitat.

14. **Education and Experimentation – H.O.P.E.S. Bench**
    This bamboo shelter and cobb bench at the far north end of the quad is one of a number of experimental structures constructed by students and designed to test sustainable materials. It is the first bamboo structure constructed in Oregon that was tested and approved by the Uniform Building Code. Hands-on student experiences provide great educational value.

15. **Reuse and Retrofit - McKenzie Hall Renovation/Bioswale**
The small bioswale (area filled with pebbles) in McKenzie Hall's lower courtyard does not look like much but it demonstrates how simple and inexpensive sustainable alternatives can solve big drainage problems that would have required substantial excavation and new piping. This bioswale was part of a major remodeling project that included retrofitting light fixtures, controls (e.g. occupancy sensors) and HVAC systems (e.g., energy efficient equipment and carefully zoned systems). Completing energy retrofits has been a common goal for decades. Despite substantial construction since 1990 (over 800,000 gsf) and an additional 3000 students, the overall campus electrical use has decreased.

16. **Tree Protection – Large-Canopy Deciduous Trees and Stately Conifers**
The university went to great lengths to protect the mature trees in this area during a recent expansion project. Building designs were modified and substantial protection during construction included an innovative temporary bridge designed to span the root zones. The recently adopted Campus Tree Plan emphasizes the important environmental role trees play on campus and requires strict standards for tree protection during all construction projects and policies for proper tree planting (e.g., adequate root zone space).

17. **Sustainable Design - Lillis Business Center**
The university's Sustainable Development Plan (2000) strengthens sustainable design requirements and requires that new development meet the equivalence of LEED standards. The Lillis Business Center is the university's most ambitious sustainable project yet. The building will use about 45% less energy than state code requires and will incorporate a full spectrum of sustainable measures including:
    - Natural cooling and ventilation through increased thermal mass and the central atrium that acts as a chimney. Air travels under specially designed classroom floors, out into corridors, up through the four-story atrium and out of the building, ensuring a constant exchange of fresh air.
    - Photo voltaic cells with a solar generating capacity of about 6% of the building's energy use embedded in the atrium's south window panels (look for the blue cells).
    - Innovative climate settings based on actual comfort versus standard protocols. Classrooms need A/C only about 4 hrs/year, compared to 100s of hours in a conventional building.
    - Rooms with day lighting so that most are lit without electric lighting throughout the year.
    - Occupancy sensors on lights and on certain outlets.
    - A demo green roof to absorb rainwater, thus reducing runoff.
    - A comprehensive demolition waste recycling program (97% of all demo materials were recycled).

18. **Auto-free Zone - 13th Avenue**
This bike-filled street used to be the main east-west auto route through town until the late 1970s when students barricaded the street in protest. Ever since then, 13th Avenue and most of central campus has been an auto-free zone (except for service vehicle access). Instructional uses are sited to make sure students can travel by foot from one class to anther during their 10-minute class breaks.

19. **Learn from the Past - Johnson Hall Awnings/Operable Windows**
Awnings, such as these on Johnson Hall, are making a comeback. We can learn a great deal from our historic buildings as their original designs often relied on what are now considered sustainable measures. Simple solutions to cool buildings, such a reducing the lighting output, enhancing ventilation and day lighting, and installing exterior awnings, are always the first choice on campus. The campus long-range plan requires that new buildings have operable windows.

These are just some of the university's current efforts aimed at advancing environmental stewardship while supporting the institutional mission of the University of Oregon. We hope you will join us in working towards a truly sustainable community! Please return this brochure if you do not wish to save it for reference.

Campus News UNIVERSITY OF OREGON

Office of Communications
News Releases
News & Views
Events Calendar

March 31, 2002 - Today's Other News Items

UO makes top 'green' grades in U.S.

The National Wildlife Federation (NWF) has commended the University of Oregon as an exemplary school for its efforts to develop and maintain a sustainable campus.

The organization's recently published report, "**State of the Campus Environment: National Report Card on Environmental Performance and Sustainability in Higher Education**," rates the UO as one of the top schools in four of 17 categories. The UO was listed among the best in Employing Environmental Coordinators and Administrators; Recycling, Solid Waste, and Material Flow; Doing More with Recycling Solid Waste and Materials Flow; and Land and Grounds Management Programs. The reported studied 891 U. S. schools, or roughly 22 percent of the country's institutions of higher education.

"There is no doubt that the UO is very environmentally friendly," says Dan Williams, vice president for administration. "It is a leader in the **sustainability movement**, both administratively and academically."

Williams credited student involvement as well as efforts from the administration and university staff.

"As a public institution, we should try out good public policy," says Williams. "We have the luxury to do what's not done in the private sector, and we provide students with an important learning tool."

The university's environmental leadership, highlighted by these NWF listings, did not happen overnight.

"We've been doing it for decades in areas ranging from **alternative modes of transportation** to recycling," says UO Planning Associate Christine Thompson. "The **Environmental Issues Committee** was created in 1991. Then the **Environmental Policy** was created in 1997. That policy officially put into words what we were already doing."

UO Recycling Manager Karyn Kaplan agrees.

"The university is very committed even beyond recycling to waste sustainability," she explains. "We're not just focusing on recycling, but a holistic approach to waste reduction."

Even with all these successes, UO sustainability efforts continue to grow, adds Tim King, Exterior Team supervisor in the Office of Facilities Services.

"For example, we're currently developing a more **comprehensive tree policy**," says King, who supervises

UO landscaping activities. "We still have more to do. We're evolving as we go."

The UO's sustainability work has drawn attention from other groups and institutions in addition to the NWF. Schools around the world look at the **UO's recycling program** as a model.

"We are contacted often by schools requesting information about our recycling program," said Kaplan. "We gave the University of South Wales a 10-day tour of our facilities."

Aside from the environmental benefits, the UO policy of maintaining a sustainable campus has economic advantages. It provides jobs for students and residents, and it saves money and resources.

"We're landscaping with plants that are naturally resistant to pests," says King. "In addition, we use natural predators to help reduce our need for spraying. These practices both lead to plants that are healthier and more resistant to diseases and also save us money."

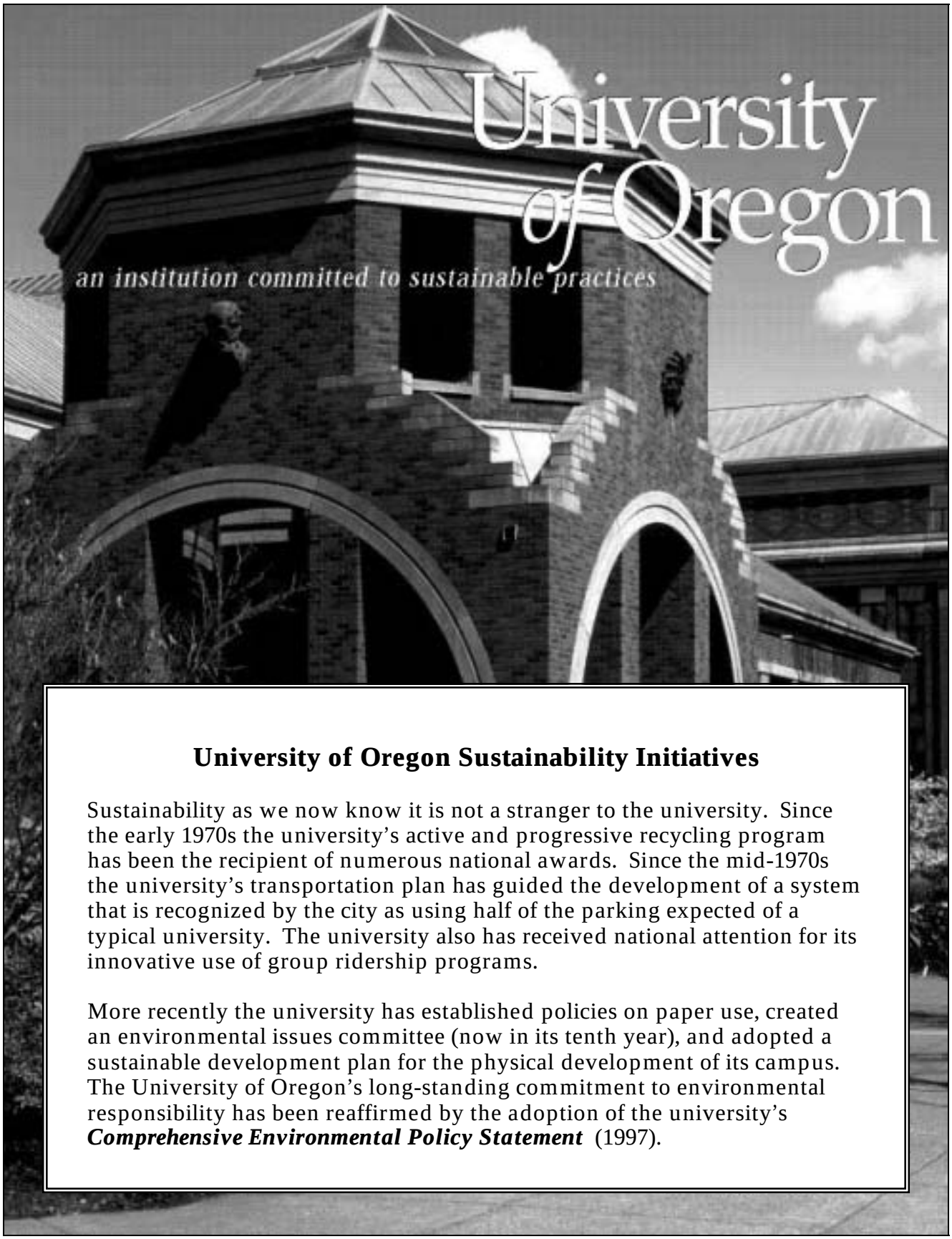
What makes the UO's environmentally sustainable campus work, according to Williams, Thompson, Kaplan and King, is broad support from across campus--faculty, staff and students.

"The administration is not reactive," said Williams. "It initiates and supports ideas."

"If I had to pick one thing that contributed to our success, it would be a cooperative effort and involvement campus wide," says Kaplan. "It's a unique system of cooperation and funding from all aspects of campus.

Only two schools scored exemplary marks in more categories. Humboldt State University in Arcata, Calif., and Warren Wilson College in Asheville, N.C., each earned exemplary marks in five categories.

Feedback **UO Home Page**



University of Oregon Sustainability Initiatives

Sustainability as we now know it is not a stranger to the university. Since the early 1970s the university's active and progressive recycling program has been the recipient of numerous national awards. Since the mid-1970s the university's transportation plan has guided the development of a system that is recognized by the city as using half of the parking expected of a typical university. The university also has received national attention for its innovative use of group ridership programs.

More recently the university has established policies on paper use, created an environmental issues committee (now in its tenth year), and adopted a sustainable development plan for the physical development of its campus. The University of Oregon's long-standing commitment to environmental responsibility has been reaffirmed by the adoption of the university's ***Comprehensive Environmental Policy Statement*** (1997).

University of Oregon
Sustainability Initiatives

The following is a short summary of how the university is pursuing environmentally sustainable practices. This list is certainly incomplete, and our current efforts are aimed at advancing environmental stewardship both on campus and in the greater community. A comprehensive list of campus sustainable efforts will be available on the web soon. Please visit the web page and join with the university in working towards a truly sustainable community.

Commitment to Environmental Education – The university offers strong academic programs addressing environmental issues in design, community planning, business, law, the sciences, and literature. In addition to a wide range of classes addressing sustainability, numerous special projects and organizations include the Ecological Design Center, HOPES Design Conference, Urban Farm, Institute for a Sustainable Environment, Sustainable Business Symposium, Environmental Law Conference, and an eco-criticism English program.

Environmentally Responsible Purchasing Policies – The university has begun integrating waste reduction into vendor contracts and purchasing low-toxicity and recycled-content products. For example, more than 95% of the copy paper used has at least 50% recycled content, and the default copy paper contains 100% post-consumer recycled fiber. The university also is working towards purchasing carpet made from 100% recycled materials.

Efficient Use and Conservation of Energy, Water, and Other Resources – Reducing energy use on campus has been a primary focus for decades. Despite substantial construction over the past decade, the overall campus electrical use has decreased over this same period due to energy-conservation retrofit projects. All recently completed major projects ($60 million worth of work) have been awarded the regional Energy Smart award.

Minimization of Solid Waste Production, Hazardous Waste, and Toxic Materials – The university's nationally recognized, comprehensive Campus Recycling Program services more than 1,500 collection sites. Other efforts include the Green Chemistry Program and an effective food rescue and composting program.

Environmentally Responsible Campus Design and Planning Principles – The Sustainable Development Plan (2000) requires that sustainable design principles be applied to all new development and remodeling projects. It strengthens sustainable practices and the collaborative design process that began with Christopher Alexander's *The Oregon Experiment* (1975). The upcoming Lillis Business Center project will use 50% less energy than state code requires and will incorporate a full spectrum of sustainable measures.

Commitment to Alternative Modes of Transportation – The university is nationally recognized for its transportation innovation. Fewer than 40% of all trips to and from the university are made by automobiles, compared to 74% of trips made in the surrounding community. Incentives include nearby student family housing, free bus passes for faculty, staff, and students, on-campus transit stations, and numerous bicycle amenities. Overall there are more bike parking spaces than car parking spaces on campus.

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Comprehensive Environmental Policy Statement
For The
University of Oregon

Effective Date: July 1, 1997
Approved Spring, 1997 by:
Council of Deans
Faculty Advisory Council
President's Small Executive Staff
Issued by: Vice President for Administration

4.1 Environmental - General

The University of Oregon establishes this policy to identify general goals and strategies for a commitment to environmental responsibility. Through enacting and implementing the vision of this policy the University of Oregon will be a positive example and play a significant role in the advancement of environmental stewardship on the campus and in the local and greater community.

Policy:

As established in the Mission Statement, "The University of Oregon strives to enrich the public that sustains it through the acceptance of the challenge of an evolving social, political and technological environment by inviting and guiding change...." In keeping with this vision and to maintain the campus effectively while also working to preserve the rights of future generations, the University affirms its commitment to environmental excellence and actively promotes the public's right to a healthy, quality environment. The University of Oregon will work toward the goal of balancing fiscal and environmental responsibility in making decisions and in general University practices. The University acknowledges its role and responsibility to provide educational, social, and financial leadership to achieve the goals of the policy.

Goals and Strategies:

- I. *Commitment to Environmental Education.* The University recognizes on-going education for all members of the university community about the importance of environmental responsibility and the provisions of the Comprehensive Environmental Policy.
  - A. The University commits to assuring that the University community is aware of the Comprehensive Environmental Policy and understands its roles in its implementation.
  - B. The University recognizes its academic role in fostering leadership by educating the university community about environmental responsibility and will continue to support

environmental education in the curriculum.

- II. *Environmentally Responsible Purchasing Policies.* The University recognizes that one of the primary methods of exercising its commitment to environmental responsibility is through its purchasing choices. The University will strive to obtain maximum value for its expenditures and will work towards obtaining the “best value” by balancing short and long-term costs, maintenance, life-cycle, and environmental costs in purchasing goods and services.
    - A. The University acknowledges that environmentally responsible purchasing choices will help create and sustain markets for environmentally responsible and recycled content products.
    - B. The University commits to the goal of making environmentally and fiscally responsible purchasing choices that consider life cycle costs, long-term implications, and relative environmental harm of products.
    - C. Purchasing policies will encourage obtaining products that minimize waste products, have high recycled content, use environmental production methods, demonstrate maximum durability or biodegradability, reparability, energy-efficiency, non- toxicity, and recyclability.
- III. *Efficient Use and Conservation of Energy, Water, and Other Resources.* The University recognizes the importance of conservation efforts and efficient use of resources as the primary method to be used to reduce resource consumption.
    - A. The University commits to minimizing the consumption of energy, water, and other resources by eliminating wasteful practices and promoting efficient use.
    - B. The University strives to maximize energy efficiency in existing buildings, renovations, and new construction.
    - C. The University commits to exploring and implementing well- considered and feasible conservation measures in existing buildings, renovations, and new construction.
    - D. The University will explore the application of developing technologies for energy systems and use of resources, as well as the potential for use of renewable energy resources.
- IV. *Minimize Solid Waste Production.* The University recognizes the importance of minimizing solid waste generation by the community. The University will establish policies and processes that will reduce solid waste generation; first through reduction, secondarily through reuse, and finally through recycling.
    - A. The University commits to waste source reduction, especially at the point of purchase.
    - B. The University supports reuse of materials to maximize fiscal, environmental, and energy efficiency.
    - C. The University supports development of food waste composting and bio-mass resource recovery programs.
    - D. The University commits to a comprehensive recycling program as the final step in solid waste reduction and as a means to transform waste into a resource.
- V. *Minimize Hazardous Waste and Toxic Materials On Campus.* The University acknowledges the importance of safe management of hazardous and toxic materials and will continue to establish policies and processes to maintain efficient use, tracking, storage, and disposal of hazardous and toxic materials.
    - A. The University commits to keeping the presence of toxic materials on campus and the generation of hazardous waste within the university community at reasonable levels for work and research on campus.
    - B. The University supports environmentally responsible disposal of hazardous waste.
    - C. The University commits to keeping the presence of radioactive materials used on campus at reasonable levels as needed for research and supports environmentally responsible disposal of radioactive waste from within the university community.

- VI. *Environmentally Responsible Campus Design and Planning Principles.* The University recognizes the importance of environmentally responsible practices in developing the physical characteristics of its community. The University will consider environmental implications in the development, construction, and operation of campus infrastructure, grounds, and buildings.
    - A. The University will strive to balance sound fiscal practices and environmental responsibility in the maintenance and further development of the planning and building of campus facilities.
    - B. The University will work toward the goals of providing landscaping and grounds maintenance practices that use vegetation compatible with the local environment and that use integrated pest management techniques.
    - C. The University has an ongoing commitment to facilitating pedestrian travel, bicycle use, and other modes of transportation that minimize environmental impact.

Follow Up, Review, and Update Units, as determined by University administration, are required to prepare their own sub-policies based on the framework established in this Comprehensive Environmental Policy within one year from the date of ratification of this policy. Subsequent plans for implementation shall be developed within one year from the date of ratification of the policy and following sub-policies.

The Office of Environmental Health and Safety shall be responsible for administering and monitoring this policy. All members of the university community are invited to support the University's effort to meet the goals of this policy by contacting the Office of Environmental Health and Safety and offering comments and suggestions for improvement. With the support and advice of the Environmental Issues Committee, the Office of Environmental Health and Safety will supervise the biannual review of this policy statement and give recommendations for updates as needed.

Clarification of the University's Political Position

The University of Oregon maintains a neutral political position and has a long-standing policy that it will not implement policies or undertake practices that would be generally understood to be political in character. The phrases "environmental responsibility" and "social leadership" in this policy shall not be interpreted to compromise, conflict with, or violate this neutral political position.

University of Oregon

Campus Tree Plan

October 2001

2000-2001 Development, Policy, Implementation, and Transportation Subcommittee
of the Campus Planning Committee
University Planning Office
University of Oregon

2000-2001 Development, Policy, Implementation, and Transportation Subcommittee of the Campus Planning Committee (CPC):

Cynthia Girling, Chair, Landscape Architecture
Grant Blume, Student Representative
Carole Daly, Development
Nilendra Deshpande, Arts and Sciences
Jerome Grzybowski, Student Representative
Randall McGowen, History
Robert Melnick, Architecture and Allied Arts
Eric Selker, Biology
Greg Stripp, Public Affairs and Development
Nathan Tublitz, Biology
Mick Westrick, Lundquist College of Business

University of Oregon Planning Office:

Christine Taylor Thompson, Planning Associate (committee staff)

Anne McGinley, Planning Secretary and Librarian
Shawn Peterson, Planning Analyst
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Cathy Soutar, Planning Associate
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Fred Tepfer, Planning Associate

Eric Black, Student
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Facilities Services:

John Anthony, Maintenance/Laborer Coordinator
Jane Brubaker, Maintenance/Laborer Coordinator
Tim King, Exterior Team Supervisor

Cover Photo: Memorial Quadrangle c. 1950

Printed on recycled-content paper.

University of Oregon
Campus Tree Plan

October 2001

2000-2001 Development, Policy, Implementation, and Transportation (DPIT) Subcommittee

Table of Contents

Campus Tree Plan

1.0 Introduction/Purpose

The campus's physical landscape is an integral part of the university's mission. The most essential, long-term component of the landscape is the tree canopy.

The Campus Tree Plan describes the intent and implementation of the 1991 Long Range Campus Development Plan (LRCDP) patterns and policies related to tree management (refer to Appendix A for a complete summary of existing LRCDP policies). In addition, this plan specifically addresses the intent of the "Campus Tree" pattern contained in the university's Sustainable Development Plan (SDP), which reads as follows:

> **Campus Trees**
>
> **The university's trees provide significant defining features on campus and are vital components of the local ecosystems.**
>
> **Therefore: Development will preserve and protect existing trees to the maximum extent possible and plan for continued enhancement of the campus forest.**

The SDP recommends a series of approaches and examples to implement this pattern, including the preparation of a campus tree management plan.

To ensure that campus trees remain a vital part of the campus landscape, the university must:

- Ensure that the protection and management of a healthy canopy of trees are priorities.
- Maintain a balance of sunny and shady outdoor spaces.
- Enhance the relationship of the tree canopy to the built environment.
- Use the canopy of trees to help unify the campus and give a sense of cohesiveness.
- Acknowledge the important environmental role of trees.
- Connect the campus trees to the university's educational mission.
- Develop a plan that is adaptable and responsive to change but also preserves the campus's historic character.
- Maintain a consistent approach.

This plan, prepared by the 2000-2001 DPIT Subcommittee of the Campus Planning Committee, addresses these issues in the following sections. As with the existing SDP and LRCDP, this plan establishes design-oriented policies rather than a "fixed" plan, which is important for a constantly changing landscape.

The process for developing the plan is described in Appendix C.

1.1 Why Now?

The need for a Campus Tree Plan has increased in the past few years as new development has begun to test the edges of desired campus density. Although great efforts have been made to preserve existing trees, this is not always possible. Therefore, it is essential to have policies in place that define how to replace lost trees in a way that will preserve the campus tree canopy as well as preserve the campus's sunny spaces. This plan provides such guidance.

In addition, the campus tree canopy has reached a level of maturity for which proactive measures are necessary to perpetuate a healthy and diverse tree canopy. This plan contains patterns addressing tree siting and selection. More detailed information is provided for the designated open spaces (as defined by the LRCDP) to help define which areas should be preserved as we know them today, which areas should be restored to an earlier design, and which areas should be altered. The "Looking Forward" section describes the next steps to take to enhance this plan.

1.2 The Value of Trees

In order to define the desired tree canopy and management approach, one must consider the full range of benefits trees provide to the campus—aesthetic, environmental, educational, historical, and psychological. The multiple benefits of trees have been thoroughly documented by others and are summarized below:

Aesthetic: Trees are a primary character-defining element of the campus landscape. They enhance the aesthetics of any campus experience by defining open spaces and views, shielding unwanted noise, and providing shady areas to sit. Seasonal changes provide an ever-changing landscape, which accents the campus infrastructure and the architectural design of each building.

Environmental: The *Planning and Design Guidelines for Air, Water, and Urban Forest Quality in Neighborhood Development*, prepared by the University of Oregon Center for Housing Innovation (1999) documents the following benefits provided by trees. When thoughtfully placed, trees reduce summer energy use by shading buildings and parking lots and by cooling the air temperature through evapo-transpiration. Heavy canopy trees can block up to 95% of incoming radiation. Evapo-transpiration, the process by which plants release water vapor, utilizes heat energy, increases humidity, and results in a net heat loss throughout the day (Spirn, 1984). A single tree can transpire up to 100 gallons of water a day during the growing season. This has the same effect as running five average air conditioners for 20 hours (EPA, 1992).

Trees reduce storm water drainage by capturing rainfall in the tree canopy and root system. The root systems also control erosion by stabilizing soil conditions, and reduce water pollution by filtering sediment.

Trees are also instrumental in reducing urban pollution. The process of photosynthesis enables trees to filter and store carbon and polluting gases, and filter significant amounts of particulates from the air.

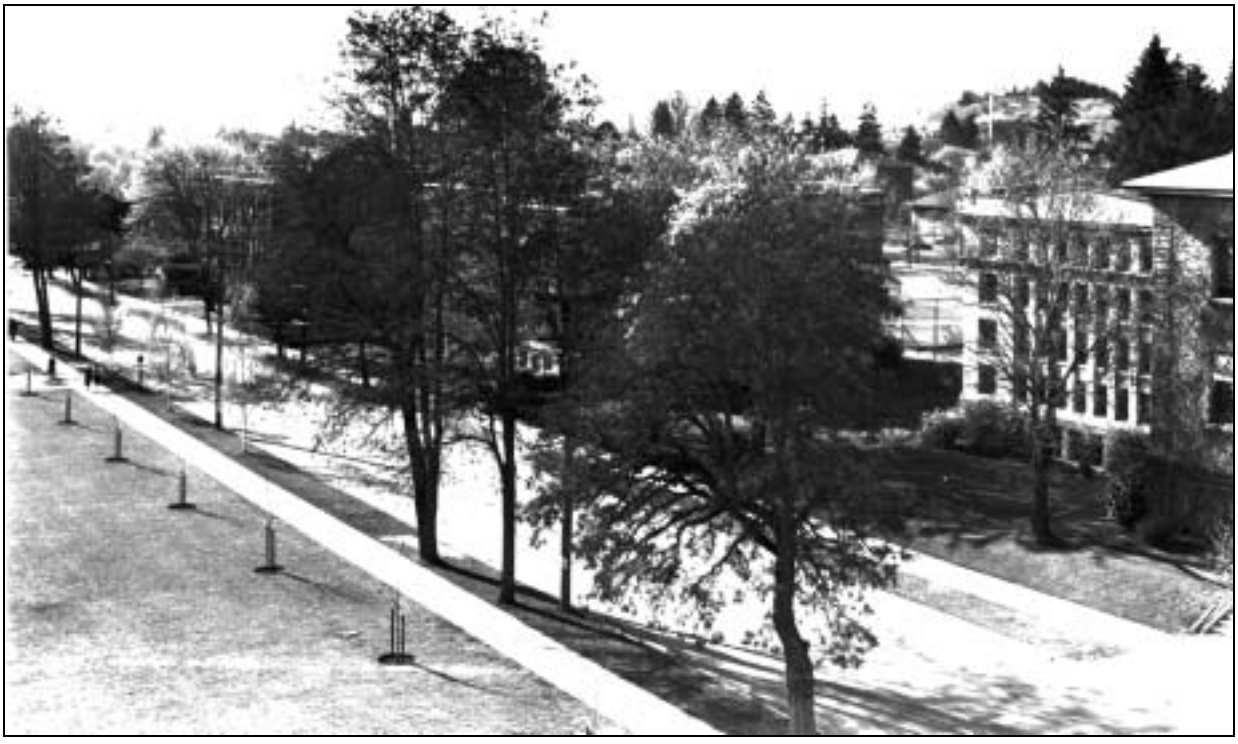
In addition, trees provide habitat for urban wildlife supplying food and safe havens, as well as critical nesting sites.

Educational: Trees provide unique educational opportunities in a campus setting. A diverse selection of trees is important for species identification and research associated primarily with landscape architecture and biology classes.

Historical: Trees associated with significant historical events related to the university enrich the campus environment. Historically significant trees help convey the history of the campus and define the collegiate character.

Psychological: A campus with trees is more desirable than those without trees, according to research noted in *Minnesota's Community and Urban Forests* (1990). Research has shown that the natural environment has a positive effect on individuals' health. Trees often help reduce the stress associated with urban settings by creating feelings of relaxation and well-being.

More detailed information about the benefits of trees on the University of Oregon campus is provided throughout the plan.



Double row of trees planted along 13th Avenue between Kincaid and University Streets, looking west (Fenton Hall on the right), c. 1920s.

2.0 Existing Policies/Management

The university completed a comprehensive inventory of trees in 1996, entitled the *University of Oregon Atlas of Trees*. Current university policies address tree management mostly in a broad sense and often as part of the overall landscape. Three primary documents address tree management on campus:

- The *University of Oregon Atlas of Trees*, 1996: This atlas is a comprehensive inventory of all trees on campus. An associated database maintained by Facilities Services provides additional information. The atlas is available for loan through the University of Oregon Library System in the Architecture and Allied Arts Library, the Science Library, and in the Oregon Collection (call number LD4363.M39 1996). It is also available for sale through the University of Oregon Bookstore and the Museum of Natural History.

- *Long Range Campus Development Plan*, 1991 (LRCDP): This plan includes a series of patterns and policies designed to guide campus development. Refer to Appendix A for a summary of patterns and policies that address trees.

- *Sustainable Development Plan*, 2000 (SDP): This plan includes a series of patterns describing the intent and implementation of the LRCDP's "Sustainable Development" pattern. Refer to Appendix B for a complete summary of patterns and policies that address trees.

The LRCDP and SDP patterns and policies represent the comprehensive framework upon which this campus tree management plan is based. Applicable patterns and policies have been integrated throughout the plan.

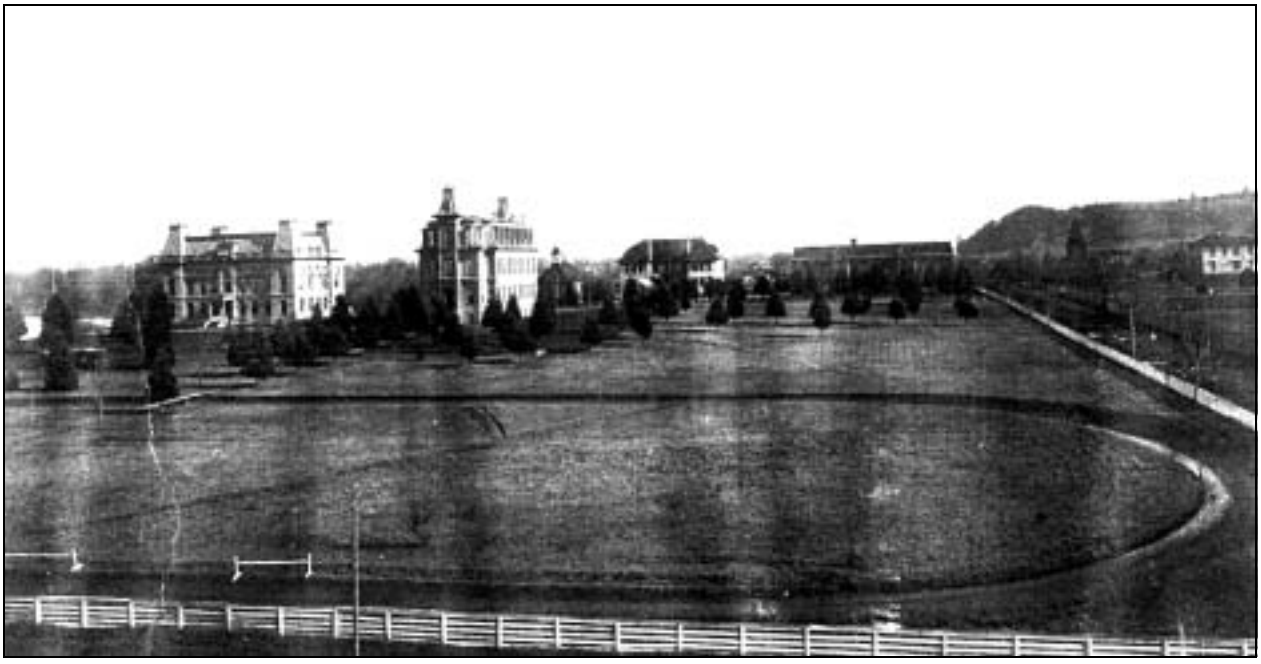
In addition, the Conceptual Landscape Master Plan, prepared by professor Ronald Lovinger in 1984, provides some interesting concepts, although the university did not officially adopt the document. Numerous smaller studies related to specific areas and projects on campus also incorporate tree-management concepts. Such studies serve as useful reference tools when determining appropriate actions for specific areas of campus.

3.0 General History and Existing Conditions

3.1 Brief History

Since the university's inception, trees have played an important role in defining its physical character. Many individuals and groups have contributed to the creation of the tree canopy we enjoy today. When Deady Hall was built in 1876, it was situated on a barren knoll in a treeless pasture, with the possible exception of the two Condon Oaks (these trees were later adopted by the classes of 1897 and 1900). Students initiated the first tree plantings in 1883 as part of a beautification effort, but the majority of the trees, mostly cedars, did not survive the following dry season. The next year, the university janitor carried out a more successful planting effort in what is considered the northwest portion of campus today (including the Old Campus Quad and west to Kincaid Street). Under contract from the regents, the janitor was paid per tree and only if it survived. These trees, including firs, cedars, maples, and palms, constituted the canopy of trees for this portion of campus for many years. The big-leaf maple near the southeast corner of Deady Hall is the sole survivor of this planting effort.[1]

At the end of the century, an additional 100 pines, firs, cedars, and maples were brought in from the surrounding hills by Dean John Straub and planted on campus. Some of the trees were planted in formal rows on either side of the entrance walk leading from Kincaid and 12th Avenue to Deady Hall, but most were planted in a rather casual arrangement surrounding Deady and Villard Halls and in the Old Campus Quadrangle.



Early tree-planting efforts, looking east from Kincaid Street, c. 1900-1902.

[1] According to the LRCDP, but not mentioned in the 1980 Tree Atlas.

As the campus grew, Ellis Lawrence's 1914 campus plan and subsequent plans established the current framework of interconnected quadrangles, malls, and axes. Over time, trees were planted to define these open spaces. In the mid-thirties, many trees were planted using funds provided through the Works Progress Administration.

In addition, the campus tree collection expanded through property acquisition. In particular, the Stafford House property (currently Straub quadrangle) and the Collier House property both had significant trees planted at the times of acquisition.

Northwest portion of campus, 1936 aerial photograph (north is at the top).

1944 aerial photograph of campus (north is at the top).

1952 aerial photograph of central campus (north is at the top).

1974 aerial photograph of central campus in the winter (north is at the top).

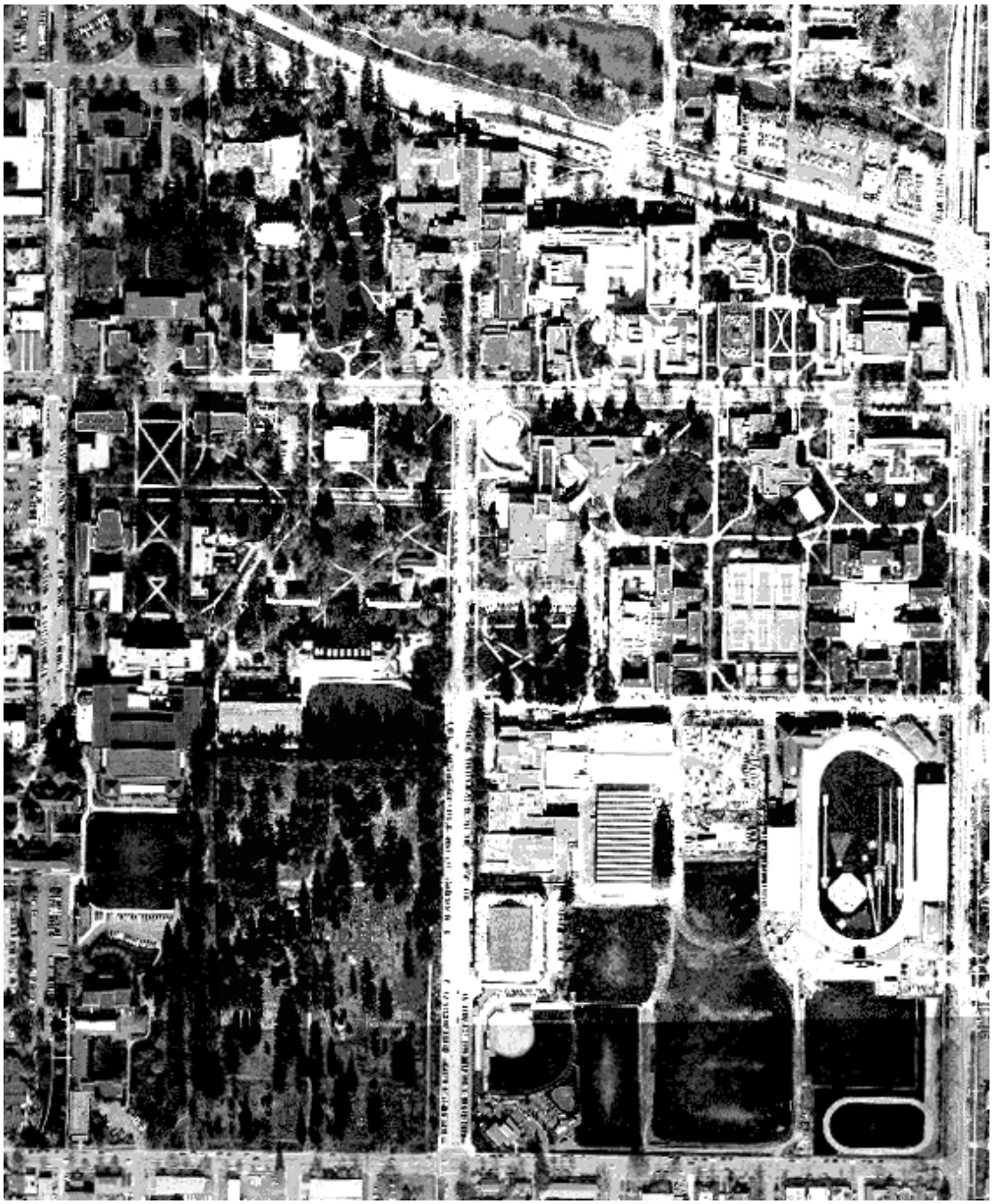
By the time the devastating Columbus Day storm hit in 1962, the campus tree canopy had reached a level of maturity that defined the quintessential character of the central campus as we know it today, with many large-canopy species. Unfortunately, a great number were blown down during the storm—some of the oldest and largest—leaving large, open spaces in the central campus area.

Old Campus Quad after the1962 Columbus Day storm (Fenton Hall is in the background).

In 1976, a project called "100 Years—100 Trees" was initiated as part of the University of Oregon's "Centennial Year" celebration. The project, co-sponsored by the Women's Club and the UO Centennial Council, far surpassed its original goal of 100 trees with a total of 450 planted between 1976 and 1983. A variety of tree species were planted as part of this project, including special varieties to enhance the university's collection of educational trees.

The Memorial / Honorarium Tree program has also helped maintain the campus tree canopy. In addition, landscaping projects associated with more recent development projects have resulted in the addition of hundreds of trees. With years of effort, the density of trees on campus has greatly increased since the first plantings on the barren knoll.

For more information, refer to George Jette's history of the campus trees contained in the 1980 *Trees of the Oregon Campus*, and the *University of Oregon Atlas of Trees* written by the University Planning Office in 1996.[2]



May 2000 aerial photograph of campus (north is at the top).

[2] The *University of Oregon Atlas of Trees* is available for loan through the University of Oregon Library System in the Architecture and Allied Arts Library, the Science Library, and in the Oregon Collection (call number LD4363.M39 1996). The atlas is also available for sale through the University of Oregon Bookstore and the Museum of Natural History.

3.2 Summary of Current Conditions

There are 3,375 trees on the contiguous campus, according to the 1996 *University of Oregon Atlas of Trees* (refer to map 3.2.1 Campus Tree Canopy). As mentioned previously, the overall density of trees on campus has greatly increased since the first plantings on the barren knoll. Even in the last two decades, as development has escalated, the number of trees has increased. In 1980, when the first comprehensive tree atlas was completed, there were 2,458 trees on the main campus (excluding the area north of Franklin Boulevard and the area east and south of Agate Street and 17th Avenue respectively) compared to 2,571 trees in 1996. Since 1994, large development projects on campus, such as the Knight Law Center and the Student Recreation Center, have resulted in an additional increase in the number of trees on campus.

In certain areas, however, such as the closed portion of 13th Avenue and, to a lesser degree, the Collier House property, some of the originally planted trees have been lost and not replaced. In addition, some of the older, established areas of campus, including the Old Campus Quad and Straub quadrangle, contain numerous trees in decline. Better identification of hazard trees has resulted in an increase in their removal in recent years. The lack of replacement of the large-canopy trees in the areas mentioned above and the trend toward smaller species in newly developed areas are of particular concern.

The *University of Oregon Atlas of Trees* (1996) is an excellent resource for identifying the existing trees on campus. It contains the following data for all trees: location, botanical name, variety, common name, species origin, family, century tree designation, and type (deciduous/conifer). The associated Atlas of Trees database maintained by the Campus and Grounds Division of Facilities Services contains the following additional data for all trees identified in the atlas: maximum height of typical growth, actual height, actual caliper, and actual spread. The following maps and tables (3.2.1 - 3.2.4) and map summarize the characteristics of the tree canopy according to the 1996 database.

3.2.1 Map: Campus Tree Canopy

Not Available

3.2.2 Map: Campus Tree Canopy and Designated Open Spaces

Not Available

3.2.3 Table: Summary of the Existing Tree Canopy
(based upon the Atlas of Trees database maintained by Facilities Services)

Total number of trees (1996)	3,375
Canopy coverage of all open space (includes all campus land excluding building footprints that is covered by a tree canopy in the summer)	about 20% (3,375 trees)
Canopy Coverage of all designated open spaces (refer to map 3.2.2)	about 28%
Deciduous (2599) Conifers (776)	77% of total 23% of total
Number of different species and cultivars Most common species: Acer rubrum red maple (132 trees) Pseudotsuga menzies Douglas fir (129 trees) Quercus palustris pin oak (120 trees) Liquidambar styraciflua American sweetgum (118 trees) Prunus serrulata Oriental cherry (101 trees) Acer platanoides Norway maple (100 trees)	over 500 about 4% of total 4% 4% 3% 3% 3% 21% of total
Species Native to the Willamette Valley (refer to table 3.2.4 for more details)	14% of total
Age range of selected species based upon truck diameter: <u>Acer macrophyllum – big-leaf maple</u> Trunk Diameter: 1 – 9 inches (1– 16' canopy) – 14 trees 10 – 29 inches (20-50' canopy) – 8 trees 30 – 79 inches (30-60' canopy) – 11 trees 80 + inches (60' canopy) – 1 tree 34 trees <u>Pseudotsuga menzies – Douglas fir</u> Trunk Diameter: 1 – 9 inches (1–34' height) – 33 trees 10 – 19 inches (30-60' height) – 27 trees 20 – 49 inches (50-100' height) – 42 trees 50 + inches (60-145' height) – 17 trees 129 trees <u>Quercus palustris – pin oak</u> Trunk Diameter: 1 – 9 inches (1–35' canopy) – 30 trees 10 – 19 inches (20-47' canopy) – 44 trees 20 – 29 inches (25-66' canopy) – 17 trees 30 + inches (35-69' canopy) – 27 trees 120 trees	 41% young 24% established 32% mature 3% very mature 28% young 23% established 35% mature 14% very mature 25% young 37% established 14% mature 24% very mature
Donated Trees (374) Includes Century Trees (450 originally planted from 1976-1983) and all other Memorial / Honorarium Trees.	11% of total

3.2.4 Table: Species Native to the Willamette Valley[3] on Campus

Abies grandis	grand fir	4
Acer circinatum	vine maple	105
Acer macrophyllum	big-leaf maple	34
Alnus rubra rhombifolia	red alder white alder	9 0
Arbutus menziesii	madrone	2
Calocedrus decurren	incense cedar	53
Cornus nuttallii	dogwood	31
Corylus cornuta	hazel	5
Crataegus douglasii	hawthorne	6
Fraxinus latifolia (F.oregana)	Oregon ash	4
Pinus ponderosa[4]	ponderosa pine	26
Populus trichocarpa	cottonwood	10
Prunus emarginata	bitter chokecherry	0
Pseudotsuga menziesii	Douglas fir	129
Quercus garryana[4]	Oregon white oak	4
Quercus kelloggii	California black oak	1
Rhamnus purshiana	cascara buckthorn	2
Salix lasiandra[5] scouleriana sessilifolia sitchensis	pacific willow scouler willow northwest willow sitka willow	See footnote #5
Taxus brevifolia	pacific (western) yew	3
Thuja plicata	western red cedar	28
Tsuga heterophylla	western hemlock	13
	Total	469 + (14% of all trees)

[3] The definition of species native to the Willamette Valley is based upon:

- The Green Guide: Eugene's Natural Landscape, by Henry W. Lawrence, Ann P. Bettman, Eugene, Or: A.P. Bettman, c. 1982
- Natural Vegetation of Oregon and Washington, by Jerry F. Franklin and C. T. Dyrness, Portland, Or., Pacific Northwest Forest & Range Experiment Station, Forest Service, U.S. Dept. of Agriculture, 1973.
- Trees to Know in Oregon, by Edward C. Jensen and Charles R. Ross, Corvallis, OR: Oregon State University Extension Service and Oregon Dept. of Forestry, 1994.

[4] Trees native to the Willamette Valley are not necessarily well suited to the micro conditions on campus. For example, most ponderosa pines are more suited to forested areas in higher elevations. There may be a subspecies known as the valley pine that is more suited to the valley floor, but it is not identified in the campus tree data. In addition, many native species, such as the Oregon white oak, are better suited in undisturbed sites, making it very difficult to transplant and establish them in a campus environment.

[5] Native willow species, e.g. those in the Millrace area, are not identified in campus tree data. Also, many are considered shrubs, e.g. piper willows.

3.3 Primary Landscape Characteristic: Open-space Framework

The primary landscape characteristic of the University of Oregon is the open-space framework. As stated in the LRCDP:

> The University of Oregon campus is organized as a system of quadrangles, malls, and other open spaces. . . . This organizational framework not only functions well, but serves as a physical representation of the University's heritage, and should be preserved, completed, and extended as opportunities arise. (13)

Trees are the primary character-defining features of the open spaces. The characteristics of the tree canopy within the open-space framework are as follows:

All Open Spaces

Open spaces on campus vary from large to small and are designed for a variety of uses as defined by the LRCDP patterns addressing open spaces. Refer to Table 4.0.2 that defines the typical character of the tree canopy for open spaces as defined by the LRCDP patterns.

Quadrangles & Malls

Formal and informal arrangements of trees are used to define quadrangles and malls that are protected from development because they are identified in the LRCPD as designated open spaces. Refer to the "Designated Open Spaces: Existing and Desired Tree Canopy Character" section for a description of desired tree canopies in individual quadrangles and malls.

Axes & View Corridors

Generally, formal arrangements of trees are used to enhance views and/or delineate axes. These axes are protected from development because they are identified in the LRCPD as designated open spaces. Refer to the "Designated Open Spaces: Existing and Desired Tree Canopy Character" section for a description of desired tree canopies in individual axes and view corridors.

4.0 General Tree Siting and Selection Patterns

The following patterns apply to all tree management activities on campus. All other applicable patterns and policies within the LRCDP and the SDP should be consulted as well (refer to Appendices A and B). A table of the existing LRCDP open-space patterns with an interpretation of how they relate to the typical tree character of campus is provided.

4.0.1 Table: Summary of Tree Patterns
(Refer to the full pattern descriptions in this section for more detail)

Tree Pattern	**Pattern Description** *Refer to the complete pattern descriptions for additional information.*
Healthy and Vital Canopy	*Strive for a sustainable tree canopy that has an uneven age structure and diverse tree species. Protect trees during construction.*
Tree Replacement Strategies	*Maintain a balanced tree population through an effective tree replacement program.*
Long-lived Tree Sites	*Site trees where they will not interfere with future development to take full advantage of and encourage a long life span.*
Sunny/Shady Open Spaces	*Preserve the current amount of non-canopied open spaces, which equals about 75-80%, by taking into consideration tree size, type, and placement.*
Environmental Mitigation	*Select tree species and locations that provide maximum environmental benefits.*
Campus as Arboretum	*Consider instructional benefits when selecting trees to replace existing ones or to establish new plantings.*
Large-canopy Trees	*Replace lost large-canopy trees and consider planting a single large-canopy tree in lieu of smaller trees where appropriate.*
Site Specific Conditions	*Make sure the tree selection fits the environmental conditions. Protect or improve existing soil conditions during construction and make design and/or site condition adjustments.*
Designated Open Spaces	*Afford extra care to trees that reinforce the system of quadrangles, malls, and open spaces.*
Outdoor Classroom	*Preserve the open, sunny spaces required for outdoor "classrooms."*
Canopied Parking	*Maximize the tree canopy over surface parking lots, with a minimum of 10%. Ensure that adequate planting space is provided.*

4.1 Healthy and Vital Canopy

A healthy, vigorous tree canopy is essential to perpetuate the character of the campus landscape and to strive towards a healthy ecosystem.

Therefore: Strive for a sustainable tree canopy that has an uneven age structure and diverse tree species. Minimize changes to site conditions for established trees, especially native species, and consider re-establishing original site conditions in areas that have been negatively altered (e.g., adjust the watering regime). Protect existing trees during construction (refer to the Tree Protection Requirements in the "Establishing Tree Responsibilities for Trees" section, and the SDP "Healthy Ecosystems" pattern in Appendix B).

When planting new trees, use native[6] or well-adapted species when appropriate, while recognizing the importance of a variety of plant materials necessary for instructional use. Select species that are resistant to disease and insects. All newly planted trees should be the optimal size required (based on the species) to ensure survival.

4.2 Tree Replacement Strategies

Trees have a limited life span and will eventually enter a phase of decline.

Therefore: Maintain a balanced tree population through an effective tree replacement program. As a general practice, a tree should not be cut down unless it is considered a hazard or it is located within a development site and meets the requirements of the "Establishing Project Responsibilities for Trees" section.

Trees planted to compensate for lost tree canopy due to new development should be located on the development site if possible (keeping in mind the "Sunny/Shady Open Spaces" pattern and all other tree siting and selection patterns). If this is not possible, work with the Campus and Grounds Supervisor to determine appropriate sites. First priority should be adjacent designated open spaces as appropriate (refer to the "Designated Open Spaces" pattern). Otherwise, trees should be planted elsewhere on campus if possible.

Tree replacement strategies should reflect the character of the open space. For example, tree replacement within a formal landscape design generally would not occur until a tree is considered a hazard. In an informal landscape design, however, it could be initiated prior to the required removal of deteriorating trees

[6] Trees native to the Willamette Valley are not necessarily well suited to the micro conditions on campus. For example, most ponderosa pines are more suited to forested areas in higher elevations. There may be a subspecies known as the valley pine that is more suited to the valley floor, but it is not identified in the campus tree data. In addition, many native species, such as the Oregon white oak, are better suited in undisturbed sites, making them very difficult to transplant and establish them in a campus environment.

by interspersing young trees between them. This often makes informal landscape designs more sustainable.

4.3 Long-lived Tree Sites

Trees take many years to become established. Once established, however, they provide a multitude of benefits over a long life span.

Therefore: Site trees where they will be less likely to interfere with future development. In general, designated significant open spaces shall have first priority for tree planting. This may include replacing trees in decline to perpetuate the desired tree-canopy character. If the proposed tree planting is part of a development project, refer to the "Establishing Project Responsibilities for Trees" section.

4.4 Sunny/Shady Open Spaces

Residents of the Pacific Northwest value sunshine during the lengthy, cool, wet portion of the year. Sunshine allows outdoor areas to warm up and dry out, enabling greater use throughout the year. Shady spots are valued during the warm summer months. Summer-shaded buildings are also highly desirable to help cool interiors by blocking solar heat gain.

Therefore: Maintain a diversity of sunny and shady open-space areas on campus. Preserve the current amount of non-canopied open spaces which equals about 75 - 80% (includes all land except building footprints that is not covered by a tree canopy in the summer). Take into consideration tree size, type and placement (refer to the "LRCDP Open-space Patterns" table at the end of this section). Adhering to this pattern may mean that it is not always possible to replant the total lost tree canopy caused by development.

4.5 Environmental Mitigation

Trees provide many environmental benefits on campus by reducing energy use, storm water drainage, erosion, and water pollution. Trees also provide important wildlife habitat.

Therefore: Select tree species and locations that provide maximum southwest- and west-side shade for buildings, cool air temperatures through evapo-transpiration, control erosion by stabilizing soil conditions, reduce off-site water drainage through canopy and root system water retention, reduce water pollution by acting as sediment filters, and help establish bird corridors. Also refer to the "Canopied Parking" pattern and the SDP (Appendix B).

4.6 Campus as Arboretum

The university campus is considered an arboretum. Plant materials on the campus, trees in particular, constitute a valuable teaching resource, particularly but not exclusively in biology and landscape architecture.

Therefore: Consider the instructional benefits when selecting trees to replace existing ones or to establish new plantings (refer to LRCDP).

4.7 Large-canopy Trees

Large-canopy trees, a distinguishing feature of the campus, are diminishing in number as the existing large trees continue to decline and as development results in open spaces that are not large enough to accommodate large trees.

Therefore: Replace lost large-canopy trees and consider planting a single large-canopy tree, rather than a series of smaller trees, where appropriate. Also, consider designing buildings and additions to provide adequate space for large-canopy trees (refer to the SDP).

4.8 Site Specific Conditions

Tree species vary as much as site conditions. Only half of each tree is visible, since root systems comprise as much biomass as above-ground portions.

Therefore: Make sure the species fit the localized environmental conditions. Consider compatibility with adjacent plantings (including irrigation needs), sight line and clearance requirements, planting area size and soil conditions, proximity to buildings, and ways to minimize disease and insect problems. Protect or improve existing soil conditions during construction and make design and/or site-condition adjustments to benefit trees' needs.

4.9 Designated Open Spaces

The primary landscape characteristic of the University of Oregon is the open-space framework consisting of a system of quadrangles, malls, and other open spaces that are designated as significant by the LRCDP. A major character-defining feature of these open spaces is the tree canopy.

Therefore: Preserve, complete, and extend the open-space framework as opportunities arise. Afford extra care to the trees that help form or reinforce the identity of these designated open spaces. Refer to the "LRCDP Open-space Patterns" table at the end of this section and the "Designated Open Spaces: Existing and Desired Tree Canopy Character" section of this plan.

4.10 The Outdoor Classroom

Many campus open spaces serve as vital "classrooms." Many outdoor "classroom" functions require open, sunny spaces (e.g., sports fields, marching band practice areas, the urban farm, and informal outdoor classes).

Therefore: Preserve the open, sunny spaces required for outdoor "classrooms." Always consider the use of the open space when selecting and placing trees. This may mean that it is not always possible to replant the total lost tree canopy caused by development (refer to the "LRCDP Open-space Patterns" table at the end of this section and the analytical area descriptions in the LRCDP).

4.11 Canopied Parking

Parking lots represent a substantial amount of the impervious surface area on campus. They create a notable amount of unfiltered storm water run-off and create undesirable heat islands.

Therefore: Maximize the tree canopy over surface parking lots. Establish a minimum coverage of 10%[7] (assuming full canopy growth) whenever possible. Ensure that adequate planting spaces are provided and select species that provide a dense canopy coverage if possible.

[7] The city's required parking lot canopy coverage at full growth equals approximately 5-10% (depending upon the parking lot size). The coverage of a typical existing campus parking lot (assuming full canopy growth) ranges from 2-5%; the current overall tree canopy coverage (not at full growth) of open space on campus is about 20%.

4.0.2 Table: LRCDP Open-space Patterns
Typical Tree-Canopy Character
(refer to the LRCDP for more detail)

LRCDP Pattern	Pattern Description	Typical Tree Character
Activity Node	*Create small centers of activity separated by quiet space.*	Usually a limited number of trees is used to define spaces (thus preventing interference with activities).
Accessible Green	*Maintain an open space in proximity to all buildings.*	Trees are used to define the space and provide a mix of sunny and shady spots.
Local Sports	*Scatter facilities for physical exercise around campus.*	Limited use of trees is appropriate to surround and define the perimeters.
Main Entrance	*Main entrances to buildings should be distinctive and easily identifiable from principal approaches.*	Trees are used to frame entrances without blocking views or hindering direct access.
Positive Outdoor Space	*Place and form buildings to define and partially enclose outdoor space.*	Trees are used to further define the space and create enclosure.
Public Outdoor Room	*Make outdoor places with some enclosure; mark them.*	Trees are used to further define the space and to shade portions of outdoor seating areas for summer use.
Quiet Backs	*Connect buildings to a quiet space, removed and buffered from adjacent sources of noise.*	Usually trees are used in an informal arrangement to provide intimacy and create seating areas. These areas may provide an opportunity for experimental or non-traditional landscaping ideas, such as native plantings.
South Facing Outdoors	*Buildings should be designed to create south-facing outdoor spaces whenever possible.*	A limit number of trees is used in these intentionally sunny areas. Trees are used to define east, west, and north sides.
Promenade	*A major pedestrian way, centrally located with main attractors at each end, should be developed to link principal activity nodes.*	Trees are used to further define the walkways and soften the hardscape.
University Streets	*Major campus activities should front on public streets that are essentially pedestrian in nature; new buildings should either connect to or extend these streets.*	Trees are used primarily in a formal arrangement to define the axes and to soften and shade the hardscape.
Shielded Parking	*Screen parking lots from view by landscaping, walls, or topographic feature.*	Trees and shrubs are used to shield views of parking from adjacent uses and to soften and shade the hardscape.

5.0 Designated Open Spaces: Existing/Desired Canopy Character

5.1 Introduction

As noted in the "Designated Open Space" pattern, every effort should be made to preserve and enhance the campus open-space framework (refer to map, 3.2.2 Campus Tree Canopy). In addition, the "Long-lived Tree Sites" pattern gives priority to planting trees in designated open spaces. For this reason, this plan focuses on defining the desired character of the tree canopy for these open spaces.

This section includes descriptions of the existing and desired tree canopy character for each designated open space. Following the open-space descriptions is a table indicating which LRCDP patterns and General Tree Siting and Selection Patterns are applicable to each designated open space. This information should be the used as a guide when implementing future tree-planting efforts.

Other Open Spaces

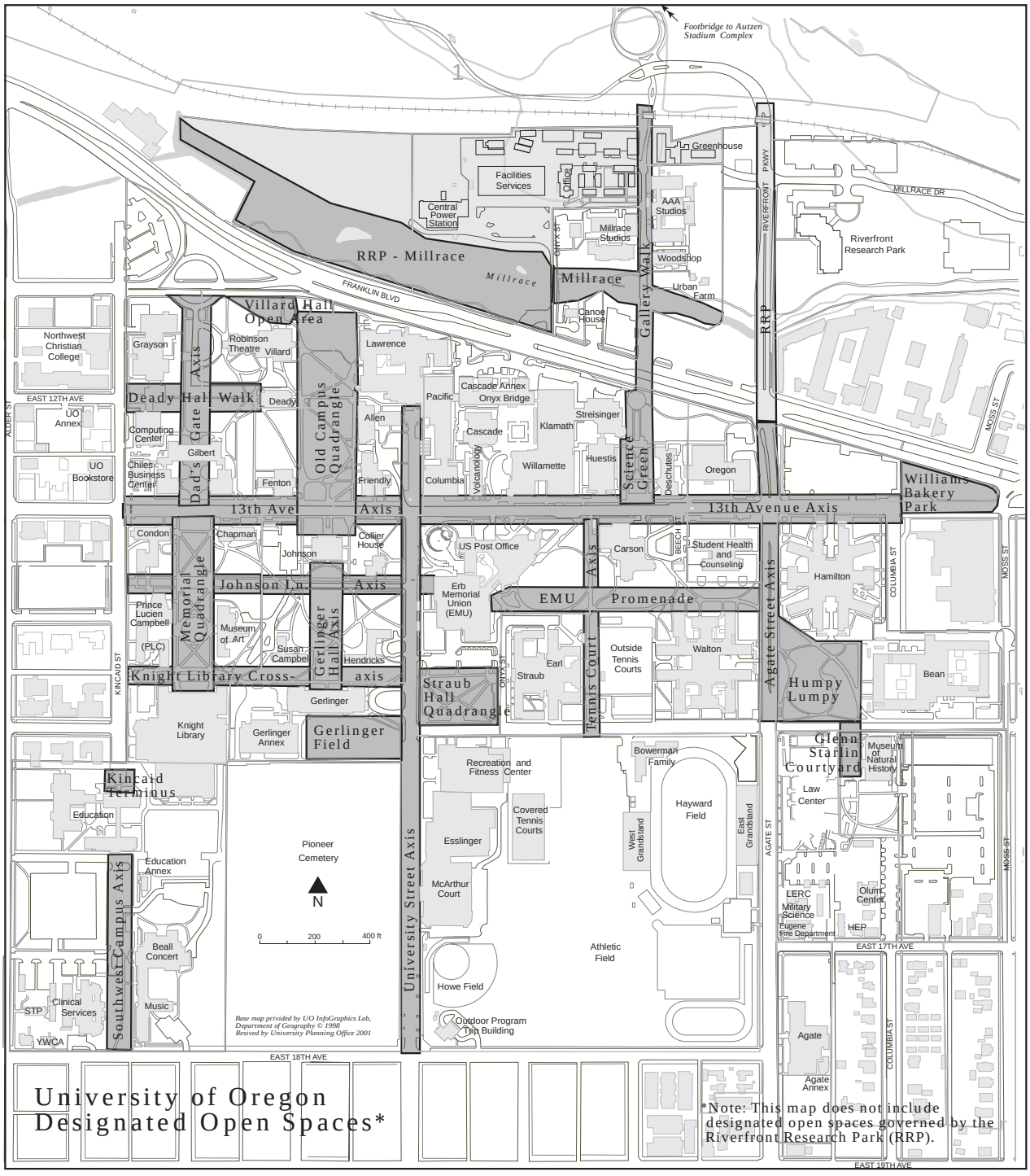
Focusing on the designated open spaces does not mean that the tree canopy in other open spaces does not serve a valuable purpose. The patterns identified in the "General Tree Siting and Selection Patterns" should be considered in all instances. Special conditions for specific landscaped areas are identified by analytical area in the LRCDP. In addition, specific uses are defined (e.g., playing field) and special designations are identified (e.g., listings on the National Register of Historic Places) in these analytical area descriptions.

More detailed information about the desired character of the other campus open spaces should be prepared when time and resources allow.

LRCDP Individual Significant Trees

The LRCDP identifies 13 specific trees that are considered historically or otherwise significant (refer to Appendix A). Those within designated open spaces are noted in the open-space descriptions. There are other significant trees on campus, however. Refer to the "Defining Significant Trees" section for a full description of criteria to consider when determining whether a tree is significant.

5.1.1 Map: Designated Open Spaces



5.2 Designated Open Spaces: Quadrangles and Malls

Memorial Quadrangle

Existing Character: This quadrangle is the academic center of campus and receives heavy pedestrian traffic. It is listed on the National Register of Historic Places and is laid out in a formal design consisting of an open, sunny lawn lined with eight pyramidal English oaks at the southern end, three English oaks and a tulip tree at the intersection of the Johnson Lane axis, and additional large-canopy trees along the outside edge of an open, sunny lawn at the northern end. The LRCDP specifically notes the English oaks as significant trees, which help form the identity of the view corridor.

Existing Condition: The trees are generally in good condition.

Existing Canopy Coverage: about 35%

Desired Character: The existing character of the area should be preserved. The English oaks are to be afforded extra care. The LRCDP states that a program for replacing these trees as they reach the end of their natural life cycles will be needed in order to preserve the area's existing character.

Old Campus Quadrangle

Existing Character: This quadrangle is an informal arrangement primarily of conifers with shrub plantings interspersed in a lawn setting. Historically, this quadrangle was the main entrance to the university, and it originally had formal plantings of roses along the pathways. Since then, it has become a quiet, park-like setting criss-crossed with pedestrian pathways. Portions of the quadrangle are within the Deady Hall and Villard Hall National Landmark boundaries and the southern boundary crosses the 13th Avenue axis. The LRCDP has identified the following trees as significant: the European linden located east of Villard Hall (1895 class tree), the big-leaf maple near the southeast corner of Deady Hall (the sole survivor of the original campus planting of 1884), and the threadleaf Japanese maple near 13th Avenue northeast of Johnson Hall (because of its size and unique character).

When Deady Hall was built in 1876, it was situated on a barren knoll in a treeless pasture, with the possible exception of the two Condon oaks located just north of the designated open space (these trees were later adopted by the classes of 1897 and 1900). Although not included in the designated open space, these two oaks are identified in the LRCDP as significant. They are prominently situated adjacent to Franklin Boulevard.

An inventory of important educational trees has not been completed for this area.

Old Campus Quad, looking north from Deady Hall roof, c 1900?

Existing Condition: Many of the conifers are in a state of decline due to old age, damage suffered during the Columbus Day storm (one is considered a habitat tree), and overwatering (particularly incense cedars and ponderosa pines). The Condon oaks are also in a state of decline due to old age, major wounds, fungal growth, and overwatering. Some trees were planted in very close proximity to the historic buildings and have outgrown their space.

Existing Canopy Coverage: about 30%

Desired Character: The existing character of the area should be preserved and enhanced. High priority should be placed on initiating a replacement program and adjusting the watering and planting regime so that the trees are not overwatered. Further research is necessary to determine an appropriate replacement program for trees crowding historic buildings. The view corridor from "The Pioneer Mother" through the Johnson Hall lobby to "The Pioneer" and the view north to the Millrace and the river should be preserved. When selecting locations for new tree plantings, opportunities to better shade the west sides of Allan Hall and Lawrence Hall should be considered. The trees identified by the LRCDP as significant should be afforded extra care.

Science Green

Existing Character: This relatively young quadrangle, extending from 13th Avenue north to Franklin Boulevard, is defined by a formal arrangement of large-canopy deciduous trees in a lawn setting. The northern half of the quadrangle is lined on

both sides with Halka honey locust to provide a rather dense canopy, and the southern half is an open, sunny lawn lined with Green Mountain sugar maples along the eastern and western outside edges. A small seating courtyard planted with a formal grove of pear trees defines the southern edge at 13th Avenue. The northern terminus of the quadrangle abuts Franklin Boulevard and was designed with the possibility of eventual connection to the Gallery Walk across Franklin Boulevard.

Existing Condition: The pear trees are planted in confined planting areas covered with grates and suffer from inadequate root zones and poor drainage. The honey locusts are suffering from midge infestations (a problem common in this region).

Existing Canopy Coverage: about 14%

Desired Character: The existing character of the area should be preserved and enhanced while maintaining the visual connection to the Gallery Walk and the view into campus from Franklin Boulevard. If the honey locusts must be replaced due to poor condition, a more suitable canopy tree species should be considered. In addition, options to improve the pear trees' confined planting areas should be explored.

Straub Hall Quadrangle

Existing Character: This quadrangle, between Straub Hall and University Street, has a traditional campus character with informal plantings of deciduous and coniferous trees in a lawn setting. Pedestrian walkways criss-cross the quadrangle, which has a mix of sunny and shady seating areas. Unique plantings from the original plantings associated with the Stafford farm site remain on this site. Some of the trees are identified as important educational trees, including the Spanish fir, the weeping higan cherries, the California incense cedar, the coast redwood, and the digger pine. The recently completed University Street Axis Conceptual Study provides additional information about existing and desired conditions.

Existing Condition: The flowering cherry trees are in a state of decline. Some volunteer trees and species remaining from the farm site, such as the holly trees, are not appropriate for a campus quadrangle. One volunteer holly along University Street is particularly poorly placed between two Norway maples.

Existing Canopy Coverage: about 31%

Desired Character: The existing character of this area should be preserved and enhanced with the exception of the inappropriate or volunteer trees. The holly along University Street should be removed, and the removal of other inappropriate trees should be considered. Refer to the University Street Axis Study for additional information. The important educational trees deserve extra care, in particular the cherry trees, which should be replaced on site or elsewhere.

Future tree plantings should include ways to buffer the open space from the EMU parking area and continue to shade the west side of Straub Hall. In addition, future tree plantings should account for the upcoming installation of a large sculpture.

5.3 Designated Open Spaces: Axes and View Corridors

13th Avenue Axis: Between Kincaid Street and University Street

Existing Character: This primary axis has heavy pedestrian and bike use (only restricted service traffic is allowed). It has a traditional street design, and is lined on either side with a double row of primarily large-canopy trees including big-leaf maples, London plane trees, and catalpas. The axis partially overlaps the Memorial Quadrangle National Register boundary and the Collier House City Landmark site. The character of the Collier House site is similar to the rest of the street with the exception of a group of mature conifers.

The LRCDP has identified the threadleaf Japanese maple northeast of Johnson Hall (a National Register building) as significant because of its size and unique character.

An inventory of important educational trees has not been completed for this area.

Existing Condition: One large conifer grand fir and a big-leaf maple in front of the Collier House were lost during a storm in 1999. Some other mature big-leaf maples have been lost in recent years in front of Gilbert Hall and others are in decline.

Existing Canopy Coverage: about 32%

Desired Character: Efforts to shade the street surface, particularly to replace the missing large-canopy trees, are a priority. However, care should be taken not to interfere with adjacent sunny open spaces, such as the Memorial Quadrangle and the Gilbert plaza. Efforts to change the character of the street to make it more bike-and-pedestrian-friendly are also encouraged. For example, the proposed design for the Lillis Business Complex / Gilbert Hall project includes new tree planting areas within the original street paving to provide adequate space to plant additional large-canopy trees that will soften the original hardscape while retaining adequate pedestrian space on the sidewalks. Placement of trees should not block the ground-level view from Dad's Gate to the Knight Library (refer to Dad's Gate Axis).

The historic character of the Collier House site should be considered when selecting and placing trees. In addition, the view corridor from "The Pioneer Mother" through the Johnson Hall lobby to "The Pioneer" should be preserved. The threadleaf Japanese maple should be afforded extra care.

Refer to "University Street Axis" for information about the intersection of 13th Avenue and University Street.

13th Avenue Axis: Between University Street and Moss Street

Existing Character: This portion of the 13th Avenue axis is open to automobiles and has the character of a typical tree-lined street. The city owns the portion between Agate Street and Moss Street; the university owns the rest. The intersection of 13th Avenue and Agate Street serves as the primary entrance to the university. Large-canopy deciduous trees, consisting primarily of red oaks and pin oaks interspersed with other deciduous trees, informally line the street. A second row of mixed species enhances the tree canopy and identifies secondary axes and building entrances.

This area contains important educational trees, including the Norway spruce near the EMU's north entrance and the Douglas fir located near the EMU's northeast corner. The LRCDP identifies the latter tree as significant because it grew from a seed that was among four fir seeds carried to the moon aboard Apollo XIV in 1971 by Astronaut Stuart Roosa. In 1978 the seedling was planted where Willamette Hall now stands; it was transplanted in 1987 to accommodate construction of the additions to the Science Facilities Additions and Alterations project.

Existing Condition: Although the existing trees are generally in good condition, a few are in decline. The health of the trees in front of Willamette Hall was damaged by past construction. The Italian stone pine tree in front of Volcanology was recently removed due to poor health, and many of the pines across from Volcanology, in front of the EMU, are in poor condition. Heavy pedestrian traffic in the critical root zone of the northern red oaks north of the EMU has compacted the soil, but this does not appear to have significantly affected the trees' health because the conditions have remained relatively constant throughout the trees' life.

Existing Canopy Coverage: about 30%

Desired Character: The LRCDP supports design strategies that encourage bikes and pedestrians and discourage through auto traffic. Further enhancement of the tree canopy is desirable to improve the appearance of the primary gateway to the university, to help connect this part of the 13th Avenue axis to the central part of the axis, and to shade the street surface. For example, the Eastgate Conceptual Study (between Oregon Hall and the University Health and Counseling Center) proposes a possible street median planted with trees. Opportunities exist for additional tree plantings between Agate Street and Moss Street. Future plantings should maintain the open, sunny lawn area at the southeast corner of the Agate Street and 13th Avenue intersection. Special care should be afforded to significant trees identified in the LRCDP, and research should be conducted to identify remedies for the poor condition of existing trees. The recently removed Italian stone pine tree provides an opportunity to install a large-canopy tree in its place to shade the west and south sides of Volcanology and the street surface. The pine was an educational tree so the same species should be replaced elsewhere on campus.

Please refer to "University Street Axis" for more information about the 13th Avenue and University Street intersection.

Agate Street Axis

Existing Character: This plan addresses only the portion of the axis south of Franklin Boulevard that serves as the primary entrance to the university. The northern portion (Riverfront Parkway) is governed by the Riverfront Research Park Master Plan. The portion of the axis south of Franklin Boulevard is owned by the city and has the character of a typical tree-lined street: it is lined in a formal arrangement with large-canopy deciduous trees consisting mostly of American sweetgums, scarlet oaks and American elms, interspersed with other deciduous trees. The canopy is enhanced by a tree-lined median between 13th Avenue and 15th Avenue.

Existing Condition: The existing trees are generally in good condition.

Existing Canopy Coverage: about 29%

Desired Character: Further enhancement of the tree canopy is desirable to improve the appearance of the primary gateway to the university, to help connect east campus to central campus, and to shade the street surface. There is also an opportunity to better shade the west side of the Hamilton residence hall complex. New trees should not interfere with the adjacent, intentionally sunny "humpy lumpy" area or the lawn area at the southeast corner of the Agate Street and 13th Avenue intersection. The motorist's view of the pedestrian crossing should not be impeded. Although the designated axis does not extend south of 15th Avenue, more street trees could be added along Agate Street towards Agate Hall.

Dad's Gate Axis

Existing Character: This axis connects Dad's Gate to 13th Avenue and is bisected by the Gilbert Hall bridge building, which will be replaced by the Lillis Business Complex/Gilbert Hall atrium space. The portion north of the Gilbert bridge is poorly defined with the exception of two big-leaf lindens and two European beeches flanking Dad's Gate. It consists partly of a service drive and partly of grassy, open space interspersed with informal plantings of conifers. This northern portion is partially within the Deady Hall National Landmark boundary and is bisected by the Deady Hall Walk, clearly delineated with two rows of Douglas firs. The LRCDP identifies two class trees of special significance in the area north of the Deady Hall Walk, a giant sequoia (class of 1880) and a California laurel (class of 1898). The California laurel, located in front of Robinson Theatre, died this past decade and was replaced.

The portion of the axis south of Gilbert Hall is primarily defined by the east and west wings of Gilbert Hall rather than by trees. Mature trees in this area were recently lost due to poor heath and hazard conditions.

The pedestrian use of this axis has substantially increased with the completion of the Grayson Hall project and will increase even more with the completion of the anticipated Lillis Business Complex/Gilbert Hall project and the Bus Rapid Transit station at Dad's Gate.

An inventory of important educational trees has not been completed for this area.

Existing Condition: Many of the trees in this area are large, mature trees in relatively good condition. Some, however, are in poor condition and will be removed as part of the Lillis Business Complex/Gilbert Hall project. In addition, some smaller trees have been moved to prepare for the upcoming Lillis Business Complex/Gilbert Hall project including a bald cyprus, redwood ash, and dogwood.

Existing Canopy Coverage: 30%

Desired Character: The northern portion of the axis should be better defined with a formal tree planting arrangement north of the Deady Hall Walk. This would also help to shade the paved access road. Placement of trees should not block the ground-level view from Dad's Gate to the Knight Library or the view of Robinson Theatre from 11th Avenue. Future tree plantings should take into consideration the future LTD Bus Rapid Transit station planned for the northern terminus of the axis in the 11th Avenue median. The portion of the axis south of the Deady Hall Walk will be accentuated with a central sidewalk as part of the proposed Lillis Business Complex/Gilbert Hall project. To preserve the informal, sunny open space, no new trees are proposed.

The mature yellow buckeye south of the Gilbert bridge building will be preserved and the tree canopy will be restored along 13th Avenue in front of Gilbert Hall as part of the Lillis Business Complex/Gilbert Hall project. The relatively small, formal courtyard space between Gilbert East and Gilbert West will remain open as an intentionally sunny, south-facing spot. If possible, however, shading the west face of Gilbert East is desirable.

A replacement program to anticipate the decline of the numerous mature trees and maintain the desired canopy character along this axis is necessary. The remaining class tree, the giant sequoia identified in the LRCDP, deserves special care.

Deady Hall Walk

Existing Character: This axis leads from Deady Hall to Kincaid Street and is clearly delineated by two formal rows of Douglas firs bisected by the Dad's Gate axis. The LRCDP specifically notes these Douglas firs as significant trees that help form or reinforce the identity of the view corridor. This axis is partially within the Deady Hall National Landmark boundary.

Existing Condition: The Douglas firs represent a range of ages; some of the older ones are in a state of decline, and one is missing. Concerns include overwatering and root compaction from an increase in pedestrian activity.

Existing Canopy Coverage: about 36%

Desired Character: The existing character of the area should be preserved. Identified in the LRCDP as significant trees, the Douglas firs are to be afforded extra care. A program for replacing these trees as they reach the end of their natural life cycles

will be needed in order to preserve the area's existing character. The proposed Lillis business Center / Gilbert Hall project will replace the missing Douglas fir. Solutions to eliminate compaction and overwatering should be researched.

EMU Promenade

Existing Character: This heavily used pedestrian axis from the east side of the EMU to Agate Street has an open, informal character. It passes through an intentionally sunny open area dotted with shade trees and is designed to provide outdoor activity space for special events and for students residing in the dormitories. The Austrian black pine north of Earl Hall is an important educational tree.

Existing Condition: One of the two mature big-leaf maples in the lawn area east of the EMU was lost, and the other is in poor condition.

Existing Canopy Coverage: about 26%

Desired Character: The existing character should be preserved and enhanced. In particular, an effort should be made to replace the lost and declining big-leaf maples. There may be an opportunity for additional trees near the Agate Street pedestrian crossing as long as the motorist's view of the crossing is not impeded. The important educational tree is to be afforded extra care.

Gallery Walk

Existing Character: This axis stretches from the railroad overpass to Franklin Boulevard and is loosely defined by a row of ponderosa pine on the east side of the walkway / bike path adjacent to the art studios. Further definition is provided by the newly planted row of zekovas on the west side, adjacent to the Zebrafish Stock Center.

The portion south of the Millrace is adjacent to Franklin Boulevard and bisects a parking lot. It is completely undefined physically as an axis, although pedestrians and bicyclists use it.

An inventory of important educational trees has not been completed for this area.

Existing Condition: The row of pine trees is in poor condition and is detrimental to building maintenance and night lighting.

Existing Canopy Coverage: about 18%

Desired Character: Further work is required to define this axis' desired character and to determine how to enhance it with trees. Deciduous canopy trees may be more appropriate than conifers. The axis is adjacent to the urban farm, which should remain open and sunny. Its proximity to the urban farm may offer unique opportunities to plant trees that serve an educational purpose but may not be appropriate on the main campus (e.g., fruit-bearing trees). Proposed plantings

adjacent to the Millrace should be compatible with and enhance this unique waterway.

Gerlinger Hall Axis

Existing Character: This pedestrian axis incorporates the view corridor from "The Pioneer Mother" through the Johnson Hall lobby to "The Pioneer." It also includes portions of the Women's Memorial Quadrangle, which is listed on the National Register of Historic Places. This grassy area has a traditional campus character with informal plantings of mature, large-canopy shade trees.

An inventory of important educational trees has not been completed for this area.

Existing Condition: Many of the trees in this area are mature; some of them are in a state of decline (particularly the pin oaks). Scarlet oaks have been used as a replacement tree.

Existing Canopy Coverage: about 46%

Desired Character: Some of the existing trees associated with this open space are not located within the designated open space and may be subject to removal when future development takes place. An effort to plan for this outcome by planting trees within the designated axis (or adjacent areas that are less likely to be affected by future development such as the Women's Memorial Quadrangle and the Johnson Lane axis) would help alleviate this potential loss. There is an opportunity to better shade the west side of Hendricks Hall. The view corridor from "The Pioneer Mother" through the Johnson Hall lobby to "The Pioneer" should be preserved as noted in the LRCDP.

Johnson Lane Axis

Existing Character: This axis is partially defined by Johnson Lane, a limited auto access route, and extends as a pedestrian access across the Memorial Quadrangle to Kincaid Street. The Johnson Lane portion is loosely defined by a mix of primarily deciduous trees planted on either side of the lane. The pedestrian portion consists of an open, grassy lane with an informal mix of conifers on the south side (including the previously noted Japanese red pine) and a row of tulip trees on the north side near Chapman Hall. The axis is further defined at its intersection with the Memorial Quadrangle with three English oaks and a tulip tree. The western end of the axis has a mix of deciduous trees and terminates at the LTD bus station and a parking lot.

An inventory of important educational trees has not been completed for this area.

Existing Condition: The trees in the axis are generally in good health with the exception of the mature pin oaks, which are in a state of decline.

Existing Canopy Coverage: about 48%

Desired Character: Further research is needed to determine how to better define this axis with more formal tree plantings (especially along Johnson Lane). Also, there may be opportunities to better define the western terminus when the parking lot is developed for university use. Additional plantings should maintain an open grassy center and preserve the view corridor from "The Pioneer Mother" to "The Pioneer" (refer to the Gerlinger Axis).

Kincaid Terminus

Existing Character: The most noticeable feature of this open space is a row of mature Douglas fir marking the northern end of the terminus. This row of trees, however, is off-center and blocks the symmetrical entry to Education, which is flanked by two young American planetrees.

Existing Condition: The trees in the open space are in good condition. The large red oak east of the area was lost but has been replaced.

Existing Canopy Coverage: about 53%

Desired Character: An opportunity exists to better define this terminus, but additional work is required to define appropriate tree-planting options. At the same time, the possibility of enhancing the approach with street trees along Kincaid Street should be considered.

Knight Library Cross-axis

Existing Character: This pedestrian walkway leading from Kincaid Street to University Street includes portions of the Women's Memorial Quadrangle and the Memorial Quadrangle, both of which are listed on the National Register of Historic Places. It has a traditional campus character with informal plantings of mature, large-canopy shade trees planted on either side of the walkway. The large European beech tree south of the Museum of Art contributes significantly to the character of axis.

An inventory of important educational trees has not been completed for this area.

Condition: The pin oak adjacent to the beech tree is in decline due to a past injury.

Existing Canopy Coverage: about 55%

Desired Character: The existing character of the area should be preserved and enhanced.

Southwest Campus Axis

Existing Character: This axis, reaching from Education south to 18th Avenue, is poorly defined. It consists partly of a parking lot / drive and partly of grassy, open space interspersed with informal plantings of deciduous and coniferous trees. Many trees in this area are important educational trees, including the ginkgo and cluster pine near 18th Avenue, the young ginkgo trees and dawn redwood near Education; and

the golden weeping willow, dragon-claw willow, ambrozyana Hispanic oak, Japanese pagoda tree, white mulberry tree, and cluster of birch in front of Music.

Existing Condition: The trees in the area are generally in good condition.

Existing Canopy Coverage: about 21%

Desired Character: Future development plans for this area should incorporate improvements to this axis. Planting additional trees to better define the axis should preserve the view of the historic west entry to Beall Hall, enhance the view from 18th Avenue looking north down the axis, preserve the mix of sunny and shady spots, and shade the west side of Music. The important educational trees should be afforded extra care.

Tennis Court Axis

Existing Character: This narrow pedestrian axis, extending from 15th Avenue north to 13th Avenue, bisects the EMU promenade. It is partially lined with American sweetgums and other deciduous large-canopy trees. The pathway borders the tennis courts and passes through an intentionally sunny, grassy area designed to provide outdoor activity space for special events and informal recreational space for students residing in the dormitories.

Existing Condition: The trees in this areas are generally in good condition. Some of the pines in the adjacent area near the EMU are in a state of decline.

Existing Canopy Coverage: about 38%

Desired Character: The existing character of the area should be preserved and enhanced, ensuring that the tennis courts and activity areas remain open and sunny.

University Street Axis (including the intersection of University Street and 13th Avenue)

Existing Character: This axis reaches all the way from Lawrence Hall south to 18th Avenue. University Street is open to automobiles between 13th Avenue and 18th Avenue and is a typical tree-lined street. The majority of trees are maples and oaks, with the exception of the area south of McArthur Court, which includes a wider mix of deciduous trees. Pin oaks dominate the portion north of 13th Avenue, known as the Lawrence Hall view corridor. The LRCDP recognizes these pin oaks as significant trees, which help form or reinforce the identity of the view corridor.

This axis is adjacent to Gerlinger Hall and Hendricks Hall, both of which are listed on the National Register of Historic Places, and the Collier House, which is listed as a City Landmark. The recently completed University Street Axis Conceptual Study provides additional information about existing conditions.

The two kobus magnolias west of the EMU are important educational trees. An inventory of important educational trees has not been completed for the entire axis.

Existing Condition: Some of the tree-planting areas have restricted root zones, restricting full growth capacity. This is particularly true at the southern end of the axis in the street diagonal parking area and at the northern end of the axis where the pin oaks are in planters. Some trees are affected by typical compaction problems evident in high foot-traffic areas. The mature fir and big-leaf maple east of the Collier House are in a state of decline. In addition, the Kentucky coffee tree west of the EMU and the black locust west of Esslinger are in poor condition.

Existing Canopy Coverage: about 22%

Desired Character: An effort should be made to soften the hardscape by finding new places with adequate growing room for trees, with the exception of the intersection of University Street and 13th Avenue. The proposed Heart of Campus project proposes an open, sunny small public square at this intersection with limited trees around the perimeter.

The trees identified as significant by the LRCDP are to be afforded extra care. The LRCDP states that a program for replacement of these trees as they reach the end of their natural life cycles will be needed in order to preserve the existing character. In addition, the important educational trees deserve extra care.

The recently completed University Street Axis Conceptual Study provides more information about the desired character of this area. For additional information about the street edge adjacent to the Straub Quadrangle, refer to "Straub Quadrangle."

5.4 Designated Open Spaces: Other

Gerlinger Field

Existing Character: This open, grassy playing field preserves the view of the south side of the historic Gerlinger Hall sun porch. The site and building are part of the Women's Memorial Quadrangle National Register designation. The only trees planted on the site are on the eastern edge adjacent to University Street, consisting mainly of a dense row of steel Lawson false cypress and a pair of Douglas fir. Although not part of the open space, the Pioneer Memorial Cemetery conifers along the southern edge contribute to the area's character and are maintained by the university.

An inventory of important educational trees has not been completed for this area.

Existing Condition: The trees on university property are in good condition. There are concerns, however, about the stability of the conifers along the steep bank of the Pioneer Memorial Cemetery just south of Gerlinger field.

Existing Canopy Coverage: about 8%

Desired Character: The existing character of the tree canopy should be preserved and enhanced. Further study is necessary to determine if there are ways to improve the current tree canopy while maintaining the open playing field. The university should continue to work with the Pioneer Memorial Park Association to maintain the conifers along the southern edge of the field.

Glenn Starlin Courtyard

Existing Character: This quiet courtyard enclosing the Museum of Natural History entrance is planted primarily with native species of trees and plants and serves as an outdoor classroom associated with the Museum of Natural History.

Existing Condition: The trees in this area are relatively young and in good condition.

Existing Canopy Coverage: about 41%

Desired Character: A mix of sunny and shady areas is desirable to accommodate various native plantings and provide seating opportunities. It may be possible to plant additional native trees to better enclose the open space while maintaining the view of the Museum of Natural History from the intersection of Agate Street and 15th Avenue. Additional trees in the adjacent parking area are also desirable to reduce its visual impact and to shade the paved surfaces.

Humpy Lumpy Area

Existing Character: This sunny open area at the northwest corner of the Agate Street and 15th Avenue intersection is dotted with large and small shade trees. It is designed to provide informal outdoor activity space for students residing in the dormitories. This area also encompasses two street edges. There are two large street trees, an American planetree and an American elm, along 15th Avenue, but only smaller trees along Agate Street (refer to "Agate Street Axis").

An inventory of important educational trees has not been completed for this area.

Existing Condition: Some trees have been lost in the short-lived plum groves, but they have been replaced.

Existing Canopy Coverage: about 26%

Desired Character: The two street edges could benefit from additional large-canopy trees to help shade the street surface and buffer the humpy lumpy open space from auto traffic. There is also an opportunity to shade the west side of the Bean residence hall complex. New trees should not interfere with the safety of the area or the intentionally sunny humpy lumpy area.

Millrace

Existing Character: The Millrace is a unique water feature on the north side of campus. This document addresses the portion of the Millrace east of Onyx Street under university ownership. This area is informally lined with a mix of deciduous trees, including black walnuts, fruit trees and some native species. The Riverfront Research Park Master Plan governs the portion west of Onyx Street, and the university does not own the southern bank of the Millrace east of Gallery walk.

An inventory of important educational trees has not been completed for this area.

Existing Condition: The trees are generally in good condition. Some invasive species, including some poplar have been removed.

Existing Canopy Coverage: about 29%

Desired Character: Proposed plantings should be compatible with and enhance this unique waterway. The Millrace area provides an opportunity to plant native riparian trees that may not be appropriate on the main campus. Appropriate native plantings to help stabilize the banks, filter storm water, and shade the water to reduce evaporative effects (such as the recent plantings near the duck pond) are encouraged when replacement of existing non-native trees occurs. A portion of the Millrace is adjacent to the urban farm and additional tree plantings should ensure that the urban farm remains open and sunny.

Villard Hall Open Area

Existing Character: This area has a traditional, informal arrangement of mature conifers interspersed in a lawn setting. Within the Villard Hall National Landmark boundary, it is prominently situated adjacent to Franklin Boulevard and provides views of Villard Hall. Two mature ponderosa pines flank the walkway leading from Dad's Gate to Villard Hall.

An inventory of important educational trees has not been completed for this area.

Existing Condition: Some of the conifers, particularly the ponderosa pines, are in a state of decline due to old age, overwatering, and disease. Although native to the region, ponderosa pines are not well suited to the valley floor. Also, frequent breakage is a problem with the mature firs.

Existing Canopy Coverage: about 28%

Desired Character: The existing character of this area should be preserved and enhanced. Initiating a replacement program and adjusting the watering and planting regime so that the trees are not overwatered are high priorities.

Williams Bakery Park

Existing Character: This open space, donated by Williams' Bakery, is prominently situated between Franklin Boulevard and the bakery. It has an undefined character consisting of a lawn interspersed with a mix of deciduous trees, primarily European beech.

An inventory of important educational trees has not been completed for this area.

Existing Condition: The area has poor drainage and remains wet a large portion of the year, which limits appropriate species. Some of the trees transplanted from the Science Facilities Additions and Alterations project are not well suited to the area and have died or are in poor condition.

Existing Canopy Coverage: about 4%

Desired Character: This area is neither traversed by pedestrians nor used for seating, which provides an opportunity for a denser canopy. Future tree plantings, however, should address all requirements established by Williams' Bakery, including preservation of the view of Williams' Bakery from Franklin Boulevard. In addition, this open space will likely serve as a primary vehicular entrance to the university when the Bus Rapid Transit is built along Franklin Boulevard. Opportunities to enhance future building construction on the parking lot site to the west should also be considered.

5.4.1 Table: Designated Open Spaces: Applicable LRCDP Patterns

LRCDP Pattern	Pattern Description	13th Avenue Axis West	13th Ave. Axis East	Agate Street Axis	Dad's Gate Axis	Deady Hall Walk	Gallery Walk	EMU Promenade	Gerlinger Hall Axis	Gerlinger Field	Glenn Starlin Courtyard	Humpy Lumpy Area	Johnson Lane Axis	Kincaid Terminus	Knight Library Cross-axis	Memorial Quadrangle	Millrace	Old Campus Quadrangle	Science Green	Straub Hall Quadrangle	Southwest Campus Axis	Tennis Court Axis	University Street Axis	Villard Hall Open Area	Williams Bakery Park
Activity Nodes	*Create small centers of activity separated by quiet space.*	*	*		*		*	*		*	*	*	*	*	*	*	*	*	*		*	*	*		
Accessible Green	*Maintain an open space in proximity to all buildings*				*		*	*	*	*	*	*	*		*	*	*	*	*	*	*	*		*	
Local Sports	*Scatter facilities for physical exercise around campus.*						*	*		*		*				*	*	*				*			
Main Entrance	*Main entrances to buildings should be distinctive and easily identifiable from main approaches.*	*	*	*	*	*								*							*		*		*
Positive Out-Door Space	*Place and form buildings to define and partially enclose outdoor space.*				*		*		*	*	*					*		*	*		*				
Public Out-Door Room	*Make outdoor places with some enclosure; mark them.*				*				*												*				
Quiet Backs	*Connect buildings to a quiet space, removed and buffered from adjacent sources of noise.*				*		*	*	*		*	*					*	*	*	*				*	
South Facing Outdoors	*Buildings should be designed to create south-facing outdoor spaces whenever possible.*				*		*	*		*		*	*					*							
Promenade	*Develop a major pedestrian way, centrally located with main attractors at each end to link principal activity nodes.*	*	*	*	*	*	*	*					*		*			*		*	*	*	*		
University Streets	*Major campus activities should front on public streets that are essentially pedestrian in nature.*	*	*	*	*		*					*	*					*		*	*		*		*
Shielded Parking	*Screen parking lots from view by landscaping, walls, or topographic features.*	*	*	*			*				*		*					*		*	*		*		*

6.0 Establishing Project Responsibilities for Trees

6.1 General Requirements

This section defines the responsibilities each project must adhere to for tree replacement and planting. The guidelines focus on a qualitative versus a quantitative approach.

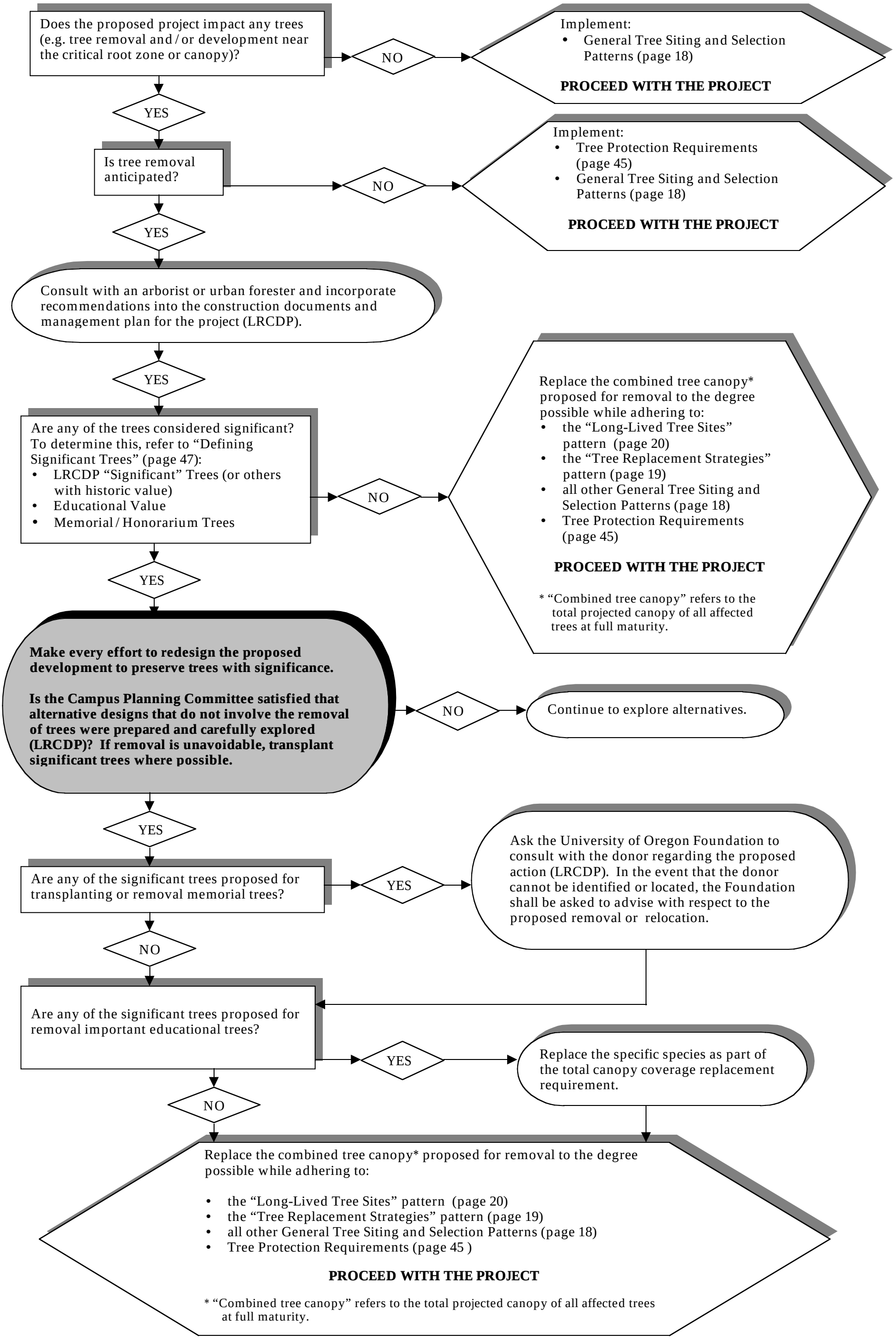
The LRCDP states that:

> When constructing buildings, the removal of trees or other substantial vegetative stands sometimes is unavoidable. . . . In preparing a plan to be adopted at Level 3 [schematic design for a project] in which the removal of a tree or construction activity in the vicinity of a tree is contemplated, the professional services of a qualified consulting arborist or urban forester should be sought. Accepted recommendations of the arborist are to be incorporated into the construction documents and management plan for the project. (36-37)
> . . .
> [Furthermore, I]n approving a Level 3 plan that requires the removal of trees or significant plant materials, the Campus Planning Committee shall be satisfied that alternative designs that do not involve the removal have been prepared and carefully explored. (36)

The following flow chart incorporates these LRCDP requirements into a step-by-step process that every project must follow.

Every development project on campus must adhere to the steps covered in the following flow chart:

6.1.1 Table: Decision Tree



6.2 Tree Protection During Construction

The SPD "Healthy Ecosystems" pattern states that all development will protect the existing ecosystems to the greatest extent possible (refer to Appendix B for the complete pattern text). To implement this pattern, every effort shall be made to preserve the integrity of the site, in particular trees, significant plant materials, and topsoil. It is important to remember that half of a tree's biomass is underground, so it is essential to protect the root zone by allocating adequate space and establishing suitable soil conditions.

Tree Protection Requirements

The following describes the procedures and documentation that must be contained in all project specifications / drawings to protect existing trees and plants during construction. All related construction drawings, including project site, landscape, and demolition plans, shall be approved, by the Landscape Architect in consultation with the project arborist, and contain the information listed below. The university has final approval in all matters.

- **Intent** — The following requirements are designed to prevent damage to plant materials including trees, ground cover, root systems, soil, bark, foliage, branches, and limbs due to construction activities, including, but not limited to:
    - Soil contamination, erosion, and compaction
    - Excessive wetting, ponding and construction run-off
    - Alteration of grade, stockpiling of soil, debris, and materials
    - Damage to soil, roots, bark, trunk, limbs, branches, and foliage
    - Unauthorized cutting, breaking, skinning and abrasion of roots, branches, and bark

- **Authorization** — The university will designate a landscape architect who, in consultation with an International Society of Arboriculture (ISA) certified arborist, will represent the university's interest in protecting valuable trees / plants. The landscape architect will be consulted by the design team on all building, utility, and landscape design issues related to the project affecting campus trees / plants. This involvement may start at conceptual deign and will not terminate until project closeout. The landscape architect, in consultation with the arborist, will determine the boundaries for the Zones of Protection and Critical Root Zones, and approve methods for protecting these areas during construction. The landscape architect will also approve methods for tree and root zone maintenance during construction, Zones of Protection posting, and allowable construction activities within the Zones of Protection. The landscape architect will monitor compliance and provide field reports, evaluate Zones of Protection violations, and determine mitigation or monetary losses from violations and damages.

- **Relocated Trees/Plants** — The landscape architect, in consultation with the arborist, will identify all trees and plants to be relocated prior to demolition / construction.

- **Saved Trees/Plants** — The landscape architect, in consultation with the arborist, will identify all trees and plants to be saved.

- **Zones of Protection** — The landscape architect, in consultation with the arborist, will determine the boundaries for the Zones of Protection for all trees / plants to be saved. Minimum protection of these zones will be a rigid 6-foot chain link or plywood fence. The following activities are prohibited in the Zone of Protection without prior written approval from the landscape architect: removal or moving of protective fencing, operation of equipment, parking vehicles, staging materials, cleaning equipment, trenching, excavations, stockpiling, flooding, and altering drainage. Tree trunks are to be protected as specified by the landscape architect, in consultation with the arborist, if there is a risk of contact by equipment. No trimming of tree canopies will be allowed without prior approval. When fencing is removed, all requirements still apply.

- **Critical Root Zone**s — The landscape architect, in consultation with the arborist, will determine the boundaries of the Critical Root Zones within the Zones of Protection where the only soil disturbances allowed are trenchless boring at specified depths, "air spade" trenching, or hand digging. No roots larger than 1 1/2" in diameter will be cut without prior approval by the landscape architect in consultation with the arborist. All cuts will be made with clean, sharp cutting tools only. No root tearing, ripping or abrasions are allowed. Exposed roots will be kept moist and protected from sun and frost at all times.

- **Procedural Proposal for Tree and Plant Protection** — Prior to any demolition or construction, the landscape architect, in consultation with the arborist, will outline materials and procedures to be used in protecting Zones of Protection including scheduling of mulching and maintenance, procedures for obtaining variances, relative timing for removal of protective fencing, and procedures for protecting Zones of Protection after fencing is removed. The contractor shall submit requests to work within the Zones of Protection following procedures established by the landscape architect.

- **Posted Notices** — Notices will be posted on Zones of Protection fencing listing prohibited activities without prior approval. These notices will remain in place until authorization is granted by the landscape architect to remove them.

- **Violations and Compensation** — Damages of two-hundred dollars ($200.00) per incident will be assessed for violation of these requirements. Additional compensation will be made to the owner for actual damages to tree foliage, branches, trunks, roots, and soil. These damages will be established by the landscape architect, in consultation with the arborist, based on the standards of the ISA. Damages can be waived if the tree is replaced with like species and size and has a full one year unconditional guarantee.

- **Additional Requirements** — Additional requirements should be incorporated into the project specifications / drawings as necessary to ensure adequate tree / plant protection as stated in #1.

6.3 Defining Significant Trees

When proposed development may negatively impact trees (e.g., adjacent construction and / or removal), it is important to define the significance of the affected trees. If a tree meets one or more of the characteristics stated below, every effort should be made to preserve it. The steps noted in the tree responsibility flow chart should be followed.

The following characteristics should be considered when determining the significance of a tree:

- LRCDP Significant Trees (or others with historic value) — The LRCDP identifies thirteen "significant trees" that are to be afforded extra care (refer to Appendix A). This list of significant trees has not been updated since 1991 and should not be considered comprehensive. Other trees associated with significant events related to the university's history deserve special attention.

- Educational Value — As stated in the LRCDP, the university campus is in fact an arboretum. The plant materials on the campus not only have an aesthetic significance, but also constitute a valuable teaching resource, particularly but not exclusively in biology and landscape architecture. For this reason, the academic or instructional value of individual materials is to be determined before existing vegetation is removed or relocated. Trees that are excellent examples of a particular species due to their size and condition or are the sole examples on campus also deserve special consideration.

- Memorial / Honorarium Trees — Trees designated in memory or in honor of an individual are subject to special care. The LRCDP states that the University of Oregon Foundation should be asked to consult with the donor regarding the proposed action. If the donor cannot be identified or located, the Foundation shall be asked to advise with respect to the proposed removal or relocation. Records of memorial plantings are maintained by the Foundation and by Facilities Services.

7.0 Looking Forward

This document is not intended to fully address a number of issues or provide all pieces of information. The following actions should take place as soon as possible to ensure effective implementation of this plan:

Update and Enhance the Tree Database — The tree database created in 1996 as part of the Atlas of Trees project is an invaluable resource. Unfortunately, it has not been updated. This is the first step required to ensure proactive tree management. Additional data fields identifying memorial/honorarium trees, educational trees, and species variety names would greatly enhance the ability to manage campus trees.

Initiate a Tree Replacement Program — Trees that are removed due to poor health have generally been replaced, and some initial work has been completed to assess the health of campus trees. A more proactive approach is necessary to replace trees in decline and maintain the character of the campus. Replacement priorities should be determined by the policies established in the tree patterns and be based on the analyses of the designated open spaces provided in this document.

Prepare a Comprehensive Landscape Analysis - The health and longevity of the campus trees are tied to a symbiotic relationship between the trees and the understory landscape. Future efforts to map out and analyze the landscape as a whole are recommended. In addition to identifying landscape features, a site analysis map showing soil and drainage conditions (e.g. soil type, wet areas, native vs. disturbed soils, old waterways and road beds) would be very useful, beginning with the designated open spaces.

Complete Analyses of the Desired Character of Designated Open Spaces — As noted in this document, further work is required to determine the desired tree-canopy character for some of the designated open spaces.

Enhance the Tree Diagnoses — Using this plan as a basis for analysis, future campus diagnostic studies should integrate information about campus trees. Such diagnoses would aid in determining where to focus management efforts.

Amend the Designated Open Spaces — Some significant open spaces on campus are not identified in the LRCDP as Designated Open Spaces. Future consideration should be given to protecting spaces used as outdoor classrooms (e.g., playing fields and the urban farm) as well as spaces connected to the open-space framework (e.g., the Condon oaks site north of the Old Campus Quadrangle and the Women's Memorial Quadrangle). Also, the open space framework should be extended to cover all areas of campus, particularly in east campus where the university is expanding, and north of Franklin Boulevard.

Appendices

Collier House, c. 1900

Appendix A: Long Range Campus Development Plan Excerpts

Summary of Long Range Campus Development Plan Policies Addressing Tree Management on Campus

V. Land Development Policies (LRCDP pp. 13-14)

Level 1 Policies and Standards

The following policies and standards are to be applied campus-wide:

1. The policy of the university is to encourage preservation, completion and/or extension of the fundamental and historic concepts of spatial organization of the campus. The University of Oregon campus is organized as a system of quadrangles, malls, and other open spaces. The quadrangles are formed and framed by the fronts of three- and four-storey buildings on the long sides and by a monumental building at one end. They are connected to other quadrangles by malls which transect them near one end.

(a) This organizational framework not only functions well, but serves as a physical representation of the university's heritage, and should be preserved, completed, and extended as opportunities arise. A few building sites on established quadrangles remain to be developed. They should be reserved for significant academic buildings that will contribute to the overall character of the space as well as promote the other policies of this plan.

5 Preservation of this organizational framework requires that the open spaces in quadrangles, malls, and view corridors be protected from encroachment. For this reason, no development shall occur in the significant open spaces identified on Map 3 except as this prohibition is specifically modified by applicable Level 2 policies.

. . .

4. All plans developed at Level 3 for individual building projects shall identify existing uses and activities that will be displaced by the proposed project, together with plans for replacement thereof. Unless the President specifically agrees to the contrary in advance, or unless provisions for these replacement uses are included in a separately authorized project, sufficient funds for accommodating the required replacement shall be included in the budget for the proposed project. In the case of replacing vehicle parking, consideration shall be given to the location of replacement facilities. The replacement spaces should be sited to serve the same general area as the spaces being replaced.

VIII. Campus Landscape Policies (LRCDP pp. 36-42)

Level 1 Policies and Standards

The following policies and standards apply campus-wide:

Plant Materials

1. Landscape materials are assets to the campus and are to be carefully selected and properly maintained.

2. In selecting and positioning landscape materials, consideration shall be given to the ways in which the vegetative materials can aid the university in achieving its goals for energy efficiency.

3. The university campus is in fact an arboretum. The plant materials on the campus not only have an aesthetic significance, but also constitute a valuable teaching resource, particularly but not exclusively in biology and landscape architecture. For this reason, the instructional benefits to be obtained by introducing materials not now present should be considered in selecting plants to replace existing materials or to establish new plantings. Similarly, the academic or instructional value of individual materials is to be determined before existing vegetation is removed or relocated.

4. Vegetation on the campus is to be planted and managed in a way that avoids excessive damage to buildings, eliminates conditions which contribute to personal safety problems, reduces susceptibility to pest infestation, minimizes reliance upon the use of pesticides, and contributes to the aesthetic quality and enjoyment of the campus as a whole. Materials likely to require excessive maintenance should be avoided or judiciously located. Appropriate Physical Plant personnel are to be consulted in a timely manner prior to planting new materials.

5. When constructing buildings, the removal of trees or other substantial vegetative stands sometimes is unavoidable. However, in approving a Level 3 plan that requires the removal of trees or significant plant materials, the Campus Planning Committee shall be satisfied that alternative designs that do not involve the removal have been prepared and carefully explored. In cases where alternatives are not feasible, to the maximum extent practical, these materials should be transplanted rather than destroyed.

6. In preparing a plan to be adopted at Level 3 in which the removal of a tree or construction activity in the vicinity of a tree is contemplated, the professional services of a qualified consulting arborist or urban forester should be sought. Accepted recommendations of the arborist are to be incorporated into the construction documents and management plan for the project.

7. Prior to relocating or removing a tree or significant planting that was donated to the university as a memorial, the University of Oregon Foundation is to be asked to consult with the donor regarding the proposed action. In the event that the donor cannot be identified or located, the Foundation shall be asked to advise with respect to the proposed removal or relocation. *N.B. Records of memorial plantings are maintained by*

the Foundation and by the Physical Plant Department; documents related to donated trees also are available in the University of Oregon Archives.

8. Trees which help form or reinforce the identity of recognized malls, promenades, and view corridors identified on Map 3 are significant trees and are to be afforded extra care. Examples include, but are not limited to, the English Oaks, which frame the Memorial Quad; the Pin Oaks, which line the promenade from 13th and University to Lawrence Hall; and the Douglas fir, which flank the walk from Deady to Kincaid Street. A program for replacement of these trees as they reach the end of their natural life cycle will be needed in order to assure that they can continue to function in this fashion.

9. Whenever possible and appropriate, plant materials are to be used to screen uses such as parking lots and service areas, and to soften the visual impact of fences and similar barricades.

. . .

Level 2 Policies

The Level 1 policies adopted above are amplified or modified in specific application as follows:

[Special Conditions for Analytical Areas
Special conditions for specific landscaped areas are identified for each analytical area— e.g.,. identifies landscapes listed on the National Register of Historic Places, such as Memorial Quad and Women's Quad, and defines specific uses, such as playing field. Please refer to pp. 19-29 of the LDCDP for a complete description**.]**

Plant materials

Area 12. This area contains eight living trees that have been identified as "class trees." These trees, identified below and on Map 5, are of special significance to the university and are to be afforded extra care:

Map No.	Class	Botanical Name	Common Name
1	1879	Cryptomeria japonica	Cryptomeria
2	1880	Sequoia gigantea	Giant Sequoia
3	1883	Ulmus carpinifolia	Smoothleaf Elm
4	1894	Juglans nigra	Black Walnut
5	1895	Tilia europaea	European Linden
6	1897	Quercus garryana	Oregon White Oak*
7	1898	Umbellularia californica	California Laurel
8	1900	Quercus garryana	Oregon White Oak*

* These trees, also known as the "Condon Oaks," were existing at the time of their "adoption" by the classes of 1897 and 1900. There is some evidence suggesting that they existed at the time the campus was established.

This area also contains two other trees of special significance to the university which are to be afforded extra care. They are:

(a) A *Metasequoia glyptostroboides* (Dawn Redwood) located north of Robinson Theatre (Number 9 on Map 5). This tree was one of two planted on the campus from the original shipment of seed from China.

(b) An *Acer macrophyllum* (Big-leaf Maple) near the southeast corner of Deady Hall (Number 10 on Map 5). This tree is the sole survivor of the original campus planting of 1884.

Area 14. This area contains one of two *Metasequoia glyptostroboides* (Dawn Redwood) planted on the campus from the original seed shipment from China. It is situated south of the front entrance to Columbia Hall and is to be afforded extra care (Number 11 on Map 5).

Area 24. Because of its size and unique character, the *Acer palmatum* "Threadleaf" (Threadleaf Japanese Maple) near 13th Avenue northeast of Johnson Hall is to be afforded extra care (Number 12 on Map 5).

Area 31. This area contains a *Pseudotsuga menziesi* (Douglas fir) which grew from a seed that was among four fir seeds carried to the moon aboard Apollo XIV in 1971 by Astronaut Stuart Roosa (Number 13 on Map 5). In 1978 the seedling was planted where Willamette Hall now stands; it was transplanted in 1987 to accommodate construction of the additions to the Science complex. It should be afforded extra care.

Appendix B: Sustainable Development Plan Excerpts

Excerpt from the 2000 Sustainable Development Plan:

Campus Trees

The university's trees provide significant defining features on campus and are vital components of the local ecosystems.

Therefore: Development will preserve and protect existing trees to the maximum extent possible and plan for continued enhancement of the campus forest.

Approaches/Examples:

- Preserve and protect the integrity of trees (supported by LRCDP policies, page 36, #5-8).
- Prepare and implement a Campus Tree Forest Plan.
- If proposed development requires removal of a tree, provide funds to replace the tree either on the development site or elsewhere on campus, as determined by the Forest Management Plan.
- Consider whether the massing and shape of proposed development provide adequate space for large-canopy trees, a defining feature of the campus landscape.

Additional patterns contained in the Sustainable Development Plan related to Campus Trees include:

Site Benefits

Every site is unique and has local environmental qualities which can be used to enhance the sustainability of development.

Therefore: All new development will site and orient the building and landscape features to take advantage of site conditions and context within the parameters of the established organizational framework of the campus.

Approaches/Examples:

- Orient buildings to make optimal use of site conditions such as solar, airflow, lighting, soil, vegetative, and topographic conditions (supported by LRCDP Site Repair pattern, page 15).
- Make usable outdoor spaces (supported by Positive Outdoor Space and South Facing Outdoors and Accessible Green LRCDP patterns, page 15).
- Select and position landscape materials to aid in achieving energy efficiency (LRCDP policy, page 36, #2). Take advantage of trees to reduce cooling loads and use hedgerows or shrubbery to block cold winter winds or help channel cool summer breezes into the building.

Healthy Ecosystems

Ecologically healthy landscapes are essential to long term maintenance of local ecosystems and biodiversity. Each site consists of interconnected living systems, all linked to the environment beyond the site's boundaries.

Therefore: All development will protect the existing ecosystems to the greatest extent possible.

Approaches / Examples:

- Protect parks, forests, wetlands, wildlife habitats, agricultural land, and watersheds to the greatest extent possible.
- Consider how the landscaped areas are linked to one another creating corridors for plants and animals. Integrate animal food sources and shelter. Tie these corridors in with the established open-space framework.
- Use native or well-adapted species for landscaping when appropriate while recognizing the importance of a variety of plant materials necessary for instructional use (LRCDP policy, page 36, #3).
- Maintain an Integrated Pest Management approach which carefully considers plant selection and design instead of using herbicides, pesticides and fertilizers and irrigation whenever possible (supported by LRCDP policy, page 36, #4).
- Preserve the integrity of the site, in particular trees, significant plant materials, and topsoil (supported by LRCDP policies, page 36, #5-8). Develop on previously disturbed areas.
- Maximize noise containment of building systems.
- Minimize night lighting within safety parameters (LRCDP policy, page 38, #1,2,3 & 8). Selection of exterior lighting standards should be consistent with energy conservation concerns (LRCDP policy, page 37, #1 & 7).
- Make underground systems easily accessible. Use vaults where possible to avoid tearing up the landscape.

Appendix C: Process for Developing the Campus Tree Plan

The Campus Tree Plan was prepared by the 2000-2001 Development, Policy, Implementation, and Transportation (DPIT) Subcommittee of the Campus Planning Committee. The need to develop a plan is identified in the 2000 Sustainable Development Plan, specifically in the "Campus Tree" pattern.

The DPIT Subcommittee began work on the Campus Tree Plan in Winter 2000/2001 by reviewing related policies and guidelines already in place at the University of Oregon as well as at other universities and organizations. They also reviewed the history of tree development on campus using historic maps and photographs. This helped the subcommittee identify the primary goals of the plan as well as issues that should be addressed. Limited time and resources meant that not all possible tree and landscape issues could be addressed as part of the Campus Tree Plan.

After developing a draft plan, the DPIT Subcommittee distributed copies to Campus Landscape and Grounds staff in Spring 2001 for review and comment. The draft plan was also reviewed by Scott Plamonden, Oregon State Urban Forester. During this review period, members were invited to a panel discussion on sustainable campus landscapes at the H.O.P.E.S. conference, which helped identify ways to integrate sustainable solutions into landscape practices. In addition, the DPIT presented the draft plan to the full Campus Planning Committee May 3, 2001 for initial review and comment.

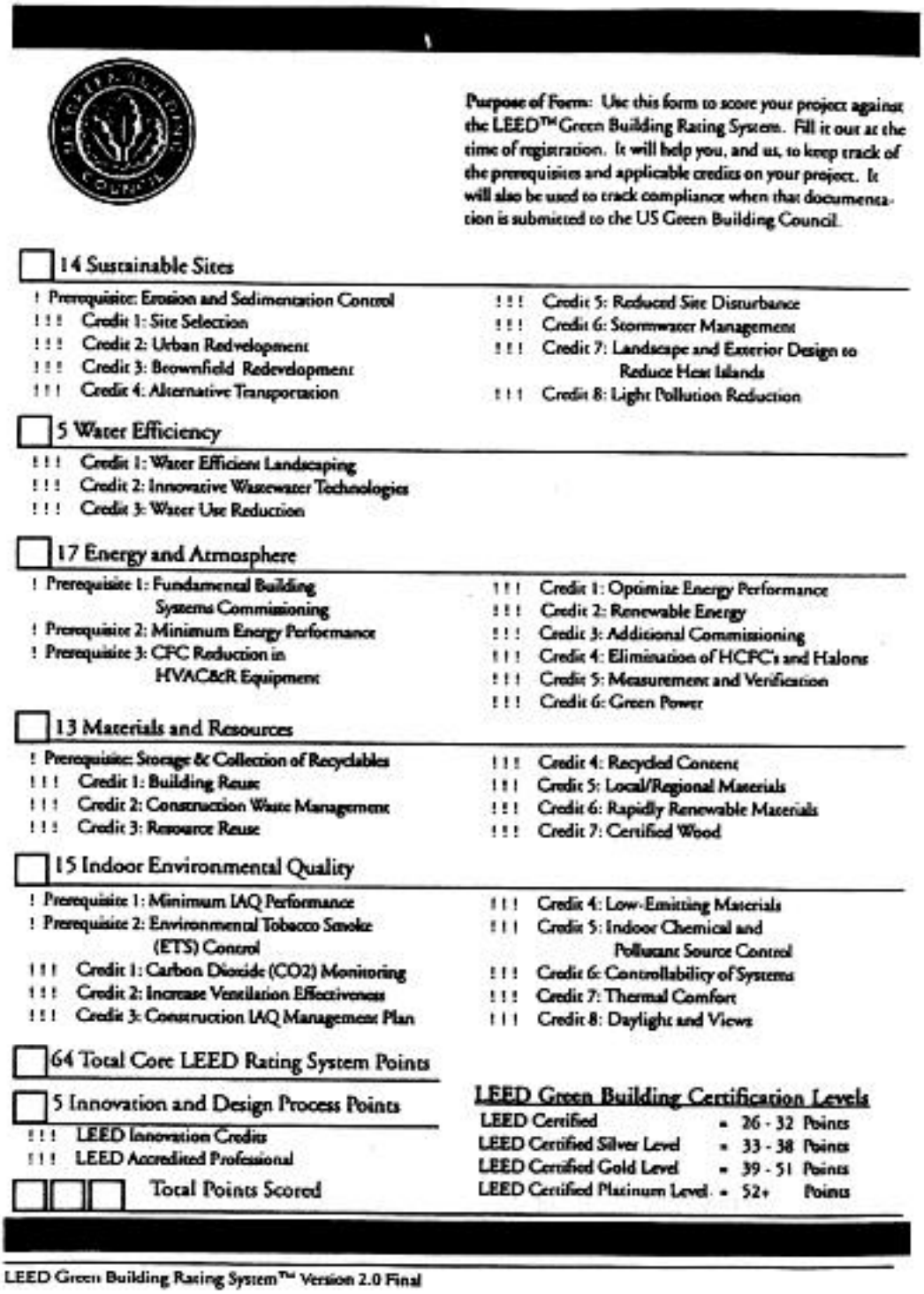
In June 2001, the DPIT Subcommittee considered all comments and suggestions, then prepared a final draft for full Campus Planning Committee review.

On October 4, 2001, the Campus Planning Committee reviewed and approved the Campus Tree Plan as a Level 3 Plan. As described in the 1991 Long Range Campus Development Plan (LRCDP), Level 3 Plans are designed to describe the intent and implementation of LRCDP patterns and policies. In this instance, the Campus Tree Plan describes the intent and implementation of patterns and policies related to tree management.

APPENDICES

Appendix A - LEED Green Building Rating System

For additional information, refer to the U.S. Green Building Council web page: http://www.usgbc.org, or contact the University Planning Office at (541)346-5562.



Purpose of Form: Use this form to score your project against the LEED™ Green Building Rating System. Fill it out at the time of registration. It will help you, and us, to keep track of the prerequisites and applicable credits on your project. It will also be used to track compliance when that documentation is submitted to the US Green Building Council.

☐ 14 Sustainable Sites

- ! Prerequisite: Erosion and Sedimentation Control
- ! ! ! Credit 1: Site Selection
- ! ! ! Credit 2: Urban Redevelopment
- ! ! ! Credit 3: Brownfield Redevelopment
- ! ! ! Credit 4: Alternative Transportation
- ! ! ! Credit 5: Reduced Site Disturbance
- ! ! ! Credit 6: Stormwater Management
- ! ! ! Credit 7: Landscape and Exterior Design to Reduce Heat Islands
- ! ! ! Credit 8: Light Pollution Reduction

☐ 5 Water Efficiency

- ! ! ! Credit 1: Water Efficient Landscaping
- ! ! ! Credit 2: Innovative Wastewater Technologies
- ! ! ! Credit 3: Water Use Reduction

☐ 17 Energy and Atmosphere

- ! Prerequisite 1: Fundamental Building Systems Commissioning
- ! Prerequisite 2: Minimum Energy Performance
- ! Prerequisite 3: CFC Reduction in HVAC&R Equipment
- ! ! ! Credit 1: Optimize Energy Performance
- ! ! ! Credit 2: Renewable Energy
- ! ! ! Credit 3: Additional Commissioning
- ! ! ! Credit 4: Elimination of HCFC's and Halons
- ! ! ! Credit 5: Measurement and Verification
- ! ! ! Credit 6: Green Power

☐ 13 Materials and Resources

- ! Prerequisite: Storage & Collection of Recyclables
- ! ! ! Credit 1: Building Reuse
- ! ! ! Credit 2: Construction Waste Management
- ! ! ! Credit 3: Resource Reuse
- ! ! ! Credit 4: Recycled Content
- ! ! ! Credit 5: Local/Regional Materials
- ! ! ! Credit 6: Rapidly Renewable Materials
- ! ! ! Credit 7: Certified Wood

☐ 15 Indoor Environmental Quality

- ! Prerequisite 1: Minimum IAQ Performance
- ! Prerequisite 2: Environmental Tobacco Smoke (ETS) Control
- ! ! ! Credit 1: Carbon Dioxide (CO_2) Monitoring
- ! ! ! Credit 2: Increase Ventilation Effectiveness
- ! ! ! Credit 3: Construction IAQ Management Plan
- ! ! ! Credit 4: Low-Emitting Materials
- ! ! ! Credit 5: Indoor Chemical and Pollutant Source Control
- ! ! ! Credit 6: Controllability of Systems
- ! ! ! Credit 7: Thermal Comfort
- ! ! ! Credit 8: Daylight and Views

☐ 64 Total Core LEED Rating System Points

☐ 5 Innovation and Design Process Points

- ! ! ! LEED Innovation Credits
- ! ! ! LEED Accredited Professional

☐☐☐ Total Points Scored

LEED Green Building Certification Levels

LEED Certified	= 26 - 32	Points
LEED Certified Silver Level	= 33 - 38	Points
LEED Certified Gold Level	= 39 - 51	Points
LEED Certified Platinum Level	= 52+	Points

LEED Green Building Rating System™ Version 2.0 Final