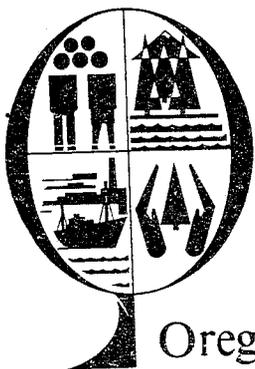


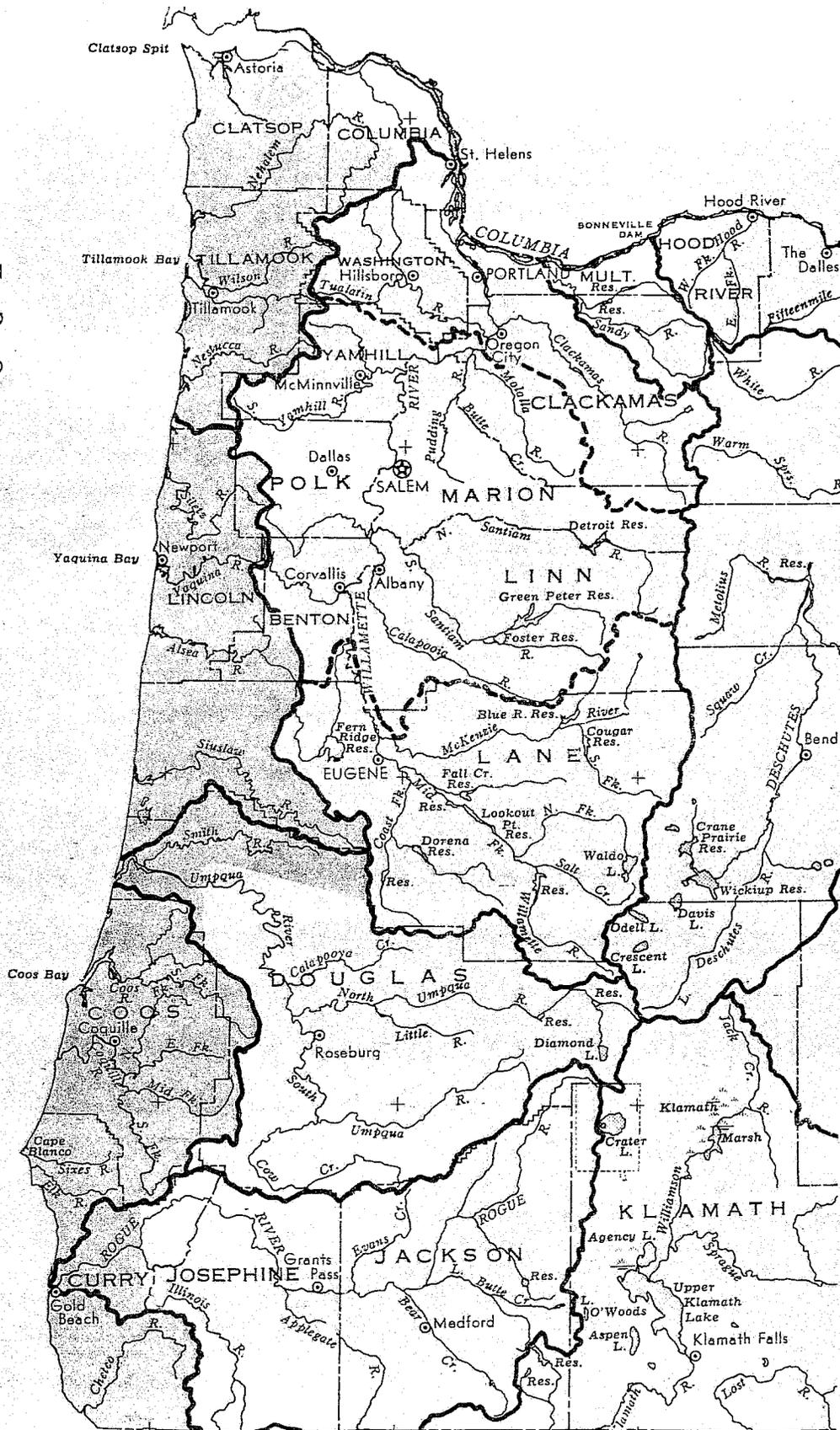
FINAL REPORT

March 1975



Oregon Coastal Conservation & Development Commission

P A C I F I C O C E A N



OREGON COASTAL ZONE



OREGON COASTAL CONSERVATION AND DEVELOPMENT COMMISSION

--- COUNTY LINE
— WATERSHED BASIN LINES

OREGON COASTAL CONSERVATION AND DEVELOPMENT COMMISSION

WILBUR TERNYIK, CHAIRMAN
JEFF BRENNAN, VICE CHAIRMAN
ROBERT YOUNKER, SECRETARY-TREASURER
JAMES F. ROSS, EXECUTIVE DIRECTOR

P.O. Box N
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March 31, 1975

To the Governor and the 58th Legislative Assembly of the State of Oregon

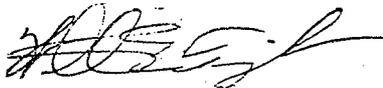
On behalf of our Commission and the countless others who contributed, we submit this report with a certain amount of pride and some misgivings. The pride comes from knowing that our Commission made every effort to reach an impossible goal of balancing conservation and development of Oregon's coastal zone resources. However, living on the coast, one becomes accustomed to facing an impossible situation with optimism. The misgivings relate to the recognized lack of adequate time or funds to do a complete environmental and economic analysis of possible impacts of implementing this coastal zone management proposal.

To my knowledge, the open process used by our Commission was certainly responsible for the popular support of our program. The involvement of local elected officials on the Commission has produced intergovernmental coordination and cooperation between counties, cities and ports that never existed before. Many of those units of government are now using portions of the enclosed program to solve current resource management problems. Through the Commission's advisory committee, comprised of environmental and industry representatives, a balanced input was made by the private and public sectors. The result is a program proposal that clearly identifies a multitude of resource management problems and suggested possible solutions.

Our Commission believes that the program reflects a general consensus approach. There is a strong indication from our members that because of the unknown impacts of this program, legislative review and approval of all sections should take place before requiring compliance through local comprehensive plans. The job of working this involved program into our present law system belongs with one body, the Oregon Legislature.

We thank you for the opportunity to prepare this planning proposal and encourage the Legislature to support needed refinement and updating of the OCC&DC resource inventories so they can be used by local decision makers in the coastal zone.

Sincerely,



Wilbur E. Ternyik
Chairman

ACKNOWLEDGMENTS

The Oregon Coastal Conservation and Development Commission wishes to express its gratitude to the hundreds of people who have contributed to the development of this coastal zone management program. Many local, state and federal government representatives worked closely with the Commission from the beginning of its work program. The Commission's Environment, Conservation and Economic Concerns Advisory Committee provided a broad range of ideas which assisted the Commission in completing its work. Also, many of the state's citizens, both within and outside of the coastal zone, made significant contributions through the Commission's public workshops and through participation at Commission meetings. The work of the Commission's professional and secretarial staff during the last three years was especially noteworthy.

Much of the success of the Commission's program stems from the dedication and involvement of all of these people. The Commission is grateful for this effort and extends its thanks and appreciation.

OREGON COASTAL CONSERVATION AND DEVELOPMENT COMMISSION

Past and Present Membership

Present

Jack Baker
City of Lakeside
1975

Wallace Baldinger
Governor's Appointee
1973-1975

Jeff Brennan
Tillamook County
1971-1975

Jack Broome
Governor's Appointee
1971-1975

Collier Buffington
Governor's Appointee
1971-1975

Don Buffington
City of Gold Beach
1975

Ted Cornett
Port of Tillamook
1972-1975

Paul Coyne
City of Dunes City
1975

Maradel Gale
Governor's Appointee
1971-1975

Gerald Gower
City of Cannon Beach
1971-1975

Grace Harbinski
City of Lincoln City
1974-1975

James Hill, Jr.
Governor's Appointee
1971-1975

Bill Karcher
Port of Umpqua
1974-1975

Don Knapp
Port of Toledo
1971-1975

Ellen Lowe
Governor's Appointee
1971-1975

Mickey Moffitt
Coos County
1971-1975

Albert Nimmler
City of Reedsport
1974

Lyle Ordway
Clatsop County
1975

Jim Richards
City of Tillamook
1975

Al Strand
Lincoln County
1975

Don Swift
Port of Newport
1973-1975

William Tankersley
Port of Gold Beach
1971-1975

Wilbur Ternyik
Port of Siuslaw
1971-1975

John Truett
Douglas County
1975

John Wells
City of Waldport
1975

Captain Martin West
Port of Astoria
1973-1975

Les Williams
Curry County
1971-1975

Bob Wood
Lane County
1975

Robert Younker
Port of Coos Bay
1971-1975

Andy Zedwick
Lincoln County
1971-1975

Past

Erv Bahlberg
Port of Newport
1972-1973

Clare Bigelow
City of Tillamook
1972-1973

Georgia Dougherty
City of Port Orford
1973-1974

Howard Edwards
City of Tillamook
1971-1972; 1974-1975

Al Flegel
Douglas County
1971-1975

Mike Forrester
Governor's Appointee
1971-1973

Bob Fullhart
Port of Umpqua
1971-1973

Paul Geuy
City of Florence
1971-1974

Lyle Hasselbrink
Port of Newport
1971-1972

Bill Humphreys
Port of Umpqua
1974

Harold Johnson
Port of Umpqua
1973-1974

Howard Johnson
Port of Astoria
1971-1973

Bud Kiefer
City of Lincoln City
1974

Richard Larsen
City of Tillamook
1973

Dave Megrath
Clatsop County
1973-1975

Mike Miller
Lincoln County
1971-1975

Nan TenEyck
City of North Bend
1973-1974

Ken Omlid
Lane County
1971-1975

Barbara Rolfe
City of Gold Beach
1973

James Scarborough
Clatsop County
1971-1972

John Schriener
City of Newport
1971-1974

Phil Smith
City of Waldport
1971-1975

Bernard Stacy
Port of Tillamook
1971-1972

Verne Stratton
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1972-1973

Ira Tucker
Curry County
1971-1973

Thomas Tymchuk
City of Reedsport

Bert Walberg
City of North Bend
1974

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Present

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Northwest Steelheaders Council

Webb Bauer
State Parks, Department of
Transportation

Jay Blair
Department of Transportation

Beale S. Dixon
Tillamook County Creamery
Association (Dairy Industry)

Brent Forsberg
American Fisheries Society

Marian B. Frank
League of Women Voters

Larry Holloran
Oregon Coast Association

James P. Johnston
Crown-Zellerbach Corporation (Forest
Products)

Stan Katkansky
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Power)

Larry R. Kauffman
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Art Paquet
Oregon Otter Trawl Commission
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Norm Price
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Paul Rudy
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Anne Squier
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Dave Tegart
Western Environmental Trade Association
(Industry)

Past

Jim Chandler
Portland General Electric
(Electric Power)

Nancy Edwards
At-large Member

Sam Haley
Department of Transportation

Carl Halvorson
Western Environmental Trade
Association (Industry)

Ken Lewis
Al Pierce Lumber Company (Forest
Products)

Martin Davis
Oregon Environmental Council

Bob Loeffel
American Fisheries Society

Gene Magee
Oregon Coast Association

Walt McCallum
State Parks, Department of Transportation

Frank Parks
Izaak Walton League of America

George Reed
Oregon Wildlife Federation

John Schaeffer
Umpqua River Navigation (Mining and
Geology)

Rex Vollstedt
Vollstedt Volkswagon (Retail Trade)

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Neal L. Coenen	WICHE Intern/Coastal Planner
W. Edward Whitelaw	Economist
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Wanda K. Young	Administrative Assistant
Sandra L. Antich	Secretary
Sue A. Crawford	Secretary
Fury L. Williams	Secretary
Pauline D. McNeil	Secretary

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- T. Inventory of Development Pressures
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- V. Oregon Coastal Zone Management Plan Implementation

Introduction

INTRODUCTION

LEGISLATIVE CHARGE

The Oregon Coastal Conservation and Development Commission (OCC&DC) was created by the State Legislature in 1971, at the request of the Oregon Coastal Conservation and Development Committee,¹ to prepare a natural resource management plan for the Oregon coastal zone. ORS 191.150 states that "such a plan shall be prepared in a form designed to be used as a standard against which proposed uses of the natural resources of the coastal zone may be evaluated." ORS 191.140 directs the Commission to submit to the Governor and the 58th Legislative Assembly "... a proposed comprehensive plan for the preservation and development of the natural resources of the coastal zone ...".

In conformance with that legislative charge, the OCC&DC is pleased to present this report to the Governor and the 1975 Session of the Oregon Legislature. Enclosed are a series of policies for the management of Oregon's coastal resources, and a series of recommendations for their implementation.

¹The Committee formally organized in December, 1970 electing officers and adopting goals and objectives. It was composed of coastal county, city, and port elected representatives.

GENERAL HISTORY

The Commission is able to look back on a number of accomplishments over the past three and one-half years. Among these are the support it provided for the enactment of the state's fill and removal law and the determination of the current level of planning on the coastal zone. The major element of the Commission's work program, however, has been the development of natural resource management policies, associated resource inventories and an economic survey and analysis of the coastal zone.

In June of 1972 the Commission sponsored a two-day conference involving Commission members, Advisory Committee personnel, local planning staff members, and state and federal natural resource agency personnel. The purpose of the conference was to identify the major natural resource management problems being experienced within the coastal zone (these problems are summarized in the Commission's Interim Report - 1973). The results of the workshop set the groundwork for the Commission's overall program design. A series of natural resource categories, coastal values, and developmental obstacles were identified as being of "critical concern" in the development of the state's coastal zone management program:

1. Estuaries and Wetlands
2. Beaches and Dunes
3. Shorelands
4. Freshwater Areas
5. Uplands (Agriculture, Forest, Urban and Recreation Lands)
6. Continental Shelf
7. Geological Hazards (including Floodplains)
8. Fish and Wildlife Habitats
9. Visual Resources
10. Scientific Natural Areas
11. Historical and Archaeological Sites

The Commission has developed natural resource management policies for each of these categories. The policies are designed to meet the legislative intent of ORS 191.150, as well as correspond to the State-wide Planning Goals and Guidelines authorized under ORS Chapter 197. The policies are supported by an extensive public input and review process, a series of natural resource inventories for each policy category and an environmental and economic impact assessment.

The policy development process was divided into two separate phases, based primarily upon the availability of funding and manpower.

CHRONOLOGY OF SPECIFIC COMMISSION ACTIVITIES

1971

1. The Commission was instrumental in resolving the issue of the Oregon Coastal Highway between Neskowin and Pacific City which had been a major conflict for seven years. An inland route was chosen in favor of construction over a sand spit. The Commission held numerous meetings in the area and testified at a public hearing at the request of the State Highway Commission.
2. The Commission retained a consulting consortium of Hart/Krivatsky/Stubee and Bradwell/Reynolds to develop a study design. The consultants were unable to agree on a precise course of action for the OCC&DC and developed two work programs. Although these work programs provided some useful information, they were not used in subsequent program management by the Commission.
3. The Commission supported the enactment and implementation of the state's fill and removal law.

1972

1. The Commission prepared Initial Report of Local, State, Federal and Private Studies and Planning Activities in Oregon's Coastal Region. This report became a useful document in determining the current level of planning in the coastal zone.
2. In June, 1972 an Executive Director was hired for the Commission, becoming the first full-time employee. In November, a Chief Planner and Information Specialist were also added to the professional staff.
3. In late June of 1972, the Commission held a two-day conference at Salishan and identified the major natural resource concerns and conflicts in the coastal zone. From the proceedings of the two-day conference, the OCC&DC overall program design was developed over the next six months.
4. The Interim Report required by ORS 191.140 was prepared and submitted to the Legislature and the Governor. The Interim Report outlined the Commission activities from 1971 to December of 1972 and outlined the Commission's work program for the two remaining years.
5. The Commission played a major role in the formation of three local estuary planning groups. As a result, plans are being completed for the Tillamook, Siuslaw and Umpqua estuaries. To assist local

Phase I: March, 1973 to February, 1974

Limited funding during this period of time prevented development of an extensive work program. To gather input regarding resource management problems and suggested management policies, the Commission sponsored 17 public workshops in the coastal zone and four in the Willamette Valley, involving over 1,000 people. To augment the public input, the Commission established technical resource teams for each policy category, made up of state and federal natural resource agency technicians and individuals from private enterprise involved in managing natural resources on a day-by-day basis. In addition to these inputs, the OCC&DC compiled detailed information regarding existing policy and statutes at the local, state and federal levels in order to provide an accurate assessment and understanding of what was presently "on the books". The combination of these three inputs (public, technical, and existing statutes) provided the ingredients for the OCC&DC to assemble over 300 "Phase I" natural resource management policies.

Following Commission approval, the "Phase I" policies were circulated for general public and agency review. Over 1,800 copies of the policy packets were distributed. Public and agency comments were evaluated and the approximately 300 "Phase I" policies were integrated and combined into 95, which covered the range of concerns expressed in the Phase I process.

Phase II: March, 1974 to Date

In March of 1974 the State of Oregon received, along with the states of Maine and Rhode Island, the first Coastal Zone Management grant funds under the Coastal Zone Management Act of 1972. These funds (\$250,132) allowed the OCC&DC to commence the majority of the natural resource inventories needed to provide support and evaluation of the policies generated in "Phase I".

Also, an economic survey and analysis of the coastal zone was developed to provide additional data for evaluation of the economic impact of management policies.

(NOTE: The economic study, funded by the Pacific Northwest Regional Commission (\$35,000) and the State of Oregon Department of Economic Development (\$5,000) provided the first comprehensive economic profile and analysis of the entire coastal zone.)

Upon completion of the inventory data and economic information (and using the evaluative comments from public review) the OCC&DC compiled Phase II policies, which have been subsequently adopted by the Commission and are being referred to the Legislature and the Governor.

efforts the Commission prepared the Estuary Planning Guidelines, which have been requested by numerous states, U.S. territories and foreign countries.

1973

1. The OCC&DC prepared a 23-minute slide presentation outlining resource management concerns in the coastal zone. The presentation has been shown approximately 125 times on the coast and in the valley, to some 3,000 adults and students. Three video-tapes of the presentation have also been prepared and shown on television and to public meetings statewide.
2. Extensive public involvement workshops were held within the coastal zone and Willamette Valley. Close to 1,000 hours were spent on the effort by staff and Commission members. These workshops were the initial step in the development of the natural resource management policies which are the "backbone" of the OCC&DC natural resource management plan.
3. The Commission began the publication of a monthly newsletter which now has a distribution of over 1,800 individuals, agencies and units of government.
4. The first OCC&DC natural resource inventory was completed. An inventory of coastal wetlands, was completed with financing provided by a HUD "701" planning grant.
5. The Commission recommended that all state natural resource agencies, counties, cities and port commissions protect all salt marsh areas from irreversible acts until the OCC&DC proposes standards for these areas.

1974

1. Based upon the overall program design developed by the OCC&DC, the State of Oregon was awarded one of the first planning grants in the nation under the Coastal Zone Management Act of 1972 (March 17, 1974).
2. The OCC&DC helped coordinate local groups in expressing their interest in establishing an estuarine sanctuary and assisted in writing a grant application. As a result, the State of Oregon was awarded the first estuarine sanctuary grant in the nation under the Coastal Zone Management Act of 1972.
3. Speaking in behalf of the OCC&DC, the Chairman of the Commission gave testimony to the U.S. Senate Committee on Commerce in support

of extending the United States fishing industry (full text of the testimony is provided as Appendix A).

4. The Commission recommended that all state natural resource agencies, counties, cities and port commissions protect all active foredunes from acts which will cause safety hazards or costly damage to private or public property until the OCC&DC can develop standards for these areas.
5. The OCC&DC completed development of 300 Phase I natural resource management policies. These policies were distributed to over 1,800 agencies, individuals and units of government for review and comment.
6. The OCC&DC completed Phase II management policies.
7. The OCC&DC, with assistance of various state and federal agencies, completed natural resource inventories and special reports for coastal resources, entitled as follows:
 - a. Estuarine Resources of the Oregon Coast;
 - b. Coastal Wetlands of Oregon;
 - c. Historical and Archaeological Resources of the Oregon Coast;
 - d. Geologic Hazards Inventory of the Oregon Coastal Zone;
 - e. Oregon Coastal Zone Management Plan Implementation;
 - f. An Inventory of Development Pressures;
 - g. Fish and Wildlife Resources - Oregon Coastal Zone;
 - h. Visual Resource Analysis of the Oregon Coastal Zone;
 - i. Economic Survey and Analysis of the Oregon Coastal Zone;
 - j. Beaches and Dunes of the Oregon Coast;
 - k. Resource Analysis of Oregon's Coastal Uplands;
 - l. Freshwater Resources - Oregon Coastal Zone; and
 - m. Shore-Process Corridor, A Pilot Study.
8. The OCC&DC developed a process for the identification of areas of critical statewide concern. The Commission also identified specific candidate areas of critical statewide concern within each natural resource inventory. The Commission recommends this process and a number of candidate areas to the Legislature as discussed in detail subsequently in this report.
9. The OCC&DC prepared three public service announcements for television and radio urging citizen awareness of coastal resource values and the role of the OCC&DC in preparing a resource management plan.

1975

1. The Commission distributed Phase II management policies to over 1800 agencies and individuals for review and comment.
2. Based upon final public comment, the OCC&DC adopted final policies for the management of coastal natural resources on March 14 and 21.
3. The OCC&DC staff evaluated two candidate areas of critical state concern as examples of using a process adopted by the Commission on August 9, 1974.

The accomplishments listed above are the major activities of the OCC&DC. There have been numerous other small projects and occasions or instances where the Commission has had an opportunity to solve problems "within the coastal zone" of regional or statewide significance, or assist in resolving problems for local units of government. Also, the Commission supported the budgets of those state agencies that assisted it in developing resource inventories.

Although Oregon's Coastal Zone Management Plan includes a number of single-purpose laws enacted previous to the establishment of the OCC&DC, the policy development process remains the central focus of the program.

The Commission on the Status of Women, established in 1946, was the first of its kind. It was created by the United Nations to address the needs and concerns of women worldwide. The Commission's mandate is to promote gender equality and to ensure that women have the same opportunities as men in all spheres of life.

The Commission has been instrumental in the development of international instruments, such as the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), which is the most comprehensive human rights treaty specifically concerning women. The Convention has been ratified by over 110 countries, demonstrating the global commitment to gender equality.

The Commission also plays a crucial role in monitoring and reporting on the progress of women's rights. It holds governments accountable for their commitments under international law and provides a platform for women's voices to be heard at the highest levels of international decision-making.

In addition to its monitoring functions, the Commission has been a driving force in the advancement of women's rights through its various initiatives and programs. It has supported the development of national policies and laws that promote gender equality and has provided technical assistance to governments in this regard. The Commission's work is essential for ensuring that women's rights are not only recognized but also effectively implemented in practice.

The Commission's efforts have led to significant progress in the area of women's rights, but there is still much work to be done. Gender inequality remains a global challenge, and the Commission continues to be committed to its mission of promoting the full and equal participation of women in society. Through its ongoing work, the Commission remains a vital institution for the advancement of women's rights and the achievement of sustainable development.

The Policy Development Process

THE POLICY DEVELOPMENT PROCESS

As introduced previously, the OCC&DC developed a two-phase process for preparing and adopting coastal management policies. In the first phase the Commission sought ideas and suggested policy statements from the public, from resource specialists, and from various existing laws and policies. The Commission evaluated each policy statement derived from this process and made Phase I policies available for public review. The purpose of the second phase was to re-assess Phase I policies in terms of scientific and economic information and an informal legal review. The OCC&DC staff prepared background statements and supporting information for policies to assist the Commission in review and approval of Phase II policies. The policy program appearing in this report was adopted by the OCC&DC March 21, 1975 following a second extensive review by federal, state and local governments and numerous private individuals. This section provides a description of how the policies evolved. The flow chart (Figure 1) summarizes the major elements of the policy development process.

In June of 1972, the Commission sponsored a two-day conference to identify the major natural resource management problems occurring within the coastal zone (these problems are summarized in the OCC&DC Interim Report - 1973). The conference participants included members of the OCC&DC and its Advisory Committee, local planners, representatives of state and federal natural resource agencies, and concerned citizens. Conference participants identified a list of natural resource categories, coastal values and development obstacles of critical concern in coastal zone management. These categories provided the basic framework for developing the management policies.

POLICY DEVELOPMENT - PHASE I

The Commission pursued a work program which included involvement of the public and resource specialists and a review of existing policies. Policies were developed separately for each of the following nine categories:

1. Estuaries and Wetlands
2. Beaches and Dunes
3. Fish and Wildlife
4. Freshwater and Shorelands
5. Continental Shelf
6. Uplands
7. Floodplains
8. Geological Hazards
9. Historical and Archaeological Resources.

The following discussion details the elements of Phase I of the policy development process.

The Public Involvement Program

The OCC&DC public involvement program was based on the principle that those people most affected by a resource management plan should have the opportunity to participate in forming the plan. In addition, the Commission believed public involvement would create a level of awareness, understanding and commitment that would help establish and implement a meaningful, responsive program.

The public involvement program was a cooperative effort between the OCC&DC and the Oregon State University Extension Service. A series of workshops were held in each of the seven coastal counties and four locations in the Willamette Valley. Approximately 1,000 people participated in the 21 OCC&DC workshops. Attendance lists reveal representation from a cross section of interests including environmental, business, industry, resource management, government (local, state and federal), outdoor recreation, civic, and education. Most Commission members attended workshops in their area. People had been informed of the workshops by invitation from county extension agents and by mass media appeals.

Workshops began with a 20-minute slide program to provide information about coastal resource and development issues and information about the OCC&DC. Participants learned that they would have a significant advisory role to the OCC&DC. They also were told they would have

further opportunities for contributing to the program by commenting on the Commission policy proposals which would be based, in part, on the results of the public workshops.

Workshop participants then broke into formal discussion groups of eight to ten people, including a discussion leader and recorder. Each discussion group was purposely balanced to insure a broad cross section of economic and environmental interests. Two distinct discussion formats were employed:

1. In the coastal workshops a workbook, characterizing the importance of specific natural resource categories, was used. Participants entered comments regarding their concerns in these workbooks. This approach usually took two or three sessions to complete.
2. The Willamette Valley sessions were less structured and employed a problem consensus method. Members of discussion groups were asked to express concerns and suggestions verbally. The groups then prioritized the five most important statement which were then written down by the group recorder. These workshops were completed in one evening.

An interesting outcome of this arrangement was that the developer and environmentalist usually found that they actually shared similar concerns. The discussion groups helped improve communication between these interests.

All workshop comments were sorted by policy category. Staff members combined similar comments wherever possible and worded the statements as policies. The workshop source was coded in the Synopsis of Public Input so that reference to the original comments could be made if necessary. The Commission kept workshop participants informed of the OCC&DC's progress by mailing them the OCC&DC Newsletter and copies of Phase I and Phase II policies for review and comment.

Resource Specialists Involvement

The OCC&DC convened resource specialist teams for each of nine Phase I policy categories. The resource specialist team members were chosen to represent a broad range of interests and expertise. Participants came from local, state and federal government agencies, universities, businesses, industries and public interest groups that work with the particular resource on a day-to-day basis. Most teams also included an OCC&DC member. A list of the technical resource teams is included as Appendix B.

Individual staff members prepared materials for the teams including a synopsis of public comments and organized meetings. Resource

specialists concentrated on preparing a set of policies for the OCC&DC program. Most teams met in four or five all-day sessions to identify specific problems and needs and to write and review evolving team policies. The resulting policies represented team consensus on the resource management needs for the particular coastal resource.

Existing Policy

Many existing laws and policies are relevant to the OCC&DC management program. The state has a significant amount of legislation to protect and manage beaches, wetlands, water resources and fish and wildlife. The OCC&DC completed a preliminary report on state natural resource agency statutory policies in May, 1973. The OCC&DC also gathered policy information from local government and federal agencies. Existing policies were grouped by the applicable resource category. This enabled the Commission to compare present laws with the identified concerns of the public and resource specialists.

Phase I Policy Evaluation

Phase I policies represented a combination of the three elements just described. The Commission reviewed a complete evaluation package including Phase I policy statements, the Synopsis of Public Input, resource specialist policies and existing laws and policies. Each policy was coded as to its origin. When two or more of the sources agreed, the consensus was shown in the code. Conflicting statements from different sources were grouped so the Commission could address the complete issue and determine the desired policy.

The OCC&DC evaluated each policy twice. At the first meeting, commissioners reviewed policies in three small discussion groups. The audience and Advisory Committee also formed groups and made recommendations. Comments and suggested rewordings resulting from these meetings were summarized. The OCC&DC gave tentative acceptance or rejection to policies at the following meeting.

PROGRAM GOAL AND OBJECTIVES

Although the Commission operated within the framework of its legislative charge while developing Phase I policies, Phase II policy evaluation required a specific statement of the overall intent of the Coastal Zone Management Program.

On August 9, 1974 the OCC&DC adopted a program goal and four objectives. Several laws and documents (including ORS 191 creating the OCC&DC, ORS 197 creating the LCDC, the federal Coastal Zone Management Act of 1972, the OCC&DC Interim Report - 1973 and Program Development Grant, the Memorandum of Understanding between the LCDC and the OCC&DC and the Phase I policies) provided the basis for the goal and objectives. The Commission also approved several background statements to clarify the intent of the goal and objectives. The revised program goal and objectives appear in a subsequent part of this section.

The Commission used the adopted goal and objectives to determine whether Phase I policies were within the intended scope of the program and whether the entire group of policies would be sufficient to meet the goal and objectives.

POLICY DEVELOPMENT - PHASE II

The purpose of Phase II of the policy development process was to critically appraise and revise the policies in light of resource inventories, economic information and public comments. Phase II policies were prepared in a format that included policy statements, necessary actions, recommended actions, and background information. Economic analysis and resource inventories suggested some additional policy or action statements.

Analysis of Phase I Policies

Preparing the Phase I policies for this evaluation consisted of three major steps:

1. Identification of duplication, inconsistencies and contradictions among the Phase I policies, and identification of interrelations and issues, through the use of a so-called sort matrix;
2. Review of comments on the policies by various agencies and organizations including a critical appraisal by members of the Ocean Resources Law Program, University of Oregon Law School and by a WICHE student intern to the staff economist; and
3. Preparation of a two-page worksheet for each policy or group of similar policies describing why the policy is considered necessary, who or what is the target of the policy, how well the policy conforms to the Commission's goal and objectives, and finally identification of problems which exist with the policy as worded.

As a result of the sort process, the various inputs and the worksheet analysis, approximately 300 approved Phase I policies were reduced in number to 95 without deleting or changing the meaning of Phase I policies. The 95 policies as revised were distributed among the following categories:

1. General Policies
2. Visual Resources
3. Historical and Archaeological
4. Scientific and Natural Areas
5. Geologic Hazards (including Floodplains)
6. Fish and Wildlife
7. Estuaries and Wetlands
8. Freshwater

9. Shorelands
10. Beaches and Dunes
11. Continental Shelf
12. Agriculture, Forest, Urban and Recreation Resources

The policies were evaluated in terms of the support available from natural resource and economic inventories.

Coastal Resource Inventories

The OCC&DC, with assistance of state and federal agencies, completed ten coastal resource inventories and one pilot study for shorelands management between August, 1973 and December, 1974. The inventories were designed to provide a basis for the development and evaluation of sound resource management policies. Other functions were to designate the geographic location of particular resources and describe how inventory data could or should be used to make management decisions.

Each inventory defines the resource and describes its natural functions, capabilities and values. Inventories also describe major human uses of the resources and the way those uses relate to each other and affect the value of the resource. The reports discuss resource management concepts suggested by the information collected. Geographic information is shown on uniform 1:62,500 scale maps with the exception of estuaries, wetlands, and continental shelf information, which are at 1 inch equals 1,000 feet and 1:250,000 scales. This report contains a brief summary of each resource report, and the complete documents are included as Appendices J through T.

The Commission took an active part in the development of resource inventories through subcommittees that interviewed consultants and reviewed the progress of all reports that were contracted to private consultants. Authors of the inventories presented findings to the Commission at regular OCC&DC meetings. These presentations gave Commission members an understanding of the information available to be applied to policy development.

The inventories served two purposes in Phase II of policy development, one of defining resources and associated issues and a second of defining the geographic locations where certain policies apply. Inventory narratives substantiated the need for several Phase I policies. In some cases inventories defined problems or needs that had not been recognized in the previous policy work. Management suggestions and resource information gave new emphasis and more substance to some resource policies. Inventories were used as direct references in seven policies. However, individual philosophies of consultants or agencies who prepared inventories were not necessarily supported by the Commission.

Where geographic relationships to management policies are not identified, the inventories suggest methods of making the geographic designation (e.g., shorelands, visual resources, scientific natural areas). The inventory maps are resource materials and as such are not intended to be part of the policy statements. However, accurate mapping may clarify and simplify future implementation of policies. Without eventual specific designations, the protection of resources through a policy plan will be very difficult.

The inventories gained their strength from the emphasis on providing a general understanding of the characteristics and extent of the resources. Although far greater detail is available for certain aspects of particular locations, detailed site specific information would not have provided the Commission with a balanced overview. In the future, local planners will need more refined studies of their area to fully implement a coastal zone management program. However, this will require additional research in many instances.

Economic Analysis.

The Commission funded a special study team to prepare an economic study of the coastal zone (Appendix U). The OCC&DC established the Economic Study Steering Committee, consisting of four Commission members and six economic development representatives, to monitor the work of the study team. The report provided a data base from which an initial economic analysis of the policies was made.

The Commission also hired an economist to provide a specific economic analysis of the policies. The economist described likely economic impacts of each of the 95 consolidated Phase I policies and identified the information that would be needed to provide an accurate and complete determination of economic impacts. The economist also prepared an economic analysis of the Phase II policies, necessary actions and recommended actions which included the following three types of comments.

1. Analysis - raising those questions that need to be answered before a rigorous estimate of the economic consequences of the policy can be made. In addition, when answers were available from basic knowledge or from inventories, they were recorded. If the information was not readily available, the economist estimated the effort that would be required to provide the answer.
2. General Reaction - giving the economist's personal evaluation of the likely economic impact. This reaction was provided at the specific request of members of the Economic Study Steering Committee.
3. Suggested Rewordings - alternative ways of stating a policy or action so that adverse impacts identified in the analysis may be avoided or reduced.

Supporting information to most Phase II policies included a brief summary of economic impacts. The Commission reviewed the economic analysis as part of its review of Phase II policies.

Phase II Policy Evaluation

The Phase II policies format approved by the Commission was substantially different from the Phase I format. The Commission made a distinction between a policy statement and associated necessary actions (which, when combined, may become statewide planning goals for the coastal zone) and associated recommended actions (which are intended to have the same status as planning guidelines). Goals carry the force and authority of law while guidelines are optional methods a local unit of government may use to carry out a goal.

In addition to the policies, necessary actions and recommended actions, the Commission received the supporting information including background, implementation suggestions, projected impacts, glossary and suggested areas of critical state concern. The background statements explained reasons for the policies and contained relevant information from the OCC&DC reports and other significant sources. Implementation sections suggested functions for different levels of government and specific agencies in implementing policies. The section on projected impacts outlined anticipated economic, social and environmental effects of the policies. Although the section could not be a complete statement of what would happen if a policy were implemented, it did provide a future means of monitoring how well a policy is working. The glossary of terms used in the policies provided further clarification of the intent of specific statements.

The Commission also considered written alternative wordings for Phase II statements which were suggested by the general public, industry and government agencies. The policies and actions were considered by the Commission as a whole at regular OCC&DC meetings. At the meetings, individuals in the audience (representing government, industry, and public and private concerns) contributed to the policy review. The Commission considered but did not specifically review and adopt the supporting information. Upon completing analysis, the Phase II policy program was approved for public review.

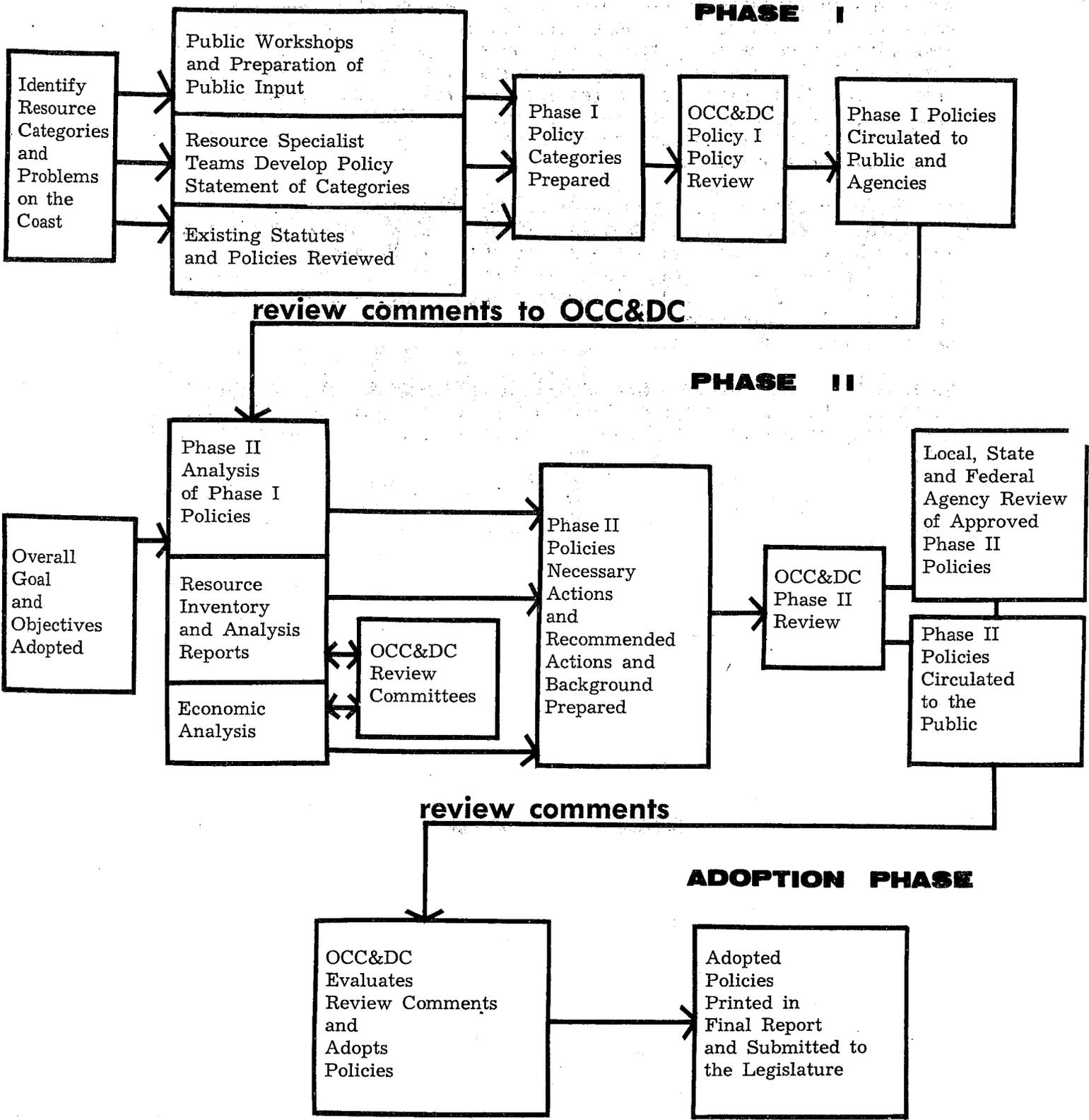
FINAL REVIEW AND ADOPTION OF POLICIES

The Commission began preparing for the final review of the policies in November, 1974 with the release of the first of a series of three television and radio spot announcements. The purpose of the announcements was to increase public awareness of the Commission and its program. The announcements were followed by a full page newspaper advertisement summarizing the Commission's responsibility and the need for coastal planning and listing the Phase II approved policy statements. The Commission distributed approximately 1,800 copies of the entire policy package to people receiving the OCC&DC Newsletter, government officials and to people requesting copies in response to the mass media presentations.

The agency review of policies involved responses from five units of local government, 16 state agencies, 29 regional or federal offices, and the University of Oregon Ocean Resources Law Program. The Commission reviewed written responses from agencies, organizations and individuals, and evaluated all comments suggesting rewordings in the policies. The Commission also considered comments from the audience before taking final action.

Because the Commission has maintained an open process for developing policies, the policy program which follows is a significant step toward developing an effective and publicly acceptable coastal zone management program.

OCC&DC Policy Development Process



The OCCDC Program for Management of Coastal Resources

THE OCC&DC PROGRAM
FOR
MANAGEMENT OF COASTAL RESOURCES

The OCC&DC program consists of an overall goal and four objectives and several policies, necessary actions and recommended actions. It also includes implementation recommendations, process and case studies on selecting areas of critical state concern, and identified information needs. The goal expresses the end toward which state efforts in managing coastal resources is directed. The objectives define in specific measurable terms some of the overall accomplishments necessary to achieve the goal. The policies provide a guiding principle or process for making coastal zone management decisions that will lead toward achieving the state goal and objectives. Necessary actions identify specific measurable actions or accomplishments that must occur for a policy to be effective. The policies and necessary actions may become specific statewide planning regulations for land use in the coastal zone.

Recommended actions suggest means or activities that decision makers and agencies should consider implementing to achieve a policy. The OCC&DC proposes recommended actions as guidelines rather than state regulations for one of the following reasons: the impact of the action is primarily local; the action is intended to provide government with new innovations or alternatives for carrying out policies but not to restrict the alternatives used; or the action, although significant, is of lower priority than policies and necessary actions in terms of funding for implementation.

The Commission considered the background material and footnotes that appear along with the policies as explanatory material to help understand and interpret the intent of the program. The Commission did not specifically adopt the background and footnotes.

The OCC&DC program is concerned with the preservation, conservation, development and restoration of natural resources of the coastal zone for the benefit of all people. Policies address the following land and water resource features: freshwater, estuaries, wetlands, shorelands, continental shelf, sand areas, uplands, and fish and wildlife habitats. These resources will be managed under constraints based on cultural, recreational, historical, archaeological and aesthetic values; on economic needs for income, employment, urban, agricultural and forest land; and on natural obstacles to development such as floodplains and other geologic hazards.

GOAL AND OBJECTIVES

Goal

It is the goal of the State of Oregon

- (a) to preserve, conserve, develop and restore the natural resources of the coastal zone in such a way that there is created and maintained a balance between conflicting public and private interests that shall assure the greatest benefits to this and succeeding generations of Oregonians; and
- (b) to develop and implement a coastal zone management program that is consistent with (a) above; and
 - i. that shall guide public and private uses of natural resources of the coastal zone so that pollution is controlled and irreversible damage to the ecological and environmental qualities of the coastal zone is prevented;
 - ii. that shall reflect a balancing of the conservation and the orderly development of the natural resources of the coastal zone; and
 - iii. that shall protect the unique character of life on the coast that is reflected in cultural, historic, and esthetic values.

Objectives

- 1. To insure substantive statewide citizen involvement in management of the coastal zone's resources.
- 2. To insure coordination of coastal resource planning management and administration with local, state and federal agencies through clearly established authorities and responsibilities.
- 3. To manage the natural resources of the coastal zone on an evolving experimental and flexible basis so that as experience with and knowledge of the coastal zone increases, revision and improvement of the program can be effected and so that irreversible actions are avoided and thus future options are retained, and specifically:
 - a. To encourage, monitor and sponsor research on the coastal zone that is relevant to and consistent with the goals and objectives of management program;
 - b. To identify, coordinate, store, retrieve and disseminate information that is both necessary and sufficient for the continuing implementation of the management program by means of a system that is compatible with present and emerging information systems; and

- c. To establish an organizational structure to conduct the coordination, storage, retrieval and dissemination of information that is sufficient for the management program but does not duplicate or supersede existing activities.
4. To establish a system of preferences such that conflicts among uses of the natural resources of the coastal zone may be resolved.

POLICIES, NECESSARY ACTIONS AND RECOMMENDED ACTIONS

1. Incorporating Social Concerns in Planning and Decision Making

Policy Statement

State and local governments shall base modifications, approval or disapproval of proposed developments, plans and programs on the short and long term economic, ecological, cultural, aesthetic, historic and recreational effects on all Oregonians. If it is determined that the proposed action and its effects are a national concern or exclusively a local concern, then the nation or the locality shall be the relevant constituency.

Necessary Action

The appropriate state agency shall require a written evaluation of social costs and social benefits for proposed developments, plans and programs that are likely to affect adversely areas of critical state concern. The state agency in cooperation with units of local government shall determine those developments, plans and programs that are likely to affect adversely areas of critical state concern.

Background

This policy guides decision makers to incorporate the full range of social concerns into the decision making process. In the past, decisions have often been based only on short term economic (and other easily quantifiable) factors. In some cases this has led to developments or activities that have significantly decreased the social benefits derived from the natural resources of the coastal zone.

In areas of critical state concern the state will have a responsibility to protect and maintain the values of the area. Many ecological, and other values of natural resources have been identified in the OCC&DC resource inventories. The OCC&DC reports also describe the cultural and economic heritage of the coastal zone and several long term, chronic and secondary impacts of specific activities. These reports can serve as a first source for identifying the less quantifiable factors of a particular proposed development or use.

The OCC&DC system of preferences, to the extent that it is adopted, will establish a process of resolving conflicts using objective information to the greatest extent possible.

2. Planning and Providing for Multiple Use of Natural Resources

Policy Statement

State and local government through planning and management shall provide for multiple uses of natural resources on public lands and shall encourage multiple uses on private lands. When several uses are proposed in the same location, state and local governments shall provide for multiple use based on the demands of each user, the degree of compatibility among various uses, and the effects of each use and combined uses on the natural resources.

Background

The concept of multiple use has been used in the management of forest and water resources for many years. Multiple use in this policy reference does not mean that all uses should be allowed in all locations. Most uses in some way affect other uses either beneficially, as some timber harvest practices do for deer hunting; or adversely, as waste disposal does on aquatic life habitat. The compatibility of uses usually depends on the intensity of each use. Uses which are compatible or even mutually beneficial at lower intensities become less compatible at higher use intensities. When incompatible uses are proposed for the same area, decisions will have to be made about which use or uses should predominate. In the interest of maintaining a diversity of uses of natural resources provisions should be made to allow a place for each socially desirable use.

The uplands inventory (p. 76-81) describes a means of selecting which (if any) of the broad use categories; forestry, agriculture and recreation should predominate on different types of uplands. In addition, each resource inventory gives an analysis of preference of uses based on resource impact. The Beaches and Dunes Inventory and the Visual Resource Analysis show compatibility ratings for several uses. The major determinants in providing for multiple uses will be the impacts, compatibilities and desired intensities of the several uses.

3. Establishing Scientific and Natural Areas

Policy Statement

State and local units of government, in cooperation with the federal government and the private sector, shall:

- a. acquire, designate or otherwise establish scientific and natural areas, not to exceed more than one percent of the total coastal area for any one major ecosystem type;¹*
- b. maintain the established areas in a condition suitable for developing the baseline data needed to evaluate the effects of use and management of similar areas;*

¹On May 31st, 1974, the Environment, Conservation, and Economic Concerns Advisory Committee made the following recommendation to the Commission:

"That OCC&DC adopt a policy, and recommend to the Legislature that they implement said policy, to preserve some areas representing specific coastal ecosystems. Such areas (inter-tidal, estuarine, sloughs, dunes, marshlands, bogs, unique soil and geological formations, and others to be further defined) shall be preserved in their natural condition in order to provide baseline data by which to evaluate the effect of man's activities on similar areas."

The ecosystems in the coastal zone needing representation have been further defined and identified in the preliminary draft of Research Natural Area Needs in the Northwest - A Contribution to Land Use Planning, by the Pacific Northwest Forest and Range Experiment Station, U.S. Department of Agriculture, Portland. This document outlines a minimal Research Natural Area system needed to provide adequate field laboratories for ecological, environmental, and land management research.

- c. *develop and adopt methods, guidelines, and criteria for the preservation and management of scientific and natural areas and include these considerations within the comprehensive planning process;² and*
- d. *develop a net social benefit cost analysis for each proposed scientific and natural area to demonstrate that such a designation is in the public's best interest.*

Necessary Actions

1. *The state and local units of government, in cooperation with the federal government and the private sector, shall:*
 - a. *continue the process of inventorying the coastal zone to identify and describe potential scientific and natural areas; and³*

²The method chosen to protect a specific area should be determined by: (1) an analysis of the location, extent and characteristics of the natural feature to be protected; (2) the compatibility of various uses (either existing or potential) of the area; (3) the compatibility of surrounding uses; (4) the relative importance of the areas values and potentials in fulfilling the intent of the preserves system; and (5) the levels of management capability existing in government and the private sector. Potential methods include, but may not be limited to: acquisition of fee or interest, establishment of use limitations, dedication, registration, and integrated land and water use management.

³Both the Nature Conservancy and the State Natural Area Preserves Advisory Committee have recently initiated inventory work in the coastal zone. The Nature Conservancy has completed an inventory of Clatsop County and the NAPAC has conducted a survey of state-owned lands throughout the coastal zone. The completion of an inventory of coast-wide application could be facilitated by using the information OCC&DC has collected in regards to other resource inventories. However, because of the field checking, level of detail and documentation necessary to identify and describe a potential area much more work needs to be completed.

Background

Scientific and natural areas, depending on their purposes for designation, intended uses, and level of management, contribute to general resource management and environmental quality programs through the:

- (1) provision of sites for collecting baseline data and monitoring changes;
- (2) maintenance of the diversity of natural systems;
- (3) preservation of stocks of plants and animals, including those that are threatened or endangered; and
- (4) provision of opportunities for scientific research and education.

In the coastal zone, the interactions of the land, air, and waters with plant and animal life forms have resulted in a diverse number of ecosystem types such as salt marshes, bogs, estuaries, forests, etc. Because of man's activities, ecosystems have been and continue to be altered or modified from their pre-existing condition. In some cases they may be eliminated entirely.

An adequate system of ecosystem preserves would serve to maintain the number and kinds of ecological communities by assuring the continued existence of representative samples of the various ecosystem types. Such areas provide the opportunity to develop an understanding of the ecological processes of a broad range of communities through research and monitoring.

Detailed descriptive and experimental studies could establish baseline data which enables the comparison of natural and man-manipulated systems. Information regarding ecological processes provides the resource manager and decision maker with the knowledge necessary for developing alternative plans for timber and agricultural production, aquatic and wildlife management, water yield and quality, etc. In addition, these areas provide monitoring locations for the measurement of levels of pollutants which may build up in the soil, water, and living organisms; and which, eventually may enter food-chains with the possibility of contaminating human food sources.

Natural areas act as reservoirs for plant and animal stocks. This is important not only to preserve the genetic stock of species that are threatened or endangered, but also, to assure a source of wild species of potential value to man for food, materials, and medicinal substances.

Finally, these areas act as outdoor laboratories for the training of natural scientists and biologists who need to observe natural communities under undisturbed conditions in order to interpret both the beneficial and detrimental changes of the environment.

Additionally, such areas also stimulate public appreciation and understanding of natural phenomena when nondestructive activities are permitted or interpretive displays, signs, and programs are provided.

The role of scientific and natural areas may be identified by the way in which they would contribute to the coastal zone management program. Through the development of baseline ecological measurements, scientific and natural areas serve as experimental controls to determine change and to identify how other similar resource areas may be managed. This basic informational purpose relates directly to:

- (1) the adopted objective of the Commission to revise and improve the management program as experience with and knowledge of the coastal zone increases;
- (2) the Commission's adopted policies; and
- (3) the system of preferences required by OCC&DC's legislation to resolve conflicting uses of the natural resources.

Information is a contributing link in the decision making processes of management. Its function is to provide a factual base for decision making and for understanding and evaluating the consequences of management actions. The Commission's objective of a responsive management program implicitly recognizes the need for increased knowledge. A representative system of scientific and natural areas provides the means through which resource functions and values may be identified and the success of management actions may be judged and further refined.

This basic role relates in more detailed manner when considering the policies and the system of preferences. The approved Phase II policies have attempted to reflect the beneficial and adverse consequences, of their application, to the economy and environment. Also, many of the policies call for the development and application of guidelines and criteria regarding the use of specific resources. The baseline information provided by scientific and natural areas would facilitate the development of guidelines and criteria and provide the means to judge their sufficiency when applied.⁵

⁵Because a system of scientific and natural areas would be representative of coastal ecosystems, this process could be carried out for the relevant policies and specific resource situations.

The system of preferences suggested to the Commission attempts to provide the structure and basic criteria for choosing among alternative land uses by specifying a relationship between the use to which a site (or resource) might be put and the social values society derives from that use. The Commission has indicated what characteristics should be considered in making such a decision and these include economic, ecologic, cultural, historical, aesthetic and recreational values. Again, a system of scientific and natural areas would play a role in aiding the definition of ecological values. And, because the system of preferences calls for detailed information and a provision for updating it, such a system would provide continuity in the development of ecological information.

⁶Because of the complexity of ecological processes and the scientific methods used to develop valid information, areas used for research purposes are generally assured a level of protection that makes thorough investigation, over time, possible.

4. Protecting the Visual Attractiveness of the Coast

Policy Statement

State and local governments shall protect, maintain and enhance the visual attractiveness and character of the Oregon coast in such a way as to maximize the net social benefits.

Necessary Actions

- 1. State and local governments, in cooperation with the private sector, shall identify and designate open space, scenic vistas and scenic corridors in comprehensive plans with particular attention within areas of exceptional or strong visual association with coastal processes.*¹

¹The OCC&DC Visual Resource Analysis provides the framework upon which further identification and analysis of the visual attractiveness and character of the coast can be developed. Local knowledge and concerns about these values and inputs from other studies (and the appropriate state agencies) are needed to develop a more detailed level of information for use in land use decision-making processes at both the local and state level.

The OCC&DC inventory presents a visual evaluation system with five "image region" classifications based on the extent to which the landscape evokes a coastal related experience. Those areas where the association with the ocean is stronger were regarded as being more dynamic and more significant to the visual experience of the coast. Therefore, the areas identified in the inventory as image regions with exceptional or strong coastal associations (Special Image Region and Image Region 1) require special management consideration because their value to the visual experience of the Oregon coast is of greater than local significance.

2. State government, in cooperation with local units of government and the private sector, shall develop planning criteria² for protection of visual values and shall require that these criteria be considered in local comprehensive planning as well as in state agency programs.
3. State government, in cooperation with local units of government and the private sector, shall establish criteria³ for evaluating the impact of development proposals on the visual quality and character in areas of exceptional or strong visual association with coastal processes. An evaluation of the net social benefits should be included as one of the criteria.
4. State governments shall compensate any private owner for land designated as open space, scenic vistas or scenic corridors.
5. State and federal agencies shall cooperate and comply with the OCC&DC recommended criteria concerning outdoor signs.

²Planning criteria would include guidelines and procedures to follow in identification and designation of open space, scenic vistas and scenic corridors in areas of exceptional or high visual significance. The landscape and feature classifications in the OCC&DC Visual Resource Analysis (pg. 43-53) provide basic information to the identification process which can be supplemented by local knowledge and other studies. Designation of these areas and sites requires assessment of their significance and can again refer to the OCC&DC inventory to begin. Because of the visual importance in these areas, state-wide concerns as well as those of local residents must be considered.

³In the case of management criteria, the guidelines and procedures would be directed toward the review of development proposals. The Recommendations section (pg. 73-75) and the description of landscape structure, processes and values for each landscape type in the Technical Appendix of the OCC&DC Visual Resource Analysis; and the policy and recommended actions for the protection of visual values represent initial steps toward the development of this criteria.

Recommended Actions

1. County governments should consider establishing a design review process⁴ to consider development proposals in areas of exceptional or high visual significance, and then should assure that this design review process is consistent with and incorporated into the system of preferences established for the coastal zone management program.
2. Local governments, in cooperation with the private sector, should review undeveloped open space areas and scenic vistas and designate certain ones for reservation.
3. State and local governments should identify and provide special protection to those historical and archaeological resources which contribute to the visual attractiveness and character of the coast. (Visual and Historical and Archaeological Inventories)
4. State and local governments should develop programs to encourage private maintenance and enhancement of the visual attractiveness and character of the coast, particularly in open space areas.
5. State and local governments should remove or cause to be removed abandoned and dilapidated structures when they are found to detract from the visual and cultural character of the landscape, unless it is demonstrated that the net social benefits of removing the structures are less than the net social benefits of not removing the structures.
6. State and local governments should control outdoor advertising signs in non-urban areas and should regulate all signs to protect the visual attractiveness and character of the Oregon coast.
7. State governments in cooperation with local government should develop public education programs which interpret the natural environment and cultural heritage of the coastal landscape to encourage greater understanding of its visual character and values.

⁴The county design review board should be made up of people knowledgeable in community goals, aesthetics, history and professional designers (i.e., architects, landscape architects, engineers). One member of each county board would sit on a coast-wide design review board and assist the state in review of development proposals which are of greater than local significance.

Background

Every natural resource and functional category being considered in the management of the Oregon coastal zone has visual implications. The quality and character of the visual experience in the coastal environment affects and is a concern to both residents and visitors, but management is complicated because perceptions about and recognition of these values vary greatly.

The visual attractiveness and character of the coastal landscape is not an optional amenity. Protection, maintenance and enhancement of visual values in the natural landscape and in historic, recent and proposed development has a profound effect on the quality of daily life for those who live and work on the coast. Because the coastal economy and lifestyle have been traditionally and remains highly resource-dependent,⁵ the natural and cultural landscape reflects the heritage and values of coastal people.

The OCC&DC Visual Resource Analysis examines and documents the range and quality of visual experience generated by the landscape⁶ of the Oregon coast; the inventory begins to probe the issues of development and other human activity in relation to the protection, maintenance and enhancement of potential for visual experience. Based on the visual characteristics and values of the various landscape types, the inventory recommends management considerations for each landscape type and classifies them into 5 image regions. These

⁵ Logging, fishing, shipping, and agriculture related activities are the primary industries on the coast; their influence has helped to shape the coastal landscape and, therefore, contributes significantly to the diversity and richness of potential for visual experience.

⁶ The inventory describes, analyzes, and evaluates the coastal landscape and recommends management considerations based on visual characteristics and values. Coastal landscapes are separated into three categories:

- (1) those which are either too small, too frequent, or too dynamic inventory;
- (2) those which are small in size but are highly important to experiencing the coast were identified as features; and
- (3) those of sufficient extent were delineated as representative landscape types.

The features include: lighthouses, coves, arch rocks, sea cliffs, important vegetation (e.g., Darlingtonia bogs), offshore rocks, shipwrecks, streams crossing beaches, jetties and harbors; twenty-six landscapes designated included: coastal lakes, headlands, terraces, sand areas, pastoral areas, estuaries, and uplands, gently rolling and bottom lands.

image regions range from those with strong and obvious associations with the ocean or coastal processes to those which are only weakly associated and there is a special category for those areas with exceptional potential for visual experience.⁷

The landscapes of the Oregon coast are diverse, ranging from expansive stretches of sandy beaches to heavily timbered uplands, but those landscapes which evidence the dynamic and unique character of the interface between land and the ocean hold a special fascination. The variety of opportunities for experience gain importance from the expressive and tenuous relationships which exist at the coastal edge. These experiences are heightened further by the cyclic and unpredictable nature of the ocean and climate. Even though a coastal lake may be very beautiful, its visual significance is surpassed by the uniquely coastal character of a dune lake which is surrounded or blocked by a ridge of open sand. Similarly, historic features such as lighthouses and old bay front communities express this strong sense of coastal experience.

The public interest in protection of the visual attractiveness and character of the state is evidenced by the efforts of the Travel Information Council,⁸ the Scenic Areas Board,⁹ the state parks and

⁷The special image category occasionally includes landscapes with less obvious or weak associations to the coast whose protection is essential because they strongly influence and support a more visually significant area.

⁸The Travel Information Council is authorized to control on-premise signs outside incorporated cities and to provide for motorist information signs on highway right-of-way, rest areas and sign plazas. No new signs are allowed along interstate highways except in commercial and industrial zones. To date the state has spent \$4.2 million in order to remove existing signs and erect "logo boards" (i.e., signs that inform the public of the location of various services such as camping, gas stations, restaurants, etc. in a less obtrusive manner). Although these efforts have been largely focused on Interstate 5, Highway 101 is also a high priority. Travel information centers financed by various commercial interests will also be erected to inform the public and eliminate the need for outdoor advertising signs.

⁹The 1961 Legislature created the Scenic Area Board to establish scenic areas adjacent to or along public highways. The designated scenic areas include segments of highway within state and federal parks, and sites of historical significance or unusual natural beauty and once designated no new sign permits can be issued. Many scenic roadway corridors in the coastal zone have already been identified by this process.

scenic waterway programs,¹⁰ and the Oregon Bottle Law which gained its initial popularity as anti-litter legislation. The statewide concern for the coast generated the Oregon Beach Law which affirms the public right to use of the beaches and cites the public need for aesthetic surroundings and natural scenic and recreational resources. More recently, the public outcry for protection of Cape Kiwanda reaffirms the significance of the visual quality of the coast to the state as well as local residents, especially in those areas with strong coastal associations.

The number and popularity of state parks and waysides, county and city parks and the recreational opportunities provided on federal lands evidence the importance of outdoor recreation on the coast (OCC&DC Uplands Inventory). Because much of the recreation on the coast is resource-oriented, visual amenities often contribute significantly to the quality and diversity of experience available to the recreationist. Good recreational opportunities and the protection of visual amenities are linked, both are essential to the quality of life for coastal residents and to tourists and second home owners who generally experience the coast as recreationists.

Uses which conflict significantly with the visual character and values of the landscape can threaten the health, safety, comfort and general welfare of the local community and generate a negative overall effect on the region. The intent of this policy is to protect adjacent property owners and the public from injury, not to restrict creativity or self-expression. Inappropriate development or use reduces the potential for appropriate use in the surrounding area by damaging property values, discouraging maintenance and unbalancing the relationship between the taxable value of real property and the cost of public services (e.g., sewer and water service).

Existing and proposed controls upon use of coastal resources already provide some degree of protection for visual amenities, but only as a secondary effect. These controls include air and water quality protection, regulation of objectionable smells and noise levels, minimization of disturbance of vegetation and landform, and preservation of wildlife and aquatic life habitat. Cultural, recreational, educational and scientific opportunities also affect the quality and character of the visual experience. However, at present, there is no integrated or comprehensive approach being made toward protection of coastal visual values.

¹⁰The Scenic Waterways System in the state includes approximately 72 miles of the Rogue River with a significant section within the boundaries of the coastal zone. The Nehalem River, whose entire watershed is in the coastal zone, is under consideration for scenic waterway status; studies will be made to determine its suitability.

Recognition of visual values is needed in planning and resource management throughout the coastal zone. By designating open space, scenic vistas and scenic corridors especially in those areas with the greatest visual significance and evaluating the visual impact upon them by proposed development or uses, social, economic and environmental costs can be minimized. Through this designation and evaluation process the public interest can be defined and protected more successfully. Criteria are needed to assist decision makers in analysis of the impact of development on visual values. These criteria should allow for the variability in the quality and character of potential visual experience on the coast.

Because of the difficulty in setting standards for protection of visual values, many areas in the country¹¹ have established design review boards to consider proposed development or uses. In Oregon, the cities of Gresham and Beaverton have design review boards and many other jurisdictions have special ordinances and review procedures for planned unit developments, signs and other uses. Guided by visual impact evaluation criteria, a coastal design review process would allow greater protection of visual values and greater flexibility and a more equitable response to individual proposals than other management techniques.

¹¹Notable examples on the west coast include King County, Washington and the design review process proposed by the California Coastal Commission.

5. Historical and Archaeological Resources in the Planning Process

Policy Statement

State and local governments shall protect historical and archaeological resources through the following process:

- a. National Register and other appropriate sites and areas, identified in the OCC&DC Historical and Archaeological Resources Inventory,¹ shall be incorporated into comprehensive plans; and*
- b. State and local governments shall assure that development within or near those historical and archaeological sites and areas that are incorporated into comprehensive plans is avoided, or that where development is allowed, special restrictions (appropriate to the extent, characteristics, and relative importance of the site) are established to maintain or enhance the historical and archaeological values of the sites and areas.*

¹The OCC&DC Historical and Archaeological Resources Inventory identifies the location, characteristics and relative significance of 304 sites in the coastal zone. Five of these are designated sites within the National Register of Historic Landmarks. These sites must be acknowledged by state and local governments in planning any project which involves federal funds of licensing in the National Register site area. Other sites are identified as being of national significance, although they are not included in the National Register. Remaining sites are identified according to levels of significance as well. The classification system in the inventory includes:

- a. National Register sites;
- b. districts and areas with a large number of sites of national and state significance;
- c. areas with a large number of sites of state and county significance;
- d. all other sites predominantly of concern to the county and city; and
- e. highly significant resource types scattered along the coast (e.g., lighthouses).

Necessary Action

Prior to proceeding with any archaeological digging (in an Indian site) written permission shall be received from tribal descendants, if any, and county governments and a hearing shall be held to identify concerns.

Recommended Actions

1. State government should establish a system for the protection of historical and archaeological resources through the coordination of planning and management activities conducted by state and federal agencies, local units of government, and private citizens and organizations.
2. State government should continue to maintain and develop a historical and archaeological inventory of the Oregon coastal zone, with particular attention to initiating a comprehensive archaeological survey. Local and federal governments, historical and archaeological societies, college and private efforts should be informed of the inventory and encouraged to expand the state files.
3. State and local governments should use discretion in the use and distribution of the OCC&DC Historical and Archaeological Resources Inventory to protect the sites and the property owner from harassment, vandalism, and theft.
4. State and local governments should review existing state building codes, taxing policies, and other laws and enforcement policies which affect historical and archaeological resources and propose reasonable adjustments and new legislation to provide more complete protection to these resources (such as that which is provided under federal law).
5. State and local governments should not allow excavation or removal of materials of a historical or archaeological nature unless by qualified persons² or groups with professional guidance.
6. State and local governments and private efforts should seek and use all funds potentially available (from state, federal, and private sources) for surveys, planning, management, acquisition and development of historical and archaeological resources.

²Archaeologists and historians.

7. State and local governments and private efforts should be coordinated to identify, prioritize, and reserve historical and archaeological sites which are particularly suited for anthropological, historical or scientific study, especially those which are easily accessible to education or recreational facilities or already in public ownership. Appropriate use alternatives should be recommended for those sites which are not considered a high priority for reservation.
8. State and local governments and private efforts should formulate a priority for historical and archaeological resources which are threatened by development and determine whether reservation is practicable for these areas.
9. State and local governments and private efforts should be coordinated to develop educational and interpretative programs to foster public recognition, understanding, and appreciation of historical and archaeological resources.

Background

Protection of historical and archaeological resources is in the public interest because these features reflect the diversity and richness of the human experience on the Oregon coast, and provide opportunities for cultural, educational, scientific, and esthetic experiences for all Oregonians. Management of these resources is complicated by the diversity of types, which include Indian middens, natural landmarks, bridges, lighthouses, historic buildings, and sites of significant past occurrences. These are identified and described in the OCC&DC Inventory of Historical and Archaeological Resources in the coastal zone.

Alteration, destruction, and disturbance of historical and archaeological resources is a process which is diminishing the heritage of the Oregon coastal zone. One of the most serious problems is the lack of a comprehensive archaeological survey of the coast. The Oregon Archaeology Society estimates that within 10 to 25 years, virtually all archaeological sites will have vanished unless they are further protected. The State Antiquities Act is not adequate to protect Indian occupation sites from degradation by artifact hunters, according to the Society. The Act deals only with removal of artifacts, and not with disturbance of sites, and provides protection only for sites located on state-owned land. There is no supervisory agency to deal with provisions of the Act, and present funding is set at only \$3,000 per year for archaeological research and preservation state-wide. In addition, there is a need to contact the descendants of the coastal Indians prior to archaeological work to ensure that it is conducted in a manner satisfactory to them and that the artifacts are shared with the local area. Historical sites are being lost

through neglect, incompatible development, and a lack of funds for maintenance and acquisition. A basic problem is the lack of identification and understanding of historical and archaeological resources.

A statewide system is needed for collection, storage and retrieval, and distribution of historical and archaeological information to coordinate the efforts of federal, state, and local agencies as well as private groups in protection of these resources. Discretion must be used in dissemination of this information to avoid additional threats to the property or property owner. Building codes and taxing policies must be redirected so that they do not unwillingly create constraints upon protection of historical and archaeological resources.

The Oregon coast is a microcosm of the influences and events which shaped the Northwest; the diversity and richness of the prehistoric and historic past offer a wide variety of opportunities for interpretative work and exhibits.

6. Managing Urban Growth

Policy Statement

Local government shall restrict urban uses to designated urban growth areas.

Necessary Action

Local government shall designate urban growth areas in comprehensive plans based on a process that evaluates the following factors according to the criterion of maximum social benefits:

- a. Social and economic factors including but not limited to projected increases in population and demand for developable land.*
- b. Physical factors including but not limited to topography, soils, drainage, and physical obstacles.*
- c. Natural resource factors including but not limited to the protection of fish and wildlife habitats, productive agricultural or forest land, air and water quality and aesthetics.*
- d. Public service factors including but not limited to the availability of water and sewerage services and transportation facilities.*
- e. Use factors including but not limited to existing land use and ownership.*
- f. The locally adopted growth policy which expresses the desired rate and direction of urban growth.¹*

¹The OCC&DC Inventory of Development Pressures uses a process that includes physical, governmental, and use factors. With this study as well as other OCC&DC resource inventories (e.g., Fish and Wildlife, Visual, Estuaries and Wetlands) and the OCC&DC Economic Survey and Analysis, local units of government can begin to identify urban growth areas — areas where urban uses should be allowed. Local elected officials should use the factors a through e to develop a policy establishing the desired rate and direction of urban growth. With the guidance of this policy, the information obtained from evaluating the various factors could be used to designate urban growth areas within the comprehensive plans.

Recommended Actions

1. Local governments should identify lands suitable and environmentally acceptable for industrial and commercial uses, including economically viable mineral, rock, and petroleum resource removal, and should conserve sufficient quantities of this land to allow for location of new or expansion of existing industrial and commercial uses.
2. Local government should disapprove residential developments proposed for areas identified as best suited for other than residential use unless the developer demonstrates that the net social benefits justify the residential development.
3. Local government should control the development of commercial, recreational, and industrial uses along primary highways to the extent necessary to allow for efficient provision of transportation, water, and sewer services, and to retain visually attractive roadside scenery.
4. Local government should prohibit strip or dispersed development unless it is demonstrated that the net social benefits associated with clustering of structures, separated by preserved open space, are less than the net social benefits generated by continuation of scattered development practices.

Background

Early in the OCC&DC policy development process the lack of urban growth management was identified as a problem which the OCC&DC should address. The concept of urban growth management does not refer only to local control of urban development but to the management of a regional and state resource-developable land. It is recognized that the economic and social needs of the coastal zone depend upon an adequate supply of developable land. At the same time it is apparent that other resources such as agricultural and forest lands and wildlife habitats have to be protected from incompatible urban development.² To provide for management of urban growth the policy suggests a process that first identifies land areas best suited for urban uses and then maintains these areas for urban uses.

²Nearly all of the OCC&DC resource inventories and many of the Commission's policies identify the need to control urban type development to conserve coastal natural resources.

The OCC&DC Inventory of Development Pressures represents one of the necessary steps in identifying urban growth areas. However, it is only one step. Demand for developable land, natural resource considerations, and the needs and desires of respective urban communities must also be evaluated and included in the identification process. Once identified, these land areas can be managed to provide for the most efficient and environmentally acceptable use of the land.

Areas designated for urban growth should be flexible so that as experience with and knowledge of the coastal zone increases, the boundaries can be revised to accommodate necessary growth.

7: Requiring Water Supply and Sewage Disposal for Development

Policy Statements

1. *The issuance of building permits shall be contingent upon proof from the builder that safe and adequate water supply and approved sewage disposal methods are available for the building site.*
2. *Permit granting agencies shall allow developments which require the use of water distribution and sewage collection systems (for the supply and treatment of water and sewage) only in designated urban growth areas where these services are available or will be made available concurrently with construction.*

Necessary Action

State government in cooperation with units of local government shall develop criteria for evaluating the safety and adequacy of water supplies.

Background

Water supply and sewage disposal are essential requirements for development. At present the new statewide building permit system under the Department of Commerce does not require evidence of waste disposal or water supply capabilities. Each coastal county except Coos County requires approval of subsurface disposal for issuance of building permits. The Coos County subsurface disposal program is being carried out by the Department of Environmental Quality and is not tied directly to the building permit system. Only a few counties also require approval of water supply before issuance of permits. The state has a mandated responsibility to assure safe water supplies and to protect water resources from contamination, however, no uniform criteria for determining adequate and safe private water supplies have been established.

The OCC&DC freshwater inventory characterizes the majority of the coastal zone as having limited groundwater supplies both from the standpoint of quantity and quality. The major quality problems are dissolved mineral content especially iron, high acidity, decomposed vegetation and contamination from inadequate sewage treatment. Areas with productive and good quality groundwater supplies occur in the sand dune areas and in the alluvial ground along main rivers. A person building on the coast under the assumption that water will

be available may find that a supply can only be provided at very high cost. This policy is directed at protecting the public from construction that cannot be adequately serviced.

The OCC&DC report on Identification of Areas Suitable for Urbanization states "Water and sewerage service inadequacies were identified in 93 (77%) and 97 (80%) of the 121 subareas, respectively". Higher density developments require collection, distribution and treatment systems for water supply and sewage disposal. These services represent a significant public investment. Allowing high density development to precede water and sewer systems leads to nonorderly development and urban sprawl with excessive public costs and inefficient systems. This policy would alleviate that problem by requiring development to occur within designated areas having such systems or in areas where planned growth will be accompanied by necessary capital investment.

8. Evaluating Development Proposals

Policy Statement

The local evaluation of proposed residential, commercial, industrial and recreational development in the coastal zone shall be based in part on the following factors:

- a. the compatibility of the proposed use with existing and planned uses of the site and the surrounding area;
- b. the physical suitability and limitations of the proposed site;
- c. the demand for and availability of adequate public services including: water, sewage disposal, schools, police, fire protection and open space;
- d. the demand for parking and commodity-storage areas on the development site; and
- e. the adequacy of transportation access and linkage to transportation facilities and availability of alternate means of transportation.

Background

Resource specialist identified a need to provide some consistency in evaluating development proposals to protect the public interest. This policy describes some of the basic elements of public concern in land use planning and decision making.

Item (a) reaffirms the importance of consulting comprehensive plans which contain the expressed desires of the community in land use. Item (b) refers to physical factors which often place constraints on development. Those physical factors include slopes, soils, drainage, flood hazards and geological hazards. These factors should be evaluated in order to prevent development that will cause excessive public costs. Item (c) refers to the demand for public service that accompanies most urban development. The local government should consider the added burden a development will place on the community and determine whether the benefits of the development

justify additional costs (if any) to the community.¹ Specific requirements for water and sewage approval were made in the preceding policy. Larger developments often demand substantial parking and storage areas (Item (d)). If adequate space is not allotted for parking and storage, undue pressure may be placed on neighboring uses resulting in conflicts. Item (e) transportation linkages and access is also important in larger developments. If the access to a development site is inadequate for the anticipated demand or if traffic would disrupt existing land uses, the additional public cost of providing adequate transportation for development should be considered.

¹Recent Oregon case studies have been completed determining actual monetary costs and benefits of additional development to local government. See Pattie, Preston, Impacts of Urban Growth on Local Government Costs and Revenues, OSU Extension Service, Special Report 423, November, 1974.

9. Requiring Maintenance of Vegetative Cover

Policy Statement

The appropriate authority shall require developers to minimize the disturbance of vegetative cover during development and shall require developers to re-establish an acceptable cover for all exposed earth within a period of time specified by the authority.

Background

Development, of necessity, requires the removal of vegetative cover for both construction and access to the construction site. There are several examples on the coast where clearing of vegetation has occurred far in advance of construction. In other cases, large land areas have remained exposed for long periods following construction.

The rate of wind and water erosion from exposed earth is far greater than the rate from vegetated land. Eroded material often finds its way into water bodies, creating excessive sediment loads. Sediments have major adverse impact on estuaries, freshwater and inland marsh habitat.¹ Lack of vegetative cover aggravates problems of slope instability. Excessive vegetation removal also detracts from scenic and wildlife habitat values.

¹OCC&DC, Fish and Wildlife Resources of the Oregon Coastal Zone.

10. Evaluating Geologic Hazards in the Comprehensive Planning Process

Policy Statement

State and local governments shall assure that development in geologically hazardous areas is avoided, or that special limitations to protect life and property are established for development allowed in these areas.

Necessary Actions

- 1. Local governments shall adopt and implement a geologic hazards element of the comprehensive plan which includes an identification of the geologic hazards that exist within the unit's jurisdiction, and the limitations on the use of these hazard areas.*
- 2. State government, in cooperation with local governments, shall develop planning criteria (policies and procedures) for geologic hazards and shall require that these criteria be included in the geologic hazard element of local comprehensive plans.*

Recommended Actions

1. In developing comprehensive plans for geologically hazardous areas, local governments should evaluate the degree of hazard present and designate uses which in their sum total effect will not exceed the short- or long-term limitations of the areas.¹
2. In developing comprehensive plans for floodplain areas, state and local governments should:

¹Engineering solutions may allow a wide range of activities in most cases.

- a. consider both structural and non-structural alternatives for reducing flood damage;²
- b. designate low-density uses (as appropriate in the floodway and floodway fringe areas) which are subject to least loss of life and property damage due to flooding, such as forestry, agriculture, recreation (e.g., golf courses and public hunting);
- c. prohibit public facilities (such as buildings, roads, highways, or sanitary systems) that would increase the propensity of individuals and private or public organizations to initiate or continue uses that would exceed the limitations established for the floodplain areas unless specific steps are taken in the provision of the public facilities to avoid such effects;
- d. conserve for public or private recreational development those areas within floodplains that have been identified as having exceptional recreational potential (in preference to other areas of comparable recreational potential); and
- e. reserve an unrestricted floodway for passage of major floods.

Background

The OCC&DC Geologic Hazards Inventory records 22 types of geologic hazards in the coastal zone. Reports published by Oregon's Department of Geology and State Water Resources Board document loss of life and property resulting from inappropriate development in and near these areas. Flooding is an annual, and particularly serious problem in the coastal zone, because of the potential coincidence of heavy runoff, ocean storms and high tides. The State Water Resources Board reports that flood damages in seven of the major coastal drainages have a total average of about 3½ million dollars a year. In addition, the geologic hazards inventory documents severe hazards from ground movement, coastal and stream erosion, and tsunamis. To date, there has not been a consistent response of government to these problems. Although some cities and

²The State Water Resources Board recommends the adoption of floodplain management programs which combine regulatory controls, watershed treatment and protective structures. The Department of Geology bulletins regarding the coastal zone suggest that protective structures are not appropriate in many coastal areas, except that some diking may be beneficial in lower tidal areas.

counties have adopted policies regarding flooding and local erosion hazards, a need for direct and coordinated action is apparent.³ The majority of land use decisions in areas of geological hazards are now and will continue to be, made by local government. City and county officials increasingly are recognizing the need for management of these areas.⁴ The State of Oregon also has a direct interest in certain geologic hazard concerns, but there is at present inadequate coordination of state and local efforts to prevent or reduce loss of life and property in geologically hazardous areas.⁵

State government should develop planning criteria (policies and procedures) for geologic hazards and should require that these criteria be included in the geologic hazard element of local comprehensive plans.

³See "Existing Statutory and Adopted Policies", Floodplain Management and Geological Hazards (OCC&DC Phase I Policies); and, OCC&DC Development Pressures and Status of Planning Inventory for local policies and controls.

⁴See OCC&DC Geologic Hazards Inventory; also, each coastal county is in the process of applying or qualifying for eligibility in the National Flood Insurance Program. The influence of the "Sheffert Decision" of the Los Angeles Superior Court might also affect local government in Oregon. In this decision, the County was held to be responsible for damages resulting from a landslide, because it had issued a building permit in a hazardous area.

⁵The State has the responsibility to assure adequacy of planning, and to regulate activities and areas of state-wide significance.

11. Providing Information on Geologic Hazards

Policy Statement

State and local governments shall make readily available information concerning the location, type and characteristics of geologic hazards.

Recommended Actions

1. The Oregon Department of Geology and Mineral Industries, in cooperation with federal and local governments, should complete geologic hazard investigations of western Douglas, Coos and Curry Counties, and make findings of these studies available to the general public.
2. Local governments in the coastal zone should (through the planning commission and the assessor's office) provide information on identified geologic hazards within their jurisdictions to the general public.
3. Deeds for property located within areas identified as geologic hazards should include a statement that the area has been identified as hazardous, and a reference for more detailed information.¹
4. For those transactions involving land in which geologic hazards exist, the Real Estate Division should require disclosure of the existence and nature of such geologic hazards to be included in land sales reports.

Background

Lack of information on the location, extent, and nature of geologic hazards has resulted in loss of life, damage to property, and financial losses to unwary purchasers of property. Inadequate information regarding the magnitude of given hazards could lead to

¹Some states require such disclosure for subdivision plats and other transactions. A Michigan law requires:
"When any part of a subdivision lies within or abuts a floodplain area, the plat shall include and show...the floodplain with a contour line...and the area shall be clearly labeled on the plat with the words 'floodplain area'." (No. 288, 1967, Mich. Pub. & Loc. Acts 489)

overreactions and an unnecessary restriction of growth and development.² The necessity for adequate reconnaissance studies of geologic hazards to support local and regional planning has been recognized, and several of these investigations have been completed. It is important that geological hazard studies for the remainder of the coastal zone be completed, and that information regarding the location, nature, and severity of these hazards be widely distributed within the coastal zone. In this way, development pressures on hazard areas by a public unfamiliar with the risks or restrictions associated with these areas will be lessened.

²OCC&DC, Geologic Hazards Inventory

12. Regulating Uses in Geologic Hazard Areas

Policy Statement

- A. *State and local governments shall base, in part, approval or disapproval of development in identified geologically hazardous areas¹ upon a geologic and soils report, provided by the applicant and prepared by a qualified² geologist, engineering geologist, soil scientist or civil engineer. The report shall include an evaluation of the potential geologic problems and the capability of the site to support the proposed development without endangering life, property and environment.*
- B. *Local governments shall disapprove development proposals which will exceed the geologic hazard limitations of the site³ unless the applicant agrees to safeguards recommended and certified by a qualified engineering geologist or civil engineer that adequately protect life, property and environment.*

Necessary Action

When development involving activities of statewide significance or other uses characterized by high densities or a major investment of public funds are proposed for areas in which there exist geologic hazards, then in addition to the regulations imposed by local governments, the State of Oregon shall assure public safety by reviewing, approving or disapproving the geologic evaluation of the project.

¹As identified in geologic hazard inventories of the coastal zone, with the exception of stream, ocean and tsunami hazard areas, which are treated in Policy 13.

²Oregon does not license geologists. A list of qualifications for those conducting site evaluations should be based on overall education, experience, and knowledge of the area being evaluated.

³In an area of identified geologic hazards.

Recommended Actions

1. State or local governments which review site evaluations in areas of geologic hazards shall state findings of fact which substantiate either the approval or disapproval of a development proposal.
2. State government should develop criteria for the geologic and soils reports that are used in evaluating development proposals in geologically hazardous areas.⁴
3. State government should develop a statement of qualifications for professional engineers and geologists to assist local governments and the public in selecting individuals to conduct evaluations of projects in geologically hazardous areas.
4. Local governments should not approve development of structures on the ocean front in areas identified as subject to "critical coastal erosion"⁵ unless a geologic or engineering investigation has determined that the structure has an adequate setback, in consideration of the rates of erosion and the possibility of extensive cliff failure.⁶ (Ocean front for purposes of this recommended action lies behind the vegetation line and outside the area covered by the Beach Program, ORS 390).

Background

Policies for geologically hazardous areas must be somewhat general. However, many uses and activities may take place in specific hazard areas depending on the types of hazards, the potential impacts of the hazards, the variation of impacts as a function of land use, and the types of engineering and planning solutions available. Although policies are designed in part to protect the public, they should not be based on overreactions arising from inadequate information regarding the magnitude of given hazards. Although

⁴Actual review is a local matter, except for developments of regional impact. The appropriate agency should consult with the Department of Geology and Mineral Industries to develop criteria for geologic and soils reports.

⁵On maps accompanying Department of Geology Bulletins 74, 79, 81 and 85.

⁶Approval also should not be dependent on construction of protective structures along the beach which would interfere with natural process.

general decisions (such as planning and zoning) require only generalized study, site-specific decisions - particularly those involving large or high-density developments - should be based on rigorous investigation.

13. Regulating Flood Hazard Areas

Policy Statement

State and local governments shall adopt and enforce the following specific regulations for known and designated flood hazard areas within the coastal zone:¹

- a. Developments housing restrained or incapacitated persons (hospitals, rest homes and jails) and emergency service structures (police and fire stations) shall be prohibited in floodplains;*
- b. Residential structures shall be prohibited in floodways and other structures and fills shall be permitted in floodways only if measures are taken to insure that there will be no increase in flood level, downstream erosion, or flood damage potential due to the development;²*
- c. Structural developments shall be permitted in flood fringe areas only if designed to safely provide floor elevations or flood proofing to a height above that of the 100-year flood;³ and*
- d. The coastal high hazard area⁴ shall be identified, and no land below the level of the 100-year flood in this area may be structurally developed unless the new construction or substantial improvement:*

¹As identified in the OCC&DC Geologic Hazards Inventory, these include stream, tidal and tsunami hazard areas.

²To be consistent with the National Flood Insurance Program, the concept of the floodway as applied here means that "the area chosen for the floodway must be designed to carry the waters of the 100-year flood, without increasing the water surface elevation of that flood more than 1 foot at any point". (Federal Regulations, Land Use 1910.3)

³The National Flood Insurance Program requires that residences in the floodway fringe must be elevated above the 100-year flood level; and, that other structural developments may be allowed if they are flood-proofed to the 100-year flood level. It is not considered feasible financially to floodproof residences.

⁴That area along the coast subject to ocean flooding from storms and high tides, as described in the OCC&DC Geologic Hazards Inventory. These areas will be delineated as part of investigations in local jurisdictions applying for eligibility in the National Flood Insurance Program.

- (1) *is located landward of the beach zone line as defined in ORS Chapter 390;*
 - (2) *is elevated on adequately anchored piles or columns to a lowest floor level above the 100-year flood level and securely anchored to such piles or columns; and*
 - (3) *has no basement and has the space below the lowest floor free of obstructions so that the impact of abnormally high tides or wind-driven water is minimized.*
- e. *Transportation facility developments that encroach on floodplains shall be designed to permit conveyance of the basic flood without causing significant change to the highway, the stream, body of water, or other property, in accordance with FHWA guidelines in Instructional Memorandum 20-1-67.*

Recommended Actions

1. Unless it is demonstrated that the net social benefits of the following actions are less than the net social benefits of inaction, then federal, state and local government should:
 - (a) remove, or cause to be removed, from floodways any natural or man-caused obstructions which threaten increased flood damage;
 - (b) evaluate the design of all developments proposed or constructed in floodplains with special emphasis on achieving the least adverse hydraulic effect considering expected regional flood levels and debris, and should base approval on the evaluation; and
 - (c) apply, or cause to be applied, floodproofing measures to existing facilities in order to reduce flood damage potential.
2. Cities and counties in the coastal zone having flooding or mudslide hazards within their jurisdictions should become eligible for the National Flood Insurance Program.

Background

Policy No. 10 addresses flooding hazards within the comprehensive planning process, and states the basic concepts of avoidance of or

safeguards for development in geologically hazardous areas. However, a specific policy for flooding hazard areas in the coastal zone is considered necessary because:

- (1) physical factors (including location, climate, and topography) make flooding hazards both more severe and more frequent in the coastal zone than in other regions of the State;
- (2) regulation of land uses (as included within the comprehensive planning process) is only one of several procedures considered necessary for sound floodplain management by the State Water Resources Board; and
- (3) all counties and several cities in the coastal zone are participating in the National Flood Insurance Program, which requires detailed procedures for management of flooding hazards.

Policy No. 10 requires evaluation of special hazard areas and the provision of safeguards for development proposed in these areas. This policy requires similar procedures for flooding hazard areas. However, this policy was not incorporated into Policy No. 10 because

" . . . the flood hazard at a particular site usually cannot be estimated by physical examination of the site. Relevant hazard indicators are often well-hidden and difficult to identify. . . . Flooding depends not only upon characteristics of the site and adjacent watercourses, but also upon runoff characteristics of the entire watershed."⁵

Flooding of the streams (in Clatsop and Tillamook Counties) is an annual winter occurrence and some streams may overflow their banks several times a year.⁶ Stream flooding is an annual problem in Lincoln County and often occurs more than once a year.⁷ The coastal streams (of Lane County) flood frequently and sometimes more than once in one year. Large damaging floods are less frequent but occur on an average of about every 5½ years. Flooding along the coast is caused by . . . large winter storms coming from the ocean, . . . immediate runoff because of steep canyons, short streams with high gradients, and because the underlying bedrock in most of the

⁵U.S. Water Resources Council, Regulation of Flood Hazard Areas to Reduce Flood Losses, Vol. I, Parts I-IV. Washington, D.C., Government Printing Office, 1971.

⁶Department of Geology, Bulletin 74.

⁷Department of Geology, Bulletin 81.

area is composed of impermeable sedimentary rocks. A major contributing factor to flooding is the effect of high tides generated by winter storms. Published tide tables do not consider the effect of wind, which can push a normal 6 or 7 foot tide to a height of 12 feet and more. When this occurs, the effects of the flood are extended greatly.⁸

Tsunamis (waves generated at sea by earthquakes or particularly violent volcanic activity) are an infrequent, but serious hazard. Damage along the Oregon coast from the 1964 Alaska earthquake amounted to \$700,000 and 4 drownings.⁹

⁸Department of Geology, Bulletin 85.

⁹OCC&DC, Geologic Hazards Inventory.

14. Conserving and Regulating Energy Resources

Policy Statement

State government in cooperation with federal and local governments shall conserve all energy resources, including nuclear, fossil fueled, hydroelectric, geothermal, wind, solar and other sources, through land use and resource planning and regulation, and shall develop criteria for regulation which maximizes net social benefits to this and succeeding generations of Oregonians.

Recommended Actions

1. State and local governments, within their legal jurisdictions, should develop site selection criteria (including landscaping, methods of development and the maximization of net social benefits) for all sources of energy generated in the coastal zone.
2. State and local governments should encourage use of renewable energy sources and recycling and resource recovery of renewable and non-renewable resources.

Background

The provision of energy has become a critical issue of national concern. Each state and unit of local government through its planning and development affects the consumption of energy resources. Major power generating sources almost always have a high social and ecological impact. State and local governments could, through regulations, influence the design and siting of energy generating facilities.

Department of Geology Bulletin 88

Geologic Hazards Inventory, 1980

15. Planning for Transportation Facilities

Policy Statement

State and local government shall estimate existing and future demand for highway, rail, trail, pedestrian, air, water, and mass transit facilities in state transportation plans and comprehensive plans for the coastal zone.

Recommended Actions

1. Transportation plans should provide for more than one mode of transportation, where applicable.
2. A compatible system of long-range hiking and bicycle trails, urban trails, and trails connecting population centers with recreation attractions should be planned for the coastal zone in cooperation with local, state and federal agencies and interested public groups.
3. Transportation plans should consider the demand for public transit facilities, including: continuous bus service along the coast, intra-urban transit for the non-driving population, commuter air and water service, and east-west bus and rail connections to recreation areas and key coastal communities.
4. State government should support improvements to water transportation, as outlined in the Oregon Coastal Ports Development Plan, which are environmentally acceptable and have a desirable benefit-cost ratio.

Background

Transportation facilities have a major impact on the location of urban development and recreational use of the coast. According to the Inventory of Development Pressures "the degree or level of accessibility can usually be directly related to the density of urban development". Coastal residents and recreation users have differing demands for transportation on the coast. Transportation plans must fit with state and local plans and policies. There is an increasing need to consider all modes of transportation when planning for the future. In any case an estimation of present and future demand for transportation facilities is essential for planning.

16. Evaluating Transportation Facility Proposals

Policy Statement

State and local government shall base decisions to construct or improve transportation facilities on the demand of the entire affected region as identified in state transportation plans and local comprehensive plans and on the projected impacts and costs of alternative designs and locations, including consideration of the desirability of making no change.

Recommended Action

Plans for construction or improvement of federal and state highways in the coastal zone should include consideration of the need for community by-pass routes and access control.

Background

Transportation facilities have major social and environmental impacts. Construction of transportation corridors and navigation improvements has high primary and secondary impacts on estuaries¹ and wetlands.² Road construction and maintenance is listed as having a major impact on all coastal zone fish and wildlife habitats.³ Transportation construction has destroyed some important archaeological sites which could have been avoided by allowing preconstruction excavation or other measures.

Proposed transportation development will often affect several units of government which may have differing transportation goals and demands. Each planning area involved should be consulted, so the overall best alternative can be selected.

¹OCC&DC, Estuarine Resources of the Oregon Coast.

²OCC&DC, Coastal Wetlands of the Oregon Coast.

³OCC&DC, Fish and Wildlife Resources of the Oregon Coastal Zone.

17. Locating Utility Lines

Policy Statement

State and local governments shall require that utility and communication structures be located on or adjacent to existing public or private rights of way, unless it is demonstrated that an alternative location would provide greater net social benefits and new facilities shall be designed and located consistent with land and water use plans.

Background

Utility and communication structure siting is of public concern both from the stand point of conserving land and minimizing visual impact. New facilities should be located in a way that will not interfere with or detract from planned uses of the land. Visual impact, though possibly separate from the use of existing rights of way, has become an issue in utility line siting. The Visual Resource Analysis evaluates the visual impact of utility lines in each of its designated landscape types.

18. Improving Employment Opportunities in the Coastal Zone

Policy Statement

The state through the Department of Economic Development shall make efforts to increase the number of year-round or winter season commercial, industrial and recreational employment opportunities which are compatible with the character of the coastal zone, as long as it is demonstrated that such efforts do not decrease per capita income or increase the rate of unemployment on the coast.

Background

The coastal economy is dominated by the resource oriented industries of forest products, agriculture, recreation and fishing. Each of those industries have substantially lower employment rates in the winter. The seasonality of employment is seen as causing social and economic problems in coastal communities. However, caution is essential in making efforts to stimulate the economy. Simply reducing the seasonality of employment or increasing the number of year-round jobs will not necessarily increase the economic welfare of coastal residents. For example, if the total demand for goods and services on the coast were to remain constant, then increasing the number of year-round jobs would come at the expense of seasonal jobs. The resulting interference with the private market could actually cause no improvement or even decrease the earnings on the coast. Even with no overall change in the average income, the coast would be worse off because of the added cost of supporting a program that didn't accomplish its goal.

The change in income and employment due to economic development programs is very difficult to predict. If the Department of Economic Development can increase the demand for coastal products, the likelihood that the economic well-being of the coast will improve is much greater.

19. Providing for Recreational Needs

Policy Statement

State and local governments shall plan for diverse opportunities for outdoor recreation to satisfy present and future demand for recreation in the coastal zone.

Necessary Actions

- 1. State government, in cooperation with local government, shall estimate the present and future demand for recreation in the coastal zone.*
- 2. State government, in cooperation with local government, shall establish criteria to be taken into account by local government in identifying areas having exceptional potential for recreational opportunities.¹*
- 3. Local government shall identify those areas that have exceptional potential for recreational opportunities taking into account state criteria including the physical capabilities and limitations of the areas and the identified recreational*

¹The OCC&DC inventory, Resource Analysis of Oregon's Coastal Uplands, identifies five classes of recreational resources in the coastal zone. The methodology used in the inventory provides initial criteria by which local governments can identify exceptional recreation areas. The classification process includes an evaluation of the physical "suitability" of the land to support recreational uses and the "significance" of the land in regard to irreplaceability or cultural value. Variables involved in the concept of "significance" include: recreation experience, visual impact, uniqueness of resource, proximity to water, variation of terrain, vegetation and view. Variables involved in the concept of suitability include: accessibility, degree of slope, ownership, proximity to public services and current or zoned use. Class 1 - recreational lands - unique and not replaceable; and Class 2 lands - having high significance and suitability - are considered to be "areas having exceptional potential for recreational opportunities".

demands, and shall designate those areas so identified in comprehensive plans for public or private recreational development.²

- 4. State and local governments shall encourage the private sector to develop recreational opportunities in preference to public facilities where economically feasible.*

Recommended Actions

1. In the planning, acquisition and development of areas for outdoor recreation, state and local governments should recognize the high recreational value of shorelands consistent with carrying capacity.
2. State and local governments and the private sector should coordinate planning and development of recreational opportunities.
3. State and local government and the private sector should include opportunities for education and interpretation of the unique natural and cultural resources of the coastal zone in the development of recreational sites.

Background

The OCC&DC Economic Survey and Analysis identifies the travel industry as the third largest employer on the coast and indicates that its importance to the coastal economy is increasing. A greater number of travelers, an increasing use of recreational facilities, greater amounts being spent per visitor and increasing

²The Recreation classification system described in the OCC&DC Uplands Inventory depicts a preliminary analysis of all lands in the coastal zone and a more extensive analysis of the state-owned lands. Land areas are not classified for their potential to support each type of recreational activity, but rather their capability to support recreation in general. The preliminary analysis provides a broad aerial or regional view and identifies areas that deserve closer attention. In order for local government to designate areas of recreation potential in comprehensive plans, two other steps must be taken. First, the best areas identified in the preliminary analysis must be looked at more closely to determine number and types of attractions. Second, a more detailed site analysis must be conducted to allow boundary lines to be drawn.

employment in the industry are all expected in the future.³ In order to maintain this industry's role in the coastal economy, it is necessary to provide sufficient recreational opportunities to meet the demand.

The coastal zone is a state and national recreational resource. Its climate, topography (variety of landforms and marine-land interfaces), ocean artifacts and cultural significance all contribute to a rare and valuable recreation environment. Much of the value from all coastal natural resources comes from existing and potential recreational uses.

There is a wide range of recreational activities that may take place in the coastal zone most of which require the provisions of facilities whether it be as little as access or waysides or as much as boat marinas, campgrounds, and condominiums.⁴ Providing a sufficient amount of these facilities in the best location to obtain the desired psychological, social, educational and economic benefits of recreational resources is the management task.

The policy and necessary actions are directed at first identifying the various recreational needs and then designating those resource areas with greatest potential for meeting these needs. The OCC&DC recreation inventory, as noted, provides some initial criteria for use in identifying areas of exceptional potential. Proximity to water is emphasized as one of the more significant factors.

The limited amount of shorelands in comparison with the large, diverse demand for these areas makes them a critical recreational resource. The inventory generally identifies shorelands as one of the highest classes of the recreational resource.⁵

³OCC&DC Economic Survey and Analysis, pp. 19, 25, and 35.

⁴The OCC&DC Resource Analysis of Coastal Uplands, recreation section describes and inventories many of these.

⁵Resource Analysis of Coastal Uplands.

Another point emphasized in the inventory as well as in the various policy inputs (public workshops and resource specialist teams) is the need for coordination among the providers of outdoor recreation. There are roles and responsibilities at all levels of government. "The major public providers must know what their counterparts are doing and where new recreational development is planned in order to avoid duplication of facilities and services and improper use of public resources."⁶ Of course the private providers should also be included in this coordinative process. The private sector should be encouraged to provide recreational facilities.

⁶Resource Analysis of Coastal Uplands.

20. Providing Access to Public Lands and Waters

Policy Statement

State and local governments shall plan for access to public lands and waters to satisfy present and future demand for such access, and they shall assure that the access provided is consistent with the carrying capacity of the site.

Necessary Actions

- 1. State and local governments shall estimate the present and future demand for public access to public lands and waters in the coastal zone.*
- 2. State and local governments shall estimate the carrying capacity of public lands and waters.*

Recommended Action

Local government should require new shoreland development to dedicate easements for public access to lakes and streams if the local governments determine the easements are necessary.

Background

Access to public lands and waters is a subject that has general application to nearly all natural resource categories under consideration by the OCC&DC. The policy is included in the recreation category because access is most often desired for recreation purposes.

Several of the OCC&DC inventories identify access as one of the major impacts on natural resources. Access needs to be controlled or properly designed so that the carrying capacity — the capability of the environment to support that activity — is not exceeded. Damage to vegetation water quality and habitat as well as harassment of wildlife should be avoided. In addition, care must be taken so that the resource values that cause the demand for access are not damaged by providing that access.

Public access to shorelines and water bodies is the most in demand. The State Highway Division has an ocean beach access program with a goal providing access at 1½ to 3 mile intervals. However,

public access to many of the coastal lakes and streams and their shorelines is severely limited due in part to surrounding private ownerships.

21. Preventing Over-Use of Recreational Resources

Policy Statement

State and local governments shall require that public and private recreational development and the expected maximum use of recreation areas do not exceed the carrying capacity of the natural recreational resource.

Necessary Action

State and local governments shall develop criteria and procedures to be used by both state and local governments in evaluating carrying capacity of existing and planned recreational areas.

Recommended Action

State and local governments should prevent adverse environmental effects of excessive seasonal use of recreation facilities through management, education, and public information programs.

Background

The resource specialist team that assisted the OCC&DC in developing recreation policy statements suggested the following goal:

"To maximize the opportunities for quality outdoor recreation in the coastal zone, consistent with the necessity of protecting natural, scenic, economic and human resources."

In addition, five Phase I policy statements in the Uplands and Freshwater and Shorelands categories identified the necessity of environmental protection while using or developing the recreation resource. Three of these statements used the term "carrying capacity".

This concern for carrying capacity — the environmental capability of the resource to support continuing recreational use in an undeteriorated environment — is further described in the OCC&DC Economic Study and Uplands Inventory. The Economic Study discusses the costs of the travel industry as those of congestion, pollution, and seasonal over use of facilities.¹ The inventory calls for a

¹Economic Study and Analysis, pp. 29-33.

consideration of carrying capacity in describing impacts and management needs. "The dual problem of preserving the recreation resource while providing for its use and enjoyment must be considered. For this to occur, it is necessary to know the carrying capacity of each existing and potential recreation area ..., including:

- (1) the impact of the recreational environment on people;
- (2) the impact of people on the recreational environment; and
- (3) management procedures to modify these reciprocal impacts."²

The policy and necessary action are directed at developing criteria and procedures for evaluating carrying capacity and then applying these procedures and criteria to the acquisition and development of recreational resources.

²Resource Analysis of Coastal Uplands.

22. Regulating Off Road Use of Vehicles

Policy Statement

In order to limit damage to land, water, wildlife and vegetation and avoid conflicts with other activities, federal, state, and local governments shall restrict recreational, off the road use of vehicles (including ORV's as defined) on public lands to designated seasonal roads and off-road areas.

Necessary Action

Federal, state, and local governments shall identify and designate seasonal roads and off-road areas on public lands where vehicles may be used for recreation.¹

Recommended Action

State and local governments should regulate off-road-vehicles by a permit system or special licensing program which applies the fees to applicable regulation and education programs, impact studies and maintenance of use areas for recreation and other purposes.

Background

Off the road, recreational use of vehicles is recognized as a significant problem confronting the management of our natural resources. The U.S. Forest Service is engaged in a process (started in 1973) to establish controls over use of off-road vehicles on all lands it administers.² The Forest Service program

¹Designation of areas should be based on standard criteria developed by the state. These criteria should include an analysis of the impact of vehicular use on: wildlife and wildlife habitat; domesticated animals and livestock; vegetation; water quality and watershed run-off, erosion and flood control; noise levels; air quality; state and local land use plans and ease of enforcement.

²Rules and Regulations for Use of Off-Road Vehicles, Part 295 of Title 36; Federal Register Volume 38, No. 185 - Tuesday, September 25, 1973.

is an outgrowth of a 1972 executive order to set up a system of controls which would minimize damages to natural resources, protect public safety and reduce conflicts among users on public lands. Recognition of this problem at the state level is evidenced by House Bill 2282 which was considered by the 1973 Oregon Legislative Assembly,³ and by House Bill 2764 which was introduced to the 1975 Regular Session. Both bills call for limiting use of public lands by off-road vehicles to areas specifically designated for such use. In addition, House Bill 2764 includes a requirement for registration of off-road vehicles. At the local level, Multnomah County recently adopted an ordinance which would limit off-road vehicle use to designated areas on public land and would require written permission from private landowners to operate on private land.

In the OCC&DC policy development process, twelve Phase I policies and recommended actions concerning off the road, recreational use of vehicles were suggested by both public sources and resource specialist teams. These statements were included in fish and wildlife, uplands and beaches and dunes resource categories. The OCC&DC beaches/dunes and estuaries inventories identified off-road use of vehicles as having major impacts on vegetation, wildlife habitats, wildlife and public safety in these resource areas.

The policy and necessary action is directed at a designation of areas in public lands where vehicles can be used for recreational purposes and a restriction of this use from other areas. The policy is intended to cover only recreational use of vehicles and not law enforcement, emergency, agriculture or forestry uses. Seasonal road restrictions are included to reduce erosion and sedimentation damage which results from winter use of these roads.

³Engrossed House Bill 2282 including amendments by the Committee on Environment and Land Use passed in the House, but was allowed to die in the Senate Transportation Committee.

23. Promoting Economic Development of Fishery Resources

Policy Statement

The state shall improve the economic conditions for utilization of the fishery resources, as long as it is demonstrated that such efforts do not decrease per capita income or increase the rate of unemployment on the coast.

Necessary Action

The Fish Commission, in cooperation with the Sea Grant Program and with commercial fishing industry, shall study and evaluate alternative programs for increasing per capita income and decreasing unemployment on the coast by using fishery resources.

Recommended Actions

1. The state and federal governments should encourage improvements in processing methods, marketing techniques and financing for commercial fisheries.
2. The state and federal governments should encourage private development of aquaculture in coastal waterways.

Background

The fishing industry, including aquaculture, has not developed to its potential because of many political, economic and social factors. One reason for inefficiency is that fish are considered a common property resource, that is, property rights for fish are not defined and the number of people fishing is not limited. The number of people and the investment in equipment included in harvesting "free goods" tends to exceed the most efficient level. That can lead to either overuse of the resource or low economic return from the fishing effort or both. A second major reason for inefficiency is that government regulations of fisheries often prevent the application of technological improvements.¹

Also, the commercial fishing industry in many ways has not followed processing and marketing practices that stimulate a high demand for seafood products.

¹Economic Survey and Analysis of the Oregon Coastal Zone, page D-4.

24. Managing Fish and Wildlife on a Sustained Yield Basis

Policy Statement

The State Fish and Wildlife Commissions, using evolving scientific principles of resource management, shall plan and manage the use of both aquatic life and wildlife resources so that the optimal yield of these resources will be sustained in perpetuity. The criterion of optimality is maximum net social benefits accruing to Oregonians.

Necessary Action

The State of Oregon, through the Oregon Fish and Wildlife Commissions, shall determine procedures for establishing harvests for those fish and wildlife species of commercial and recreational importance according to the criterion of maximum net social benefits accruing to Oregonians in perpetuity, taking into account the impacts of harvest levels, the impacts of land and water uses on fish and wildlife resources, and the biological factors that determine supply.

Recommended Actions

1. The Oregon Fish Commission should determine:
 - a. why certain species of fish have remained unutilized or underutilized; and
 - b. if it would benefit Oregonians for there to be governmental encouragement of the exploitation of these unutilized or underutilized species.
2. The Oregon Fish and Wildlife Commissions should initiate an expanded program of research to develop the additional biological information needed to establish harvest levels and should, thereafter, increase the monitoring of impacts of harvest, and of land and water uses on the supply of fish and wildlife resources.
3. The Oregon Fish Commission should cooperate with the federal government in conducting studies to identify the causes for the decline in natural salmon populations and methods to correct it.

NOTE: While salmon populations in general suffer from many problems there exist geographical differences and a mix of species which require special attention and particular management treatment. The salient difference, expressed geographically, exists between the salmon populations of coastal watersheds and those of the Columbia River watersheds.

4. The federal and state governments, as well as private individuals, should supplement wild fishery stocks with hatchery stocks as long as diseases are controlled and genetic stocks are not mixed indiscriminately.
5. Sea Grant should encourage and fund research on the expanded use of unexploited fish stocks.
6. The State of Oregon should expand research, educational, and enforcement programs to help in carrying out the intent of aquatic life and wildlife regulation and management of the resource on a sustained yield basis.
7. The State of Oregon should update the system of fines for game law violations. Present fines are inadequate to deter poaching. The state should consider loss of license privileges as a penalty.

Background

The OCC&DC Fish and Wildlife Inventory identifies a number of particular species of high commercial and recreational value. It also indicates that some of these species are now depleted or face depletion due to (1) overharvest, and (2) habitat modifications.

The overharvest of fish and wildlife resources, due to increasing demand for a biologically limited supply, is most apparent among the commercially and recreationally valuable fish species in ocean waters. Inadequate and unenforceable international constraints such as gear restrictions, seasons, and catch-limits, allow foreign fishermen to exceed reasonable harvest levels.

Fish and wildlife species in the coastal zone thrive best where there is a suitable habitat providing the proper balance of food, water, and cover. Although natural limitations may cause an imbalance in one or more of these basic requirements, most degradation of habitat quality comes from man-made development and land use practices.

Many of the uses and impacts affecting habitat areas are identified in the inventory.¹ The magnitude of impact, of course, will vary with each instance and some uses or practices having negative impacts on some species will have positive impacts on other species. However, habitat modifications that degrade or create an imbalance of food, water, and cover contribute to depletion of the fish and wildlife resources and, therefore, should be controlled.

The concept of sustained yield harvest (i.e., the consumption of fish and wildlife resources at a rate which does not impair the ability of the species to perpetually replace individuals through natural reproduction) is employed in the management of biological resources to assure their continued supply. For the scientific application of this concept, both the stock of resources and their rate of renewal are important factors and are determined by the productivity of habitats and the biological characteristics of the species being managed. Therefore, in order to avoid depletions of aquatic life and wildlife resources, their management on a sustained yield basis must include consideration for the diverse characteristics and requirements of the resources; as well as the factors relating to or controlling their use.

¹The OCC&DC inventory report provides a narrative description of uses and impacts by habitat types and displays them in matrix form for all habitats, pp. 15 and 16.

25. Protecting Significant Habitats of Fish and Wildlife Resources

Policy Statement

1. *State and local governments shall protect the significant aquatic life and wildlife habitats of the Oregon coastal zone, defined and described in the OCC&DC inventory,¹ through the management, planning, and regulation of uses that would adversely affect these areas. Furthermore, the state shall develop programs and incentives for improvement and restoration of potentially significant habitat areas.*
2. *State and local governments shall manage habitats of threatened and endangered species, and other species of special interest, as defined in the OCC&DC inventory,¹ in such a manner to preserve these species in the Oregon coastal zone.*

¹Within the OCC&DC Fish and Wildlife Inventory eleven criteria are used to evaluate habitat values and identify those habitats considered to be critical to the viability of fish and wildlife in the coastal zone and, therefore, in need of special management considerations. Among a total of 29 habitat types inventoried in the coastal zone 14 are in this group; these habitat types are: (1) kelp beds, (2) benthic rock, (3) rocky intertidal, (4) sandy beach, (5) estuarine systems including submerged lands, coastal tidelands, eelgrass beds, coastal salt marshes, (6) rivers and streams subject to low summer flows, (7) lakes and reservoirs, (8) water-related upland habitat including inland marsh, wet meadows, riparian vegetation, and (9) evergreen hardwood. In addition, the inventory, as well as Phase I policies, identify the following areas as appropriate for special management in order to protect related species of special interest: (1) marine mammal haul-out grounds, (2) elk wintering areas, (3) snowy plover nesting areas, (4) blue heron rookeries, (5) eagle nests, (6) osprey nests, (7) spotted owl nests, (8) clam beds, (9) herring and anadromous fish spawning areas, and (10) band-tailed pigeon watering areas. As a result of interpretation of both inventory and Phase I policy direction, the above are considered "significant habitat areas" where sustaining the natural resource characteristics is important, or essential, to the production and maintenance of identifiable aquatic and wildlife populations, as well as threatened, endangered and other species of special interest; and are those areas referred to in policies 1 and 2.

NOTE: It is not the thrust of these policies to provide protection for only a select group of habitats or wildlife species. Rather, it is the intent of the policies to focus attention upon particular habitats and species both because of their relatively greater sensitivity to use and impacts and social importance. It should be recognized that few, if any, areas are devoid of some species of wildlife or aquatic life and that all areas are subject to impacts. Therefore, while significant habitats, threatened and endangered and other special interest species are to receive particular protective consideration within the comprehensive planning process, it is also important to consider the impacts of land and water use decisions on all habitats and species in general.

Necessary Actions

1. *Local units of government shall incorporate in comprehensive land and water use plans consideration for significant habitat areas, habitats of threatened and endangered species and species of special interest, and shall specify use limitations which are sufficient for the protection of these habitat areas.*
2. *State government, in cooperation with local government, shall develop planning and management criteria for both the preservation of species and the regulation of adverse impacts in significant habitat areas and shall require that these criteria be included in local comprehensive plans.²*

²The intent of this necessary action is to assure the incorporation of essential habitat values within the planning process. The basic process of planning for fish and wildlife habitat involves (1) identifying those uses of significant habitat areas which do not conflict with established values; and (2) eliminating, minimizing, or compensating for adverse impacts resulting from development designated for these areas. Criteria established by the State of Oregon shall emphasize the planning process and major issues and concerns of state significance. Resolving the many problems of trade-offs and applying policies to issues of strictly local significance are now, and will continue to be, the primary concern of local government.

Recommended Actions

1. The State of Oregon, through the Oregon Wildlife and Fish Commissions and Sea Grant, should conduct studies to determine the recreational, non-appropriative, and economic values of fish and wildlife to assist in planning and decision making.
2. The State of Oregon should cooperate with the local units of government in developing and carrying out habitat improvement and restoration programs. In particular, state and local governments should create, enhance and restore spawning and rearing areas in coastal streams according to the criterion of net social benefits.
3. The Oregon Fish Commission should establish a program for the management of marine vegetation.
4. The State of Oregon and local units of government should prohibit agricultural, forestry, and urban development practices which threaten significant aquatic life and wildlife habitats unless it is demonstrated that the net social benefits of alternative practices are less than the net social benefits of the practices that threaten significant aquatic life and wildlife habitats.³
- 5a. The State of Oregon and local units of government should provide public access in appropriate habitat areas for hunting, fishing and wildlife observation in a manner that:
 - a. assures quality experience; and
 - b. provides for public health and safety.
- 5b. In particular, when any access is provided to significant habitat areas it should be done in a manner which minimizes adverse effects on aquatic life and wildlife resources.
6. The appropriate state agency should not permit the introduction of new plant or animal species to the continental shelf or inland coastal zone waters unless it is demonstrated that the introduction of the new species will not reduce the ecological values of those waters.

³Alternative practices are described within the Oregon Forest Practices Act; by the Oregon Department of Environmental Quality for collection and treatment of agricultural wastes; and by the Soil Conservation Service, for urban development and general watershed treatment.

7. The state, in cooperation with local government, should:
 - a. develop explicit criteria for identifying fish habitats which are appropriate for enhancement;
 - b. identify, by the criteria the state has developed, those fish habitats in the coastal zone that should be enhanced; and
 - c. develop and implement techniques that enhance fish habitats.

Background

The coastal zone, from a fish and wildlife resource point of view, consists of air, land, and water and critical areas of contact between these basic elements of the environment. Therefore, the coastal zone cannot be defined precisely from a biological standpoint. There are zones and gradations of physical and biological processes which result in a great variety of habitat types and species.

The variety and interrelationships of these areas makes possible the abundance, distribution, and diversity of aquatic and wildlife resources. Particular habitat types, because of their productivity and value, uniqueness, relative scarcity, vulnerability and strategic locations are of special concern in the management of fish and wildlife resources.

The traditional concern of Oregonians for fish and wildlife has been expressed in laws and regulations regarding individual species of wildlife. In recent years, however, the major concern has been for managing wildlife habitat. The growth and development of the coastal zone has included some land use and management practices which have adversely affected fish and wildlife values. As discussed in the OCC&DC Fish and Wildlife Inventory, these include the impacts of: (1) chemical pollution and spraying (in the uplands), overfishing, erosion, waste disposal, mineral extraction, and sedimentation of valuable offshore fishing areas; (2) dredging, filling, waste disposal, log storage, diking and draining, and other alterations of estuaries; (3) flow depletions, channel alterations, removal of aquatic and riparian vegetation, and siltation in rivers and lakes; and (4) loss of wintering range and critical habitats in upland areas.

Many of these problems cannot be solved by single-purpose and specie-oriented regulations. Rather, solutions depend on day-to-day decisions regarding land and water use by local planning commissions, state agencies, private industry and the general public. The fact remains that the key to the preservation, maintenance, or enhancement of a fish or wildlife species is directly

dependent upon the condition and extent of its habitat — the productive land and water required for its existence. Until concern for aquatic and wildlife species and their habitats is incorporated into state and local land and water use plans, unnecessary and unwarranted loss and disruptions of this resource will continue to occur.

Therefore, the focus on significant habitat areas is necessary because: (1) the commercial and recreational⁴ uses of fish and wildlife resources are of particular importance to the coastal economy and social well-being of this and succeeding generations; and (2) varying types and degrees of impacts have adversely affected the values of these areas.

⁴The OCC&DC inventory indicates that more than 3.5 million recreation days are spent annually in pursuit of fish, game, and shellfish in the coastal zone; resulting in expenditures well in excess of \$60 million. Commercial production of fish and shellfish is valued annually at between 27-30 million dollars at the fisherman's level. (P. 4 and Table 1, OCC&DC Fish and Wildlife Inventory.)

26. Maintaining Values and Uses of Water Resources

Policy Statement

State and local governments shall maintain and enhance the values of the water resources of the coastal zone in a manner consistent with the adopted policy of the State of Oregon to:

- a. promote, secure, and control the water resources for multiple purposes and maximum beneficial uses;¹*
- b. conserve and protect adequate and safe supplies of water for human consumption while conserving supplies for other beneficial uses;²*
- c. improve water quality for the propagation of wild-life, fish and aquatic life and for domestic, industrial, municipal, recreational and other legitimate beneficial uses; and³*
- d. provide that any wastes discharged into state waters receive adequate treatment or other corrective action to protect the other legitimate uses of the water resources according to the standards and policies of the Department of Environmental Quality and the Environmental Protection Agency.*

Necessary Actions

- 1. State and local governments, in cooperation with federal agencies, shall develop and adopt guidelines and criteria which apply to the different levels of management within the comprehensive planning process;⁴*

¹Existing State Water Resources Board policy (ORS 536.220).

²Existing State Water Resources Board policy (ORS 536.220).

³Existing Department of Environmental Quality policy (ORS 449.077).

⁴The different levels of management refer to the interests, concerns, and responsibilities of:

- (a) federal water and related land resource agencies;
- (b) state water resource management and regulatory agencies; and
- (c) the units of local government.

and which take into account the different geographic, physical, cultural, historic, aesthetic, recreational, environmental and economic characteristics associated with the development and use of the water resource.

2. The appropriate state agency shall coordinate and expedite the activities of state and federal agencies which administer programs dealing (directly or indirectly) with the management of water resources, in order to: (a) eliminate duplication and conflicting activities; and (b) provide a clear and integrated direction to local units of government regarding water resource development and compliance with state and federal management policies.

Recommended Actions

1. Within the comprehensive planning process, state and local government should provide for:
 - a. the reduction of contamination of groundwater and surface waters by septic tanks and other sources by establishing density recommendations; and
 - b. the reduction of adverse or negative effects on the character and use of surface freshwaters caused by groundwater withdrawals up to that point where net social benefits no longer increase.
2. The state and federal government should continue to improve control of industrial waste discharges; including control over releases and accidental spills.
3. The state and federal government should develop or cause to be developed, for the use of local government, practical and satisfactory methods of controlling waste disposal from water craft; and they should control waste disposal from water craft, except in emergencies, by imposition of fees or regulations or both.
4. Appropriate agencies should consider the net social benefits of land storage vs. water storage prior to the approval of water storage of any material; and, that alternative with the highest net social benefits shall be authorized.
5. The state should develop standards, implement programs and finance the regulatory actions to reduce the pollutorial effects of storage and handling of materials in public waters.

6. The state should investigate and encourage beneficial uses of thermal discharges as well as prevent damaging discharges.
7. Proposed uses which may significantly alter water quality, hydraulics, tidal prism, surface area or volume should be studied to determine the probable consequences, and these should be evaluated by state and local governments according to the criterion of maximum net social benefits before approval or disapproval is given for the proposed uses.
8. The State of Oregon should determine the impact on water quality of land runoff from urban, agricultural and forest lands, irrigation return waters, water impoundment (supply) reservoirs, and should develop procedures such as treatment methods and design controls to reduce adverse impacts from these sources.

Background

In Oregon, policies for the management of water use are administered by the State Water Resources Board.⁵ Policies for the management of water quality are established by state law, and by federal law, and are administered by the Oregon Department of Environmental Quality.⁶ At present, no single policy exists for the entire coastal zone. Rather, basin programs, much in the fashion of land use plans, are a culmination of the policies for smaller areas such as sub-basins or stream sections. The Water Resources Board prepares water use programs by basin; the Department of Environmental Quality prepares or coordinates water quality management plans by basin.

⁵In 1909, the State of Oregon declared by statute that all water from all sources of water supply belongs to the public. In 1955, the legislation creating the Water Resources Board emphasized that state sovereignty over water resources should be preserved and protected in all cooperative water programs (ORS 536.310(10)). This legislation concurrently established the State Water Resources Board with responsibilities to: (1) progressively formulate an integrated, coordinated program for the use and control of all water resources of the state; and (2) to devise plans and programs for development of the state's water resources.

⁶The State of Oregon's first comprehensive water control laws were approved by the voters in 1938 and modified by the State Legislature in 1961. In 1969, the Oregon State Legislature created and assigned to the Department of Environmental Quality the responsibility for water quality control. This legislation emphasized the need for conserving, protecting and improving the quality of the state's water and for treating water discharged into water bodies in order to control pollution.

In addition, the regulation of other water uses and related factors has been established by legislative-statute for the Health Division, the State Engineer, and the Fish and Wildlife Commissions.

The Health Division is authorized to set standards, rules and regulations to prevent domestic water contamination; examine plans for supply sources to insure their purity; notify responsible agencies about conditions which are dangerous to the public health; and demand corrections within a reasonable time.

The State Engineer, among other responsibilities, accepts applications for rights to appropriate water, issues permits, licenses, and certificates authorizing use of public water; regulates critical ground water areas and enforces water well standards; and adjudicates relative rights to the waters of any lake, stream or ground reservoir.

The Fish and Wildlife Commissions review proposals for water development projects for their impact on fish and wildlife resources. Also, these agencies make recommendations to the State Water Resources Board regarding minimum stream flows as part of the Board's responsibility to develop water use programs and the classification of unappropriated water for beneficial uses.

Within the coastal zone severe water quality and quantity problems exist. These relate to factors including land use, waste disposal practices, and the great number of small, independent, under-financed, and uncoordinated water supply, distribution and treatment systems of local government.

Part of the problem, as described in a case study conducted for the Local Government Relations Division, is indicated by the fact that: (1) many supply systems draw from unimproved sources; (2) there has been inadequate water treatment; (3) distribution systems have insufficient capacity; and (4) a lack of bacteriological control creates hazardous health conditions.

The OCC&DC Inventory of Development Pressures indicates further, that "The availability and quality of water and sewerage services is one of the most important factors in determining where urbanization will occur. In few, if any, locations will sizable areas of urban development be found unless these services are available". The report further states that "Water and sewerage service inadequacies were identified in 93 (77%) and 97 (80%) of the 121 subareas (of the coastal zone) respectively. Of these locations, the limitations were considered severe in 37 and 54 instances respectively, pointing out the critical need for service improvements."

Further problems associated with water quality and quantity involve other multiple uses of the resource. As indicated in the OCC&DC Fish and Wildlife Inventory, chemical pollution, waste disposal, dredging, water storage of materials and commodities, erosion,

sedimentation, and inadequate stream flows have impacts on fish and wildlife habitats and reduce their productivity.

The OCC&DC inventory, Estuarine Resources of the Oregon Coast, also indicates that these impacts may be compounded in estuaries because of estuarine resource sensitivities, water circulation characteristics, and the nature of shoreland activities.

Particular problems are also connected with the maintenance of water quality in the coastal lakes, which are recognized by the State Water Resources Board as being highly important for fish, wildlife, and recreation uses, as well as municipal and industrial water supplies.

The Department of Environmental Quality's Water Quality Survey of Selected Coastal Lakes in the Sand Dune Region of Western Lane and Douglas Counties indicates that sedimentation, due to watershed development activities creates problems with water quality and lake productivity. Construction sites for homes, road building, boat launching and docking facilities result in areas stripped of topsoil and vegetative cover and allow soil and debris materials to waste directly into the lakes; this results in turbidity, nutrient enrichment, and shoaling of lake waters.

In this regard the OCC&DC Freshwater Resources Inventory states that "The sensitivity of the coastal lakes is not readily apparent... (because they) are constantly undergoing physical, chemical, and biological change; usually in response to some naturally or culturally initiated occurrence."

The report indicates that man plays the most dramatic role in the lakes life cycle. Through extensive use of the resource, and surrounding watershed lands, increased nutrient enrichment accelerates eutrophication of the lake, which thereby reduces both water quality and the lake's value for many uses. In addition, excessive withdrawal of groundwater can cause critical reductions in the depth of the water table, which could result in adverse effects such as salt water intrusion and lowered lake levels, and thus negatively affect the lakes character and uses.

The responsibility for these diverse problems cannot be placed entirely upon local government. Rather, they have come about because of the myriad of decisions made by the private sector and all levels of government. Particularly, in the past, these problems have been complicated by the number of governmental functions, indicated earlier, and by where, how much, and the way in which, development has taken place in the coastal zone, and the impacts it generates on water related resources. Therefore, the above policy is proposed for adoption to reassert and assure coordination of water resource management decisions in protecting the multiple beneficial uses of the water resource.

27. Developing Potential Water Supplies

Policy Statement

State and local governments shall develop or cause to be developed regional water supplies, as defined and described in the OCC&DC inventory, to meet present and future demand for water; and furthermore, shall establish or cause to be established adequate and reliable water storage and groundwater sources of supply where additional direct diversions from natural stream flows would result in unreliable sources of water supply.

NOTE: The unification of water supply districts, while possibly desirable from an economic viewpoint, is not the thrust of this policy. Rather, the development of regional water supply potentials is intended, in part, to organize the wholesale of water to individual districts which may continue the retail distribution of water in their local areas, and thus retain control of their districts.

Necessary Actions

The appropriate state agency, in cooperation with local units of government, shall identify, evaluate, and designate suitable water sources for regional supply development (either groundwater or surface storage).

Local governments shall designate, within the comprehensive planning process, those areas in need of service from regional supply systems and select the most appropriate of the identified suitable regional water supply sources.

State and local governments shall coordinate and estimate present and future demands for water, taking into account limitations or needs for water established by application of the carrying capacity concept.

Background

The development of regional water supply potentials is a concept which includes the development of major water supply systems on a regional basis. It thus relates the development of storage and distribution systems for the high volume demands of municipal and industrial users; and subsequent collection and treatment systems

as these may be influenced by: (1) the area wide potential availability of water; (2) regional topography; and (3) the location of present and future demand in developed urban areas and areas identified as being suitable for urbanization. In this regard the OCC&DC Freshwater Resources Inventory states that "the development of regional water supply potentials is an attempt to solve water supply problems in the Coastal Zone in harmony with the water resource capability and at the same time provide opportunity for growth, development, and protection of the existing fishery and other resources." Further information pertaining to water storage and regional water supply development is contained in the Background statement to policy 28.

28. Providing Flow Protection to Maintain Values of Water Resources

Policy Statement

The state shall maintain or cause to be maintained coastal stream flows with levels sufficient to support aquatic life, to enhance recreation, or to abate pollution, or to accomplish all three purposes up to that point where net social benefits no longer increase.

Necessary Actions

1. *The appropriate state agency shall coordinate the appropriation of water rights; the development of basin plans for water quality management; and shall assure maintenance of adequate stream flows by implementing legal withdrawals, stream use classifications, or the establishment of minimum flows. All these actions shall be directed to maximizing the net social benefits associated with the use of water resources by Oregonians.*
2. *The local governments in the coastal zone shall designate, within the comprehensive planning process, land and water uses for specific areas in a manner consistent with developing regional water supply potentials, meeting stream flow requirements and maintaining in-stream water quality.*
3. *The state shall develop funding mechanisms and shall share with local government the capital costs of water storage development projects where regional and statewide benefits will accrue.*
4. *The state shall identify and consider alternatives for low flow augmentation; and shall support that alternative or project, including the no-augmentation alternative, which provides the maximum net social benefits.*

Recommended Actions

1. *State and local governments should, according to the criterion of maximum net social benefits, identify those sites suitable for reservoir development and should protect them from incompatible development.*

2. The state should encourage the development and use of water conservation measures and water re-use techniques to reduce the demands for new water supply development.
3. The state should acquire, through adjudication, purchase, or other means of transfer, water rights on streams where flows exist that are insufficient to protect aquatic life.
4. The state should conduct a surveillance and metering program to assure that the current level of water withdrawals is consistent with the level of withdrawals designated for appropriative rightholders.

Background

Within the coastal zone, the major consumptive uses of water are for municipal, industrial and irrigation purposes while maintenance of aquatic life and recreational use are the major nonconsumptive uses of water. In regards to the supply of water, the OCC&DC Freshwater Inventory states that on an annual yield basis, there is sufficient water to satisfy all existing and future needs for designated beneficial uses.

Water availability, however, is constrained by seasonal distribution characteristics where requirements in excess of seasonal flows result in insufficient supplies in many of the coastal streams during the low flow summer months. This supply problem is also compounded, in many locations, by limited supplies of potable groundwater.

Such problems are further complicated by the fact that low flows in many streams occur during the July through October period. These months, generally, are those of highest water use when the available supply must meet greater demands from increased summer populations and municipal, industrial and agricultural uses. This results in stream flows that are less than the minimum flows needed to sustain aquatic life, support water-based recreation, and maintain in-stream water quality.

When these low flows occur, there is an insufficient amount of water to meet the needs consisting of present legal appropriations and the minimum flows recognized as needed to sustain aquatic life. Thus, the combination of natural flow occurrence and level of use under legally established water rights determine the amount of water available for future use.

Since coastal development has outpaced water supply development and because many streams are fully appropriated further growth in consumptive water uses will raise acute conflicts with recreation and aquatic life along the entire coast in future years. Expanding

industrial, municipal, and perhaps irrigation, demands will be in direct conflict with maintenance of the region's recreation potential and the anadromous fishery; both of which are important components of the coastal economy.

Therefore, to fully provide for human uses of the water resource, maintain water quality and water based recreation, and to meet the flow requirements of aquatic life, augmentation of existing flows through the development of storage on selected coastal rivers and streams will be necessary.

29. Maintaining Values and Uses of Estuarine Areas

Policy Statement

State and local government shall maintain and where appropriate enhance the values of Oregon's estuarine areas by guiding public and private uses of these areas to assure:

- a. a balancing and an equitable allocation of present and future uses of estuarine areas;*
- b. a reasonable high level of environmental quality protection for all estuarine areas, based on the impact of human uses on the physical and biological system;¹ and*
- c. consideration of the interests of the diverse groups of people who depend on or use estuarine areas.*

Necessary Actions

- 1. State and local government shall establish a permanent management center on or near each major estuarine area or group of estuaries to coordinate information about planning and regulation and to provide for data storage, interpretation, research*

¹The term "system" as used herein refers to the physical components of estuarine areas (open waters, tidelands, marshes, sand spits, and adjacent shorelands), to the biological components and to the processes which interrelate these components (such as tides and currents, water quality, and fresh water inflow).

education activities, meetings and hearing procedures. The management center recommended herein could be established as part of an existing office such as the county planning department.²

2. State and local government shall assure that developments proposed for estuarine areas conform to the following criteria:
 - a. uses shall be water-related, essential to the support of water-related uses, or interim uses which will not substantially interfere with the future development of water-related uses unless it is demonstrated that the net social benefits generated by applying this criterion exceed the net social benefits of not applying it;
 - b. development on piling shall be required unless it is demonstrated that the net social benefits of locating the development on fill exceed the net social benefits of locating the development on piling; and
 - c. appropriate agencies shall consider the net social benefits of land storage vs. water storage prior to the approval of water storage of any material; and, that alternative with the highest net social benefits shall be authorized.

²The purpose of the management center is to provide, in one location, a complete identification of all activities taking place in the estuarine area. The center is a "clearinghouse" where the decisions taking place at the local, state and federal level may be evaluated in terms of short- and long-term impacts (both environmental and economic). Because fragmentation of decision making has been identified as a basic problem in estuarine management, it is assumed that such a center (operating for each major estuary, although one county office may work with several estuarine areas) would provide coordination information important to decisions being made at all levels. References to activities which would be filed at the center would primarily involve physical alterations and shoreland uses, water quality, and major alterations of the watershed. Funds for the maintenance of the center would be provided by those local, state and federal agencies which would benefit from the coordination activities provided. Coastal zone management funds from an implementation grant could be used for such a project.

3. *Federal, state, and local governments shall develop disposal plans which include a designation of necessary and environmentally acceptable sites for the disposal of dredged materials and such plans shall be an integral part of estuarine plans.*

Recommended Actions

1. State and local governments should maintain the character of historic, unique, and scenic waterfront communities.³
2. State and local governments should prohibit transit corridor, roadbeds, and other transportation facilities in estuarine areas, unless the net social benefits associated with using alternative routes; including those benefits associated with preserving the estuarine area, are less than the net social benefits of locating the transportation facilities in the estuarine area.
3. Where dredging is necessary in estuarine areas, state government should permit disposal of dredged material in a proposed estuarine area only if one of the following conditions exists:
 - a. the disposal site is within an area designated for that purpose in a state and locally approved estuary plan; or
 - b. the net social benefits of the total dredging operation, including estuarine disposal, exceed the net social benefits of the total dredging operation, including non-estuarine disposal or alternative uses of dredged material.

Background

Estuarine areas are among the most productive environments on earth because of the natural abundance of nutrients available for plant growth and animal consumption. Estuarine areas provide a diversity of habitats within a small area. Estuarine areas have distinct

³Although the criterion of water-relatedness for the location of uses in estuarine areas is recognized as being of major importance, many coastal residents choose to live in waterfront communities. These waterfront communities constitute a resource of major economic, esthetic and cultural value. The redevelopment and improvement of these communities is considered consistent with the intent of the policy, which discourages random, dispersed development of non resource-related uses in estuarine areas.

components, defined within the OCC&DC estuary inventory as including tide flats, salt marshes, sand spits, fresh water inflow and associated shoreland and watersheds. Each component plays a significant role in determining the biological and physical characteristics of the entire estuarine area. The relative productivity and significance as habitat depends on the condition and extent of each component. Many important aquatic animals depend on physical, chemical, and biological conditions within estuarine areas at various stages of life.

Estuarine areas have historically been centers for development in the coastal zone because of opportunities for transportation of logs and wood products, for commercial fishing and fish processing, and for farming the floodplains and diked marshes. These development activities have also produced significant impacts on the natural values of estuarine systems.

The OCC&DC report Inventory of Development Pressures indicates that most of the incorporated cities and many unincorporated communities of the coastal zone are located in estuarine areas. Urban growth will continue in many estuarine areas. Population growth, as well as increased demand for the economic benefits and amenities that estuarine areas provide will require increased concern in management. Urbanization has four main impacts on estuarine areas:

- (1) competitive demand for existing waterfront land increase;
- (2) urban land costs accelerate proposals and pressure to fill lands within estuarine areas for development;
- (3) waste disposal problems become greater as the amount of waste and overall urban runoff increases; and
- (4) the number of space-demanding power, land and water transportation and waste-disposal facilities increases dramatically.⁴

The development of railroads and highways opened the coast to the population centers of the Willamette Valley and stimulated the use of estuarine areas for recreation. Recreational uses, while having some adverse impacts on estuarine areas, derive their value from the quality and productivity of the estuarine system as a whole, rather than characteristics of a single component of estuarine areas, such as marshland for agriculture or deep water for navigation.

⁴Reference to impacts of urbanization derived from the U. S. Department of the Interior, National Estuary Study.

Within the OCC&DC report Fish and Wildlife Resources of the Oregon Coastal Zone, estuarine areas are identified as the most abused habitat type in the coastal zone, and the most vulnerable to damage. Estuarine areas are in essence "catching basins" for nearly all of the land use activities in the watershed. This includes effects of logging, log storage, road construction, chemical spraying, dredging and filling, and agricultural practices. In developing navigation channels, much of the habitat of estuarine areas has been destroyed by the deposition of dredged spoil on tideflats and marshes. Estuarine areas have been used as dumping grounds for domestic and industrial wastes. Channel alteration, filling for residential, commercial, and industrial development, many having no specific relationship to marine activities, have all contributed to the degradation of Oregon's estuarine areas.

Some of the most significant changes in estuarine areas have been the result of rapid man-caused sedimentation diking of tidal marshes, degradation of water quality, and the alteration of the circulation pattern and water surface area at particular locations. Many impacts can be lessened, or prevented, without prohibiting a specific use. Planning, and using practices which are based on the physical, biological and temporal characteristics of estuarine areas will result in avoidance of major impacts. (For example, clustering of shoreland uses will provide the same total development in many cases as strip development of shorelands but usually at lower cost in service facilities, and clustering will at the same time maintain a large amount of open shoreline.)⁵

This policy is proposed to protect the natural resource values of estuarine areas, while providing for controlled development of important economic and social activities.

⁵Reference to clustering derived from Bella and Klingman, General Planning Methodology for Oregon's Estuarine Natural Resources.

30. Managing Estuarine Areas Within the Comprehensive Planning Process

Policy Statement

State and local governments shall designate certain estuarine areas for different levels of management, within the comprehensive planning process, ranging from intensive development to preservation, consistent with sound principles of conservation.

Necessary Actions

State and local government shall designate within the comprehensive planning process:

- a. those estuarine areas which are to be managed in a high state of development;*
- b. those estuarine areas which are to be managed for a moderate level of development;*
- c. those estuarine areas which are to be managed for preservation in as close to natural conditions (undeveloped) as possible, while providing for certain appropriate, beneficial uses; and*
- d. those estuarine areas which are to be managed for restoration, to provide greater benefits from resources which have been destroyed, damaged, or degraded by some natural or man-made process.*

Recommended Actions

1. The State of Oregon should establish within the state coastal zone management program, a process for coordination of planning for estuarine areas by local government and federal and state agencies.¹
2. State and local government should provide special consideration in planning for significant salt (tidal) marsh areas within the estuarine system, such as protective zoning for these areas and upland areas immediately adjacent to them.

¹The state coastal zone management program will be the basis for coordinating estuary planning with local comprehensive plans and the programs of other state and federal agencies, including the wetlands plans of the Corps of Engineers.

In particular, state and local governments should consider the establishment of a "marsh bank" within each estuary, areas of undisturbed tidal marsh to assure the provision of materials to the estuarine and marine food chain for continued productivity. "Marsh bank" production units could include the following large tracts and marsh islands:²

- a. Columbia River - Cathlamet Bay islands within the proposed Lower Columbia River National Wildlife Refuge;
- b. Necanicum River - Remaining salt marsh areas;
- c. Nehalem Bay - Lazarus Island, West Island, Dean Point marshes;
- d. Tillamook Bay - Wilson River-Kilchis River Delta marshes;
- e. Netarts Bay - South end of bay and east side of sand spit;
- f. Nestucca Bay - Marsh at confluence of Nestucca and Little Nestucca;
- g. Salmon River - All remaining undiked areas;
- h. Siletz Bay - Undisturbed portions of Siletz Keys and all islands;
- i. Yaquina Bay - Poole's Slough, McCaffrey Slough, Boone Point and point upstream of Boone's Slough, marsh near Marine Science Center;
- j. Alsea Bay - Mouth of Drift Creek and islands lying downstream of it, Eckman State Park salt marsh area;
- k. Siulsaw River - Cox Island and adjacent tideland west of the railroad trestle, undiked marshes in lower North Fork;
- l. Umpqua River - The Point and land inside the Cutoff, Bulter Creek;
- m. Coos Bay - North Slough, Coalbank Slough, Coos River Delta, upper end of Haynes Inlet;
- n. Coquille River - Islands and shorelands southwest of Highway 101 on the southeast side of river;
- o. Roque River - None, no significant areas of marsh; and
- p. Chetco River - None, no significant areas of marsh.

In all cases local inventories should be conducted to identify areas for protection.

²Some of these areas (such as McCaffrey and Poole's Slough in Lincoln County) are already managed in the manner recommended by local government.

Background

The designation of estuarine areas for different levels of management is a critical component of the state coastal zone management program for the following reasons:

- a. the present system of management of coastal resources - particularly estuarine areas - is hampered by a diversity of agencies having responsibility and jurisdiction over different aspects of the system and a limited knowledge of the resource system;
- b. the state, by law and accepted practice, represents a key management unit for estuarine resources;
- c. the land and water resources of estuarine areas are so linked biologically and physically that they can and should be considered as parts of a single system; and
- d. under the present system of management the functions of the estuarine system and the existing social system are not compatible.³

Cities and counties are designating permissible land and water uses for particular geographic areas within comprehensive plans. Oregon's coastal harbor, waterway, and port developments have contributed to the economic growth of the coastal area and Oregon. Economic and employment impacts of ports show considerable variation among coastal counties. Impacts in Clatsop and Coos Counties are greater than the impacts in other coastal counties. With respect to the future, Astoria and Coos Bay's ports have an excellent potential to increase their economic importance; however, Astoria's port is expected to attract most of the future growth. The other coastal ports are expected to diversify their function concentrating on recreation, industrial, and commercial development. A few ports, however, will continue to handle a significant amount of cargo.⁴

The policy requires local comprehensive plans to reflect the regionally desirable level of estuary management ranging from intensive development to preservation. The nationwide determination would be based on existing development, the state's interest in conserving estuarine resources and maintaining the state's coastal zone management program and wetland plans being prepared by the Corps of Engineers. This policy does not specify the

³Derived from the U.S. Department of Interior National Estuary Study.

⁴Derived from the Pacific Northwest River Basins Commission (draft) Economic Survey and Analysis of the Oregon Coastal Zone.

particular uses which would take place in given areas, but rather the level of management with which particular uses should be consistent.

High development designations would imply that trade-offs between natural productivity (and other natural functions and values of the estuarine area) and the economic benefits provided by navigation, commerce, or other developed uses should be facilitated by local, state and federal government. If regional designations for management are adopted, increased attention could be brought to bear on easing restrictions, expediting permits, and providing services to designated development areas.

From an economic point of view, management on a regional basis would allow for a proper prioritization of preservation and development designations. What is required is a procedure for assigning conservation priorities for various sections of the coastline. Since the value of ecological resources of any particular coastal wetland will depend in part on the amount of wetlands still in existence elsewhere along the same coast, the conservation priority assignment must be performed on a comprehensive coastwide basis. It is very important to recognize here: (1) that a planning scheme will be found acceptable by investors and landowners only if it is stable, and not subject to frequent change; and (2) that it can be stable only if it takes basic economic factors into account, for if it does not it will be forced to yield and change due to economic pressures. Consequently, planning should, if at all possible, avoid assigning high preservation priorities to areas with major economic potential.⁵

Managing the estuarine areas of the Oregon coastal zone on a comprehensive regional basis will provide economic, environmental and institutional advantages. Management for designated levels of development will make it possible to consider the carrying capacity of each area in terms of present and future planned uses.

⁵Derived from Walter Isard, Ecologic-Economic Analysis for Regional Development.

31. Regulating Alterations of Estuarine Areas

Policy Statement

State and local governments shall prohibit alterations of estuarine areas¹ unless all the following conditions are found to exist:

- a. the proposed alteration satisfies existing statutes, administrative rules and permit criteria of the Oregon Division of State Lands;²*
- b. the alteration will be the minimum amount required for the proposed uses;*
- c. the proposed use of the alteration is in conformance with adopted estuary plans, unless such a plan does not exist at the time of application (in which case this condition does not apply);³ and*
- d. the net social benefits of the alteration is demonstrated to exceed the net social benefits of not making the alteration.*

¹This policy is intended to apply primarily to the open waters, submerged and submersible land, and tidal marshes of estuarine areas. It should not be applied to estuarine shorelands, except in those cases (if they ever occur) when altering shorelands would have a direct and measurable impact on estuarine waters, submerged or submersible lands, or tidal marshes which are intended for preservation or conservation in the public interest.

²Under the Miscellaneous Water Laws of the State of Oregon, proposed fills must be:

- a. consistent with the paramount policy of the state to preserve the use of its waters for navigation, fishing and public recreation;
- b. in conformance with sound principles of conservation, and consistent with the public health and safety;
- c. in conformance with existing public uses of the waters; and
- d. consistent with duly enacted zoning and land use plans.

³At present, no policy specifically requires the adoption of estuary plans. However, under existing state legislation, cities and counties are required to prepare comprehensive plans. An estuary plan which was completed by cooperation between jurisdictions which are adjacent to a particular estuarine area should then be adopted within the existing comprehensive plans.

Background

Filling of estuarine areas prompted coastal zone management legislation in several states, and was responsible for the great interest in the creation of an agency to manage San Francisco Bay. In Oregon, state regulation of fill and removal of material from the beds and banks of public waters existed before the passage of coastal zone management legislation. ORS 541.605 to .990 provides the Division of State Lands with permit authority over the deposit or removal of over 50 cubic yards of material. In the OCC&DC public workshops and resource specialist team meetings, alterations of estuaries continued to be addressed as an area of concern.

The OCC&DC estuaries inventory indicates that filling is a "high impact" activity in each of the twelve types of Oregon estuarine areas identified in the inventory. Filling is also the most "irreversible" action which may affect estuarine areas. Also, as a dominating physical alteration of the estuarine area, filling may bring about changes in components or natural processes throughout the estuary which are not predictable in terms of the extent, location or time of occurrence.

Detailed descriptions of recorded fills (up to 1971) are available from the Inventory of Filled Lands prepared by the Oregon Division of State Lands.⁴ Other fills have gone unrecorded and many acres of marsh have been cut off from the estuary for agriculture by dikes and tide gates. Local government and the general public are generally unaware of the extent to which filling is taking place throughout Oregon's estuarine areas.

The OCC&DC Estuaries Inventory also rates dredging and other alterations as having medium to high impact depending on the type of estuary. A careful examination of proposed alterations is important.

⁴The Division of State Lands has provided OCC&DC with a list of fills applied for in the past two years and with a description of the uses proposed for fills and with the disposition (approval or denial) of the applications.

32. Designating Geographic Boundaries of Shorelands

Policy Statement

State and local governments shall establish a process to cooperatively¹ describe and designate on maps the geographic boundaries of the shorelands of the coastal zone.² Such designation shall be based predominantly upon identification of landforms³ that limit or control the hydraulic action in the water course or in the periodically wetted fringes of the water course, such as wetlands and floodplains.⁴

Recommended Action

State and local governments, in identifying and designating the shoreland areas of the coastal zone, should:

- (a) compile a map or series of maps depicting existing land uses, ownerships patterns, topography, and similar information which lends itself to presentation in graphic form; and

¹Local government will have important responsibilities in identifying specific boundaries, while the state will provide financial and technical assistance, and will evaluate the adequacy of boundaries in terms of the public interests in shorelands. Roles and responsibilities will be detailed in the Implementation Section of this report.

²Boundaries will be designated on maps of a scale adequate to allow local landowners to recognize them clearly regarding their own property.

³Classification of landforms of the Shore-Process Corridor, "shoreforms", are detailed in the pilot study.

⁴As is shown on a series of aerial photographs which accompany the pilot study, the width of the corridor varies extensively with the type, size and stage of development of the water course. Areas characterized by extensive wetlands and broad floodplains would have a large shoreland zone designated.

- (b) prepare a series of descriptive analyses of the water characteristics and of the natural features of the shorelands. The descriptive analyses should be done on an area-by-area (e.g., using shore process zones described in the pilot study, drift sectors and/or a vegetation and soil classification system) basis and should be keyed to the map element in a clear and direct manner.⁵

Background

This policy deals with the identification and designation of what might be termed the "immediate shoreland areas" of the coastal zone. This area, as defined, must be distinguished from "shorelands" as defined within the Coastal Zone Management Act of 1972 (as interpreted in Paragraph 923.10, 15 CFR Part 923, August 21, 1974). The federal interpretation of the term means all lands extending inland from shorelines to the boundaries of the coastal zone (which, in the case of Oregon, is the crest of the Coast Range). Other resource management categories for which policies are being developed by OCC&DC treat these "upland" areas.

Shorelands, as discussed here, are those lands immediately adjacent to the ocean, rivers, lakes and estuaries, which have an influence on coastal waters which is considered "direct and significant". The process for identification of these areas is based on the "Shore-Process Corridor" system outlined by Wolf Bauer in a pilot study conducted for OCC&DC. The process is designed to identify the boundaries of shoreland landforms (fully described in the pilot study) which limit or control hydraulic and biological activities in the water course. It must be recognized at this time that the shoreland boundaries which would be set by application of this system may not respond to each and every management problem discussed in Policy 2. Policy 2 requires a flexible approach to boundary definition. Yet, in reviewing discussions of shorelands problems which have prompted legislation elsewhere, it is apparent that many are related to the physical and biological processes of the waters. Because of this, and the fact that water use and water quality have been established as matters of state concern, defining the physical boundaries of the corridor system⁶ appears to offer the best methods of establishing

⁵Derived in part from The Shoreline Management Act of 1971, of the State of Washington.

⁶Such a system, based on physical and biological processes, seems to be consistent with other management boundaries established in Oregon (i.e., in the Beach Bill and the fill and removal statutes).

a "baseline" which would include a majority of management concerns. Other concerns such as visual values, or particular issues of access or development, may require the setting of a more extensive boundary which includes the "functional" concern.

In the process of defining boundaries based on the Shore-Process Corridor system, certain other modifications may be considered appropriate. For example, a boundary may be modified to:

- (1) include a significant coastal resource, which has been identified as an area or category of concern by OCC&DC;
- (2) exclude a series of permanent structures which intrude into the corridor (and the properties are fully developed); and
- (3) coincide with a two-lane primary highway which roughly parallels the shore.⁷

A more technical and detailed description of the corridor appears in the pilot study prepared for the OCC&DC:

The Shore-Process Corridor represents a zonal belt that not only straddles the extreme surge-limits⁸ of riverine, estuarine, lacustrine⁹ and marine waters, but which includes those aquatic and terrestrial outer fringes on each side that can effect, or are affected by, the prevailing geo-hydraulic system. In terms of marine shores for example, the central portion of the corridor forms the extreme intertidal zone. The aquatic fringe is that immediate offshore border which receives the geo-hydraulic backlash effects of bottom wave motion, and fine sedimentation around sea grass and kelp bed habitat. The terrestrial fringe, on the other side of the surge zone, may constitute a sloping terrace, secondary dune, or it may include the top of a receding sea cliff. In the example of a riverine environment, the central surge zone of the corridor covers both floodway and floodplain. The aquatic fringe, in this case, constitutes the perennially wetted summer channel, while the occasionally activated terrestrial fringe includes any outer floodplain escarpments, or stream-impinged valley bluffs. The width of the Shore-Process Corridor

⁷Derived in part from Sedway/Cooke's Tri-County Coastline Study.

⁸The area wetted by the combined action of river flow and incoming tide. The surgeplain is discussed on p. 17 of Coastal Wetlands of Oregon.

⁹Pertaining to lakes.

can vary greatly. The landward boundary of the marine corridor may coincide with the high tide coastline, as in the case of a rocky cliff coast that has no back-shore. In that instance, the corridor is composed of a narrow surge zone (inter-tidal) without a terrestrial fringe zone. At other locations, the corridor boundary may be a half-mile from the high tide line because the backshore consists of a broad deflation plain, or an extensive high marsh.

The Shore-Process Corridor also has lateral boundaries (up- and down-stream, or longshore). These would not be defined as part of the implementation of Policy 1. However, they would be of major importance in addressing specific management problems in some areas.

33. Managing Shorelands Within the Comprehensive Planning Process

Policy Statement

State and local governments shall identify shorelands within the comprehensive planning process,¹ and shall designate permissible uses for these areas based on:

- a. recognition of the critical inter-relationships between shorelands and the freshwater, estuarine and marine resources of the coastal zone;*
- b. promotion of the concept of shorelands as "environment corridors" where there is a coincidence of natural resources and land use concerns in which there is a major public interest;*
- c. consideration of the needs and desires of land-owners who maintain or propose uses reasonable and appropriate for shoreland location;*
- d. consideration of shoreland uses related to the public interest in navigation and other water dependent activities; and*
- e. adherence to the objective of maximizing net social benefits accruing to this and succeeding generations of Oregonians.*

Necessary Actions

- 1. State government shall coordinate shoreland planning and management activities in cooperation with appropriate federal agencies in order to implement shorelands management policies and to provide more specific and unified guidance to local governments.²*
- 2. State government, in cooperation with local governments, shall provide criteria for designating uses consistent with maximizing net social benefits for shorelands in comprehensive plans prepared by local governments. The criteria shall provide for:*

¹Some shorelands management concerns may require specific regulations and controls more specific than the use designations within land use plans. It is assumed the plans would form the basis for these implementing regulations.

²Such a process is facilitated by approval of a state's coastal zone management program by the Secretary of Commerce.

- (a) identification and designation of shorelands of regional or statewide concern;
- (b) conservation of natural character and amenities of waterways;
- (c) increased public access where needed;
- (d) increased public recreational opportunities where needed;
- (e) continuance of forest and agricultural uses without restriction except as otherwise provided by law;³
- (f) retention of shoreland vegetation (including tree species) in as natural a state as possible and restoration of desirable vegetation without delay after disturbance in order to protect water quality, aquatic life, and wildlife habitat; and
- (g) regulation of building sites, placement of buildings, and location of septic tank disposal fields to control pollution.⁴

Recommended Actions

1. State and local governments should prohibit channelization and use of seawall and similar bulkhead methods of bank stabilization unless it is demonstrated that the net social benefits of that type of construction are greater than the net social benefits of alternative actions, including the alternative of leaving the waterway in its natural form.
2. State and local governments should regulate timber and vegetation zones along streams exclusively for the purposes of maintaining optimal water quality, stream protection, and aquatic life and wildlife habitats unless it is demonstrated that the net social benefits accruing to Oregonians can be increased by accommodating additional purposes.

³Derived from HB 3210 (1973 Oregon Legislature).

⁴Department of Environmental Quality subsurface sewage disposal rules have presently established this requirement at 100 feet from the high water line.

3. State and local governments should encourage where appropriate developers of residential, commercial, and industrial sites on shorelands to allow for needed water-related public recreational opportunities.

Background

Although OCC&DC has not conducted an inventory of the shorelands of the coastal zone to document (1) resource characteristics and values; and (2) current problems affecting the management of these resources; information is available from other sources to support the general considerations of this policy. These sources include the OCC&DC resource inventories for fish and wildlife, estuaries, freshwater, uplands, beaches and dunes, and wetlands; publications concerning the waterways and submerged and submersible lands of Oregon; and proposed legislation and ordinances at the state and local level.

A major concern for shorelands derives from the statement in the Coastal Zone Management Act which requires "control" of those activities on shorelands which have a "direct and significant impact on coastal waters". This relationship is discussed in detail by John Clark:

The primary ecological consideration in coastal management is control of water. This applies not only to coastal waters but to the upland drainageways and to land surfaces. It implies that the natural patterns of land vegetation and drainage are to be retained in land development. It is necessary to respect this basic ecological principle: Water provides the essential linkage of land and sea elements of the coastal ecosystem.

One must start with the presumption that shoreland development will have adverse effects on coastal ecosystems by modifying runoff patterns and thereby reduce the capability of the land to both store and regularize the release of rainwater from the watershed, and to cleanse it enroute to coastal waters. Clearing the land of vegetation has many effects. One is a decrease in the watershed's ability to hold back storm waters. Another is an increase in the total volume of freshwater delivered to the estuary caused by one or both of these factors: (1) a lesser fraction is transpired to the atmosphere because there is less vegetation, and (2) a lesser fraction is evaporated to the atmosphere because the water moves to rivers faster over cleared land.

Because of the inter-relationships between the coastal waters and activities on shorelands, management becomes essential to protect the public interest in coastal waters. Thus, there must be a

working relationship between shorelands management, and legislation at the federal and state level, the purpose of which is to protect "navigation, fish and wildlife, conservation, aesthetics, ecology, and the general public interest".

Shorelands are also of major significance in the coastal zone because these areas are "environmental corridors" relatively narrow bands of diverse, valuable and fragile resources which traverse a coastal environment dominated by steep topography and dense forests. A rigorous overlaying process, or even a general perusal, of the OCC&DC resource inventories indicates the extent to which natural and cultural resources are concentrated in these shoreland corridors.

Because of the concentration of resource values, shorelands have become increasingly sought after for a variety of developments in recent years. Pressures for access to the public waters, for development of new marinas and other recreational facilities, and for continuing the historical process of shoreline residences (for recreation and retirement) are mounting. The OCC&DC estuarine policies also point out the need to consider some shoreland areas as essential for the future commercial and industrial development of the coastal zone. Conflicts between uses of shorelands have been increasingly apparent to the people of coastal Oregon. This is becoming especially true of the coastal lakes, which are at the same time, recreational, residential, biological, and water supply resources.

Despite desirability for "view lots" shorelands are often part of a physical environment which presents hazards for development. Flooding, ponding, erosion, unstable soils, and high ground water tables are often associated with these areas. For example, the State of Michigan is restricting shoreland development specifically based on geologic hazard concerns.⁵ The Oregon Soil and Water Conservation Commission has completed an inventory of shoreland erosion in Oregon which documents the extent and nature of that problem, which may be seriously affected by development.

A principle concern on shorelands is the protection of riparian vegetation as wildlife habitat. As stated in the OCC&DC Fish and Wildlife Inventory:

Riparian habitat occurs along the edges of all water areas and is usually in a dense, narrow band. It is a concentration point for a great variety of game and

⁵Interview with representative of Michigan Department of Natural Resources, Coastal Zone Management Program.

non-game species, providing food and cover near water. It also protects the quality and quantity of water for wildlife, and often is important shelter and food source for fish, especially panfish. Riparian vegetation also permits greater utilization of open grassland and agricultural areas suitable as wildlife feeding areas by providing the necessary cover. Most of the furbearers inhabit this zone. It also provides important nesting areas for songbirds, osprey, and wood ducks. Elk and deer use it for shade cover. The endangered Columbian white-tailed deer are associated with this habitat along the lower Columbia River.

There are about 25,000 acres of riparian habitat, representing 0.4% of the coastal zone.⁶ A wide variety of man's activities have had adverse impacts on riparian vegetation. Logging, road construction, and stream channel alterations have been and will continue to be serious threats to conservation of this form of habitat. Land use planning should encourage "buffer" strips of riparian habitat along waterways. Waters of recreational significance should be provided with public access through these riparian areas. Because streams and lakes are attractive areas for recreation and development, and of great social values, they should be given high priority for public use in land use plans.

⁶Figure does not include riparian vegetation along estuaries.

34. Regulating Alterations of Shorelands to Avoid Geologic Hazards

Policy Statement

Federal, state, and local governments shall control construction on or modification of shorelines so that it will not interfere with natural processes to the extent that geologic hazards are created, unless it is demonstrated that the net social benefits of such construction or modification exceed the net social benefits of prohibiting the construction or modification.

Recommended Actions

1. State government should support and encourage studies and surveys of erosional, transport, and depositional processes in shoreline areas.¹
2. Federal, state and local governments should conduct engineering investigations, or shall require engineering investigations to be conducted, prior to the construction of shoreland and channel structures (such as groins, jetties, breakwaters, seawalls and navigation channels) to determine if geologic hazards will result from the modification of natural processes.

Background

Erosion of stream, estuarine and ocean shorelands has been identified as a geologic hazard which results in undercutting of structures, interruption of linear developments, loss of topsoil in forestry and agriculture areas, increased sediment load, degradation of water quality and the destruction of spawning grounds. "The nature of a shoreline, whether erosional, depositional or in equilibrium, is largely controlled by natural processes. Shoreline construction, whether in the form of shoreline control or development, alters the natural balance. Modification of these natural processes can be effected only locally. Generally, modification of one stretch of shoreline causes a corresponding change in another shoreline area."²

¹Oregon State University Sea Grant is currently funding a project regarding longshore drift on the Oregon coast. The U.S. Army Corps of Engineers maintains information on particular sites (stored at the Portland District office and Ft. Belvoir, Va.).

²Fisher, et.al., Environmental Geologic Atlas of the Texas Coastal Zone.

35. Maintaining Values and Uses of Sand Areas¹

Policy Statement

State and local governments shall maintain or enhance the values² of Oregon's sand areas³ by assuring that public and private uses do not exceed the carrying capacity⁴ of these areas.

Necessary Actions

- 1. Local governments shall include within their comprehensive plans an identification of the various types of sand areas (as defined in the OCC&DC Beaches and Dunes Inventory) and shall designate for each type of sand area uses that do not exceed the physical and biological limitations peculiar to each type of sand area.*
- 2. State government, in cooperation with local units of government and with the requested assistance of the U.S. Soil Conservation Service, shall develop*

¹Public recreational use regulations and values at all beaches are controlled by the Oregon Beach Law (Act 601 - 1967) which affirms the public right to use of the beaches (waterline to vegetation line). This law is administered by the State Parks and Recreation Office and includes the following requirements:

- (a) Improvements on beaches; removal of sand, rock, mineral, marine growth and other natural products; and laying of pipe, cable, or conduit across beaches require permits. Permits are based on the following considerations, among others:
 - (1) The public need for healthful, safe, aesthetic surroundings and conditions; the natural scenic, recreational and other resources of the area; and the present and prospective need for conservation and development of those resources.
 - (2) The physical characteristics of the changes in the physical characteristics of the area and the suitability of the area for particular uses and improvements.

Footnotes (continued)

- (3) The land uses, including public recreational use if any, and the improvements in the area, the trends in land uses and improvements, the density of development and the property values in the area.
- (4) The need for recreation and other facilities and enterprises in the future development of the area and the need for access to particular sites in the area.
- (b) No deposit of debris, logs, rubbish, or refuse is allowed.
- (c) Use of motor vehicles or aircraft on beaches is restricted to varying degrees along the coast.

²Sand area values include: areas of significant wildlife habitat; storage and recharge of ground water; aesthetics; foredune protection of property and environment from wind erosion, high tides, storms and tsunamis; and opportunities for recreation and development.

³Sand areas can be classified into four categories: active, recently stabilized, interdune, and stabilized. Active sand areas include: beaches, open sand dunes (oblique, parabolas and transverse dunes), hummocks, and active foredunes; recently stabilized sand areas include: conditionally stable foredunes, inland foredunes, conditionally stable open sand dunes, younger stabilized dunes and dune complexes (the latter which evidences a variety of forms within a small area); interdune sand areas include: deflation plains and wet interdune areas (in some cases lakes, streams, floodplains and surge plains are also interdune forms but they are excluded from this definition because these are addressed in other resource categories); stabilized sand areas include other stabilized dunes and older foredunes. Sand spits are not identified as a separate type because they may have the characteristics of all categories.

⁴In the OCC&DC Beaches and Dunes Inventory (Beaches and Dunes of the Oregon Coast) a total of twenty different types of sand landforms are identified and discussed. The distinguishing characteristics of each landform type are evaluated in regard to their suitability for recreation, development, wildlife habitat and a wide range of human activities. The tolerance ratings for specific activities and matrix of activity compatibility presented for each landform (Tables 3 and 4, Beaches and Dunes Inventory) provide basic information for assessing the carrying capacity (the stability of the landform is generally of paramount importance) of a sand area for a particular use.

planning criteria⁵ for sand areas and shall require that these criteria be used in the local comprehensive planning process as well as in state and federal agency programs.

Recommended Actions

1. State and local governments should approve proposed recreational uses of those sand landforms identified as having high value for recreation use (as defined in the OCC&DC Beaches and Dunes Inventory) unless it is demonstrated that the net social benefits of approving an alternative proposed use exceed the net social benefits of disapproving it.⁶
2. State and local governments should designate certain sand areas for preservation in their natural state in order to allow for continuance of natural dune processes for the purposes of scientific study and protection of scenic, recreation and wildlife habitat values.
3. State and local governments should designate sand areas within the comprehensive planning process which are suitable for development without a thorough site investigation.
4. Local governments should require that dune stabilization be conducted in conformance with use designations included in comprehensive plans.

⁵Criteria would include guidelines and procedures to follow in designating sand areas for particular uses. The OCC&DC inventory Beaches and Dunes of the Oregon Coast and the policies and recommended actions addressing this resource category represent the first steps in developing criteria that can be used by local and state governments in developing/revising plans and regulations.

⁶Three OCC&DC inventories: Beaches and Dunes of the Oregon Coast, Visual Resource Assessment of the Oregon Coast, and the recreation section of Resource Analysis of Oregon's Coastal Uplands discuss the outstanding recreational values of sand areas, particularly active open sand areas and beaches. This statement is also reinforced by OCC&DC General Recreation Policies which recognize the need for preservation of areas having outstanding potential for recreation and the need for use limitations based on the capability of the resource to support that use.

5. State and local governments, in cooperation with the Soil Conservation Service, should encourage and support additional studies of sand area carrying capacity, including the impact of motor vehicles, pedestrians and livestock.
6. State government should develop and implement, with the cooperation of concerned agencies, an education program to explain beaches and dune processes to the general public and to schools.

Background

Long shore currents, sand supply, wave action, vegetation and wetness are the principle natural processes influencing the sand area resource. Littoral drift⁷ is deposited on the beach by currents and wave action. As this beach sand dries, it is carried inland by the wind. European beachgrass and other plants which have established themselves in the open sand up to the normal storm tideline reduce the velocity of the surface wind and the inland movement of the sand. Sand deposited in the vegetation forms a continuous sand ridge parallel to the shoreline. Directly behind the foredune, the wind currents scour the area down to the water table and form a low wetland called a deflation plain. The sand laden wind continues to move inland depositing the sand which creates sand area landforms.

Oregon has approximately 314 miles of ocean shoreline which includes 255 miles of beaches and 195 miles associated with the dune building process. In total, the dune areas include approximately 164,380 acres of the coastal zone with 19,750 acres of active sand areas, 23,575 acres which are conditionally or semi-permanently stable, 38,980 acres of interdune areas, and 82,075 acres which are stabilized sand areas (Table 2, Beaches and Dunes Inventory). The degree of stabilization⁸ of the landform is generally the primary factor in determining the level of suitability or tolerance of a sand area for a particular use. Most sand areas are stable or conditionally stable. However, this stability can be damaged and the area can be returned to an active condition if the natural limitations of the landform are exceeded. Therefore, uses allowed in sand areas should be based upon the requirements of the use and its compatibility with the effected landform type.

⁷Littoral drift is the movement of material such as gravel or sand by waves and currents (long shore transport) through the littoral (close-in water) zone. The material comes from the watersheds of coastal rivers and streams and erosion of the ocean shoreline.

⁸Stabilization is determined in part by the lack of active sand movement or dune migration because of vegetative cover as well as soil development, soil moisture, and the degree of stabilization in adjacent areas.

Recreational opportunities in sand areas are diverse and essential to the experience of being on the coast. The dynamic interface between land and sea has always held a fascination for man. Oregon's beaches are being managed as a public recreational resource. The majority of the parks and many of the recreational developments on the coast occur in or adjacent to sand areas. Although beaches are probably the area that most recreationists associate with the coast, the dunes, particularly the open sand areas, are also highly popular. Off-the-road-vehicle (ORV) use, hiking, horseback riding, hang gliding, hunting, wildlife observation and innumerable other recreational activities occur in these areas. Beaches and open sand areas are generally well suited for undeveloped recreational uses because these landforms will tolerate high levels of human impact. However, in some areas conflicts may arise between the activities themselves (Table 4, Beaches and Dunes Inventory). For example, public safety hazards and annoyance factors indicate that ORV's are often incompatible with pedestrian and equestrian use of sand areas.⁹ Other sand area landforms have less capacity to tolerate human impact. For example, conditionally stable open sand and hummocky areas are particularly fragile.¹⁰ Also, foredunes can be damaged by the breaching and trampling of recreationists. Therefore, recreational access and the types and levels of use should be based upon the capacity of the landform type.

Sand areas also possess outstanding natural beauty and evidence of the dynamic forces of nature. The diversity in their character ranges from the openness and broad vistas of active open sand areas to the dense forest cover of an older stabilized dune. This variety allows an extraordinary richness of experience within a small area. Changes in season, tides, weather and time of day add another dimension to the dynamic character of sand areas. In the OCC&DC Visual Inventory, 10 of the 26 representative landscapes of the coastal zone were related to sand areas and received high ratings in the visual evaluation.¹¹

⁹One of the OCC&DC General Recreation Policies states the ORV use should occur in designated areas and that these areas should be selected according to their physical suitability for that use.

¹⁰Fragile in terms of stability and also significant wildlife values in the case of hummocky areas. Disturbance of the vegetation areas can return them to an active, blowing sand condition.

¹¹Eight of the ten representative landscapes in sand areas were placed in the highest classification because of their obvious and strong association with the ocean and the "coastal experience". The Clatsop Plains, much of the Coos Bay dune sheet, Sand Lake and the sand spits on the Nehalem, Tillamook, Netarts, Salmon River, Alsea Bay, Sixes, Elk and Euchre Creek were identified as being of exceptional visual (experiential) importance.

Many of the areas identified as suitable for urbanization are associated with sand areas (OCC&DC Inventory of Development Pressures). Because most sand areas are in a stable condition, this does not represent a significant problem for urban development except where water and sewer services are not available. Use of septic tanks will create pollution problems due to the high vertical and horizontal (iron banding) permeability of older dunes. The vital role of the vegetation in retaining the stability of these landforms must also be recognized. If the vegetation is removed or sufficiently disturbed (root damage and moisture loss) and no preventive measures are taken to re-establish cover, then an older stabilized dune can be reactivated.

There are several types of sand area landforms which are unstable and generally unsuited for development. Active or conditionally stable foredunes, which are subject to ocean undercutting, are highly unstable due to wind erosion and blowing sand and wave action. Open sand areas and dry and wet hummocks are also unstable due to active dune migration. Open sand conditionally stable areas represent a fire hazard as well as being highly susceptible to renewed instability, but can be developed under careful management. Deflation plains and wet interdune areas are not well suited for development because they are highly significant wildlife habitat areas and present problems from flooding and ponding, compressible soils and surface and sub-surface pollution. The suitability of some of these unstable areas for various uses can be improved by careful management. However, individual site evaluations would be necessary.

Erosion of the ocean shoreline contributes to littoral drift. Rates of ocean undercutting of shoreline landforms are influenced by resistance of the material to erosion and the slope and vegetative cover. Hence shoreline erosion of coastal terraces and the unconsolidated sediments of sand area landforms is more rapid than a basaltic headland. Ocean undercutting becomes a hazard to development and other uses when the rebuilding action of summer waves fail to replace the sand lost by the erosion of winter storms. Ocean undercutting is a serious problem, especially on parts of the central coast. Bulkheading of the shoreline reduces the available sand supply to sand areas. Natural and artificial barriers to littoral drift such as headlands, rivers and jetties also interfere with the sand supply and the continuance of nearby sand areas. Some beaches on the central coast seem to be deficient in sand, therefore, studies are needed to determine the impact of bulkheading, the relative importance of other local sand sources and project future shoreline erosion and accretion trends.

Active dune migration or dune advancement sometimes threatens public works such as road and navigation channels and public and private property. However, these active dune processes also are valuable recreational and aesthetic resources. Therefore, conflicts arise over whether or not artificial dune stabilization should occur.

In Honeyman State Park, for example, the expanse of open sand area and the lake are the primary recreational features, but the active dune movement is closing the outlet of the lake and will cause the water to become stagnant unless part of the open sand area is artificially stabilized. The decision to stabilize an active dune should be done in conformance with comprehensive plans to make sure public benefits and costs are adequately considered.

There are many areas of significant wildlife habitat in sand areas. The stabilized dune forests contain the greatest species diversity, but the deflation plains, wet interdunes and hummocky areas provide more significant habitat values. Waterfowl and special interest species such as Whistling Swan depend on the deflation plain as a feeding, and resting habitat. Snowy Plover require the driftwood area adjacent to foredunes.

36. Regulating Uses in Sand Areas

Policy Statements

- A. In sand areas other than older stabilized dunes and older foredunes (as defined in the OCC&DC inventory), state and local governments shall base approval or disapproval of uses, in part, on a site investigation report which has been prepared by a qualified sand specialist¹ and provided to the applicable unit of government by the developer. The report shall evaluate the capability of the site to support the proposed development without endangering life, property or environment and shall describe:
- (1) the type of development (use) proposed;
 - (2) the temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation; and
 - (3) the methods for protecting the surrounding area from adverse effects of the development and stabilization.
- B. State and local governments shall not approve any proposed use of a sand area that is likely to cause any of the following conditions unless it is demonstrated that the net social benefits of approving the use in the sand area exceed the net social benefits of disapproving the use:
- (1) excessive damage to existing desirable vegetation including moisture loss and plant root damage;
 - (2) exposure of stable and conditionally stable areas to erosion;
 - (3) slope instability;
 - (4) pollution or excessive drawdown of ground water which would lead to loss of vegetation or intrusion of salt water into water supplies; and

¹A sand specialist could be a soil scientist, geologist or another individual qualified to conduct site evaluations based on overall education, experience and knowledge of the type of area being evaluated.

(5) *interference with significant wildlife habitats.*²

Recommended Actions

1. State government, after consultation with local governments and the Soil Conservation Service, should specify those data that must be included in the site investigation reports used in evaluating development proposals in sand areas.
2. State government, in cooperation with local governments and the Soil Conservation Service, should develop a statement of qualifications for sand specialists to assist local government and the public in selecting individuals to conduct evaluations of projects in sand areas.
3. State and local governments should control or design access into or through sand dune areas, particularly conditionally stable dunes and dune complexes, so that the stability of the area is maintained, scenic values are protected, and fire hazards avoided.
4. Local governments should allow cutting and removal of timber and understory vegetation or ground cover in sand areas only if the planned method for removal will not threaten the survival of the adjacent desirable plant communities due to subsequent moisture loss, or root damage.
5. State and local governments should permit removal of sand from sand areas only when it is necessary to protect private or public property from sand damage or when such removal will not adversely affect the environment or the stability of adjacent areas as determined by a site investigation.
6. State and local governments should regulate driftwood removal from sand areas and beaches for both individual and commercial purposes so that scenic values and the dune building process are not adversely affected.³

²The most significant habitats in sand areas as described by the OCC&DC Beaches and Dunes Inventory are in the deflation plains. Up to 92 wildlife species use these areas. Of special note is the Whistling Swan which is dependent on this habitat.

³In the Beaches and Dunes Inventory log debris is credited with playing a part in the formation of foredunes.

7. Local governments should regulate grazing of domestic animals on stabilized dune areas on an assigned density basis as determined by site investigations to be compatible with sustained carrying capacity.
8. In developing structures that might cause excessive diminishment of sand supply or interruption of the longshore transport of littoral drift, the developer should investigate and where possible provide methods of sand by-pass.

Background

Policy #1 provides the general framework for management of the sand area resource. The planning that is guided by this policy will provide general use designations for the various types of sand landforms based on inventory information and state developed criteria. Certain sand landforms such as older stabilized dunes and older foredunes may be designated for development or other intensive uses. However, due to the physical and biological limitations (carrying capacity) of other sand landforms, additional site-specific information is needed prior to approving or disapproving proposed uses of them. Therefore, to complete the recommended management approach for sand areas, it is necessary to establish a regulatory procedure which requires site investigations in applicable sand areas.

Many uses may be possible on a particular sand site depending on the landform type, the potential impact of the proposed use and the ability to alter the natural limitations encountered. A site investigation in providing site-specific information will allow for a needed flexibility in making the complex decisions related to use of these sand areas.

The physical and biological capabilities (carrying capacity) of most types of sand areas vary in relation to the existence and interaction of sand supply, wind and wave forces, water and vegetation. The existing vegetation or potential for establishing vegetation is critical to the use suitability and capability of the site. The stability of a site, its resistance to wind, erosion, ocean undercutting and mass wasting, most often depends on how well the vegetative cover is established and protected. Therefore, sand area stabilization and protection and maintenance of existing vegetation are important elements of resource management.⁴ The inventory emphasizes this point and the proposed policies include it as a major evaluative criteria.

⁴The absence of vegetation (i.e., unstabilized sand areas) is important to many of the recreational uses and scenic values of sand areas and, therefore, proper management would not always require stabilization programs.

The presence of water is essential to the existence of healthy vegetation. Accordingly, uses which would threaten moisture loss need to be regulated so that enough water is available to sustain the vegetation and maintain stabilized conditions. Cutting and removal of vegetation as well as excessive drawdown of ground water could affect the available moisture in the soil.

The ground water supplies in sand areas also are important as a source of domestic water for both communities and individual users. However, care must be taken to not exceed yield limitations of these supplies. Over withdrawal of freshwater could lead to intrusion of salt water into the wells.⁵ In addition, ground water in sand areas is highly susceptible to pollution from surface or subsurface waste discharges due to the vertical and horizontal permeability (high infiltration rates) of sand landforms.⁶

A continuing sand supply is important in the dune building process, particularly that of foredunes which protect property and environment from sand damage. The recreational values of open sand areas (oblique and transverse dunes and beaches) are also dependent on a continuing supply of sand. Therefore, removal of sand and interference with the natural sand supply process should be controlled so that protective and recreational values are retained. The longshore transport of sand (littoral drift) is a major part of this natural process.⁷

The criteria recommended for evaluating proposed uses of sand areas and several of the recommended actions pertaining to specific uses are directed toward maintaining the appropriate (depending on management objective) interaction of sand supply, water and vegetation.

⁵Geologic Hazards Inventory of the Coastal Zone, (p. 28).

⁶Beaches and Dunes of the Oregon Coast, (p. 56, 59, 62).

⁷Beaches and Dunes of the Oregon Coast, (p. 16).

37. Regulating Modifications of Foredunes

Policy Statements

- A. *State and local governments shall permit development on active foredunes and on conditionally stable foredunes which are subject to serious ocean undercutting only when it is demonstrated that the net social benefits of development on these sand areas exceed the net social benefits of prohibiting such development.*
- B. *State and local governments shall allow breaching of foredunes only on a temporary basis for emergency purposes (e.g., fire control, cleaning up oil spills) and shall require that these foredunes be restored once the emergency passes, unless it is demonstrated that the net social benefits of permanent breaching of the foredune exceed the net social benefits of prohibiting permanent breaching.*
- C. *The U.S. Forest Service shall allow permanent breaching of foredunes located in the Dunes National Recreation Area when necessary to maintain a continuing supply of sand to inland recreational areas.*

Necessary Action

The state, in cooperation with local governments and state and federal agencies, shall establish criteria and procedures governing breaching of foredunes and restoration of breached foredunes.

Recommended Actions

1. *State and local governments should investigate all known methods of inducing foredunes artificially on the continental shelf and should encourage federal agencies to use appropriate methods to protect developments threatened by undercutting erosion of present foredunes.*
2. *State and local governments, in cooperation with federal agencies, should develop criteria for construction of beach front protective structures, and one of the criteria should be an evaluation of the net social benefits.*

Background

Both Policy #1 and #2 apply to foredunes as one of the landforms within sand areas. However, separate policies directed specifically at active and certain conditionally stable foredunes are considered necessary because:

- (1) these foredunes have very little, if any, tolerance for most activities that might occur in sand areas with the exception of undeveloped pedestrian access and wildlife habitat.¹
- (2) the potential for a rapid change in the foredune landform due to wind and wave erosion is ever present.
- (3) foredunes provide a valuable protective function keeping sand laden wind from penetrating further inland and damaging property, facilities and wildlife habitat.
- (4) the foredunes are an area of geological hazard due to wind erosion, ocean undercutting, and tsunamis.²

There are some 1,385 acres of active foredunes and 2,055 acres of conditionally stable foredunes stretching 138 miles along the Oregon coast. Many of these dunes are a direct result of some of man's first efforts in sand stabilization during which European beachgrass was introduced.³ Other foredunes are the outcome of the naturalization of European beachgrass and its growth along the sand areas of the coast. This vegetation provides one of the key elements of a dynamic dune building process. The ocean deposits sand on the beaches and the wind carries it inland until its velocity is reduced by the vegetation at which point the sand is deposited. The vegetation then grows up through the sand and the process repeats itself until a sand ridge (the foredune) is established.

¹Table 3 of the OCC&DC inventory Beaches and Dunes of the Oregon Coast describes tolerance levels of active foredunes and recently stabilized foredunes (conditionally stable).

²The Geologic Hazards Inventory of the Oregon Coastal Zone describes these hazards and their relationship to dune lands.

³Between 1910 and 1935 sand stabilization projects were initiated in the Coos Bay dune sheet using European beachgrass and in 1935 the U.S. Soil Conservation Service and the Civilian Conservation Corps began stabilization projects on the Clatsop Plains.

Interference with this process will directly affect the characteristics of the foredune. If the vegetation is removed or not allowed to continue its growth and the sand is exposed, a blowout or rapid wind erosion may occur causing encroachment of sand on previously protected property and wildlife habitats.

Although few species of wildlife use the beachgrass on foredunes as habitat, modification of the foredunes may have adverse effects on the adjacent habitats of the Snowy Plover⁴ as well as some 54 species of wildlife found on the landward side of the dune and 98 species of wildlife inhabiting the deflation plain.

Developments such as housing on active foredunes may result in wind erosion of the dune, damage to the development of adjacent property, and hazards to human life. The damages of housing construction on active foredunes in Clatsop, Tillamook and Lincoln Counties are illustrated in the inventory (p. 38-43). Rapid movement of sand by the wind not only damages the development itself but causes damage and maintenance costs to be increased for adjacent property owners. On conditionally stable foredunes where wind erosion may not be a major problem there is still the threat of ocean undercutting and seismic sea waves (tsunamis). The undercutting of wind stable foredunes and active foredunes in Salishan Spit, Lincoln County during the winter of 1972-1973 and on Bay Ocean Spit, Tillamook County during 1930-1952 are prime examples of ocean undercutting.⁵ The past and potential effects of tsunamis are described within the Beaches and Dunes Inventory (p. 46-50) and within the Geologic Hazards Inventory of the Oregon Coastal Zone (p. 39-41).

As indicated, the growth and stability of active foredunes or of conditionally stable foredunes is dependent on sand supply, water, vegetation cover, and wind velocity. The uses that affect or modify these controlling elements need to be managed if the protective function of this resource is to be preserved.

⁴The Snowy Plover is dependent on the beach-driftwood habitat which lies adjacent or parallel to foredunes.

⁵Figures and references to these occurrences are on p. 46 of the Beaches and Dunes Inventory.

In some special cases the protection of the foredune may not be desirable. For example, where inland sand areas are considered best used for recreational purposes that require large expanses of open sand, removal of the foredune to allow replenishment from the beach sand supply may be necessary. However, such a situation is not likely to occur except within the Dunes National Recreation Area.

In most cases, removal or serious alteration to the protective foredunes will mean that: "substantial sand deposition damage will result to man's existing developments and public works, lakes, wildlife areas, agricultural land and forests. In other words, the active foredunes or those foredunes conditionally stable provide a protective wind barrier to what exists landward of them and the removal of the barrier will increase wind erosion and sand deposition in the landward area."⁶

⁶USDA Soil Conservation Service, Beaches and Dunes of the Oregon Coast, (prepared for the OCC&DC), March, 1975, p. 50.

38. Managing Continental Shelf Resources

Policy Statement

The appropriate state agency shall coordinate with state agencies, other states and federal agencies to manage continental shelf resources so food production, water quality, recreation and navigation values are conserved and enhanced.

Necessary Actions

1. *Oregon shall support:*
 - a. *National efforts to extend the contiguous fishing zone to 200 miles offshore to protect coastal and anadromous species from overexploitation;*
 - b. *National efforts to establish effective international fisheries management agreements; and*
 - c. *Completion of continental shelf resource inventories by the appropriate state and federal agencies.*
2. *The appropriate state agency shall appoint a technical advisory committee with members from private industry, from local, state and federal agencies, and from other interested groups including the public in general to advise on the management of continental shelf resources.*

Recommended Actions

1. *The state should require the developer to provide an inventory of the biological resources of a proposed development area and the inventory should be an explicit part of ecological and economic impact statements also provided by the developer, to determine whether the development should be approved.*
2. *The state should cooperate with the Coast Guard to assure that adequate state contingency plans are developed and resources are available to contain and clean up spills of oil and other harmful substances in the ocean.*

3. The state should encourage and review federal regulations that require vessels carrying hazardous substances in Oregon waters to meet strict design, operation and maintenance standards which would reduce the risk of damage to the natural resources.
4. The state should require that disposal of materials offshore will meet Environmental Protection Agency ocean dumping regulations.

Background

The continental shelves of the world contain about 90% of the ocean's biological resources and nearly all of the ocean's chemical and geological resources. The shore and ocean also have exceptional visual and aesthetic values.

Management of the continental shelf resources is complicated by the differing jurisdictions of states and the nation. Oregon, through the State Land Board, owns three miles of continental shelf immediately offshore, and the Department of Interior, Bureau of Land Management manages the lands of the rest of the continental shelf for the federal government. Legal constraints and jurisdictions to some extent limit Oregon's power to provide effective management. It is in the state's interest to promote cooperative management of continental shelf in a manner that protects the values of main concern to the people of Oregon. Those values have been identified as food production, water quality, recreation and navigation.

The OCC&DC did not complete an inventory of continental shelf resources. Such an inventory would contribute greatly to the general understanding of this resource and could lead to improved management.

The Commission expressed strong concern about the impact of foreign fishing on the fish resources of the continental shelf. At the April 19, 1974 meeting in Tillamook, commissioners drafted and unanimously passed the following resolution:

Because of the emergency nature in the coastal fishing industry created largely by unrestricted and long-term damage to the total fishery resource of the continental shelf of Oregon caused primarily by various foreign-owned fleets and because current federal consideration is being given this issue, therefore OCC&DC declares an interim policy supporting 200 miles U.S. jurisdiction over coastal fishing and urges federal adoption of this policy.

The OCC&DC Chairman was authorized to appear before the U.S. Senate Hearing to support a federal bill to extend the U.S. contiguous fishing zone to 200 miles offshore.¹

¹Complete text of the hearing testimony from the OCC&DC Chairman is included in Appendix A.

39. Regulating Mineral Resource Development on the Continental Shelf

Policy Statement

The state shall allow exploration for, extraction of, and transfer stations for mineral resources on the continental shelf only if the developer demonstrates that such activities will increase the net social benefits of Oregonians and that the methods employed minimize the adverse impacts of the ecological, cultural and aesthetic values of the ocean and its shorelands.

Necessary Action

The state shall require a developer to obtain a permit from the appropriate state or federal agency for exploration for, extraction of, or transfer stations for mineral resources on the continental shelf. Before approval is granted, appropriate state and federal agencies and the public shall review the permit application to determine if the proposed development is within the public interest. The permit application shall:

- a. designate areas which will be off limits to exploration and extraction;*
- b. specify methods and equipment to be used;*
- c. require that the developer will finance monitoring and inspection of the exploration, extraction or transfer operations by the appropriate state and federal agency;*
- d. require that pollution abatement methods to be used reflect the best economically available and proven technology;*
- e. require that the developer is liable for individual or public damage caused by the mining operations and will post necessary bonding to cover damages;*
- f. specify the extent of restoration that will be accomplished when the mining operations are finished; and*
- g. specify that the state or federal government may revoke or modify a permit to prevent or halt damage to the environment.*

Background

The pressure for developing mineral resources of the Oregon continental shelf is increasing because of the "energy crisis" and federal outer continental shelf programs. Oregon has not set up specific policy or regulations to control development of the continental shelf. Accidents and problems occurring elsewhere on the nation's continental shelf areas during mineral resource development have aroused public concern for protecting the values of the continental shelf. This policy establishes a low priority for mineral resource development off Oregon and describes social and environmental criteria for offshore mineral resource development which are aimed at protecting the state's interest.

40. Conserving Forest Lands

Policy Statement

State and local governments shall conserve for forest uses¹ all lands in the first three classes of forest land defined by the OCC&DC Uplands Inventory and shall conserve those forest lands in class four, defined by the OCC&DC Uplands Inventory, that are capable of growing at least 20² cubic feet of usable wood fiber per acre per year.²

Necessary Actions

- 1. Local government shall identify forest lands within comprehensive land use plans in a manner consistent with the classes of forest land defined by the OCC&DC Uplands Inventory and shall designate for forest uses all lands in at least the first three classes and those capable of growing at least 20³ cubic feet of usable wood fiber per acre per year.³*

¹Forest uses, as defined in the glossary and described in the OCC&DC inventory, include: production and related processing of trees for the diversified wood products industry; provision of natural water reservoirs or watersheds; fish and wildlife habitats; outdoor recreation; and provision of scenic buffers, open space, and grazing of livestock.

²The RESOURCE ANALYSIS OF OREGON'S COASTAL UPLANDS describes five classes of forest land: Class 1 - those forested lands where resource protection, scenic, and research values pre-empt all other uses due to potential or existing ecological problems and aesthetic reasons; Class 2 - those forest lands suited for provision of community water supply or for high-use recreational activities as well as for timber production; Class 3 - those forest lands suited for the commercial exploitation of wood or other forest products; Class 4 - those forest lands producing less than 20 cubic feet of usable wood fiber per acre per year that may be capable of producing greater than 20 cubic feet of usable wood fiber per acre per year under alternative management practices; and Class 5 - those forest lands capable of producing at least 20 cubic feet of usable wood fiber per acre per year (without intensive management practices) that instead are devoted to other uses such as farming, mining, and power transmission.

³Local governments' identification and designation of forest lands should be based on criteria provided by the state through the LCDC and the State Department of Forestry.

2. *Lands conserved or designated for forest uses shall not be converted to other than forest uses unless it is demonstrated that the net social benefits of conversion exceed the net social benefits of retaining them in forest uses.*

Recommended Actions

1. State government should encourage intensive management practices that allow realization of the multiple use of forest lands with a minimum of undesirable ecological impact.
2. In order to improve timber production of forest lands, state government should: encourage rehabilitation of old cutover, burned or brush-covered forest lands; and support research and development of new methods of management.
3. In order to maximize the benefits accruing to Oregonians from the use of forest lands for wood production while at the same time avoiding erosion and sedimentation problems, forest land-owners and managers should manage their lands in accordance with the Oregon Forest Practice Act Rules and the state should provide sufficient staff to adequately enforce these rules.
4. The state forester should conduct or support a study of the feasibility of coordinating timber harvesting by drainage basins, or by other means, in order to protect all forest uses and watershed values.
5. The state should encourage the development of land use plans for both public and private forest lands which would:
 - a. designate high productive site timberland to be reserved for timber production, unless it is demonstrated that the net social benefits of conversion to other uses exceed the net social benefits of reservation;
 - b. identify possible incentives to be used in conservation of forest lands for forest uses; and
 - c. provide a means for coordination of timber harvesting to protect watershed values.
6. The state should conduct or support a study of the log exporting industry to determine the long- and short-term effects on forest reserves, reforestation and log costs and the capability of the areas involved to continue to provide a timber product of unimpaired quality as well as quantity.
7. State government should require road location and construction to be planned to minimize siltation and prevent mass soil movement by avoiding areas of easily erodible soils.

8. State government should develop a fire or natural disaster contingency plan to avoid creating extensive erosion and silt damage to watershed streams and estuaries and blockage of streams with debris from salvage operations.

Background

Approximately 90% of the coastal zone, over 4,300,000 acres, is in forest land.⁴ Most of this land (approximately 85%) has value as commercial timberland and much of this timberland is considered to be the most productive in North America.⁵ As such, these forest lands can provide a permanent major resource base for the continued future economic development of the coastal region. At present the forest products industry is the major economic force in the coastal zone, comprising about 1/5 of all direct employment.⁶ Continuation of the forest products industry as a major part of the coastal economy will require conservation and intensive management of commercial timberland.⁷ In addition, efforts should be made to improve the productivity of small farm and miscellaneous woodlots as well as large tracts of non-commercial timberland through increased investment and higher levels of management.

⁴Economic Survey and Analysis of the Oregon Coastal Zone, OCC&DC November 1974, Table E-3, p. E 7 (western Lane and western Douglas estimated).

⁵Worell, Albert C., Forest Resources, Private Enterprise, and the Future, Industrial Forestry Association, Portland, 1967, OCC&DC Economic Survey, Table E-2,5 (interpreted). Over 50% of the forest land in western Oregon of which the coastal zone is a part is included in the top two productivity classes (capable of producing 121 or more cubic feet of wood fiber per acre per year).

⁶OCC&DC Economic Survey and Analysis.

⁷OCC&DC Economic Survey and Analysis, p. 73-89, discusses the future of the industry and possible future yields.

The future of the coastal forest products industry is dependent on and adequate supply of available raw materials. The major constraint to an adequate supply appears to be the level of management applied to both public and private forest lands. Conversion of forest lands to urban uses resulting in a substantial loss of commercial forest land available for timber production does not appear to be a major problem confronting the coastal industry.⁸

The Oregon Forest Practices Act provides rules and guidelines applicable to all forest owners and managers which will improve management. Immediate reforestation is one of the requirements included in the Act. However, rehabilitation of older (more than 10 years) cutover, burned, or brush covered forest lands is not included in the Act.

The values of forest lands are not only economic. The forest resource is a multiple use resource with many compatible functions. In addition to the material for the forest products industry, forest lands provide natural watershed, recreational sites, fish and wildlife habitats and quality of life factors such as open space, wilderness and visual quality.⁹ Management of forest lands must not only be related to productivity and economic viability but also to conserving water quality and supply, habitat, recreation, and quality of life values.

The Forest Practices Act Rules address the problem of water quality by requiring proper logging procedures related to road construction, stream modification, stream buffers and skid trails. With sufficient staff to enforce these rules, the water supply function of forest lands would be protected. However, the Act does not provide for the protection of the recreational and quality of life functions.¹⁰ The Act should be broadened to provide additional forest resource protection by requiring specialized management techniques in areas of high recreation and scenic value.

⁸OCC&DC Economic Survey and Analysis, p. 74, found that conversion of forest land to urban uses resulted in a loss of 29,000 acres between 1945-1970 or only 1.5% of all commercial timberland. The OCC&DC Inventory of Development Pressures, states that most forest land is not threatened by urbanization due to lack of physical suitability and there are only a few instances where public agencies or timber companies hold prime developable property.

⁹These diverse values and functions of forest lands are discussed in the OCC&DC Uplands Inventory, and within the OCC&DC inventories for fish and wildlife, recreation (part of Uplands), visual resources and water resources.

¹⁰The OCC&DC Uplands Inventory.

Of overall concern in managing the forest resource is the development of land use plans which would allow a higher degree of coordination among the various public and private forest managers as well as provide an opportunity for improved management of all coastal forest lands. Each agency, company or individual manages its part of the forest resource in accordance with its own goals and policies. Although the Forest Practices Act attempts to standardize the various management policies through its rules and guidelines, it does not provide for coordination and long range planning. Land use plans developed by the private sector as well as the public land managers could provide information which would maximize the benefits from the entire coastal forest resource. The private sector's willingness to make its plans public considering the competitive nature of the industry and the state's capability to coordinate and monitor planning are unknowns.

A more specific concern pertaining to the log export industry has been expressed. This sector of the timber industry has had a substantial growth in output in recent years.¹¹ However, there has been considerable controversy surrounding log export policies including suggestions that log exports be prohibited until it is determined that there are no adverse effects on forest reserves, reforestation and log costs. Neither the Uplands Inventory nor the Economic Survey support such a moratorium. However, a study of possible adverse effects should be conducted.

¹¹The OCC&DC Economic Survey and Analysis, p. E-44.

41. Reserving Productive Agricultural Lands

Policy Statement

State and local governments shall reserve productive agricultural lands¹ in the coastal zone, defined in the OCC&DC Uplands Inventory and in local comprehensive plans, for agricultural uses,² unless it is demonstrated that the net social benefits of conversion to other uses exceed the net social benefits of reservation.

Necessary Action

Local government shall identify productive agricultural lands within comprehensive land use plans and shall designate these lands for agricultural uses.³

¹The OCC&DC inventory, Resource Analysis of Oregon's Coastal Uplands, describes five classes of agricultural land. Class 1 and 2 — those agricultural lands having the best conditions for agricultural production — should be preserved for agricultural uses. Class 3 — those agricultural lands, identified in the OCC&DC inventory, having fair production potential, if soil and/or water conditions are improved and competitive uses controlled — should be preserved in agricultural use only if case by case evaluations determine that soil and/or water improvements will be made and competitive uses will be controlled. Class 4 and 5 — those lands having little or no value for agriculture due to production limitations and competitive uses — are excluded from this policy.

²Agricultural uses, as defined in the glossary and described in the OCC&DC Uplands Inventory, include: raising and harvesting of crops; feeding, breeding and management of, or produce of, livestock, poultry, fur-bearing animals or honey bees; enhancement of quality of life through provision of open space, scenic vistas and opportunities for rural life style; and provision of fish and wildlife habitat.

³Local government identification and designation of agricultural lands should be based on criteria provided by the state through the LCDC (the OCC&DC inventory and economic survey provides initial guidance).

Recommended Actions

1. State government should develop and fund an incentive program to encourage the retention of agricultural lands in agricultural use through use of authority of the State Soil and Water Conservation Commission and soil and water conservation districts as specified in the Soil and Water Conservation District Act (ORS 568.210).⁴
2. Local government should protect agricultural lands by limiting uses of adjacent land to those which are compatible with agricultural activities.

Background

Approximately 10.4% of the land area within the coastal counties⁵ is in farming use as compared to 29.3% for the state as a whole. The predominant farming activity on coastal agricultural land is forage (grass and hay) production and grazing of dairy cows and beef cattle. The production of speciality crops such as cranberries, greenhouse plants and lily bulbs is also of some significance.⁶

⁴Existing state law ORS 215 allows local government to establish an Exclusive Farm Use Zone for automatic special tax assessment under ORS 308.270. ORS 308.740 to 790 provides for special tax assessment of open space lands to discourage their forced conversion to more intensive uses. However, these incentives are not enough to keep productive agricultural lands in agricultural use. Programs which provide monetary incentives such as direct compensation or assistance in soil/water improvement should be developed.

⁵The OCC&DC Economic Survey and Analysis, p. C-2. "Coastal Counties" do not include western Lane or western Douglas because information for just the western portion of these counties was not available.

⁶The OCC&DC Resource Analysis of Oregon's Coastal Uplands.

At present, the agricultural industry is the second largest employer in the coastal zone. However, employment in agriculture continues to decline as it has over the last several decades. Production and income earned is increasing but this is due to increased yields per acre. The number of farms and the total amount of land in farm use is decreasing.⁷

The OCC&DC inventory of coastal uplands identifies several reasons for the reduction of the agricultural resource including changes in lifestyle; limitations of coastal agricultural land and climate; economics; management and competition from other uses. Land best suited for agriculture is generally flat, well drained, and has an available water supply. Such land is also the easiest to develop (and the most desirable) for housing and other urban uses. Economically, the monetary value for such land is greater for urban uses than agricultural uses. Forest uses of agricultural land also can have a higher monetary value than use for agriculture.

The agricultural resource is vulnerable. It occurs in a finite amount and is limited to specific locations. If it is considered desirable to preserve this coastal resource, a positive effort must be made to provide incentives and protection. Otherwise, agricultural uses will not be able to compete economically with urban and forest uses for the available land resource.

The functions and values of agricultural land, described in the inventory of coastal uplands, provide the rationale for preservation of productive agricultural lands. They include: production of food; improvement of soil stability; protection of watersheds; fish and wildlife habitats; recreation and education opportunities; open space; pollution abatement; employment; quality of life (visual attractiveness and character of the coast and opportunity for rural or part-time farming life style). These functions and values added together seem to justify preservation of the most productive, coastal agricultural lands.

⁷During the period 1959-1969 there was a 28.7% (164,490 acre) decrease in the amount of land in farms in coastal counties as compared to 1.4% decrease for the state and a 38.1% decrease in the number of farms on the coast. OCC&DC Economic Survey and Analysis, pp. G-2,3.

Although there is limited potential for increasing the supply of highly productive agricultural land,⁸ soil improvement, drainage and irrigation could result in improving the agricultural potential of some 185,499 acres of crop and pasture land.⁹ Assistance and incentives to make these improvements should be provided as long as other values, such as wetlands, are not sacrificed.

⁸The OCC&DC Uplands Inventory, and the Economic Survey and Analysis, p. C-34.

⁹The OCC&DC Economic Survey and Analysis, p. C-37.

42. Implementing the OCC&DC Management Program

Policy Statements

1. *In as much as the entire OCC&DC coastal zone management proposal was developed for submittal to the 1975 Oregon Legislature, the OCC&DC recommends that legislative review and approval of all sections of this report take place before requiring compliance in the comprehensive planning process at the local level.*
2. *The Legislature shall designate a body that will bear the responsibility for estimating and evaluating the economic and other social consequences of the policies.*
3. *No policy shall be implemented until its economic consequences are estimated and evaluated by the state government, in cooperation with local governments, and that field-testing be an integral part of the evaluation.*
4. *The State Legislature shall appoint a body composed of equal representation from the governmental, industrial, and public sectors whose main responsibility will be to direct the expansion of the existing OCC&DC inventories to the level of comprehensiveness necessary to complement the policy statements and to reach fair and equitable land use identifications and designations in the coastal zone.*

(The Executive Committee determined that the intent of the OCC&DC by adopting this policy was not to create another agency but to insure direct involvement of all sectors affected by the OCC&DC inventories and policies. To clarify this intent, the Executive Committee suggested the following rewording: State and local governments shall appoint bodies composed of equal representation from the governmental, industrial, and public sectors to direct the expansion of the existing inventories to the level of comprehensiveness necessary to complement the policy statements and to reach fair and equitable land use identifications and designations in the coastal zone.)

5. *State government shall assume responsibility for defending against lawsuits directed at units of local government as a result of their implementation of state mandated policies and planning goals and for paying compensatory costs that are awarded.*

6. *The state shall develop and implement a system for compensating landowners who demonstrate that they have incurred economic losses from land use regulations.*

Background

The OCC&DC, during its final meeting, adopted these general policies to guide the state in implementing the Coastal Zone Management Program. Policies 2 and 3 were recommended to the Commission by its Economic Steering Committee. The Committee felt that these provisions must accompany the resource management policies forwarded to the Legislature. Policies 5 and 6 were originally included only in the implementation section of this final report. However, the Commission felt that these recommendations required additional emphasis, and, therefore, adopted them as general policies.

In that the OCC&DC management plan expresses a state interest in the conservation and development of natural resources, the state should accept responsibility for the results of implementing all or any part of the plan. Management of natural resources requires certain land and water use restrictions and regulations. These additional restrictions may be interpreted by private property owners to be overly restrictive to the point of representing a taking of land without just compensation. If this becomes the case, units of local government may incur lawsuits in implementing state mandated policies and planning goals. Local governments are not in the best financial or legal position to respond adequately to such suits.

Throughout the OCC&DC work program, property owners in the coastal zone expressed to the Commission their concerns about the economic impacts of land use regulations. Many felt that they should be compensated when development on their land was prohibited or greatly restricted. The popular acceptability of land use management is essential to the effectiveness of the Coastal Zone Management Program. The possibility of achieving this acceptability can be improved if the state will continue the development of a land value adjustment mechanism.

GLOSSARY

Adjudicate: To hear and settle (a case) by judicial procedure.

Adverse Effects: Effects which can or have been measured and determined undesirable considering social, economic, or environmental factors.

Aesthetics: That in the natural or man-made environment which is pleasing to the senses.

Agricultural Lands: Lands for which the primary use is the growing and harvesting of agricultural products.

Agricultural Uses: Raising and harvesting of crops; feeding, breeding and management of, or produce of, livestock, poultry, fur-bearing animals or honey bees; provision of open space; farm woodlots.

Agriculture: Cultivation of the soil for the purpose of harvesting crops, raising livestock, or producing of any other useful commodity from the land. (Definition includes farming, which is the practice of agriculture as a business.)

Alteration: An artificial physical modification of submerged, submersible or dry land, including but not limited to fill, removal, excavation, channel changes, rip-rap, bulkheading, seawalls, groins, tide-gates, floating structures and jetties.

Aquatic Life: Those organisms whose usual habitat is in submerged or submersible areas.

Archaeological Resources: Those districts, sites, buildings, structures and artifacts which possess material evidence of human life and culture of the prehistoric and historic past and may be recovered and studied.

Areas of Exceptional or Strong Coastal Association: Areas of high visual significance because their quality and character evidence the influence of the coastal environment.

Beach: A gently sloping zone of loose material (sand) that extends landward from the low-water line to a point where there is a definite change in the material type or landform.

Breaching: Making a hole or gap in or breaking through.

Carrying Capacity: The maximum capability of an existing environment and the resources of that environment to support indefinitely a certain population or activity level without deterioration.

Channelization: The straightening and deepening of a shallow, braided or meandering stream, usually to facilitate passage of flood flows.

Coastal High Hazard Area: The area along the coast subject to ocean flooding from storms and high tides.

Conserve: To use natural resources wisely, consistent with long-range goals to prevent deterioration or destruction of the resources.

Contiguous Fishing Zone: An ocean area, starting at the outer edge of the territorial sea and extending to a specified distance offshore (12 nautical miles presently for the U.S.), in which complete control of fishing activities is exercised by the adjacent nation.

Continental Shelf: (Legal Definition) The territory seaward from the ocean shore to the distance where the average ocean depth is 200 meters.

(Physical Definition) The territory seaward from the ocean shore to the distance where the ocean floor slopes steeply to the deep sea floor.

Deflation Plain: A broad interdune area which is wind scoured to the level of the summer water table.

Design Review: A process by which proposed developments or uses are evaluated through a committee to determine their potential impacts on visual values.

Developer: Any individual who proposes or conducts development or any public or private entity or association (including corporations, governmental and private agencies, associations, firms, partnerships, joint stock companies and groups of the aforementioned) which proposes or conducts development.

Development: On land, in or under water, the placement or erection of any solid material or structure; grading, removing, dredging, mining, or extraction of any materials (not including agriculture or forestry activities); increasing the density or intensity of use of land, including, but not limited to, subdivision of land and increase in the intensity of use of water. As used in this section, "structure" includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line.

Development, Orderly: Well-considered, directed development in which the consideration and direction is embodied in comprehensive planning controlled by the public. The term does not rule out encouraged development, but it does not mean stimulated development in which private development is subsidized by the public.

Dune Complex: A sand area landform which contains a variety of dune types (including unstable areas) within a small area.

Dune, Conditionally Stable: A dune presently in a stable condition but vulnerable to becoming active due to fragile vegetative cover.

Dune, Oblique: Open sand areas characterized by a broad sloping ridge and a slip face oriented obliquely to both northwest and southwest winds.

Dune, Old Stabilized: A wind stable sand area landform, characterized by significant soil development and a diverse forest cover.

Dune, Open Sand: A collective term for active unvegetated dune landforms.

Dune, Sand: A hill or ridge of sand built up by the wind along sandy coasts.

Dune, Transverse: An active, open sand landform composed of a sloping ridge and a slope face with low relief occurring in a wave-like pattern in the summer.

Ecosystem Types: Refers to the different and identifiable communities of living and nonliving things.

Endangered Species: Native fish or wildlife whose habitat is threatened with destruction, drastic modification, or severe curtailment, or whose survival is threatened by overexploitation, disease, predation, or other factors; or whose continued survival requires assistance.

Environmental Corridor: A linear tract of land (such as along a river or the edge of an estuary) on which there is a coincidence of natural resources (such as water, wildlife habitat, wetlands and riparian vegetation).

Erosion: The removal and transport of earth material by air, water or gravity.

Estuarine Area: The open waters, submerged lands, submersible lands and adjacent shorelands of an estuary.

Estuary: A semi-enclosed body of water where freshwater from streams meet and mix with saltwater from the sea. The estuary includes: (1) estuarine waters; (2) tidelands; and (3) tidal marshes.

Flood: A temporary rise in stream flow or stage that results in water overtopping stream banks and inundating the land adjacent to the channel.

Flood Fringe: The area of the floodplain lying outside of the floodway, but subject to periodic inundation from flooding.

Floodplain: The area adjoining a stream, tidal estuary or coast that is subject to inundation by a regional flood.

Flood Proofing: Any combination of structural additions, changes or adjustments to structures primarily for the reduction or elimination of flood damage potential to structures and contents of buildings.

Floodway: The normal stream channel and that adjoining area of the natural floodplain needed to convey the waters of a regional flood while causing less than one foot increases in upstream flood elevations.

Flow Augmentation: Increasing stream flows to desired levels for protection of aquatic life, maintenance of water quality standards, protection of recreational and aesthetic values; and to supply needs of designated water uses through water storage releases, efficient use of water resources and/or inter-basin water transfers.

Foredune: An active foredune which has become conditionally stable with regard to wind erosion.

Foredune, Active: A growing barrier ridge of sand paralleling the beach which lies immediately above the high tide line.

Foredune, Older: A wind stable foredune landform with a well developed soil profile.

Forest Lands: Lands dominated by trees of any age and capable of (a) producing wood or other forest products; (b) exerting an influence in the climate or in the water resources; or (c) providing shelter for livestock and wildlife.

Forest Uses: Include management, production and harvesting of forest products; provision of natural water reservoirs or watersheds; provision of open space and scenic buffers; fish and wildlife habitats, outdoor recreation; grazing land for livestock.

Geologically Hazardous Area: A land area where geologic conditions are unfavorable for certain kinds or intensity of development and may result in loss of life or property or environmental damages.

Ground Water: Water in the saturated zone beneath the earth's surface which is the source of water for wells and springs.

High Productive Site Timberland: Forest land capable of producing at least 121 cubic feet of wood fiber per acre per year.

Historical Resources: Those districts, sites, buildings, structures, and artifacts which have a relationship to events or conditions of the human past.

Hummock, Active: Partially vegetated (usually with beach grass) circular and elevated mounds of sand which are actively growing in size.

Hydraulic Action: The action of moving water on the beds, banks and shorelands of water bodies (streams, lakes, estuaries and the ocean).

Hydraulic Effects: Effects related to movement of water.

Intensive Management Practices: Methods of increasing the production of land such as thinning, soil improvement, irrigation, and genetic improvement.

Interdune Area: Low-lying areas between higher sand landforms which are generally under water during part of the year.

Irreversible Damage: Impairment of the usefulness or value of natural resources which can not be reversed or corrected.

Land and Water Use Plan: A plan prepared by local, regional, state or federal planning bodies in accord with respective policies, concerning area development and conservation.

Landslide: A general term covering a wide variety of mass movement landforms and processes involving measurable movement downslope by means of gravitational forces; the occurrence of such movement.

Littoral Drift: The material or movement of material such as sand or gravel by ocean currents (longshore transport) and waves through the littoral (close-in water) zone.

Marshland: That area between the mean high waterline and the line of nonaquatic vegetation. Wetlands.

Marine Vegetation: Those species of marine vegetation such as kelp and eelgrass which have a commercial harvest value or are an important component in the diet of aquatic life or wildlife.

Mineral Resources: Naturally occurring homogeneous substances (such as sand, gravel, sulfur, coal, petroleum, and natural gas) obtained for human use.

Minimum Streamflow (Requirement): The amount of streamflow necessary to sustain aquatic life.

Multiple Use: The coordination or integration of diverse uses or activities within one development or resource area in a manner that will conserve the basic resource values.

Net Social Benefits: Net social benefits are social benefits less social costs.

Non-Appropriative (Non-Consumptive) Fish and Wildlife Use: A manner of use of fish and wildlife resources which does not reduce any portion of them to personal possession or alters them from their natural state, such as viewing and photography.

Ocean Undercutting: Active erosion of the ocean shoreline by wave action.

Off-Road Vehicles: Any motorized vehicles designated for or capable of cross country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain which would include, but not be limited to, such vehicles as four wheel drive, motorcycle, snowmobile, amphibious, and air cushion vehicles; except that such term excludes (1) any registered motorboat, and (2) any military, fire, emergency or law enforcement vehicle when used for official or emergency purposes.

Offshore Construction: Development of structures off the ocean shoreline for mineral extraction or other uses.

Open Space: Land used for agricultural or forest purposes and any land area, the preservation of which in its present use would:

- (1) Conserve and enhance natural or scenic resources;
- (2) Protect air or streams or water supply;
- (3) Promote conservation;
- (4) Conserve landscaped areas;
- (5) Enhance the value to the public of abutting or neighboring areas;
- (6) Enhance recreation opportunities;
- (7) Preserve historic sites; or
- (8) Promote orderly urban or suburban development.

Outdoor Advertising Signs: Signs which advertise goods, products and services not related to the premises on which the signs are located.

Preserve: To keep a resource from harm or damage.

Public Benefits (or losses): Those combined social, economic, and environmental gains (or losses) which accrue to (or are taken from) the public because of a use or activity and its subsequent resulting effects.

Regional (100 Year) Flood: A large flood occurring in an area as a result of inundation during periods of higher than normal streamflows, extremely high tides, high winds, rapid snowmelt, natural stream blockages, tsunamis, or combinations thereof, whose size has a one percent chance of occurrence in any one year.

Regional Water Supply: Major storage and distribution systems for the high volume demands of municipal and industrial users on a regional basis.

Reserve: To keep back or save for future use or a special purpose.

Restore: To bring back to or put back into a former or original state.

Riparian: Of, on or pertaining to the bank of a river, pond or lake.

Sand Areas: Sand landforms which are grouped into active, recently stabilized, interdune, and stabilized areas. Active sand areas include: beaches, open sand dunes, hummocks, and active foredunes; recently stabilized sand areas include: conditionally stable foredunes, inland foredunes, conditionally stable open sand dunes, younger stabilized dunes and dunes complexes; interdune sand areas include: deflation plains and wet interdune area; stabilized sand areas include: older stabilized dunes and older foredunes.

Sand Area, Active: A sand area which is growing, moving or both as a result of wind action. There is a broad range of active sand areas such as transverse dunes, oblique dunes, parabolas, active hummocks and active foredunes.

Sand Area, Stabilized: A sand area protected by vegetation or some other means from further movement or modification by the wind. Includes sand landform types - older stabilized dune and older foredune with a well developed soil profile (well cemented soils having more resistance to disturbance).

Sand Spit: A small point of land or narrow shoal composed of sand which projects from the shore into a body of water.

Scenic Corridor: The area adjacent to a roadway, river or other transportation route which is associated with the visually pleasing experience of traveling along the route.

Scenic Vista: A distant view which is visually pleasing and generally associated with a particular vantage point.

Scientific and Natural Areas: Naturally occurring physical or biological units of the landscape where human influence is minimal, and where representative ecosystem types and communities are preserved for the scientific and educational purposes of establishing baseline ecological data.

Shorelands: Those areas adjacent to a lake, stream, estuary or the ocean which have a direct and significant relationship to the water. Specific identification of shorelands on maps may be based on landforms which affect or are affected by the action of the water.

Shorelines: The non-submersible land area immediately adjacent to a body of water.

Shore-Process Corridor: A zonal belt which is bounded on the landward side or sides by the extreme surge-limits of river, estuarine, lake and marine waters, and where they exist, those aquatic and terrestrial outer fringes on each side that can affect or are affected by the action of the water. The Shore-Process Corridor contains shorelands, and features of the watercourse.

Significant Habitat Areas: A land or water area where sustaining the natural resource characteristics is important, or essential, to the production and maintenance of identifiable species of aquatic life or wildlife populations.

Social Benefits: Favorable or positive effects on one or more of the following values: aesthetic, cultural, historic, ecological, recreational, and economic. Social benefits can accrue to individuals and to groups of individuals including society as a whole. Social benefits may be tangible or intangible, pecuniary or nonpecuniary, and they need not be measured by numerical data.

Social Costs: Those explicit cost outlays made by private individuals, firms and organizations, and by public institutions and organizations plus those implicit costs stemming from forgone opportunities for factors that might otherwise be used in alternative ways or activities. Social costs may be tangible or intangible, pecuniary or nonpecuniary, and they need not be measured by numerical data.

Species of Special Interest: Wildlife not considered threatened or endangered but of special concern because of their relative low abundance, particular habitat requirements or distribution.

Stability: Resistance to change or movement. In sand areas this refers to role of vegetative cover or mechanical means in protecting the landform from movement.

Stabilization: The process of controlling sand or soil activity (i.e., stilling the movement) by natural vegetative growth, planting of grasses and shrubs or use of artificial materials.

Surge: A term referring to the movement of water over the floodplain and other lands adjacent to a watercourse because of a combination of river flow (from the uplands) and tidal action (damming by a high or incoming tide).

Surge Limits: The extent to which waters would reach, on both sides of a watercourse, as a result of river and tidal flooding.

Sustained Yield Management: The consumption of fish and wildlife resources at a rate which does not impair the ability of the species to perpetually replace individuals through natural reproduction.

Tidal Prism: The total amount of water that flows into a harbor or estuary and out again with movement of a tide, excluding any fresh water flow.

Tsunami: A seismic sea wave created by a submarine earthquake abruptly elevating and lowering the sea bottom or creating a submarine landslide.

Urban Growth Area: A land area designated for future expansion and development of urban uses based on identified suitability and need.

Urban Uses: Residential uses having a density of one or more dwelling units per acre and commercial, industrial, institutional and public uses which are related or comparable to these higher density residential uses.

Utility and Communication Structures: Structures which would include power or telephone transmission lines, towers and poles, substations and any other utility structures.

Water Characteristics: A term encompassing factors of water quality, hydraulics, water surface area and water volume.

Water-Dependent: A use which can be carried out only in areas adjacent to the waters of this state because of its reliance on the use of water for transportation, recreation, source of energy production or as a necessary element of manufacturing or processing.

Water-Oriented: A use which needs to be located in close proximity to water-dependent uses for financial viability or public benefit.

Water-Related: A term which encompasses both water-dependent and water-oriented.

Wetlands: Areas on which standing water, seasonal or permanent, has a depth of six feet or less and where the wet soil retains sufficient moisture to support aquatic or semi-aquatic plant life.

Wildlife: Those nondomesticated animals including game and nongame species, whose usual habitat is located above submersible areas.