

Apply this designation to the following sites;

Elsie County Park

David Douglas County Park

Kloutchy Creek Park

Bradley Park

Oswald West State Park

Other appropriate sites

INVENTORY: State-wide Planning Goal 5 requires that the County inventory its watersheds and groundwater resources, including information on the location, quality and quantity of each resource. This section provides information as to the location of the major watershed systems in the County. This information is summarized in tabular form below, and on Map \_\_\_\_\_, included by reference. Clatsop County does not presently have information on the quality and quantity of the watersheds listed below. The rest of the Goal 5 process for these watersheds will be delayed, pursuant to OAR 660-16-000(1B).

<u>Reference Number</u>	<u>Major Waterway(s)</u>	<u>Approximate Acreage</u>
1.	Plympton Creek/West Creek	8,900
2.	Hunt Creek	5,100
3.	Blind Slough/Grizzley Slough	24,700
4.	Big Creek/Little Creek/Fertile Valley Creek	29,000
5.	Mary's Creek/Bear Creek/Ferris Creek	14,500
6.	John Day River	4,400
7.	Young's River/Klaskanine River/Walluski River	80,300
8.	Lewis & Clark River	42,800
9.	Neawanna Creek/Thompson Creek	4,700
10.	Canyon Creek	2,100
11.	Necanicum River	30,300
12.	Nehalem River	213,200
13.	Elk Creek	15,200
14.	Arch Cape Creek/Asbury Creek/Shark Creek/Fall Creek/Red Rock Creek	7,100
15.	(This drainage area is almost entirely within the City of Astoria)	
16.	Clatsop Plains — see below	

0. These small or minor watersheds are not included. They consist of small coastal creeks and small creeks draining into the Columbia River. They are not included at this time due to lack of information.

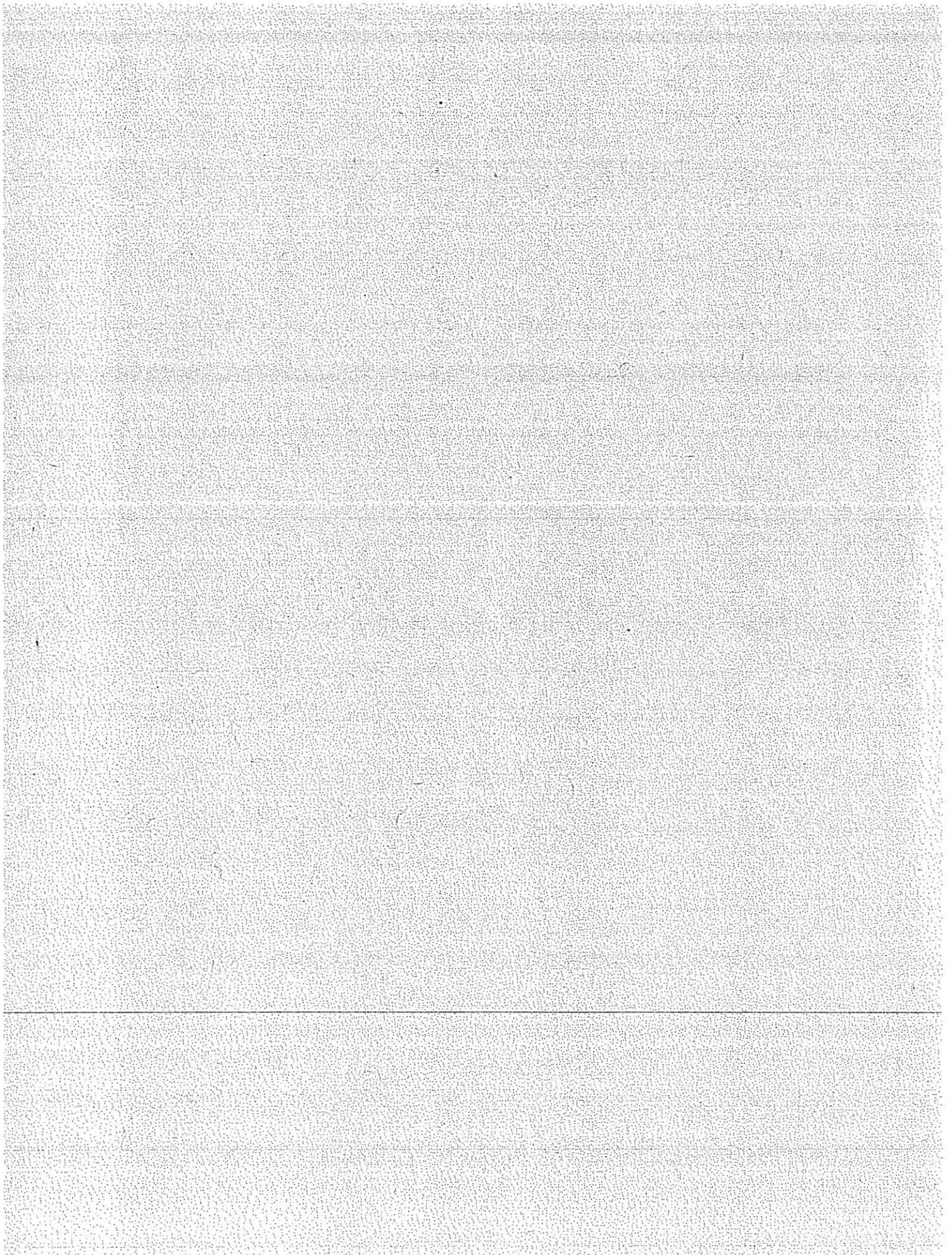
The Clatsop Plains area (Map \_\_\_\_\_, number 16) consists of two major waterways: the Skipanon River, which drains to the north, and Neacoxie Creek, which drains to the south. The Clatsop Plains area is not notable for its watersheds: it is, however, notable for its groundwater resources.

Clatsop County has complete inventory information for the Clatsop Plains groundwater resource. This information is found in two documents:

R.V. Beck and Associates. Clatsop Plains Ground Water Protection Plan: Summary Report and Environmental Assessment. March, 1982.

Sweet, Edwards and Associates. Clatsop Plains Ground Water Protection Plan: Ground Water Evaluation Report. December, 1981.

These two reports identify conflicting uses, (2) determine the economic, social, environmental and energy consequences of allowing the conflicting uses, and (3) suggest policies to restrict conflicting uses in order to protect the groundwater resource. These reports are included here by reference. The County Board of Commissioners adopted the proposals in these reports on the 24th of March, 1982. The Environmental Quality Commission adopted regulations pursuant to these recommendations on 27 August, 1982 (revised 15 October, 1982).



GOAL 6 AIR, WATER, AND LAND RESOURCES QUALITY

1. Adopt a policy to assure that the County will comply with state and federal environmental standards.

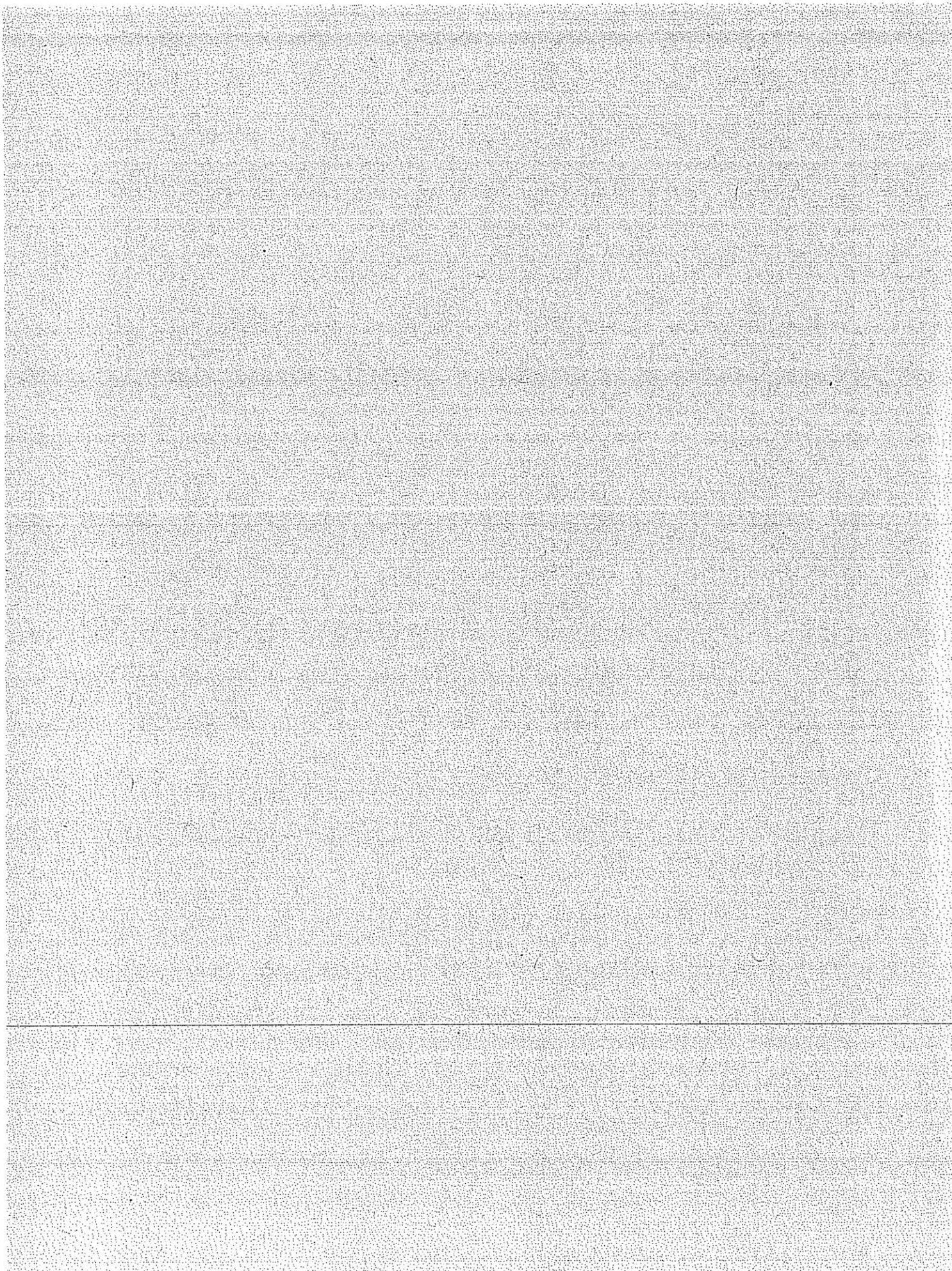
Proposed addition to the County Comprehensive Plan:

Any development of Land, or change in designation of use of land, shall not occur until it is assured that such change or development complies with applicable state and federal environmental standards.

Waste discharges from any development, when combined with existing discharges from existing development, shall not result in a violation of state or federal environmental quality statutes, rules, or standards.

Proposed change in the County Land and Water Development and Use Ordinance:

State and Federal Permits. Applicants for development which require a state or federal permit shall submit to the Planning Director a copy of: the completed permit application, other supporting material provided to the permit granting agency, and other pertinent information demonstrating that the development is consistent with the Comprehensive Plan and this Ordinance.



GOAL 9 ECONOMY OF THE STATE

1. Amend the plan to specify whether and how commercial and industrial uses will be allowed in areas designated Rural.
2. Amend the plan to specify which plan designations allow cottage industries and amend the zoning to be consistent with plan policies.

See attached amendments.

GOAL 9

BACKGROUND REPORT

Add to Page 1 - after the Section on "Statement of Purpose" and before "Planning and Project Limitations":

COMMERCIAL AND INDUSTRIAL USES IN RURAL AREAS OF THE COUNTY

Different levels of commercial and industrial development are appropriate for lands in different plan designations in the County. Most of the commercial and industrial development will occur within the Development and Rural Service Area plan designations. A limited amount of commercial and industrial development is appropriate for the Rural plan designation.

The Rural designation covers lands which are built upon or committed to nonresource use. Rural homesites are the predominant uses of these lands. There are approximately \_\_\_\_\_ acres of land in this designation. Also, as of 1980, there are approximately 4600 homes with over 12,000 people living outside UGB's in Clatsop County, most of these in the Rural plan designation.

The residents of the rural parts of the County need a certain level of local commercial and industrial facilities. The commercial facilities appropriate in these areas are businesses which cater to the local areas, such as grocery stores, feed and seed outlets, restaurants, small "general stores", etc. Businesses which are designed to serve primarily urban areas should be located within Urban Growth Boundaries, not in the Rural plan designation.

Certain light industrial operations are also appropriate on lands in the Rural plan designation. These include industrial activities which, by their nature, are best located near resource lands. For example, repair of heavy logging and agricultural equipment requires a Light Industrial zone. This activity is best located near forest or agricultural areas, but should not occupy valuable resource land. Other industrial activities which serve local needs are also appropriate. As with commercial facilities, those industrial operations which are designed to serve primarily urban areas or which draw mainly on urban areas for employees should be located within Urban Growth Boundaries.

Goal 9  
County-wide Element  
Add to Page 9

C. Cottage Industries  
after existing paragraph add:

"Most cottage industries are small scale family operations with no intention of growing into a major industrial use. Allowing that business to occur in conjunction with the family home can perform many beneficial functions such as reducing unemployment and often promoting energy conservation. The County's role is ensuring that cottage industries are compatible with the existing character of an area.

Cottage industries are appropriate in conjunction with residences in both the Rural and Conservation Plan designations. On Conservation: Forest lands an additional standard exists to ensure that there will be no impact on or from forest management practices.

Many residences that are not resource related are located in Agricultural and Forest areas presently. New dwellings generally must be resource related. Cottage industries in conjunction with either existing residences or newly approved residences are appropriate so long as the resource is not adversely affected. The cottage industry standards ensure that the use will be compatible with the area."

Goal 9  
County-wide Element

Add to page 9:

D. Commercial and Industrial Zoning Outside UGB's.

Most commercial and industrial development outside UGB's will take place on lands in the Development or Rural Service Area Plan designations. However, a limited amount of commercial and industrial development is appropriate in the Rural Plan designation. This includes developments needed to serve the rural population and commercial and industrial businesses which directly rely on nearby resource lands and are most appropriately located in close proximity to such lands.

Add to page 10, Policies:

7. Commercial and industrial uses in the Rural Plan designation should be either those necessary to serve local needs or those which are most appropriately located near and are dependent on nearby resource lands.

Cottage Industry Standard Revisions

- S3.452(9) A cottage industry in or adjacent to the AF-20, F-38 and F-80 zone shall not involve activities which might disrupt or adversely impact forest use of the parcel or adjacent forest parcels. The cottage industry shall also not involve activities sensitive to standard forest management practices including but not limited to herbicide application or the noise of heavy equipment which might occur on forest parcels.

Add to Economy County-wide Element page 7.

Add as Policy #6 The Destination Resorts designated on the Comprehensive Plan/Zoning Map may receive a Destination Resort Overlay District and Development Plan Approval upon Compliance with the following criteria:

- Natural amenities of the site;
- The type and extent of development proposed, and its direct and indirect on-site and off-site environmental, social and energy impacts;
- Access to adequate transportation facilities;
- The physical limitations for development of the site, including natural hazards such as flooding and steep slopes;
- Whether or not the effects of the development can be limited to avoid interference with continued resource use of surrounding lands including intensive farming operations, highly sensitive natural resource sites;and
- Orderly and economic provision of key facilities, assuming full development of the subject site.

Add Policy 7 Clatsop County shall:

Require an economic and fiscal impact assessment showing whether or not there are net benefits to the County as a whole for the destination resort. Such an assessment should examine and consider:

- Changes in employment and income to the area and the county;
- Changes in local revenues and demands for new or increased levels of public facilities and services;and
- Indirect economic impacts on the surrounding area including the effect of the loss of resource land.

Policy 8 Clatsop County shall:

Require conditions necessary and sufficient to ensure that the development is compatible with continued resource use of surrounding lands. These measures may include, but are not limited to:

- Limiting the number of dwelling units;
- Limiting the overall density of the development;
- Limiting the location of structures, roads and physical alterations, or otherwise restricting layout to protect important natural features or to buffer the resort from adjacent or nearby uses; and
- Additional planning and zoning controls on nearby land to reduce or manage pressures of offsite development created by the destination resort.

Policy 9: Clatsop County recommends that a joint state-federal task force be appointed to examine planning for developed recreation facilities on state and federal lands. Based upon a state-wide study of potential facility needs, such a task force could suggest needs which might be met on state or federal owned lands.

### Destination Resorts

The preceding discussion on Travel or Tourist Industry basically reflects the desire of people to visit Clatsop County and natural resources. Most of the facilities available to the tourist are small scale projects, few are large destination oriented facilities. The following discussion is based in large part on the Report and Recommendations on Destination Resort Siting study conducted by the Joint Subcommittee of the Economic Development Commission and the Land Conservation and Development Commission.

Generally, a destination resort is "a large tourist-oriented development which provides extensive recreational facilities as an attraction to visitors in an area with high natural amenities." This is the type of facility which will provide the economic impacts the state and Clatsop County are seeking.

### AN ECONOMIC OVERVIEW OF DESTINATION RESORTS

#### Importance of Destination Resorts

Tourism is Clatsop County's third largest industry, behind forestry and fishing and fish processing. Visitors to the County make a substantial contribution to the County's economy. As with other sectors of the economy, the County is seeking ways to increase and improve the performance of this industry as a form of economic development.

Through the efforts of the State of Oregon Department of Transportation, the state has done much to research and promote tourism. Available information indicates that tourists to the state spend an average of \$12 to \$25 per person per day. For economic development purposes, increasing trip lengths and per person expenditures is perhaps as important as increasing the number of visitors to the state.

Destination resorts can be an important part of the state's efforts to increase visit lengths and per person spending. Like convention centers, destination resorts attract visitors who stay longer and spend more than the average tourist. Destination resorts provide a different and special opportunity not provided by other attractions in the state. They provide a "get away from it all" setting along with extensive recreational facilities. The size of most well known destination resorts allows them to provide more and better facilities attracting visitors for longer stays. Larger resorts are also more likely to attract visitors from longer distances. Destination resorts also provide a recreational opportunity for many citizens in the state; possibly reducing travel to similar developments in other states.

Like other tourist activities, destination resorts provide economic benefits to the state at relatively low public costs. Tourists do not demand schools, health care facilities and other government expenditures that a full-time resident population does. A further advantage of destination resorts over other types of visitor housing is that they are self-contained. They do not require government investments in sewer, water, roads and recreational facilities, because these are provided by the developer.

Increasing tourism is an appropriate and necessary step in an overall state economic development program. Destination resorts, because they attract visitors for longer stays, result in higher expenditures per person per day, and because they have low public costs are an attractive and appropriate means of increasing tourism.

Market Considerations

Development of a destination resort is a risky and very expensive proposition. A substantial initial capital outlay for recreational facilities--golf courses, swimming pools, tennis courts, etc.--is necessary to provide the attraction for individuals to visit or purchase units in a destination resort. If these facilities are not provided in sufficient quantity and quality, the destination resort is not likely to succeed.

Changing economic conditions have and probably will continue to affect the demand for destination resorts. It appears that demand for second homes has peaked because of lower disposable income, higher interest rates, and changing tax laws, which all affect people's willingness to invest in second homes, particularly expensive ones associated with destination resorts. It is expected that these trends will result in demand for smaller destination resorts which provide more shared ownership of units rather than individual ownerships. Economic improvement and growth or changes in federal tax policy may increase demand for individual ownership.

While demand for individual ownership of units is probably decreasing, it is still a very important factor in the success of destination resorts. In most cases, residential use of individually owned units is quite low--a 13 percent average by one account. This is the case despite the fact that the great majority of units at most destination resorts are individually owned or only partially shared ownerships (i.e., three or four owners). Individual ownership is important to the economics of destination resorts for two reasons. First, the destination resorts have high vacancy rates; perhaps as high as 50 percent on a year-round basis. Most developers are unable to profitably run a development at this vacancy rate. However, individual owners are willing to make the "uneconomic" investment in an individual unit for recreational purposes. The second factor, related to the first, is that most potential buyers see the opportunity to use a unit as a full-time residence as an important reason for purchasing a unit. Many rationalize the investment as a potential retirement home, although the number that actually retire at destination resorts in Oregon is presently not that high.

The pattern of ownership at destination resorts has some important implications. Destination resorts that evolve into full-time communities, cities or retirement centers will not result in the desired economic benefits associated with tourism. In fact, a growing number of full-time residents will create demands for government expenditures for schools and health care facilities. A large resident population also demands development of a private infrastructure to service the full-time community including a range of commercial and professional services.

These costs might offset the economic benefits created by continuing tourist and visitor use of the remaining portion of the development.

## Conclusion

Destination resorts can provide important economic activity for the County and state with little additional demand for public investments. The nature of destination resorts is changing, and will continue to change, in response to economic conditions. Regulation of destination resorts must respond to these changes. Residential development within destination resorts can offset the economic benefits of tourism and may be inconsistent with state land use objectives. This aspect of destination resorts must be dealt with carefully to balance ownership flexibility with public objectives.

### Minimum Size for Destination Resorts

The subcommittee found that a minimum acreage for a destination resort is appropriate for a number of reasons. A certain size is necessary to establish a casual, relaxed, and rural character of a destination resort. It is also necessary to provide both the area and number of units necessary to support the extensive recreational facilities, that serve as an attraction to visitors. Without these facilities, visitors, particularly out-of-state visitors, are not likely to be attracted to a resort development. A large minimum size is also important to ensure enough open space for buffering a destination resort from surrounding uses. The need for large acreage is also an important reason why destination resorts cannot be accommodated in urban areas.

While the subcommittee has recommended 160 acres as a minimum acreage, smaller acreages may provide a large enough site for a destination resort in certain areas of the state, such as the Columbia River Gorge. Somewhat smaller acreages should be considered large sites in such areas if they otherwise meet objectives of the 160 acre size--economy of scale for recreational improvements that attract visitors buffering from adjacent ownerships and substantial open space. Clatsop County will conduct a study of destination resorts on smaller acreages.

### Developed Recreational Facilities

Recreational facilities provided by destination resorts are a key ingredient distinguishing them from other types of rural planned developments. They are also important to encouraging longer visitor stays. The quantity and quality of recreational facilities needed to attract visitors is high and requires a major up-front capital investment by the developer.

### Minimum Distance From Larger Urban Growth Boundaries

Developments designed to attract commuters are essentially suburban planned developments rather than destination resorts and are generally inconsistent with the purpose of Goal 14. The Economic Development Committee-Land Conservation and Development Commission subcommittee believes it is necessary to discourage siting of such developments and recommends a distance standard from larger UGB's to accomplish this.

The Committee recommends not allowing a destination resort within 25 road miles of urban growth boundaries with a population of 50,000 or more.

Another important element of a destination resort is its ability to fit into and maintain the natural or undeveloped character of its site. The attraction and reason for placing destination resorts outside of large UGB areas is to provide for the "away from it all" experience. Capturing this concept in specific criteria is difficult.

The subcommittee has approached this part of the definition in two ways. First, the definition requires that a majority of the site be maintained as open space. Second, a general standard is recommended to require that the design, density, and layout of the development maintain the resource-oriented character of the site. The subcommittee recognizes that this is a general standard and subject to interpretation and may lead to litigation. Clatsop County will work to refine this standard in a way which will minimize this problem.

Uses Which Do Not Qualify as Destination Resorts

Quite a number of facilities in the state and County can be argued to attract and serve the needs of visitors and tourists. However, the subcommittee does not believe that many of the activities which might otherwise fit the definition of "destination resorts" are truly destination resorts. Many of these uses are currently provided for in farm and forest lands and consequently do not require goal exceptions. It is not appropriate to establish a separate process for siting of these types of attractions. To avoid any continuing confusion about what uses qualify as destination resorts, the subcommittee has developed a list of activities which would not qualify.

There is a need to recognize and provide for smaller resort facilities which provide access to unique natural attractions. This type of resort relies primarily on a particular natural feature to attract tourists and visitors and provides much more limited recreational facilities.

The subcommittee agrees that the following definition is appropriate to provide for these smaller resorts and distinguish them from destination resorts and other types of development:

"Other resort facilities are small scale developments which depend upon a unique natural amenity not available within or adjacent to an urban growth boundary and is the principal attraction for visitors. Examples of such outstanding natural amenities can include hot springs and year-round ski areas. Given the specific attraction of these amenities, accommodations must be 100 percent tourist oriented (i.e., all rooms or units are designed for tourists and visitors. No single family units designed for full-time residents other than employees would be allowed)."

Clatsop County will work to define other resort facilities develop plan and zoning provisions that are appropriate for Clatsop County.

Minimum Number of Units

Setting a requirement for a minimum number of units or accommodations is another way of assuring that the destination resorts are built at the scale necessary to provide recreational and other facilities which attract visitors. The subcommittee has not made a recommendation on this issue for two reasons. First, given the wide variety of ownership possibilities (such as timesharing) the number of ownerships can be as important as the number of units in providing the capital to develop recreational facilities. Second, the natural limitations of some sites may dictate that relatively few accommodations be provided if the development is to be compatible with site constraints and surrounding uses. The committee believes that the other criteria that it has established will assure that destination resorts are large enough to serve as an attraction to visitors.

Limiting Full-Time Residential Development

The most difficult task in defining what a destination resort is distinguishing it from other types of housing development. Superficially, destination resorts have much in common with high quality planned unit developments. Both are self-contained, provide a high level of open spaces, and recreational facilities; both occur on large sites. Clatsop County and the state's land use planning program provides for residential development both within urban growth boundaries and on built and committed lands in rural areas. In Clatsop County up to 14,000 acres of built and committed lands will be available for rural residential development once the plan is acknowledged. Providing additional land for such residential developments is a decision appropriately made through the Goal 2 exceptions process.

Distinguishing between destination resorts and other types of rural housing must consider and distinguish between a destination resort and a residential community. An example in Oregon is Sunriver. While it is generally thought of as a destination resort, it was conceived as a planned community with extensive resort facilities. Sunriver now has a year-round population of over 1,000 providing both a business park and a school.

A similar concern is the potential, over time, for a destination resort to become a full-time community. The Urban Land Institute's definition of destination resort, in part, notes:

"...more successful resorts enjoy substantial year long operation and often have real estate programs associated with them, eventually becoming combined resort and second-home communities" (emphasis added).

As noted above, full-time communities make different and more extensive demands for both public and private services. Such demands are generally inconsistent with the state land objectives and diminish the economic benefits desired from a destination resort.

The subcommittee carefully considered ways to assure that destination resorts are not built as rural residential developments. The subcommittee finds it a complicated issue to deal with. Most destination resorts in Oregon are composed primarily of individually owned condominiums or houses on individual lots. Further, several persons testified that successful development often depends on the developer's ability to sell individual lots to finance construction of recreational facilities and other improvements.

In most resorts, a good portion of these individually owned units are available through rental pool arrangements. However, there are usually no requirements to use a rental pool nor are there restrictions on conversion of units to full-time residences. The existing pattern of use of these units shows about 10-15 percent of units are occupied by full-time residents.

This pattern of individual ownerships is essentially the same as that of other types of residential development which clouds the distinction between a resort development and a high quality residential development. Without a clear distinction, it is difficult to assure that proposed developments will, in fact, cater primarily to visitors or that it will not, over time, evolve into a residential development.

The subcommittee has considered the means of directly dealing with ownership and use to make this distinction clear. The restrictions considered were use limits and restrictions of types of ownerships. Use limits, most likely covenants, would restrict or prohibit occupation of some percentage of a resort's units as full-time residences. Restricting ownership types would require that a majority of units be sold in interval or time-share ownerships or held by a developer for permanent rental use. Interval or time share ownerships sell individuals the right to use a unit for from 1 to 4 weeks.

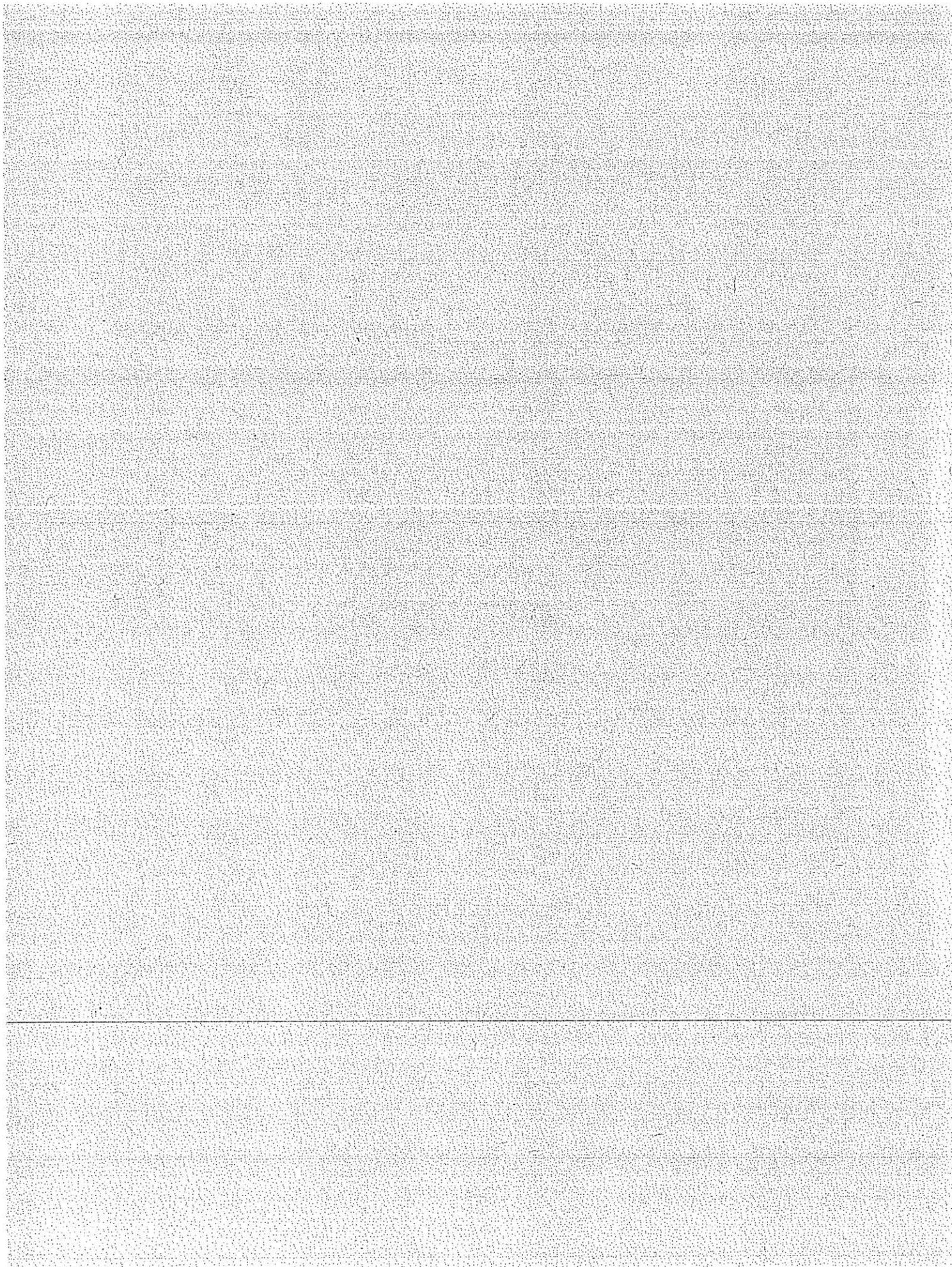
The possibility of requiring restrictive covenants or deed restrictions on length of stay and use of individual units was considered but rejected. While most units are not occupied as residences, the option to do so is often critical to an individual's purchase decision. In short, many people will not buy an individual unit if there is not at least a possibility that they can eventually use it as a residence or retirement home. Directly restricting residential use of individually owned units goes beyond the scope of current land use regulations. It would be a complex and perhaps unenforceable way to assure that destination resorts remain visitor oriented.

The subcommittee also considered limiting the types of units constructed and the types of ownerships sold as a means of assuring that destination resorts are constructed as and remain visitor oriented facilities. The destination resort plan would have to show that a majority of the units would be visitor oriented accommodations (i.e., units constructed and intended permanently for visitor and tourist use). These would include hotel and motel rooms and condominiums owned by the developer and available for rent, as well as time-share condominiums and time-share houses where one to four-week shares are owned by individuals. This approach would avoid regulating use of individual units and the administrative and enforcement burdens associated with it. It could be accomplished easily as part of the initial review and restrictions would guarantee that at least the majority of the units are permanently available for visitor oriented use. The subcommittee did not endorse this approach because it may adversely affect the economic feasibility of resort development.

The subcommittee expects that many, if not most, individually owned homes and condominiums would be available through rental pool arrangements as is currently the case in most destination resorts. This should not be interpreted to encourage developments which intend to construct and market dwelling units as primary residences. This provision is simply meant to recognize the pattern of ownership in existing destination resorts and to continue opportunities for individual ownerships.

The subcommittee agreed that destination resorts should be clearly directed to providing tourist and visitor oriented use rather than residential development. Direct controls on use of ownership to do this appear cumbersome and may frustrate resort development. Careful case-by-case review of other elements of destination resorts--such as design, location, amenities, recreation facilities and limited commercial services--may be able to assure this distinction.

In Implementation a major difficulty is providing mechanisms which assure that expensive capital investments in common recreation facilities (i.e., golf courses, swimming pools, tennis courts, etc.) are made prior to or simultaneously with sale and construction of individual lots. This is particularly important because most resorts are built on a number of phases over 5-10 years. Improvements in these mechanisms are needed to assure that destination resorts do in fact provide the developed recreation facilities necessary to attract tourists. Without these measures, the desired result of increased tourist visitation and expenditure may not be realized.



GOAL 11 PUBLIC FACILITIES AND SERVICES

1. Amend the plan to identify what types of public facilities and services are appropriate for and limited to Rural Service Areas and for areas designated Rural, Conservation, and Development.
2. Amend the plan to identify levels of public services that will be appropriate for the development planned for various parts of the County outside of UGB's, including Rural Service Areas.
3. Adopt policies and implementing measures to ensure the timely, orderly and efficient provision of public services at the levels specified in accordance with statement 2 above.

Delete Public Facilities and Services Background Report and County-wide Element and replace with the following.

COUNTY-WIDE ELEMENT

Goal II

Public Facilities and Services

Amended May, 1983

As recommended by the County Planning  
Commission August 9, 1983

INTRODUCTION

Public facilities and services affect a community in two ways: (a) through the costs involved in their financing and (b) through their influence on land use patterns. The nature and level of these services do much to define a community, clearly making the differences between urban and rural land usage by their presence or absence.

The 5 cities and 1 town in Clatsop County provide differing levels of public facilities. Almost all of the urban areas provide police and fire protection, sewer, water, and library service. As the size of the city increases, the services provided become more varied.

There are limited public facilities and services provided in rural Clatsop County. This is due to the low density development characteristics and the lack of need to serve open farm and forest lands. Most rural land use is sufficiently dispersed so as not to require public facilities such as a sewer.

APPROPRIATE LEVELS OF PUBLIC FACILITIES IN THE COUNTY

Eight different Plan designations exist for lands in the County. Differing levels of public facilities and services are appropriate for the different types of development planned for the County. Certain facilities and services are available to all County residents, such as County health services, Sheriff's protection and many other social services.

Development - This is a Plan category for estuary and shoreland areas appropriate for commercial and industrial use. Consequently, a level of public facilities sufficient to carry on that type of use is appropriate. Public water and sewer services would be appropriate but may not be necessary depending on the type of development. Public fire protection is appropriate. Development here will not directly effect school services, although increased employment may result in increased housing in the vicinity which would impact schools. Those impacts will be considered in terms of the residential effects, not at the point of commercial or industrial development.

Urban Growth Boundary (UGB) - Appropriate levels of services for UGB areas are discussed in the Comprehensive Plans of the individual cities.

Rural Service Area (RSA) - The RSAs in the County are Arch Cape, Fishhawk Lake Estates, Shoreline Estates and the old Naval hospital site. All currently have public water, sewer and fire protection although the current water supply for the old Naval hospital is inadequate. Public water or sewer services and fire protection are appropriate in RSAs and further development must be based on the capacities of the systems. Development in RSAs can have significant impacts on schools. Applications for subdivisions within RSAs will be referred to the appropriate school district. The development will be allowed only if the schools are capable of handling the increased capacity expected to be generated from the proposal.

Public fire protection may be present here, and is appropriate since so many residences currently exist, but is not necessary for development and is not encouraged in sparsely settled forest areas.

Community sewage systems are not appropriate in this Plan designation.

Conservation Other Resources and Natural - These Plan designations are for important resource areas and for recreation areas. For areas such as the estuary and wetlands, no public water, sewer or fire protection is appropriate. For developed recreational areas, these facilities are appropriate but may not be necessary.

The Wauna-Westport area is an RSA, but is served by on-site sewage disposal systems rather than a community system. There have been problems for many years of systems failing and discharging directly to surface water. A County service district formed in ---- but dissolved by a vote of the residents in ----. CH2M-Hill prepared a facilities plan for a sewer system in the area but financing was never obtained. Now that the district has been dissolved, other options for taking care of the problem, such as creation of a smaller district, are being explored.

The City of Seaside is exploring methods to expand their treatment capacities; Warrenton will need to look at expansion in the mid-1980's. The City of Cannon Beach is installing a novel marsh treatment system for polishing effluent from their lagoons.

Over the last several years, solid waste sites in Clatsop County have either filled up or closed due to new environmental standards developed by the federal government. Several potential new landfill sites have been rejected due to water pollution problems, steep slopes or remoteness from populated areas. Clatsop County is in the process of reexamining potential landfill sites and should be developing a site by the mid 1980's.

#### Governmental Structures and Other Public Facilities and Services

Within Clatsop County there are 51 different types and sizes of services districts and associations. The level of rural fire protection provided by the 9 rural fire districts varies from a fire insurance rating of 6 to 9. Police protection provided by the County Sheriff's Department is inadequate for areas remote from population centers.

All school districts within the County have some capacity for additional students, although some schools are nearing capacity. Warrenton built a new elementary school in 1980, consolidating the old grade school and junior high.

Within the County, postal delivery and location of homes for emergency services has become an increasing problem with approximately 400 different house numbers for each of the 6 rural mail routes. The situation grows more complicated as time passes and the population of rural areas of the County increases.

#### PUBLIC FACILITIES GOALS

1. Urbanizable Areas - To provide public facilities in accordance with coordinated land use and transportation systems in a manner which encourages the orderly conversion of land from rural to urban use.
2. Outside of Urbanizable Areas -
  - a. To support the provision of needed public facilities for rural areas at levels appropriate for rural densities;
  - b. To discourage the development of inappropriate public facilities on resource lands which would result in pressure for conversion to more intense use.

WATER SUPPLY SYSTEMS POLICIES

1. If a community water system is to be utilized, either the development of a subdivision or the building of individual residences, the County shall confer with the local water supplier to insure adequate water is available prior to issuance of plat approvals or building permits.
2. If water supply for building permits or land divisions is from a surface source, including a spring, proof of water rights from the State must be presented.
3. When water supply to a subdivision or planned development is to be from a source other than a community water system, the developer shall provide evidence of a proven source of supply and guarantee availability of water to all parcels of land within the proposed development.
3. Clatsop County shall encourage existing community water supply systems to be improved and maintained at a level sufficient to:
  - a. provide adequate fire flow and storage capacity to meet the service area requirements,
  - b. meet the anticipated long-range maximum daily use and emergency needs of the service area, and
  - c. provide adequate pressure to ensure the efficient operation of the water distribution system.
4. Clatsop County shall cooperate with the various cities in examining the feasibility of developing some type of regional water system to provide municipal and community water.
5. Clatsop County should work with State agencies to conduct a study of the Gnat Creek aquifer to determine the potential to provide a water source for residents of the area.

WASTE DISPOSAL POLICIES

1. Clatsop County considers sewer services only appropriate for urbanizable lands and RSAs. The intensity of land use facilitated by provisions of sewer is not appropriate for Rural areas. Clatsop County may permit the creation or extension of sewer services outside UGBs and RSAs in the event of a health hazard or water pollution problem identified by DEQ.
2. Clatsop County shall cooperate with cities in developing a phased growth plan to guide the provision of municipal services to urbanizable areas.
3. Clatsop County shall encourage alternative methods of sewage disposal when such methods are economically, legally, and environmentally feasible.

CLATSOP COUNTY COMPREHENSIVE PLAN

Background Report  
PUBLIC FACILITIES AND SERVICES

September 1979  
Amended May, 1983

Prepared by

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Clatsop County Department of Planning and Development

Adopted July 23, 1980 by  
Clatsop County Board of Commissioners

Amendment by Janet Young  
Clatsop County Department of Planning and Development

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Land Conservation and Development Commission.

As recommended by the County  
Planning Commission on  
August 9, 1983

Clatsop County Board of Commissioners

Background (Inventory) Reports

PUBLIC FACILITIES AND SERVICES

ADOPTION

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Chairman

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Date

AMENDMENTS

Resolution  
Number

Signature

Date

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Chairman

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Chairman

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## PREFACE

Clatsop County has been involved in the process of updating the Clatsop County Comprehensive Plan in order to comply with the Oregon Land Conservation and Development Commission's Statewide Planning Goals and Guidelines, and to develop sound comprehensive planning in the best interests of the area. This task has been undertaken incrementally, resulting in several informative and technical Background Reports to be used as the basis for policy formulation. The Background Reports include the various Environmental Plans for the planning areas; Agricultural Lands; Forest Lands; Housing; Transportation; Public Facilities and Services; Economy; Energy Conservation; Estuarine Resources; Coastal Shorelands; Beaches and Dunes; Air, Water and Land Quality; Hazards; and Recreation.

The planning staff has attempted to provide a clear, complete and accurate accounting of current circumstances within Clatsop County. Your comments are encouraged to assist in the maintenance and periodic update of the Clatsop County Comprehensive Plan.

## INTRODUCTION

Certain facilities and services are required to support the various levels of development in Clatsop County. The type and intensity of development determine the level of needs for these facilities.

On the other hand,

the availability of public facilities and services is a very significant determinant of the land use pattern. The existing pattern is primarily due to the location and level of public services available. The County and State highway system, for example, has had a dominant affect on the establishment and extent of development. With the ease of auto travel, individuals no longer need to live near their work or goods and services.

Public facilities are usually built to satisfy an existing or anticipated need for the services. When provided, these facilities can also have the effect of encouraging or making possible additional more intensive development within their service area. They also usually increase value and add benefits to each property served.

Within urban areas, the provision of public services is a necessary requirement for urban density development. In rural areas, however, the establishment of public facilities can have a detrimental effect of encouraging urban sprawl which destroys the rural character by overdevelopment. Basic facilities include sewage disposal, water, police protection, fire protection, schools, roads and utilities. The level of provision of these facilities varies from minimal provision of the basic services in rural areas to the more elaborate and complete provision of public facilities and services in incorporated cities.

Public services are provided either by an incorporated city government, by special purpose private districts, or by County service districts. The revenue to support these facilities is usually gained by levying user fees and property taxes. Providing public facilities is expensive. Therefore, the provision of public services is much more cost effective in the more intensely developed urban areas than in lower density rural areas.

### GROWTH SHAPERS

Public Facilities affect local growth by influencing the location and costs of new construction, and can have a powerful affect on the density, timing, and amount of new development. It is important that public facilities be designed to enhance the positive features of new trends in development. At the least, local decision makers should be aware of the land use implications of their public facilities decisions, and the economic and environmental impacts likely to follow.

The following information taken from The Growth Shapers: The Land Use Impacts of Infrastructure Investments, discusses further the relationship between public facilities and land use planning.

"The link between infrastructure\* investments and land use changes has long been recognized in a general way, but little has been done to control the design and location of new infrastructure.

\*Infrastructure means public facilities.

Development induced by public facilities, such as a new county road or water line, frequently occurs in scattered locations away from already developed areas. The "leap frog" development, as discussed in The Growth Shapers, creates many problems.

"This 'leapfrog' development pattern carries high public costs, since utility lines, streets, and services must be extended long distances through vacant land. Even if the intervening land is ultimately filled in, the community must bear unnecessarily high service costs in the interim. It also finds itself locked into sprawled out low density development patterns for the long term, with all its implications for higher public service costs.

"If development occurs at a rapid rate, as is often the case where infrastructure changes are made in a region with strong economic growth, another group of economic impacts may be felt. In an area where a great deal of single-family housing is built over a short time, most of the residents moving in will be about the same age, as will their children. It will be necessary to build schools to serve this large group of children, but after they pass through the number of school age children in the community will drop suddenly. A large portion of the school space may then be useless."

Because the economic impact of new development depends so much on the particular characteristics of the situation, any conclusions about a specific development have to be based upon specific analyses. Below are some general conclusions on the impacts of growth taken from Impacts of Urban Growth on Local Government Costs and Revenues prepared by Oregon State University Extension Service, 1974.

#### GENERAL CONCLUSIONS

Three overall conclusions were drawn from this study:

1. Impacts of residential growth on municipal government expenditures depend upon location and density of development. Expenditures per home on streets, water lines and sewer lines are related to mileage of streets and utility lines. Initial investment in extending utility lines and streets into urbanizing areas is partly paid for by property owners benefiting from new services provided. Local government, and hence all taxpayers, pay for annual maintenance and operating expenses plus some construction.
2. Effects on city or school expenditures appear small when streets, water and sewer systems, school buildings, etc. have enough capacity to accommodate growth. In these cases, no major capital outlays are needed for urban expansion to occur. However, even though the investment in these major facilities has already been made, it is still a cost of urban expansion.
3. Comparison of expenditures and revenues per capita in different cities and in areas outside cities are not

## RURAL FACILITIES

There are limited public facilities and services provided in rural Clatsop County. This is due to the low density of development characteristics and the lack of need to serve open farm and forest lands. Most rural land use is sufficiently dispersed so as not to require public facilities such as sewer systems. Various types and sizes of community water systems, Rural Fire Protection, Schools, and septic tanks provide the service needs. In some cases, the major difference between urban and rural facilities and services is the quality of services being provided. Rural facilities and services are provided on either a general County-wide basis or by special districts.

The provision of public facilities and services in rural Clatsop County should be limited to those necessary to support the level of rural activity. The development of rural areas should consider the impact on existing services and the anticipated need for additional facilities.

It is the intent of Clatsop County to maintain the character of rural areas by limiting their need for urban type services. Only those facilities and services that are necessary to accommodate projected rural land use activities should be provided. The demand for rural facilities and services should be expected to increase within areas designated for rural development. The provision of additional public facilities and services should not significantly increase in agriculture and forest designated areas.

Part of the reason little or no progress was made by the committee was the concern that some diking districts would have to subsidize the poorly maintained diking districts.

The following are the committee's findings:

#### MAINTAINING DIKING DISTRICTS

##### Advantages

1. Restricted to operation and maintenance of tidegates and dikes.
2. Less area of responsibility (smaller area to govern).
3. District sets assessment with landowner approval given to County Commissioners as suggested assessment to be placed on tax roll. Bills presented to County Commission for payment. Directors need to be bonded.

##### Disadvantages

1. There is no way or responsibility to get water from flooded lands to outlets at tidegates.
2. One landowner at outlet can plug up or flood several landowners upstream from him by not maintaining drainage through his property.

#### REORGANIZE AS A DRAINAGE DISTRICT

##### Advantages

1. Has control over main internal ditches (one that benefits two or more landowners) for maintaining water level as well as control over dikes and tidegates.
  - a. Better water table control in areas of septic tank drainfield.
  - b. Water won't stand on fields as long - earlier and longer growing season.
  - c. Grow larger variety of plants or crops.
2. Wider assessment base (assessment per acre plus possible set assessment per building) not based on ad valorem tax.
3. Landowner at outlet of main ditch or slough couldn't plug water outlets to people upstream by poor maintenance.

The following is some information on the various diking and drainage districts within the County by planning areas.

CLATSOP PLAINS

Skipanon Water Control District

Location: Skipanon River Area - Warrenton - Cullaby Lake  
Size: 1,860 acres - assessment units  
Length of Dikes: 150 feet  
Tideboxes: 2 water control structures  
Date Organized: 1959  
Comments: None

LEWIS & CLARK/WALLOOSKEE RIVER VALLEYS

Diking District #3

Location: Along the Wallooskee River, 2 miles South of Astoria along Youngs Bay.  
Size: 642 acres  
Length of Dikes: 8.3 miles  
Tideboxes: 17  
Date Organized: 1939  
Comments: Maintenance and repair of levees, tideboxes and drainage ditches is the responsibility of the residents in the respective areas since no district organization exists. The Corps of Engineers inspection indicates that maintenance has been accomplished on several of the levees, but none on others.

Diking District #8 -- Inactive

Location: Both sides of the Lewis & Clark River  
Size: 1,506 acres  
Length of Dikes: 10.5 miles  
Tideboxes: 14  
Comments: The Corps of Engineers inspection indicates the condition of the flood protective works has become progressively worse. Tideboxes continue to deteriorate and dense growth on the levee embankment prevents an adequate assessment of erosion damage.

Diking District #12 -- Inactive

Location: On Warren Creek near Knappa  
 Size: 105 acres  
 Length of Dikes: 450 feet plus the Burlington Northern  
 railroad embankment  
 Tideboxes: 1  
 Comments: There are dense growths of brush, trees and berry  
 vines on the embankment slopes, as well as slight  
 leaks during high tide in the two tideboxes.

Diking District #10

Location: Karlson Island  
 Size: 370 acres  
 Tideboxes: 3  
 Date Organized: 1940s  
 Comments: The dike has been broken. It would be expensive  
 to repair.

Diking District #14

Location: John Day River area  
 Size: 229 acres  
 Length of Dikes: 3.5 miles  
 Tideboxes: 16  
 Comments: The condition of the levees has improved very little  
 for the past several years. The Corps of Engineers  
 has told the district its maintenance program is  
 inadequate.

Diking District #4 -- Inactive

Location: Gnat Creek area near Brownsmead  
 Size: 90 acres  
 Length of Dikes: 2 miles  
 Tideboxes: There were 3  
 Date Organized: 1918  
 Comments: The lagoon is filled with each tide. The County has  
 put in a dike along the road to protect it. It  
 would cost more to reclaim the land and repair the  
 dike than the land would be worth.

Diking District #1 -- Inactive

Location: Near Brownsmead  
 Size: 1391 acres  
 Length of Dikes: 9.4 miles  
 Tideboxes: 6  
 Date Organized: 1915  
 Comments: None

TABLE 1  
FLOOD CONTROL DISTRICTS

<u>Local Name</u>	<u>Legal Name</u>	<u>Floodplain and Elevation</u>	<u>Elevations, Top of Levee</u>	<u>Freeboard</u>	<u>Datum</u>
<u>CLATSOP COUNTY, OREGON</u>					
Blind Slough Area	Clatsop County Diking District #7	1933 H.W. 8.6	11.6	3.0	M.S.L.
City of Warrenton Diking District #1	Formed one district effective 2/12/73	1933 H.W. 7.6	11.6	4.0	M.S.L.
City of Warrenton Diking District #2		1933 H.W. 7.6	11.6	4.0	M.S.L.
City of Warrenton Diking District #3		1933 H.W. 7.6	11.6	4.0	M.S.L.
Clatsop County Drainage District #1		1933 H.W. 8.8	11.8	3.0	M.S.L.
Clatsop County Diking District #2	Formed one district, April, 1983	1933 H.W. 7.6	11.6	4.0	M.S.L.
Clatsop County Diking District #5		1933 H.W. 7.6	10.6	3.0	M.S.L.
John Day River Area	Clatsop County Diking District #14	1933 H.W. 7.8	8.8	1.0	M.S.L.
Karlson Island	Clatsop County Diking District #10	1933 H.W. 8.5	10.5	2.0	M.S.L.
Knappa Area	Clatsop County Diking District #12	1933 H.W. 8.6	10.6	2.0	M.S.L.
Lewis & Clark River Area	Clatsop County Diking District #11 & 8	1933 H.W. 7.7	10.7 to 8.7	3.0 to 1.0	M.S.L.
Tenasillahe Island	Clatsop County Diking District #6	1933 H.W. 11.9	14.9	3.0	U.S.E.:2 Below M.
Walluski River Area*	Clatsop County Diking District #13	1933 H.W. 7.7	7.7 to 6.0	None	M.S.L.
Westport District	Clatsop & Columbia Counties, Diking District #15	1876 H.W. 11.0	13.0	2.0	M.S.L.
Youngs River Area	Clatsop County Diking District #9	1933 H.W. 7.7	8.7	1.0	M.S.L.

(from CREST Inventory)

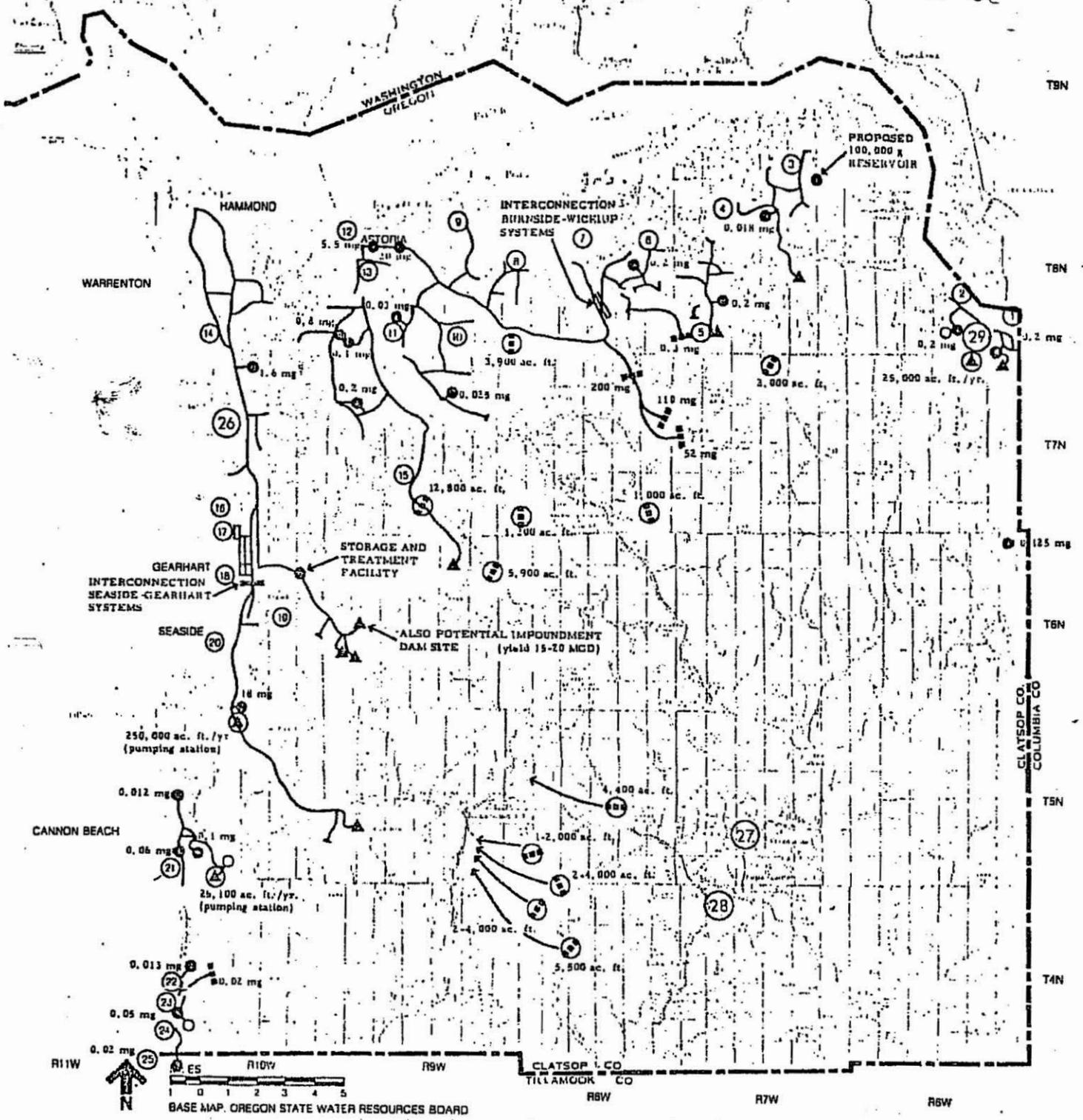
The City of Warrenton operates a water system which supplies water to Warrenton, Hammond, Fort Stevens State Park, Sunset Beach Water District, Palisades Pipeline Co., Gearhart and scattered properties in the Clatsop Plains rural areas. The estimated July 1979 population of this service area was 6,163 with approximately 1,995 connections of which 512 are in the unincorporated plains.

The main water line has a capacity of between 12 to 15 mgd. The current maximum daily consumption of the Warrenton system is 3.9 mgd. The City draws water from the Lewis & Clark River and three of its tributaries. The City currently holds water rights for the use of approximately 4.5 mgd. Under normal operating conditions, turbidity levels are below the EPA's allowable level of 1.0 turbidity units. As with Astoria's system, during periods of extremely high rainfall turbidity counts exceed the 1.0 turbidity unit level. In 1979, the City of Warrenton completed a comprehensive water study. The study found that the Lewis & Clark River is probably adequate in meeting the peak demand to the year 2000, but source augmentation, however, will be required beyond that time. The major recommendations were installation of meters in the City, increased fire flow capacity and constructing of a reservoir.

As mentioned before, the City of Gearhart and Town of Hammond obtain their water through the City of Warrenton water system. Gearhart and Hammond water systems have no storage at the present time. Both are entirely dependent upon the Warrenton water system and any break in the Warrenton pipeline could potentially deprive both systems of their source until the break was repaired.

Seaside's water system serves an estimated population of 6,500 including 2,167 metered services plus the Stanley Acres Water Association just north-east of the City limits. The main water supply is from a source on the south fork of the Necanicum River about eight miles southeast of the City. Water flows by gravity from a diversion dam at the headworks for six miles to a point where it is pumped to an 18 million gallon reservoir. The reservoir is at an elevation of 154 feet and has a nine-day storage capacity. An auxiliary supply source is located on the Necanicum River below the reservoir. The distribution system consists of lines from 6 to 12 inches with some laterals four inches or smaller. The system is generally in good condition, although recently large water loss has been recorded. The water system must serve a five-month summer population of up to 15,000 on weekdays and 30,000 on weekends.

Future water supply capability is good, but additional storage capacity may be necessary. Expansion of the system will not be a great problem if the area served is contained and future development is kept below the 80-foot elevation line to avoid further pumping.



SOURCE: ENGINEERING REPORT BY  
 CARL E. GRIEN AND ASSOCIATES

- EXISTING PIPELINE
  - EXISTING RESERVOIR
  - EXISTING SPRINGS
  - ▲ EXISTING DIVERSION DAM
  - ▤ EXISTING IMPOUNDMENT DAM
  - ⊕ POTENTIAL DIVERSION DAM
  - ⊕ POTENTIAL IMPOUNDMENT DAM
- (See text for explanation of numbered items)

System: Cannon View Park, Inc.

Estimated Total Population Served: 96 (37 services, no metering)

Existing Source and Water Rights: Spring

Estimated Capacity of System: No Data

Potential Source: Arch Cape Creek

Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	1	75,000 g.
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	

Treatment: None

Comments:

Recent improvements to the system; new distribution lines and storage tank have addressed the system's supply and fire protection problems.

System: Elderberry-Nehalem Water Company

Estimated Total Population Served: 150 (50-55 services)

Existing Source and Water Rights: Unnamed Creek

Estimated Capacity of System: No Data

Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	1	35,000 g.
- Impoundments and capacity		Concrete retaining wall
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	

Treatment: Chlorine-filter

Comments:

This system was unapproved following inspections conducted by Health Division Staff during the spring of 1977. There have been numerous complaints by users on the water quality and pressure.

System: Evergreen Acres Water System

Estimated Total Population Served: 75 (28 services, no metering)

Existing Source and Water Rights: Well

Estimated Capacity of System: 60 services

Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	2	280 g. ea.
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	

Treatment: None--in the process of building a treatment plant

Comments:

The owner would like this system to become a public water system.

System:

John Day Water District

Estimated Total Population Served:	225 (75 services; all metered)
Existing Source and Water Rights:	City of Astoria
Estimated Capacity of System:	Near Capacity
Potential Source:	No Data
Storage Sites - Existing	<u>(No.)</u> <u>(Cap.)</u>
- On system reservoirs and capacity	None
- Impoundments and capacity	None
Storage Sites - Potential	
- On system reservoirs and capacity	No Data
- Impoundments and capacity	No Data
Existing Potential to Support:	No Data
Treatment:	By the City of Astoria
Comments:	

There is a problem with some hydrants having too low a volume of water. The district plans to replace the 4 inch line with a 6 inch line, which will increase capacity by 25 connections. These improvements will occur as soon as funds are available.

System:

Knappa Co-op Water Company

Estimated Total Population Served:	780-900 (311 services, all metered)
Estimated Capacity of System:	400 services
Existing Source and Water Rights:	Mill Creek/Wells
Potential Source:	Big Creek/Astoria System/Wells
Storage Sites - Existing	<u>(No.)</u> <u>(Cap.)</u>
- On system reservoirs and capacity	2      7,650 g.
- Impoundments and capacity	None
Storage Sites - Potential	
- On system reservoirs and capacity	1      200,000 g.
- Impoundments and capacity	1      2,000 ac.ft.
Existing Potential to Support:	No Data
Treatment:	Chlorination
Comments:	

In 1974, the Co-op had an engineering study of the system. The study found the present system operates with a number of problems which include excessive leakage, low pressure problems, pump station problems, and inadequate overall system reliability.

System:

Stanley Acres Water Association

Estimated Total Population Served:	325 (86 services, all metered)	
Existing Source and Water Rights:	City of Seaside	
Estimated Capacity of System:	150 services	
Potential Source:	No Data	
Storage Sites - Existing	<u>(No.)</u>	<u>(Cap.)</u>
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	
Treatment:	By the City of Seaside	
Comments:		

The system is generally in good condition.

System:

Sunset Lake Water County Service District

Estimated Total Population Served:	460 (200 services, all metered)	
Existing Source and Water Rights:	City of Warrenton	
Estimated Capacity of System:	400+ connections	
Potential Source:	Clatsop Plains Aquifer	
Storage Sites - Existing	<u>(No.)</u>	<u>(Cap.)</u>
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Treatment:	By the City of Warrenton	
Comments:		

The district was organized in 1977 serving the Sunset Lake area. Fire hydrants are within 1000 feet of all houses in the district.

System:

Surf Pines Water District

Estimated Total Population Served:	300 (110 services, all metered)	
Existing Source and Water Rights:	Two well systems	
Estimated Capacity of System:	No Data	
Potential Source:	No Data	
Storage Sites - Existing	<u>(No.)</u>	<u>(Cap.)</u>
- On system reservoirs and capacity	2	20,000 g.
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	
Treatment:	None	
Comments:		

The District plans to improve pumping capacity by adding an additional pump to each well system. The system's 4 inch line does not have sufficient water volume to hook up to a fire truck.

System: Westport Water Association

Estimated Total Population Served: 375-400 (150 services, all metered)  
 Existing Source and Water Rights: West Creek - 0.50 cfs  
 Estimated Capacity of System: 300-400 services  
 Potential Source: Gnat Creek Artesian Aquifer  
 Plympton Creek

	(No.)	(Cap.)
Storage Sites - Existing		
- On system reservoirs and capacity	1	200,000
- Impoundments and capacity	None	-
Storage Sites - Potential		
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Treatment:	Chlorination	
Comments:		

Plympton Creek has been identified as a potential source for the Westport-Wauna area. However, extreme low stream flows, estimated at 1.1 cfs, would provide very limited supplemental supply to either system during the summer dry period. Further, any draw on the source during low flow periods could seriously endanger the ability of the stream to support any fish life or other natural life systems.

The Gnat Creek Artesian Aquifer is another potential source for the two systems. Upon examination of existing information, the aquifer appears to offer some potential for supplementing their present supplies. Additional studies of the aquifer are necessary though, to determine the feasibility of supplying that water to the Westport and Wauna systems.

System: Wickiup Water District

Estimated Total Population Served: 1,300-1,600 (467 services, all metered)  
 Existing Source and Water Rights: Little Creek - 2.1 cfs  
 Estimated Capacity of System: 475  
 Potential Source: Astoria System

	(No.)	(Cap.)
Storage Sites - Existing		
- On system reservoirs and capacity	1	200,000 g.
- Impoundments and capacity	2	300,000 g.
Storage Sites - Potential		
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Existing Potential to Support:	Near Capacity	
Treatment:	Chlorination	
Comments:		

With an extremely small (300,000 g) impoundment reservoir, only 2.1 cfs in water rights, and an extreme low stream flow of 0.31 cfs, the system has almost no potential to support any additional growth. Through their connection with the Burnside Water Association which is interconnected with the Astoria system, it is feasible that they could purchase sufficient water to support some limited, controlled growth. This would necessarily assume that Astoria would develop at least part of the available water rights.

## INDIVIDUAL WELLS/SPRINGS

As it becomes more difficult in certain parts of the County to obtain water from a rural water system, more people will turn to a well or a spring as an alternative water source. Within this County springs are more likely to provide a source of water than wells. The number of people using springs as a water source is unknown. In those areas of the County where springs are used, the major problems have been quantity and quality of water. September tends to be the time of the year when many springs run dry or have very low flows. Persons who are using a spring as a source of water are required to apply to the Water Resources Board for water rights.

The availability of groundwater to wells depends on the permeability of geologic formations and their capacity to absorb, store and transmit water. Due to the sedimentary formation in vast areas of the County, drilling for potable water is somewhat a gamble. (See Map 4) Rain falling on the impermeable slopes of volcanic and marine sedimentary rock is rejected and runoff is rapid. The amount of water that enters the rock units is small; although it will often yield an adequate amount for domestic use, it might be brackish. Groundwater in the alluvial plains is more abundant due to the permeability of the gravels and sands and seepage from the river. Generally, water can be obtained at shallow depths in the wider floodplain areas. Most wells in the alluvial lowlands produce good quality water for domestic use. Hard water, usually high in calcium and magnesium, is likely to occur in wells in marine sedimentary and volcanic rocks.

water to Clatsop County. With these considerations and the U.S. Corps of Engineer's data,<sup>1/</sup> it would appear more feasible at this time to consider Columbia River water for uses which would not require large capital investments in treatment, storage, and transmission systems.

Artesian Aquifer - Gnat Creek

A recent report from the State Engineer's office on a well drilled for the Gnat Creek Fish Hatchery, east of Knappa Junction, indicates that the lava rock underlying the area could be a significant artesian groundwater aquifer. The well was drilled to 305-ft. and developed to 250-ft. Yield from the boring was up to 100 gallons per minute with a pressure of 42 psi.

The potential of the aquifer cannot be measured until further studies explore the limits of it. We can surmise, however, that subsequent borings yielding a similar capacity to the test well might be sufficient to adequately augment the water supplies of the independent water districts in the area. Map 3 on page 32 shows the location and general area the aquifer could possibly cover, based on present geological data.

The Clatsop Plains Aquifer

A report prepared in 1970 by Mr. F.J. Frank of the U.S.G.S. in cooperation with Clatsop County <sup>1/</sup> has shown the Clatsop Plains dune sand area to have considerable potential as a groundwater resource. Presently, the only area where the dune sands groundwater is being used as a primary community water supply source is in the private Surf Pines Development. About 90 homes are connected to the system, some occupied only on a seasonal basis.

According to the report, there are approximately 10 square miles in the central part of the dune area which are favorable for development of this water supply (see Map 3 on page 32 ). The areas immediately adjacent to the ocean, the Necanicum River at its mouth, and the northernmost extension of the dune area, are not considered good withdrawal areas because excessive pumping from the aquifer could permit saline water intrusion. Further, the dune area east of U.S. Highway 101 lies in low, boggy areas and groundwater from there could have an excessive iron content which, although not harmful to health, has an unpleasant taste and would tend to stain plumbing fixtures, cooking utensils and laundry.

The total volume of deposits saturated with freshwater in the dune sand aquifer is estimated at more than 900,000 acre feet. The estimated maximum volume of freshwater that could be pumped from that reservoir is 180,000 acre feet (20%), or nearly 60 billion gallons. Given that storage in the aquifer, an annual infiltration of up to 60-inches of precipitation into

1/ Carl E. Green & Associates, op. cit., pg. 91.  
2/ F.J. Frank, Ground Water Resources of the Clatsop Plains Sand Dune Area, Clatsop County, Oregon. U.S.G.S. Water Supply Paper 1899-A (Washington D.C.: USGS, 1970) p. 41.

TABLE 3

PRIMARY SOURCES OF POTENTIAL DOMESTIC SURFACE WATER SUPPLIES

Source	No. of Systems on Source Now	Estimated Population on Source Now	Est. Avg. Summer Population	Existing Water Rights (cfs)	High/Low Stream Flows (cfs)	Present Storage Capacities (MG) of Impoundment <sup>1/</sup> On System <sup>2/</sup>	Potential Impoundment <sup>1/</sup> Capacities	Comments
Flympton Creek	0	0	-	0.4 S.P.S. RR	20/1.1 diversion site	0		Limited potential for Wauna-Westport area
Bear Creek (Astoria Sys.)	7	Not sufficient data	No Data	3.0 City of Astoria	15/3.0	I = 262.0 R = 25.55	None	No additional water available
Big Creek <sup>2/</sup>	0	0	-	27.38 (25.0 to O.S.F. Cons.)	50/3.0 storage site	0	2,000 acre ft.	Storage potential to benefit fish and municipal requirements.
Walluski River	0	0	-	0.05 Non-Consumpt.	No Data 0.34 stor. site	0	3,900 acre ft.	Good potential to supplement Astoria system.
Klaskanine River <sup>2/</sup> (No. Fork)	0	0	-	None	44/0.8 storage site	0	1,000 acre ft.	High cost to transmit water to populous.
Klaskanine River <sup>2/</sup> (So. Fork)	0	0	-	None	40/2.2 storage site	0	1,200 acre ft.	Area could be developed to augment Astoria system.
Lewis & Clark River <sup>2/</sup>	3	3,900	11,000	17.0 Warrenton Intake	45/2.8	R = 1.6	No Data	Good potential for Warrenton system - storage will be required.
Youngs River & Tributaries	1	1,600	-	49 Astoria	40/4.1 storage site	I = 3,912.0 R = 0.5	18,700 acre ft.	May yield from 12 - 20 mgd for city and industry - good potential.
Meconicum River	2	2,300	15,000	15.0	20/3 at intake	R = 16.0		Lacks good impoundment sites - water could be diverted from Nehalem River to supplement flow year 'round.
Elk Creek Basin	1	1,100	4,100	2.6	23/0.8 RR diversion	R = .172	None	Good potential for Cannon Beach area.
Nehalem River Drainage Basin	None in Clatsop County	-	-	None in Clatsop County	200/0.7 (North Fork)	None in Clatsop County	15,000 (+) acre ft.	Water could be pumped from Nehalem R. tributaries to Meconicum River tributaries.
TOTALS	14	20,000	40,000 (+)					

<sup>1/</sup> Impoundment - (I) - storage reservoir site on stream (back-up behind dam).

<sup>2/</sup> On system - (R) - storage reservoir in or near community (usually a large tank).

<sup>3/</sup> Although these rivers exhibit some potential for domestic water use, they are presently closed to further development for any purpose other than the protection and propagation of fish life. Note: A systematic analysis of any source, whether being used or considered for potential use, is needed to determine each's ability to supply domestic water systems and still adequately maintain natural life systems dependent on the source.

Source: Engineering and Planning Report - Water Supplies and Sewerage of Clatsop County, Carl E. Green & Associates, Portland, Oregon 1968  
 Resource Analysis - Clatsop County, Oregon: Compiled by Cooperative Extension Service, Resources Development Section, Oregon State University, Corvallis, Oregon, January 1964.  
 Report of Clatsop County Long-Range Planning Conference, 1968.



estimates were made as to when the treatment plant would reach its capacity, both with and without the addition of flows from Hammond and Fort Stevens State Park. It is assumed that the population of Warrenton will grow at an annual rate of 3%, the treatment plant has the capacity to handle in-city waste flows until the year 2000. If the same 3% growth rate is assumed and Hammond and Fort Stevens State Park are connected to the system, the lagoon capacity would be reached by the year 1985.

On November 15, 1978, the city of Warrenton entered into an agreement with the town of Hammond to allow Hammond to connect into the Warrenton treatment plant. Hammond will be responsible for the construction of the collection system within its municipal boundaries and for the construction of a sewer main line from the Hammond city limits to the Warrenton treatment plant, south along NW Warrenton Drive. As part of this agreement, initial steps were taken to obtain federal funding to partially offset the cost of expansion improvements to the Warrenton treatment plant. Also, a preliminary estimate was prepared for determining the shares which Warrenton and Hammond would be required to contribute as local matching funds to a federal grant.

The city of Warrenton will require Fort Stevens State Park to enter into a similar agreement if it desires to connect onto the Hammond collection system and, in turn, have its sanitary wastes treated at the Warrenton treatment plant.

Gearhart

Wastewater disposal in Gearhart is achieved by on-site systems, principally septic tanks. This practice and potential influences on groundwater quality has been a subject of debate for several years. The concern is over the level of nitrates in the groundwater, which is increased by septic tank discharges and other human activities as well as by natural vegetation.

The City of Gearhart has prepared a wastewater facilities plan considering wastewater management alternatives within its incorporated limits. The findings are that the low density development existing within the community and projected in the City's Comprehensive Plan would not result in nitrate levels exceeding five milligrams per liter (mg/l), which is the administrative limit set by DEQ for the Clatsop Plains Aquifer.

The Department of Environmental Quality has since amended the moratorium in Gearhart and is allowing some new construction. Currently building permits are based on an overall city density rather than a density per lot. Monitoring results from the County groundwater quality study during 1978 indicate that the observed nitrate concentrations are less than the conservative estimates initially predicted.

As a result of the 208 Groundwater Protection Study, all new on-site sewage disposal systems in Gearhart must use low pressure distribution systems and/or sand filters.

Location

Comments

Camp Rilea

To meet the continued expansion of the National Guard training program, a sewage lagoon system has been constructed on the southeast boundary of Camp Rilea. The system is designed for a population equivalent of 2000 to 3000 people on a year-round basis. The present usage is around 1,500 people during the summer months. Camp Rilea sewer system could provide treatment to a sanitary district in the area around Sunset Beach and Cullaby Lake. The district, if formed, would have to operate and pay for expansion of the treatment plant.

Shoreline Sanitary District (Cullaby Lake)

Shoreline Sanitary District, a private system, serves a population equivalent of 220 people with a capacity of 500 people. The owner of the system is looking into the possibility of expanding the plant's capacity to an equivalent of 1,200 people.

Tongue Point

Located east of Astoria, the Tongue Point Job Corps Center, originally a Navy installation, has a primary and secondary treatment plant. The system was tied into the City of Astoria treatment plant in 1979.

Sundown Sanitary District

A primary system built for the Navy hospital during WWII. The site is no longer being used for a hospital. At the present time the system is being used for residential as well as manufacturing uses. The system has a design capacity of 62,000 gpd with a present usage varying from 16,000 to 35,000 gpd.

Fishhawk Lake

A small private domestic sewer system with a design capacity of 270 hookups. Present usage is approximately 53 hookups, most of which are seasonal.

Wauna Mill

The Crown Zellerbach mill has a sewerage treatment plant designed for industrial treatment.

Florence I. Tagg Grade School (Westport)

This system is designed for school use only. Present usage is around 4000 gpd while design capacity is at 5000 gpd.

First of all, there are geological and topographical considerations. A large majority of the area in Clatsop County is composed of steep and rugged terrain which is highly unsuitable for septic tank operations. Not only is the slope too great, but the depth of the soil is shallow. In most cases, these areas are used exclusively for forestry.

The lower valley areas have less severe limitations. Here the soil characteristics themselves--texture, structure, shrink-swell potential, permeability, etc.--are generally more conducive to proper drainage rates that insure effective treatment. There are, however, problems in some areas with high water tables and winter surface water predominantly in the diked tidelands area.

A critical consideration in septic tank operation is development density. With the exception of steep terrain, high water table, bedrock, and flood plain areas, a septic tank system, if properly designed and constructed, can be made to function adequately in most soils. Problems result when development densities become too great for the soil to accommodate the resulting effluent discharges. For example, a few homes scattered about a new subdivision on one acre lots may operate very effectively with individual drainfields. However, when the subdivision becomes fully developed with homes on every adjacent lot, the soil may become saturated with unfiltered effluent which could eventually surface and/or contaminate wells and other groundwater sources. The result is a potentially dangerous health situation.

The subsurface sewage disposal program is operated by the Department of Environmental Quality. Statistics for the inspection of septic sites indicate a 90% approval rate for installation of systems in 1978, while in 1977 it was 88% and 92% in 1976.

In areas where conventional systems may not be feasible, alternative and/or experimental systems may be utilized. The experimental systems program began on a non-funded basis in late 1975 with funding supplied by the legislature in 1977. Possible alternative systems are as follows: disposal trenches in soil shallow to weathered bedrock; disposal trenches in drainable wet soils; pressure distribution system in sandy and gravelly soils; seepage trenches in soils on steep slopes; sand filter followed by disposal trenches; mound; and gray waste water disposal trenches. There are approximately twenty alternatives available for different types of on-site sewage disposal systems, as of 1983. Many areas of the County previously nonapprovable can now qualify for alternative systems. Limitations on septic systems are no longer the sort of limiting factor to development that was once the case.

LOCATION (cont'd)

COMMENTS (cont'd)

Clatsop Plains

The Clatsop Plains are underlain by windblown sands with a high hydraulic conductivity. Septic tank drainfield effluent is easily disposed of but is not adequately treated for all contaminants in this medium. High density residential development which uses septic tank drainfield disposal systems will pollute the aquifer.

Below in Table 5 is a brief discussion of the five solid waste disposal sites in Clatsop County. Of the five sites, three are land fills and two are dumps. A sanitary land fill is distinguished from a dump in that the sanitary land fill process compacts and confines the refuse to the smallest possible area and then covers the refuse with a layer of earth at the end of the day or, at least, at frequent intervals.

TABLE 5

## CLATSOP COUNTY SOLID WASTE DISPOSAL SITES

<u>Site Location</u>	<u>DEQ Permit</u>	<u>Area Served</u>	<u>Type of System</u>	<u>Comments</u>
Astoria	Yes	City of Astoria	Sanitary land fill backfilled daily	Pick-up is mandatory for city residents. Burning of paper and cardboard. Water pollution potential--stream runs through site. Rodent population controlled by monthly poisoning.
Warrenton	Yes	Warrenton Hammond Ft. Stevens North Clatsop Plains	Sanitary land fill compacted and backfilled daily.	No burning. No rodent population. No present danger of water pollution.
Seaside	Yes	Seaside Gearhart South Clatsop Plains	Dump over embankment.	Frequent complaints: potential leachate during rainy season. No controls on burning. Large rodent population, although poisoned monthly.
Cannon Beach	Yes	Cannon Beach Area	Dump over embankment.	Potential air-water pollution problems due to occasional burning and surface runoff. Rodent population controlled by monthly poisoning.
Elsie	Yes	Elsie and Area	Sanitary land fill--dump in trench; cover when full.	No pollution problems. No rodents.

Source: Clatsop County Planning Commission Staff and Oregon Department of Environmental Quality.

After nine years, these recommendations have not been implemented. Essentially the same open dumps and modified landfills are still in use now as in 1974. The reasons for the present situation are varied and complex, but some of the factors are:

1. The problems of high rainfall, steep slopes, poor soils and citizen concerns make finding a landfill very difficult. The Department of Environmental Quality has been reluctant to approve any landfill sites it feels could cause water pollution problems.
2. Some sites, such as Clifton near the Columbia County border, are too remote. The Skipanon site was rejected because of environmental problems and proximity to the airport. The BPA site is not available due to federal land transfer policies.
3. Smaller volumes of waste make resource recovery uneconomical on a large scale. The County was actively supporting a two-county composting/recycling operation for a period of time, but found that the costs and lack of market for the product made the concept infeasible.
4. Waste recovery prices do not provide sufficient revenue to make recycling feasible on a mass scale. Community recycling still must depend largely on volunteer labor. However, if a County-wide system was initiated, there is the possibility that a "coordinator" could be paid on a part-time or full time basis. The technology still does not exist to separate recyclables at the end of the "waste stream" (the dump or landfill). Hand separation is still too costly.
5. Although a solid waste district has been established, there is no staff to provide the work needed. The County roadmaster has had to function as the principal staff person in between other duties.

Since other efforts have not as yet provided a solution, the County is preparing to hire an engineering consultant to investigate other landfill sites. The solid waste collection system will continue to rely on private haulers throughout the County, although the possibility of transfer sites has been investigated as a function of the solid waste district. Both the collection and disposal systems would be financed through user fees.

There are a number of options for handling of recycling in the district. They are:

1. Continue strictly volunteer recycling operations.
2. Retain voluntary program, but provide coordination, space and other assistance to volunteer operators.
3. Conduct a fee-supported County operation. At this time a County-wide program would be excessively expensive, but it may become feasible in the future.

Many future actions could reinforce voluntary recycling success. The counties might adopt a credit system whereby individuals reduce their disposal fee through accumulated recycling credits issued at recycling centers. Within the coastal area (as elsewhere) there is a great need for jobs suitable for the handicapped, and the potential of a recycling operation to support a sheltered workshop program ought not be overlooked. Over the long term, the value of a successful community recycling effort as a tool for changing attitudes from viewing household by-products as waste to considering them a reusable resource, with consequent reduction in total volume discarded, should not be discounted.

As the value of various salvaged materials rises, more and more individuals and firms are entering what can prove to be a highly competitive field. In some areas severe conflicts have developed between persons involved in salvage operations (newsprint, cardboard, etc.) and franchised collectors who feel that their businesses are being threatened and their franchise rights violated by these salvage operations. Many problems can be avoided by early clarification of the status of materials which may one day be considered waste and the next, a desirable commodity. The Solid Waste Committee should provide a forum for open discussion of this question, obtain legal advice, and recommend clarification of the Solid Waste Ordinance if such is found necessary.

Energy Recovery

The Solid Waste Plan stated that as of 1974, there was near complete utilization of wood processing residues, and that these "wastes" would become more valuable in coming years. The use of municipal refuse as a supplementary fuel is receiving a great deal of attention. In Oregon, studies in Lane County, Lincoln County and the south coast have proposed using solid waste along with hog fuel to produce power. Utilization of the combustible fraction of the waste stream for fuel provides resource recovery in the form of energy from 80 percent of the waste stream.

The amount of processing needed to prepare the waste for use as fuel varies with the type of boiler. Some units can accept unprocessed wastes, while other require shredding and separation of the combustible matter from the non-combustible fraction. Shredding and classification of the wastes facilitate the recovery of other resources from the waste stream.

GOVERNMENTAL STRUCTURE AND OTHER PUBLIC FACILITIES AND SERVICES

## LOCAL GOVERNMENT

Within the boundaries of Clatsop County are six incorporated cities and several special purpose service districts, including seven school districts. The basic unit of local government is the county with jurisdiction in all areas for such responsibilities as tax assessment, public records, and the county court. For other responsibilities, such as land use planning, zoning and building regulation, jurisdiction is limited to those areas outside the boundaries of the incorporated cities.

In addition to the cities and county which are general purpose governmental units, there are special purpose districts authorized by Oregon law. The seven school districts which are discussed in more detail below provide educational services. The county-wide intermediate education district provides special educational services. The Clatsop Community College District encompasses the whole county and provides educational services on the campus in Astoria. The Port of Astoria District and the Clatsop Soil and Water Conservation District also encompass the whole county.

The Port of Astoria, under the guidance of the publicly elected Port Commission, maintains a terminal for waterborne commerce at Astoria and the Clatsop Airport on the west side of Youngs Bay.

The Clatsop Soil and Water Conservation District administers land use controls in the Warrenton Dune Area, and provides technical assistance in the use and conservation of the soil and water resources of the county.

## EDUCATION

Clatsop County has seven school districts and five complete school systems (defined as facilities to educate grades 1 - 12). The boundaries of the school districts are shown on Map 5, and the capacities of the various school districts are shown on Table 6. The districts are laid out for the purpose of equalizing tax revenue from forest lands which means that students in outlying areas of one district may find it more convenient to attend a school located closer to their homes on a tuition basis. Students in the Olney and Lewis and Clark Districts must attend Astoria Schools for grades 9 - 12 on a tuition basis because their districts do not maintain high schools. There are five private schools in the county: Star of the Sea in Astoria, the Seventh Day Adventist School in Olney, Lewis and Clark Christian Academy in Lewis & Clark, North Coast Christian School in the Clatsop Plains, and Philadelphia Kindergarten in Hammond.

TABLE 6  
SCHOOL DISTRICTS IN CLATSOP COUNTY

<u>Public Schools</u>	<u>Grades</u>	<u>Enrollment</u>	<u>Capacity</u>	<u>% of Capacity</u>	<u>Year Built</u>
<u>District #30 Warrenton</u>					
		(As of 1983)			
Warrenton Grade School	K-8	589	750	79	1981
Warrenton High School	9-12	261	300	87	1948
<u>District #10 Seaside</u>					
		(As of 1983)			
Seaside Heights Elementary	K-6	463	478	97	1974
Gearhart Elementary	K-6	230	275	84	1948
Broadway Junior High School	7-8	260	280	93	1949
Seaside High School	9-12	416	600	69	1958
Cannon Beach Elementary	K-6	157	175-200	79	1948
<u>District 5J Knappa-Westport</u>					
		(As of 1983)			
Florence I. Tagg Grade School	1-7	123	200	62	1971
Lahti Grade School	1-8	404	450	90	1958, rem. '76
Knappa High School	9-12	179	500	36	1952, rem. '76
<u>District #8 Jewell Consolidated</u>					
		(As of 1983)			
Jewell	K-12	125	250	50	Grade Sch., 1977 High Sch., 1976
<u>District #5 Lewis &amp; Clark</u>					
		(As of 1983)			
Lewis & Clark Elementary *remodeled several times	K-8	340	425	80	1927*
<u>District #11 Olney</u>					
		(As of 1983)			
Olney Elementary	K-7	74	80-100	74	1967
<u>Private Schools</u>					
		(As of 1979)			
Lewis & Clark Christian Academy	K-12	97	200	49	
North Coast Christian School	2-12	28	30	93	
Philadelphia Kindergarten	K	10	15	67	
Port of the Sea	K-8	184	200	92	
Seventh Day Adventist School	1-8	9	30	30	

**PUBLIC ASSISTANCE**

The County also supplies public assistance services from its Welfare office located in Astoria. There are three public assistance programs administered by the Welfare office, General Assistance Program, Oregon Supplementary Income Program and Aid to Dependent Children Program. The County welfare office reports that currently 49 percent of their cases are in the Astoria area, 36 percent are in the Seaside-Cannon Beach area, 11 percent are in the Warrenton-Hammond area, and 3 percent are in the rest of the County.

As of November, 1976, there were 423 cases, or 1,204 individuals receiving Aid to Dependent Children Assistance. The County reports that about 75 percent of the households receiving ADC are headed by women. Additionally, in November 1976 there were 615 households, or 1,472 individuals who were not on public assistance programs but were receiving food stamps. The number of persons receiving some kind of public welfare varies from season to season depending upon the economics of the time. Layoffs by large plants such as Bumble Bee in Astoria often result in the temporary increase of the public assistance rolls.<sup>1</sup>

**POLICE PROTECTION**

The State, County and local governments all have a role in police protection. There were a total of 74 sworn officers in the study area in 1977. Within the unincorporated County about 80% of the crimes are burglaries and vandalism. The rural County has about the same crime rate per 1000 as do the cities in the County. Clatsop County has funding for 8 sheriffs to protect a rural population of 10,900. Clatsop County is deficient in the level of police protection that is currently being provided. The national median average is one officer to 1000 population, while in Oregon the average number of sworn officers to population is 1:877 for counties with populations of 25,000 to 99,000.<sup>2</sup>

Department	Police Services (1977)				
	Sworn Officers	Reserve Officers	Support Personnel	Patrol Cars	Special Vehicles*
Oregon State Police	22	6	2	8	6
Clatsop County Sheriff's Dept.					
Criminal Division	8	15	1	3	2
Jail Division	6	3	-	-	-
City of Astoria Police Dept.	17	10	6	4	1
Town of Hammond Police Dept.	1	0	0	1	0
City of Gearhart Police Dept.	3	8**	0	3	1
City of Seaside Police Dept.	12	15	7	5	3
City of Warrenton Police Dept.	3	3	0	2	0
City of Cannon Beach Police Dept.	4	2	0	3	1

\*Special vehicles include game control trucks, 4-wheel drive patrol vehicles for beaches and rugged terrain, and motorcycles. \*\*Plus three cadets.<sup>1</sup>

<sup>1</sup>Source: Brown & Root EIS 1977.

<sup>2</sup>Law Enforcement Data System 1979.

606 135

TABLE 8  
FIRE PROTECTION RATING

(Where two figures appear, the parenthesized number predominates)

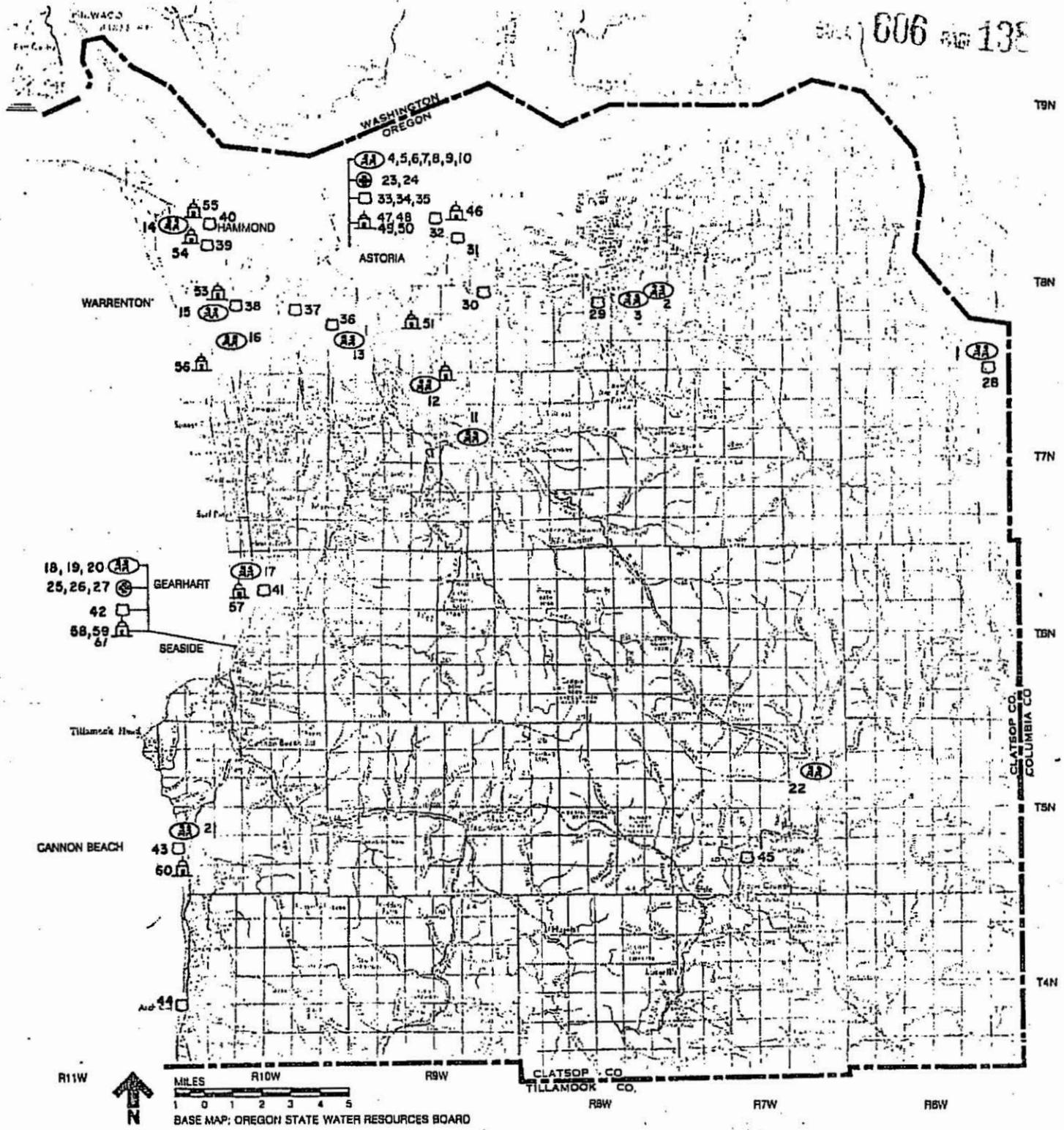
Served by Cannon Beach R. F. P. D.	(6) - 9
Served by Seaside R. F. P. D.	4 - 8
City of Seaside	5
City of Gearhart	6
Served by Gearhart R. F. P. D.	7 - 9
City of Warrenton	(6), 8
Served by Warrenton R. F. P. D.	5 - 7
City of Hammond	(7), 8
City of Astoria	(5), 7
Served by Lewis and Clark R. F. P. D.	8 - 9
Served by John Day-Fernhill R. F. P. D.	9
Served by Knappa-Svensen R. F. P. D.	8 - 9
Served by Westport, Wauna R. F. P. D.	7 - 9
Served by Elsie-Vinemaple R. F. P. D.	10

The rating bureau's recommended premiums are not affixed linearly; thus, an expensive home in a class 10 area will cost more than twice as much to insure as a home half its value. The largest gulf between recommended premiums occur between ratings 8 and 9. A \$15,000 home costs about \$35 annually to insure in a class 8 area, \$70 in a class 9 area.

Recommended Premium on:	In Protection Class							
	2	4	5	6	8	9a	9b	10
\$15,000 home	16	20		25	25	69	83	91
\$10,000 home	14		19					67
\$ 5,000 home	12		16					45

Source: Oregon Insurance Rating Bureau

All class 2 areas receive excellent fire protection. The insurance companies affix only a base rate dependent on home value. What fire protection exists in a class 10 area is not sufficient to prevent the highest premium being charged.



**MAP 6**  
**CLATSOP COUNTY**  
**PUBLIC FACILITIES**

SOURCE: CLATSOP COUNTY PLANNING COMMISSION

- EDUCATION
  - HEALTH CARE
  - PUBLIC SAFETY
  - ADMINISTRATIVE AND/OR INSTITUTIONAL
- (See text for explanation of numbered items)

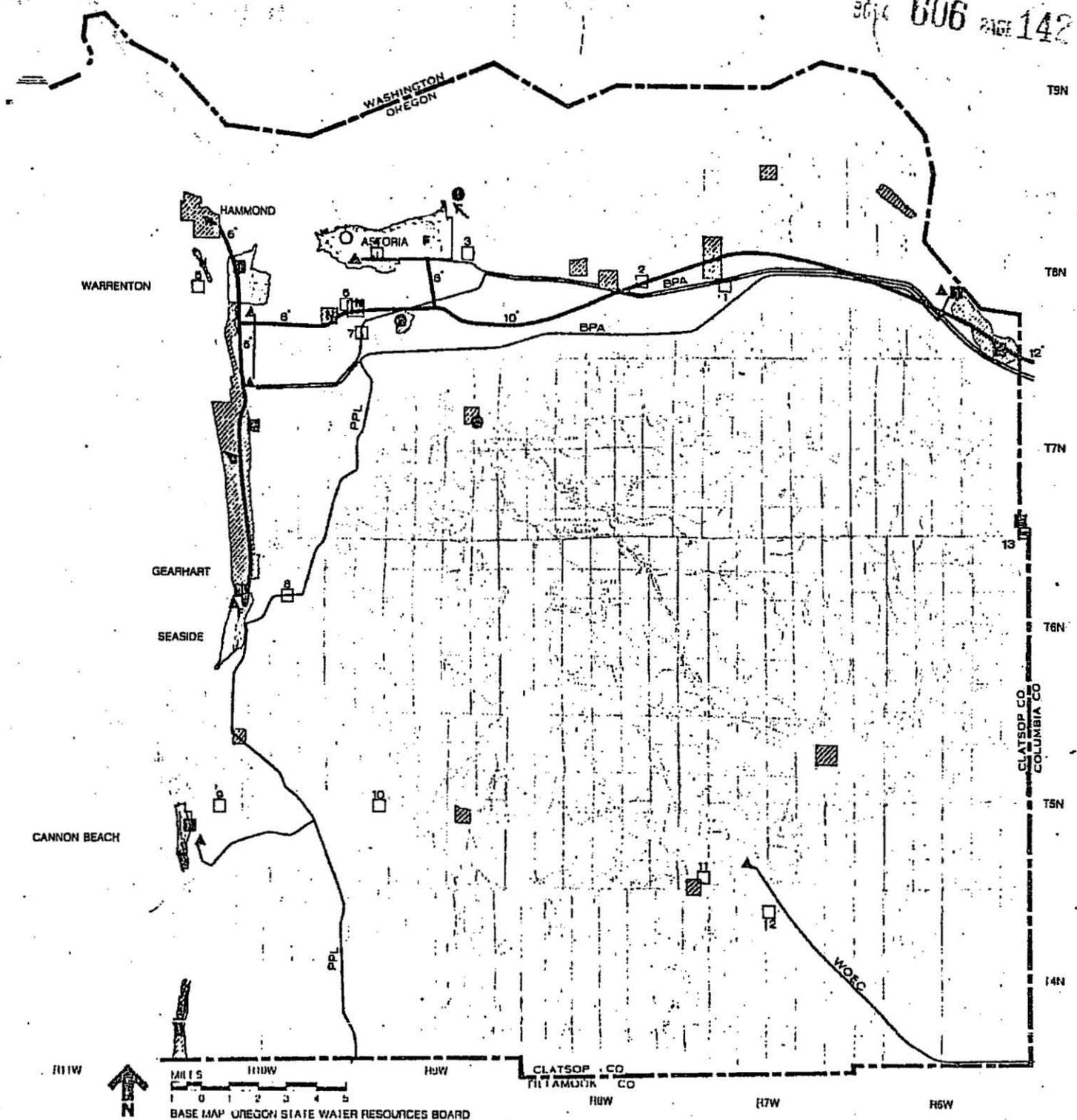
Map  
Index

Number      Public Safety... cont'd

- 33.            Astoria Police and Fire Department
- 34.            Clatsop County Sheriff
- 35.            Oregon State Police
- 36.            Lewis and Clark Fire Department
- 37.            Coast Guard Air Station
- 38.            Warrenton Police and Fire Department
- 39.            Hammond Fire Department
- 40.            Point Adams Coast Guard Station
- 41.            Gearhart Police and Fire Department
- 42.            Seaside Police and Fire Department
- 43.            Cannon Beach Police and Fire Department
- 44.            Arch Cape Station of Cannon Beach Rural Fire Protection District
- 45.            Jewell Elsie Fire Department

Administrative Institutional

- 46.            Job Corps Center
- 47.            Astoria City Hall
- 48.            Astoria Library
- 49.            County Courthouse
- 50.            Federal Building
- 51.            State Forestry Department
- 52.            John Jacob Astor Experiment Station
- 53.            Warrenton City Hall
- 54.            Hammond City Hall
- 55.            National Marine Fisheries
- 56.            Camp Rilea
- 57.            Gearhart City Hall
- 58.            Seaside Library
- 59.            Seaside City Hall
- 60.            Cannon Beach City Hall
- 61.            Sunset Recreation District (swimming pool)



BASE MAP OREGON STATE WATER RESOURCES BOARD

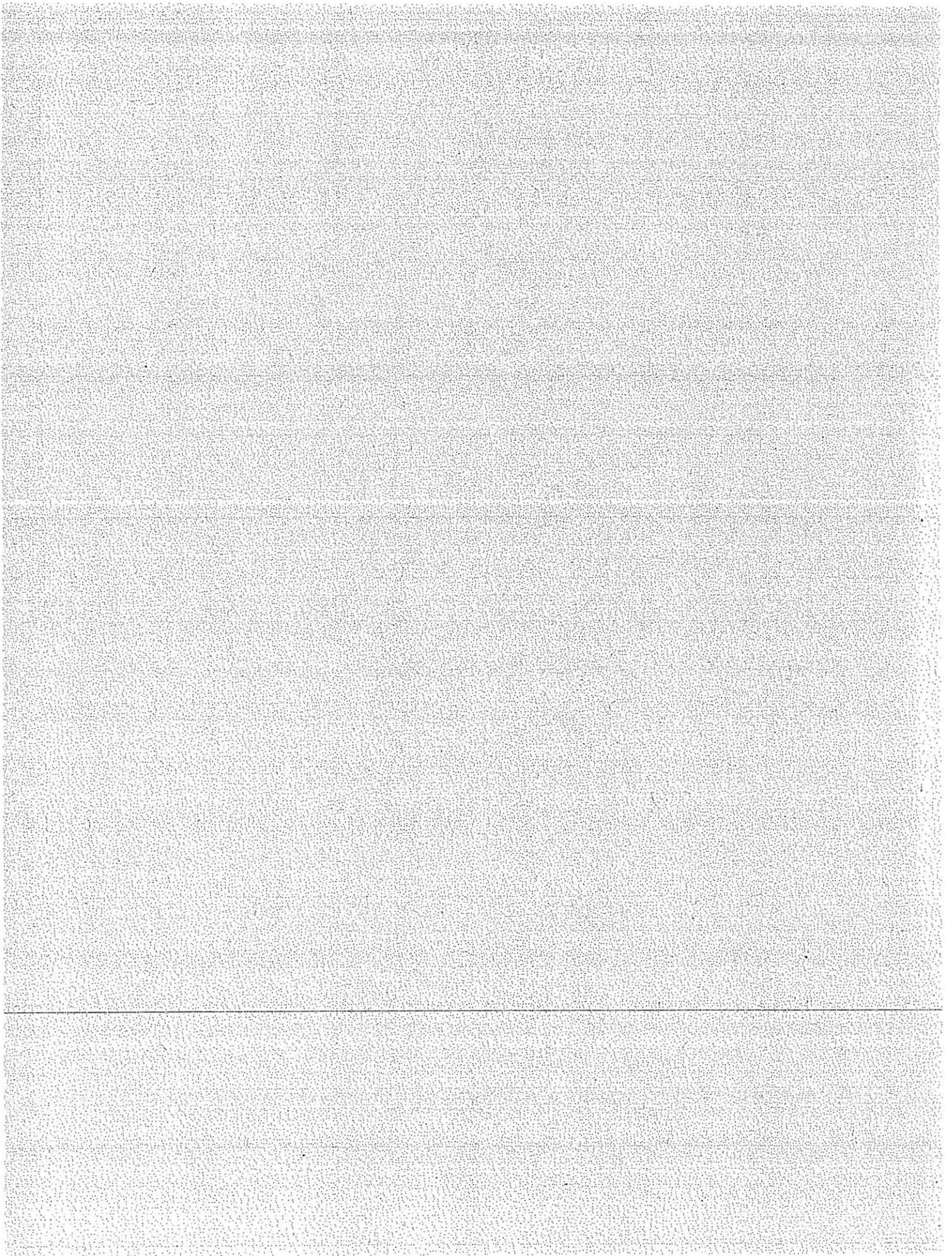
**MAP 7  
CLATSOP COUNTY  
PUBLIC UTILITIES**

SOURCE: PUBLIC UTILITIES & PRIVATE TRANSPORTATION COMMISSION, 1973

- SEWER MAIN LINES (High pressure booster main system)
- SEWER COLLECTOR LINES (Low pressure)
- SUBSTATION
- URBAN SEWERAGE AREAS
- RURAL COMMUNITIES & SUBURBAN (In addition to a local sewer treatment plant)

- PRIMARY SEWAGE TREATMENT PLANTS
- SECONDARY SEWAGE TREATMENT PLANTS
- NO SEWAGE TREATMENT PLANT

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08/09/83

Section 4.320. Clatsop Airport Overlay District(/CAO).

Section 4.322. Purpose. The intent of this District is to regulate actions in the vicinity of the Clatsop Airport from obstructions.

Section 4.324. Definitions. The following definitions are to be used for the Clatsop Airport Overlay District area unless the context otherwise requires it.

1. AIRPORT - The Clatsop Airport.
2. AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet from sea level. This is 11 feet above mean sea level for the Clatsop Airport.
3. AIRPORT OPERATOR - The Airport authority of Clatsop County whose responsibility it is to maintain and operate the Airport.
4. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section 4.328 of this Ordinance. The perimeter of the approach surface coincides with the perimeter of the approach zone.
5. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section 4.326 of this Ordinance.
6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.
7. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.
8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this District and shown on the approach and clear zone map, the datum shall be mean sea level elevation unless otherwise specified.
9. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone. This is 161 feet above mean sea level for Clatsop Airport.
10. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.
11. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this District or an amendment thereto.

## GOAL 12 TRANSPORTATION

1. Adopt a county-wide policy to consider the needs of the transportation disadvantaged in planning the County's transportation needs.

Proposed addition to the County Comprehensive Plan:

- 1) The County shall encourage programs that better serve the transportation needs of those who, because of age, physical or mental handicap, income, or other reason, are transportation disadvantaged.
  - 2) The County shall encourage the consolidation of existing programs serving the transportation disadvantaged in order to:
    - a) make such programs more efficient;
    - b) serve a broader population base.
  - 3) The County shall actively seek and/or provide support to groups or agencies seeking funds to aid the transportation disadvantaged.
  - 4) The County shall encourage the establishment of commuter bus service along Highway 101 and Highway 30 serving the communities located along these highways.
3. Coordinate with ODOT's Aeronautics Division to determine whether the present height restrictions on lands east of Seaside Airport and beyond the UGB's of Gearhart and Seaside are adequate to implement the County's policy to "prevent the development of incompatible uses or hazardous structures around airports" and to comply with applicable state and federal standards; and adopt an airport overlay zone, more restrictive height limitations, or other implementing measures as may be necessary.

12. **NONPRECISION INSTRUMENT RUNWAY** - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned.
13. **OBSTRUCTION** - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section 4.323 of this Ordinance.
14. **PERSON** - An individual, firm, partnership, corporation, company, association, joint stock association, or governmental entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.
15. **PRECISION INSTRUMENT RUNWAY** - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS) or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated on an approved Airport Layout Plan or any other planning document.
16. **PRIMARY SURFACE** - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section 4.326 of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.
17. **RUNWAY** - A defined area on an airport prepared for landing and takeoff of aircraft along its length.
18. **STRUCTURE** - An object, including a mobile object, constructed or installed by persons, including but without limitation, buildings, towers, cranes, smokestacks, earth formations, and overhead transmission lines.
19. **TRANSITIONAL SURFACES** - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.
20. **TREE** - Any object of natural growth.
21. **UTILITY RUNWAY** - A runway that is constructed for and intended to be used by propeller-driven aircraft of 12,500 pounds maximum gross weight and less.
22. **VISUAL RUNWAY** - A runway intended solely for the operation of aircraft using visual approach procedure.

GOAL 12 continued

2. Coordinate with ODOT's Aeronautics Division to adopt an airport overlay zone, height limitations, or other implementing measures to restrict the heights of structures around the Clatsop County Airport in a manner consistent with County policies and with applicable state and federal standards.

See attached Clatsop Airport Overlay District (/CAO) Section 4.320.

Section 4.320. Clatsop Airport Zones. In order to carry out the provisions of this District, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to Clatsop Airport. Such zones are shown on the Clatsop County Airport Master Plan Sheet 1/4 entitled Airport Layout Plan and Sheet 2/4 entitled Approach and Clear Zone Plan and Profiles Map which are located in the Clatsop County Department of Planning and Development and made a part hereof. An area located in more than one (1) of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

1. Utility Runway Visual Approach Zone (Runways 3, 21 and 31). The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.
2. Runway Larger than Utility with a Visibility Minimum Greater than 3/4 Mile Nonprecision Instrument Approach Zone (Runways 7 and 13). The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.
3. Precision Instrument Runway Approach Zone (Runway 25). The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 10,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.
4. Transitional Zones - The transitional zones are the areas beneath the transitional surfaces.
5. Horizontal Zone - The horizontal zone is established by swinging arcs of 5,000 feet radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.
6. Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward and upward at 20:1 therefrom for a horizontal distance of 4,000 feet.

Section 4.320. Clatsop Airport Height Limitations. Except as otherwise provided in this District, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this District to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone (Runways 3, 21 and 31). Slopes twenty (20) feet outward for each foot upward (20:1) beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.
2. Larger than Utility Runway with a Visibility Minimum Greater than 3/4 Mile Nonprecision Instrument Approach Zone (Runways 7 and 13). Slopes thirty-four (34) feet outward for each foot upward (34:1) beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.
3. Precision Instrument Runway Approach Zone (Runway 25). Slopes fifty (50) feet outward for each foot upward (50:1) beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically (40:1) to an additional horizontal distance of 40,000 feet along the extended runway centerline.
4. Transitional Zones - Slope seven (7) feet outward for each foot upward (7:1) beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation which is 161 feet above mean sea level. In addition to the foregoing, there are established height limits sloping seven (7) feet outward for each foot upward (7:1) beginning at the sides of and the same elevation as the approach surface, and extending to where they intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven (7) feet outward for each foot upward (7:1) beginning at the sides of and the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.
5. Horizontal Zone - Established at 150 feet above the airport elevation or at a height of 161 feet above mean sea level.
6. Conical Zone - Slopes twenty (20) feet outward for each foot upward (20:1) for 4,000 feet beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation, and extending to a height of 350 feet above the airport elevation.

#### Section 4.330. Use Restrictions.

Except as otherwise provided in this District, no structure or object of natural growth shall be erected, altered, or allowed to grow, or be maintained in any zone created by this District to a height in excess of the applicable height limit herein established for such zone.

Notwithstanding any other provisions of this District, no use may be made of land or water within any zone established by this District in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

Section 4.322. Nonconforming Uses.

1. Regulations Not Retroactive. The regulations prescribed by this District shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this District, or otherwise interfere with the continuance of nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of the District and is diligently pursued.
2. Marking and Lighting. Notwithstanding the preceding provisions of this section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the Port of Astoria to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the Port of Astoria.
3. Nonconforming Uses Abandoned or Destroyed. Whenever the Planning Director determines that a nonconforming structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit for reconstruction shall be granted that would allow such structure to exceed the applicable height limit or otherwise deviate from the zoning regulations. A nonconforming structure that is abandoned or more than 80 percent deteriorated shall be torn down within one year of the Planning Director's determination, unless a permit for reconstruction is applied for within the said year. A nonconforming tree that is more than 80 percent deteriorated or decayed shall be removed by the landowner or the Airport Operator, at the landowner's option, within one month of written notice of such action.

Section 4.324. Permits.

1. Future Uses. Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefor shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this District shall be granted unless a variance has been approved in accordance with this section (3) below.
  - a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five (75) feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

- b. In areas lying within the limits of the approach zones, but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five (75) feet of vertical height above the ground, except when such tree or structure would extend above the height limits prescribed for such approach zones.
- c. In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal zone, no permit shall be required for any tree or structure less than seventy-five (75) feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topography features, would extend above the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any height limits established by this Ordinance.

2. Existing Uses. No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this District or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.
3. Variances. Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this District may apply to the County Planning Director for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and, relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this District. Additionally, no application for variance to the requirements of this District may be considered by the County Planning Director unless a copy of the application has been furnished to the Airport owner for advice as to the aeronautical effects of the variance. If the Airport owner does not respond to the application within fifteen (15) days after receipt, the County Planning Director may act on its own to grant or deny said application. The criteria used in this section shall be the criteria used for a variance and not that listed in Section 5.132.
4. Obstruction Marking and Lighting. Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this District and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the County Planning Director, this condition may be modified to require the owner to permit the Airport owner, at its own expense, to install, operate, and maintain the necessary markings and lights.

Add to Section 3.030.

The boundaries of the Clatsop Airport Overlay/CAO District shall be the areas identified in the Clatsop County Airport Master Plan 1979-2000 Technical Report, Port of Astoria, Oregon. Sheet 1/4 entitled Airport Layout Plan and Sheet 2/4 entitled Approach and Clear Zone Plan and Profiles. These maps are on file in the Clatsop County Department of Planning and Development and are hereby adopted by this reference as a part of this Ordinance.

08/09/83

Section 4.300. Seaside State Airport Overlay District(/SAO).

Section 4.302. Purpose. The intent of this District is to regulate actions in the vicinity of the Seaside State Airport from obstructions.

Section 4.304. Definitions. The following definitions are to be used for the Seaside State Airport Overlay District area unless the context otherwise requires it.

1. AIRPORT - The Seaside State Airport.
2. AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet from sea level. This is 9 feet above mean sea level for the Seaside State Airport.
3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section 4.308 of this Ordinance. The perimeter of the approach surface coincides with the perimeter of the approach zone.
4. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section 4.306 of this Ordinance.
5. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.
6. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.
7. HEIGHT - For the purpose of determining the height limits in all zones set forth in this District and shown on the approach and clear zone map, the datum shall be mean sea level elevation unless otherwise specified.
8. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone. This is 159 feet above mean sea level for Seaside State Airport.
9. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this District or an amendment thereto.
10. OBSTRUCTION - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section 4.308 of this Ordinance.

11. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association, or governmental entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.
12. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section 4.306 of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.
13. RUNWAY - A defined area on an airport prepared for landing and takeoff of aircraft along its length.
14. STRUCTURE - An object, including a mobile object, constructed or installed by persons, including but without limitation, buildings, towers, cranes, snowstacks, earth formations, and overhead transmission lines.
15. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces to where they intersect the horizontal surface.
16. TREE - Any object of natural growth.
17. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller-driven aircraft of 12,500 pounds maximum gross weight and less.
18. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedure.

Section 4.306. Seaside State Airport Zones. In order to carry out the provisions of this District, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to Seaside State Airport. Such zones are shown on the Seaside Airport Approach and Clear Zone Map which is attached to this District and made a part hereof. An area located in more than one (1) of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

1. Utility Runway Visual Approach Zone. The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide for Runway 16/34. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

2. Transitional Zones - The transitional zones are the areas beneath the transitional surfaces.
3. Horizontal Zone - The horizontal zone is established by swinging arcs of 5,000 feet radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.
4. Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward and upward at 20:1 therefrom for a horizontal distance of 4,000 feet.

Section 4.309. Seaside State Airport Height Limitations. Except as otherwise provided in this District, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this District to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone. Slopes twenty (20) feet outward for each foot upward (20:1) beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.
2. Transitional Zones - Slope seven (7) feet outward for each foot upward (7:1) beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation which is 159 feet above mean sea level.
3. Horizontal Zone - Established at 150 feet above the airport elevation or at a height of 159 feet above mean sea level.
4. Conical Zone - Slopes twenty (20) feet outward for each foot upward (20:1) for 4,000 feet beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation, and extending to a height of 350 feet above the airport elevation.

Section 4.310. Use Restrictions.

A. Restrictions on Development.

1. The following are prohibited within the area beneath the Utility Runway Visual Approach Zone:
  - a. Residential uses.
  - b. Churches.
  - c. Hospitals.
  - d. Day care centers.
  - e. Schools.

2. All uses other than those listed above and within the area beneath the Utility Runway Visual Approach Zone, shall be considered and processed as conditional uses in accordance with the provisions and processes for a conditional use found within the Zoning Ordinance. Notice, in accordance with the prescribed processes, shall be given to the State of Oregon Department of Transportation Aeronautics Division and to the Federal Aviation Administration.

B. Restrictions on Use. Notwithstanding any other provisions of this District, no use may be made of land or water within any zone established by this District in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

#### Section 4.312. Nonconforming Uses.

A. Regulations Not Retroactive. The regulations prescribed by this District shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this District, or otherwise interfere with the continuance of nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of the District and is diligently pursued.

B. Marking and Lighting. Notwithstanding the preceding provisions of this section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the State of Oregon to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the State of Oregon.

#### Section 4.314. Permits.

1. Future Uses. Except as specifically provided in a, b, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefor shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this District shall be granted unless a variance has been approved in accordance with this section (4) below.

a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five (75) feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

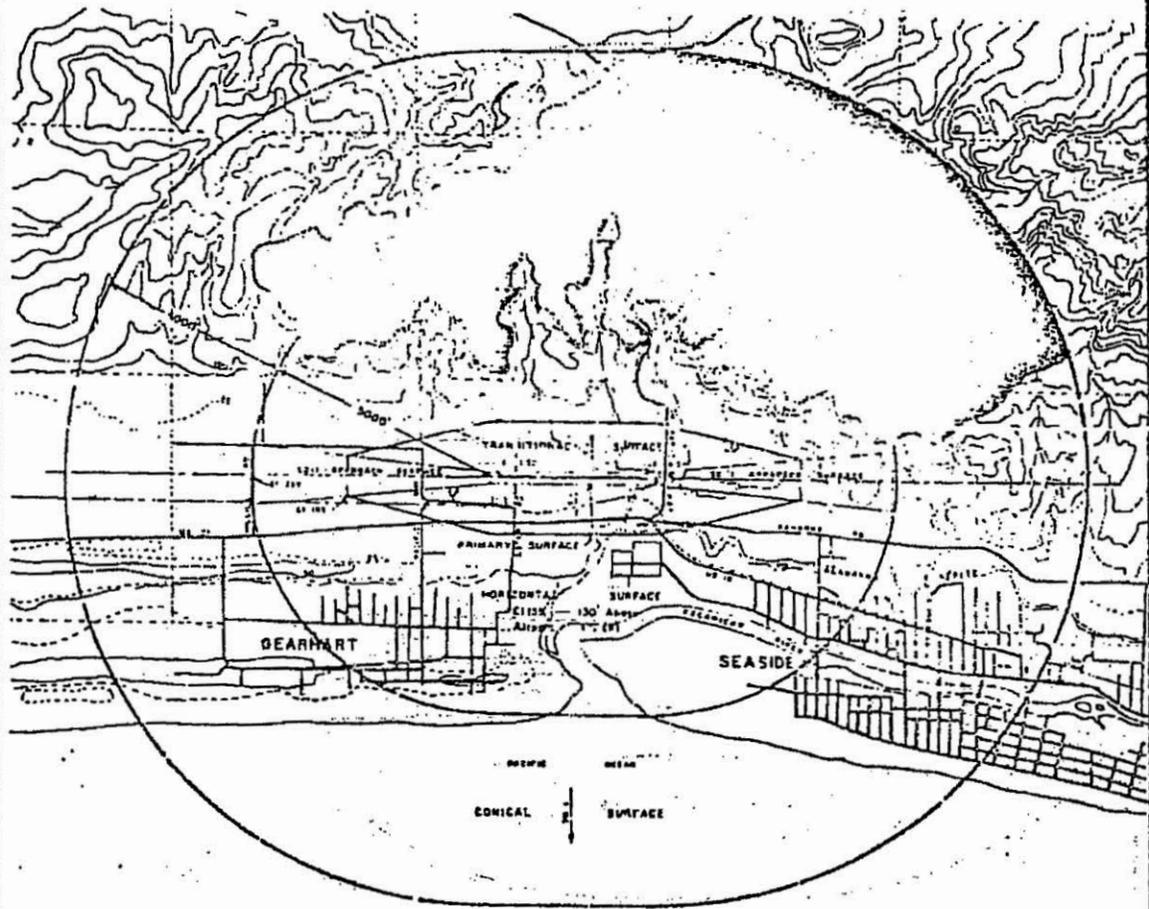
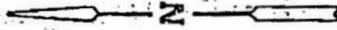
b. In areas lying within the limits of the approach zones, but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five (75) feet of vertical height above the ground, except when such tree or structure would extend above the height limits prescribed for such approach zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any height limits established by this Ordinance.

2. Existing Uses. No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this District or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.
3. Nonconforming Uses Abandoned or Destroyed. Whenever the Planning Director determines that a nonconforming structure has been abandoned or more than 90 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.
4. Variances. Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this District may apply to the County Planning Director for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and, relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this District. Additionally, no application for variance to the requirements of this District may be considered by the Planning Director unless a copy of the application has been furnished to the State of Oregon for advice as to the aeronautical effects of the variance. If the State of Oregon does not respond to the application within fifteen (15) days after receipt, the Planning Director may act on its own to grant or deny said application. The criteria used in this section shall be the criteria used for a variance and not that listed in Section 5.132.
5. Obstruction Marking and Lighting. Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this District and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the Planning Director, this condition may be modified to require the owner to permit the State of Oregon at its own expense, to install, operate, and maintain the necessary markings and lights.

# AIRPORT OVERLAY ZONE

## Imaginary Surfaces<sup>1</sup>



Scale in Feet

Note: Dark shaded, irregularly bounded areas indicate contours penetrating the imaginary surfaces.

<sup>1</sup> Based on Federal Aviation Regulations, Part 77.

SOURCE: Oregon Aeronautics Division

EXHIBIT "A"

COMPREHENSIVE PLAN,  
ZONING AND STANDARDS  
REVISIONS  
VOLUME II

(LCDC In Order to Comply Statements)

Board of Commissioners Adoption: 9-30-83

Ordinance 83-17

Effective Date: 9-30-83

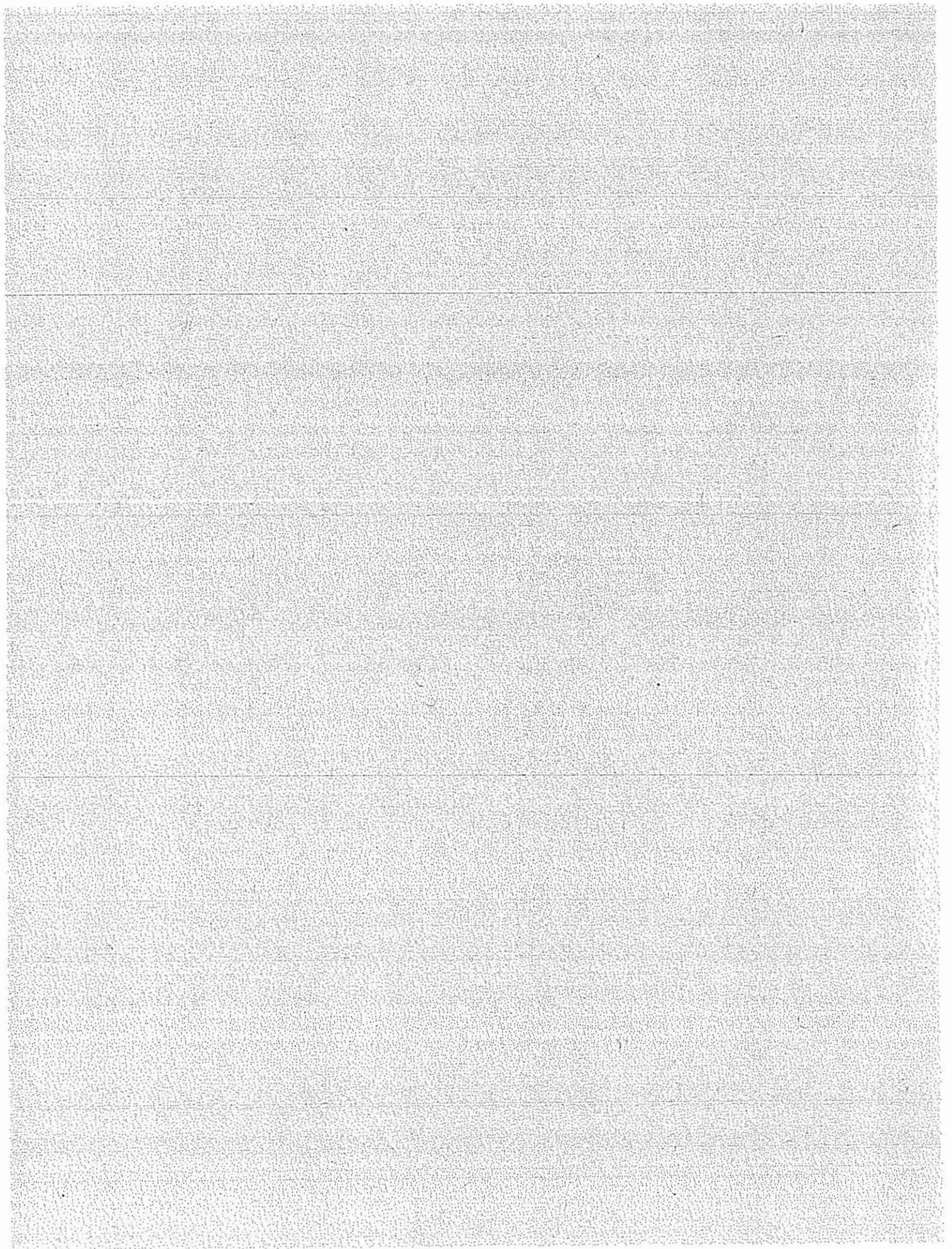
## ESTUARINE RESOURCES AND COASTAL SHORELANDS

## Introduction: Estuarine Resources and Coastal Shorelands Elements

Clatsop County's Estuarine Resources and Coastal Shorelands extend from the western end of Puget Island on the Columbia River to the mouth and then south along the coast to the Tillamook County line. This element is divided into six parts, an introduction, three estuaries and their associated coastal shorelands, the remaining non-estuarine shorelands and Findings for Rural Shorelands. The sections follow and are entitled:

## TABLE OF CONTENTS

- I. Introduction
- II. Columbia River Estuary
- III. Necanicum Estuary
- IV. Ecola Creek Estuary
- V. Ocean and Coastal Lake Shorelands
- VI. Findings for Clatsop County Rural Shorelands



9-15-83

Amend CREST Plan 41.09 Ft. Stevens State Park Subarea

Subarea Policy

Add:

The shoreland portion of the south jetty shall be designated Conservation. Maintenance and repair is necessary to preserve the jetty. Maintenance and repair activities shall be done in such a manner that minimizes adverse effects on adjacent areas.

# CREST

Post Office Building, Room 202

P.O. Box 175, Astoria, Oregon 97103

(503) 325-0435

September 6, 1983

TO: Curt Schneider  
 Department of Planning and Development  
 Clatsop County

FROM: George Blomberg *Geo*

Subject: Aquatic Conservation Two Zone at Clifton Channel (Subarea 43.11)  
 and residential designation at adjacent uplands

At your request, I have talked with owners of the net loft and former cannery at Clifton Channel. The aquatic conservation designation is appropriate to their expectations for maintenance and repair of the existing piling structures and moorage facility at this location. The individuals concerned plan no expansion of the existing water-dependent structures.

However, the upland residential designation proposed by your office was questioned by the individuals involved. At present, no industrial or commercial use is made of uplands at the site, but the owners would prefer not to foreclose options for use of upland for uses now undertaken in the piling structures, in the event that these structures were lost or become unuseable. In fact, they may wish to use the uplands for residential development in the future, if they have no need of the property for water-dependent development needs. Therefore, a residential zone at the upland location is appropriate, if provision is made for movement of present overwater uses to uplands following loss of the piling structures to a catastrophic event or structural failure. A policy providing for water-dependent use of residential uplands at the site, if the present structures become unuseable would meet the needs of the individuals concerned.

It is suggested that the Issues and Findings section of the Clifton Channel subarea (Section 43.11) of the Eastern Clatsop portion (Section 43) be amended to include the following:

Use of uplands adjacent to the Clifton Channel cannery and net loft buildings may be used for development needs which have been displaced from these structures due to structural failure of the buildings.

COMPREHENSIVE PLAN

Goal Element 16 and 17-Columbia River Estuary

- P 10. Introduction and Background
- P 15. Overview and Cumulative Impacts
- P 20. Estuary and Shoreland Regional Policies
  - 20.1 Agriculture
  - 20.2 Aquaculture
  - 20.3 Deep-Water Navigation, Ports and Industrial Development
  - 20.4 Diking of Estuarine Wetlands and Shorelands
  - 20.5 Dredged Material Disposal Site Selection
  - 20.6 Dredging and Dredge Material Disposal
  - 20.7 Energy Facilities
  - 20.8 Estuarine Construction
  - 20.9 Filling
  - 20.10 Fish and Wildlife Habitat
  - 20.11 Fisheries
  - 20.12 Forestry and Forest Products Industry
  - 20.13 Land Transportation Facilities
  - 20.14 Mining and Mineral Extraction
  - 20.15 Mitigation
  - 20.16 Public Access
  - 20.17 Recreation and Tourism
  - 20.18 Residential, Commercial and Industrial Development
  - 20.19 Restoration
  - 20.20 Shallow-draft Ports, Marinas, and Navigation
  - 20.21 Significant Areas: Natural, Scientific, Scenic, Historical, Cultural and Archeological
  - 20.22 Shoreland Hazard Areas
  - 20.23 Water Quality Maintenance
- 21. Intergovernmental Coordination and Public Education Policies
  - 21.1 Local Intergovernmental Coordination
  - 21.2 Scientific Research and Planning in Estuarine Areas
  - 21.3 Public Information
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## P 10 INTRODUCTION AND BACKGROUND

## THE ESTUARY PLANNING AREA

The Columbia River estuary planning area includes aquatic areas and shorelands from the 3-mile limit offshore, upstream to the end of Clatsop County in Oregon (RM 45) and Wahkiakum County in Washington (RM 53). All tributary streams to the head of tide and adjacent shorelands are part of the estuary planning area.

The estuary is divided into five planning areas and 54 subareas. Both bio-physical and jurisdictional information were used in establishing planning boundaries. A precise geographical definition is given in the introductory section of each planning area or subarea. Technical definitions of aquatic areas and shorelands are found in Sl.030.

## THE PLANNING PROCESS

CREST defined its land and water use planning process and established roles for local governments, citizens, state and federal agencies in December, 1976. With minor variations, the same basic planning process was followed for each area. An area planning committee was selected, an educational phase conducted, a draft plan developed, public and agency review conducted and conflicts resolved.

A conflict resolution period extending from December, 1978 to June, 1979 provided the opportunity to resolve disagreements over plan policies and area use designations. Conflicts were defined as a substantive disagreement with a draft plan policy or area use designation (type of designation or specific boundaries) which was identified by a private individual, group of citizens, local government, state or federal agency, or business or industrial concern. Comments on the draft plans were used to identify these conflicts.

Many conflicts were resolved by CREST working with local jurisdictions and the dissenting party.

Major conflicts over areas that might be subject to development pressures in the future required special meetings. One day sessions were held for Eastern Clatsop County and Baker Bay. A final conflict resolution meeting to discuss the regional balance of development and preservation was also held. Where a consensus on a given issue could not be achieved, the CREST Council made a decision, generally in favor of what the local jurisdiction desired. A mediation effort sponsored by CREST in the spring of 1981 resolved remaining major development use conflicts (refer to P 60, Appendices). Further estuarine and shoreland resource use conflicts should be resolved within the context of the County's Comprehensive Plan.

## P 15 OVERVIEW AND CUMULATIVE IMPACTS

Estuarine Resources and Coastal Shorelands Plan  
Overview and Cumulative Impacts

1. BACKGROUND

The management units requirements of Goal 16 stipulate that the cumulative effect of the following uses, activities, and alterations in Development Aquatic management units be considered and described during plan development and adoption:

- (a) Dredge or fill; as allowed elsewhere in the goal;
- (b) Navigation and water-dependent commercial enterprises and activities;
- (c) Water transport channels where dredging may be necessary;
- (d) Disposal of dredged material;
- (e) Water storage areas where needed for products used in or resulting from industry, commerce, and recreation;
- (f) Marinas;
- (g) Aquaculture;
- (h) Extraction of aggregate resources;
- (i) Restoration.

Because the Clatsop County Comprehensive Plan and the comprehensive plans of Astoria, Hammond, and Warrenton allow for a variety of potential uses and activities in the Aquatic Development management units, it is not possible to determine precisely what the cumulative effects of all potential uses might be. However, potential conflicts between uses and activities in some Development Aquatic management units have been identified during plan development. The intent of this section of the plan is to identify and describe potential inter-relationships between different categories of uses and problems that may arise in meeting overall water dependent needs. The cumulative impacts discussion also addresses diminishing estuarine surface area use conflicts by means of thorough utilization of available upland sites. Because specific use decisions are not undertaken in the plan, particular limitations to commitment of estuarine surface areas will take place during plan implementation. Specific regional policies in Land and Water Activity Policy 3 (Filling of Estuarine Waters and Wetlands) require that prior to any dredge, fill, or other reduction in estuarine resource values, it must be demonstrated that alternative upland sites are inappropriate and infeasible for siting the proposed development. This requirement complements federal 404 guidelines, which require that fill in aquatic areas be allowed for water-dependent uses only if it is demonstrated that other project alternatives on upland sites have been determined to be inappropriate.

2. WATER-DEPENDENT NEEDS

Water-dependent development needs in the Columbia River Estuary are described in the County's Plan, Section \_\_\_\_\_. Need justification for Economic Development Exception describes water-dependent industrial activities that are appropriate to meet regional economic needs (pp. \_\_\_\_). Section \_\_\_\_\_, Background and Summary,

describes the total acreages of aquatic development management unit designations and details the maximum amount of estuarine aquatic area that could be filled, dredged, or otherwise substantially altered. Note that of the 4,396 acres designated Aquatic Development, 3,391 acres are identified as navigation channels, with development activities limited, in practice, to maintenance dredging. Table 1, Inventory of Development Aquatic Management Units and Potential Conflicts, identifies particular Development Aquatic sites. Each subarea description also includes a section on issues and findings, discussing potential uses and conflicts in aquatic development management units. These are summarized in Table 1.

#### A. Dredge or Fill

The cumulative effect of potential dredge or fill activities in aquatic development management units is described in Section \_\_\_\_\_, Background and Summary, and in the Dredged Material Management Plan, Section \_\_\_\_\_.

Use of aquatic surface areas designated Aquatic Development for dredge or fill is possible only if it is clearly demonstrated that the activity associated with the dredge and/or fill proposal must have direct access or proximity to the water in order to fulfill its basic purpose and that other site or project alternatives are not practicable, as provided in federal, state and local permit processes (Section \_\_\_\_\_, State and Federal Requirements).

#### B. Navigation and Water-Dependent Commercial Enterprises and Activities

Potential conflicts resulting from navigation and water-dependent commercial activities may arise in the Skipanon Waterway, Port of Astoria, Tongue Point, and Westport areas if significant port activities develop. The cumulative effect of intensive development of these sites would be to increase demands for channel, rail, and highway access. The effects of development on adjacent communities (as in the Westport subarea), residential property owners, and other commercial activities should also be considered as a potential conflict.

#### C. Water Transport Channels Where Dredging may be Necessary

Water transport channels where necessary dredging may result in estuarine surface area use conflicts include the main navigation channel near the Hammond Riverfront. Channel deepening in the lower estuary between River Mile 5 and 18 may accelerate shoreline and submerged land erosion, which could effect future upland development. Maintenance of depths in excess of the 40 foot authorized depth of the main navigation channel may effect salinity, sedimentation, and water exchange processes in the estuary. Accelerated erosion in other areas could also result.

#### D. Disposal of Dredged Material

No potential conflicts were identified. DMD sites designated in the planning area do not include estuarine aquatic areas.

#### E. Water Storage Areas

Intensification of the use of the West Bank of the Skipanon Waterway as a log export facility may result in the need for expansion or relocation of in-water log storage in the waterway. Changes in water storage areas could interfere with fishing, recreation, and charter boats using the waterway. In the

case of expansion of water storage area it must be demonstrated that needed storage capacity cannot be met at available upland sites.

#### F. Marinas

Increased usage of the Skipanon Waterway for recreational boating and mooring could conflict with potential industrial development on both the east and west banks of the Skipanon Penninsula.

#### G. Aquaculture

No potential conflicts associated with aquaculture were identified.

#### H. Extraction of Aggregate Resources

Extraction of aggregate resources (e.g., mining of heavy minerals or sediments to be used as construction materials) from estuarine aquatic areas may conflict with navigational use of the river for commercial and recreational purposes. In-water extraction operations requiring port facilities for transfer of materials to upland storage and transshipment may conflict with the use of areas designated for water-dependent development by other, competing industrial and commercial uses.

#### I. Restoration

No potential conflicts associated with restoration have been identified in the plan. No restoration sites are located in areas designated Aquatic Development.

Table 1. Inventory of Aquatic Development Management Units and Potential Conflicts

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Planning Unit: CREST Planning Region

Shorelands: 54,060  
 Aquatic area: 123,160  
 Total Acres: 177,220

Total area designated  
 Shoreland and Aquatic Development: 4,396 acres

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Planning Unit: 41. Lower River and Islands

Total area designated  
 Shoreland and Aquatic Development: 3,250 acres

Subarea: 41.02 & 41.04 - Main Navigation Channel

Acres designated Development: 3,200 aquatic

Water Dependent Needs: Navigation.

Potential Conflicts: Deepening the federally authorized main navigation channel beyond the present 40 foot MLLW depth (and subsequent adjustment of the bar channel depth) could affect salinity intrusion, sedimentation and circulation in the estuary and may accelerate erosion in some locations. The dredging of the 55 foot bar is not expected to result in significant adverse water-dependent use conflicts. The full impact of the latter is discussed in "Interim Feasibility Report and Final Environmental Impact Statement, Columbia River at the Mouth, Oregon and Washington Navigation Channel Improvement, March 1983, prepared by the Portland District of the U.S. Army Corps of Engineers.

Subarea: 41.01 & 41.09 - South Jetty Corridor

Acres designated Development: 50 aquatic

Water Dependent Needs: Navigation

Potential Conflicts: None Identified.

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Planning Unit: 42. Youngs Bay-Astoria

Total area designated  
 Shoreland and Aquatic Development: 841 acres

Subarea: 42.01 - Hammond Mooring Basin and access channel

Acres designated Development: 33 aquatic; 30 upland

Water Dependent Needs: Commercial & Recreational boat moorage.

Potential Conflicts: The Corps of Engineers maintains a navigational channel into the basin. Future use and potential expansion of the basin will be jeopardized if the COE discontinues this responsibility.

Subarea: 42.02 - Hammond Riverfront (Alaska Packers to Warrenton City Limits)

Acres designated Development: 23 aquatic; 20 upland

Water Dependent Needs: Industrial use (fish processing).

Potential Conflicts: Channel deepening in the lower estuary between Clatsop Spit and Smith Point may accelerate shoreline and submerged land erosion, which could jeopardize existing flood control structures and/or limit future development in the area.

Subarea: 42.02 - Warrenton Riverfront (western boundary of City Limits)

Acres designated Development: 24 aquatic; 90 upland

Water Dependent Needs: Industrial development (access to ESWD shoreland).

Potential Conflicts: Erosion is less of a problem in this area, although strong river currents could hinder development of the shoreland for water-dependent uses. Few estuarine use conflicts are foreseen resulting from designating uplands in this region ESWD Shorelands.

Subarea: 42.06 - West Bank, Skipanon River

Acres designated Development: 8 aquatic; 110 upland (Exception and Mediated Agreement)

Water Dependent Needs: Industrial development (log and lumber export facility).

Potential Conflicts: Use of the west penninsula as a deep draft log and lumber export facility will intensify use demands of the Skipanon Channel, especially in the event of expansion of the facility or changes in its use, such as using the penninsula as an access corridor for bulk commodity movement.

Subarea: 42.06 - East Bank, Skipanon River

Acres designated Development: 25 aquatic; 200 upland

Water Dependent Needs: Industrial (bulk commodities or water-dependent heavy industry).

Potential Conflicts: See discussion of Warrenton Mooring Basin, below. Development of a large bulk commodity facility may affect existing air and water quality and include a variety of social impacts. All of these potential impacts would be considered during local project review.

Subarea: 42.06 - Skipanon River and Channel

Acres designated Development: 95 aquatic

Water Dependent Needs: Navigation.

Potential Conflicts: See Warrenton Boat Basin, below.

Subarea: 42.06 - Warrenton Mooring Basin

Acres designated Development: 15 aquatic; 15 upland

Water Dependent Needs: Commercial & Recreational boat moorage.

Potential Conflicts: Future industrial development on both the east and west banks of the Skipanon Peninsula may conflict with potential increase in recreational and commercial vessel movement through the Skipanon Channel.

Subarea: 42.07 & 42.11 - Youngs River Navigation Channel

Acres designated Development: 55 aquatic

Water Dependent Needs: Navigation.

Potential Conflicts: None identified.

Subarea: 42.12 - Bumblebee Boatyard

Acres designated Development: 14 aquatic; 10 upland

Water Dependent Needs: Marine Construction and repair operations.

Potential Conflicts: None identified.

Subarea: 42.09 - Lewis and Clark River Navigation Channel

Acres designated Development: 41 aquatic.

Water Dependent Needs: Navigation.

Potential Conflicts: None identified.

- Subarea: 42.09 - Shipyard at Jeffers Slough  
 Acres designated Development: 5 aquatic; 15 upland  
 Water Dependent Needs: Marine construction and repair operations.  
 Potential Conflicts: None identified.
- Subarea: 42.09 - Crown Zellerbach log dump, Lewis and Clark River  
 Acres designated Development: 5 aquatic; 15 upland  
 Water Dependent Needs: Log storage and log booming.  
 Potential Conflicts: None identified.
- Subarea: 42.13 - West of Pier 3, Port Docks  
 Acres designated Development: 13 aquatic, Mediated Agreement  
 Water Dependent Needs: Industrial development (port operations).  
 Potential Conflicts: Intensive port development in the area of the existing port slips will entail upgrading of rail and highway access, accompanied by increased frequency of commodity movement via such access. Resultant impacts would be experienced east of the Port along the railroad right-of-way.
- Subarea: 42.13 - West End Mooring Basin  
 Acres designated Development: 26 aquatic; 30 upland  
 Water Dependent Needs: Commercial & Recreational boat moorage.  
 Potential Conflicts: None Identified.
- Subarea: 42.13 - Barbey Packing  
 Acres designated Development: 16 west; 11 east, aquatic  
 Water Dependent Needs: Fish processing.  
 Potential Conflicts: None identified.
- Subarea: 42.14 - Downtown Astoria waterfront  
 (101 Bridge to 33rd St., plus Bumblebee).  
 Acres designated Development: 58 aquatic; 30 upland  
 Water Dependent Needs: Mix of small industrial uses (fish processing, etc.).  
 Potential Conflicts: Extensive development of water-dependent and water-related commercial activities could result in use conflicts. Vehicle access, parking area, processing space and material storage is constrained at present. Competition for development sites between industrial and tourist oriented interests may result.
- Subarea: 42.14 - East End Mooring Basin  
 Acres designated Development: 35 aquatic; 15 upland  
 Water Dependent Needs: Commercial & Recreational boat moorage.  
 Potential Conflicts: None identified.
- Subarea: 42.16 - Coast Guard Dock (West of Tongue Point)  
 Acres designated Development: 10 aquatic  
 Water Dependent Needs: Marine support services (maintenance of USCG vessels and navigational aids).  
 Potential Conflicts: Potential conflicts with USCG activities due to intensive development of Tongue Point.
- Subarea: 42.16 - North Tongue Point  
 Acres designated Development: 280 aquatic; 45 upland, Mediated Agreement.  
 Water Dependent Needs: Industrial development (bulk commodities or other water-dependent heavy industrial activities).  
 Potential Conflicts: Intensive use of North Tongue Point would conflict with existing Job Corps Center and USCG base and maintenance operations. Present log storage and decking operations would be displaced.

Subarea: 42.16 - South Tongue Point

Acres designated Development: 29 aquatic; 100 upland, Mediated Agreement  
 Water Dependent Needs: Industrial Development (storage and backup for the North  
 Tongue Point Parcel).

Potential Conflicts: Use of the South Tongue Point Parcel would require  
 relocation of the existing Corps of Engineers field office. Railroad and  
 highway upgrading necessary for intensive use of North and South Tongue Point  
 may reduce access to these areas for other activities (e.g., recreation at  
 Tongue Point or materials shipment to the USCG base).

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Planning Unit: Eastern Clatsop

Total acres designated  
 Shoreland and Aquatic Development: 305 acres

Subarea: 43.12 - Bradwood

Acres designated Development: 5 aquatic; 60 upland  
 Water Dependent Needs: Industrial development (lumber mill site and storage).  
 Potential Conflicts: None identified.

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## AREAS OF COLUMBIA RIVER ESTUARY HABITAT TYPES (IN ACRES)

Habitat	SALINITY			Total
	Marine	Brackish	Fresh	
Below -18 ft. MLLW*	7,660	14,500	9,090	31,250
-18 to -3 ft. MLLW*	2,220	26,330	19,620	48,170
-3 to 0 ft. MLLW*	330	10,280	7,230	17,840
0 to +3 ft. MLLW**	260	7,560	2,930	10,750
Low marsh <sup>o</sup>	0	1,400	5,600	7,000
High marsh <sup>o</sup>	20	780	1,400	2,200
Swamp <sup>o</sup>	0	130	5,820	5,950
TOTAL	10,490	60,980	51,690	123,160

## Data Sources:

- \* CREDDP digitized bathymetry
- \*\* Planimetered from 1:40,000 CREDDP habitat map
- <sup>o</sup> Planimetered from 1:12,000 and 1:9,600 aerial photos

P 20. Estuary and Shoreland Regional Policies

The Columbia River Estuary Regional Policies are intended to be used as a general guideline for land and water use actions in the Columbia River Estuary.

Each policy has been divided into two parts - planning and implementation. The policies which appear in the planning section shall be used primarily to guide major plan amendments and updates and secondarily as reference for specific development proposals. The policies which appear in the implementation section shall be used to develop recommendations and findings and shall provide primary guidance to the County for specific development proposals.

P 20.1 AGRICULTURE

Agriculture is the most extensive use of estuary shorelands in Clatsop County. While portions of County farmlands are highly fertile, a great deal of the farmland is diked tideland subject to seasonally high water levels. These diked tidelands have limited potential for other, non-agricultural types of development.

Planning

1. Continued agricultural use of productive agricultural lands is encouraged, and conversion to more intensive, non-agricultural use is strongly discouraged. Exceptions to this include development within established urban growth boundaries and non-intensive uses of general public benefit, such as public access to estuarine shorelands and aquatic areas and recreation.
2. Development of new crops to increase productivity of agricultural lands is encouraged.
3. Damage to the estuarine resources and shoreland habitats resulting from agricultural non-point pollution should be prevented. Tillage and drainage practices should minimize sedimentation and control surface water run-off of animal wastes and excess fertilizers, herbicides and pesticides. Pesticides and herbicides shall be applied so as to minimize the amount that is lost to the aquatic environment. The following practices shall apply to meet this objective:
  - a) The Soil Conservation Service should continue working with landowners to implement tillage and drainage practices which minimize sedimentation and control surface water run-off of animal wastes and excess fertilizers, herbicides and pesticides. (Ref: State and Federal Requirements Section)
  - b) The County will rely on the following state agencies to implement regulations controlling application of agricultural chemicals: Oregon Department of Forestry, Department of Agriculture, and Department of Environmental Quality. Protection of estuarine aquatic areas and streams tributary to the estuary from contamination by agricultural chemicals is emphasized. (Ref: State and Federal Requirements Section)
4. Laws requiring adequate maintenance of existing dikes and tidegates to prevent flooding and erosion of agricultural lands should be observed and enforced.

### Implementation

5. In undiked areas bordering estuarine aquatic areas, a buffer strip of permanent vegetation shall be maintained between cultivated or pasture areas and the water body to serve as bank stabilization and as a natural filter and sediment trap.

## P20.2 AQUACULTURE

### Planning

1. The use of aquaculture projects including fish hatcheries and fish release/recapture operations to replenish natural stocks is encouraged.
2. Existing aquaculture facilities and areas identified as having significant aquaculture potential shall be protected from conflicting use or uses that would create water quality problems.
3. In all estuary zones, water-dependent development zones and other shoreland areas, aquaculture facilities shall be sited, designed and operated so that adverse impacts on estuarine and shoreland ecosystems, navigation channels, and public access points to publicly owned lands are minimized and shall be consistent with the purpose of the management designation.

## P20.3 DEEP-WATER NAVIGATION; PORTS AND INDUSTRIAL DEVELOPMENT

As the threshold to navigation on the Columbia and Snake river system, 460 miles of commercially navigable waterway, the margins of the Columbia River estuary may be the site of significantly increased port development in future years.

### Planning

1. Development, improvement, and intensive utilization of existing port sites is encouraged prior to development of new port sites.
2. Port improvement, expansion, and modernization may require dredging and filling of undeveloped estuarine shoreland and aquatic areas. Estuarine resources and shoreland habitats will be protected from preventable adverse impacts in the design and construction of port facilities.
3. Navigational access in the estuary and its tributaries should be maintained in light of expected future demand for recreational boating and sports and commercial fishing. Peripheral channels, streams and sloughs should not be closed to navigation. Traditional use of such areas for moorage and access to fishing grounds should be provided for by allowing for necessary maintenance dredging.

## P20.4 DIKING OF ESTUARINE WETLANDS AND SHORELANDS

To provide continued flood protection for urban and agricultural lands in the estuary area, dikes should be maintained and improved. Construction of new dikes, particularly in tideland and wetland areas must be carefully evaluated to avoid increasing flood and erosion potential downstream, and to avoid destructive effects on the estuarine ecosystem. Therefore:

### Planning

1. New diking of tidelands and wetlands will be allowed only:
  - a. As part of an approved fill project or in an appropriate management unit designation; or
  - b. As temporary flood protection in the interest of safety and welfare of the public.
2. Breaching or removal of dikes may be allowed as part of a restoration or mitigation project. Productive agricultural land and significant wildlife habitat should not be lost.
3. Maintenance of dikes by means other than dredging of aquatic area sediments is encouraged. In particular instances dredging of subtidal aquatic areas to obtain materials for dike maintenance may be justified. Dredging of subtidal areas as a source of fill material for dike maintenance shall be permitted if:
  - a. Due to the remote location of the dike and/or the absence of heavy equipment access to the dike, alternative methods of dike maintenance are demonstrated as infeasible;
  - b. Dredging is limited to that necessary to maintain the structural integrity of dikes;
  - c. Dredging does not disturb emergent vegetation, intertidal flats, or other intertidal estuarine resources;
  - d. Dredging occurs in the deepest subtidal aquatic area accessible to float-mounted dredging equipment (i.e., subtidal aquatic areas near the centerline of narrow waterways and subtidal areas greater than 80 feet distant from the foot of dikes in reaches of the estuary exceeding 200 feet in width).
  - e. All instances of dredging operations necessary as a source of fill for dike maintenance are coordinated with state and federal resource agencies, local governments, and private interests to determine project timing and dredging conditions ensuring the protection of estuarine resources (e.g., fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).
4. When water-dependent facilities require siting in aquatic areas construction of the facility on piling is preferred over construction on fill, whenever feasible.

#### P20.5 DREDGED MATERIAL DISPOSAL SITE SELECTION

More material is dredged from the Columbia river estuary than can be used constructively, shorelines have been altered and new land areas have been created by deposition of dredged materials, and the shoreland capacity for dredged material disposal will be exhausted within twenty years. Methods of dredged material disposal include use of shoreland sites, dike disposal, beach nourishment, estuary or ocean in-water disposal, and flow-lane disposal. Suitable disposal options are needed for new project and maintenance dredging of existing projects. Identification of dredged material disposal sites is an estuary-wide concern.

### Planning

1. When identifying appropriate sites for dredged material disposal, emphasis shall be placed on sites where:
  - a. The local comprehensive plan land use designation is development;

- b. The potential for development or recreational use will benefit from deposition of dredged materials;
- c. Material may be stockpiled for future use;
- d. Dredged spoils containing organic, chemical, and/or other potentially toxic or polluted materials will be contained within impermeable dike structures, presenting minimal health and environmental hazards due to leaching or other redistribution of contaminated materials;
- e. Placement of dredged materials will help restore degraded habitat; or where
- f. Wetlands would not be impacted.

Agricultural land that would not benefit from dredged material disposal, fish and wildlife habitat regulated by state and federal agencies, or areas with scenic, recreational, archaeological, or historical values and sites where the present intensity or type of use is inconsistent with dredged material disposal shall be avoided.

Engineering factors to be considered in site selection should include: size and capacity of the site; dredging method; distance from dredging operation; elevation; and the costs of site acquisition, preparation and revegetation.

- 2. Aquatic and shoreland disposal of dredged material shall be allowed only at approved sites identified in the Dredged Material Management Plan except if the disposal operation is part of an approved development project in an appropriate management unit designation or an approved flow-lane disposal operation in channel areas designated Aquatic Development.

#### Implementation

- 3. Identified shoreland material disposal sites shall receive either Priority I or Priority II designations on the basis of site suitability as described in Item A above and with respect to the importance of the disposal site for receiving dredged materials generated by five years of existing, planned, or proposed dredging projects.

#### A. Priority I Dredged Material Disposal Sites.

The purpose of the priority I site designation is to protect important dredged material disposal sites from incompatible and preemptive uses, and to assure that an adequate number of sites will be reserved in order to accommodate dredged material disposal needs resulting from five years of existing and planned navigation projects and water-dependent development.

Incompatible and preemptive use of priority I dredged material disposal sites includes:

- 1) Uses requiring substantial structural or capital improvements (e.g., construction of permanent buildings, water and sewer service connections);
- 2) Uses that require alteration of the topography of the site, thereby affecting the drainage of the area or reducing the potential useable volume of the dredged material disposal site (e.g., extensive site grading or excavation, elevation by placement of fill materials other than dredged spoils);
- 3) Uses that include changes made to the site that would prevent expeditious use of the site for dredged material disposal. Such uses would delay deposition of dredged material on the site

beyond the period of time commonly required to obtain the necessary federal, state and local dredging and dredged material disposal permits (approximately 90 to 180 days);

Note: Examples of non-preemptive or compatible uses of Priority I dredged material disposal sites are: parking lots, equipment storage yards, materials marshalling yards, log storage and sorting yards, and undeveloped recreation areas, campgrounds or recreational vehicle parking areas.

Priority I dredged material disposal sites do not allow deposition of dredged spoils in water areas or wetlands, unless part of an approved development project in an appropriate management unit designation.

Uses of priority I dredged material disposal sites must conform to the specifications contained in the dredging and dredged material disposal policies and standards sections of the comprehensive plan.

B. Priority II Dredged Material Disposal Sites

The purpose of the Priority II dredged material disposal site ranking is to identify disposal areas necessary to meet probable or projected dredging needs. These sites may be required in the future to provide disposal site volumes associated with long-range navigational dredging needs and development plans.

The importance of these sites, as compared with priority I sites, does not justify efforts to reserve all or portions of each site from other possible preemptive, uses.

1. Dredged material disposal sites identified in the comprehensive plan, located on shorelands, shall have a management designation consistent with future use and development of the site. All shoreland DMD sites shall be designated so that:
  - a) Preemptive uses on Priority I DMD sites do not occur until after the placement of the dredged material; or
  - b) A freeze is placed on development requests for 90 to 180 days on Priority II dredge material disposal sites, for the purpose of allowing affected government agencies or private interests to negotiate for the use of the property as in DMD site.
2. In order to ensure the adequacy of identified dredged material disposal site capacities for anticipated five-year maintenance dredging and new development project dredging requirements, an analysis of the dredge material disposal site inventory will be completed every two years. The analysis shall include:
  - a) A determination of the priority I sites utilized for dredged material disposal and the volume received by each site during the preceding period, noting also the project source of the dredged material and the interval separating the most recent from the next anticipated dredging event.
  - b) A determination of the number and usable volume of Priority I sites remaining in the inventory, and the relationship between these sites and present or expected navigation-related dredging or water-dependent development projects in the following five year period, and the number of useable volume of Priority II sites identified in the inventory.
  - c) An identification of the Priority II or other additional sites to be added to the Priority I inventory. Noting that dredged material disposal areas recognized as priority II sites provide a survey of suitable sites that may be elevated in status.

- d) An analysis of the adequacy of the dredged material site inventory shall include notification of an communication of up-dated inventory information to affected property owners and local, state and federal governmental agencies. Of particular importance is the addition, deletion or change in priority of dredged material disposal sites.
  - e) Clatsop County will cooperate with other jurisdictions on the Columbia River Estuary in monitoring of dredged material site availability. Should new Priority I or Priority II sites be identified within the CREST planning area, these sites shall be protected through an amendment to the comprehensive plan and zoning ordinance.
3. In-water disposal sites shall be in areas identified as low in benthic productivity and use of these sites shall not have adverse hydraulic effects. Long-term use of disposal sites within the estuary shall be allowed only when no feasible alternative shoreland or ocean disposal sites can be identified and the biological and physical impacts are demonstrated to be minimal. Flow-lane disposal is contingent upon demonstration that:
    - a) Dredged sediments are free from contamination;
    - b) Sediments will remain in suspension and continue downstream within the main navigation channel; and that,
    - c) Adverse effects due to changes in aquatic biological and physical estuarine properties will not result.
  4. An in-water disposal site shall not be used if insufficient sediment type and benthic population data are available to characterize the biological value of the disposal area.
  5. Flow-lane disposal sites will be shown able to transport sediment downstream without excessive shoaling, interference with commercial or sports fishing, undesirable hydraulic effects, or adverse effects on significant estuarine fish and wildlife habitat or damage to essential properties of the estuarine resource.
  6. Beach nourishment may be practiced to offset the effects of active erosion, but should not be used to create new beach or upland area.

P 20.6 DREDGING AND DREDGED MATERIAL DISPOSAL

Dredging and dredged material disposal are activities of estuary-wide significance. Excavation and maintenance of navigational access in the estuary is necessary for the economic health of the region and may result in long-term impacts on the estuarine environment. Dredging and dredged material disposal activities are subject to review by authorities at the local, state and federal levels of government.

Implementation

1. Loss or disruption of significant estuarine fish and wildlife habitat and damage to essential properties of the estuarine resource shall be minimized by careful location, design and construction of: (1) facilities requiring dredging, (2) sites designated to receive the dredged material, and (3) dredging operation staging areas and equipment marshalling yards. Disposal of dredged material shall be at an approved site where the biological productivity and physical characteristics are appropriate to receive the material. Dredged

- materials shall not be placed in productive habitat unless as an activity associated with an approved development project. Shoreland disposal should enhance or be compatible with the final use of the site area. Except for flow-lane disposal and beach nourishment in-water disposal within the estuary may be substituted for ocean disposal only when sea or weather conditions prohibit dredging vessels from using ocean disposal sites.
2. Where a dredged material disposal site is vegetated and the vegetation serves as wildlife habitat or the vegetation stabilizes the site in the interim preceding development, dredged material disposal should occur on the smallest land area consistent with sound disposal methods (e.g., providing for adequate dewatering of dredged sediments, avoiding degradation of receiving waters). Clearing of land should occur in stages and only as needed. It may, however, be desirable to clear and fill an entire site at one time, if the site will be used for development immediately after dredged material disposal. Reuse of existing disposal sites is preferred to the creation of new sites in order to minimize the total land area impacted by dredged material disposal.
  3. The effects of initial and subsequent maintenance dredging, as well as dredging equipment marshalling and staging, shall be considered prior to approval of new dredging projects, or expansion of existing projects. Projects will not be approved unless adequate disposal sites are available for initial excavation dredging and at least five (5) years of expected maintenance dredging requirements.

#### P 20.7 ENERGY FACILITIES

The Columbia River Estuary area, because of its deep-water access and large freshwater supply, has potential for development of outer continental shelf petroleum support facilities, bulk materials transshipment facilities, and other energy-related facilities. There are also limitations to development and operation of energy facilities in the estuary, due to the estuary's dynamic physical character, its valuable natural resources, and the resource based industries it supports. The following policies apply to energy facilities development and commodity transport.

##### Planning

1. The County will review development of upriver energy facilities requiring transport of energy commodities or related hazardous materials through the estuary on the basis to the potential impacts identified above.
2. County review of proposals for fossil fuel or nuclear power plants in development designations of the estuary area will concentrate on the potential for direct environmental impacts and indirect impacts on local facilities due to related industrial expansion and rapid urban growth.
3. The County supports energy conservation and the development of environmentally sound alternative energy sources. Possible energy sources, including solar power, wind power, and wood by-products should be investigated.
4. The states of Oregon and Washington should work together to develop joint policies for the Columbia River concerning energy commodity supply, transport, and processing facilities and thermal power plants. Local governments should be consulted in this matter.

## Implementation

5. Energy commodities storage, transport, and processing facilities proposed for an estuary location will be evaluated by Pacific County. Such facilities should not be constructed unless the following can be demonstrated:
  - a) The proposed project is compatible with affected estuarine aquatic and shoreland areas,
  - b) Alternative locations not affecting the estuary are infeasible,
  - c) Economic, fiscal, and population growth impacts will be favorable, and
  - d) Operational risks (including explosion, fire, and spillage, potential and water pollution), adverse effects on fish and wildlife resources and other land and water environment impacts are minimized.
6. Petroleum spill containment and clean-up equipment should be located in the Estuary area. This equipment should be capable of controlling a large spill in all areas of the estuary. The U.S. Coast Guard vessel inspection program should be implemented to keep unsafe bulk transport vessels out of coastal waters.

P 20.8 ESTUARINE CONSTRUCTION: PILING AND DOLPHIN INSTALLATION, SHORELINE STABILIZATION AND NAVIGATION STRUCTURES

Certain structures must be placed in the estuary, in support of water-dependent uses, to influence the movement of the water, or to prevent shoreline erosion. Adverse effects of these activities and uses on estuarine resources should be minimized as much as possible.

## Implementation

1. Piling and dolphin installation shall normally be allowed only in support of water-dependent or water-related uses, and in special cases, for other uses. Occupation of water surface in productive areas should be minimized.
2. Proper management of existing streamside vegetation is the preferred method of shoreline stabilization, followed by planting of vegetation. Where vegetative stabilization is inappropriate (because of high erosion, tidal conditions, intensive use of shorelines at the site, or other factors) structural means such as riprap, pile dikes, groins or bulkheading may be considered in accordance with use restrictions in particular management unit designations.
3. When feasible, floating breakwaters are preferred over solid or rubble structures to maintain aquatic area habitat and to minimize interference with sediment transport.
4. Where structural shoreline stabilization is shown by the project sponsor to be necessary due to the inadequacy or inappropriateness of land use management practices or vegetative stabilization, the utility of riprap, pile dikes, or groin placement as erosion control devices shall be considered on a case-by-case basis. Factors to be considered include, but are not limited to:
  - a) Type of sediments in the project area;
  - b) Effects on shoreland and aquatic area habitat;
  - c) Uses of shorelands and aquatic areas adjacent to the project area;
  - d) Effects on fishing areas;

- e) Relative effectiveness of the shoreline stabilization methods, engineering feasibility;
- f) Relative cost of alternative shoreline stabilization methods;
- g) Potential erosion, flooding and sedimentation in adjacent areas due to the project.

Adverse impact on water currents, erosion and accretion patterns shall be minimized.

Bulkheading should only be used in developed areas.

- 5. Navigation structures (e.g., breakwater, jetties, groins, pile dikes, and fills) are major alterations of the estuary with long-term biological and physical effects. The Corps of Engineers, as the principal review and permitting agency, will require an impact assessment for development proposals of this magnitude. (Ref: State and Federal Requirements Section.) In placement of navigational structures, alteration of the estuary shall be minimized, essential estuarine resource properties maintained and effects on significant fish and wildlife habitats avoided.

P 20.9 FILLING OF ESTUARINE WATERS AND WETLANDS

The Columbia River Estuary has lost more than 15 percent of its volume in the last century. The surface area, particularly the area of vegetated tide flats and wetlands has also been reduced due to fill and sedimentation.

Planning

- 1. Loss of estuarine surface area and volume should be avoided in the selection of development and dredged material disposal sites, and the design of navigational structures requiring fill or with potential effects on sedimentation.

Implementation

- 2. When water-dependent facilities require siting in aquatic areas, construction of the facility on piling is preferred over construction on fill, whenever feasible.

P 20.10 FISH AND WILDLIFE HABITAT

Substantial alteration of natural habitat in the Columbia River Estuary area has been caused by such factors as dredging, filling, diking, urban development, intensive recreational activities, logging, and agriculture.

Planning

- 1. Significant areas of all types of estuarine, wetland and shoreland habitats in the Columbia River Estuary shall be identified and protected from development.
- 2. Estuary fish-food production and resting areas, such as shallow submerged lands, wetlands and marshes shall be preserved.
- 3. The use of adjacent shoreland shall be controlled in order to protect these vital links in anadromous fish life cycles.
- 4. Minimum tributary stream flows necessary to maintain aquatic life should be set. Methods for protection of minimum tributary stream flows to the estuary necessary to maintain the essential properties of estuarine resources (e.g., dynamic geological processes, continued

- biological productivity, unique or endemic communities of organisms, species diversity) should be set. Regional goals and recommendations to resource agencies responsible for management of tributary stream flows should emphasize the need to: (1) identify and maintain minimum stream flows, (2) protect salmonid fish migrations and significant fish and wildlife habitats, and (3) use Columbia River water or ground water for municipal and/or industrial purposes as an alternative to use of downstream portions of the tributary rivers. (Ref: State and Federal Requirements Section).
5. Maintenance of existing, favorable anadromous fish habitat through establishment of protective stream corridors and control of potentially harmful watershed activities is strongly supported.
  6. Efforts to conserve riparian environments to assure the protection of fish resources should be coordinated with state and federal resource agencies. Land owners should be encouraged to enhance the fishery resource value of private stream and riparian habitat. (Ref: State and Federal Requirements Section).
  7. Streams tributary to the existing estuary planning area should be evaluated to protect existing fish habitat and to determine the potential for future hatchery and natural fish production.

#### Implementation

8. The habitat of endangered wildlife species shall be protected through individual management plans developed through implementation of the Forest Practices Act, large lot zoning, designation of critical estuarine habitat in land use plans, reliance on state and federal agency implementation of management decisions and other appropriate resource protection methods available to the County.
9. Wildlife habitat shall be protected through the following actions:
  - a) Requiring a setback to protect riparian vegetation along rivers, sloughs, streams and wetlands areas, except where direct water access is required for water-dependent and water-related uses (see S4.237);
  - b) Requiring subdivisions and other major developments to minimize the alteration of estuarine habitats and encouraging the provision of open space in wildlife habitat areas;
  - c) Discouraging the conversion of existing farm and forest areas to more intensive uses.
10. The avoid erosion problems and disruption of wildlife habitat, the use of off-road vehicles should be strictly regulated.

#### P 20.11 FISHERIES

Columbia River anadromous fish resources have played a major role in the cultural and economic development of the estuary area. The dramatic decrease in natural and hatchery runs of these fish is partially the result of habitat destruction or degradation caused by man. The advent of the 200 mile fishery conservation zone has provided impetus for diversification in the fishing industry, however, enhancement efforts have not maintained the salmon fisheries. To maintain and improve fisheries in the estuary area:

### Planning

1. Traditional fishing areas will be protected when dredging, filling, installing piling structures, installing navigational aids and structures, or other disruptive inwater activities are permitted.
2. Areas should be reserved that will provide for adequate dock and moorage space for present and anticipated future commercial and sports vessels and for fish processing, boat repair, cold storage and other support facilities.
3. Wise management of fishery resources and maintenance of reproductive stocks is strongly supported.
4. Fish enhancement programs of local, state and federal groups are strongly supported. Special considerations should be given to restoration of chum salmon runs.

### P 20.12 FORESTRY AND FOREST PRODUCTS INDUSTRY

Continued management of commercial forest lands for the production of forest products is strongly encouraged. Continuation and expansion of related forest products in industries are also supported, consistent with the maintenance of air and water quality.

### Planning

1. Locally grown forest products should be processed in the estuary area.
2. Appropriate shoreland areas should be reserved for siting water dependent and water related facilities needed by the forest industry.
3. Local organizations and government agencies and private landowners should coordinate stream restoration and riparian conservation efforts with state and federal agencies (Ref: State and Federal Requirements Section).

### Implementation

4. The County will rely on the Oregon Department of Forestry to enforce the Forest Practices Act. To prevent man-induced sedimentation and preserve water quality, spawning areas and riparian habitat during implementation of the Forest Practices Act, appropriate measures shall be taken in all commercial, as well as non-commercial activities for proper road building, site preparation, timber harvest, slash burning, fertilization, and pest and plant control to minimize run-off of pollutants, temperature disruption of streams, mass soil movement, surface erosion and extreme fluctuations in stream flows (Ref: State and Federal Requirements Section.)
5. Water storage and transport of logs are supported as energy efficient and economically necessary uses of estuarine and tributary water areas.
6. New log storage sites should be situated in areas where adverse effects on water quality, estuarine resources and shoreland habitats will be minimized and where navigation will not be impaired, and where estuarine productivity and wildlife habitat will not be unduly disrupted. New log storage will not be allowed where logs and booms go aground on tidal changes or low flow cycles. The compatibility of new log storage sites with other estuarine uses should be examined on a case-by-case basis. Alternative land and water log storage sites shall be found in cases where conflicts can not be resolved.

7. Estuarine use conflicts resulting from drift logs and snag material should be addressed by means of:
  - a. Efficient management of timber inventories, the establishment of time limits on water storage of log rafts and the bundling of logs to minimize the occurrence of "sinker logs",
  - b. Land disposal of sinker logs removed from the estuary, and
  - c. Location of new log storage sites away from potential conflict areas, such as gillnet fish drifts.

P 20.13 LAND TRANSPORTATION FACILITIES

Although marine and river shipping in the Columbia River Channel is the most important form of transportation in the estuary area, road and rail transport is also vital to the economy of Pacific county. Because of steep topography land transportation has historically been sited along the margins of the estuary or in fill in estuarine aquatic areas. The cumulative impact of these alterations has been high. Therefore:

Planning

1. Land transportation networks should be maintained and improved to support existing urban areas, to allow use of the major development sites indicated in Pacific County, and to support rural and recreational uses.
2. New roads and railroad systems shall not be located so as to reduce the development potential of Water-Dependent and General Development Shorelands. New transportation systems should be located and designed to direct urban expansion toward areas identified as suitable for development, and not toward rural areas. Existing systems and right of ways should be used to the maximum extent feasible.

Implementation

3. New roads and railroads will not be located in aquatic areas except where bridge crossings are needed and where no feasible shoreland or upland route exists. New roads and railroads shall be designed and located to take advantage of the natural topography and to cause minimum disruption of the shoreland area. Causeways across aquatic areas shall not be permitted. New roads and railroads should be located on existing uplands where possible.
4. Public roads in scenic areas shall provide for safe pedestrian and non-motorized vehicle travel. Provisions shall be made for sufficient viewpoints, rest areas and picnic areas along public shorelines. Extensive loops or spurs of old highways with high aesthetic value shall be kept in service as pleasure bypass routes, especially where main highways, paralleling the old highway, must carry large volumes of traffic and access is limited.
5. Maintenance of existing roads and maintenance or replacement of bridges shall be allowed, regardless of the designation of the aquatic and/or shoreland area through which the road or railroad passes.
6. Routes for new land transportation systems shall be selected which preserve public access and avoid separation of high intensity use areas (such as commercial centers) from the waterfront. The benefits of the location of new or expanded transportation routes shall be

## 2.6 Mitigation Policies for the Columbia River Estuary

The purpose of this section is to present the mitigation policies which can be derived from the preceding sections. These policies have been used to update and revise relevant sections of the Columbia River Estuary Regional Management Plan (1979b):

The following policies fulfill the requirements of Oregon law. While Washington state law does not specifically require mitigation for dredge and fill activities in intertidal or marsh areas, the following policies are strongly encouraged. Alternative forms of mitigation in Washington, including resource compensation and resource enhancement, are also encouraged (Section 4).

### MITIGATION POLICIES

#### 2.6.1 Mitigation for Impacts to Intertidal Areas

A) Adverse impacts to estuarine resources resulting from dredge, fill, or other activities permitted in intertidal or marsh areas shall be mitigated by creation, restoration, or enhancement of estuarine areas as required by ORS 541.626 and Statewide Planning Goal 16.

*add*  
B) No mitigation action shall endanger or obstruct adjacent properties. The potential for present and future endangerment or obstruction must be determined in advance of the mitigation action. Any costs incurred in preventing damage or loss to adjacent properties are the responsibility of the agency or individual undertaking the development project that requires mitigation.

C) The 19 habitat types defined herein provide the basis for evaluating and comparing development activities and possible mitigation areas, and shall be used to maintain the functional characteristics and processes of the estuary, such as its natural biological productivity, habitats and species diversity, unique features and water quality.

D) For planning purposes, mitigation acreages shall be computed using the trade-off formula described in Section 2.3. This method emphasizes the importance of;

- 1) maintaining estuarine surface area; and
- 2) maintaining high natural resource values.

E) The following criteria shall be used to match mitigation sites with development sites within the estuary (in order of importance):

- 1) proximity of the mitigation site to the development site
- 2) present use and ownership of the proposed mitigation site
- 3) amount of mitigation acreage needed at each development site as determined by the trade-off formula, and the amount of potential habitat available at identified mitigation sites. This criterion addresses the Goal 16 considerations of salinity regime, tidal exposure and elevation, current velocity and patterns, and slope.

analyzed in light of the costs of relocating housing, businesses and public facilities.

- 7. Airport facilities shall not be allowed on new fill land.

P 20.14 MINING AND MINERAL EXTRACTION

Sand, gravel and minerals are valuable resources. In some instances, the only locally available source of these materials is the estuary large-scale extraction of these materials can result in erosion of adjacent land and shifting of sediments in the removal area, causing adverse economic and environmental effects. Therefore:

Implementation

- 1. Extraction of gravel, minerals and construction sand from estuary tributaries shall be permitted only when these resources are not otherwise locally available at upland sites.
- 2. On the basis of an environmental impact assessment, adequate protection must be provided for adjacent shoreline property fish and wildlife habitat, and essential properties of the estuarine resource. Sediment and silt gated by the activity must be minimized to the extent feasible.
- 3. Approved projects must specify and use mining technology which minimizes the potential damage to estuarine resources, in conformance with the Oregon State Reclamation of Mined Lands Act.
- 4. Mining and mineral extraction activities shall be sited to avoid major marshes, significant fish and wildlife habitat, exceptional aesthetic resources and important historical or archaeological sites identified during plan formulation.

P 20.15 MITIGATION

Necessary new development projects in the Columbia River Estuary will have adverse environmental impacts, regardless of how carefully the projects are designed and constructed. Adverse effects of such development can be mitigated by the restoration or enhancement of other estuarine areas.

Planning

- 1. Mitigation for Impacts to Intertidal Areas
  - a) Adverse impacts to estuarine resources resulting from dredge, fill, or other activities permitted in intertidal or marsh areas shall be mitigated by creation, restoration, or enhancement of estuarine areas as required by ORS 541.626 and Statewide Planning Goal 16.
  - b) The 19 habitat types defined herein provide the basis for evaluating and comparing development activities and possible mitigation areas, and shall be used to maintain the functional characteristics and processes of the estuary, such as its natural biological productivity, habitats and species diversity, unique features and water quality.
  - c) For planning purposes, mitigation acreages shall be computed using the trade-off formula described in Section 2.3. This method emphasizes the importance of;
    - 1) maintaining estuarine surface area; and
    - 2) maintaining high natural resource values.

- d) The following criteria shall be used to match mitigation sites with development sites within the estuary (in order of importance):
- 1) proximity of the mitigation site to the development site
  - 2) present use and ownership of the proposed mitigation site
  - 3) amount of mitigation acreage needed at each development site as determined by the trade-off formula, and the amount of potential habitat available at identified mitigation sites. This criterion addresses the Goal 16 considerations of salinity regime, tidal exposure and elevation, current velocity and patterns, and slope.
- e. Improvement of Circulation. During mitigation, consideration shall be given to the improvement of circulation instead of other actions on a case by case basis.
- f. Restoration of significant non-tidal freshwater wetlands. Significant non-tidal freshwater wetlands such as tidedated sloughs may be restored to the estuary during a mitigation action if restoration is an identified management objective for that area.
2. Mitigation for Other Impacts
- a. Dredging, filling, or other activities or alterations which significantly degrade or destroy biologically productive subtidal areas should be mitigated by restoration, habitat creation, enhancement or other appropriate means.
  - b. Mitigation for significant alterations which would degrade or destroy critical habitat for endangered or threatened species or other wildlife, shall be required through restoration, resource enhancement, or preservation. Mitigation for loss of other valuable wildlife habitat, such as freshwater marshes, spruce swamps and old growth forest is encouraged.
3. Mitigation Banking
- a. A local or state agency shall be responsible for administration of the site, throughout the period in which the site serves as a mitigation bank.
  - b. A memorandum of agreement among federal, state and local entities should serve as the implementing instrument establishing the mitigation bank and providing for continuing management of the bank. Such an agreement is necessary to document the initial conditions of the bank's formation, including the means by which the mitigation bank will be administered. The agreement should also detail ownership of the site and include an itemized presentation of project costs, and include the number of mitigation credits available in the bank. A plan for monitoring the mitigation site should be provided. The agreement must specify the mechanism by which mitigation requirements for future estuarine development would be transferred to the bank, the type of activity qualifying for use of the bank, and the means by which proportional mitigation bank development costs would be assessed development sponsors.
  - c. Mitigation credits in mitigation banks will be reserved for use by small scale projects (5 acres or less).
  - d. A variety of habitat should be created whenever possible, such that the opportunity for replacement of estuarine resources lost to a variety of development activities is possible. The mitigation bank should be of sufficient capacity to meet the requirements of a number of expected development projects.

## Implementation

4. Mitigation sites will be zoned to protect them from incompatible uses, such as substantial structural or capital improvements, uses that significantly alter the topography of the site, or other uses that would prevent use of the site for mitigation, including restoration. The Mitigation designation will not effect present use of the land, such as grazing, crop harvesting, and other agricultural activities.  
The importance of Inventory sites (compared to Mitigation sites) does not justify efforts to fully protect them from preemptive uses. These sites will be designated in the Clatsop county Plan such that an inventory of potential Mitigation sites can be kept on file. A 30 day freeze will be placed on any application for a development permit on a Inventory site in order to allow affected government agencies or private interests to negotiate for use of the property. When an area zoned for exclusive farm use (EFU) is designated a Mitigation site, the value of the present agricultural use will be balanced against the potential value to the estuary through mitigation before determining if the site is acceptable.
5. As the need arises, Clatsop county may identify additional mitigation sites may be approved. Designation of additional mitigation sites shall be coordinated with CREST, the Port of Astoria, and state and federal resource agencies. New sites shall be protected through amendments to local comprehensive plans. Any mitigation activity not identified in local plans or described in this plan, but meeting its policies, will be given full consideration.
6. Clatsop county will cooperate with other jurisdictions on the Columbia River Estuary and state and federal resource management agencies in the periodic review of the region's mitigation plan. Such a review shall be undertaken at two year intervals. The scope of the review shall include re-examination of site availability, degree of plan implementation, new requirements and possible new projects that may require mitigation.
7. Estuarine alterations for development in one state can be mitigated in the other state. Mitigation in the State of Washington for an estuarine alteration permitted in Oregon and vice versa shall be allowed only if:
  - a) State agencies with statutory responsibility for administering mitigation requirements approve the site selected for the mitigation action, and;
  - b) The mitigation action is provided for prior to the issuance of a permit for an alteration in the state in which the development project is proposed.
8. Actions exempt from the mitigation requirements in planning policy A include: (DSL 1983)
  - a) Removal or filling of less than 50 cubic yards of material or when an Oregon State Removal and Fill permit is not otherwise required;
  - b) Filling for repair and maintenance of existing functional dikes where there is negligible physical or biological damage to tidal marsh or intertidal area;
  - c) Riprap to allow protection of an existing bank line with clean, durable material provided that the need for riprap protection is demonstrated and that this need cannot be met with natural vegetation, and no appreciable increase in upland occurs;

- d) Filling for repair and maintenance of existing roads when there is negligible physical or biological damage to tidal marsh or intertidal areas;
  - e) Dredging or filling required as part of an estuarine resource creation, restoration, or enhancement project agreed to by local, state, and federal agencies, and;
  - f) Other proposed projects or activities where, upon determination by the Director, Division of State Lands, the proposed alteration would have negligible physical, biological, and water quality impacts.
9. Actions not considered as mitigation under Goal 16 include: (DSL 1983)
- a) Subtidal areas created from an existing intertidal area;
  - b) Transfer of ownership of estuarine lands to public ownership, including wetlands and submersible lands;
  - c) Dedication of estuarine lands for certain natural uses;
  - d) Provision of funds for research; or
  - e) Monetary compensation for lost resources.

P 20.16 PUBLIC ACCESS TO THE ESTUARY AND ITS SHORELINE

Public access to the shoreline and adjacent intertidal areas is sanctioned by law and custom. Future population growth and urban development will increase the demand for public access.

Planning

- 1. Special provision is needed in urban areas to preserve remaining open space and improve the public access to the water through restoration of historic waterfront areas, and construction of other public facilities.
- 2. The private use of privately owned shorelands is legitimate and must be protected against encroachment. Compensation of land owners for the cost of preventing or repairing damages occasioned by public access may be necessary in some cases.
- 3. The establishment of foot bicycle paths along shoreline bluffs and other shorelands should be investigated. Such paths should not impair fish and wildlife habitat or interfere unduly with agriculture or other shoreland uses. Purchase of easements from property owners may be necessary.
- 4. Publicly owned shorelands with water access that are declared surplus and have significant scenic or recreational value should in most cases remain in public hands.

Implementation

- 5. Public access to scenic views and significant areas shall be provided in a manner consistent with the nature of the area.
- 6. Special consideration should be given to making areas of the estuary available to the elderly, handicapped and physically disabled.
- 7. Federal, state and local actions in the estuary area should provide for maintenance and improvement of public access to water for all people, consistent with legitimate shoreland uses and the need for protection of the estuary from over use. Public purchase of lands or scenic easements may be necessary or desirable in particular instances.

8. Where major shoreline developments are allowed, they should not, singly or in combination with other developments in the area, exclude the public from shoreline access to areas traditionally used for fishing, hunting or other shoreline activities.
9. Public access to publicly owned shorelands (e.g. public street ends) should be maintained and improved whenever possible, consistent with authorized use.

P20.17 RECREATION AND TOURISM

Boating, fishing, hunting, hiking and nature enjoyment are essential to the lifestyle of Lower Columbia area residents and to the tourist industry. To maintain and enhance estuary area recreational values:

Planning

1. The natural resources on which these activities are based should be conserved and enhanced.
2. Consistent with demand, natural resource values, private property rights and the need for other, more intensive recreational development:
  - a) Local, state and federal agencies are encouraged to use their authority and material capabilities to provide recreational facilities and maximum opportunity for public access to the estuary, and
  - b) Expansion and new development of recreation and tourist facilities is encouraged.
3. Recreational access to the water along publicly owned shorelines shall be maintained to the maximum extent possible, consistent with safety and resource conservation needs.

P 20.18 RESIDENTIAL, COMMERCIAL AND INDUSTRIAL DEVELOPMENT

Uses of the estuary are concentrated along its margins, with attendant resource use conflicts. Much of the undeveloped or minimally developed shoreland and adjacent estuarine aquatic areas have important natural values that should be conserved. Future intensive development should be concentrated where such activity is appropriate and feasible.

Planning

1. General priorities for use of these shorelands and adjacent aquatic areas are:
  - a) Uses which maintain the integrity of the estuary;
  - b) Water-dependent uses;
  - c) Water-related uses;
  - d) Non-water related uses that do not degrade estuarine resources or irreversibly commit shorelands and aquatic areas to non-water-dependent use and
  - e) Non-water related uses that permanently alter shorelands, or estuarine resources, upon a demonstration of public need.
 Non-water related or marginal use may be preferred if:
  - f) Additional water-dependent use of the shoreline would overly congest small waterways;
  - g) Additional water-dependent or related use would result in extensive adverse impacts on adjacent estuarine aquatic areas or

- h) The proposed use is part of an integrated plan for restoration of an historic waterfront area, enhancing community development and promoting tourism.
2. Residential, commercial and industrial shoreland developments should be: designed and constructed to minimize adverse environmental impacts, be aesthetically compatible with shoreland location, and architecturally related to any adjacent historic or scenic structures or areas. Appropriate visitor facilities and public access to the water should be provided. Clustering of residential, commercial and industrial uses is preferred to scattered development in order to preserve the natural values of riparian vegetation and wildlife and to provide maximum open space. Subdivision, mobilehome parks and planned unit developments shall be designed to protect and complement the aesthetic character of the shorelands and adjacent aquatic areas (as viewed from the water or shorelands).

P 20.19 RESTORATION

The Columbia River Estuary has been substantially altered over the past century to provide for navigation, shoreline development and agriculture. Up-river dams and watershed activities have also contributed significantly to changes in the natural functioning of the estuary. While it is not possible or desirable to return the estuary to its pre-nineteenth century condition, restoration or creation of certain habitat and cultural values is an important estuary management objective.

Planning

1. Overall Restoration Policy.  
All restoration projects should serve to revitalize, return, replace or otherwise improve the estuarine ecosystem or highly-valued cultural characteristics. Examples include restoration of natural biological productivity, fish or wildlife habitat, or aesthetic, cultural and historic resources which have been diminished or lost by past alterations, activities or catastrophic events.  
In selecting projects, priority should be given to those projects which provide substantial public benefits and which restore the habitat types, resources or amenities which are in shortest supply as compared to past abundance. Particular emphasis should be given to aquatic and riparian habitat restoration.
2. Habitat Creation Through Dredged Material Disposal.  
Disposal of dredged material in water and wetland areas for the specific purpose of creating shallow water, intertidal, or island areas is strongly discouraged, because this practice contributes to the downward trend of available aquatic habitat. Habitat creation through upland plantings on existing dredged material islands is encouraged to provide wildlife habitat. Marsh plantings on existing intertidal areas should continue to be evaluated and considered as a habitat creation technique.
3. Diked Lands Restoration.  
Restoration of marginal and unused low-lying diked areas to estuarine wetland is encouraged; active restoration to provide potential for diverse habitat (e.g. mudflat and marsh) as well as passive restoration are encouraged. Natural establishment of marsh vegetation is preferred over artificial plantings. Providing for a maximum amount of hydraulic connection to the estuary is also

encouraged. Incentives should be provided to private landowners who restore diked areas to aquatic production.

4. **Restoration of Shoaled Areas.**  
 Estuary areas that have shoaled or filled at an unnaturally high rate, resulting in loss of a particular type of aquatic habitat or loss of traditionally navigable areas, should be restored to historic conditions as practical. Passive measures are preferred, but active measures or a combination may be required. All such projects should be carefully evaluated to ensure potential ecological, economic and social benefits to man and natural resources outweigh potential losses.
5. **Removal of Old Pilings and Structures.**  
 Old piling, navigational structures and buildings which are a hazard to navigation, contribute to excessive shoaling, or pose a danger to life and property should be removed.
6. **Shoreland Revegetation**  
 Areas of existing shoreline development should be considered for revegetation for both aesthetic, biological and bank stabilization values.

**Implementation**

7. **Diked Lands Restoration**  
 If loss of productive farmland or significant wildlife habitat would occur, breaking of dikes is strongly discouraged. Except through public condemnation procedures, removal of dikes protecting private lands shall not occur without the expressed consent of the landowner.
8. **Removal of Old pilings and Structures**  
 Prior to any removal of old piling, navigational structures and buildings which are a hazard to navigation, contribute to excessive shoaling, or pose danger to life and property costs and benefits should be evaluated, including the potential erosion or sedimentation caused by removal, the biological habitat value and probable life of the structure, and historic and scenic value.
9. **Erosion Area Restoration.**  
 Where feasible, areas with erosion problems should be vegetated with marsh and shoreland planting to establish a natural buffer against erosion. Beach nourishment should be used to restore historic shoreline configurations where feasible. Structural solutions should be used as a last resort to protect life and property.
10. **Restoration of riparian vegetation**  
 Restoration plans should seek to restore upland riparian vegetation adjacent to the estuary. Priority should be given to restoration actions which would restore such riparian vegetation. Following restoration, the new riparian zone should be protected.
11. **Maintenance of Unique Features**  
 Impacts of dredge or fill actions on endangered species and on unique features of the estuary shall be considered on a case-by-case basis. Loss of critical habitat for endangered species shall be avoided.
12. **Restoration and resource enhancement actions proposed in Aquatic Development or Marine Industrial Shorelands should be undertaken only if it is likely that the project will not conflict with or be destroyed by existing or subsequent development appropriate to these zones.**

13. The applicant shall establish that the beneficial effects of a restoration or resource enhancement project outweigh the direct and indirect project costs. Benefits shall include those benefits related to a development project if the restoration or resource enhancement is undertaken as mitigation of other adverse affects of the project. For diked tideland restoration, costs should include costs associated with the loss of agricultural land.

P 20.20 SHALLOW-DRAFT PORTS AND MARINAS

Shallow-draft ports and marinas play a significant economic role in the Columbia River Estuary. Since marina construction usually involves major alteration of estuary shorelines and aquatic areas, it is important that marinas be sited, designed, constructed and expanded such that adverse impacts to the estuarine environment and other shoreline uses are minimized.

Implementation

1. New marinas shall be constructed only when existing marinas are inadequate or cannot be expanded to meet moorage needs identified by appropriately detailed analysis accompanying new marina project proposals. Marina sites should be located in or adjacent to areas of extensive boat usage and in areas capable of providing the necessary service, including access roads or streets, adequate upland parking, trailer storage areas, water and sewer service, and power supplies. The feasibility of dry boat moorage should be considered in the design of new or expanded marina facilities. Open moorages are preferred to covered or enclosed moorages.
2. Marina development and expansion may require filling and/or dredging of existing estuarine aquatic and shoreland areas. Estuarine resources and shoreland habitats shall be protected from preventable adverse impacts in designing marina facilities.
3. Proliferation of individual, single-purpose docks, piers, and mooring facilities is discouraged in favor of common or cooperative moorage facilities. Individual single purpose docks and piers will be approved only after alternative moorage options such as nearby marinas, community docks or mooring buoys are investigated and considered. Any dock or pier approved shall be the minimum size necessary to fulfill the purpose.
4. As required by state and federal regulations, provisions shall be made for adequate flushing/water circulation to ensure maintenance of water quality in marina facilities. (Ref: State and Federal Requirements Section.)

P 20.21 SIGNIFICANT AREAS: NATURAL, SCIENTIFIC, SCENIC, HISTORICAL, CULTURAL AND ARCHAEOLOGICAL

The estuary has unique natural features which have influenced the settlement and development of the area. The archeological, historical and cultural resources of the estuary should be protected.

Planning

1. Areas which have been identified in the County's Plan as significant estuarine resources, shoreland wildlife habitat, historic or archaeological or exceptional scenic resources shall be protected. Uses in these areas shall be consistent with the protection of the unique characteristics of the area.

2. Known or newly discovered archaeological sites shall be protected through application of existing federal and state laws. These laws prohibit willful destruction or removal of material from Indian burial grounds and have an established process for evaluating and preventing impacts of proposed development of identified archeological sites. The County shall recognize and protect archeologic sites in their land use designations (Ref. State and Federal Requirements Section).
3. Funding sources shall be investigated for the purpose of enhancing historical waterfront areas.

P 20.22 SHORELANDS HAZARD AREAS

Natural hazards affecting the shorelands of the estuary include flooding (by abnormally high tides, river discharge or combination), wind, wave action, erosion, storm surges, tsunamis, weak foundation soils and earth and rock fall. Development in hazard areas without proper safeguards subjects people and property to needless dangers and costs taxpayers more in relief after damage occurs.

Planning

1. Development in areas subject to the above hazards is generally discouraged and, when proposed, shall be protected from the hazard.
2. Shoreland and aquatic development should be evaluated prior to construction to ensure that they will not create or worsen hazards elsewhere.
3. Measures will be taken to discourage reconstruction of structures in hazard areas, which have been damaged or destroyed.

P 20.23 WATER QUALITY MAINTENANCE

Estuarine water quality is vital to estuarine productivity, the fishing industry, recreation and tourism. Estuarine water quality is a result of activities taking place upstream, as well as in the estuary itself. To maintain high water in the estuary:

Planning

1. The County will rely on the 208 Water Quality Program to identify water quality issues related to such non-point sources of water pollution as forest lands, road buildings, agricultural practices, natural stream bank erosion, and urban runoff, and to develop programs for control of these sources of pollution through existing state and federal programs.  
These programs include:
  - a) Forest practices legislation and implementing codes in Oregon and Washington,
  - b) Programs of the Soil and Water Conservation Commission, local districts and the Soil Conservation Service.
  - c) The non-point source discharge water quality program administered by the Department of Ecology under section 208 of the Federal Water Quality Act. (Ref. State and Federal Requirement Section.)
2. Treatment of industrial wastes released directly into the river and estuary should be improved. Industrial wastes should be more adequately characterized and effluent standards upgraded in accordance with the Federal Water Pollution Control Act.

3. Waste discharges to tributary streams, enclosed bays and sloughs should be eliminated where possible.
4. Fish processing wastes are a special category of industrial wastes. The environmental and economic benefits and potential adverse se impacts of releasing these wastes to the estuary require investigation to determine if legislative changes should be sought to allow such disposal.
5. Minimum streamflow should be established for each season for the Columbia River. Consumptive uses should not be allowed to decrease Columbia River flow below the set levels. The late summer low flow period is particularly critical for fishery resources. The effects of decreasing the spring and winter flow maximums on sedimentation processes and on fishery resources require further examination and appropriate action.

#### Implementation

6. Provision should be made for cooling of thermal effluents before they are returned to the estuary. (State and Federal Requirement Section.)
7. Reclamation and re-use of waste water should be considered in the design and construction of new industrial facilities.
8. Facilities for the public dumping of oil and emptying of holding tanks by all vessels should be provided in convenient places near moorage areas so that these wastes will not be introduced into the estuary.

### P 21. INTERGOVERNMENTAL COORDINATION AND PUBLIC EDUCATION POLICIES

#### P 21.1 LOCAL INTERGOVERNMENTAL COORDINATION

CREST provides local governments with a forum for communication and cooperation in planning and development activities of regional scope and importance. Local governments recognize the mutual benefits of such coordination and the expanded role it provides to local government in estuary decision-making.

On behalf of member governments, CREST will:

1. Provide continued planning assistance to member jurisdictions upon request to and approval by the CREST Council, review local comprehensive plans and make recommendations which will result in coordination and conformance with the Columbia River Estuary Regional Management Plan;
2. Provide technical information and assistance to member jurisdictions, other agencies and private interests concerning implementation of the Columbia River Estuary Regional Management Plan;
3. Evaluate state and federal estuary activities, programs, developments and project impact assessments that may affect local governments and report results to concerned jurisdictions;
4. Coordinate with local, state and federal agencies on estuary development, research, regulation, project impact assessment and plan review and update;

5. Establish and operate a Columbia River Estuary Information Center to provide technical information services to the public local government and state and federal managers and researchers.
6. For member jurisdictions and other local interests, work to complete the Columbia River Estuary Data Development Program.

P 21.2 SCIENTIFIC RESEARCH AND PLANNING IN ESTUARINE AREAS

Important scientific and applied research is conducted by state and federal agencies, universities, private consultants, and individuals in the estuary area. State and federal agencies periodically develop special-purpose plans for particular resource areas, such as the estuary, which affect local planning and decision-making.

To ensure local coordination and to provide useful information for local estuary management decisions, all agencies, consultants, university personnel and individual researchers conducting research or developing special management plans should:

1. Contact CREST and affected local jurisdictions concerned during the project-planning stage, to outline the research or planning objectives and schedule, and the means of reporting project results; and
2. Make provision for timely reporting of research results and management plan findings to local jurisdictions. Researchers are requested to provide reports in clear and simple language.
  - a) CREST will: compile information concerning on-going and proposed research and planning programs that are important or useful to local governments in the estuary area. During completion of the
  - b) Columbia River Estuary Data Development Program local participation will be encouraged through the formation of a citizen advisory panel.

P 21.3 PUBLIC INFORMATION

Public knowledge of the value of estuarine resources and the importance of estuarine resources to the local economy could be dramatically improved through a program of education and public information. CREST and local governments, in cooperation with state and federal agencies, educational institutions and private groups should:

1. Encourage development of practical educational courses, extension education programs, science fairs, library and museum displays relating to the Columbia River Estuary and the marine sciences in general;
2. Encourage the establishment of major oceanographic research and educational facilities in the area;
3. Maintain and expand the CREST information services.

P 21.4 DEVELOPMENT EVALUATION, PERMIT INFORMATION AND PERMIT REVIEW

Development occurring in the estuary or on its shorelands produces impacts of varying type and degree. State and federal permits are red for in-water construction, dredging, filling, waste discharge and numerous other activities. These permits are mandated by law and allow each particular government agency to carry out its responsibility to control or limit negative economic and environmental effects. The proliferation of permits and other requirements and the lack of knowledge about such requirements adds substantial cost and time delays to development projects.

CREST will provide information and assistance about development project permit requirements at the local, state and federal level. Information to be provided may include: environmental and legal constraints, methods to minimize or mitigate the impacts of proposed projects, and general policies of agencies that will review the project. The intent of this policy is to facilitate understanding and use of existing permit processes. Review by CREST is not mandatory.

P 21.5 STATE AND FEDERAL CONSISTENCY

The Columbia River Estuary plan is part of Oregon's Coastal Zone Management Program. The plan is implemented through local comprehensive plans. Direct state and federal activities and state and federally funded or permitted activities in the estuary area shall be consistent with the regional policies, development standards, and land and water use designations in local comprehensive plans.

P30. SUBAREA PLANS

P31. LOWER RIVER AND ISLANDS PLAN

THE PLANNING AREA

The Lower River and Islands planning area extends from the offshore three-mile limit to the upstream end of Tenasillahe Island and includes most of the aquatic areas of the estuary. The only shorelands are at Fort Stevens State Park, both sand Islands, on Tenasillahe Island and on several dredged material disposal islands. The main navigation channel of the Columbia River, the lower, mid and upper estuary sand flats, the expansive tidal marshes and forested wetlands of Cathlamet Bay, and the intricate network of deep and shallow channels are major parts of this planning area. Much of this area is included in the 35,000 acre Lewis and Clark National Wildlife Refuge and a portion of the Columbia White-tailed Deer National Wildlife Refuge. Detailed descriptions of aquatic and shoreland features are given in each subarea plan.

With the exception of small areas along the eastern water portion of Pacific County and along the western water portions of Wahkiakum County, the entire planning area is within the State of Oregon.

The great majority of the area is under the local planning and regulatory authority of Clatsop County. Small portions of Pacific and Wahkiakum Counties are included in the northern fringe, and small portions of Hammond, Warrenton and Astoria are included on the southern edge of the area between river miles 7 and 18. State and federal agencies play the most significant management and regulatory role in this planning area.

MAJOR ISSUES AND DECISIONS

Major issues, include navigation-related issues such as dredging, dredged material disposal, shoaling and erosion, the effects of log storage on water quality and commercial fishing areas, management, public access and recreational use of the wildlife refuges, and the impacts of development upriver and in adjacent planning areas. These issues are addressed by a variety of regional area and subarea policies.

The most important feature of this planning area is the almost complete absence of developed or developable shorelines. Waters and wetlands predominate and, with the exception of Youngs, Baker and Grays Bays, this management unit contains most of the aquatic areas of the estuary.

The Lower River and Islands Plan provides for natural resource protection, particularly in Fort Stevens State Park and the Lewis and Clark and Columbian White-tailed Deer National Wildlife Refuges. Recreation and public access to these areas and the maintenance and improvement of navigational projects in the river also have received a high priority in this plan.

AREA POLICIES

1. Public Access, Refuge Management, and Preservation of Wildlife Habitat

Additional shoreline access points in the areas adjacent to the Lewis and Clark Wildlife Refuge and Tenasillahe Island portion of the Columbia Whitetailed Deer Refuge should be considered and reviewed on the basis of their impacts on the site and the refuge. Existing access points should be maintained and improved consistent with refuge management.

Except in the area noted above, additional public access points should be developed consistent with recreational and commercial demands and needs.

Existing hunting and fishing shacks in the wildlife refuges may continue to be used by the present owner, but may not be sold. New shacks may not be built. Eventually, all shacks will be removed. This is in accord with U.S. Fish and Wildlife Service refuge management policy.

2. Off-Road Vehicles

Off-road and all-terrain vehicles are permitted only in those areas specifically designated for their use. This policy is particularly applicable to the Clatsop Spit area, where damage to dune and wetland vegetation has been a chronic problem.

3. Log Storage

Existing log storage in wetland sites (aquatic areas less than 3 feet below MLLW) may continue, unless there is evidence that more than nominal damage to aquatic life or water quality is occurring, in which case they should be passed out. Log storage sites in wetland areas and those requiring maintenance dredging should be the first to be phased out, if the demand for log storage sites decreases. New log storage sites in wetlands will not be permitted.

Maintenance dredging of existing log storage sites and replacement of pilings and dolphins is permitted. Research on the effects of log storage in the Columbia River is strongly encouraged.

4. Dredged Material Disposal at Area D and Tansy Point

The Area D and Tansy Point in-water dredged material disposal sites should be used only when weather and sea conditions render the use of disposal sites outside the Columbia River mouth hazardous.

P31.1 MOUTH OF THE COLUMBIA RIVER

GENERAL DESCRIPTION

This subarea includes the North and South Jetties, the offshore waters west to the Columbia River Lightship (see attached map) and the estuary between the North and South Jetties and upstream to a line connecting Jetty A and Clatsop Spit (RM 3). It does not, however, include Clatsop Spit, Jetty A, the ocean beaches or other land areas. The subarea extends seaward of the three mile limit (state and county line) to the Columbia Lightship, to encompass productive areas outside the mouth of the estuary and Corps of Engineers dredged material disposal sites. Local governments have no regulatory authority outside the three mile limit, but these productive fishing grounds and the dredged material disposal sites there concern local governments. The subarea includes parts of both Clatsop and Pacific Counties.

AQUATIC FEATURES

The Mouth of the Columbia River (MCR) is the most physically dynamic area of the estuary. Tidal currents, fresh water flow, wind-driven currents, estuarine (density-driven) currents, waves, and coastal currents are all important. Currents and wave action combine to make navigation notoriously difficult. The sediment is almost entirely fine sand inside the mouth and in the adjacent offshore area. Some silt is found further offshore and to the south of the South Jetty. Outside the mouth, sediment is transported by wind-driven currents and waves. Large storms capable of moving sand in suspension transport most of the sediment. The dominant direction of sediment transport is north. From the bar inward, however, tidal, estuarine and river flow effects become much more important. Upstream bottom currents bring sand into the estuary from the ocean during low flow periods. Sand transport is seaward during high flow periods. Sand transport is seaward during highflow periods. The overall yearly balance and the effect of storms are not known. The geometry of the area has been extensively altered by the installation of jetties and continued dredging.

Important commercial crab and shrimp fisheries are located outside the mouth, while the recreational crab fishing is important inside the jetties. The densities of other sampled benthic invertebrates are not high. Many fish species use the area for migration, and important sports and troll salmon fisheries exist. Important shore fisheries are located on Jetty Sands and the North and South Jetties. Primary (phytoplankton) and secondary (zooplankton) productivity is very high in this area and seaward of it for several miles - the highest plankton productivity in the entire estuary.

#### SHORELAND FEATURES

The only shorelands are the North and South Jetties, which are constructed of rock and rubble mound.

#### HUMAN USE

The MCR area contains the downstream end of the authorized navigation channel (48 feet deep and 1/2 mile wide to RM 3 and 40 feet deep and 600 feet wide upstream from that point). The channel is stabilized by the South Jetty, the North Jetty and Jetty A, and maintained by hopper dredge. The average amount dredged from MCR is about 5 to 6 million cubic yards per year, but is widely variable. The offshore disposal sites (areas A, B, E and F) are in the outer portions of this area. Two in-water estuary sites (area D and Tansy Point in the Estuary Channels subarea) are also used. Recreational use of the waters by small boats is high, and the view from the North or South Jetties or Cape Disappointment is spectacular. Commercial fishing use is intensive throughout the year.

#### ISSUES AND FINDINGS

The Corps of Engineers is currently studying the feasibility of deepening the entrance channel from 48 feet to 55 or 60 feet, repairing the existing jetties and constructing a new Jetty B parallel to and seaward of Jetty A. There is also the possibility of new or additional hopper dredge disposal sites. The desirability and cost-effectiveness of a deeper channel, the utility of the proposed Jetty B, and the disposal of dredged material in this highly productive area with its important fisheries are all at issue.

Peacock Spit has accreted north of the North Jetty and is part of Fort Canby State Park. In recent years the spit has experienced erosion and Washington State Parks desires maximum disposal of dredged material at Area E, since this may feed the beach at Peacock Spit and retard erosion. The desirability of extensive disposal at Area E needs to be evaluated, particularly as it may affect the productive crab fishery in the area.

### P31.2 BAKER BAY

#### GENERAL DESCRIPTION

This subarea includes the aquatic areas of Baker Bay and the Sand Islands. It is bounded by the Oregon-Washington border. Jurisdiction is by Clatsop County.

#### AQUATIC FEATURES

The Baker Bay hydraulic system is complex and poorly understood. Prior to construction of the south jetty in the 1890's, Baker Bay was an open water environment, very exposed to winds and waves. Sheltered anchorage and deep water were provided only at and behind Cape Disappointment; most of the bay was navigable. Construction of the south and north jetties caused Middle Sands to move northward to form Sand Island, which reached very nearly its present shape

by 1910; it continued to move northward for another 30 years. The area between Chinook Point and Chinook has always been shallow, but, like the rest of the bay, this area has shoaled considerably.

Following the construction of the Chinook Jetty (pile dike) and the Sand Island dikes in the 1930's Sand Island began to erode and breached several times. The present gap between the islands appeared in the early 1940's and has gradually become the dominant entrance, through which most of the tidal exchange occurs. This process may have been accelerated by the construction of Jetty A in 1939.

There is a sand transport system that extends from Chinook Point to the seaward end of Big Sand Island. There are two gaps, the Chinook Channel and the breach between the islands. Sand transport east of Chinook Channel is toward the mouth of the river, judging from shoaling on the east side of the Chinook Channel and erosion along Little Sand Island to the west. The transport along Big and Little Sand Islands is not unidirectional. During storms, it is upstream, while river currents cause downstream transport. This pattern is complicated by the pile dikes. Some sand may also be transported into the bay through the gaps.

The existence of the three entrances makes the circulation of the bay very complex and the maintenance of navigation channels difficult. Because the breach in the islands is the major entrance, the scouring action in the navigation channels is comparatively weak. As the understanding of the bay improves, realignment of the channels through the gap may occur.

The interior of the bay has also changed greatly. Sediments were probably sand prior to 1900, but as the bay has become more protected, widespread shoaling occurred; the material in the bay ranges from sands in the channels to mixed sands, silts and clays on the flats in the northern part of the bay. The bar extending west from Chinook Point is hard sand. Much of the sedimentation of fine material probably results from the flocculation of the silts and clays carried by the fresh river water as this water is diluted by saline sea water. This shoaling mechanism probably was not operative before the increase in salinity caused by the maintenance of the Columbia River entrance channel at a depth of 48 feet (as opposed to the natural depth of 20 to 30).

Baker Bay has changed from an exposed, fresh water environment with (presumably) sandy sediments to a more protected, more saline one with mixed sandy and muddy sediments. Almost nothing is known of the earlier biology of Baker Bay, except that it was filled with upstream migrant salmon - the fish traps were very profitable. Probably the benthic populations were very different 50 or 100 years ago.

Presently, fish support values in this subarea are high. Primary production is very high in the water column and in the low, immature marshes around Sand Island and the adjacent fringing marshes. A *Salicornia* (pickleweed) marsh has formed on the northern side of the small portion of Sand Island. Other large marshes have formed around the large Sand Island, and the marshes throughout the bay appear to be expanding as the bay shoals. Secondary production is probably also very high with clams, polychaetes, oligochaetes, crab, and sand shrimp. Fish found in this area include juvenile salmon, juvenile starry flounder, juvenile Dungeness crab and others.

#### SHORELAND FEATURES

The Sand Islands have a moderate wildlife value as a nesting and resting area for gulls and Caspian terns. The most important area is the eastern end of Little Sand Island. The central, brushy part of Big Sand Island is more important than the rest of the island.

#### HUMAN USE

The shorelands of the large Sand Island have limited pasture value. There is a grazing lease with the Corps of Engineers. There are three active dredged material sites: the northern portion of the large island, the eastern portion of the small island (which is filled nearly to capacity), and beach nourishment along the south shore of the small island. Aquatic uses include crabbing, fishing, and boating.

Alterations are extensive in Baker Bay. Several thousand pilings from the old fish traps remain. The Chinook Jetty and the pile dikes along the southern shore of the islands were built to direct the flow of the river to the main navigation channel and prevent erosion of the islands. Also, the southern shore of Little Sand Island was rip-rapped. The remains of the pier and the railroad bed used to unload the material remain on Little Sand Island.

Tidelands are owned by the States of Oregon, Sand Island is owned by the federal government.

#### ISSUES AND FINDINGS

Use conflicts in this subarea include the impacts on aquatic and terrestrial habitat of dredging, dredged material disposal, and proposed black sands mining. The eastern portion of the small Sand Island has been inventoried as a nesting area for Caspian terns. This area has also been used as a disposal site for maintenance dredging of the Chinook Channel; it is now filled to capacity. The northwest corner of Big Sand Island has been used for disposal and other parts of the island are designated for disposal.

Although the nature and extent of the navigational access problems in Baker Bay have received careful attention during the CREST planning process, the scientific research and engineering studies necessary to solve these problems are beyond the scope of this plan. Accordingly, this plan provides for the future resolution of these problems without determining the exact measures. The relevant maps which are a part of this plan include dashed lines which indicate possible future channel realignments. The actual locations and sizes of those channels should be determined as a result of the necessary studies and cooperation among the various interested parties.

The mineral rights to most of Baker Bay have been leased for black sands mining. This mining would have unknown impacts on the hydraulics and the biological productivity of the bay.

#### SUBAREA POLICIES

1. Channel realignments must be justified in terms of hydraulics, sand transport and impacts on maintenance dredging.
2. No more dredged material disposal should occur on the uplands of Little Sand Island. Beach nourishment is also discouraged, because the material may contribute to shoaling in Baker Bay.
3. Upland disposal on Big Sand Island should be confined to the smallest possible area; disposal sites should be revegetated; upland habitat values should be preserved; and grazing should not be permitted.
4. The marshes north of the Sand Islands should be protected.
5. The local governmental bodies, relevant agencies and interested parties shall continue to pursue the resolution of the navigational access problems in Baker Bay. Approved channel realignments and/or improvements shall be permitted notwithstanding the environmental designations of this plan.

### P31.3 ESTUARY CHANNELS

#### GENERAL DESCRIPTION

This subarea includes the deep water portions (greater than 20 feet to 40 feet) of the estuary from Jetty A (RM 3) to the upper end of Rice Island (RM 22.5). These are the channels and the adjacent slopes. The subarea is not restricted to the authorized navigation channel, but includes the flow lanes of both the north and south channels. There are no wetland or shoreland areas. The jurisdictions in this subarea include Clatsop and Pacific Counties, the Cities of Astoria and Warrenton, and the Town of Hammond.

#### AQUATIC FEATURES

The limits of this area are approximately defined by the normal limits of salinity intrusion on high tide. Salt water does not normally penetrate beyond the upper end of Rice Island (although it has been observed as far upstream as Pillar Rock under unusually low flow conditions) and is usually seen along the bottom at least to Clatsop Spit (although the estuary may be entirely fresh on an ebb tide under high flow). Salt and fresh water mix (except under very high flow conditions) throughout this subarea.

Because of the very strong river flow, the channels contain sand almost exclusively and some dredging is required. The fine sediments (silts and clays) accumulate in the bays, and fine coarse sand accumulates on the estuary sand flats. The estuary has lost about 15% of its volume in the last century, largely in the flats and not in the continually dredged channels.

Under low flow conditions of less than 150,000 cfs, sediment transport is upstream in the south channel below Tongue Point and in the north channel below the Astoria Bridge. Net transport is downstream in the channel above Harrington Point under almost all flow conditions. The null zone or point of zero net sediment transport fluctuates from about Harrington Point to Clatsop Spit. Sediment transport may be in the downstream direction all the way to mouth under very high flow conditions, but present freshet levels are not sufficient to carry out to sea the sediment that enters from the ocean and the river during most of the year.

Benthic (bottom) productivity in these deep channels and slope areas is not high. However, the null zone effect allows an accumulation of particulate matter, and primary (algal) productivity is seasonally high, though probably lower than outside the mouth. The important species of estuary phytoplankton are almost all river (fresh water) forms, whereas the species in the offshore areas are coastal plankton common in the upwelling areas along the coast. There are characteristic estuarine zooplankton (animals) that feed on the phytoplankton and on particulate debris in the water. The estuarine populations of both phyto- and zooplankton are inherently unstable. Strong tides or a freshet can push the entire population of plankton out to sea and the populations may remain depressed for some time afterward; physical factors predominantly determine population levels. The estuary channels are extremely important as migration routes for anadromous fish.

#### HUMAN USE

Navigation and associated dredging are the most prominent human activities in the ship channel, and dredged material disposal at selected sites. Waste disposal, principally from fish processing, is a lesser use. There are also gillnet drifts in and around the north and south channels and recreational fishing for salmon and sturgeon are important. Recreational crabbing occurs off Hammond and the Sand Islands.

### ISSUES AND FINDINGS

In water disposal of dredged material is a major issue. Approximately 1.2 million cubic yards of dredged material are removed from this reach each year. Approximately 630,000 cubic yards of material (most originating from the river channels upstream from the estuary) are placed in the Harrington Point Sump by hopper dredge each year, and eventually placed by pipeline dredge on Rice Island (in the Estuary Sands subarea). Between 700,000 and 1,000,000 cubic yards of material is deposited in Area D; this total has been declining and may be much smaller in the future. Use of the Tansy Point site is minor and irregular.

The overall filling trend in the estuary was discussed under Aquatic Features. The fate of the dredged material deposited in estuary disposal sites is a major concern. Much of the material may stay in the estuary reentering channels or building up shoals in bays and flats marginal to the channels. Material placed in Area D, for example, may end up in Baker Bay, increasing the already severe shoaling and access channel maintenance problems there.

### SUBAREA POLICY

The continued use of the Tansy Point site and Area D should occur (as per inter-agency agreement) only when weather and sea conditions render the use of disposal areas outside the mouth hazardous. New in-water sites in the estuary may be designated in the future and that use of Area D and Tansy Point may be discontinued with the next few years.

### P31.4 ESTUARY SANDS

#### GENERAL DESCRIPTION

This subarea includes the extensive mid-estuary sand flats between RM 6 and RM 24 and the adjacent slopes. These are Desdemona and Taylor Sands, the Tongue Point Bar and other unnamed sands, the largest of which extends west and north from Rice Island into Grays Bay. Rice Island, a dredged material island, is also included. Some sands are bare at mid-tide, while the slopes extend down to 30 feet in some areas. A shallow channel is used by fishermen and tugs to cross from the north channel to the south channel near the Astoria-Megler Bridge. There are other minor channels and two small areas of bare sand. Rice Island is high enough to be classified as shorelands. Vegetation is absent, or nearly absent, from all shoreland areas. Rice Island and adjacent water areas are part of the Lewis and Clark National Wildlife Refuge. This subarea includes portions of Clatsop, Pacific and Wahkiakum Counties.

#### AQUATIC FEATURES

These sands have accreted rapidly since the construction of the jetties at the mouth and the dams on the river. In contrast to the fine sediments found on flats in Youngs, Grays and Baker Bay, the mid-estuary sands consist largely of fine to coarse sand. Much of the loss of volume of the estuary (15% in the last century) has occurred in this area. The reason for this accumulation is unclear, but it is apparently related to the increased salinity intrusion and the decrease in freshwater flow during the freshets. Sediment transport patterns in the area are unknown. Probably accretion occurs from both upstream and downstream. The sands are exposed to wind, waves, ship wash and river currents and, judging from the coarse texture of the sediments, the energy level is high.

Phytoplankton and zooplankton productivity is seasonally high (cf - Estuary Channels), and benthic algal productivity on the sands may be significant but has not been studied. Populations of benthic animals living in

the sediments are low to moderate when compared to Baker Bay or Youngs Bay because both the sediment type and the exposure to the elements are less favorable. Use by epibenthic animals (starry flounder, sand shrimp, mysids and dungeness crabs) is high. downstream migrant salmon may feed and rest on these sands. The sands are also important as a seal haul-out area and as feeding and resting areas for gulls and other birds.

#### HUMAN USE

Human Use includes gillnet drifts along the margins of the sands and in the minor channels between the sand bars, recreational boating, and small boat and tug navigation across the river. Dredging and dredged material disposal have occurred on and around various sands in the past and the sands were used for horse seining and fish traps when such activities were legal. The only area currently being used for dredged material disposal is Rice Island, an entirely man-made island installed for the dual purposes of flow control and dredged material disposal.

#### ISSUES AND FINDINGS

A major issue in this subarea is the recent dramatic increase in seal populations and the impact on the gillnet fishery. Prior to enactment of the Marine Mammal Protection Act in 1972, seals were kept under control by harrassment and occasional shooting. Now protected, they have increased in numbers and boldness. This issue is outside the scope of this plan and research is being undertaken to determine if active management is required.

Potential uses of the sand flats include dredged material disposal, recreation, aquaculture, restoration, and even urban development. Part of Rice Island could be developed for a park, after dredged material disposal is completed. However, the Oregon part of Rice Island is in the Lewis and Clark National Wildlife Refuge and development would have to be consistent with refuge management.

#### P31.5 RIVER CHANNELS

##### GENERAL DESCRIPTION

This subarea includes the deep water (greater than 20 feet to 40 feet) portions of the main river channel and adjacent slopes upstream from Harrington Point (RM 22.5) to the eastern end of Wahkiakum County (RM 52). The authorized navigation channel is contained within this subarea, but side channels are not included. There are no wetlands or shorelands. Some water areas are part of the Lewis and Clark National Wildlife Refuge. Parts of Wahkiakum and Clatsop Counties are in the subarea.

##### AQUATIC FEATURES

While tides and tidal currents are important in this reach, fresh water flow increasingly dominates the circulation patterns toward the eastern end. Salinity intrusion extends only to Pillar Rock, even under low flow (less than 100,000 cfs). Flood tide currents may not be observable under high flow conditions, and the 100-year flood level rises sharply in the upstream direction. Sediments in the channel and slopes are barely medium to coarse sand, with some gravel. Compacted finer sediments are found in some scour holes. The transport of sand and gravel as bedload is almost entirely downstream. Some sand will also move in suspension under freshet conditions. Finer material (silts and clays) moves downstream in suspension.

Benthic productivity in these channels and slopes is probably not high because of the active sediment transport and ship wake disturbances. The

phytoplankton in this reach are barely an extension of the riverine plankton coming downstream. These channel areas have seasonally high primary (phytoplankton) production in the spring. However, the nutrients are soon exhausted by production further upstream. Since salt water is absent in this reach, there is no nutrient enrichment by marine waters. The role of the extensive marshes in providing nutrients to support the phytoplankton productivity in this area remains to be investigated. The zooplankton are also primarily fresh water forms. Peak populations are related to phytoplankton populations and to warm water temperatures that occur in the late summer.

The river channels are important to fish species primarily as migration routes, though sturgeon also feed extensively in the channel areas. Adult salmon, steelhead, smelt, shad and eulachon migrate up the river channels to spawn. Juvenile sub-yearling salmonids (fall chinook and chum) tend to concentrate in beach and mudflat areas, whereas the yearling salmonids (coho, spring and summer chinook, sockeye, steelhead and cutthroat) migrate down the main channels.

#### HUMAN USE

The primary human uses of the river channels are navigation, dredging and dredged material disposal, commercial and sports fishing and (to a lesser degree) waste disposal. The main navigation channel passes through this area from end to end. Dredging is required at 16 separate bars, with an average (1973-77) of 1.9 million cubic yards removed annually by pipeline and 1.2 million cubic yards by hopper dredge. In water disposal occurs at the Harrington Point Sump (for re-handling) and at several flow lane disposal sites. Numerous pile dikes exist. Gillnet drifts exist along the edge of and in the main navigation channels. Commercial sturgeon longlining, sports fishing and pleasure boating also occur.

#### ISSUES AND FINDINGS

The primary issues in the area center around the problem of dredged material disposal and navigational improvements (e.g. pile dikes). Deepening the channel to Portland has been discussed but presently does not appear feasible. Flow-lane disposal may either increase or decrease the passage of fish through an area. Changes in bottom contours may make an area difficult to fish. Pipeline dredging operations occur during a fishing season, and may make it impossible to fish certain areas. Any disposal operation may affect migrating fish, and installation of pile dikes (e.g. in the Brookfield reach) may permanently close a drift. Dredging of the deeper channel areas has probably accelerated shoaling in side channels used by fishermen and recreational boaters.

The transport of petroleum products and hazardous products is also an issue. No major transfer facilities, pipelines or refineries have been proposed for the estuary area; all proposals call for shipment of petroleum through the estuary and river channels to upstream locations.

#### P31.6 SNAG ISLANDS

##### GENERAL DESCRIPTION

This subarea includes dredged material islands (Miller Sands and Jim Crow Sands), tidal marsh (around the Snag Island Jetty and Miller Sands), the Woody Island Channel, exposed sand bars south and west of Woody Island Channel, and various subsidiary channels. The entire subarea is within the Lewis and Clark National Wildlife Refuge and Clatsop County.

#### AQUATIC FEATURES

Very little is known concerning the circulation in the area. Some salinity intrusion probably occurs south and west of Miller Sands under low flow conditions, but data are absent. Plankton and zooplankton have been discussed in Estuary Channels and River Channels subareas. Benthic populations on the bare sands at the west end of this area are probably similar to those at Taylor Sands (Estuary Sands subarea). Small fresh water clams are more abundant here than further west. It seems likely that the margins of some of the smaller channels have accumulated sufficient fine material to support large benthic populations of fresh water species, especially adjacent to and in the marshes on Miller Sands and the Snag Islands but only limited data are available. Feeding by juvenile salmonids may be important and sturgeon probably feed in the deeper channels. Use of this area by migrant waterfowl, wading birds and shore birds is extensive. Nutria and muskrat are common.

The tidal marshes (sedge/bulrush) on the Snag Islands are low and have been established since the installation of the Snag Island Jetty (1880's). Those on Miller Sands grade from low to high marsh and are also of recent origin.

#### SHORELAND FEATURES

Grasslands, shrub and Willow/Cottonwood habitats are found on the upland portions of Miller Sands, and grasslands are found on Jim Crow Sands. Marsh and grass planting is under way as part of a Corps of Engineers research project on Miller Sands and as dredged material stabilization on Jim Crow Sands.

#### HUMAN USE

Human use of this area includes navigational improvements, dredged material disposal, commercial and sports fishing, wildlife observation, hunting, and trapping.

Active disposal sites are located on Jim Crow Sands and Miller Sands. A new in water disposal site east of Jim Crow Sands was used for the first time in November, 1977. Gillnet drifts are found in Woody Island Channel and along the margins of the navigational channel.

The only intensive use is dredged material disposal. Nonetheless, it is hard to pick any feature of the area (except perhaps Pillar Rock) that has not been created or radically altered by man in the last century. The main navigation channel (the Cordell Channel) passed through what is now Snag Island. This channel was closed off by the Snag Island Jetty. North Island (north of Seal Island) was formerly much larger but was eroded away as the Woody Island Channel shifted to the south. Extensive dredging of the Tongue Point crossing and the channel reach above Harrington Point resulted in the creation of the unnamed sands southeast of Woody Island Channel, Miller Sands, Jim Crow Sands, and Rice Island.

#### ISSUES AND FINDINGS

The primary issues in the area are: dredged material disposal versus shallow water and wetland habitat; ownership disputes between county, state and federal governments; and public access. No active management is practiced except in the dredged material disposal areas. Active revegetation is carried out on Miller Sands and Jim Crow Sands. Ownership of most aquatic and shoreland parcels is claimed by at least two governmental units, and there is one private ownership claim. The U.S. Fish and Wildlife Service owns large parts of the refuge and manages those areas it does not own through operating agreements with the county and state governments. These agreements have not

prevented disagreements, in certain instances, as to how the area should be managed; e.g. whether dredged material disposal should be allowed.

This area is relatively distant from all boat launching ramps, thus the hunting and sport fishing use of this area is probably less than in some other subareas. All areas except Miller Sands are open to hunting and trapping. Future use of Miller Sands and Pillar Rock Island is an issue of concern. Public access on the wildlife refuge is discussed in the Cathlamet Bay subarea.

### P31.7 CATHLAMET BAY

#### GENERAL DESCRIPTION

This subarea includes Green, Grassy, Russian, Seal, McGregor and unnamed marsh islands, sand and mud flats, and North, South, Prairie and other subsidiary channels. It extends from near Tongue Point (RM 19) to RM 25. Brush and trees are, for the most part, absent from these islands. The entire area is in the Lewis and Clark Refuge and Clatsop County. No shorelands are present.

#### AQUATIC FEATURES

Little specific information is available with regard to physical circulation. Salinity intrusion is known to occur along the bottom in North Channel as far as McGregor Island. The marshes are probably expanding, judging from old charts. Installation of the Green Island dike prior to 1890 and the creation of Lois and Mott Islands from the dredging of the Tongue Point Basin (1939 to 1949) have stabilized Green Island and generally accelerated marsh formation, though erosion has occurred in some areas.

The available information concerning phytoplankton and zooplankton productivity has been discussed in Estuary Channels and River channels subareas ( and ). Only one benthic station is available, from the mudflats south of Russian Island. The population of fresh water forms was very high. Presumably this is true for many of the other mud and sand flats in this area.

Green, Grassy and unnamed (RM 21 to 23) islands are all tidal marsh. The dominant vegetation types in the lowest areas are bulrushes and rushes. Sedges predominate on the higher parts. Russian and Seal Islands are somewhat older and contain typical high marsh plant communities. Waterfowl, wading and shore bird use is high. There are extensive nutria and muskrat populations.

Adult and juvenile salmonids and other anadromous fish migrate through this area. Juvenile salmonids probably feed in the sand and mudflats, but this has not been confirmed in this area. Sturgeon feed in the deeper channels. There is some warm water resident fish usage.

#### HUMAN USE

Human use of this area includes sports and commercial fishing, log storage and transport, hunting and fishing shacks, hunting, trapping, and wildlife observation. None of these could be classified as intensive.

#### ISSUES AND FINDINGS

Issues in this area include log storage in wetland areas, the presence of hunting and fishing shacks, public access, and ownership questions. The log storage in wetland areas is opposed by resource agencies, because of adverse effects on benthic organisms when the logs rest on the bottom.

The tidal flats and marshes of Cathlamet Bay are highly productive, integral parts of the estuarine ecosystem. Their inclusion in the Lewis and Clark National Wildlife Refuge provides needed protection for fish and wildlife resources in the area.

## P31.8 LOIS AND MOTT ISLANDS

## GENERAL DESCRIPTION

This subarea includes the two dredged material islands created by dredged material during the construction of Tongue Point Naval Base and the MARAD Basin (1939-49), the adjacent wetlands, and the channel between. The subarea is in the Lewis and Clark Wildlife Refuge and Clatsop County.

## AQUATIC AND SHORELAND FEATURES

Lois and Mott islands are surrounded by tidal marsh, are wooded (willow, alder) around the fringes and grass-covered in the interior. Bird and wildlife values are high. The water and wetland portions of this subarea are protected and very productive; the populations of benthic invertebrates are very high.

## HUMAN USE

Human use includes recreation boating, beachcombing, sports fishing, hunting, trapping and wildlife observation. None of these uses is intensive.

## ISSUES AND FINDINGS

There is some potential for port related development on Lois and Mott Islands; however, since the two islands have no utilities or land transportation and are in the wildlife refuge, the only likely use is dredged material disposal. Mott Island and the northern lobe of Lois Island are within one mile of the Tongue Point entrance channel, The rest of Lois Island is adjacent to the MARAD Basin and within reach of dredging that might occur at the Corps of Engineers site south of Tongue Point. Low intensity recreational facilities might also be provided on the upland portion of these islands.

Both Mott and Lois Islands are within the wildlife refuge and the habitat value of the upland areas for birds and wildlife is high. The U.S. Fish and Wildlife Service has indicated that they will oppose use of the area for dredged material disposal. Recreational fishing and boating may conflict with port development in the Tongue Point area. Public access may also be an issue.

## P31.9 UPPER MARSH ISLANDS

## GENERAL DESCRIPTION

This diverse group of marsh islands and interconnecting channels extends from Minaker Island (RM 26) to Welch Island (RM 35). The subarea includes Minaker, Karlson, Marsh, Brush, Horseshoe, Woody, Tronson, Quinns, Goose, Grassy, Fitzpatrick and Welch Islands. Large sections of these islands are brushy or wooded, with high tidal marsh in the lower areas. Sand and mudflats also occur. There are no shorelands, now that the dikes on Karlson Island are breached. The entire area is in the Lewis and Clark National Wildlife Refuge and Clatsop County.

## AQUATIC FEATURES

No specific information is available concerning the physical circulation of the area. Salinity intrusion is rare or totally absent. The available information on phytoplankton and zooplankton populations is presented in the Estuary Channels and River Channels subareas (31.2 and 31.4). Benthic populations of freshwater forms are high at some stations in the smaller sloughs. Salmon smolts are known to be abundant north of Horseshoe Island and probably congregate in other areas as well. Use by sturgeon and warm water fish probably occurs. There is a large blue heron rookery on Karlson Island

and raptors may be seen on the islands with large trees. Wading bird, shore bird and migrant waterfowl use is high. Nutria, beaver and muskrat are common.

Most of Minaker Island is high marsh, with willow in a few areas. Karlson Island is more complex. About one-fourth of the island was diked, but the dikes have breached and much of this area is returning to tidal marsh. The western end of the island is undisturbed tidal marsh. The rest of the island is willow and two, three and four species mixture of alder, Sitka spruce, western red cedar and cottonwood. Brush and Horseshoe Islands are largely high marsh with some willow. Marsh Island is mostly willow with some high marsh, cottonwood and spruce. Woody Island is covered by a four-species mixture of trees with high marsh in lower areas. There is some willow on Quinns and Tronson Islands and some emerging marsh on Goose, Grassy and Quinns Islands. Fitzpatrick Island is dominated by high marsh and willows and has a dredged material disposal site on the western end. Welch Island is covered with high sedge marsh, cottonwood and willow. Dredged material has been deposited along the northern shore to protect against erosion.

#### HUMAN USE

Human use of the area includes log storage and transport, small boat navigation, sports and commercial fishing, hunting and fishing houses, hunting, trapping, and wildlife observation.

#### ISSUES AND FINDINGS

Public access, log storage, hunting and fishing houses, and ownership disputes are issues, just as they are in other areas of the refuge. The main access point is Aldrich Point, and these islands probably receive more use than islands more distant from a launching ramp. Karlson Island (formerly diked part) is closed to all public use. Welch Island is subject to seasonal access regulations. Otherwise, the islands are open to the public, but access is difficult. Lower River and Islands Policies deal with public access, log storage and hunting and fishing houses (cf P31).

#### P31.10 TENASILLAHE ISLAND

##### GENERAL DESCRIPTION

This subarea extends from Multnomah Slough (RM 35), which separates Welch and Tenasillahe Islands, to the pile dike (RM 38) at the upstream end of Tenasillahe Island, and includes waters to the south side of the Main Channel and to the opposite shore of Clifton Channel. Most of the perimeter of Tenasillahe Island is forested wetland, the remainder inside the dike is pastureland. The tidegate washed out in 1975 but has been repaired. The island is part of the Columbia White-tailed Deer National Wildlife Refuge and the entire subarea is in Clatsop County.

##### AQUATIC FEATURES

No specific information is available concerning the physical circulation of the area. Salinity intrusion is absent. The available information on phytoplankton and zooplankton is presented in the River Channels subarea (31.4). Benthic organisms, including amphipods, worms and small clams, are probably abundant in shallow water areas and in Multnomah Slough, although no data are available. Juvenile salmon migrate downstream along the shoreline. There is some tidal marsh along Multnomah Slough and on the small island at the upstream end of Tenasillahe Island.

#### SHORELAND FEATURES

The island serves as a wintering area for birds of the Pacific flyway, such as whistling swam, Canadian geese, mallards and other waterfowl. Shorebird use is high on the sandy upstream end of the island; hawks and bald eagles are often seen. The island is managed to protect the Columbia White-tailed deer, an endangered species. Nutria, beaver, and muskrat are the other common mammals. Cattle grazing is used to aid in management of the area for the white-tailed deer. Erosion problems exist both along the Clifton Channel and the Main Channel side of the island. Upland vegetation other than grasses is largely alder, willow, cottonwood, and spruce trees.

#### HUMAN USE

Human use of the area includes log storage and transport, small boat navigation, sports and commercial fishing, and wildlife observation. There is a log storage area along Clifton Channel and commercial fishing areas along both the Clifton and Main Channel sides of Tenasillahe Island. There is very restricted public access to the island; however, a private duck hunting club has access during certain periods of the year to an area near Multnomah Slough.

#### ISSUES AND FINDINGS

Log storage and public access are issues, as they are in the Cathlamet Bay and Upper Marsh Islands subareas (P31.6 and P31.7); the same Lower River and Islands policies apply (see P31). Development potential is low in this intensely managed part of the white-tailed deer refuge.

#### DREDGED MATERIAL DISPOSAL

Three sites are present. One site on the north shore is designated for dike maintenance (71(D)). A second site just upstream is a beach nourishment (erosion control) site outside the dike (72(B)). The third site is also a beach nourishment site, behind the pile dikes at the upstream end of the island (77(B)).

#### P31.11 FORT STEVENS STATE PARK

##### GENERAL DESCRIPTION

In this area shorelands extend east along the top of the South Jetty, over the existing dune ridge at the Jetty landfall, to meet and follow the western margin of the Russell-Clatsop Spit Road to the south. The shorelands boundary includes wetlands west of the Russell-Clatsop Spit Road in the vicinity of Fort Stevens Parking Lots A and B, crossing the road to follow the north margin of the roadbed to the intersection of Russell-Clatsop Spit Road and the Hammond Town Limits.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

##### AQUATIC FEATURES

The northwest Face of Clatsop Spit is a sandy beach area, with significant wave energy impinging upon it. The northeast face of the spit, also a beach area, is an area of high erosion and strong currents. The wetlands of Trestle Bay are tidal marsh (dominated by Lyngby's sedge, common reed, creeping

bentgrass and Pacific Silverweed) and sand/mudflats. The marshes are cut by deep tidal channels, one of which, on the southeast margin, leads inland to Swash Lake, another area is dominated by tidal marsh. Trestle Bay is cut by a trestle and a jetty, the latter of which is overtopped regularly by tidal waters. While there are no data, benthic productivity in the inner flats is expected to be quite high because of the sheltered nature of the area and adjacent marsh productivity. Benthic productivity on the outer flats is moderate. The benthic productivity may make Trestle Bay an important nursery area for downstream migrant salmon, but no data are available. There is also a small tidal salt marsh on Clatsop Spit adjacent to the observation tower. It is covered by high salinity tidal waters coming directly in under the jetty from the ocean.

#### SHORELAND FEATURES

The shorelands of Clatsop Spit are rolling foredunes, running transversely from southwest to northeast, and stabilized by European beachgrass. Coastal strawberry, early hairgrass, scotch broom and coast pine are also present. These species also characterize the shoreland vegetation along Trestle Bay; other shrubs, some willow, and alder are also present. The shorelands up to Hammond are river beach, rock rip-rap (original starting point of south jetty) and some shrub vegetation. The subarea has significant bird and wildlife values, including nesting sites for the snowy plover. Trestle Bay is important for waterfowl, wading birds, shorebirds and raptors, as well as deer, nutria, mink, beaver, raccoon and opossum.

#### HUMAN USE

Intensity of human use in the Fort Stevens subarea varies from high to low. Most use centers around the community of Fort Stevens and the three parking lot areas on Clatsop Spit and includes sightseeing, bicycling, hiking, beachcombing, nature observation, and jetty and beach angling. Drift logs are used for firewood. There is also some illegal off-road use of the area by four-wheel drive vehicles, even in the salt marsh adjacent to the observation tower.

#### ISSUES AND FINDINGS

Development and potential of the area is restricted to recreation and historic preservation. The Clatsop Spit area is already developed as far as it is intended to be. The old gun batteries of Point Adams area between Swash Lake and Hammond are suggested for "major development" in the Oregon State Parks Fort Stevens Master Plan, including parking and battery restoration.

Erosion problems along Jetty Sands and on Clatsop Spit, just south of the South Jetty, use of the area by four-wheel drive vehicles, removal of beach logs, and the possibility of ocean waves breaching the spit south of the jetty are issues of concern. While some structural control over erosion south of the jetty may eventually be required, non-structural means of erosion control are more suitable in a state park.

#### SUBAREA POLICY

Off-road vehicles should not be permitted on dune or wetland areas in the park and shall not traverse the Natural wetland-salt marsh on Clatsop Spit.

## P32. LEWIS &amp; CLARK, YOUNGS &amp; WALLOOSKIE RIVER VALLEYS

## THE PLANNING AREA

The Youngs Bay-Astoria planning area includes the most intensively developed aquatic and shoreland areas in the estuary region. Potential for new development is high. The area also has important aquatic resources; Youngs Bay and the basin around Tongue Point are both highly productive aquatic environments. Shorelands in Hammond, Warrenton and Astoria are included in this planning area, as are the diked tidelands up the tributaries of Youngs Bay.

The establishment of the boundaries for the Youngs Bay-Astoria planning area was based on evaluation of potential shoreland hazards, important shoreland habitat areas, areas needed for urban water oriented development, and scenic resources. The planning area extends from Tongue Point west to Point Adams and includes the waters of Youngs Bay and tributary streams to the head of tide. The water boundary on the river side extends from John Day Point around Lois and Mott Islands, around Tongue Point to join with the in-water Astoria city limits. It follows the 40 foot depth contour to point Adams. The shorelands boundary is described in each subarea. Planning, management and regulatory jurisdictions include Clatsop County, the Cities of Astoria and Warrenton, the Town of Hammond, the Port of Astoria, and Oregon state and federal agencies.

## MAJOR ISSUES AND DECISIONS

Resource protection versus maximizing development potential is the overriding issue throughout the Youngs Bay-Astoria planning area. Log storage, transportation facilities, dike maintenance, public access, and the shoaling of Youngs Bay and its tributary streams were issues of importance. These issues are addressed by regional area and subarea policies.

From Youngs Bay to Astoria is the major population center and most intensively developed area in the estuary. This is due in part to historical patterns of rail, highway and deep water channel development. Major portions of shoreland and adjacent aquatic areas have been set aside for water dependent use. Areas for shallow draft marinas and other development include the areas along the Lewis and Clark River and youngs River and Bay. Numerous dredged material disposal and potential mitigation sites have been identified.

## AREA POLICIES

## 1. Log Storage

Log Storage in the Lewis and Clark and Youngs Rivers should continue to be allowed at all existing sites, even in those instances where it is a non-conforming use in a Natural area. However, no new log storage sites should be allowed in Natural areas or in wetlands, where the logs would rest on the bottom at low tide.

## 2. Transportation Routes

All existing railroads and highways are considered Development for the purpose of maintenance, repair and possible expansion, regardless of the adjacent aquatic or shoreland designation. Furthermore, new transportation routes which may be required through Natural or Conservation areas are allowed, but only on the condition that the most environmentally sound construction methods are used and impacts of construction are minimized.

## 3. Recreation and Public Access

Public waterfront access for recreation should be improved throughout the Youngs Bay-Astoria area. Particular emphasis should be given to small waterfront parks in urbanized areas to serve local residents and day-use needs.

The Astoria People Place system concept of small parks, fishing piers and viewpoints, connected by a waterfront walkway is strongly supported. Improvement of waterfront access and/or park construction is recommended: at Tongue Point; in Astoria at the new Maritime Museum, at 14th Street, between 9th and 10th Streets, at the foot of the Astoria-Megler Bridge, and at the Port docks; at small boat launches in the Youngs and Lewis and Clark Rivers; and on the west bank of the Skipanon, just south of the new Skipanon River Bridge, at Tansy Point, and adjacent to the Hammond Mooring Basin.

#### P32.1 YOUNGS BAY

##### GENERAL DESCRIPTION

Youngs Bay is one of the more biologically productive parts of the estuary. This subarea extends from the old U.S. Highway 101 Bridges over the Youngs River and the Lewis and Clark River to the 30-foot contour in the Columbia River. It includes large fringing marshes and tideflats. The boundary of the subarea follows the MHHW mark along the Astoria waterfront and the dike line elsewhere, except adjacent to the Port of Astoria and the proposed Brown and Root site. No shorelands are included. Warrenton, Astoria and Clatsop County all have jurisdiction in the Bay.

##### AQUATIC FEATURES

Because of numerous development proposals, Youngs Bay is the most intensively studied bay of the estuary. Like the rest of the Astoria waterfront, the area has been considerably altered by human activity. The most important physical alterations have been timber cutting in tributary watersheds with resulting sedimentation, the diking of tidal marshes and spruce swamps, the filling of shallow areas, and the alteration of the hydraulics of the bay by channels, fills and causeways. Youngs Bay originally extended from Tansy point to Smith Point, but the peninsulas at the mouth of the Skipanon River have completely separated Alder Cove from Youngs Bay, though the systems remain similar in their biology. The strongest effects on the bay's hydraulics have been exerted by the Skipanon peninsulas, the fills at Smith Point (Port of Astoria piers) and the two causeways. The new Highway 101 causeway in particular has caused a marked reduction in currents and wave action in the interior of Youngs Bay. There has been extensive shoaling.

It is much harder to evaluate biological changes in Youngs Bay. There has been a very large loss of tidal marsh and open water habitats and perhaps a gain in mud/sand flats. There has been a very large loss of spawning habitat in tributary streams, runs of fall chinook and steelhead are greatly reduced, and the chum runs are virtually extinct. It is not possible to determine changes in the nutrient supply to the bay or changes in benthic populations or planktonic productivity.

Tides in Youngs Bay and tributary streams are of the standing wave type. Thus, the tidal range increases somewhat from the port docks (8.0 feet) to the tidal reaches of the tributary streams (8.6 or 8.7 feet). High water is nearly simultaneous throughout the system and occurs at slack water. This type of tide is typical of shallow bays but atypical of the Columbia River estuary.

Three basic water masses contribute to the circulation in Youngs Bay: Columbia River fresh water, tributary fresh water and marine water. Fresh water flow in the Columbia River is greatest during the spring freshet in June; winter freshets also occur. Youngs Bay tributary flow is strongest in December and January, when local rainfall is at a maximum. Intrusion of saline marine water is governed primarily by Columbia River flow and secondarily by tributary flow. Salinities in Youngs Bay rarely exceed 10 to 15 ‰, even in the fall.

Under these conditions, the vertical salinity differences are pronounced and salinity may intrude upriver along the bottom as far as the upstream end of Haven Island in the Youngs River and river mile 5 in the Lewis and Clark River. During high flow periods for either the Columbia River or Youngs Bay tributaries, salinity is absent or nearly absent from Youngs Bay.

Current patterns in Youngs Bay are too complicated to be easily described. Eddies and stagnant areas prevail in the shallow, wetland areas. Stronger currents are found in the deep areas. Currents are highly variable, depending on winds, tides, freshwater flow and salinity intrusion.

Water quality is generally excellent in Youngs Bay; no serious pollutant sources are present and the flushing is excellent. Flushing times for the bay itself have been estimated to vary from 1 to 2 days, depending on tide and freshwater flow conditions. The flushing time of the tributaries below the head of tide is considerably slower; 3.3 to 16 days for the Lewis and Clark River and 2.3 to 7.8 days for the Youngs River. Water quality in some smaller tributaries and sloughs such as the Little Walluski River is definitely less favorable because of the poor flushing.

Close to and above tidewater, coarse sediments are carried as bedload by tributary streams. Below tidewater, bedload sand transport probably occurs only under flood conditions. Suspended fine sediment settles out in the lower reaches of the tributary streams and on the tidal flats. The sediments in the channel and the deeper parts of the bay are coarser than those in the lower reaches of the tributaries, reflecting the influence of Columbia River sediments. Sediments outside the causeway are almost entirely Columbia River sediments, except on the tidal flats between the Skipanon River and the causeway, where some Youngs Bay tributary material is found.

Youngs Bay appears to experience alternating periods of sedimentation and erosion, with variations occurring on time scales from storm events and seasons to years and decades. Sedimentation predominates (average rate throughout bay 1 cm/yr) and most strongly so in the shallow areas (up to 6 cm/yr). These observations are confirmed by the historical changes over the last century.

The authorized channel in Youngs Bay is 10 feet deep and 150 feet wide from deep water in the Columbia River to the upstream end of Haven Island (river mile 8). The authorized channel in the Lewis and Clark River was never dredged and the authorization has expired. The Youngs River Channel was last dredged in 1967.

The most ubiquitous marsh plants in Youngs Bay are cattails, bulrush and sedge. Most of the tidal marshes of Youngs Bay have, however, been filled or diked. Valuable fringing marshes remain at Dagget Point, along the entire south and west sides of the bay and at the entrance to the Lewis and Clark River. Because of the shoaling occurring in Youngs Bay, it is likely that the fringing marshes will continue to grow. High primary production by plankton (single-celled algae living in the water column) is also likely. Fresh water diatoms are the most common forms. Although there are no dominant, characteristically-estuarine types of phytoplankton in this estuary, there are characteristic types of estuarine zooplankton that are extremely abundant seasonally.

The mud and sand flats of Youngs Bay are among the more productive areas of the estuary for benthic (bottom dwelling) animals. These animals may live in the bottom sediments or just above the sediments. The variety, productivity and number of such organisms depend on such factors as sediment type, salinity, exposure to waves and currents, biological interactions and disturbance by man. Salinity and sediment type are the most important factors. Shallow, protected areas, such as Alder Cove, Cathlamet Bay and Youngs Bay, that have intermediate salinity and mixed sand and mud sediments are the most productive.

The organism of greatest interest has been the amphipod *Corophium salmonis*, because it is an important food for downstream migrant salmon (for fall chinook in particular), and because it plays an important role in the estuarine food chain. Populations of this small shrimp-like organism are used as an indicator to judge the value of tidal flats, though no quantitative relationship between population and productivity has been established. *Corophium salmonis* is the dominant benthic organism (in numbers and biomass) found in most areas of Youngs Bay. While this organism is found in many parts of the estuary, Youngs Bay is one of the richer areas and is known to be an important feeding area for juvenile salmon, starry flounder, longfin smelt, sculpin and other fish species.

Salmon and trout are the most important commercial species found in Youngs Bay. Adult fall chinook enter the estuary during late August, are most abundant in early September, and spawn by late September or October. The Klaskanine Hatchery, the South Fork of the Klaskanine River and the Lewis and Clark River support the most important runs in the Youngs Bay watersheds. Most juvenile fall chinook migrate to sea from March to November as subyearlings. During migration, they frequent shallow areas and river margins rather than deep channels. *Corophium* is their most important food in the estuary during spring and summer.

Adult coho salmon run during late summer and fall and are fished in Youngs Bay. The Klaskanine Hatchery, the Klaskanine River, the Youngs River and the Lewis and Clark River all support runs. Most juvenile coho go to sea as yearlings in May. Their diet in the estuary is thought to consist of *Corophium*, small fish and insects. They tend to migrate more quickly and in deeper water than the fall chinook.

Chum salmon were formerly very abundant in Youngs Bay, but are now nearly extinct. The adults return late in the season and spawn closer to tidewater than is the case with other salmon. The juveniles migrate earlier than other salmon (March to May) and eat *Corophium* and other benthic organisms.

Cutthroat trout are in youngs Bay and tributary streams in all seasons, but are most numerous during the spawning season (December to January). There are runs in the Lewis and Clark River and possibly other streams, but no hatchery program. Winter steelhead return between November and March. Runs are supported by the Klaskanine Hatchery, the Klaskanine River, the Youngs River and the Lewis and Clark River. Juveniles of both cutthroat and steelhead may spend several years in the river before migrating to sea.

Shad spawn in Youngs Bay tributaries, starry flounder and longfin smelt use the bay as a nursery and numerous other fishes use the bay as a feeding area.

Because of the loss of upriver salmon habitat, the estuary tributaries and Youngs Bay in particular will probably play an increasingly important role in salmon propagation in future years. In addition to the state hatchery program, Astoria fishermen have started their own fishrearing program, with ponds on Tucker Creek.

While the lower estuary is not as heavily used by waterfowl as the upper estuary, the marshes and flats support significant populations of both resident and migratory waterfowl. Wading birds such as blue herons, shorebirds, gulls, colonial nesting birds, gamebirds and other varieties are found along the shoreline.

#### HUMAN USE

The primary uses are boating, sports fishing, commercial fishing, log transport and channel maintenance.

ISSUES AND FINDING

Youngs Bay is surrounded by Warrenton and Astoria. Several recent land use disputes have centered around fills in Youngs Bay or uses of nearby shorelands that might have polluted the bay. Prime industrial sites on Youngs Bay shorelands include the area west of Pier 3, the east peninsula of the Skipanon River (the Brown and Root site), and the Astoria Airport. These sites could be made larger by filling productive shallow areas. Dredging an entrance channel into the Lewis and Clark River was authorized, but was not economically feasible. This project and maintenance dredging of the authorized channel in Youngs River will probably be suggested in the future. The use of the bay and tributaries for fish propagation will probably also increase.

Major limitations on development surrounding the bay include the impacts of each development, the cumulative effects of all developments, and limited land transportation west of Youngs Bay. Navigational access to the Youngs Bay shorelines is limited by fringing tidal marshes, shallow water and the high shoaling rate. Commercial use of the bay in the near future will probably be limited to log transport and fishing. Recreational boating and fishing will probably increase.

The old PP&L power plant facility has the potential for development of either water dependent or other uses of moderate size. Water access to the site could be developed with minimal impacts on aquatic productivity.

SUBAREA POLICIES

1. Dredging of shallow biologically productive areas adjacent to dikes as a source of material for dike maintenance shall be allowed upon a demonstration that:
  - o Alternative sources of material are not available or are not economically feasible;
  - o The dredging method selected will not leave potholes where juvenile salmon and other fishes might be stranded at low water; and
  - o Other disruption of tidal flats and tidal marshes is minimized.
2. Minor dredging shall be permitted in all areas where necessary to open drainage channels from tide boxes to deeper water to assure efficient operation of the drainage system.
3. Subject to conditional use procedures, shallow draft water access may be developed at the old PP&L facility

P32.2 LEWIS AND CLARK RIVER

GENERAL DESCRIPTION

Extending from the west footing of the Lewis and Clark River Bridge south along Alternative Highway 101, passing through the floodplain to the shoreline near Fort Clatsop National Monument, and continuing to an area west of the Fort Clatsop Loop Road. Returning to the Fort Clatsop Loop Road and following the road to the location of the Crown Zellerbach log dump, thence following the edge of the floodplain around Johnson Slough and crossing the floodplain to join with the Fort Clatsop Loop Road near the bridge connecting with the Lewis and Clark Road. Following the Western edge of the floodplain and shoreline to the south, from the area near the west end of the bridge to the upper reaches of the Lewis and Clark River, circling to return along the shoreline and eastern perimeter of the floodplain to an area east of the bridge connecting the Fort Clatsop Loop Road with the Lewis and Clark Road. Following the Lewis and Clark Road north, crossing Petersen Slough west of the road and paralleling the road until turning west toward Green Slough. Passing through the floodplain to cross Green Slough and Barrett Slough, ending at the southern edge of Jeffers Slough.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

The tides, circulation, sedimentation patterns and aquatic life of the Lewis and Clark River system have been discussed under subarea P32.1, Youngs Bay. The average freshwater flow of the Lewis and Clark River is about 250 cfs; some water is diverted from this river basin to the water system of the City of Warrenton. Tidal influence extends under low flow conditions to about RM 11.

Important tidal marshes remain along the west bank near the mouth (RM 1.8 to 3.5) and adjacent to Fort Clatsop National Memorial (RM 4). Numerous small and fringing marshes remain. Diked, freshwater marshes have not been fully inventoried. Bird use of the river and marshes for feeding and nesting is moderate, though not as high as in Cathlamet Bay and other areas further upriver.

#### SHORELAND FEATURES

Most shorelands in this reach are low, diked lands in the 100-year floodplain. Soils are of the Coquille-Tidal Marsh (fresh) - Clatsop and Walluski-Knappa Associations. The soils are fair to good for agricultural use. Most of the land is or has been in agricultural production. There is little commercially valuable timber, but adjacent uplands are highly productive timberland. Wildlife values are high; deer, elk, and small mammals are found.

#### HUMAN USE

The important land uses are agriculture (largely grazing), rural housing, and the Crown Zellerbach log dump. Highway access is provided by U.S. Highway 101 (alternate) and county roads. Water is private or provided by the Lewis and Clark Water District. There is no sewer system. The scenic value of the river is high. The Fort Clatsop National memorial commemorates the winter headquarters of the Lewis and Clark Expedition. There are several public access points for fishermen. The major human uses of the waters are fishing, log sorting, storage and transport, and recreational boating. There are two active diking districts in the subarea; most dikes are maintained by barge-mounted dragline.

#### ISSUES AND FINDINGS

There is very little development potential because of the flood hazard, poor transportation network and distance from developed areas. Some housing development may occur on adjacent upland areas.

Significant issues in this subarea include the location of Exclusive Farm Use Zones and water related issues such as the preservation of diked freshwater wetlands, log storage in wetland areas where logs may go aground at low water, and the dredging of shallow productive areas for fill material to maintain dikes. Dredging of the Lewis and Clark River Connecting Channel (10 feet deep and 150 feet wide) was at one time authorized, but has since been de-authorized. However, private dredging regularly occurs in the river.

Maintenance of fresh water flow and water quality during summer minimum flow periods is important for continuation and enhancement of fish runs. There is potentially a conflict between public water supply and the need to maintain minimum stream flows.

This subarea includes hundreds of acres of farmland and many residences which are dependent upon an extensive diking and drainage system for protection from flooding. The maintenance of this system is the responsibility of local diking districts which have limited funds. In some instances the only economically feasible source of material for dike maintenance is the river bottom sediments outside the dike.

Lands behind the dikes are drained by a system of tide boxes. For the tide boxes to function effectively, the area outside the dike in front of the tide boxes must remain low enough so that water will move through the tide boxes and drain into the river at low tide. Because of substantial shoaling in some areas, limited dredging of tide box drainage channels is necessary.

#### SUBAREA POLICIES

1. Existing log storage areas should be inventoried to determine where logs rest on the bottom at low water. Use of these areas should be minimized and phased-out as new sites adequate to meet industry needs are provided.
2. Dredging of shallow biologically productive areas adjacent to dikes as a source of material for dike maintenance shall be allowed upon a demonstration that:
  - o Alternative sources of material are not available or are not economically feasible;
  - o The dredging method selected will not leave potholes where juvenile salmon and other fishes might be stranded at low water; and
  - o Other disruption of tidal flats and tidal marshes is minimized.
3. Minor dredging shall be permitted in all areas where necessary to open drainage channels from tide boxes out to deeper water to assure efficient operation of the drainage system.

#### P32.3 MILES CROSSING

#### GENERAL DESCRIPTION

Extending from the intersection of Clover land with Jeffers slough at the southwest, around the peninsula separating the Lewis and Clark River and the Youngs River, and ending at Miller Slough toward the southeast.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

The only aquatic areas in this subarea are diked sloughs. Some of these sloughs have moderate waterfowl habitat value, and some may harbor warm-water game fish. The sloughs are the major collections for drainage of the low-lying diked lands in this area.

#### SHORELAND FEATURES

These shorelands, except for the causeway fill for the U.S. Highway 101 (alternate) Bridge over the Youngs River, are diked. The area is entirely within the 100-year floodplain, with the exception of the highway and some lands north and west of the highway that are in the 500-year floodplain. Dike maintenance by the diking districts is described by the Corps of Engineers as generally adequate. Areas on both rivers have been rip-rapped by the Corps of Engineers in the last decade to protect against erosion.

Soils are of the Coquille-Tidal Marsh (fresh) - Clatsop Association and topography is flat. Because the land is very low, the agricultural suitability is fair to moderate, and there is no timber of commercial value.

#### HUMAN USE

The major agricultural use is grazing. Other land uses include rural and low-density residential housing, commercial uses and light industry. The only water-related uses are the AMCO Shipyard on the Lewis and Clark River and boat construction at the mouth of Cook Slough on the Hess property. Commercial and industrial uses are concentrated along U.S. Highway 101 (alternate), which as access to Warrenton and Astoria. County roads provide access to nearby rural areas.

There is no sewer system, and septic tank suitability is very poor. It is unlikely that permission could be obtained to discharge sewage into Youngs Bay. Therefore, sewerage the area would require connection to the Warrenton or Astoria sewer systems. Water is provided by two water districts.

Water and marsh areas adjacent to this subarea are used for hunting, fishing, boating and trapping. Some shoreline views are scenic.

#### ISSUES AND FINDINGS

The planning process has included extensive discussion as to whether major portions of this subarea should be included in Astoria's Urban Growth Boundary. The City and some commercial interests favored inclusion. A large majority of area residents who voiced their opinion were opposed. A decision was made not to include the area. Future inclusion is possible (see subarea policy below).

The area has significant development potential due to its proximity to Astoria and the availability of significant portions of flat land. This potential is constrained, however, by the lack of sewers, flood hazard, and poor soil suitability. Water oriented development is feasible only along the Lewis and Clark River.

This subarea includes hundreds of acres of Exclusive Farm Use Land and many residences which are dependent upon an extensive diking and drainage system for protection from flooding. The maintenance of this system is the responsibility of local diking districts which have limited funds. In some instances the only economically feasible source of material for dike maintenance is the river bottom sediments outside the dike.

Lands behind the dikes are drained by a system of tide boxes. For the tide boxes to function effectively, the area outside the dike in front of the tide boxes must remain low enough so that water will move through the tide boxes and drain into the river at low tide. Because of substantial shoaling in some areas, limited dredging of tide box drainage channels is necessary.

#### SUBAREA POLICIES

1. The Rural designation in the Miles Crossing area recognizes that there are no plans to include this area in the Astoria Urban Growth Boundary (UGB) at this time. However, there are commitments between the County and City to reconsider the UGB issue during future review and update of plans. In the meantime, the nature and intensity of new uses should be consistent with the Rural designation and availability of public services.
2. Dredging of shallow biologically productive areas adjacent to dikes as a source of material for dike maintenance shall be allowed upon a demonstration that:
  - o Alternative sources of material are not available or are not economically feasible;
  - o The dredging method selected will not leave potholes where juvenile salmon and other fishes might be stranded at low water; and

- o Other disruption of tidal flats and tidal marshes is minimized.
3. Minor dredging shall be permitted in all areas where necessary to open drainage channels from tide boxes out to deeper water to assure efficient operation of the drainage system.

#### P32.4 YOUNGS RIVER

##### GENERAL DESCRIPTION

This area is divided into three reaches. First: extending from the south shore of Miller slough to the area south of Sales Slough. Second: reach (a) to (a'), extending from the southwest edge of the Astoria City limits (a) along the shoreline to cross Highway 202 north of Crosel Creek, then crossing Highway 202 south to the Walluski River, following Highway 202 north of the Walluski River Bridge, extending east to the area where Walluski Loop Road crosses the Walluski River, and then south to (a'). Third: reach (b) to (b'), extending north from (b) along the southern edge of the Walluski River Bridge and extending south from the confluence of the Walluski River and Youngs River to (b').

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

Area 2: This area is divided into two reaches. first: extending from the area south of Sales Slough west to the Youngs River Loop Road, around Binders Slough, and south connecting with Youngs River Loop Road near Tucker Slough. Then southeast, following around Battle Creek Slough and extending through and along the floodplain to connect with Youngs River Loop Road southwest of the confluence of Youngs River and the Klaskanine River. Then following the Youngs River Loop Road and the floodplain to connect with the shoreline of Youngs River near the Youngs River Falls, and turning to extend northeast along the edge of the floodplain, following east to the upper Klaskanine River. At the upper Klaskanine River floodplain, extending northwest along the floodplain perimeter, circling Cooperage Slough to follow the shoreline and extend along the floodplain to Highway 202, and along Highway 202 to the north.

Second; reach (c) to (c'), extending from (c) on the east edge of the upper Walluski River floodplain, following the perimeter of the floodplain to the south, and circling to the west and north to (c').

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

##### AQUATIC FEATURES

The tides, circulation, sedimentation patterns, navigational channel and aquatic life of the Youngs River system have been discussed under 42.07, Youngs Bay. The average fresh water flow of the Youngs River is about 600 cfs at the mouth. tidal influence extends under low flow conditions to Youngs River Falls (RM 13), which is a significant scenic attraction. The falls cut off any

possibility of anadromous fish spawning in a large part of the Youngs River watershed. The largest remaining tidal marshes are Fry and Grant Islands, between RM 7 and 8, and Cooperate Slough, at RM 9. Most areas that were historically marsh have been diked. Numerous small and fringing marshes remain. Diked, freshwater marshes have not been fully inventoried. Bird use of the river and marshes for feeding and nesting is moderate, though not as high as in Cathlamet Bay and other areas upriver.

#### SHORELAND FEATURES

Most shorelands in this reach are low, diked lands in the 100-year floodplain. Soils are of the Coquille-Tidal Marsh (fresh) - Clatsop, Walluski-Knappa, and the Nehalem Associations. The soils are fair to good for agricultural use. Most of the land is or has been in agricultural production. There is some commercially valuable timber and adjacent uplands are highly productive timberland. Wildlife values are high; deer, elk, coyote and small mammals are found.

#### HUMAN USE

The important land uses are agriculture (both grazing and crops) and rural housing. Highway access is provided by State Highway 202 and county roads. Water is private or provided by three water districts; there is no sewer system, except at the old naval hospital. The scenic value of the river is high. There is a County Park at Youngs River Falls and there are several undeveloped access points for fishermen.

The major human uses of water areas are fishing, log storage and transport, and recreational boating. There is one active diking district and one defunct diking district on the Youngs and Klaskanine Rivers; most dikes throughout the area are maintained by barge-mounted dragline.

#### ISSUES AND FINDINGS

There is little development potential, because of the flood hazard, poor transportation network and distance from developed areas. Housing developments may occur on adjacent uplands areas. The old naval hospital site (the Drucker Property) is on high ground near the intersection of the Youngs and Walluski Rivers, has water and sewer systems, and could be developed. Increased residential use in the Youngs River area is likely.

Significant issues in this subarea include the location of Exclusive Farm Use Zones and the possible extension of the Astoria Urban Growth Boundary. Water related issues include the preservation of diked, freshwater wetlands, log storage in wetland areas where logs may go aground at low water, and the dredging of shallow productive areas for fill material to maintain dikes.

This subarea includes hundreds of acres of farmland and many residences which are dependent upon an extensive diking and drainage system for protection from flooding. The maintenance of this system is the responsibility of local diking districts which have limited funds. In some instances the only economically feasible source of material for dike maintenance is the river bottom sediments outside the dike.

Lands behind the dikes are drained by a system of tide boxes. For the tide boxes to function effectively, the area outside the dike in front of the tide boxes must remain low enough so that water will move through the tide boxes and drain into the river at low tide. Because of substantial shoaling in some areas, limited dredging of tide box drainage channels is necessary.

A boat construction facility is located immediately adjacent to the tide box at the mouth of Cook Slough. This facility was built and utilized for the construction of wooden fishing vessels in the 1930's and 1940's. Following a

period of inactivity, steelhulled fishing vessels are presently being built at this location. Extensive shoaling in this area has substantially reduced water depths in the area, however, and launching the vessels is extremely difficult. Vessels can be only partially completed (bare hull and house) before launching in order that their draft is minimized. Even under these circumstances, all launching activities must occur at high tide.

The dredging of a "pothole" in the area would allow vessels to be launched in a safe manner and would permit the vessels to be moored at this location while the final outfitting takes place. Movement out to the main river channel could then occur at high tide. Continued shoaling of this area, however, could result in shallow water depths which would not allow the movement of these vessels (drafts of approximately 9 feet) out to the river channel even on the highest tides. Under those circumstances a plan amendment to permit limited dredging for ingress and egress to the area would be appropriate.

The Youngs River subarea contains significant natural values which should be protected. Except for extensive diking, people have changed this environment to a lesser extent than other portions of the estuary. There is a substantial local and state investment in fisheries enhancement. The state operated a fish hatchery on the Klaskanine River and the Clatsop Economic Development Committee operated fish rearing ponds near Tucker Creek. Expansion of these fish-rearing efforts is being planned. The construction of a fish ladder at Youngs River Falls and the use of the area for mitigation sites could result in development of the river as an extremely valuable fisheries resource.

#### SUBAREA POLICIES

1. Existing log storage areas should be inventoried to determine where logs rest on the bottom at low water. Use of these areas should be minimized and phased-out as new sites adequate to meet industry needs are provided.
2. Dredging of biologically productive areas adjacent to dikes as a source of material for dike maintenance shall be allowed upon a demonstration that:
  - o Alternative sources of material are not available or are not economically feasible;
  - o The dredging method selected will not leave potholes where juvenile salmon and other fishes might be stranded at low water; and
  - o Other disruption of tidal flats and tidal marshes is minimized.
3. Minor dredging shall be permitted in all areas where necessary to open drainage channels from tide boxes out to deeper water to assure efficient operation of the drainage system.
4. To protect present investments and the future potential of the fisheries resource of the Youngs River, new development in the area shall be carried out so as to preserve water quality, biological productivity, and other factors which contribute to fisheries production.

#### P33. EASTERN CLATSOP PLAN

##### THE PLANNING AREA

The establishment of the planning area boundary for the Eastern Clatsop area was based on evaluation of potential shoreland hazards, important shoreland habitat areas, areas needed for water oriented development and scenic resources. The Eastern Clatsop planning area extends from the eastern border of Clatsop County west to the mouth of the John Day River. Streams included are the John Day River, May's Creek, Bear Creek, Big and Little Creeks, Gnat Creek, Plympton Creek, and all other streams eastward to the border of Clatsop County. Planning, management and regulatory jurisdictions include Clatsop county, State of Oregon, and federal agencies.

### MAJOR ISSUES AND DECISIONS

Major issues included fish and wildlife protection, the need for development areas along the river, maintenance of agricultural lands, recreational water access to the river, and the use of navigable waters for houseboats, float houses and private docking facilities. Restoration of dikes long in disrepair has also emerged as a significant issue. These issues are addressed either through regional policies area or subarea policies, and other plan provisions.

The western portion of the Eastern Clatsop planning area is rural, with little intensive development. The plan designations reflect this. This western area has no deep water access and commercial fishing, fish production at hatcheries, and recreational use of sloughs and adjacent wildlife refuge areas are important.

The eastern end of this planning area is adjacent to the main Columbia River ship channel and has rail and highway access. A small potential waterfront development site exists at Bradwood.

### AREA POLICIES

#### 1. Recreational Access to the Estuary

Clatsop County has emphasized its great recreational resources by developing parks and picnic areas, boat launch sites, and beach access points throughout the Columbia River estuary. To meet the needs of hunters, fishermen, and boaters in the Eastern Clatsop county area, boat launch sites are presently located at the John Day River, Aldrich Point and Westport. Other access points providing recreation for the public are at Bradley Wayside and at Tongue Point. Generally, public access to the river is adequate with some potential for improvement, although limited. Foot and/or bicycle paths along shoreline bluffs would be appropriate if they would not impair fish and wildlife habitat or interfere with agricultural use. Boat landings, docks and scenic viewpoints would also be appropriate if privately owned shorelands are protected from encroachment. Additional locations for public recreational access or expansion of existing facilities should be jointly considered by interested state agencies and the County to assess local needs and to protect the environment. The Aldrich Point boat launch facility, however, except for general maintenance requirements, should be adequate for many generations. The current facility consists of one boat lane on one acre of land at the terminus of a long, narrow winding country road that passes through some of the best dairy land in the County. Typical of a country road are the numerous cattle crossings, playing children and slow vehicles. Additional use of the facility could destroy the rural lifestyle of the area. In addition, to the east, along the railroad tracks, an eagle's nest has been cited. The Nature Conservancy has suggested protecting this area in order to attract as many eagles to the point as possible.

The Eastern Clatsop Planning Committee recognizes the importance of providing public access to the Columbia River and its tributaries and sloughs. But, because of the area's natural environment for wildlife and the desire to protect areas from overuse and potential damage and in consideration of the rural nature of the area, these access points should be limited.

In consideration of expansion of existing or new potential locations, a public hearing should be held to assess the needs of the area and the following standards should be met:

- o Access from the U.S. Highway 30 must be appropriately located and designed to provide for safe exist from and entry to the highway by large motor homes and vehicles pulling trailers.

- o State or County roads connecting U.S. Highway 30 with access points must be capable of handling the types and volumes of traffic that such a facility would create.
- o The impacts of site development and the resulting traffic upon local residential areas shall be carefully considered. The County will reject proposals which will have undue impacts on local citizens.
- o Before any overnight facilities are established at any public or private parks, consideration should be given to their impact on the area (i.e. streams, tributaries, sewage disposal, garbage, roads). These facilities, if they are developed, should be self-supporting and aesthetically pleasing.

## 2. Eagles

Eagles should be given full protection because the eagle is the national symbol of freedom, is an endangered species with only 708 breeding pairs in the lower 48 United States and only a few know pairs in Clatsop County, and is part of the eco-system of the Columbia River estuary with migrating eagles from Alaska wintering in Clatsop County. A five acre buffer area around trees containing nests should be protected from logging operations, so that the nest is not subject to blowdown as it might be under existing regulations.

## 3. Filling of Shallow Waters and Wetlands

The contribution of shallow water areas, fresh water marshes, and wetlands to the biological productivity of the Columbia River estuary is significant. The indiscriminate filling of such areas is discouraged. However, to develop the areas designated for Development, dredging and filling may be necessary. Potential development areas on both sides of the Columbia River should be surveyed. Those requiring the least amount of fill in shallow estuarine waters, fresh water marshes or wetlands, should be ranked first and those requiring the most fill be ranked last. Using additional requirements such as economic factors and the needs and goals of a given area, those areas ranked first on the list should be developed first.

## 4. Fishing Industry

Fishing is a traditional industry and lifestyle in the Columbia River estuary area and has been an important part of the history and development of Clatsop county. It remains a major factor in the economy. Columbia River salmon are internationally acclaimed and the loss of the fishing industry would mean a loss of identity for this area.

- o Boat houses, net floats and associated fisheries related facilities should be allowed in waters designated Conservation.
- o Logging practices in the Columbia River drainage area should be strictly enforced as outlined in the Forest Practices Act to maintain a high degree of water quality.
- o Industrial development permitted along the Columbia River and its tributaries should be compatible with the fishing industry. In particular, any waste water returned to the river or its tributaries should meet or exceed the quality of the surrounding river water.
- o Recognizing the possible harmful effects of log storage to the fisheries, the timber industry is encouraged to find alternatives to water storage of logs.
- o Dredging and filling of wetlands and water areas should be minimized.
- o Additional oil tanker traffic on the Columbia River is discouraged. New oil port facilities present a hazard to the fishing industry.
- o Because of the importance of the Gnat Creek and Big Creek Hatcheries, activities or development that could be detrimental to their water quality are discouraged in these creeks or the waters into which they drain.

- o Steps to increase native or hatchery runs on Plympton Creek, Little Creek, Mary's Creek, Ferris Creek, Bear Creek or the John Day River are encouraged.

5. Houseboats and Floathouses

Residential use of protected waterways is a way of life in the Columbia River estuary area. In eastern Clatsop County, the John Day River and the Svensen Island area are historical moorage areas for residential floathouses.

Existing houseboats and floathouses should be allowed to continue. However, expansion of this activity should not occur. Current regulations of the Oregon Department of Environmental Quality concerning sewage disposal indicate that additional houseboats and floathouses are unlikely. In addition, these residences block navigable waters which could otherwise be used by the public.

6. Industrial Development

Continued economic development in Northeast Clatsop County is essential for the well-being and livelihood of the people who have lived here and who wish to live here.

To promote environmentally sound development consistent with maintaining the unique character of the area, the following are encouraged:

- o Timber production, which is highly suited because of rainfall and soils;
- o Forest products industries, to locally process local timber;
- o Waterways and ports, for energy efficient transportation of goods and minimization of the need for overland transfer of products;
- o Production of fish by both hatchery and natural means, to more fully utilize ocean resources and provide for their local commercial and sports harvest.

7. Natural Areas

Natural areas in the Columbia River estuary provide habitat for wildlife including eagles, great blue heron, waterfowl, deer, and elk; maintain an aesthetically beautiful area, basically unaltered by man; preserve areas of unique or valuable vegetation; and preserve areas of historical significance for future generations.

Natural areas are necessary to maintain a healthy balance with development and to maintain the existing quality of life in this area, and should be given full protection to ensure their preservation.

8. Nuclear Power Plant Siting

Although the Oregon Nuclear and Thermal Energy Council designated eastern Clatsop County as being unsuitable for the siting of a nuclear power plant, the Washington Public Power Supply System listed a site adjacent to the Brownsmead areas as one of the twelve sites they are considering.

Construction of nuclear power plant and the storage of radioactive waste should not occur in northeast Clatsop County because:

- Potential adverse impacts in the fishing industry due to changes in the water temperature when cooling water is returned to the river and from construction impacts on the streams;
- Effect of low level radiation on adjacent agricultural practices, particularly the dairy industry;
- Lack of facilities in the United States for longterm storage of radioactive waste;
- Safety factors which include the possibility of accidents and natural catastrophies as well as the long term risk of continued radioactivity at a site after a plant is shut down.

9. Agriculture

The low-lying areas adjacent to the Columbia River estuary (in particular the Brownsmead area) have the most potential for agricultural development in

Clatsop County. They produce excellent forage to support the dairy industry and are noted for quality peas and corn. These agricultural lands should be protected for their agricultural value.

These same areas are also important feeding, resting, and nesting areas for migrant waterfowl. At least three herds of elk graze in the area. Many furbearers are trapped each winter from the sloughs. To preserve this important agricultural and wildlife area:

- oThe diked lands of Brownsmead should be designated for exclusive agricultural use (EFU) zone. This would discourage housing developments, subdivision of farms into small uneconomical units, and would keep property taxes low thus encouraging farmers to make long term plans and investments.
- oThe Forest Practices Act should be strictly enforced in all watersheds that drain into agricultural lands. Poor drainage is a major problem in low-lying farm areas. Strict implementation of the Forest Practices Act would help keep siltation of sloughs and drainage ditches to a minimum.
- oCleaning of sloughs and ditches and dike maintenance should be allowed under the supervision of the local diking districts and in cooperation with the Clatsop Soil and Water Conservation district.
- oTrapping of furbearers should be encouraged to minimize crop and dike damage.

### P33.1 JOHN DAY RIVER

#### GENERAL DESCRIPTION

This area includes shorelands extending from south Tongue Point, east of Highway 30, and following the floodplain to cross Highway 30 near the highway bridge. Following the west perimeter of the floodplain south along the John Day River and including areas of the floodplain at the upper John Day River to the southeast. Turning to follow the floodplain north along the east side of the John Day River, following Highway 30 near the highway bridge, and then north along the floodplain perimeter to John Day Point.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

While the types of fish present in the John Day are varied, the numbers are not large. During the fall, there are cutthroat trout, some coho salmon, and maybe a small number of Chum salmon. During May and June, there is a substantial run of American Shad which spawn around the head of tide. Other species which occur throughout the year are carp, largemouth bass, crappie, yellow perch, catfish, and other rough fish.

A large tidal marsh area has developed at the mouth of the river on the west side, south of the railroad fill. Other wetland marsh areas exist upstream along the river bank.

Water depths are a relatively shallow 4 to 12 feet. While the river is considered navigable for a distance of three miles, there is no authorized channel project. River flow from the small drainage basin is low, particularly in the summer. There is minimal sediment transport, and flushing is slow.

There is little salt water intrusion, except during very low Columbia River flow periods. The aquatic ecosystem of the John Day River is thus freshwater in nature.

#### SHORELAND FEATURES

The shorelands are predominantly diked tidelands used for low intensity agriculture. There are also small forested shoreland areas. The shorelands have moderate wildlife value. Deer and elk, along with smaller wildlife, frequent the area and several bald eagle nests have been located in adjacent upland areas.

Shoreland soils are the Coquille-Tidal Marsh (fresh)-Tolovana Association. These lowlands have high flooding potential (most of the area is within the 100 year floodplain), relatively high ground water level, and moderate agricultural stability.

Some dikes along the river are low or in poor condition and erosion and undercutting of the dikes is a significant problem.

#### HUMAN USE

Existing land and water use includes agriculture, forestry, shoreland residences, houseboats, and recreation. To protect low-lying shoreland areas, there are dikes and fourteen tidegates located along the river. Adjacent land uses are mostly related to forestry.

Ownership is mostly private with some county, state and cooperative owners. There is a newly improved public boat launching ramp on county land near the mouth of the river. There are also numerous private docks along the river. Access to the area is by water from the Tongue Point Basin and by road from Highway 30.

#### ISSUES AND FINDINGS

There is little potential for new development on the John Day River and its low-lying shorelands. The river itself is relatively narrow and shallow. Increased river traffic would conflict with existing houseboat uses and worsen the stream-bank erosion problem. The shorelands, being either low and flood-prone or steep and unsuitable for intensive development, also offer little potential for expanded use. Factors which could improve development potential in the future would be the use of low areas for disposal of dredged material and possible relocation of U.S. Highway 30.

Water quality and navigational access concerns related to existing houseboats may become a more significant issue in the future. State policies on dieland leasing, water quality standards and the area policy in this plan will prevent expansion of this residential use.

Another issue is dike maintenance and erosion control using materials dredged from the river. State and federal resource agencies discourage this practice.

The tidal marsh-mudflat areas just inside the river mouth are very shallow, are flooded on every tide, have significant fish and wildlife values, are publicly owned, and have little potential for any development activities. It is in the public interest to protect these natural resource values.

The low intensity recreational uses of the river, the fishery resources and wildlife values should be protected while providing for limited developed uses.

## P33.2 JOHN DAY POINT - SETTLERS POINT

## GENERAL DESCRIPTION

This area includes shoreland extending from John Day Point following the northern edge of the Burlington Northern roadbed to the southeast. Crossing the Burlington Northern tracks to include the shoreline of two tidal wetlands ((a) and (b)) to the southwest of the roadbed, and returning to the northern edge of the roadbed to the area of the Twilight Creek wetlands. Crossing the railroad at the shoreline west of the Twilight Creek wetlands and following the southern perimeter of the floodplain, including area south of the Burnside Loop Road. Returning to the north side of the Burlington Northern roadbed, near the east end of the railroad causeway crossing the Twilight Creek wetlands, and extending to Settlers Point.

**SHORELANDS BOUNDARY:** Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

## AQUATIC FEATURES

There are fringing tidal marshes adjacent to the railroad along much of the shoreline. Dominant vegetation includes sedge, bulrush, marsh horsetail, common cattail, Pacific water parsley, and many other species. Tidal flats adjacent to marshes are productive for benthic algae, bacteria, microscopic invertebrates and larger invertebrates such as small clams, worms, and amphipods which characterize freshwater areas of the estuary. The tidal range at Settlers Point is 6.3 feet (as compared to 6.5 feet at Tongue Point) and the diurnal range is 8.0 feet (8.2 feet at Tongue Point). Salinity intrusion may occur in this area but has not been documented. The area is well-flushed.

## SHORELAND FEATURES

Soils in this area include the Tolovana and the Walluski-Knappa Associations. Flood potential is low and there is a seasonally high water table. The soils have a very low suitability for agriculture. Soil movement hazards are present to the west of Twilight Creek. While the movement is not rapid, it is present almost every winter, intruding on U.S. Highway 30.

Shoreland vegetation is characterized by shrub willow, alder, Sitka spruce, and Douglas fir. Wildlife in the area includes blacktail deer, elk, and small mammals. Furbearers such as nutria and bear may be present.

## HUMAN USE

Existing uses in the area are forestry and scattered residential uses. The railroad runs along the shoreline. There is also in-water log storage east of Twilight Creek. There is a mixture of state and private ownership, with minor holdings by the county. Physical access to the water is limited to private shoreline structures.

## ISSUES AND FINDINGS

There is limited development potential in the area. Some expansion of residential uses at Settlers Point may occur in the future.

The tidal marshes at the mouth of Twilight Creek have been intensively studied and are a valuable natural resource. The marshes are primarily in private ownership and are managed for waterfowl hunting by a local club. There

are several small docks and walkways giving access to tidal channels cut in the marshes. Low intensity recreation is the dominant use of these marshes. Continued need for maintenance and possible improvement of docks and duck shacks is expected. Demand for recreation facilities requiring major alterations, however, is not expected.

### P33.3 SETTLERS POINT EAST TO IVY STATION

#### GENERAL DESCRIPTION

This area includes shorelands extending from Settlers Point across the Burlington Northern tracks south, following the perimeter of the floodplain west of Marys Creek, and turning north along the eastern Marys Creek floodplain from the area near Make Road (old Highway 30). Returning to the north of Highway 30 and turning south to follow the western margin of the Bear Creek floodplain, extending under the Highway 30 bridge. Following the eastern edge of the Bear Creek floodplain north to cross the Burlington Northern roadbed and extend east along the northern edge of the roadbed across the southern footing of the bridge to Svensen Island. Then extending south along the floodplain, including the west and east perimeter of the Ferris Creek floodplain. Finally, extending along the northern edge of the Burlington Northern roadbed to Ivy Station.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

The wetland areas at the mouths of Mary's, Bear and Ferris Creeks were at one time diked and in agricultural use. Dikes and tidegates have fallen into disrepair or have been purposely breached. At Mary's and Bear Creeks, the wetland area influenced by tidal waters (6.5 foot diurnal tidal range) has completely reverted to tidal marsh vegetation, including sedges, bulrush and cattail. At Ferris Creek, there has been some establishment of wetland vegetation, but the area seems slightly higher and drier. The upper tidal reaches of all three streams and fringes along the marshes are forested and shrub wetlands, with Sitka spruce, willow and some alder.

Mary's, Bear and Ferris Creeks have small wild runs of cutthroat trout, steelhead, and coho and chum salmon; coho from state hatcheries have been placed in Bear Creek. wildlife values of the wetland areas and adjacent flats north of the railroad are high. Deer, elk, bear, aquatic and terrestrial furbearers, waterfowl, raptors, including bald eagles, and other wildlife use the area.

#### SHORELAND FEATURES

The soils in the area are primarily of the Coquille-Tidal Marsh (fresh)-Clatsop Association. These soils are characterized by a potential for flooding, a relatively high seasonal water table, and a low slope. Agricultural suitability is moderate, a class IV soil. East of Ferris Creek, the area adjacent to the planning area is much steeper (Walluski-Knapka Soil Association). Wildlife values of the shoreland area are similar to the other wetland areas, with deer, elk, bear, and small furbearers frequenting the area.

#### HUMAN USE

Intensity of human use is low in all wetland areas. Adjacent shorelands are used for rural residences, agriculture and some forestry. The shoreland and formerly diked wetlands are privately owned, except for a county-owned parcel on the west bank of Mary's Creek. Crown Zellerbach owns land south of U.S. Highway 30 on Mary's Creek. The watersheds have been logged and some areas replanted.

#### ISSUES AND FINDINGS

The major issue in this area is whether or not the formerly diked wetlands can be re-diked and placed into agricultural or other use. According to state and local policy, once areas have substantially reverted to wetland vegetation, repairing dikes and tide boxes is considered new diking. New dikes are permitted if the purpose is to provide for water dependent uses. New diking of wetlands for agricultural use would not be permitted. Proposals for restoring abandoned dikes on Mary's Creek and Ferris Creek have been made.

#### P33.4 SVENSEN ISLAND

##### GENERAL DESCRIPTION

In this area the entire portion of Svensen Island is within the 100 year floodplain.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary includes all of the diked area of Svensen Island.

##### AQUATIC FEATURES

Svensen Island is surrounded by tidal marshes which are dominated by sedge, bulrush and cattails. The undiked area is good habitat for aquatic and semi-aquatic animals including beaver, nutria, muskrat, and waterfowl. The productivity of adjacent tidal flats is likely to be moderate to high.

Fish found in the area include warm water species such as bass, crappie, suckers and carp. Sturgeon may also be present, particularly in the deep water areas north of the island. Juvenile salmon use of the area has not been studied, but this area, close to Big Creek (hatchery site), probably gets extensive use by feeding smolts.

##### SHORELAND FEATURES

The soils on Svensen Island are of the Coquille-Tidal Marsh (fresh)-Clatsop Association. These soils have a low slope, are subject to flooding, and have a seasonally high water table. These class III or IV soils are also moderately suitable for agriculture.

Much of the island is diked farmland used as pasture. The island is divided in half on the west by a shrubby wetland area with a small pond. The island is good wildlife habitat and is frequented by deer and small terrestrial mammals.

The diked portion of the island is in two large private ownerships. Aquatic area ownerships are a mixture of state, county and private.

##### ISSUES AND FINDINGS

Svensen Island dikes on the north side of the island have experienced problems with erosion. A series of pile dikes to retard erosion have been placed near the center of the island. Material to maintain the dikes is difficult to obtain.

Portions of the diked land used for agriculture are poorly drained and common rush is a dominant vegetation on much of the island. The wetlands inside the dike are protected from tidal flooding by a series of tidegates.

P33.5 IVY STATION - BIG CREEK

GENERAL DESCRIPTION

This area includes shorelands extending south from Ivy Station along the west margin of the floodplain, passing through the floodplain to the east, and continuing north to cross the Burlington Northern tracks in the vicinity of Calander Slough. Following the northern edge of the Burlington Northern roadbed toward Eddy Point, crossing the tracks to include the southern shoreline of estuarine wetlands (at (a)) lying between the roadbed and adjacent uplands to the south, then re-crossing the tracks to follow the northern margin of the Burlington Northern roadbed around Eddy Point.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

AQUATIC FEATURES

Tidal marshes surround Calendar Island and fringe the shoreline along the mainland north of the railroad. These marshes are similar in composition to others in the area; sedges, bulrushes and cattails predominate. Use by wildlife is significant. Fishery values in the area are high. Thousands of juvenile salmon smolt are released from the hatchery at Big Creek and no doubt use the tidal flats for feeding and to avoid predators. Warm water fishes are also common in the area.

SHORELAND FEATURES

The soils in this portion of the planning area are primarily the Coquille-Tidal Marsh (fresh)-Clatsop Association. These soils are typical of the lowlands adjacent to the estuary and are characterized by a low slope, high flood potential, and a high seasonal water table. There are no hazards except for tidal flooding in low-lying areas. The shoreland area at Ivy Station is diked pastureland and has a tidegate at the mouth of the creek.

Shoreland vegetation in this stretch includes cottonwood, Sitka spruce, and shrub willow. Wildlife in the area includes deer, elk, waterfowl, and many small mammals and furbearers. The nature Conservancy has identified a bald eagle nest in the Ivy Station area.

HUMAN USE

Agriculture and forestry are predominant uses, along with rural residences. North of Calendar Island, there are log storage areas.

ISSUES AND FINDINGS

There is little development potential in this subarea; existing uses are likely to continue. No major issues have been identified. Diked shorelands at Ivy Station are in private ownership. Other shorelands are either in state or corporate (Boise Cascade) ownership. Aquatic areas are primarily in state ownership, with some private.

## P33.6 BIG CREEK - LITTLE CREEK

## GENERAL DESCRIPTION

In this area shorelands extend along the northern margin of the Burlington Northern roadbed, crossing the tracks at the western end of the railroad causeway at the mouth of Little Creek and Big Creek to follow the perimeter of the floodplain containing the downstream portions of these creeks. Extending north along the eastern edge of the floodplain to the area west of Knappa Dock.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

## AQUATIC FEATURES

Big and Little Creeks, a large tidal spruce swamp at the mouth of the creeks, and Knappa Slough are all prominent aquatic features of this subarea. Natural resource values are high, particularly for fisheries.

A state salmon hatchery on Big Creek released six million fall Chinook salmon, 800,000 coho, 40,000 chum and 50,000 steelhead in 1978. The stream occasionally has a run of lamprey and has a wild population of cutthroat trout. Little Creek fish runs are primarily strays from Big Creek. Angler pressure is heavy on Big Creek. The drainage basin of Big Creek is 39 square miles. Creek discharges range from 21 cubic feet per second (cfs) to 538 cfs.

The approximately 125 acre tidal spruce swamp at the mouth of the creeks is undisturbed Sitka spruce forest, dominated by large, open-growth form of Sitka spruce and some red alder, vine maple, salmonberry, skunk cabbage, sedges and water-parsley. A variety of other wetland plants are also present. The daily tidal range in the swamp is approximately 6 feet in lower reaches. There is no intrusion of saltwater into this portion of the estuary, even on lowest river flows. Wildlife is diverse and rich, including owls, ducks, other waterfowl, blue heron, bald eagles, deer, raccoon, beaver, squirrels, muskrat, and nutria.

## SHORELAND FEATURES

The primary soil in this area is the Coquille-Tidal Marsh (fresh)-Clatsop Association. Portions of Little Creek flow through a group of soils known as the Nehalem Association. Many of the characteristics are similar, but the primary difference is the agricultural suitability: the Nehalem Association is mostly Class II soils, while the other is Class III and IV. The primary hazard in the area is the potential of flooding of the creeks, which also occurs upstream of tidal areas.

Wildlife values of the shorelands are similar to the wetlands with deer, elk, and furbearers frequenting the area.

## HUMAN USE

Agriculture on shorelands in the upper portion of the subarea is the most intensive human use. There is forestry on adjacent shorelands and recreational use of Big Creek is important further upstream. Little Creek is the source of water for the Wickiup Water District and one of several sources of water for the City of Astoria.

ISSUES AND FINDINGS

The major issue in this area is the need for protection of the old growth spruce swamp at the mouth of Big and Little Creeks versus private land use. The area has been inventoried by the Nature Conservancy and, based on the natural values described above, recommended for protection. Most of the spruce swamp is in a single corporate ownership (Boise Cascade), with a small portion in private farm ownership near the upper tidal reaches between the two streams. Both landowners vigorously object to a protective land use designation which would prevent their use of the area for forestry or agriculture.

The waters of Knappa Slough adjacent to Big and Little Creeks are important holding areas for adult anadromous fishes prior to ascending the streams to spawning grounds and the hatchery. This area should be protected from competing uses.

The Knappa Slough area also has significant historical and archaeological value. The shoreline of the slough was the site of an Indian village. The present Knappa Dock is also the first landing site of the Lewis and Clark expedition in Clatsop County.

The Knappa dock area, midway between public water access points on the John Day River and at Aldrich Point, has been proposed by the Oregon Department of Fish and Wildlife as a possible public boat launch site. Because of the inability of local roads to handle increased traffic and impacts on area residents and lifestyle, this has been opposed by local residents. This public access issue is addressed in an overall Eastern Clatsop policy.

SUBAREA POLICY

The Natural designation of the Big Creek spruce swamp recognizes the unique natural fish and wildlife values of this area. However, such a designation should not limit logging of adjacent shoreland and upland areas in accordance with the Oregon Forest Practices Act, and should not impede construction of a log sorting yard or similar support facilities on the uplands adjacent to the swamp.

P33.7 FERTILE VALLEY

GENERAL DESCRIPTION

In this area shorelands extend east along the shoreline past Knapp Dock, turning south to follow the shoreline of Warren Slough and an unnamed slough west west of Warren Slough. Crossing the Burlington Northern railroad tracks to follow the western margin of the Fertile Valley Creek floodplain. Passing through the floodplain to the east and extending north and then easterly to follow the floodplain between the Burlington Northern roadbed and Ziak-Gnat Creek Road.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

AQUATIC FEATURES

The natural resource characteristics of Knappa Slough are discussed in the Big Creek-Little Creek subarea. Fertile Valley Creek is diked with a tidegate near its mouth where it joins Warren Slough. The area is a private waterfowl reserve and receives significant wildlife use. Ducks and geese are common and

nesting areas have been provided. No fishery information is available on Fertile Valley Creek, but warm water fish are probably common.

#### SHORELAND FEATURES

Soils in the Fertile Valley area include the Coquille Tidal Marsh (fresh)-Clatsop Association on the lower portion of the waterway and the Walluski-Knappa Association on the remainder. The two associations have similar characteristics except the latter has less flooding potential and is better suited for agricultural practices (Class II and III soils). Shoreland vegetation consists of grasses and forest. Wildlife of the preserve is significant.

#### HUMAN USE

Agriculture and rural residential uses occur within the diked area. There are private water access points in both sloughs. Ownership is mostly private, with some corporate.

#### ISSUES AND FINDINGS

Development potential in the area is limited by land and soil characteristics. The area also has poor transportation access and no public facilities. There are no major land use issues, except for public access in the Knappa Dock area. This access issue was discussed in the Big Creek subarea and addressed by an overall Eastern Clatsop policy

#### P33.8 MOUTH OF BLIND SLOUGH

##### GENERAL DESCRIPTION

In this area shorelands extend from the area between the Burlington Northern roadbed and Ziak-Gnat Creek Road, at the eastern edge of the Fertile Valley Creek floodplain, along the margin of the floodplain just north of the road. Following between Ziak-Gnat Creek Road and the Burlington Northern roadbed, then turning to follow the northeast margin of the road as it turns to the southeast.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

##### AQUATIC FEATURES

The freshwater wetland areas north and south of Blind Slough are some of the largest, undisturbed tidal spruce and shrub swamps along the shoreline of the estuary. Natural resource values are high. The areas have not been extensively studied but the vegetation and wildlife use is probably similar to the Big Creek area. Sitka spruce, willow and alder make up the overstory with low wetland vegetation as an understory. The area is prime habitat for waterfowl, great blue heron, bald eagles, beaver, muskrat, nutria, and raccoon.

Fisheries are important in the area. There are large populations of warm water fishes including yellow perch and bass. Blind Slough is the navigation route for juvenile steelhead released upstream at Gnat Creek Fish Hatchery. The small sloughs are probably used for feeding by downstream migrant juvenile salmon from Big Creek and areas up the Columbia River.

Knappa Slough has been inventoried by the Nature Conservancy, and its tidelands, fringing marshes and riparian vegetation are described as valuable fish and wildlife habitat.

#### SHORELAND FEATURES

The only shorelands in this area are the strip along Ziak-Gnat Creek Road. Southeast of the road, the hill land is forested with Douglas fir and hemlock. The area is managed for forestry use.

#### HUMAN USE

Blind Slough and Knappa Slough are used extensively for storage and transport of logs. Warren Slough has numerous houseboats, used mainly for recreation. Fishing and boating are popular in the area, with a boating access point just upstream at Aldrich Point. There is little human use of the vegetated wetlands, which increases their value to wildlife.

#### ISSUES AND FINDINGS

The bulk of the wetlands north and south of blind Slough are owned by Western Transportation Company, with the remainder in a small private ownership. The soils are regularly inundated by fresh tidal waters, resulting in low value, small timber. There are no plans to log the area. Drainage is complex, with many small sloughs and channels. The tidal range is approximately 7.0 feet and there is no salt water intrusion this far upriver. These undisturbed wetlands have high natural values and need protection.

Blind Slough, Prairie Channel and Knappa Slough are among the more important log storage areas in the estuary. Water quality is good, the water is deep enough so that grounding at low water is not a problem, and there are no gillnet fish drifts in the area.

#### SUBAREA POLICIES

1. The Natural designation on the privately owned portion of wetland south of Blind Slough expressly provides for construction of a single residence at some future time on a piece of higher ground near the railroad. The residence would provide for a caretaker of the area, which is intended as a wildlife preserve.

2. Maintenance and possible expansion of log storage activities in Blind Slough are provided for in this plan. This area is well protected from winds and river currents, has relatively deep water and is one of the most important log storage areas in the estuary. The Conservation designation of the adjacent spruce swamps at the mouth of Blind Slough are intended to provide for protection of the natural vegetation and wildlife values, while not limiting adjacent log storage and transport activities. Logging in the swamp area shall not be permitted.

#### P33.9 GNAT CREEK

##### GENERAL DESCRIPTION

This area includes shorelands east of Ziak-Gnat Creek Road, extending south along the eastern margin of the road, past the Brownsmead Hill Road-Aldrich Point Road intersection, toward Highway 30. Continuing south of the intersection, crossing Ziak-Gnat Creek Road to include shorelands in the area of (a) and following the floodplain south, and then turning to the north. Extending north and east along the eastern perimeter of the floodplain to cross and follow the western margin of Aldrich Point Road, past Davis Creek. Extending across the floodplain on the west side of Aldrich Point Road to the cut-off section of Blind Slough.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

The fisheries value of the Gnat Creek area is very high. The Gnat Creek Fish Hatchery supports steelhead sport fishing in the creek. Most of the fish raised at the hatchery are transported and released at other streams in Oregon. Gnat Creek also supports a good run of fall Chinook, and some coho, cutthroat, and chum. The stream has good angler access.

The lands adjacent to Gnat Creek are wetlands subject to tidal inundation, though there is no salt water intrusion. While there are some forested areas with willow and spruce, most vegetation is shrub and marsh plants. Wildlife value of this area is high, particularly for small mammals, waterfowl, marsh birds and great blue herons.

#### SHORELAND FEATURES

The soil association in this portion of the management unit is the Coquille-Tidal Marsh (fresh)-Clatsop Association. The shorelands are leased farmland or forested, and wildlife in this area includes deer, elk, and small mammals. Some of the areas behind dikes are low and could be classified as freshwater wetlands.

#### HUMAN USE

The primary use of Gnat Creek is for recreational fishing. Shorelands are used for agriculture and there are some rural residences.

#### ISSUES AND FINDINGS

Gnat Creek, with its wetlands, riparian vegetation and important fishery, needs protection from major alterations. Some of the wetlands are formerly diked areas, but no dike restoration has been suggested. Some pressure exists for installation of private docks. The recreation value of the stream for sport fishing is high.

Shoreland and wetland ownership is mostly private, with a state-owned area near the upper reach of tidal influence.

#### SUBAREA POLICY

The conservation designation along Gnat Creek provides for low intensity uses. However, each project for docks, moorages or other alteration must be carefully evaluated. Projects which along or in combination with past alterations have a detrimental impact on fishery values shall not be permitted.

#### P33.10 BROWNSMEAD

#### GENERAL DESCRIPTION

In this area shorelands are described in two reaches. First: reach (a) to (a'), extending from (a) at Ziak-Gnat Creek Road following the floodplain margin to meet and follow the eastern edge of the road past the bridge crossing Blind Slough, and extending toward Gnat Creek to (a'). Second: reach (b) to (b'), extending north and westerly through the floodplain from (b) near the cut-off section of Blind Slough, crossing Barenose Road, and turning northwest after crossing the Burlington Northern roadbed. Then extending through the

floodplain parallel to the Drainage District No. 1 dike to meet and follow the west margin of Aldrich Point Road to (b').

**SHORELANDS BOUNDARY:** Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

Blind Slough is the main migration route for steelhead produced at the Gnat Creek Hatchery. There is a population of warm water game fish such as bass, crappie, and perch in Brownsmead Slough. Other sloughs also have good populations of warm water fishes.

Several fresh water wetlands have been identified in the Brownsmead area. Most have been cleared, have little wetland vegetation, and are now used for grazing. At one time, all of the shorelands in this subarea were tidal marsh or swamp. The tidal marshes and flats along Prairie Channel have not been studied, but are probably similar to those on the adjacent islands. These areas are very productive and valuable for fish and wildlife.

#### SHORELAND FEATURES

The Class III and IV soil types in this area are of the Coquille-Tidal Marsh (fresh)-Clatsop Association. There are large areas of peat and organic soils, and freshwater wetland. The lowlands are protected by dikes and five tidegates.

The diked lowlands and small forested areas both have moderate wildlife value. Deer and elk use the area along with waterfowl and small mammals.

#### HUMAN USE

Existing uses include farming and rural residences. A portion of Blind Slough is used for log storage. Ownership is entirely private except for small parcels in state and county ownership, and a portion owned by Western Transportation Company adjacent to their other holdings outside the dike. Recreational use of the water area is moderate.

There are several water access points. Private docks are located mainly on Blind Slough. There is a public boat launching facility at Aldrich Point, which gets extensive use, particularly in the summer.

#### ISSUES AND FINDINGS

The Brownsmead area, according to the U.S. Soil Conservation Service, is the best agricultural land in Clatsop County. Most of the area is used as pasture land, but corn, peas, beans and other crops are also grown. The area is in the exclusive farm use zone (EFU) adopted by Clatsop county. As such, it will be protected for this use.

The public boat launching facility at Aldrich Point is a source of conflict in the area. Local residents do not want the facility expanded because the traffic generated by the facility already causes problems during peak use periods. The County government operates the facility and has plans for improving the boat launch. This issue is addressed in the overall Eastern Clatsop policies.

A major issue in this area is the potential development of a nuclear power plant in the area to the south of blind Slough. While most of the site is outside the CREST planning area, extensive impacts would occur in the

Brownsmead area. The site is one of twelve potential sites in the Pacific Northwest. Washington Public Power Supply System is currently evaluating these sites to reduce the number to four, from which the final site selection will be made. The Brownsmead site is currently ranked 9th. This is addressed in the overall Eastern Clatsop policies.

#### P33.11 CLIFTON CHANNEL

##### GENERAL DESCRIPTION

In this area shorelands extend from Aldrich Point along the northeast margin of the Burlington Northern roadbed. Crossing the roadbed near (a) to include the shoreline of estuarine wetlands southeast of the railroad, then returning to the northeast margin of the tracks to the area of Clifton. At Clifton, extending southwest of the railroad to include the floodplain perimeter, then continuing southeast, along the waterward margin of the Burlington Northern tracks to Bradwood.

SHORELANDS BOUNDARY: Areas landward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

##### AQUATIC FEATURES

Freshwater flow becomes increasingly dominant over tidal circulation in this reach of the river. Salt water intrusion is absent, flood currents are weak, and ebb current is strong. Clifton Channel is relatively shallow in some areas, deep in others. Sediments range from sand to silt and clay in shallow areas.

Juvenile salmon migrate along the shorelines of this subarea and it is a migration route for adult salmon returning to upstream spawning areas. Small fringing tidal marshes serve as habitat for small mammals and waterfowl.

##### SHORELAND FEATURES

Most of the shorelands in this subarea are steep, heavily forested and subject to landslide hazards, particularly adjacent to Clifton Channel. Vegetation on these shorelands and adjacent uplands is mostly Douglas fir and hemlock. Small pockets of tideland soils occur along Clifton Channel, vegetated with conifers, alder and willow. Wildlife using shore and uplands include deer, elk, bear and smaller animals. A bald eagle nest is located near Aldrich Point.

##### HUMAN USE

Forestry and some residential use occur in this area. The old fishing community of Clifton is still occupied by several families and is used as a staging area for fishing the Clifton channel gillnet fish drifts. Extensive log storage sites are located across the channel adjacent to Tenasillahe Island and are a source of conflict.

##### ISSUES AND FINDINGS

Potential for increased development is limited by topography, transportation access and available land. Existing low intensity uses are likely to continue or be abandoned.

The fish drifts in this area are very productive, but are hampered by drifts and snag material. Most of these obstructions are sinker logs from log rafts stored across the channel. Occasional broken log bundles also cause serious problems, resulting in lost fishing time and expensive snag removal from drifts. This issue is dealt with in the Regional Policies and local fishermen are working with Crown Zellerbach to alleviate the problem.

### P33.12 BRADWOOD

#### GENERAL DESCRIPTION

In this area shorelands extend from the northeast margin of the Burlington Northern roadbed south along the perimeter of the floodplain, including the shoreline of estuarine wetlands in the downstream portion of Hunt Creek. Crossing the railroad fill causeway at the eastern edge of the floodplain and following the northeast margin of the Burlington Northern roadbed to the eastern limit of the estuary.

SHORELANDS BOUNDARY: Areas land ward of the shoreline and within the 100 year floodplain shall be included. The shorelands boundary shall not extend greater than 1000 feet landward of the shoreline in floodplain areas. In areas where the shoreline and floodplain coincide, and in instances where riparian resources are identified or require protection, the shorelands boundary shall not extend greater than 50 feet landward of the shoreline.

#### AQUATIC FEATURES

The fishing in this area is good with good angler access. This is on a major migration route for salmon (both adult and juvenile) and steelhead. Also present are shad, smelt, and starry flounder. Bugby Hole is very deep and good for sturgeon. Major gillnet drifts are maintained in this area.

There are only minor wetlands in this stretch of the river, the largest being a tidal marsh adjacent to the Bradwood industrial site. This marsh is habitat for marsh birds, small mammals and a resting area for migrating waterfowl.

#### SHORELAND FEATURES

The soils in this subarea include the Hembre-Klickitat Association (30% - 60% slope) in the Bradwood area and the Astoria-Hembre-Klickitat Association (3% - 30% slope). The industrial area at Bradwood has been filled.

The vegetation on the Bradwood Cliffs is mostly Douglas fir and hemlock. This serves as habitat for deer, elk, bear, small mammals and furbearers, and birds.

The Nature Conservancy has identified the Bradwood Cliffs old growth (150-180 years) Douglas fir stand as a unique area.

#### HUMAN USE

The Bradwood industrial site is not currently used. The shoreline area between Bradwood and Wauna is forested. Bradwood is privately owned.

There are private access points to the river in this reach. River use includes sport fishing, commercial fish drifts, and commercial ship and barge traffic.

#### ISSUES AND FINDINGS

The Bradwood industrial site offers excellent potential for small to medium sized water dependent industrial development. There is deep water close to shore, some available vacant land, and railroad access. There are

constraints to development, however, including poor highway access and the proximity of the wildlife refuge. Large scale development involving extensive dredging or filling would not be appropriate.

SUBAREA POLICY

Development activities at Bradwood shall be of small or moderate scale, not involving extensive filling to create new land areas.

P 40 DREDGE MATERIAL DISPOSAL PLAN

P 40.1 PURPOSE AND PLAN DEVELOPMENT

More material is dredged from the Columbia River estuary than can be used constructively and shoreland disposal sites will be exhausted or developed during the next twenty years. All dredging occurs within certain economic and environmental constraints. Suitable disposal options are needed for both new project and maintenance dredging, and placement of dredged material on a site should be compatible with its proposed final use.

The Dredged Material Management Plan is derived from the Columbia River Estuary Regional Management Plan and consists of several major parts. In this section of the Plan, dredging requirements are estimated and linked to appropriate disposal sites. Regional dredging, disposal, and site selection policies are included in Sections P 20.5 and P 20.6 of the comprehensive plan and sections 4.232 and 4.233 of the zoning ordinance. These policies and standards are implemented through County review of state and federal permits (described in P 21.5), and administration of aquatic and shoreland ordinances, including the dredged material disposal overlay zone (section 4.160)

The objectives of this Plan are to:

Provide policies and standards for dredging and dredged material disposal that will minimize damage to wetlands and other estuarine resources;

Describe environmentally, technically and economically acceptable disposal sites for expected dredging during the next twenty years;

Coordinate dredged material disposal use with other uses designated in the Clatsop County Comprehensive Plan consistent with Goal 16 (Estuarine Resources) and Goal 17 (Coastal Shorelands).

Development of the Dredged Material Management Plan involved two distinct phases: dredging and dredged material disposal (DMD) policies and standards; and dredged material disposal site selection.

Dredging and disposal practices were developed from existing state and federal regulations as they relate to the Columbia River estuary area. The dredging and disposal policies and standards allow for maintenance, improvement and establishment of navigation channels and water dependent development while protecting wetlands and other important estuarine natural resources. These practices are coordinated with the Columbia River Estuary Land and Water Use Plan (cf. Part IV) so that dredging and disposal operations are consistent with existing and projected development.

Draft policies and standards were developed by a technical subcommittee involved in planning for the Lower River and Islands area. This committee, composed of representatives from state and federal natural resource agencies, The Corps of Engineers, local ports and other dredging interests, participated in workshops on February 1-2, 1978 and May 2-3 1978, and published draft policies in the Lower River and Islands Plan. The plan was published for review and comment in July 1978 and based on comments, was revised and placed in a different format.

For dredged material disposal sites, the first consideration was to identify all possible in-water and reusable sites. Whether the site is flow lane, beach nourishment, or ocean disposal, the major issues are environmental and technical: Will the site allow for disposal of dredged material without adverse consequences? Next, shoreland sites were identified, and it was soon apparent that sites that would meet environmental and economic standards are not of sufficient capacity to provide for disposal needs over the next 20 years. The major issues with shoreland sites were economic feasibility, environmental damage, compatibility with existing and planned use, ownership and site protection.

The first regional coordination for dredged material disposal had occurred through cooperation between the Corps of Engineers and state and federal resource agencies and resulted in the DMD sites identified in the Corps' 1975 EIS on the Columbia River 40 foot channel. An April 1977 CREST workshop evaluated potential DMD areas and restoration/mitigation areas and the results were published in the CREST Columbia River Estuary Inventory. The most important result of this workshop was the development of environmental, economic and engineering criteria for site selection.

The Lower River and Islands Technical Committee began initial site selection work for the main ship channel in 1978. In November, 1978, the Committee conducted a workshop and did field evaluation of some potential DMD sites in the Youngs Bay-Astoria area. Washington sites were reviewed at a March, 1979 workshop, where a refined list of Oregon sites was also presented. The Draft Dredged Material Management Plan was released for agency and public review on May 1, 1979 and another technical committee workshop was held on that date.

The final Draft DMMP was prepared from the May 1979 TAC workshop. This draft was mailed to all individuals, local officials, and state and federal agency representatives who had participated or expressed an interest in the planning process. All affected property owners were notified by mail. After comments had been evaluated and appropriate changes made, the CREST Council formally adopted the Draft DMMP in June, 1979.

Following review of the CREST Plan by the Land Conservation and Development Commission in 1980 and 1981, the DMMP was revised and has since been incorporated into the local plans of Astoria, Warrenton, Hammond - all in Oregon - and Pacific County - in Washington - and now Clatsop County. The revisions made to the original DMMP include:

1. Evaluation of all DMD sites to ensure that site use is consistent with the protection of natural values.
2. A DMD site priority system, linking high priority sites with specific dredging needs and preventing pre-emptive use of DMD sites. A list of second priority sites necessary to meet probable or projected dredged material disposal requirements is also included.
3. Establishment of a DMD site review process designed to monitor disposal site needs and site availability, and to update local plans as necessary.

#### CRITICAL ISSUES

Over the twenty-year horizon of this plan, increasing reliance will be placed on ocean disposal of dredged materials. Even within the planning horizon, five areas will have difficulty finding shoreland disposal sites unless regional dredged material management develops resources and cooperation that are now only conceptual.

Of the large private projects, the Brusco work at Cathlamet Channel has shoreland site capacity for eight more years.

Warrenton has adequate DMD site capacity but use of those sites for Skipanon related dredging, as indicated in this plan, may preclude development because the fine sediments are too unstable.

Tongue Point development has adequate DMD capacity only if nearly half the dredged material can be used as fill during the construction. If the facilities are built largely on pilings, four million cubic yards disposal capacity will need to be found.

Disposal sites for Grays Bay projects are all priority two and have nearly half a million cubic yards capacity less than will be required.

Projects at Skamokawa Creek, Brooks Slough and Steamboat Slough use the same shoreland site and will exceed its capacity by eighty six percent, though this situation is mitigated somewhat by beach nourishment options for the Brooks Slough work.

The Dredged Material Management Plan meets these issues through its implementation process: Shoreland DMD site use should be coordinated to facilitate development and provide for sediments that cannot be disposed of in-water.

CLATSOP COUNTY. DREDGED MATERIAL DISPOSAL MANAGEMENT PLAN

(REVISED 1983)

BOB ASAI

<u>Site Identification</u>	<u>Priority</u>	<u>Project-Related Use</u>	<u>Dredging Requirements</u>	<u>Acreage/Capacity</u>
3(S) (West Sand Island, Columbia River Mile 3.0, West Baker Bay Channel Mile 1.1)	I	Maintenance dredging of West Baker Bay Channel and Port of Ilwaco Boat Basin, also new excavation and subsequent maintenance dredging necessary for deepening and realignment of West Baker Bay Channel	Present Project: 50,000 cy yearly, 250,000 cy (expected 5 yr maintenance requirement), 1,000,000 cy (expected 20 yr maintenance requirement)  New Excavation: 180,000 cy to 280,000 cy, with maintenance requirements similar to above	3(S): 23 acres/ 370,000 cy at 10 feet
4(S) (West Sand Island, Columbia River Mile 3.0, West Baker Bay Channel Mile 0.7)	I	Same as above	Same as above	4(S): 80 acres/ 1,290,000 cy at 10 feet
5(S) (West Sand Island, Columbia River Mile 3.0, Southwest portion of West Sand Island)	I	Same as above	Same as above	5(S): 95 acres/ 1,530,000 cy at 10 feet
9a(S) (East Sand Island, Columbia River Mile 5.0, East Baker Bay)	I	Maintenance dredging of Chinook Channel and Port of Chinook Boat Basin	45,000 cy yearly, 225,000 cy (expected 5 yr maintenance requirement), 900,000 cy (expected 20 yr maintenance requirement)	9a(S): 27 acres/ 350,000 cy at 15 feet (site has received approximately 7 feet of dredged spoils)

CLATSOP COUNTY: DREDGED MATERIAL DISPOSAL MANAGEMENT PLAN cont.

(REVISED 1983)

<u>Site Identification</u>	<u>Priority</u>	<u>Project-Related Use</u>	<u>Dredging Requirements</u>	<u>Acreage/Capacity</u>
33(S) (east bank of Lewis and Clark River, mile 7)	I	Maintenance dredging of Crown Zellerbach log booming and rafting area on Lewis and Clark River, also limited maintenance dredging of Lewis and Clark River	10,000 cy yearly, 50,000 cy (expected 5 yr maintenance requirement) 200,000 cy (expected 20 yr maintenance requirement)	33(S): 13 acres/ 210,000 cy at 10 feet
44(S) (west bank of John Day River, mile 2.5)	II	Reserved for receiving spoils from development areas at Tongue Point (note that the site is 12,000 to 15,000 feet distant from potential dredging areas at Tongue Point)	Undetermined--on site dis- posal areas at Tongue Point (i.e., fill of present finger pier area) meet expected 20 yr new project excavation and maintenance requirements for deep draft development at Tongue Point	44(S): 45 acres/ 720,000 cy at 10 feet
46(S) (west Svensen Island)	I	Maintenance dredging of Port of Astoria slips, West and East End Mooring Basins, and Coast Guard slips at Tongue Point (note that dredged material disposal capacity of Svensen Island is limited by potential use of the area as a mitigation site)	Undetermined--maintenance dredging at sites using Svensen Island as a disposal area is performed at irregular intervals, also dredged materials may be disposed at other areas, including in-water sites	46(S): 144 acres/ 1,100,000 cy with maximum increase in site elevation of 5 feet
78(S) (Bradwood, Columbia River Mile 39)	II	Reserved as a potential site for main navigation channel spoils, and for receiving dredged materials resulting from potential water- dependent development at Bradwood	Undetermined--at present main navigation channel spoils are deposited at the upper end of Tenasillahe Island and at the southwest tip of Puget Island. No estimates are available concerning dredging requirements for water-dependent development at Bradwood	78(S): 39 acres/ 625,000 cy at 10 feet

CLATSOP COUNTY: DREDGED MATERIAL DISPOSAL MANAGEMENT PLAN cont.

(REVISED 1983)

<u>Site Identification</u>	<u>Priority</u>	<u>Project-Related Use</u>	<u>Dredging Requirements</u>	<u>Acreage/Capacity</u>
90(S) (Westport, Columbia River Mile 43)	II	Formerly used for receiving maintenance spoils from lower Westport reach of main navigation channel, reserved for dredged materials resulting from continuing and potential increased water-dependent development at Westport	Undetermined--approximately 90(S): 40-60 acres of the site has been used for dredged material disposal within the last five years and the site is near capacity	70 acres/ 112,000 cy at 10 feet final elevation

Summary: The Priority I dredged material disposal sites on West and East Sand Islands are federal property and linked only with navigation projects in Washington State. All other Priority I dredged material disposal sites in the County's jurisdiction are privately held. Reservation of these sites as high priority sites is feasible since the present and future uses of the sites are not preemptive and would be compatible with dredged material disposal.

## P 50 RESTORATION AND MITIGATION PLAN

## P 50.1 INTRODUCTION

Oregon state law requires that development involving dredging or filling of intertidal areas in estuaries be mitigated by creating, restoring, or enhancing similar areas. (ORS 541.626)

The development of a mitigation/restoration plan for Clatsop County serves several purposes. By matching potential development projects with mitigation actions, a detailed mitigation plan provides increased predictability for developers, resource agencies, and local governments. The first part of this section presents matchups and detailed descriptions of estuarine development and mitigation sites in Clatsop County.

This mitigation plan brings the Columbia River Estuary Regional Management Plan portion of the Clatsop County Comprehensive Plan into compliance with Goal 16, Estuarine Resources, and Goal 17, Coastal Shorelands, addressing the concerns of the Oregon Department of Land Conservation and Development. Specifically, the DLCD required that historical habitat losses and trends in the estuary be identified. The results of the CREST Historical Study have been incorporated into the background report on which the mitigation/development site matchups are based, and thus DLCD requirements are satisfied.

The second part of this section describes alternatives to marsh restoration as a form of mitigation or restoration action. It is important to note that the mitigation and restoration options contained herein are not exhaustive, and that new and creative mitigation or restoration actions are possible. This plan is not meant to limit any future mitigation or restoration proposals. Any mitigation or restoration proposal consistent with policies in this section will be given due consideration.

P-59.2 Development/Mitigation Site Matchup

Development sites	Identified mitigation sites
Hammond, Hammond Boat Basin	1) Swash Lake 2) Holbrook Slough 3) circulation enhancement in Baker Bay
Tansy Point	1) Swash Lake 2) Holbrook Slough 3) circulation enhancement in Baker Bay
West Bank, Skipanon River	1) Holbrook Slough 2) Airport mitigation bank 3) circulation enhancement in Baker or Youngs Bay
East Bank, Skipanon River	1) Holbrook Slough
Port of Astoria Docks/Astoria waterfront	1) Airport mitigation bank 2) Holbrook Slough
North Tongue Point	1) Svensen Island mitigation bank 2) Airport mitigation bank
South Tongue Point	1) Svensen Island mitigation bank 2) Airport mitigation bank

P 50.3 Development and Mitigation Site Descriptions

P 50.31 Development Site Descriptions

HAMMOND, HAMMOND BOAT BASIN

Location: This area includes aquatic area and shorelands within the Town of Hammond and its urban growth boundary (UGB). The boundaries are the town limits on the east, the 40 foot Columbia River depth contour to the north, the Fort Stevens Highway to the south, and the UGB to the west.

General description: Deep water of highly variable salinity is close to shore in this reach of the Columbia River. River bottom material is primarily sand. Benthic productivity in this area is not high, but there is substantial fish usage of the area, particularly as a migration route for salmonids (CREST 1979a). Review of navigation charts published over the last 40 years indicates that naturally occurring deep water (up to 60 feet) is moving closer to shore (CREST 1979b). In contrast, there is a severe shoaling problem in the mooring basin. Potential railroad access is available along the shore from Tansy Point to the Alaska Packers plant.

Factors leading to the attractiveness of the Hammond waterfront for development are as follows:

- 1) proximity to the main ship channel and river mouth (RM 7 to 9)
- 2) deep water close to shore, minimizing dredging needs
- 3) potential rail access (trackage in place and existing right-of-way)
- 4) low density of present use and substantial vacant areas

Zoning designation: The Hammond Comprehensive Plan zones the upland areas adjacent to the river and mooring basin Water Dependent Development. The mooring basin and the aquatic areas east to and including Alaska Packers out to the 40 foot depth contour are zoned Aquatic Development; west of Alaska Packers to the UGB is zoned Aquatic Conservation, except for west of the mooring basin, which is zoned Aquatic Development. The aquatic area between the 40 foot depth contour and the navigation channel is zoned Aquatic Conservation.

Ownership: Various private ownerships.

Mitigation needs: Expansion of the mooring basin would require dredging 10 to 15 acres of brackish coarse intertidal flats. Fill along the waterfront would require mitigation, the amount being dependent on the size of the fill.

Mitigation options:

1. Enlargement or enhancement of Swash Lake.
2. Mitigation by dike breaching of the Holbrook Slough mitigation site.
3. Circulation enhancement in Baker or Youngs Bay.

Findings:

- 1) Proximity: The Swash Lake site is within one mile of the designated Hammond development areas. The next closest site (Holbrook Slough) is three miles distant. Therefore, Swash Lake is the first priority site in terms of proximity.
- 2) Present use and ownership: The present use of the site is for upland recreation as part of the Fort Stevens State Park. This site is zoned Shoreline Conservation and is in public ownership. Use of portions of this area for marsh creation would enhance the wildlife value of the area and would not conflict with the existing use of the site. A small mitigation project has already taken place at Swash Lake. Therefore, mitigation at the Swash Lake site is high priority in terms of present use and ownership.
- 3) Mitigation acreage requirements/availability: Development in the Hammond Boat Basin or along the waterfront would entail loss of marine intertidal sand/mud flats, with a resource value of 6.0. Brackish low marsh may be created at the mitigation site, with a habitat value of 5.0. Trade-offs would require a 1.2 to 1.0 mitigation to development acreage ratio. Creating 40 acres of brackish low marsh at Swash Lake would compensate for 33 acres of marine intertidal sand/mud flat loss in the Hammond development area. Thus, adequate high value mitigation habitat is available at the Swash Lake site, making it a high priority site.

Conclusion: The Swash Lake site is the most suitable mitigation site for estuarine development occurring in the Hammond area.

## TANSY POINT

Location: Columbia River waterfront, Alaska Packers property line east to Pacific Shrimp Co. property line. Approximately 27 acres of medium depth brackish water fronting 58.5 acres of potential development sites.

General description: The CREST Mediation Agreement (CREST 1981), now incorporated into the Warrenton Comprehensive Plan, identifies the Tansy point area for large (80-100 acre) water dependent development, with the exception of bulk coal or ore facilities. This does not preclude use for other projects. Tansy Point is an attractive development site for the following reasons:

- 1) Naturally scoured deep draft vessel access adjacent to the shoreline.
- 2) Proximity to the river mouth (RM-10).
- 3) Little or no maintenance dredging of the berthing area would be required due to the high degree of river scour.
- 4) Potential for 3,600 feet of deep water berthing frontage exists.
- 5) Fewer biological impacts associated with major development than at most other development sites.
- 6) Total of 80-100 acres available for development.
- 7) Access to the longest tidal window of any major development site on the Columbia River.

Possible disadvantages to Tansy Point are the existing use of the area, deed restrictions on certain parcels, and lack of current rail service (trackage in place). To develop an 80-100 acre contiguous site, property ownerships would have to be consolidated, 21 homes and businesses would have to be relocated, and improvement of the highway and rail line would be necessary. The cost of correcting these problems is estimated to be similar to project costs at other sites (Smith 1983).

Zoning designation: The Warrenton Comprehensive Plan zones the upland areas Water Dependent Development, and the adjacent aquatic areas are zoned Aquatic Development.

Ownership: Various private owners.

Mitigation needs: Filling or bulkheading of intertidal waterfront would require mitigation, the amount being dependent on the size of the fill. Construction of extension piers probably would not require mitigation.

Mitigation options:

1. Enlargement or enhancement of Swash Lake.
2. Dike breaching of the Holbrook Slough mitigation site.
3. Circulation enhancement in Baker or Youngs Bay.

Findings:

Tansy Point - Swash Lake

- 1) Proximity: The Swash Lake site is within two miles of the designated Tansy Point development areas. The next closest site (Holbrook Slough) is three miles distant. Therefore, Swash Lake is the first priority site in terms of proximity.
- 2) Present use and ownership: The present use of the site is for upland recreation as part of the Fort Stevens State Park. This site is zoned Shoreline Conservation and is in public ownership. Use of portions of this area for marsh creation would enhance the wildlife value of the area and would not conflict with the existing use of the site. A small mitigation project has already taken place at Swash Lake. Therefore, mitigation at the Swash Lake site is high priority in terms of present use and ownership.
- 3) Mitigation acreage requirements/availability: Development at Tansy Point or along the waterfront would entail loss of brackish intertidal sand/mud flats, with a resource value of 4.0. Brackish low marsh may be created at the mitigation site, with a habitat value of 5.0. Trade-offs would require a 1.0 to 1.0 mitigation to development acreage ratio. Creating 20 acres of brackish low marsh at Swash Lake would compensate for 20 acres of brackish intertidal sand/mud flat loss in the Tansy Point development area. Thus, adequate high value mitigation habitat is available at the Swash Lake site, making it a high priority site.

Conclusion: The Swash Lake site is the most suitable mitigation site for estuarine development occurring in the Tansy Point area.

WEST BANK, SKIPANON RIVER

Location: In Alder Cove on the northwest side of the west peninsula of the Skipanon River.

General description: This site consists of three non-contiguous parcels of land of approximately 32 acres, 52 acres, and 110 acres separated by the City of Warrenton sewage lagoons, at approximately Columbia River mile 10.5 (Smith 1983). Direct access to the Skipanon River or main Columbia River ship channel is limited. Conveyor galleries across the log storage sites and through a "Conservation Aquatic" corridor to the north to a loading pier near the navigation channel would allow deep draft berthing access without significant dredging. This method could also be used to connect the three parcels of land by passing over the sewage lagoons. Highway access is good. Upgrade of the rail line and trestle would be necessary for a transshipment facility.

Zoning designation: Under the CREST mediated agreement, the City of Warrenton Comprehensive Plan designates the upland area Water Dependent Development, and the aquatic areas Aquatic Development.

Ownership: Warrenton Lumber Co./Dant and Russell, Inc.

Mitigation needs: Filling up to 7.8 acres of intertidal wetlands is allowed under the mediated agreements. The area is composed of approximately 2 acres of brackish low marsh and 5.8 acres of brackish high marsh.

Mitigation options:

1. Dike breaching of the Holbrook Slough mitigation site.
2. Dike breaching of the Airport mitigation site.
3. Circulation enhancement in Baker or Youngs Bay.

Findings:

West Bank, Skipanon River - Holbrook Slough

- 1) Proximity: The Holbrook Slough site is approximately one mile from the West Bank, Skipanon River development area. Other potential mitigation sites (Swash Lake, Airport) are three or more miles distant. Therefore, Holbrook Slough is the first priority site in terms of proximity.

- 2) Present use and ownership: The Holbrook Slough site is presently used as low density cattle grazing land and dredged material disposal. The area is zoned as Water Dependant Development with a Mitigation overlay. The Holbrook Slough site is presently legally tied to development on the East Bank, Skipanon River through the Mediated Agreements, and is in public ownership. Therefore, the Holbrook Slough site is a high priority site in terms of present use and ownership.
  
- 3) Mitigation acreage requirements/availability: Intertidal development on the West Bank, Skipanon River would impact a total of 7.8 acres of brackish low and high marsh. The Holbrook Slough site contains 40 acres of potentially similar habitat, thus the trade-off would be one for one. Adequate acreage exists to provide mitigation for both the East and West Bank, Skipanon River development areas. Therefore, the Holbrook Slough site is high priority in terms of mitigation acreage requirements and availability.

Conclusion: The Holbrook Slough site is the most suitable mitigation site for estuarine intertidal development on the West Bank of the Skipanon River.

West Bank, Skipanon River - Airport

- 1) Proximity: The Airport site is approximately three miles from the West Bank, Skipanon River development area. As the Holbrook Slough site is only one mile away from the development area, the Airport site ranks second priority in terms of proximity.
  
- 2) Present use and ownership: The Airport site is presently used for low intensity cattle grazing. The area is zoned Airport Development. Ownership is both public and private. The site has been considered for a mitigation bank. Because of the partial private ownership of the site, the Airport site ranks second priority in terms of present use and ownership.
  
- 3) Mitigation acreage requirements/availability: Intertidal development at the West Bank, Skipanon River site would impacts a total of 7.8 acres of brackish low and high marsh. The Airport site provides 4.8 acres of similar habitat, therefore after application of the trade-off method 9.2 acres would be needed to compensate for the 7.8 acre impact at the development site. Therefore, although mitigation acreage would be adequate, because it would not be like-kind the site ranks second priority to the Holbrook Slough site.

Conclusion: The Airport site is a suitable mitigation site for development occurring at the West Bank, Skipanon River development area. However, mitigation actions at the Holbrook Slough site should be given priority.

#### EAST BANK, SKIPANON RIVER

Location: In Youngs Bay on the east side of the east peninsula of the Skipanon River.

General description: The east peninsula of the Skipanon River is one of the best large acreage water-dependent development sites with deep draft access in the Columbia River Estuary. Reasons for this include proximity to the river mouth, (River Mile 11.5) and access to the main 40 foot navigation channel 2,100 feet to the north (USCOE 1982). With minimal or no alteration to adjacent estuarine wetlands, up to 200 acres of upland and 1500 feet of Skipanon River frontage would be available for construction of bulk commodity storage and ship berthing.

Dredging requirements are small relative to sites further upriver. The Skipanon River channel is federally authorized at 30 feet deep and 200 feet wide, although the present maintained depth is 13-15 feet (USCOE 1982). To develop the site to make best use of its potential deep water, a 40 foot channel would need to be dredged to the main river channel (Port of Astoria 1983). Alternately, conveyor galleries could provide access to the channel, thus avoiding the need to dredge the Skipanon River. This may cost up to 15 million dollars for the galleries, but would reduce dredging costs (Smith 1983). The combined cost of development at this site is estimated to be less than at other site options further upriver (Smith 1983).

Highway and potential rail access are available to the site. Upgrading of the rail line and trestle across Youngs Bay would be necessary for any transshipment option.

Zoning designation: Under the CREST mediated agreement, the City of Warrenton Comprehensive Plan designates the upland areas Water Dependent Development, and the aquatic areas Aquatic Development.

Ownership: Port of Astoria.

Mitigation needs: Filling of 25 acres of Youngs Bay intertidal wetlands is allowed under the Mediated Agreements. This acreage is composed of approximately 6.9 acres of brackish low marsh and 18.1 acres of brackish high marsh.

Mitigation options:

1. The mediated agreements stipulate use of the Holbrook Slough mitigation site as compensation for habitat loss due to development on the east bank of the Skipanon River.

Findings:

East Bank, Skipanon River - Holbrook Slough

- 1) Proximity: The Holbrook Slough site would provide on site mitigation for intertidal development at the East Bank, Skipanon River development site, and is therefore top priority in terms of proximity.
- 2) Present use and ownership: The Holbrook Slough site is presently used as low density cattle grazing land and dredged material disposal. The area is zoned as Water Dependant Development with a Mitigation overlay. The Holbrook Slough site is presently legally tied to development on the East Bank, Skipanon River through the Mediated Agreements, and is in public ownership. Therefore, the Holbrook Slough site is a top priority site in terms of present use and ownership.
- 3) Mitigation acreage requirements/availability: Intertidal development at the East Bank, Skipanon River development site could impact 25 acres of brackish low and high marsh. The Holbrook Slough site contains 40 acres of similar habitat, thus the trade-off would be one for one. Adequate acreage exists to provide mitigation for both the West and East Bank, Skipanon River development areas. Therefore, the Holbrook Slough site is high priority in terms of mitigation acreage requirements and availability.

Conclusion: The Holbrook Slough site is the most desirable mitigation site available for estuarine intertidal development on the East Bank of the Skipanon River.

## PORT OF ASTORIA DOCKS

Location: At the Port of Astoria, on the northwest corner of Smith Point

General description: The Port of Astoria Docks is a feasible location for energy related development. The Port has expressed special interest in a bulk coal handling facility and other deep draft cargo transshipment (Baker, pers. comm.) The Port has direct access to the 40 foot main navigation channel, and is located at River Mile 13. Under the Mediated Agreements, 2,340 feet of continuous berthing area could be made available with direct access to approximately 85 acres of upland, 52 acres of which is already levelled and surfaced. This would require filling between Pier 2 and Pier 3, demolition of an existing warehouse, and construction of a thirteen acre, 1,280 foot pier to the west of the existing facility. There is good highway and rail access to the site. Additionally, development at the Port of Astoria Docks would not require upgrading of the Youngs Bay railroad trestle. The rail upgrade costs from Portland to Astoria would be less than to the Skipanon or Tansy Point sites. However, this advantage may be offset by the greater dredging costs of being further upriver (Smith 1983).

Zoning designation: The Astoria Comprehensive Plan zones the upland areas Water Dependent Development. The existing slips are zoned Aquatic Development, and a ten acre area to the west of pier 3 is zoned Aquatic Development to allow construction of an extension pier.

Ownership: Port of Astoria.

Mitigation needs: Filling of 2.1 acres of brackish medium depth water, filling 19.4 acres of possibly degraded brackish medium depth water between piers 1,2, and 3, and construction of a 10.0 acre extension pier to the west of Smith Point into Youngs Bay is allowed under the mediated agreements. The 2.1 acre brackish medium depth water fill may require mitigation under federal statutes. Filling between the piers and construction of the extension pier probably will not require mitigation, and are not included in the matchups.

Mitigation options:

1. Dike breaching of the Holbrook Slough mitigation site.
2. Dike breaching at the Airport mitigation site.

Findings:

## Port of Astoria Docks - Holbrook Slough

- 1) Proximity: The Holbrook Slough site is approximately two miles from the Port of Astoria Docks proposed fill area. The other identified potential site at the Airport is approximately equidistant. Other sites (Swash Lake, Svensen Island) are 6-8 miles distant. Therefore, Holbrook Slough is equal priority with the Airport site in terms of proximity.
- 2) Present use and ownership: The Holbrook Slough site is presently used as low density cattle grazing land and dredged material disposal. The area is zoned as Water Dependant Development with a Mitigation overlay. The Holbrook Slough site is presently legally tied to development on the East Bank, Skipanon River, and is in public ownership. Therefore, the Holbrook Slough site is a high priority site in terms of present use and ownership.
- 3) Mitigation acreage requirements/availability: Intertidal development at the Port of Astoria Docks development site could impact 2.3 acres of brackish intertidal sand/mud flat. The Holbrook Slough site contains 40 acres of brackish low and high marsh. Exchanging brackish sand/mud flat for brackish low marsh involves "trading up" in habitat value, thus the trade-off would be one for one. Adequate acreage may exist to provide mitigation for the West and East Bank, Skipanon River development areas as well as the Port of Astoria Docks development area. Therefore, the Holbrook Slough site is of equal priority with the Airport site in terms of mitigation acreage requirements and availability.

Conclusion: The Holbrook Slough site is a suitable site for mitigating intertidal impacts at the Port of Astoria Docks development area. Although the ownership and mitigation acreage criteria favors the Holbrook Slough site, economic considerations will likely be the priority determinant between the Holbrook Slough site and the Airport site.

## Port of Astoria Docks - Airport

- 1) Proximity: The Airport site is approximately two miles from the Port of Astoria Docks proposed fill area. The other identified potential site at Holbrook Slough is approximately equidistant. Other sites (Swash Lake, Svensen Island) are 6-8 miles distant. Therefore, the Airport site is equal priority with the Holbrook Slough site in terms of proximity.
- 2) Present use and ownership: The Airport site is presently used for low intensity cattle grazing. The area is zoned Airport Development, and has good potential as a mitigation bank. Ownership is both public and private. Because of the partial private ownership of the site, the Airport site ranks second priority in terms of present use and ownership.
- 3) Mitigation acreage requirements/availability: Intertidal development at the Port of Astoria Docks development site could impact 2.3 acres of brackish intertidal sand/mud flat. The Airport site contains 17.8 acres of brackish high marsh and swamp. Exchanging brackish sand/mud flat (habitat value 4.0) for brackish high marsh (habitat value 3.0) involves "trading down" in habitat value, thus the trade-off would be greater than one for one. Therefore, the Airport site is of lesser priority than the Holbrook Slough site in terms of mitigation acreage requirements.

Conclusion: The Airport site is a suitable site for mitigating intertidal impacts at the Port of Astoria Docks development area. Although the ownership and mitigation acreage requirement criteria favors the Holbrook Slough site, economic considerations will likely be the priority determinant between the Holbrook Slough site and the Airport site.

## NORTH TONGUE POINT

Location: The east side of Tongue Point, consisting of fresh medium depth water between existing finger piers.

General description: North Tongue Point, at River Mile 18.5, has been extensively studied for potential use as a coal handling facility. As a result a great deal of site planning has already been completed (State of Oregon 1981a; 1981b) The main advantage to the North Tongue Point site for development is the proximity to rail service necessary for efficient operation. Estimates for the rail upgrade between Portland and Tongue Point are about half of the rail upgrade costs to the Skipanon and Tansy Point sites (Smith 1983). In addition, the North Tongue Point option would eliminate the need for train traffic through downtown Astoria. A major drawback to the North and South Tongue Point sites is the high cost of new work and maintenance dredging of the Columbia River navigation channel to accommodate deep draft vessels. This may offset all of the above advantages, and force deep draft development (if any) further down river.

Zoning designation: Under the Mediated Agreements, The Astoria Comprehensive Plan zones the upland areas Water Dependent Development. Aquatic areas between the finger piers are designated Aquatic Development.

Ownership: State of Oregon.

Mitigation needs: Filling of 77 acres of fresh medium depth habitat between the existing finger piers is allowed under the mediated agreements. This habitat may be degraded due to large inputs of woody material from extensive use of the area for log raft storage.

Mitigation options:

1. Breaching of diked farmland on Svensen Island. Total of 165 acres available, including approximately 16 acres of non-tidal freshwater marsh.  
Potential restored habitat is mostly fresh low marsh, with about 6 acres of fresh high marsh.

Federal and state resource agencies objected to the use of John Day River sites for mitigating estuarine development impacts. This restricted mitigation options to Svensen Island. This reduces the number of affected landowners from 35 to one.

Findings:

North Tongue Point - West Svensen Island

- 1) Proximity: The Svensen Island site is approximately three miles from the North Tongue Point development area. Other sites (Airport, Holbrook Slough) are over six miles distant. Therefore West Svensen Island is the priority site in terms of proximity.
- 2) Present use and ownership: The mitigation site is presently zoned Exclusive Farm Use, and in private ownership. Approximately sixteen acres of the site is considered wetland, and the upland area is used for low intensity sheep and cattle grazing. Dredged material spoiling is allowed. Quality of the farmland is poor, as the tidegate is in need of repair. (See Section F 50.32) Because the site is privately owned and zoned Exclusive Farm Use, it is low priority in terms of present use and ownership.
- 3) Mitigation acreage requirement/availability: Development of the North Tongue Point parcel would entail filling approximately 77 acre of fresh medium depth water. As mitigation requirements for subtidal mitigation are not included in state mitigation statutes (DSL 1983), it is suggested that the mitigation requirement of such an action would be a one for one trade-off. As such, West Svensen Island is the only site in the estuary that can provide the needed large acreage.

Conclusion: West Svensen Island is the only suitable site for mitigation actions required for filling 77 acres at the North Tongue Point development site.

SOUTH TONGUE POINT

Location: On the south east side of Tongue Point, near the Corps of Engineers docks and access causeway.

General description: The South Tongue Point site consists of 100 acres of upland with immediate rail and highway access. Development of South Tongue Point is directly related to the North Tongue Point development site. Development of South Tongue Point would add approximately 2,500 feet of shallow draft pile supported berthing and 100 acres of upland to potential Tongue Point development. Development of North Tongue Point is a prerequisite to development of South Tongue Point for water-dependent use.

Zoning designation: Under the Mediated Agreements, the Astoria Comprehensive Plan zones upland areas are designated Water Dependent Development, and intertidal areas allowed to be filled are zoned Aquatic Development. Access channel and pile causeway areas are designated Aquatic Conservation, and all other surrounding areas are designated Natural.

Ownership: Federal (Corp of Engineers).

Mitigation needs: Filling of 19.8 acres of intertidal habitat is allowed under the mediated agreements. This acreage is composed totally of fresh high marsh habitat.

Mitigation options:

1. Breaching of diked farmland on Svensen Island. Total of 165 acres available, including approximately 16 acres of marsh. Potential restored habitat is mostly fresh low marsh, with about 6 acres fresh high marsh.

Federal and state resource agencies objected to the use of John Day River sites for mitigating estuarine development impacts. This restricted mitigation options to Svensen Island. This reduces the number of affected landowners from 35 to one.

Findings:

South Tongue Point - Svensen Island

- 1) Proximity: The Svensen Island site is approximately three miles from the South Tongue Point development area. Other sites (Airport, Holbrook Slough) are over six miles distant. Therefore West Svensen Island is the priority site in terms of proximity.
  
- 2) Present use and ownership: The mitigation site is presently zoned Exclusive Farm Use, and in private ownership. Approximately sixteen acres of the site is considered wetland, and the upland area is used for low intensity sheep and cattle grazing. Dredged material spoiling is allowed. Quality of the farmland is poor, as the tidegate is in need of repair. (See Section P 50.32) Because the site is privately owned and zoned Exclusive Farm Use, it is low priority in terms of present use and ownership.
  
- 3) Mitigation acreage requirement/availability: Development of the South Tongue Point parcel would entail filling approximately 20 acre of fresh high marsh habitat. Trade-offs between South Tongue Point and Svensen Island would be like-kind or trading up in value, therefore the trade-offs would be one for one. The site is the only large acreage (165 acres) site that could provide mitigation acreage for both North and South Tongue Point mitigation needs (approx. 100 acres total). The West Svensen Island site has potential as an upper estuary freshwater mitigation bank. Thus, the West Svensen Island site is high priority in terms of mitigation acreage and habitat availability.

Conclusion: West Svensen Island is the only suitable site for mitigation actions required for filling 20 acres of fresh high marsh at the South Tongue Point development site.

## P 50.32 Mitigation Site Descriptions

Information contained in the general descriptions of the mitigation sites for salinity regimes, tidal range, elevation, and flora and fauna were obtained from the CREST Regional Management Plan (CREST 1979a), the CREST Inventory (CREST 1979b), and the CREST Scientific Literature Review for the Columbia River Estuary (Fox 1981).

## SWASH LAKE (site #6)

Location: Swash Lake/Trestle Bay, south of Clatsop Spit at the river mouth.

Size: Variable, up to 40 acres.

Site Description: Accreted shoreland area contiguous to the tidal marshes of Trestle Bay and Swash Lake, consisting of stabilized sand dunes with a rolling landscape. The area was formerly a sandy beach at the river mouth; the dunes have accreted as a result of construction of the south jetty.

Salinity: Marine.

Tidal range: 8.3 feet.

Elevation: Variable, dependant on the amount of material removed.

Flora/fauna: Primarily coast pine, scotchbroom, salal and other kinds of shrubs and ground cover such as wild strawberry. The dune area gets substantial use by wildlife, including deer, raptors and other birds, small mammals, and reptiles.

Zoning designation: This area as part of Fort Stevens State Park. The Clatsop County Comprehensive Plan zones the area Conservation Shoreland for recreational uses.

Ownership: Federal ownership (Corps of Engineers), leased to the State of Oregon.

Restoration action: Expand the size of the Swash Lake/Trestle Bay marshes by excavating the adjacent dunes to the intertidal level, opening up drainage channels into existing marsh channels. Plant native marsh plants or allow natural marsh colonization of the area; natural marsh colonization is preferred. Excavate dune material used to fill in dune troughs and stabilize with beach grass and scotchbroom. One or more marsh areas could be created at this general location. Cost is estimated to be approximately \$6,250/acre. (See Mitigation Site Cost Calculations)

Expected habitat development:

Habitat would consist of low or high marine marsh or intertidal flat, depending on level of excavation.

Total area: variable, up to 40 acres.

Other Potential Uses: The area is zoned Conservation Shoreland. The only potential use of this site is for recreational upland. A mitigation action at this site would not preclude recreational use, and can be seen as compatible with the present zone designation. The zone would be changed to Natural Aquatic to reflect the preservation of the created intertidal area.

HOLBROOK SLOUGH (site #9)

Location: Warrenton, on Youngs Bay, east of King Road, west of Holbrook Slough.

Size: 40 acres total, 4.3 acres already marsh.

Site Description: This site consists of diked marshland above with a network of old drainage channels which formerly emptied into Youngs Bay.

Salinity: Brackish, 0 - 10 ppt.

Tidal range: 8.6 feet.

Elevation: 4 to 11 feet above MLLW.

Flora/fauna: Vegetation is a mixture of pasture grasses and tussock, with common rush, bentgrass, and some low shrubs. The area gets some use by cattle, small mammals and foraging birds, including short-eared owls and marsh hawks.

Wildlife value of the site is considered to be low.

Zoning designation: The Warrenton Comprehensive Plan zones this area Water Dependent Development Shoreland and also as a potential DMD site, and will carry a Mitigation overlay. These designations are mutually exclusive in relation to the Mitigation designation, in that use as a mitigation site for East Skipanon development precludes use of the site for water dependent development or DMD.

Ownership: Port of Astoria.

Restoration action: Construct 3400 feet of new dike adjacent to the railroad and on the northwest side of Holbrook Slough. Once the new dike has stabilized, the existing dike would be breached in a way that would provide strong scour action to keep the opening(s) from filling in, and existing drainage channels would be connected to the opening to provide flushing with Youngs Bay. Cost is estimated at approximately \$8,200 - \$8,800/acre. (See Mitigation Site Cost Calculations)

Expected habitat development:

- 4.3 acres channel (below +3 ft. MLLW)
- 24.2 acres brackish low marsh (+3 to +8 ft. MLLW)
- 11.5 acres brackish high marsh (+8 to +11 ft. MLLW)
- 40.0 acres total.

Other Potential Uses: The upland area including the proposed mitigation site is presently zoned Water Dependent Development. Other potential uses include future large scale bulk handling facilities or other water dependent development, or its present use as pasture land for cattle.

PORT OF ASTORIA AIRPORT (site #13)

Location: Southeast of runway 7-25, from the Instrument Landing System south to the old Highway 101.

Size: Variable, up to 17.8 acres.

Site Description: The site is diked former high marsh, shrub marsh, and forested swamp. The southern half of the site is used as pasture for cattle.

Salinity: Brackish, 0-10 parts per thousand.

Tidal range: 8.0 feet.

Elevation: 6 to 11 feet above MLLW.

Flora/fauna: Vegetation is mostly forested and shrub swamp on the northern portion, and pasture grasses, blackberry, and wiregrass on the southern portion. Forested swamps are generally dominated by Sitka spruce, willow, and some alder. Shrubs include salmonberry, elderberry, creek dogwood, scrub willow, and twinberry. Sedge, skunk cabbage, impatiens, and ferns are also present. Wildlife use of the site is low.

Zone designation: This site is designated Airport Development and will carry a Mitigation overlay.

Ownership: Port of Astoria, 12 acres; W.H. Anderegg, 5.8 acres.

Restoration action: The best use of this site would be as a mitigation bank for small scale development in the Youngs Bay area. This would require construction of 1,800 feet of new dike, and return 17.8 acres of varied habitat to estuarine influence. Other options of restoring only 7.0 or 11.8 acres include less dike reconstruction, less area for restoration, and significantly less economies of scale. (See Appendix II) Once the new dike has stabilized, the existing dike would be removed and used in part for landward fill material for the new dikes and airport development areas. Estimated cost of the full restoration action is estimated to be \$143,600 - 154,000, or approximately \$8,100 - 8,700 per acre. (See 3.4.2)

Expected habitat development:

4.8 acres brackish high marsh  
13.0 acres brackish shrub/forested swamp  
 17.8 acres total

Other Potential Uses: The Warrenton Comprehensive Plan zones the area Airport Development, and therefore other potential uses are restricted to expansion of the airport industrial park, and its present use as pasture for cattle.

SVENSEN ISLAND, WEST HALF. (site #41)

Location: Svensen Island, adjacent to Prairie Channel, approximately RM 22.

Size: 165 acres total; 16 acres are existing wetlands, therefore 149 acres count as mitigation.

Site Description: This site consists of diked former freshwater low tidal marsh, presently in agricultural use for pasturing cattle.

Salinity: Fresh, 0 - 2 ppt.

Tidal range: Approximately 8.0 feet.

Elevation: 3 to 9 feet above MLLW.

Flora/fauna: Vegetation consists of sparse willow and other shrubs along the diked portions and near the wetland area, and pasture grasses. Bulrush and cordgrass appear to be re-invading the low areas. The area is used for sheep and cattle grazing, and there is some use of the 16 acre marsh by waterfowl.

Zoning designation: This area is designated Rural Agriculture and DMD, and will carry a Mitigation overlay. The present landowners has expressed a desire to receive dredged material spoils on the property. This is not incompatible with these designations, and DMD will be allowed on the site provided that said disposal does not remove the site from possible use as a mitigation site, i.e., remove it from potential estuarine tidal influence. To this end, DMD will be allowed only up to the low marsh/high marsh boundary, e.g., 7.9 feet above MLLW. The mean height of the site at present is approximately three feet above MLLW. Therefore, DMD will be allowed under the following restrictions:

- 1) DMD will be allowed only on land less than 7.9 feet above MLLW in elevation. (144 contiguous acres)
- 2) DMD areas after spoiling will not exceed 7.9 feet above MLLW in elevation.
- 3) Total DMD volume will not exceed 1.1 million cubic yards. This figure is derived as such:  $144 \text{ acres} \times 4840 \text{ yd}^2/\text{acres} = 695,992 \text{ square yards}$ . Raising the mean elevation approximately 5 feet (1.6 yd) =  $695,992 \text{ yd}^2 \times 1.6 \text{ yd} = 1,100,000 \text{ yd}^3$ .

Ownership: Private. R. Reed, on behalf of five owners.

Restoration action: A cross dike will be reconstructed between the west and east portions of the island upon an existing deteriorated cross dike. Cross dikes will also be constructed, if necessary, to protect the existing buildings and the county road that provides access to the eastern portion of the island. Cross dikes can also be constructed to allow only partial flooding of the property if the site is not used for a mitigation bank. Dike breaching would

take place at 200 foot intervals through the existing dikes, with openings about 25-50 feet wide. Cost per acre is estimated to be approximately \$1,500 - \$1,700/acre. (See Mitigation Site Cost Calculations)

Expected habitat development:

Salinity: fresh

15.9 acres channel

143.8 acres low marsh

5.7 acres high marsh

165.4 acres total

Other Potential Uses: The area is presently zoned Exclusive Farm Use. As such, potential uses are restricted to the present use, which is pasture land for sheep and cattle, or other farming activities.

-- Value as farmland. Due to the low elevation of the site, the grazing value of the land is low. Bulrush and other marsh grasses are rapidly re-invading the property, and the main tidegate is in need of extensive repair. The landowner lost several animals to flooding during the winter storms of 1982-83.

-- Value as estuarine habitat. The value of the site for mitigation is high for two reasons. One, Svensen Island is the only large acreage site suitable for mitigation for development at Tongue Point, and is therefore valuable in terms of future development activities in the upper estuary. Second, the site consists of diked former tidal marsh. Almost 7,000 acres (43%) of tidal marshes have been removed from the estuary in the last 100 years (Thomas 1982a), and thus restoration of former marsh is highly desirable in terms of estuarine habitat. Tidal channels within marshes have been shown to be valuable feeding grounds for juvenile salmon at high tide (Levy and Northcote 1981; Higley and Holton 1981) and the restoration of tidal marsh channel habitat can therefore be seen as a benefit to the salmon resource. The approximately 16 acres of tidally influenced wetland on the site will have a much better connection with the estuary, improving the circulation to the area and possibly increasing organic export to the estuary.

P 50.4 Goal 17 Considerations: Significant Freshwater Wetlands.

The Holbrook Slough mitigation site contains 4.3 acres of significant shoreland (i.e., non-tidal) freshwater wetland biological habitat, as identified by Thomas (1982b). Thus, Goal 17 requires that the value as shoreland freshwater wetland habitat be balanced against a proposed competing use, in this case use as a restoration site for mitigation actions. If the site is used for restoration or mitigation, the freshwater wetland habitat would revert to estuarine wetland habitat, and most freshwater wetland habitat values (e.g., bird and small mammals) would be lost. However, overall habitat value would not be lost, but would be changed. Estuarine habitat values (e.g., fish and benthic invertebrates) would replace the freshwater wetland habitat values.

Criteria used by Thomas to determine significance of wetlands can be used to compare the existing freshwater habitat values of the sites with estuarine habitat values created through restoration.

**Size:**

Larger areas of wetland are of higher value than smaller ones. Restoration actions at the Holbrook Slough site would greatly increase the areal extent of the wetlands, from 4.3 acres to approximately 40 acres. Thus, there would be an increase in habitat value.

**Level of disturbance:**

The more natural (undisturbed) the wetland and surrounding area is, the higher the habitat value. After restoration, the area surrounding the wetland will no longer be used for pasturing cattle, and will not be subjected to floodplain pasture management practices such as ditching and herbicide application. As the level of disturbance would decrease after restoration, the habitat value would increase.

**Habitat diversity:**

The presence of diverse natural wetland habitats increases habitat value. The existing wetlands is surrounded by monoculture pasture grasses. Restoration to estuarine influence would allow natural colonization of diverse marsh communities, thereby increasing habitat value.

**Degree of inundation:**

The presence of standing water increases habitat values of wetlands. Restoration at the Holbrook Slough site would change the degree of inundation from a seasonal cycle to a daily cycle, thereby retaining or increasing habitat value.

**Critical habitat for wildlife species:**

The presence of critical habitat for wildlife species increases the habitat value of a wetland. The present freshwater wetland probably supplies habitat for waterfowl, shorebirds, and small mammals. While it is not known if the present wetlands could provide critical wildlife habitat, it is known

that the proposed restoration actions would return to estuarine influence wetlands that were originally part of the estuary and were used as such historically. Less than 1% of the historical amounts of brackish high and low marsh remain in the estuary (Thomas 1982a). Therefore, restoration of this type of habitat would be beneficial to the types of wildlife that historically occupied the site.

The discussion above suggests that while the character of the existing habitat values would change from freshwater wetland to estuarine wetland, there would be a net gain in wetland habitat values.

It is important to remember that mitigation credit is not given for mitigation acreage that is derived from significant non-tidal freshwater wetlands.

## P 50.5 MITIGATION ALTERNATIVES TO MARSH RESTORATION\*

## P 50.51 Fisheries and Resource Enhancement

The Columbia River and estuary tributary streams have experienced dramatic decreases in the production of trout and Chinook, Coho, and Chum salmon over the past several decades. These decreases have been due to a combination of several factors including dam construction, overfishing, logging in watersheds, and other degradations of stream and estuarine habitat. Chum salmon runs in particular have deteriorated. This is thought to be largely caused by logging operations silting in the areas just above tidewater where Chum salmon spawn. Currents are generally too sluggish in this area of streams to flush the silt.

Fishery enhancement projects to improve habitat and to supplement former and existing fish runs is appropriate for many estuary tributaries. Examples of fishery enhancement projects include regravelling of streams to provide improved spawning habitat; removal or bypass of obstructions such as old tidegates, dams or waterfalls; construction of salmon rearing ponds to provide a greater capacity for artificial replacement of lost fish stocks; work with state hatchery programs and lumber companies to improve stream habitat and water quality; and restoration of riparian vegetation. Total removal of debris from tributaries is discouraged, as this debris provides valuable resting and feeding habitat for stream migrants.

Each of the major tributary streams on the estuary is listed for potential fishery enhancement. Specific strategies are discussed below.

Site 1. Wallacut River-Baker Bay.

The Wallacut River is heavily silted in and historic fish runs have been essentially eliminated. Chum and other salmon might be restored in the stream if the stream was dredged, areas near tidewater regravelled, and obstructions to fish passage bypassed or removed. Careful management of watershed riparian vegetation would help the siltation problem.

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\* This discussion is drawn largely from the Columbia River Estuary Regional Management Plan, Ian McColgin, Ed. 1979.

Site 2. Chinook River-Baker Bay.

Siltation of the Chinook River has reduced the historically good runs of anadromous fish that used the river. Because of the Sea Resources Hatchery on the stream, fish runs have been kept alive. Dredging to improve fish passage and removal or bypass of obstructions would improve the salmon fishery potential. Regravelling silted areas and subsequent stream and riparian management practices to minimize further siltation are also recommended.

Site 13. Lewis & Clark River.

The Lewis and Clark River has runs of Chinook and Coho salmon, steelhead, and sea run cutthroat trout. The river formally supported an excellent Chum salmon run, but as in other coastal streams, the run has been severely depleted. Sea run cutthroat trout have also declined because of a shortage of habitat. There is a severe problem with low river flows in the upper river in August and September. The City of Warrenton draws river water for municipal uses.

Better management of watershed tree growing operations will help improve upper river flows and habitat for all fish species, and be particularly helpful in the effort to re-establish self sustaining runs.

Site 42/43. Deep River/Grays River.

Historically the Grays River system supported large runs of Chum salmon and some Coho, fall Chinook, and steelhead. Much of the former spawning habitat is now unusable because of watershed logging practices, and most salmon are raised at the Grays River hatchery. Local fishermen operate a small scale Chum salmon enhancement project on a tributary of the Grays River.

Fishery enhancement on the Deep River and Grays River should start with more effective management of stream sedimentation and water quality related to tree growing operations. Dredging the silt from stream mouths should also be evaluated. An evaluation needs to be conducted of current fish rearing practices which have resulted in reduced runs and smaller Coho salmon on the Grays River. These apparently detrimental practices include substitution of "Cowlitz Coho" in this and other state hatcheries and genetic manipulation caused by the taking of eggs from only certain time frames of the returning runs. Additional citizen input is needed in managing the Grays River fishery.

Site 51. Big Creek.

Big Creek is the location of an important state fish hatchery. The stream and hatchery produce large runs of Chinook salmon, some Coho, steelhead cutthroat trout, and some Chum salmon. The stream is well managed for control of stream sedimentation, but areas at or just above tidewater could be regravelled to improve habitat. Water quality should be strictly controlled, particularly non-point sources related to watershed tree growing operations.

Site 52. Gnat Creek.

Gnat Creek has a good run of steelhead and cutthroat trout. Careful management of stream sedimentation and water quality as it relates to tree growing operations in the watershed will maintain and improve habitat in the stream itself and maintain a flow of pure water to the hatchery.

Site 53. Elochoman River.

The Elochoman River has a state salmon hatchery which produces Coho and Chinook salmon. Bear Creek, a tributary to the Elochoman well below the salmon hatchery, has a state trout hatchery which produces cutthroat trout and steelhead. Coordination of timing of releases to prevent interspecific predation is important in managing fisheries on these streams.

Fisheries can be enhanced by better management of stream sedimentation and water quality related to tree growing operations. Maintenance of riparian vegetative buffers in downstream areas which may be developed in the future is also important.

Site 54. Westport Slough/Plympton Creek.

Plympton Creek, which drains into Westport Slough at the ferry landing has an excellent run of Chinook salmon and a small run of Chum. However, the stream has a problem with drainage of sewage from Westport into the stream. Installation of planned sewers should correct this problem. Other measures are needed to control water quality and stream sedimentation in the watershed.

Site 57. Youngs River.

The Clatsop Economic Development Committee operates the Youngs Bay Salmon Enhancement Program. The project includes two salmon rearing ponds on Tucker Creek. The program is being conducted with assistance of ODFW fish hatcheries on Big Creek and Klaskanine River, state grants, and local contributions.

When fishery enhancement is used as complete or partial mitigation for the adverse effects of estuarine alterations; it should be accomplished through the existing Youngs Bay Salmon Enhancement Program.

Site 58. Youngs River Falls.

The 65 foot Youngs River Falls is an effective barrier to anadromous fish passage. Construction of a fish ladder around the falls on the south side of the stream would open up many miles of potential spawning habitat for salmon and trout. The potential for runs establishing themselves on a self sustaining basis is difficult to estimate, but upstream areas could be planted with fish on a regular basis.

Using proven fish ladder technology (stairstep series of rectangular reinforced concrete boxes) with an estimated cost of \$4,000-6,000 per vertical foot, the falls could be scaled for a cost of \$260,000-300,000. A possible conflict is that the City of Astoria has had long range plans to construct a dam just above the falls.

Site 59. Upper Klaskanine River.

River flow on the North Fork of the Klaskanine River in August and September is often reduced below minimum levels necessary to support fish, other aquatic life, and state run fish hatcheries. A dam project was proposed for the river in 1969 by the Clatsop Water Resources Committee to correct this problem. An earth-filled dam could be designed to provide 1200 acre feet of additional water to the stream and the fish hatchery during low flow periods.

P.50.52 Circulation Enhancement

Site 3. Baker Bay/Sand Islands.

Baker Bay has shoaled considerably since the turn of the century. The shoaling has been caused by a variety of factors including construction of the North and South Columbia River Jetties and subsequent northward migration of Sand Island; construction of hundreds of fish traps which reduced circulation in the bay; and construction of the Chinook pile dike. The gap between Big and Little Sand Islands experiences intense scouring, and it appears that most tidal water exchange occurs through this gap.

Dredging of the breach between Big and Little Sand Islands is proposed as a possible restoration measure. This seems more realistic with the passage of time, since the tidal scouring appears to be continually deepening the area. Encouraging the scouring process through dredging and possibly rerouting the Ilwaco and Chinook Channels through the gap may eventually become desirable.

Site 11. Youngs Bay behind the Highway 101 causeway.

In 1964, the new Youngs Bay Bridge was constructed, including nearly a mile of filled causeway. This fill greatly reduced near shore currents and has resulted in an increased shoaling rate (2-4 cm/year).

Removal of the entire causeway and replacement by a pile supported bridge would be the most desirable in terms of circulation enhancement, but the cost would far outweigh any benefits gained. Alternatively, culverts could be installed at various locations to increase circulation and flushing and to decrease sedimentation. Prior to such action, a hydraulic model should be used to determine potential beneficial and detrimental effects of culverting.

Site 45. Grays Bay/River.

Grays Bay has shoaled considerably over the past several decades. This is due to diversion of Columbia River flow southwest into the main ship channel toward Tongue Point, decreased river and tidal currents, and increasing sediment loads coming down Deep and Grays Rivers. At the mouth of Grays River, a bar has developed and the lower reaches of the river have shoaled extensively. Existing channels have not been able to carry the flow during high water periods, resulting in lowland flooding. Traditionally navigable areas are also no longer usable. Fish migration is also impaired at times.

Dredging and maintaining a channel in the Grays River and Grays Bay is proposed to alleviate the above problems. Several of the principle causes of the shoaling problem are not likely to decrease appreciably, and a technological solution (dredging) is probably necessary.

Site 56. Upper Cathlamet Channel.

At the upriver end of Puget Island, a series of pile dikes have been installed to divert flow into the ship channel and away from the Cathlamet Channel. Material placed in a series of small islands has migrated into Cathlamet Channel, reducing navigability of certain areas. The reduced currents through the channel also result in increased sedimentation. Sloughs bordering the north side of Puget Island have shoaled considerably.

A recommended course of action would be to plug the gaps between the pile dikes, creating a single spit upstream from Puget Island. Flows through Cathlamet Channel would still be reduced, but less dredged material would enter the channel.

P 50.53 Shoreland Revegetation

Site 46. Rice Island.

Rice Island is relatively high in comparison to other areas, and is an active dredged material disposal site. Selecting vegetation for this area must take into account the lower depth of the water table. Some natural vegetation is starting to take hold on portions of the island, but this process could be substantially accelerated.

Site 47. Miller Sands.

Miller Sands is just upriver from Rice Island, on the south side of the ship channel. Miller Sands is also an active disposal site. Both upland and marsh plantings have been conducted successfully on the island, but continued experimental work and eventual full revegetation is recommended.

Site 49. Jim Crow Sands.

Jim Crow Sands has been the subject of an intensive experimental upland vegetation project conducted by the Corps of Engineers and Soil Conservation Service. The experimental plantings have been largely successful, having attracted large numbers of waterfowl and other birds and resulting in stabilization of large areas of the sands.

P 50.54 Pile Dike/Piling Removal.

Site 4. Baker Bay.

The remains of hundreds of abandoned fish traps in Baker Bay are contributing to severe shoaling problems, and represent a severe navigation hazard which annually takes its share of small boats. Systematic inventory and removal of these pilings is needed to correct these problems. The adverse impacts are expected to be minimal, but high cost is a key consideration.

Site 5. Chinook Jetty.

The 3500 foot long flow control structure is believed to be a major cause of shoaling problems in Baker Bay, particularly the east end including the Chinook Channel. It is recommended that the jetty be removed and monitoring occur to see if improved scouring is a result.

Site 50. Snag Island Jetty.

The Snag Island Jetty was installed in the 1880's to help maintain the ship channel, which was at that time adjacent to the island. Since that function is no longer appropriate, possible removal of the jetty should be evaluated.

## P 60 APPENDICES

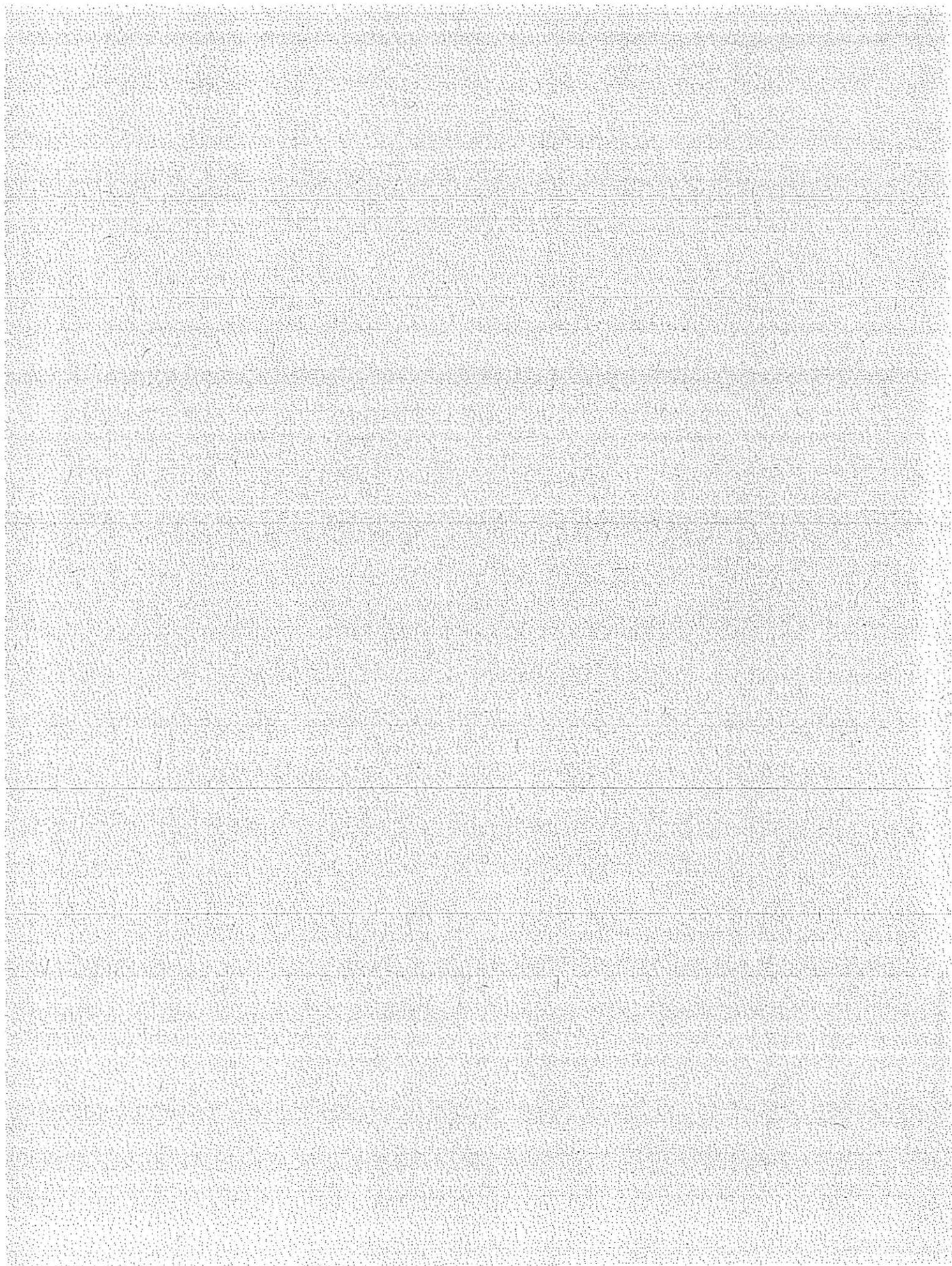
The following materials are included in the County's Comprehensive Plan by reference:

1. Columbia River Estuary Inventory of Physical, Biological, and Culture Characteristics (1977)
2. The Columbia River Estuary Regional Management Plan (1979)
3. An Economic Evaluation of the Columbia River Estuary (1981)
4. The CREST Mediation Panel Agreement (1981)
5. Energy Related Development in the Columbia River Estuary: Potential, Impacts and Mitigation. (1983)
6. A Mitigation Plan for the Columbia River Estuary (1983)
7. Changes in the Columbia River Estuary Over the Past Century (1983)
8. Columbia River Estuary Resource Base Maps. The Columbia River Estuary Planning area in the County is illustrated on thirteen Columbia River Estuary Resource Base Maps and accompanying overlays. The resource base maps include the following information:
  - a. Shoreline
  - b. Vegetation types: swamp, high and low marsh
  - c. Depth contours: -3 feet and -18 feet MLLW
  - d. Dikes
  - e. Significant non-tidal wetlands: streams, lakes, marches, swamps
  - f. Non-significant, non-tidal wetlands
  - g. Riparian vegetation
  - h. Significant wildlife habitat
  - i. Aesthetic resources
  - j. Historic sites
  - k. Archeological sites
  - l. Geologic hazards
  - m. Roads/railroads

The accompanying overlays include the following information:

- a. Aquatic Zones: Development, Conservation Two, Conservation One, and Natural

- b. Shoreland Zones: Marine industrial, Conservation and Natural.
- c. Overlay zones: Shoreland, Mitigation and Dredged Material Disposal (DMD)
- d. Shoreland Boundary
- e. Mitigation sites
- f. Floodway/floodplain zone
- g. DMD sites



Sept. 2, 1983

Amendments to CREST Plan and Zone Provisions

Revise Goal 16 and 17 Element Columbia River Estuary section. Revise zone designations and all references in the Plan.

old designation	revise to
A-1	AD
A-2	AC-2
A-3	AC-1
A-4	AN
S-1	Delete
S-2	CS
S-3	NS

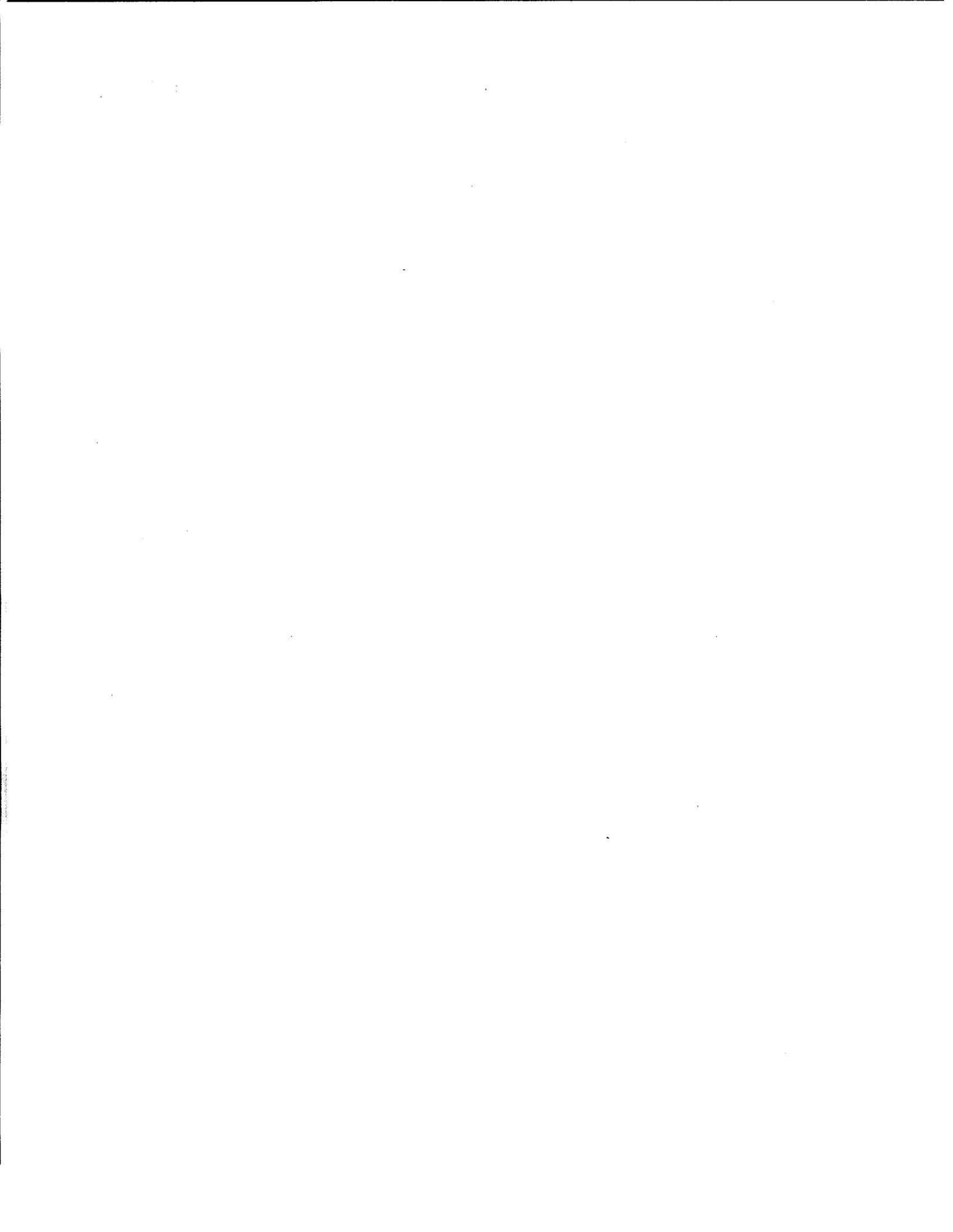


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## S-1.030 DEFINITIONS

**AQUACULTURE** - The raising, feeding, planting and harvesting of fish and shellfish, or other aquatic plants and animals including associated facilities necessary to engage in the use.

**AQUATIC AREAS:** Aquatic areas include the tidal waters and wetlands of the estuary and non-tidal sloughs, streams, and wetlands within the shoreland areas.

The lands underlying the waters are also included. The upper limit of aquatic areas is the line of non-aquatic vegetation or, where such a line cannot be accurately determined, Mean Higher High Water (MHHW) in tidal areas or Ordinary High Water (OHW) in non-tidal areas. Aquatic areas can be further subdivided into wetlands (the upper portion of the aquatic zone) and waters (the lower portion). Wetlands and waters adjoin at Extreme Low Water (ELW) in tidal areas or, in non-tidal areas, a water depth of six feet relative to Ordinary Low Water (OLW).

**ARCHAEOLOGICAL RESOURCES** Districts, sites, buildings, structures, and artifacts with material evidence of prehistoric human life and culture.

**BANKLINE...OR STREAM ALTERATION:** Realignment of a stream bank or the entire stream, either within or without its normal high water boundaries.

**BEACH** - Zone of unconsolidated material extending landward from the low water line to the seaward edge of shoreland vegetation.

**BULKHEAD** - A vertical wall of steel, timber or concrete piling of solid or open pile construction.

**COMMUNICATION FACILITIES:** Power and communication lines and towers, antennas and microwave receivers.

**DIKE:** A structure designed and built to prevent inundation of a parcel of land by water. A dike is considered new when placed on an area which: (1) has never previously been diked; or (2) has previously been diked, but all or a substantial part of the area is subject to daily inundation and tidal marsh has been established. Maintenance and repair refer to: (1) existing serviceable dikes (including those that allow some seasonal inundation); and (2) those that have been damaged by flooding, erosion, tide gate failure, etc., but where reversion to tidal marsh has not yet occurred.

**DOCK:** A pier or secured float or floats for boat tie-up or other water use, often associated with a specific land use on the adjacent shoreland, such as a residence or commercial use or light industrial facility.

**EMERGENCY:** Emergency conditions are limited to activities such as bankline or streamline alteration, dike repair, fill, and shoreline stabilization undertaken during high water and/or storm conditions. Emergency activities affecting removal of material from estuarine aquatic areas or filling of estuarine aquatic areas are those necessary for preventing irreparable harm, injury or damage to persons or property.

**ESTUARY** - A body of water semi-enclosed by land, connecting with the open ocean, and within which salt water is diluted by freshwater derived from the land.

**ESTUARY AREA** - The water and submerged lands of the Columbia River estuary and its tributary streams, the associated tidelands, wetlands, shorelands and tributary watersheds within Pacific and Wahkiakum Counties in Washington and within Clatsop County in Oregon.

**EXCAVATION:** The creation of new water surface area.

**FILL:** Fill is the placement by man of sediment or other material (excluding solid waste) in an aquatic area to create new shorelands or on shorelands to raise the elevation of the land.

**FINAL ORDER** - shall include the approval or disapproval of a permit, or a letter of exemption as set forth in WAC 173-14-115.

**FLATS** - Intertidal and shallow subtidal areas with low slopes and current velocities, often productive with relatively fine sediments.

**FLOODPLAIN** - The area adjoining a stream, tidal estuary or coast that is subject to regional flooding. A regional (100-year) flood is a standard statistical calculation used by engineers to determine the probability of severe flooding. It represents the largest flood which has a one-percent chance of occurring in any one year in an area as a result of periods of higher than normal rainfall or streamflows, extremely high tides, high winds, rapid snowmelt, natural stream blockages, tsunamis, or combinations thereof.

**FLOW-LANE** - The natural channel and the slopes adjacent to the natural channel, including the navigation channel.

**FLOW-LANE DISPOSAL** - Disposal of dredged material in the flow lane, in a location where the prevailing sediment transport is in a downstream direction.

**FLUSHING TIME** - The length of time required to remove an introduced pollutant from a body of water through tidal or fresh water flow.

**HABITAT** - The place where an organism lives; the place occupied by an entire community, such as a freshwater tidal marsh community.

**HISTORICAL RESOURCE** - Those districts, sites, buildings, structures, and artifacts which have a relationship to events or conditions of the human past.

**INTERTIDAL:** Between the tides, here considered to be that area between mean lower low water and mean higher high water.

**IN-WATER DISPOSAL** - The disposal of dredged material in the estuary, river or ocean.

**KENNEL:** A lot or building in which four or more dogs or cats at least four months of age are kept commercially for board, propagation, training or sale.

LAND DISPOSAL - Dumping dredged material on upland areas or on shorelands behind a dike.

LAND TRANSPORTATION FACILITIES: Highways, railroads, bridges and associated structures and signs which provide for land transportation of motorized and/or non motorized vehicles (excluding logging roads).

LOG DUMP/SORT AREA (in-water): The use of an area to transfer logs to or from the land to water, normally associated with log storage/sort yards, log booming or processing/shipping facilities where rafts are built or dismantled.

LOG STORAGE/SORTING AREA (dry land): An area where logs are gathered from surrounding harvest areas, weighed, sorted for species, size and quality, and stored until ready for transfer to water storage areas or to market.

LOG STORAGE (in-water): The use of water surface area to store commercial logs in rafts until ready for market.

LOW WATER BRIDGES: A specific type of bridge crossing. Low water bridges are temporarily placed by private property owners across minor streams and sloughs during periods of low or intermittent water flow in order to provide access for farm machinery and other uses. Low water bridges are generally constructed of logs or planking and cable, and, as such, fill required for approaches to these bridges will in all cases be minimal (e.g., grading of a road approach) and consistent with the resource capabilities of the area and the purpose of the management unit. Low water bridges are removed during periods of high water flow and are replaced in the same location in subsequent seasons. Note that in sloughs behind tidegates, where water levels are regulated and changes in seasonal water heights are minimal low water bridges may be in place year-round.

MARINAS: Marinas are facilities which provide moorage, launching, storage, supplies and a variety of services for recreational, commercial fishing and charter fishing vessels. They are differentiated from docks/moorages by their larger scale, the provisions of significant landside services and/or the use of a solid breakwater (rock, bulkheading, etc.).

MARSH - A low-lying wetland characterized by emergent vegetation such as cattail which is predominantly herbaceous.

MEAN HIGH WATER - The average height of all high waters over a 19-year period.

MEAN HIGHER HIGH WATER - The average height of the higher high waters over a 19-year period.

MEAN LOW WATER - The average height of all low waters over a 19-year period.

MEAN LOWER LOW WATER - The average height of the lower low waters over a 19-year period.

**MINING/MINERAL EXTRACTION:** The removal for economic use of minerals, petroleum resources, sands, gravels or other naturally occurring materials from the shorelands and/or the bed beneath an aquatic area.

**MITIGATE** - To alleviate the negative impacts of a particular action.

**MOTEL:** A building or group of buildings on the same log, containing guest units with separate entrances and consisting of individual sleeping quarters detached or in connected rows, with or without cooking facilities, for rental to transients.

**NAVIGATION CHANNEL** - The authorized channel(s), maintained by the Corps of Engineers.

**NAVIGATIONAL STRUCTURES:** Structures such as pile dikes, groins, fills, jetties and breakwaters that are installed to help maintain navigation channels, control erosion, or protect marinas and harbors by controlling water flow, wave action and sand movement.

- a. Pile dikes are flow-control structures that are used primarily in river systems and are made of closely spaced piling connected by timbers; usually they are perpendicular to the shore. They are constructed to increase scour in the navigation channel and/or control shoreline erosion by interrupting sand transport and encouraging sedimentation in the sheltered lee of the pile dike. A single pile dike is unusual; they are generally constructed in groups.
- b. Groins are analogous to pile dikes, but are constructed from rocks. They can withstand rougher wave conditions than pile dikes, are often used on beaches, where they exert a strong influence on sand transport and extend from the backshore seaward across the beach.
- c. Jetties are the largest of all navigational structures; they are made of rock or concrete and are used to stabilize the channel and improve the scour at the mouth of an estuary. They must be able to withstand extreme wave conditions and may alter longshore sand transport for many miles along the coast.
- d. Breakwaters may be of rock, steel, concrete or piling, or of the floating kind. They are used to protect harbors and marinas against waves and currents.

**OVER-CHANNELIZATION** - Diversion of flow from shallow areas into the main channel by dredging, pile dikes or other means to the degree that circulation is markedly decreased and sedimentation increased in the shallow areas.

**PILE DIKE** - A partial barrier to water flow, constructed of wooden piling, that is designed to direct river flow in a particular direction. They are commonly erected perpendicular to the shore.

**PILING/DOLPHIN INSTALLATION:** The driving of wood, concrete or steel piling into the bottom in aquatic areas to support piers or docks, structures, moored floating structures, vessels or log rafts, or for other purposes. A dolphin is a group of piling held together by steel cable and used for mooring vessels, log rafts or floating structures.

**PUBLIC ACCESS** - A means of physical approach to and along the shoreline available to the general public.

**PUBLIC GAIN** - The net gain from combined economic, social, and environmental effects which accrue to the public because of a use or activity and its subsequent resulting effects.

**PUBLIC USE:** A structure or use intended or used for a public purpose by a city, school district, county, state, or by any other public agency or by a public utility.

**PUBLIC UTILITY** - A private business or organization such as a public service corporation, performing some public service and subject to special governmental regulations, or a governmental agency performing similar public services, the services by either of which are paid for directly by the recipients thereof. Such services shall include, but are not limited to, water supply electric power, gas and transportation of persons or freight.

**RECREATION, HIGH INTENSITY** - Recreation which requires specially built facilities, or occurs in such extent, degree or magnitude that it results in impacts to or requires modification of estuarine resource areas. Examples of high intensity recreation include campgrounds, golf courses, boat launches, etc.

**RECREATION, LOW INTENSITY** - Recreation which does not require developed facilities and can be accommodated without change to the area or resource except for small improvements in Shoreland areas involving minimal capital investment and no structures over 500 square feet in area. Examples of low-intensity recreation include boating, hunting, wildlife observation, beachcombing and picnicking. Examples of small improvements appropriate in shoreland areas include trails, picnic tables, restrooms and viewing platform.

**RECREATIONAL VEHICLE (RV)** - "Recreational Vehicle" (RV) means a vehicular type portable structure without permanent foundation, which can be towed, hauled or driven and primarily designed as temporary living accomodation for recreational, camping and travel use and including but not limited to travel trailers, truck campers, camping trailers and self-propelled motor homes.

**RECREATIONAL VEHICLE PARK** - "Recreational Vehicle Park" (RV Park) means a plot of ground upon which two or more recreational vehicles are located, established or maintained for occupancy by recreational vehicles of the general public as temporary living quarters for recreation, education or vacation purposes.

**RESOURCE ENHANCEMENT** - The use of artificial or natural means to improve the quantity or quality of a specific resource.

**RESTORATION** - Replacing or restoring original attributes or amenities such as natural biological productivity and esthetic or cultural resources which have been diminished or lost by past alterations, activities or catastrophic events. Active restoration involves the use of specific remedial actions such as removing dikes or fills, installing water treatment facilities, or rebuilding or removing deteriorated urban waterfront areas.

**RIPARIAN** - vegetation on the banks of bodies of water which perform several functions: vegetation maintains water temperature and quality and enhances fish habitat; provides bank stabilization, provides habitat for the breeding, feeding, and resting of aquatic & upland wildlife species & protects aquatic ecosystems from unnecessary human disturbance.

**RIP-RAP** - A layer, facing, or protective mound of stones randomly placed to prevent erosion, scour or sloughing of a structure or embankment; also, the stone so used.

**SHORELANDS** - The area adjacent to the estuary and its tributary streams and wetlands. The lower boundary of the shoreland is the line of non-aquatic vegetation, or in cases where this cannot be defined, Mean Higher High Water. The upper boundary is 200 feet inland from Mean Higher High Water or the line of non-aquatic vegetation or the extent of the 100-yr flood plain, whichever is greater. Shorelands extend upstream in estuary tributaries to the edge of the 100-yr flood plain.

**SHORELAND AREAS** - Shorelands include urban lands, farm lands, other low lands, forests, cliffs, and other steep topography along the estuary, tidal reaches of estuary tributaries, and the ocean.

**SHORELINE** - The boundary between shorelands and water. Wetlands may extend shoreward of the shoreline.

**SHORELINE STABILIZATION** - The protection of the banks of tidal or nontidal stream, river or estuarine waters by vegetative or structural means.

**SIGN** - Any letter, figures, symbols or designs which are intended to convey a message or to attract the attention of a person on a public street.

**SIGNIFICANT AREAS** - An area of more than local significance; so designated because it possesses important natural, scientific, historical, cultural and/or archaeological resources.

**STRUCTURE** - Anything constructed, erected, or located on the ground or water, or attached to the ground or to an existing structure, including but not limited to residences, apartments, barns, stores, offices, factories, sheds, cabins, mobile and floating homes, and other buildings.

**STRUCTURAL ALTERATION** - Any change to the supporting members of a building including foundations, bearing walls or partitions, columns, beams, or girders or any structural change in the roof or in the exterior walls.

**SUBMERGED LANDS** - Lands normally covered by water; lands below Mean Low Water (Oregon); Lands below Extreme Low Water (Washington).

**SUBMERSIBLE LANDS** - Lands between Mean Low Water and Mean High Water (Oregon) or between Extreme Low Water, and Mean High Water (Washington).

**WATERS** - The overlaying water and the submerged lands located below Extreme Low Water in a tidally-influenced body and below -6 feet relative to Ordinary Low Water in non-tidal bodies.

**WATER-DEPENDENT** - Water-dependent refers to uses and activities which can only be carried out on, in, or adjacent to water, and the water location or access must be needed for one of the following:

- a. Water-borne transportation (navigation; moorage; fueling and servicing of ships or boats; terminal and transfer facilities; resource and material-receiving and shipping);
- b. Recreation (active recreation such as swimming, boating or fishing, or passive recreation such as viewing or walking);
- c. A source of water (energy production, cooling of industrial equipment or wastewater, other industrial processes, aquaculture operations); or
- d. Marine research or education (viewing, sampling, recording information, conducting experiments, teaching).

**WATER-RELATED** - Water-related refers to uses and activities that do not require direct water access (are not water-dependent), but may be appropriate as consistent with other development criteria because:

- a. They provide goods and/or services that are directly associated with other water-dependent uses (supplying materials to, or using products of, or offering commercial or personal services to water-dependent uses); and
- b. Location other than adjacent to the water would result in a public loss of quality in the goods and services offered (evaluation of public loss of quality will involve a subjective consideration of economic, social, and environmental consequences of the use).

**WETLANDS** - The overlying water and lands where tidal water determines the nature of soil development and the types of plant and animal communities living at the soil surface. Wetland soils retain sufficient moisture to support aquatic or semi-aquatic plant life. In marine and estuarine areas, wetlands are bounded at the lower extreme by Extreme Low Water, in fresh-water areas, by the depth of 6 feet. Lands below wetlands are submerged lands. The shoreward boundary of wetlands is the line of non-aquatic vegetation, or in areas where this line cannot be defined, Mean Higher High Water.

Supplemental Definitions: Reference CREST Plan, Part III, Management System and Development Standards, Section 32, Definitions, III-4)

Emergency - - Emergency conditions are limited to activities such as bankline or streamline alteration, dike repair, fill, and shoreline stabilization undertaken during high water and/or storm conditions. Emergency activities affecting removal of material from estuarine aquatic areas or filling of estuarine aquatic areas are those necessary for preventing irreparable harm, injury or damage to persons or property. The Oregon Division of State Lands requires notification within 24 hours following the start of emergency activities. Measures taken as a result of emergency conditions will be inspected following notification and denied or approved.

Low Water Bridges - - A specific type of bridge crossing. Low water bridges are temporarily placed by private property owners across minor streams and sloughs during periods of low or intermittent water flow in order to provide access for farm machinery and other uses. Low water bridges are generally constructed of logs or planking and cable, and, as such, fill required for approaches to these bridges will in all cases be minimal (e.g., grading of a road approach) and consistent with the resource capabilities of the area and the purpose of the management unit. Low water bridges are removed during periods of high water flow and are replaced in the same location in subsequent seasons. Note that in sloughs behind tidegates, where water levels are regulated and changes in seasonal water heights are minimal, low water bridges may be in place year-round.

Minor Navigational Improvement - - A use or activity which improves or provides for navigation without causing a major alteration of the estuary. Included in this definition is the use of floating breakwaters and open-pile piers in marina

1 parcel reduced in size by the adjustment is not reduced below the  
2 minimum lot size established by this Ordinance; (c) the sale of a  
3 lot in a recorded subdivision approved pursuant to Clatsop County  
4 Subdivision Ordinance No. 69-8 dated December 22, 1969, even though  
5 the lot may have been acquired with other contiguous lots or pro-  
6 perties by a single ownership.

7 RECREATION, HIGH INTENSITY - Recreation which requires a substantial capital  
8 investment in and continuous upkeep and maintenance of facilities. Examples of  
9 high intensity recreational facilities include but are not limited to second homes  
10 and visitors centers (Aquatic zones).

~~11 RECREATION, MEDIUM INTENSITY - Recreation which requires the construction and placement  
12 of facilities and which require minimal capital investment and upkeep. Examples of  
13 medium intensity recreational facilities include but are not limited to shelters,  
14 duck shacks, and restrooms (Aquatic zones).~~

15 RECREATION, LOW INTENSITY - Recreation which does not require developed facilities and  
16 which can be accommodated without change to the area or resource except for small  
17 improvements requiring minimal capital investments and upkeep. Examples of low  
18 intensity recreational facilities include but are not limited to trails and viewing  
19 platforms, outhouses and pit toilets subject to National Park Service standards. (Aquatic  
20 zones).

21 ROAD, PUBLIC - State or federal highways or any thoroughfare which has been dedicated  
22 to the public and ownership of which has been formally accepted by the County for access  
23 purposes only, without any responsibility, obligation or agreement for improvement or  
24 maintenance by the County, except as otherwise specified in the formal acceptance by  
25 the County.

26 ROAD, PRIVATE - Any road which is maintained by funds or means other than public monies

construction, dredging required for marina development where it meets the resource capabilities of the particular management unit. Dredging for minor navigational improvement includes remedial deepening of shoal areas in naturally existing channels allowing for passage of shallow draft craft, or for other minor uses or activities which are determined to meet the resource capability of the area and the purpose of the management unit in which the dredging is proposed.

Recreation, Low Intensity - - Recreation which does not require developed facilities and can be accommodated without change to the area or resource. Except for small improvements in shoreland areas involving minimal capital investment and no structures over 500 square feet in area. Examples of low intensity recreation include boating, hunting, wildlife observation, beach combing and picnicking. Examples of small improvements appropriate in shoreland areas include trails, picnic tables, restrooms and viewing platforms.

Recreation, High Intensity - - Recreation which requires specially built facilities, or occurs in such extent, degree or magnitude that it results in impacts to or requires modification of estuarine resource areas. Examples of high intensity recreation include campgrounds, golf courses, boat launches, etc.

Water-Dependent Commercial Activity, Low Intensity - - ~~Commercial activity which is conducted in or on the water, or on a structure in or on the water, and which is conducted for the purpose of making a profit.~~

~~Commercial activity which is conducted in or on the water, or on a structure in or on the water, and which is conducted for the purpose of making a profit.~~

~~Commercial activity which is conducted in or on the water, or on a structure in or on the water, and which is conducted for the purpose of making a profit.~~

A privately-owned or operated facility or place of business open to the public for sale of goods or services that can only be carried out on, in or adjacent to water, that results in negligible adverse impacts to aquatic resources or recreation benefits and that occupies an aquatic surface area no greater than 2250 sq. ft

Center is per Cal. Admin. Code

1 DUCK SHACK - A structure having no permanent water or sewage treatment connection  
2 which is used to store recreational equipment meant for hunting waterfowl and not  
3 exceeding 500 square feet on a float or pier not exceeding 750 square feet. Oc-  
4 cupancy by a single individual of a duck shack shall be strictly limited to fifteen (15)  
5 out of any consecutive thirty (30) day period.

6 DUNE, CONDITIONALLY STABLE - A dune which is presently in a stable condition, but  
7 vulnerable to becoming active if its fragile vegetative cover is disturbed.

8 DUNE, INTERDUNE AREA - A low lying area between higher sand land forms which is  
9 generally under water during part of the year. Interdune areas are characterized  
10 by a deflation plain which is wind scoured to the level of the summer water table.

11 DUNE, OLDER STABILIZED - A dune which is resistant to wind erosion, has significant  
12 soil development, and may include diverse forest cover.

13 FLAG LOT - A lot having a minimum frontage of 25 feet on a public road or street  
14 from which an accessway not less than 25 feet is provided to a site located behind  
15 other lots which have frontage upon said road or street. Lot area, dimensional  
16 standards and designation of lot lines shall be determined as shown in Section 5.202  
17 Figure 1.

18 GARAGE, PUBLIC - A deck, building or part thereof used for repair or storage of  
19 vehicles for remuneration by the owner and/or employees of said garage.

20 GARAGE, PRIVATE - See Accessory Building.

21 GAS OIL WELL - A well from which oil or gas is obtained.

22 HEIGHT, BUILDING - The vertical distance measured from the existing grade or ground  
23 level (excluding daylight basements on the downhill side) to the highest point on

24 the building or structure excluding chimneys, utility vents, solar panels and  
25 antennas.

## S3.010 Establishment of Zones

2nd Paragraph: The zone boundaries ..... Clatsop County Land and Water Development Maps and Columbia River Estuary Resource Base Maps which in their present form are hereby adopted by reference.

Table 3.010:

Delete:	General Development Shorelands	(S-1)
	Aquatic Rural	(A-2)
	Aquatic Conservation	(A-3)
Add:	Aquatic Conservation Two	(A-2)
	Aquatic Conservation One	(A-3)
	Dredged Material Disposal	
	Overlay Reserve District	(DMD)
	Mitigation Site Overlay	
	Reserve District	(MIT)
	Restoration Inventory Sites	(RI)

## S3.030 Special Purpose Districts

1st Paragraph: The boundaries of special purpose ..... the Clatsop County ..... Maps and Columbia River Estuary Resource Base Maps.

Table 3.030

Delete:	Dredged Material Disposal	..... RES
Add:	Dredged Material Disposal	
	Overlay Reserve District	(DMD)
	Mitigation Site Overlay	
	Reserve District	(MIT)
	Restoration Inventory Sites	(RI)

Section 3.740 Aquatic Development Zone (A-1).

Section 3.742 Purpose and Areas Included. The purpose of the Aquatic Development Zone (A-1) is to designate areas to provide for navigation, water-dependent industrial and commercial uses and other water-dependent development consistent with the level of development allowed by this management zone and the need to minimize damage to the estuarine ecosystem. 1

The Aquatic Development Zone includes existing navigation channels, access channels and, turning basins. Further, deep water areas adjacent to or in proximity to the shoreline, subtidal areas for in-water disposal of dredged materials, and areas for which water-dependent use designations have been justified by means of approved Estuarine Resources Goal exception declarations are designated Aquatic Development.

Section 3.744 Development Uses and Activities Permitted. The following uses and activities are permitted in the Aquatic Development Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.754, Development Standards and Procedural Requirements.

1. Low intensity water-dependent recreation.
2. Passive restoration.
3. Navigational aids, such as beacons or buoys.
4. Vegetative shoreline stabilization.
5. Low water bridge.
6. Emergency repair to existing functional and serviceable dikes.
7. Temporary dike for emergency flood protection, subject to state and federal requirements.

Approval of Permitted Uses 1 through 7 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Permitted Uses.

Section 3.746. Development Uses and Activities Permitted with Review. The following uses and activities are allowed as review uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.754, Development Standards and Procedural Requirements.

1. Maintenance and repair of structures or facilities existing as of October 7, 1977.
2. Water-dependent industrial uses, including but not limited to:
  - a. Port facilities and/or shipping activities.
  - b. Marine fuel dock.
  - c. Ship and boat building, repair, and marine railway facilities.
  - d. Wharves, piers, and other terminal and transfer facilities for passenger or water-borne commerce.
  - e. Seafood receiving and processing.
  - d. Single purpose industrial docks.
3. Maintenance and repair of existing functional and serviceable dikes.
4. Communication facilities.
5. Submerged cable, sewer line, water line, or other pipeline.
6. In-water log storage.

7. Water-dependent portions of aquaculture facilities.
8. Structural shoreline stabilization.
9. Dredged material disposal.
10. Storm water and treated waste water outfalls.
11. Minor dredging of existing tidegate channels and drainage ways, subject to standards for dredging, Section S4.232.
12. Dredging of subtidal estuarine aquatic areas as a source of fill material for dike maintenance, subject to standards for dredging, Section S4.232.

Approval of Review Uses 1 through 12 above must include approval of dredging, fill or piling installation if necessary for placement or installation of these Review Uses.

Section 3.768 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.754, Development Standards and Procedural Requirements. It must also be determined if the proposed uses and activities meet the resource capability of the affected Aquatic Development Zone and if the proposed uses and activities are consistent with the purpose of the Aquatic Development Zone stated in Section 3.742. These findings shall be made in accordance with the procedure detailed in Section , Resource Capability Determination.

1. Navigational structures, including breakwaters, groins, and pile dikes.
2. Dredging for new navigational projects.
3. Dredging for mining or mineral extraction, or dredging as a source of fill material.
4. Public transportation facility bridge crossings and utility foundations.
5. Active restoration.
6. Marina and high intensity water-dependent development recreation development.
7. Single, individual dock or moorage, providing for aquatic area access by owner of adjacent uplands and allowing for moorage of vessels for water-dependent commercial and recreational use.
8. In-water log dump, sorting operation, or storage areas.
9. Water-related commercial and industrial uses including:
  - a. Boat and marine equipment sales.
  - b. Charter fishing offices.
  - c. Cold storage and ice processing facilities.
  - d. Retail trade facilities for the sale of products such as ice, bait, tackle, charts, gasoline, or other products incidental to, or used in conjunction with a water-dependent use.
  - e. Sports fish cleaning establishments.
  - f. Seafood market.
10. Flow lane disposal of dredged material.
11. A non-water dependent use occupying an existing structure with a water-dependent use, and the combination results in a multiple use facility.
12. A temporary use utilizing existing structures or facilities which requires minimal capital investment. A temporary use permit shall be valid for one year with annual renewals permitted subject to conditional use procedure.
13. Security guard quarters in conjunction with a water-dependent use.
14. Other water-related uses meeting the criteria in Section 3.752.

Approval of Conditional Uses 1 through 14 above must include approval of dredging, fill, or piling installation if necessary for placement or

installation of these Conditional Uses.

Section 3.750 Water-Dependent Use Criteria. Water-dependent uses can only be accomplished on, in, or adjacent to water. The location or access is required for any one of the following:

1. Waterborne transportation (such as navigation; moorage, fueling, and servicing of ships or boats; terminal and transfer facilities; fish or other material receiving and shipping).
2. Recreation (active recreation such as swimming, boating, and fishing or passive recreation such as viewing and walking).
3. A source of water (such as energy production, cooling of industrial equipment or wastewater, other industrial processes, aquaculture).
4. Marine research or education (such as observation; sampling, recording information, conducting field experiments and teaching).

Section 3.752 Criteria for Determining Whether a Use is Water-Related. A use is water-related when the use:

1. Provides goods and services that are directly associated with water-dependent uses, supplies materials to, or uses products of water-dependent commercial and industrial uses; or offers services directly tied to the functions of water-dependent uses; and,
2. If not located adjacent to water, would experience a public loss of quality in the goods and services offered (evaluation of public loss of quality will involve a subjective consideration of economic, social, and environmental uses).

Section 3.754 Development Standards and Procedural Requirements.

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall also be satisfied.
4. All development uses and activities that would alter the integrity of the estuarine ecosystem shall be subject to an Impact Assessment as detailed in Section of the Resource Capability Determination procedure, Section .
5. When a development proposal includes several uses, the uses shall be reviewed in aggregate under the more stringent procedure. In addition, a proposal with several uses shall be reviewed in aggregate for consistency with the resource capability and purposes of the Aquatic Development Zone, when a resource capability determination is required.

Section 3.760 Aquatic Conservation Two Zone (A-2).

Section 3.762 Purpose and Areas Included. The purpose of the Aquatic Conservation Two Zone designation is to assure the conservation of: (1) fish and wildlife habitats, (2) essential properties of the estuarine resource (e.g., dynamic geological processes continued biological productivity, unique or endemic communities of organisms, maintenance of species diversity), and (3) the long-term use and conservation of renewable estuarine resources. This designation provides for development uses of low to moderate intensity that do not require major alterations of the estuary, with emphasis on maintaining estuarine natural resources and benefits.

Aquatic Conservation Two Zone designations include small areas of tidal marsh and intertidal mud and sand flats, small fringing tidal marshes, open water portions of the estuary, and areas needed for water-dependent recreational use. Partially altered estuarine areas adjacent to existing development of moderate intensity are also included in this designation; unless otherwise needed for preservation or development potential consistent with the need to minimize damage to the estuarine ecosystem.

Low to moderate intensity development is appropriate in Aquatic Conservation Two management units (e.g., active restoration, communication facilities, and aquaculture). When consistent with the resource capabilities of the area and the purposes of the Aquatic Conservation Two Zone designation, conditional uses providing for development of moderate intensity are appropriate.

Section 3.764. Development Uses and Activities Permitted. The following uses and activities are permitted in the Aquatic Conservation Two Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.770, Development Standards and Procedural Requirements.

1. Low intensity water-dependent recreation.
2. Passive restoration.
3. Navigational aids, such as beacons or buoys.
4. Vegetative shoreline stabilization.
5. Low intensity aquaculture.
6. Low water bridge.
7. Emergency repair to existing functional and servicable dikes.
8. Temporary dike for emergency flood protection, subject to state and federal requirements.

Approval of Permitted Uses 1 through 8 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Permitted Uses.

Section 3.766 Development Uses and Activities Permitted with Review. The following uses and activities are allowed as review uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.770, Development Standards and Procedural Requirements.

1. Single individual dock or moorage, providing for aquatic area access by owner of adjacent uplands and allowing for moorage of a single vessel and recreational use.
2. Submerged cable, sewer line, water line or other pipeline.
3. Maintenance and repair of structures or facilities existing as of October 7, 1977.

4. Structural shoreline stabilization limited to riprap where necessary to protect:
  - a. Structures or uses existing as of October 7, 1977.
  - b. Significant natural resources, historic or archaeological sites.
  - c. Public facilities.
5. Maintenance and repair of existing functional and serviceable dikes.
6. Communication facilities.
7. Storm water and treated waste water outfalls.
8. Minor dredging of existing tidegate channels and drainage ways, subject to standards for dredging, Section S4.232.
9. Dredging of subtidal estuarine aquatic areas as a source of fill material for dike maintenance, subject to standards for dredging, Section S4.232.
10. Dredged material disposal at sites identified in the Comprehensive Plan.

Approval of Review Uses 1 through 10 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Review Uses.

Section 3.768 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.770, Development Standards and Procedural Requirements. It must also be determined if the proposed uses and activities meet the resource capability of the affected Aquatic Conservation Two Zone and if the proposed uses and activities are consistent with the purpose of the Aquatic Conservation Two Zone stated in Section 3.762. These findings shall be made in accordance with the procedure detailed in Section , Resource Capability Determination.

1. Moorages associated with recreational facilities and low intensity, water-dependent commercial or industrial uses.
2. High intensity water-dependent recreation.
3. Public transportation facility bridge crossings.
4. Water-dependent portions of aquaculture facilities.
5. Minor navigational improvements limited to: minor dredging of shoals in naturally existing and traditionally used channels.
6. Low intensity water-dependent commercial or industrial uses requiring occupation of water surface area by means other than fill.
7. In-water log storage.
8. Structural shoreline stabilization limited to riprap and/or bulkhead installation necessary to protect:
  - a. Aquaculture facilities.
  - b. Moorages or marinas.
  - c. High intensity recreation facilities.
9. Maintenance dredging of existing facilities.
10. Dredging for mining or mineral extraction, or dredging as a source of fill material.

Approval of Conditional Uses 1 through 10 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Conditional Uses.

Section 3.770 Development Standards and Procedural Requirements

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall also be satisfied.
4. All development uses and activities that would alter the integrity of the estuarine ecosystem shall be subject to an Impact Assessment as detailed in Section . . . of the Resource Capability Determination procedure, Section . . .
5. When a development proposal includes several uses, the uses shall be reviewed in aggregate under the more stringent procedure. In addition, a proposal with several uses shall be reviewed in aggregate for consistency with the resource capability and purposes of the Aquatic Conservation Two Zone, when a resource capability determination is required.
6. For an expanded water-dependent commercial use of surface area (see Section 3.768, item 6) the following criteria are established and may be required by the Planning Commission:
  - a) that the need for additional aquatic area cannot be met at other alternative locations in the County;
  - b) that the increase in use of estuarine aquatic area will result in minimal additional impacts to fish and wildlife;
  - c) that the increase in use of estuarine aquatic area will not result in adverse impacts on the navigability of the area or adversely affect other commercial uses of adjacent aquatic areas;
  - d) that the need for additional surface area to accommodate the proposed activity is precisely delineated and sufficient information presented warranting expansion.

Section 3.780 Aquatic Conservation One Zone (A-3)

Section 3.782 Purpose and Areas Included. The purpose of the Aquatic Conservation One Zone (A-3) designation is to assure the conservation and protection of: (1) significant fish and wildlife habitats, and (2) essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, maintenance of species diversity). This designation provides for uses that do not require major alteration of the estuary, while providing for the long-term use and conservation of renewable estuarine resources

Aquatic Conservation One Zone designations include valuable tidal marshes and intertidal mud and sand flats smaller or of less biological importance than those identified in the Aquatic Natural Zone (A-4). Aquatic Conservation One Zones may also include productive shallow subtidal areas.

Low intensity uses which do not result in major alterations of the estuary are appropriate in Aquatic Conservation One management units (e.g., aquaculture, recreation, minor navigational improvements). Minor alterations of the estuary may be permitted in conjunction with approved uses.

Section 3.784 Development Uses and Activities Permitted. The following uses and activities are permitted in the Aquatic Conservation One Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.790, Development Standards and Procedural Requirements.

1. Low intensity water-dependent recreation.
2. Passive restoration.
3. Navigational aids, such as beacons and buoys.
4. Vegetative shoreline stabilization.
5. Low water bridge.
6. Emergency repair to existing functional and serviceable dikes.
7. Temporary dike for emergency flood protection, subject to state and federal requirements.

Approval of Permitted Uses 1 through 7 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Permitted Uses.

Section 3.786 Development Uses and Activities Permitted with Review. The following uses and activities are allowed as review uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.790, Development Standards and Procedural Requirements.

1. Single individual dock of moorage, providing for aquatic area access by owner of adjacent uplands and allowing for moorage of a single vessel and recreational use.
2. Submerged cable, sewer line, water line or other pipeline.
3. Maintenance and repair of structures or facilities existing as of October 7, 1977.
4. Maintenance and repair of existing functional and serviceable dikes.
5. Communication facility.

The following review uses and activities are permitted if determined to meet the resource capability of the Aquatic Conservation One Zone in which the use occurs and are found to be consistent with the purpose of the Aquatic Conservation One Zone stated in Section 3.782. This determination shall be made in accordance with the procedure detailed in Section , Resource Capability Determination.

6. Aquaculture facilities limited to: temporary, easily removed structures which require no dredge or fill (e.g., net pens anchored by individual piling). Individual, unconnected piling in conjunction with such aquaculture facilities.
7. Minor dredging of existing tidewater channels and drainage ways, subject to standards for dredging, Section S4.232.
8. Dredging to subtidal estuarine aquatic areas as a source of fill material for dike maintenance, subject to standards for dredging, Section S4.232.
9. Structural shoreline stabilization limited to riprap where necessary to protect:
  - a. Structures or uses existing as of October 7, 1977.
  - b. Significant natural resources, historic or archaeological sites.
  - c. Public facilities.

Approval of Review Uses 1 through 8 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Review Uses.

Section 3.788 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.790, Development Standards and Procedural Requirements. It must also be determined if the proposed uses and activities meet the resource capability of the affected Aquatic Conservation One Zone and if the proposed uses and activities are consistent with the purpose of the Aquatic Conservation One Zone stated in Section 3.782. These findings shall be made in accordance with the procedure detailed in Section , Resource Capability Determination.

1. Public transportation facility bridge crossing.
2. Water-dependent portions of aquaculture facilities.
3. Active restoration.
4. Maintenance dredging of existing facilities.
5. Minor navigational improvements limited to: minor dredging of shoals in naturally existing and traditionally used channels.

Approval of Conditional Uses 1 through 5 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Conditional Uses.

Section 3.790 Development Standards and Procedural Requirements.

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall also be satisfied.
4. All development uses and activities that would alter the integrity of the estuarine ecosystem shall be subject to an Impact Assessment as detailed in Section of the Resource Capability Determination procedure, Section .
5. When a development proposal includes several uses, the uses shall be reviewed in aggregate under the more stringent procedure. In addition, a proposal with several uses shall be reviewed in aggregate for consistency with the resource capability and purposes of the Aquatic Conservation One Zone, when a resource capability determination is required.

Section 3.800 Aquatic Natural Zone (A-4).

Section 3.802 Purpose and Areas Included. The purpose of the Aquatic Natural Zone (A-4) designation is to assure the preservation and protection of: (1) significant fish and wildlife habitats, (2) essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, species diversity), and (3) research and educational opportunities.

The Aquatic Natural Zone includes major tracts of tidal marshes and intertidal mud and sand flats, which because of a combination of factors such as size, habitat value, and productivity, play a vital role in the function of the estuarine ecosystem. Aquatic Natural Zones may also include ecologically important subtidal areas.

Low intensity uses and activities consistent with the preservation and protection of natural resource values are appropriate in Aquatic Natural Zones.

Section 3.804 Development Uses and Activities Permitted. The following uses and activities are permitted in the Aquatic Natural Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.810, Development Standards and Procedural Requirements.

1. Low intensity water-dependent recreation.
2. Passive restoration.
3. Navigational aids, such as beacons and buoys.
4. Vegetative shoreline stabilization.
5. Emergency repair to existing functional and serviceable dikes.
6. Estuarine research and educational observation.

Section 3.806 Development Uses and Activities Permitted with Review. The following uses and activities are allowed as review uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.810, Development Standards and Procedural Requirements.

1. Individual, unconnected piling in conjunction with navigational aides.
2. Maintenance and repair of structures or facilities existing as of October 7, 1977. Dredge, fill or piling installation required for maintenance and repair of such existing structures and facilities.
3. Maintenance and repair of existing functional and serviceable dikes.

The following review uses and activities are permitted if determined to meet the resource capability of the Aquatic Natural Zone in which the use occurs and are found to be consistent with the purpose of the Aquatic Natural Zone stated in Section 3.802. This determination shall be made in accordance with the procedure detailed in Section , Resource Capability Determination.

4. Aquaculture facilities limited to: temporary, easily removable structures which require no dredge or fill (e.g., net pens anchored by individual piling). Individual, unconnected piling in conjunction with such aquaculture facilities.
5. Minor dredging of existing tidegate channels and drainage ways, subject to standards for dredging, Section S4.232.
6. Dredging of subtidal estuarine aquatic areas as a source of fill material for dike maintenance, subject to standards for dredging, Section S4.232.

7. Structural shoreline stabilization limited to riprap where necessary to protect:
  - a. Structures or uses existing as of October 7, 1977.
  - b. Significant natural resources, historic or archaeological sites.
  - c. Public facilities.
8. Low water bridges.

Approval of Review Uses 1 through 8 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Review Uses.

Section 3.808 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.810, Development Standards and Procedural Requirements. It must also be determined if the proposed uses and activities meet the resource capability of the affected Aquatic Natural Zone and if the proposed uses and activities are consistent with the purpose of the Aquatic Natural Zone stated in Section 3.802. These findings shall be made in accordance with the procedure detailed in Section , Resource Capability Determination.

1. Communication facility.
2. Active restoration.
3. Submerged cable, sewer line, water line, or other pipeline.

Approval of Conditional Uses 1 through 3 above must include approval of dredging, fill or piling installation if necessary for the placement or installation of these Conditional Uses.

Section 3.810 Development Standards and Procedural Requirements.

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall be adhered to.
4. All development uses and activities that would alter the integrity of the estuarine ecosystem shall be subject to an Impact Assessment as detailed in Section of the Resource Capability Determination procedure, Section .
5. When a development proposal includes several uses, the uses shall be reviewed in aggregate under the more stringent procedure. In addition, a proposal with several uses shall be reviewed in aggregate for consistency with the resource capability and purposes of the Aquatic Natural Zone, when a resource capability determination is required.

Section 4.080 Shorelands Overlay District (SHO)

Section 4.082 Purpose. The purpose of this district is to manage development uses and activities in coastal shorelands in a manner consistent with the resources and benefits of coastal shorelands and adjacent estuarine aquatic areas.

Section 4.084 Designation of Shorelands Overlay District. This district overlay refers to areas described in the estuarine shoreland inventory included in the comprehensive plan background report and designated on \_\_\_\_\_ . Included in this overlay district are:

- (1) Shorelands which are directly affected by hydraulic action of estuarine waters, or in turn limit, control, or affect the characteristics of estuarine waters, including areas of the 100-year floodplain, areas of geological instability in or adjacent to the shoreland boundary, and sedimentation sources.
- (2) Natural or man-made riparian resources, especially vegetation which functions to stabilize the shoreline and to maintain water quality.
- (3) Areas of significant shoreland and wetland biological habitats, including feeding areas, nesting sites, and important fish and wildlife habitat.
- (4) Areas necessary and appropriate for water-dependent and water-related uses, including port facilities and navigational structures, areas suitable for aquaculture, and existing land uses and public facilities.
- (5) Areas of exceptional aesthetic or scenic quality.
- (6) Areas of recreational importance or public access.
- (7) location of archaeological or historic sites.

Section 4.086 Development Uses and Activities Permitted. Development uses and activities allowed in the underlying zone are permitted subject to the procedural requirements of the zone designation, except in specific areas identified in the comprehensive plan and \_\_\_\_\_ as:

- (1) Significant, non-estuarine marshes.
- (2) Riparian resources.
- (3) Significant fish and wildlife habitat.
- (4) Exceptional aesthetic resources.
- (5) Historic or archaeological sites.

In specific areas (1) through (5) above, uses listed below are permitted under a Type I procedure, Section 2.110:

- (1) Low intensity water-dependent recreation.
- (2) Existing and compatible farm uses and activities, excluding structures.
- (3) Propagation and selective harvesting of forest products consistent with the Oregon Forest Practices Act.
- (4) Research or educational activities which maintain or enhance the natural characteristics of the area and its resources.
- (5) Navigational aids, such as channel range markers, requiring minimal structures and maintenance.
- (6) Vegetative shoreline stabilization.
- (7) Maintenance and repair of existing and servicable dikes.

Section 4.002 Purpose. The purpose of this district is to manage development uses and activities in coastal shorelands in a manner consistent with the resources and benefits of coastal shorelands and adjacent estuarine aquatic areas.

Section 4.004 Designation of Shorelands Overlay District. This district overlay refers to areas described in the Estuarine and Coastal Shoreland Element of the comprehensive plan and designated on official Clatsop County Zoning Maps. Included in this overlay district are:

- (1) Shorelands which are directly affected by hydraulic action of estuarine waters, or in turn limit, control, or affect the characteristics of estuarine waters, including areas of the 100 year floodplain, areas of geological instability in or adjacent to the shoreland boundary, and sedimentation sources.
- (2) Natural or man-made riparian resources, especially vegetation which functions to stabilize the shoreline or maintain water quality.
- (3) Areas of significant shoreland and wetland biological habitats, including feeding areas, nesting sites, and important fish and wildlife habitat.
- (4) Areas necessary and appropriate for water-dependent and water-related uses, including port facilities and navigational structures, areas suitable for aquaculture, and existing land uses and public facilities.
- (5) Areas of exceptional aesthetic or scenic quality.
- (6) Areas of recreational importance or public access.
- (7) Location of archaeological or historic importance.

Section 4.006 Categories of Coastal Shorelands. There are two categories of Coastal Shorelands as described below:

- (1) Those shorelands described in the Estuarine and Coastal Shoreland Element of the Comprehensive Plan as:
  - (a) Significant, non-estuarine marshes;
  - (b) Riparian resources;
  - (c) Significant fish and wildlife habitat;
  - (d) Exceptional aesthetic resources;
  - (e) Historic and archaeological sites.
- (2) All shorelands which do not fall within 1 (a)-(e) are the second category of coastal shorelands. This constitutes most of the coastal shorelands in the County.

Section 4.008 Development Uses and Activities Permitted Within Category 1 Coastal Shorelands. Only the following uses and activities are permitted under a type 1 procedure (Section 2.110) within shorelands defined in Section 4.006 (1) (a)-(e):

- (1) Low-intensity, water-dependent recreation.
- (2) Existing and compatible farm uses and activities, excluding structures.

- (3) Forest operations only if natural values of the resource are protected, as determined by administration of the Oregon Forest Practices Act, where applicable, otherwise as determined by the Department under a Type II procedure.
- (4) Research or educational activities which maintain or enhance the natural characteristics of the area and its resources.
- (5) Navigational aids, such as channel range markers, requiring minimal structures and maintenance.
- (6) Vegetative shoreline stabilization.
- (7) Maintenance and repair of existing and servicable dikes.

Section 4.090 Development Uses and Activities Permitted Within Category 2 Coastal Shorelands. Within coastal shorelands defined in Section 4.086 (2) the following uses and activities are permitted if otherwise allowed in the underlying zone, and subject to the procedural requirements and standards of the use in the underlying zone:

- (1) Uses allowed in Section 4.088 above,
- (2) Single-family dwelling,
- (3) Home occupation,
- (4) Cottage industry in an existing building,
- (5) Signs

Any other uses within Category 2 Coastal Shorelands are only allowed under a Type IV procedure upon findings that such uses satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas and that the use is compatible with the objectives of the comprehensive plan to protect riparian vegetation and wildlife habitat.

Section 4.092 Placement of Structures.

- (1) For parcels totally within the Coastal Shoreland Boundary, structures shall be sited according to lot line setbacks and Riparian Vegetation Standards in S4.500 et seq.
- (2) For parcels partially within and partially outside of the Coastal Shorelands Boundary, structures shall be located outside the Boundary. This requirement may be waived by the Planning Director only upon a showing that the portion of the site outside the Boundary cannot accommodate the use or is of such value for resource purposes that the use would impact resource productivity less if located within in Coastal Shorelands.

Section 4.094 Land Divisions.

- (1) Land divisions in the EFU, AF-20, F-38 and F-80 zones are permitted subject to the requirements of the base zone.
- (2) Land divisions in areas built and committed to nonresource use are permitted subject to the requirements in the base zone.
- (3) Land divisions in areas other than (1) and (2) above are permitted only if they satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas.

Section 3.680 Natural Shorelands Zone (S-3)

Section 3.682 Purpose and Areas Included. This zone is for shoreland areas which should be managed for resource protection, preservation, restoration, and recreation, with severe restrictions on the intensity and types of uses permitted. Natural shoreland areas may include unique or highly valuable vegetative or wildlife habitat, and critical habitat of endangered or threatened species, where a less restrictive designation would not provide adequate protection.

Section 3.684 Development Uses and Activities Permitted. The following uses and activities are permitted in the Natural Shorelands Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.690, Development Standards and Procedural Requirements.

1. Navigational aids.
2. Low intensity recreation.
3. Vegetative shoreline stabilization.
4. Emergency repair to existing functional and serviceable dikes.
5. Research and educational observation.

Section 3.686 Development Uses and Activities Permitted with Review. The following uses and activities are permitted in the Natural Shorelands Zone under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.690, Development Standards and Procedural Requirements.

1. Maintenance and repair of existing functional and serviceable dikes.
2. Structural shoreline stabilization for:
  - a. Structures or uses existing as of October 7, 1977.
  - b. Significant natural resources, historic, or archaeological sites.
  - c. Public facilities.
3. Maintenance and repair of structures existing as of October 7, 1977.

Section 3.688 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.690, Development Standards and Procedural Requirements.

1. Marine research and/or education facilities.
2. Active restoration, mitigation.
3. Cable, sewer line, water line, or other pipeline access corridor and landfall for submerged portions of these facilities in adjacent aquatic areas.

Section 3.690 Development Standards and Procedural Requirements.

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.

Section 3.680 Natural Shorelands Zone (S-3), cont.

2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall be adhered to.
4. Shoreline setbacks shall meet the requirements of development standard S4.237, Riparian Vegetation Protection.

Section 3.660 Conservation Shorelands Zone (S-2)

Section 3.662 Purpose and Areas Included. This zone is intended for shorelands which provide important resource or ecosystem support functions but because of their value for low intensity recreation or sustained yield resources or because of their insuitability for intensive development uses should be designated for nonconsumptive uses. Nonconsumptive uses are those which can utilize resources on a sustained yield basis, while minimally reducing opportunities for other uses of the area's resources.

Section 3.664 Development Uses and Activities Permitted. The following uses and activities are permitted in the Conservation Shorelands Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.670, Development Standards and Procedural Requirements.

1. Low intensity recreation.
2. Navigation aids.
3. Vegetative shoreline stabilization.
4. Emergency repair to existing functional and serviceable dikes.
5. Temporary dike for emergency flood protection, subject to state and federal requirements, limited to 60 days.
6. Agriculture.
7. Timber propagation and harvest, subject to state and federal requirements.

Section 3.666 Development Uses and Activities Permitted with Review. The following uses and activities are permitted in the Conservation Shorelands Zone under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.670, Development Standards and Procedural Requirements.

1. Structural shoreline stabilization for:
  - a. Structures or uses existing as of October 7, 1977.
  - b. Significant natural resources, historic, or archaeological sites.
  - c. Public facilities.
2. Dredged material disposal at sites designated in the comprehensive plan.
3. New dike construction and maintenance and repair of existing functional and serviceable dikes.
4. Excavation to create new water surface area.
5. Active restoration, mitigation.
6. Maintenance and repair of structures existing as of October 7, 1977.
7. Communication facilities.

Section 3.668 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.670, Development Standards and Procedural Requirements.

1. Marine research and education facilities.
2. Access to single individual dock or moorage used for water-dependent recreational or low-intensity commercial purposes. Upland facility limited to immediate water access needs.
3. Aquaculture facilities.
4. Log storage and sorting yard.
5. Utilities.
6. Land transportation facilities.
7. Cable, sewer line, water line, or other pipeline access corridors and landfall for submerged portions of these facilities in adjacent aquatic areas.

Section 3.660 Conservation Shorelands Zone (S-2), cont.

Section 3.670 Development Standards and Procedural Requirements.

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall be adhered to.
4. Shoreline setbacks shall meet the requirements of development standard S4.237, Riparian Vegetation Protection.

Section 3.620 Marine Industrial Shorelands Zone (M-1)

Section 3.622 Purpose and Areas Included. The purpose of the Marine Industrial Shorelands Zone is to manage shorelands in urban and urbanizable areas especially suited for water-dependent development uses and to protect these shorelands for water-dependent industrial, commercial, and high-intensity recreational use.

The Marine Industrial Shorelands zone includes areas with special suitability for water-dependent development. Primary attributes for Marine Industrial Shorelands areas are access to well scoured deep water and maintained navigational access, presence of land transportation and public facilities, existing developed water-dependent upland uses, potential for aquaculture, feasibility for marina development, and potential for recreational utilization.

Uses of Marine Industrial Shorelands shall maintain the integrity of the estuary and coastal waters. Water-dependent development uses receive highest priority, followed by water-related uses. Uses which are not water-dependent or water-related are provided for, only if they do not foreclose options for future higher priority uses and do not limit the potential for more intensive uses of the area.

Section 3.624 Development Uses and Activities Permitted. The following uses and activities are permitted in the marine industrial Shorelands Zone under a Type I procedure, Section 2.110, and subject to the provisions of Section 3.634, Development Standards and Procedural Requirements.

1. Low-intensity water-dependent recreation.
2. Vegetative shoreline stabilization.
3. Navigational aids.
4. Passive restoration.
5. Grazing or other farm uses involving no structures.
6. Forestry
7. Emergency repair to existing functional and serviceable dikes.
8. Temporary dike for emergency flood protection, subject to state and federal regulations, limited to 60 days.

Section 3.626 Development Uses and Activities Permitted with Review. The following uses and activities are permitted in the Marine Industrial Shorelands Zone under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.634, Development Standards and Procedural Requirements.

1. New dike construction and maintenance and maintenance and repair of existing functional and serviceable dikes.
2. Communication facilities.
3. Cable, sewer line, water line, or other pipeline access corridors and landfall for submerged portions of these facilities in adjacent aquatic areas.
4. Structural shoreline stabilization.
5. Dredged material disposal at sites designated in the comprehensive plan.
6. Storm water and treated wastewater outfalls.
7. Docks and moorages.

8. Excavation to create new water surface area.
9. Utilities.

Section 3.620 Marine Industrial Shorelands Zone (M-1), cont.

Section 3.628 Conditional Development Uses and Activities. The following uses and activities are allowed as conditional uses under a Type II procedure, Section 2.120, and subject to the provisions of Section 3.634, Development Standards and Procedural Requirements.

1. Water-dependent industrial uses including, but not limited to:
  - a. Port facilities and/or shipping activities.
  - b. Marine fuel dock.
  - c. Ship and boat building, repair and marine railway.
  - d. Wharves, piers, and other marine terminals and transfer facilities for passenger or water-borne commerce.
  - e. Seafood receiving and processing.
  - f. Single-purpose industrial docks.
2. Other water-dependent industrial or commercial uses meeting the criteria in Section 3.630, Water-Dependent Use Criteria.
3. Water-related industrial and commercial uses including, but not limited to:
  - a. Boat and/or marine equipment sales.
  - b. Charter fishing offices.
  - c. Cold storage and/or ice processing facilities.
  - d. Retail trade facilities for the sale of products such as ice, bait, tackle, charts, gasoline, or other products incidental to or used in conjunction with a water-dependent use.
  - e. Sports fish cleaning establishments.
  - f. Seafood market.
4. Other water-related industrial and commercial uses meeting the criteria in Section 3.632, Criteria for Determining Whether a Use is Water-Related.
5. A temporary use utilizing existing structures or facilities which requires minimal capital investment. A temporary use permit shall be valid for one year with annual renewal permitted subject to a Type II procedure.
6. Security guard quarters in conjunction with a water-dependent use.
7. Aquaculture facilities.
8. Marina and/or commercial moorage, high-intensity water-dependent recreation.
9. Forest manufacturing.
10. Mining and mineral extraction processing and differentiation.

Section 3.620 Marine Industrial Shorelands Zone (M-1), cont.

Section 3.630 Water-Dependent Use Criteria. Water-dependent uses can only be accomplished on, in, or adjacent to water. The location or access is required for any one of the following:

1. Waterborne transportation (such as navigation; moorage, fueling, and servicing of ships or boats; terminal and transfer facilities; fish or other material receiving and shipping).
2. Recreation (active recreation such as swimming, boating, and fishing or passive recreation such as viewing and walking).
3. A source of water (such as energy production, cooling of industrial equipment or wastewater, other industrial processes, aquaculture).
4. Marine research or education (such as observation, sampling, recording information, conducting field experiments and teaching).

Section 3.632 Criteria for Determining Whether a Use is Water-Related. A use is water-related when the use:

1. Provides goods and services that are directly associated with water-dependent uses, supplies materials to, or uses products of water-dependent commercial and industrial uses, or offers services directly tied to the functions of water-dependent uses; and,
2. If not located adjacent to water, would experience a public loss of quality in the goods and services offered (evaluation of public loss of quality will involve a subjective consideration of economic, social, and environmental uses).

Section 3.634 Development Standards and Procedural Requirements.

1. All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
2. All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards Document.
3. All other applicable ordinance requirements shall be adhered to.
4. When a proposal includes several uses, the uses shall be reviewed in aggregate under the more stringent procedure.
5. Uses that are not water-dependent shall not preclude or conflict with existing or probable future water-dependent use on the site or in the vicinity.
6. In Marine Industrial Shorelands, uses that are not water-dependent or water-related shall be set back 30 feet from mean higher high water or the line of non-aquatic vegetation.

Section 3.620 Marine Industrial Shorelands Zone (M-1), cont.

1. Chapters 1, 2, 5 and 6 and Sections of Chapter 3 of the Development and Use Standards Document; and
2. Section S4.200, Shoreland and Aquatic Development and Section S4.200, Rock and Mineral Resource Use, of the Development and Use Standards Document.

3. Plan review and approval:

No building permit or other permit for construction or alteration of any building structure or use in the M-1 zone shall be issued until plans have been reviewed and approved by the Planning Director in order to evaluate their conformity with the performance standards of this zone and the Comprehensive Plan, and to evaluate the compatibility of the proposed structures or uses with surrounding uses as to factors, including, but not limited to, transportation, access, signs, lighting, building placement and design, noise, air quality, vibration, storage, landscaping, adjoining uses and location of public utilities including water and sewer facilities. Following said review, any activity or structure so approved by the Planning Director shall be deemed a permitted development with review under the general description of permitted uses set forth in Section 3.626 hereof. Any activity or structure shall no longer be deemed a permitted use if not so constructed or completed, of the activity undertaken within the time not to exceed five years as may be set forth in the approval and review. If the permitted use status is lost because of lack of construction or activity within the time specified, a new plan review or approval must be obtained.

4. Standards:

- a. All uses must meet applicable state and federal air quality and noise laws or regulations.
- b. Storage: all materials, including wastes, shall be stored and maintained in a manner that will not attract or aid the propagation of insects or rodents or other animals or birds, or otherwise create a health hazard or nuisance.

Section 4.080 Shorelands Overlay District (SHO), cont.

Section 4.088 Development Standards and Procedural Requirements.

- (1) All development uses and activities shall satisfy applicable regional policies contained in the Comprehensive Plan, Estuarine Resources and Coastal Shorelands element.
- (2) All development uses and activities shall satisfy applicable Shoreland and Aquatic Development Standards contained in the Development and Use Standards document.
- (3) All other applicable ordinance requirements shall also be satisfied.

Section 4.160 Dredged Material Disposal Overlay Reserve District (DMD)

Section 4.162 Purpose. The purpose of this district is to designate dredged material disposal sites with the County with respect to present and expected water-dependent development and navigational access requirements and to protect these sites for dredged material disposal operations.

Section 4.164 Zone Boundaries. The DMD district is indicated on the County \_\_\_\_\_ and conforms to the description of dredged material disposal sites in the County's Dredged Material Disposal Management Plan (1983 revisions) and the comprehensive dredged material management plan for the Columbia River estuary presented in the Columbia River Estuary Regional Management Plan. Revisions to the County's Dredged Material Disposal Management Plan and \_\_\_\_\_ must be recorded by amendment to the comprehensive plan and plan map.

Section 4.164 Site Reservation. When a valid development permit application is submitted for Planning Department or Planning Commission approval which would entail use of property within the DMD district, action on the application will be suspended for 90 days, in the case of Priority I dredged material disposal sites, and for 30 days, in the case of Priority II sites, from the date of application to allow interested individuals or organizations to negotiate for use of the site as a dredged material disposal area. The Planning Director will maintain a list of dredging project sponsors and other parties who may be interested in the use of dredged material disposal sites included in the County's plan. Persons on this list will be notified of the development application and the hold on County action to allow them an opportunity to negotiate for the use of the involved site. If negotiations are not completed within the relevant period, the development application will be reviewed in accordance with normal procedures.

Section 4.166 Priority I Dredged Material Disposal Sites. The purpose of Priority I dredged material disposal site designations is to protect important dredged material disposal sites from incompatible and pre-emptive uses that may limit their ultimate use for the deposition of dredged material, and to assure that an adequate number of sites will be reserved in order to accommodate dredged material disposal needs resulting from five years of existing and expected water-dependent development and navigation projects.

Section 4.168 Designation of Priority I Dredged Material Disposal Sites. Priority I dredged material disposal sites are identified in the County's Dredged Material Disposal Management Plan and on \_\_\_\_\_. Revisions to the County's Dredged Material Disposal Management Plan and \_\_\_\_\_ must be recorded by amendment to the comprehensive plan and plan map.

Section 4.170 Uses Permitted in Priority I Dredged Material Disposal Sites. In Priority I dredged material disposal sites, only those development uses and activities permitted, permitted with review, or conditionally permitted in the underlying zone which are determined not to pre-empt the site's future use for dredged material disposal are allowed.

Incompatible and pre-emptive use of Priority I dredged material disposal sites includes the following:

Section 4.160 Dredged Material Disposal Overlay Reserve District (DMD), cont.

- (1) Uses requiring substantial structural or capital improvements (e.g., construction of permanent buildings);
- (2) Uses that require extensive alteration of the topography of the site, thereby reducing the potential usable volume of the dredged material disposal area (e.g., extensive site grading, elevation by placement of fill materials other than dredged spoils);
- (3) Uses that include changes made to the site that would prevent expeditious use of the site for dredged material disposal. Such uses would delay deposition of dredged materials on the site beyond the period of time commonly required to obtain the necessary federal, state, and local dredging and spoil disposal permits (approximately 90 days);

Section 4.172 Removal of Priority I Dredged Material Disposal Site Designation.

- (1) After a Priority I dredged material disposal site has been filled and is no longer available for additional dredged material disposal, the dredged material disposal site designation shall be removed.
- (2) Removal of a Priority I dredged material disposal site designation before a site has been filled to capacity shall be done by ordinance amendment to the comprehensive plan and plan map and shall only be approved if:
  - (a) Provision is made for a replacement Priority I dredged material disposal site of suitable characteristics; or
  - (b) The dredging need for which the Priority I site was initially designated for dredged material disposal is withdrawn or re-evaluated.

Section 4.174 Priority II Dredged Material Disposal Sites. The purpose of the Priority II dredged material disposal site ranking is to identify disposal areas necessary to meet probable and projected dredging needs. These sites may be required in the future to provide disposal site volumes associated with long-range water-dependent development and navigational dredging needs. The importance of these sites, as compared with Priority I dredged material disposal sites, does not justify efforts to reserve all or portions of each site from other potential pre-emptive uses.

Section 4.176 Designation of Priority II Dredged Material Disposal Sites. Priority II dredged material disposal sites are identified in the County's Dredged Material Disposal Management Plan and on \_\_\_\_\_ . Revisions to the County's Dredged Material Disposal Management Plan and \_\_\_\_\_ must be recorded by amendment to the comprehensive plan and plan map.

Section 4.178 Uses Permitted in Priority II Dredged Material Disposal Sites. In Priority II dredged material disposal sites, development uses and activities permitted, permitted with review, or conditionally permitted in the underlying zone are allowed, subject to the 30 day hold period indicated in Section 4.164.

Section 4.182 Purpose. The purpose of the mitigation reserve district is to protect identified mitigation sites from incompatible and pre-emptive development uses and activities that may prevent the potential for restoration of the area to estuarine influence or prevent mitigation actions.

Section 4.184 Designation of Mitigation Sites. Mitigation sites are identified on \_\_\_\_\_ and conform to the description of mitigation sites in the CREST Coastal Energy Impact Study element of the County's comprehensive plan background report. Revisions to mitigation site designations must be recorded by amendment to the comprehensive plan and plan map.

Section 4.186 Development Uses and Activities Permitted in Mitigation Sites. In designated mitigation sites, only those development uses and activities permitted, permitted with review, or conditionally permitted in the underlying zone which are determined not to pre-empt the area's future use as a mitigation site are allowed.

Incompatible and pre-emptive use of mitigation sites includes the following:

- (1) Uses requiring substantial structural or capital improvements (e.g., construction of permanent buildings): *ESUA - Farm barn*
- (2) Uses that require extensive alteration of the topography of the site, thereby affecting the potential value of the site for mitigation, or for restoration as a mitigation action (e.g., extensive site grading, elevation of the site by placement of fill materials)
- (3) *Mad* Uses that include changes made to the site that would prevent expeditious use of the area for mitigation. Such uses would delay use of the area for mitigation beyond the period of time commonly required to obtain federal, state, and local permits necessary for the mitigation action and the associated development requiring mitigation.

*Proposed* Proposed development uses and activities will be reviewed under the procedure required for such proposals in the underlying zone.

Section 4.190 Removal of Mitigation Site Designation.

- (1) After a mitigation site has been used for a mitigation or restoration action and all or a portion of the site is no longer available for mitigation, the mitigation site designation shall be removed and the aquatic area created as a result of the mitigation action shall be zoned as an Aquatic Natural (A-1) designation. These changes must be recorded by amendment to the comprehensive plan and plan map.
- (2) Removal of a designated mitigation site from the County's site inventory before the site has been used wholly or in part for

Section 4.180 Mitigation Site Overlay Reserve District (MIT), cont.

mitigation shall be done by ordinance amendment to the comprehensive plan and plan map and shall only be approved if:

- (a) Provision is made for a replacement mitigation site of suitable characteristics; or
- (b) The development need for which the mitigation site was initially designated as a compensating action is withdrawn or re-evaluated.

## Section 5.800 Resource Capability Determination

Section 5.810 Purpose. Certain development uses and activities in estuarine aquatic management zones are allowed only if determined to meet the resource capability and purpose of the zone in which the use or activity is proposed. The purpose of this section is to establish a procedure for determining the consistency of proposed development uses and activities with the resource capability of affected aquatic area management designations.

Section 5.820 Resource Capability Definition. Resource capability is defined as the degree to which natural estuarine resources can be physically, chemically or biologically altered, or otherwise assimilate an external use and still function to achieve the purpose of the estuarine aquatic management zone in which the estuarine resources are located and in which the development uses and activities are proposed.

Section 5.830 Statement of Purpose of Estuarine Aquatic Management Zones. Following are the purpose statements of the estuarine aquatic management zones included in the County's comprehensive plan and zoning ordinance.

Aquatic Natural Zone (A-4) (Section 3.802). The purpose of the Aquatic Natural Zone is to assure the preservation and protection of: (1) significant fish and wildlife habitats, (2) essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, species diversity), and (3) research and educational opportunities. Low intensity uses and activities consistent with the preservation and protection of natural resource values are appropriate in Aquatic Natural zones.

Aquatic Conservation One Zone (A-3) (Section 3.782). The purpose of the Aquatic Conservation One Zone is to assure the conservation and protection (1) significant fish and wildlife habitats, and (2) essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, species diversity). This designation provides for uses that do not require major alteration of the estuary, while providing for the long-term use and conservation of renewable estuarine resources. Low intensity uses which do not result in major alterations of the estuary are appropriate in Aquatic Conservation One management units. Minor alterations of the estuary may be permitted in conjunction with approved uses.

Aquatic Conservation Two Zone (A-3) (Section 3.762). The purpose of the Aquatic Conservation Two Zone is to assure the conservation of: (1) fish and wildlife habitats, (2) essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, maintenance of species diversity and (3) the long-term use and conservation of renewable estuarine resources. This designation provides for development uses of low to moderate intensity that do not require major alteration of the estuary, with emphasis on maintaining estuarine natural resources and benefits.

Aquatic Development Zone (A-1) (Section 3.742). The purpose of the Aquatic Development Zone is to designate areas to provide for navigation, water-dependent industrial and commercial uses, and other water-dependent development consistent with the level of development allowed by this management zone and the need to minimize damage to the estuarine ecosystem.

Section 5.840 Resource Capability Procedure. In order to determine whether proposed development uses and activities are consistent with the resource capability and purpose of the affected aquatic management zone the following procedure is required:

- (1) Identification of the resources in the zone in which the development is proposed.
- (2) Identification of adverse impacts expected from the development proposal on the resources identified in (1) above.
- (3) Determination of whether the aquatic area resources can continue to achieve the purpose of the zone in which the development is proposed.

Section 5.850 Identification of Resources and Impacts, Impact Assessment Procedure. The purpose of this section is to provide an assessment process for development alterations which could potentially alter the integrity of the estuarine ecosystem. Certain development uses and activities proposed for particular aquatic area management designations will require an assessment of resource capability before the use or activity is permitted as consistent with the purpose and resource capability of the zone. The impact assessment procedure is intended as a description of the impacts expected from a development proposal. This procedure will provide the information necessary to judge the capability of the estuarine resource to accommodate the identified impacts without altering the integrity of the resource as it relates to the stated purpose of the particular management zone. In addition, this impact assessment procedure will be used to analyze the effects of proposed development uses and activities which entail dredging, filling, or other potential reduction or degradation of estuarine resource values, which may or may not require a resource capability determination.

The analysis presented in the impact assessment will be the means of concluding that the proposed development alteration: (1) conforms with all comprehensive plan policies and standards and does not represent potential degradation or reduction of significant estuarine fish and wildlife habitats and essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, species diversity); or, (2) conforms with all comprehensive plan policies and standards, but includes potential environmental alteration that would degrade or reduce significant estuarine fish and wildlife habitats and essential properties of the estuarine resource.

Section 5.860 Impact Assessment Requirement. An impact assessment shall be required for the following:

- (1) When a development use or activity requires a determination of consistency with resource capability.
- (2) Filling or dredging in intertidal areas.

Section 5.800 Resource Capability Determination, cont.

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- (3) Placement of navigational structures.
- (4) Industrial or commercial uses in Aquatic Development areas.
- (5) New dredging projects.
- (6) Proposals for active restoration.

Federal environmental impact statements or detailed project reports and impact assessments may substitute for this requirement if available at the time of permit review. The Planning Director may require an impact assessment for development uses and activities not included in (1) through (6) above when it is believed that the proposed use or activity may involve significant impacts.

Section 5.870 Use of Impact Assessment Procedure. The impact assessment procedure shall be used to:

- (1) Identify potential development alterations of significant estuarine fish and wildlife habitats and perturbation of essential properties of the estuarine resource, to determine whether potential impacts can be avoided and minimized, and to provide a factual base of information that will ensure consistency with applicable Shoreland and Aquatic Development Standards contained in the County's Development and Use Standards Document.
- (2) Determine the consistency of proposed development uses and activities with the resource capability and purpose of affected management zones where a development proposal requires a resource capability determination.

Section 5.880 Information to be Provided in the Impact Assessment. Information compiled in impact assessments may be drawn from data and analysis available in: the CREST Inventory and Columbia River Estuary Regional Management Plan; environmental impact statements or environmental assessments prepared for previous projects in the vicinity of the present development proposal; Columbia River Estuary Data Development Program data, reports, and other products; or other published environmental and estuarine studies pertaining to the Columbia River estuary and region. Impact assessments should apply available information to the following general areas of analysis:

- (1) Aquatic life forms and habitat, including information on: habitat type and use (e.g., rearing, spawning, feeding or resting area, migration route), species present, seasonal abundance, sediment type and characteristics, vegetation present. Type of alteration, including information detailing the extent of alteration (e.g., area measurement, depths to which alteration will extend, volumes of materials removed and/or placed as fill), impacted species, including threatened or endangered species, life stages and life cycles affected with regard to timing of the proposed alteration, percent of total available habitat type subjected to alteration.
- (2) Shoreland life forms and habitat, including information on: habitat type and use (e.g., feeding, resting, or watering areas, flyways),

Section 5.800 Resource Capability Determination, cont.

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- species present, seasonal abundance, soil types and characteristics, vegetation present. Type of alteration, including information detailing the extent of alteration (e.g., area measurement, extent of grading and excavation, removal of riparian vegetation), impacted species, including threatened or endangered species, life stages and cycles affected with regard to timing of the proposed alteration, percent of total available habitat type subjected to alteration.
- (3) Water quality, including information on: increases in sedimentation and turbidity, decreases in dissolved oxygen concentration, changes in biological and chemical oxygen demand, contaminated sediments, alteration of salinity regime, disruption of naturally occurring water temperatures, changes due to reduction, diversion or impoundment of water.
  - (4) Hydraulic characteristics, including information on: changes in water circulation patterns, shoaling patterns, potential of erosion or accretion in adjacent areas, changes in the flood plain, decreases in flushing capacity or decreases in rate of water flow from reduction or diversion or impoundment of water resources.
  - (5) Air quality, including information on: quantities of emissions of particulates, expected inorganic and organic airborne pollutants.
  - (6) The impact of the proposed project on navigation and public access to shoreline and aquatic areas.
  - (7) Demonstration that any proposed structures or devices are properly engineered.
  - (8) Demonstration that the public good will benefit positively from the development alteration, and that the public's need and gain will offset any adverse impacts resulting from the proposed development.
  - (9) Demonstration that non-water dependent uses will not pre-empt existing or future water-dependent utilization of the area.
  - (10) Determination of the potential cumulative impact of the proposed development, including alteration of adjacent significant estuarine fish and wildlife habitat and perturbation of essential properties of the estuarine resource.
  - (11) Determination of methods for alteration and accommodation of the proposed development, based on items (1) through (10) above, in order to minimize preventable adverse impacts. Determination of the need for mitigation.

Section 5.890 Impact Assessment and Resource Capability Findings. Resulting from the analysis of the information presented in Section 5.890, Information to be Provided in the Impact Assessment, one of the following findings shall be concluded:

- (1) The proposed development uses and activities are in conformance with all comprehensive plan policies and standards and do not represent a potential degradation or reduction of significant fish and wildlife habitats and essential properties of the estuarine resource. Where an impact assessment is required for a resource capability determination the proposed development uses and activities are consistent with the resource capability and purpose of the affected management zone.

- (2) The proposed development uses and activities are in conformance with all comprehensive plan policies and standards, but represent a potential degradation or reduction of significant fish and wildlife habitats and essential properties of the estuarine resource. The impact assessment identifies reasonable alternatives to the proposed actions that will eliminate or minimize to an acceptable level expected adverse environmental impacts. Where an impact assessment is required for a resource capability determination, the adverse environmental impacts have been minimized to be consistent with the resource capability and purpose of the management zone.
- (3) The proposed development uses and activities are not in conformance with comprehensive plan policies and standards; impact assessment analysis indicates that unacceptable loss will result from the proposed development alteration. The proposed development represents irreversible changes and actions and unacceptable degradation or reduction of significant estuarine fish and wildlife habitats and essential properties of the estuarine resource will result; or, that the adverse consequence of the proposed development, while unpredictable and not precisely known, would result in irreversible trends or changes in estuarine resource properties and functions. Where an impact assessment is required for a resource capability determination, the adverse impacts expected from the proposed development uses and activities are not consistent with the resource capability and purpose of the management zone.

Section 5.900 Resource Capability Administrative Provisions. A resource capability determination for development uses and activities identified in the County's zoning ordinance as permitted with review or conditionally permitted shall be made in accordance with the provisions of a Type I Procedure, Section 2.110, or a Type II Procedure, Section 2.120, as stipulated by the pertinent aquatic area management zone.

Public notice of development proposals which require determination of consistency with resource capability shall be sent to all affected parties. State and federal resource agencies with mandates and authorities for planning, permit issuance, and resource decision-making, including the following, will be notified: Oregon Department of Fish and Wildlife, Oregon Division of State Lands, Oregon Department of Land Conservation and Development, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Environmental Protection Agency, U.S. Army Corps of Engineers.

Section 5.910 Resource Capability Determination Appeal Procedure. A resource capability determination made as part of a Type I Procedure may be appealed as provided in Section 2.110 (2) and in accordance with review procedures detailed in Sections 6.500 through 6.530. A resource capability determination made as part of a Type II Procedure may be appealed as provided in Section 2.120 (5) and in accordance with review procedures detailed in Sections 6.500 through 6.530.

## Shoreland and Aquatic Use and Activity Standards

S4.200 Purpose. Shoreland and aquatic area standards are requirements which apply to development uses and activities proposed in one or more of the following management designations: Marine Industrial Shorelands Zone (M-1); Natural Shorelands Zone (S-3); Conservation Shorelands Zone (S-2); Aquatic Development Zone (A-1), Aquatic Conservation Two Zone (A-2); Aquatic Conservation One Zone (A-3); Aquatic Natural Zone (A-4); and those areas included in the Shorelands Overlay District (SO). These standards are intended to protect the unique economic, social, and environmental values of the Columbia River estuary.

S4.202 General Standard. Particular development uses and activities shall be allowed only if it is determined that such development is consistent with the purpose of the affected management unit designation described in the Clatsop County Comprehensive Plan and, in instances of specified review and conditional uses and activities, consistent with the resource capability of the estuarine shoreland and aquatic area. The Resource Capability Determination procedure is included in Section 5.800 of the County's zoning ordinance.

S4.203 General Development Zone Standards. All development uses and activities in water-dependent development shorelands and aquatic development zones, in addition to meeting specific development standards, shall meet the following general shoreland and aquatic use and activity standards, where appropriate.

- (1) Shoreland and aquatic area developments that are not water-dependent shall not preclude or unduly conflict with existing, proposed or probable future water-dependent development on the site or in the vicinity.
- (2) Uses will be compatible with adjacent uses (particularly adjacent historic structures). Appropriate landscaping, fencing, and/or other buffering techniques shall be used to protect the character of adjacent uses.
- (3) Waterfront access for the public, such as walkways, trails, waterfront seating or landscaped areas, shall be provided except when proven to be inconsistent with security or safety factors. Industrial and port facilities should be designed to permit viewing of the waterfront and/or port operations from viewpoints which would not interfere with industrial operations. Provision of public access shall not result in enlargement of development areas requiring dredge or fill activities or other alteration of estuarine resources.
- (4) Where feasible, cooperative facilities for parking, cargo handling, storage, or moorage should be established for more than one use. When new facilities are proposed, the applicant shall show that existing facilities in the area can not be utilized.
- (5) In some locations maintenance, placement or replacement of riparian vegetation may be required to enhance visual attractiveness or assist in bank stabilization (refer to Riparian Vegetation Protection Standards, Section S4.237).

S4.205 Airports. Terminal stations for aircraft, passenger and cargo operations, including runways, towers, and associated structures and systems shall comply with the following standard:

A. Airports and associated facilities shall be located away from migratory bird flyways and habitat used by resident waterfowl and other birds, in the interest of air safety and wildlife conservation.

S4.206 Aquaculture. Aquaculture uses in shoreland and aquatic zones shall comply with the following standards:

- A. Structures and activities associated with an aquaculture operation shall be located and designed not to interfere with navigation.
- B. Water diversion or other shoreline structures shall be located so as not to prohibit public access to the shoreline in areas traditionally utilized for public access. Public access to the facility shall be provided except when the applicant demonstrates such facilities would be inconsistent with security and safety of the use.
- C. Aquaculture facilities shall be designed to minimize their visual impacts including view obstruction.
- D. Aquaculture operations in Natural Aquatic areas should be low intensity operations consistent with the protection of natural values. Such aquaculture facilities shall be limited to temporary, easily removable structures (e.g., net pens with single piling) and accessory individual piling for anchoring purposes.

S4.207 Commercial Uses. Privately-owned or operated facility or place of business open to the public for sale of goods or services. Examples include: restaurants, taverns, hotels, motels, offices, personal services, retail stores, recreational vehicle parks, and campgrounds. Outdoor advertising, signs, and billboards are subject to the standards set forth here. Public facilities offering similar goods or services should also meet these standards.

- (A) Sign placement shall not impair views of water areas. When feasible, signs shall be constructed against existing buildings to minimize obstructions of the view of the shoreline and water bodies. Off-premise outdoor signs shall not be allowed in aquatic areas.
- (B) Removal of riparian vegetation shall be permitted only when the use requires direct access to water. Temporary removal of riparian vegetation due to construction may be permitted subject to a revegetation plan approved by the County specifying the following: (1) temporary stabilization measures, and (2) methods and timing of permanent revegetation with selected plant species (Refer to Riparian Vegetation Protection Standards, Section S4.237).
- (C) Parking facilities shall not be located over the water or on the immediate shoreline, except upon a finding by the appropriate local government that no practicable alternative exists because of physical and economic constraints. Even if this demonstration is made, parking must be located as far landward as feasible.
- (D) Commercial uses situated on floating structures shall be located in areas protected from currents and wave action and shall not rest on the bottom during tidal cycles or periods of low flow. Floating structures will be sited in order to protect natural vegetation.
- (E) In development designations commercial uses that are not water-dependent or water-related shall be set back 30 feet from mean high water or the line of nonaquatic vegetation.

- (F) In Aquatic Conservation Management units, only water-dependent industrial and commercial uses which occupy water surface areas by means other than fill shall be permitted.

S4.208 Dock and Moorage Facility. Dock and moorage facilities in the aquatic and shoreland zones shall comply with the following standards:

- A. An analysis of existing docks and moorages, including nearby marinas, community docks and cooperative moorage facilities, providing evidence that alternative dock and moorage opportunities are fully utilized, impractical, or will not satisfy a specific need, must accompany a proposal for a private, individual dock or moorage exceeding two thousand five hundred dollars. New subdivisions which propose moorage shall provide a common moorage facility.
- B. The size of the dock or moorage shall be the minimum necessary to fulfill the purpose. Docks, piers, and floats shall extend no further out into the aquatic area than necessary to provide for navigational access or other water-dependent uses. Any identified conflict with other waterway uses, such as commercial fishing, recreational boating, and log storage or transportation, shall be minimized. Extension of dock and pier construction beyond MHHW is restricted to the length essential for the proposed use.
- C. Covered or enclosed moorages are not allowed except in connection with a commercial or industrial use where shelter is necessary for repair and maintenance of vessels and related equipment, such as fishing gear, etc.
- D. Open pile piers or secured floats shall be used for dock construction.
- E. Floats in tidally influenced areas shall be located in areas protected from currents and wave action and shall not rest on the bottom during tidal cycles or periods of low flow. Floating structures will be sited to prevent damage to natural vegetation.
- F. Docks and moorages shall be designed so that adverse hydraulic effects (e.g., alteration of water circulation and sediment transport) at the site and in adjacent areas are minimized.

S4.209 Industrial and Port Facilities. Public or private use of shoreland or aquatic area structures for manufacturing, processing, deep water port development, and energy generation facilities shall comply with the following standards:

- (A) The placement of industrial and port facilities will take into account the impact on views and vistas from adjacent roads, nearby residential areas, water-oriented commercial uses, and waterfront access points.
- (B) The applicant shall present evidence that the industrial or port facility is designed and constructed to minimize adverse impacts on the following: air quality, water quality, hydraulic characteristics, aquatic life and habitat, navigation and shoreland traffic routes, and commercial activities. The Corps of Engineers, as the principal review and permitting agency, will require an impact assessment for industrial and port facilities development proposals that involve major alteration of the estuary, including but not limited to breakwaters, jetties, groins, pile dikes, fills, industrial dock structures, and dredging projects (Ref: State and Federal Requirements Section).
- (C) Where a water-dependent industrial use is adjacent to natural or conservation aquatic areas, the applicant shall identify measures taken

e.g. a buffer strip of trees, that will reduce adverse impacts on adjacent natural and conservation designations to a level consistent with the purpose of the affected designation.

- (D) Parking facilities shall not be located over water or on the immediate shoreline, except upon a finding that no practicable alternative exists because of physical and economic constraints. Even if this demonstration is made, parking must be located as far landward as is feasible.
- (E) Industrial uses on floating structures or on piling shall be located in areas of minimal currents and wave action and be located so as not to rest on the bottom during tidal cycles or periods of low flow. Floating structures will be sited in order to prevent damage to natural vegetation.
- (F) Removal of riparian vegetation shall be permitted only where direct access to water is required. Placement or replacement of riparian vegetation or enhancement of existing vegetation will be required where it would improve visual attractiveness or assist in bank stabilization. Temporary removal of riparian vegetation due to construction may be permitted subject to a revegetation plan approved by the County specifying: (1) temporary stabilization measures and (2) methods and timing for restoration of riparian vegetation using selected plant species (Refer to Riparian Vegetation Protection Standards, Section S4.237).
- (G) Multipurpose and cooperative use of proposed moorage, parking, cargo handling, and storage facilities shall be required where feasible. When new facilities are proposed, the applicant shall present analysis indicating that existing facilities cannot be utilized. New facilities shall be designed to provide for cooperative uses, as feasible.
- (H) see S4.207 Commercial Uses, #F.

S4.210 Land Transportation Facilities. Highways, railroads, bridges, and associated structures and signs which provide for land transportation of motorized and/or nonmotorized vehicles (excluding private logging roads) in aquatic or shoreland zones shall comply with the following standards:

- (A) Land transportation facilities shall not be located in aquatic areas except where bridge crossings are needed and where no feasible alternative shoreland or upland route exists.
- (B) Applicants for land transportation facility projects shall provide an evaluation of the impact of the proposed project on the following:
  - 1) Land use patterns;
  - 2) Energy use;
  - 3) Significant fish and wildlife habitat and essential properties of the estuarine resource (e.g. dynamic geological properties, continued biological productivity, unique or endemic communities of organisms, species diversity;
  - 4) Existing transportation facilities;
  - 5) Physical and visual access to the estuary and shorelands;
  - 6) Sedimentation, erosion and flood elevations.

-Adverse impacts of land transportation facilities shall be minimized.

S4.211 Log Dump/Sort/Storage - In-Water. Placement of logs in-water, and in-water log storage and sorting in aquatic designations shall comply with the following standards:

- (A) New log storage areas will be located such that logs and log booms will not go aground on tidal changes or during periods of fluctuations in water flow. Proposals for re-establishing log and log boom storage in locations formerly used for such purposes, or proposals for reconditioning of former log and boom storage areas and where submerged lands lease rights must be reapproved, must meet standards applied to new log storage and log boom storage areas, and must be consistent with the purposes of the affected management unit.
- (B) New log and log boom storage areas, or proposals for re-establishing storage in areas where submerged lands lease rights must be reapproved, shall not be located in areas which would conflict with traditional and active gillnet fish drifts or other commercial and recreational fishing activities.
- (C) Log storage areas shall be located where water quality degradation due to such activities would be minimal and good flushing conditions prevail. (Ref. State and Federal Requirements Section).

S4.212 Log storage and sorting yard. A shoreland designation where logs are gathered from surrounding harvest areas, weighed sorted for species, size and quality, and stored until ready for transfer to water storage areas, or to market, shall comply with the following standards:

- (A) Unpaved storage yards underlain by permeable soils shall have at least a four foot separation between the yard surface and the winter water table.
- (B) On water-dependent development shorelands, storage and sorting facilities shall not preclude or conflict with existing or probable future water-dependent uses on the site or in the vicinity, unless the dry sort yard is itself an essential part of a water-dependent facility. (Ref: State and Federal Requirements Section)

S4.213 Marina. Marina facilities in aquatic or shoreland designations shall comply with the following standards:

- (A) The applicant shall present evidence that the marina facility is designed and constructed to minimize adverse impacts on the following: navigation, water quality, sedimentation rates and patterns, shoreland habitat and estuarine resources, traffic patterns and parking facilities, and adjacent shoreline and aquatic area uses (Ref: State and Federal Requirements Section).
- (B) The amount of water surface occupied shall be the minimum required to meet the demonstrated need. In this regard, new facilities shall make maximum feasible use of dry boat moorage on shoreland areas.
- (C) Means for preventing oil, fuel, and other contaminants from entering the water shall be provided, including shoreland facilities for public dumping of oil and emptying of holding tanks. A contingency plan for containment

and clean-up of accidental spills shall be provided, including details of confinement structures surrounding holding tanks. Sewage and fish wastes shall not be discharged directly into the water. (Ref: State and Federal Requirements).

- (D) Covered or enclosed moorages are not allowed except in connection with a commercial or industrial water-dependent use where shelter is necessary for repair and maintenance of vessels and associated equipment.
- (E) New marina facilities shall be located in areas where there is natural or man-made protection from wind, waves, tidal currents and surge, storms, strong prevailing winds and passing ship wakes. Marinas shall be located or designed in a manner which will not adversely affect the natural processes of erosion, sediment transport and/or beach accretion.
- (F) Marina facilities shall provide public access and facilities for recreational use except when the applicant demonstrates such facilities would be inconsistent with security and safety of the use. Walkways, seating, fishing areas, and similar facilities should be provided.
- (G) Parking facilities shall not be located on the immediate shoreline except upon a finding that no practicable alternative exists because of physical and economic constraints. Even if the demonstration is made, parking must be located as far landward as is feasible.
- (H) Floats used for docks, moorages or other purposes in marinas shall be located and constructed such that they do not go aground on tidal changes or during periods of low flow.
- (I) An analysis of existing marinas providing evidence that such facilities are fully utilized, impractical, or will not satisfy a specific need must accompany a proposal for a new marina.

S4.214 Mining and Mineral Extraction. Mining and mineral extraction uses and activities in aquatic or shoreland zones shall comply with the following standards:

- (A) Mining operators proposing extraction activities with potential impacts in shoreland and aquatic areas shall present the County with documentation indicating state approval of a surface mining plan and a reclamation plan before commencing operations.
- (B) Project sponsors proposing mining and mineral extraction shall demonstrate that the activity is sited, and designed, and will be operated, and maintained to minimize adverse impacts on the following:
  1. Significant fish and wildlife and essential properties of the estuarine resource (e.g., dynamic geological properties, continued biological productivity, unique or endemic communities of organisms, species diversity);
  2. Hydraulic characteristics, including but not limited to circulation and the alteration of local currents that may affect adjacent shoreline areas;
  3. Water quality.

- (C) Petroleum extraction and drilling operations shall not be allowed in aquatic areas. Petroleum may, however, be extracted from beneath aquatic areas using equipment located on adjacent shorelands or uplands. Petroleum exploration not including exploratory drilling, is permitted in estuarine aquatic and shorelands areas subject to review by state and federal resource agencies. Exploration and extraction wastes shall not impair water quality. (Ref: State and Federal Requirements Section.)
- (D) Unless part of an approved fill project, spills and stockpiles of materials removed from aquatic areas shall be placed beyond the reach of high water and in such a manner that sediment will not enter or return to the waterway.
- (E) Temporary removal of riparian vegetation shall be permitted in cases where direct water access is required as part of a mining or mineral extraction operation. Site rehabilitation plans shall provide for replacement of riparian vegetation. Erosion control measures such as seeding, mulching, ditches, dikes, sedimentation basins and silt fences or curtains shall be provided and maintained (Refer to Riparian Vegetation Protection Standards, Section S4.237).
- (F) Mining or mineral extraction shall not occur in productive, shallow sub-tidal areas, as determined by the Corps of Engineers permit processes or in aquatic areas shallower than 10 feet below MLLW. Where the applicant has shown that mining or mineral extraction in aquatic areas is necessary because no feasible upland sites exist, the activity shall occur in areas of sandy bottom sediments (or coarser materials) deeper than 10 feet below MLLW where it can be demonstrated by the project sponsor that adverse effects on significant fish and wildlife habitat and essential properties of the estuarine resource (e.g., dynamic geological properties, continued biological productivity, unique or endemic communities of organisms, species diversity) will be minimized.

S4.215 Navigational Structures. Navigation structures located in aquatic zones shall comply with the following standards:

- (A) Navigational structures shall be permitted only if:
1. Required for navigation or in conjunction with a water-dependent recreational, commercial, or industrial use;
  2. Adverse impacts on water currents, erosion, and accretion patterns, flushing characteristics, aquatic habitat and fishery resources, and navigational use of adjacent aquatic areas are avoided or minimized.

Effects on long-shore sediment transport on beaches and in the estuary are especially important and should be evaluated carefully. In addition to 1 and 2 above, where a navigational structure would function as an erosion or flood control device it must be demonstrated that alternative land use management practices and non-structural solutions are inadequate to address the problem.

- (B) Jetties, groins and rock breakwaters shall be constructed of clean, non bituminous, erosion resistant land materials. Instream sediments shall not be used. The size of materials shall be appropriate for existing wave, tide and current conditions. A plan certified by a registered engineer shall be submitted which ensures sound engineering practices and compliance with state and federal in-water construction standards.

- (C) Pile dikes shall be sited and constructed in accordance with the standards for pile and dolphin installation, section S4.236.
- (D) Fills shall be placed in accordance with the standards applying to fill activities, section S4.235.

S4.216 Recreation. Recreation uses in aquatic and shorelands areas shall comply with the following standards:

- (A) Recreation uses in waterfront areas shall take maximum advantage of their proximity to the water by providing water access points, water viewing areas and structure design compatible with the aesthetic qualities of the waterfront location.
- (B) Parking areas shall be located as far from the shoreline as feasible. Parking areas shall not be located on the immediate shoreline, except upon a finding by the county that no practicable alternative exists because of physical and economic constraints.
- (C) Recreational uses shall be designed to minimize adverse effects on surface and ground water quality. The adverse effects of storm run-off from parking lots shall be minimized.

S4.217 Residential Uses. Development of land and structures for human occupancy as living quarters. This category includes single and multi family dwellings, subdivisions, mobile homes and mobile homeparks, and planned unit developments. Residential uses in shoreland zones which permit housing shall comply with the following standards:

- (A) The basic shoreline setback for residential structures and associated parking shall be 35 feet as measured from the aquatic-shoreland boundary. If the applicant can demonstrate that existing structures on adjoining lots infringe on the 35 foot setback, the setback may be determined by the building line common to the adjacent existing structures.
- (B) Riparian vegetation shall be protected and maintained within shoreline setbacks set forth in Section S4.237, Riparian Vegetation Protection Standards, except where direct water access is required for a water-dependent or water-related use. Temporary removal of riparian vegetation due to construction practices or landscaping may be permitted subject to a revegetation plan approved by the County specifying:
  1. Temporary stabilization measures;
  2. Methods and timing for restoration of riparian vegetation. Vegetation used for restoration shall be consistent with the criteria presented in Riparian Vegetation Protection Standards S4.237, and section S4.238, Shoreline Stabilization Standards.
- (C) Unless it can be demonstrated that adequate public access exists in the area, subdivisions, mobile home parks and planned unit developments shall provide for public pedestrian access to the shoreline within the development.
- (D) Aquatic areas adjacent to the shoreland area being developed will not be used to compute the lot area or density of the residential development.

- (E) Where the groundwater is or may be used as a water supply, the level of the ground water table shall not be significantly lowered by the instruction of drainage facilities or by pumping at rates which may cause intrusion of salt water. (Ref: State and Federal Requirements).
- (F) Fill in Aquatic areas shall not be permitted for residential uses. Residential uses in Aquatic Development areas shall be limited to accessory uses and multi-family dwellings with marine facilities. Multi-family residences with marina facilities shall not preclude or unduly conflict with existing or expected future water-dependent use on or adjacent to shorelands especially suited for water-dependent development.

S4.218 Restoration. Restoration and resource enhancement in aquatic or shorelands designations shall comply with the following standards:

- (A) Restoration and resource enhancement in Aquatic Development, or Marine industrial Shorelands should be undertaken only if it is likely that the project will not conflict with or be destroyed by existing or subsequent development appropriate to these zones.
- (B) Proposals for restoration or resource enhancement shall be accompanied by an analysis of the potential effects of the action on: estuarine circulation and current patterns; shoaling or erosion; water quality; existing habitat and natural resource values; and feeding and migration of juvenile salmon, and other estuarine, marine, and freshwater fishes and aquatic organisms. Adverse effects to such estuarine resources resulting from restoration or resource enhancement activities shall be minimized.
- (C) Use of land zones for exclusive farm use for restoration or resource enhancement projects shall be accomplished through an exception to Statewide Planning Goal 16, Estuarine Resources.

S4.219 Solid Waste Disposal. Solid waste disposal in shoreland zones shall comply with the following standards:

- (A) Solid waste disposal on shorelands shall be allowed only when an alternative upland location is demonstrated to be infeasible. Solid waste deposited in a shoreland disposal site shall be strictly confined to the site with the stipulation that all leachates be controlled by impermeable dike structures with appropriate treatment and outfall facilities. (Ref: State and Federal Requirements).
- (B) Solid waste material shall not be deposited in aquatic areas or wetlands.
- (C) Aesthetic impacts of shoreland solid waste disposal sites shall be minimized by screening the site with natural or planted vegetation.

S4.220 Utility. Utilities in aquatic or shoreland zones shall comply with the following standards:

- (A) Electrical or communication transmission lines shall be located underground, unless burial is demonstrated as uneconomically feasible. Routes for major overhead electrical and communication transmission lines shall be chosen which minimize interference with migratory bird flyways and significant habitat of waterfowl, birds of prey and other birds.
- (B) Utilities shall not be located on new fill land unless part of an otherwise approved development fill project and no other alternative is feasible.
- (C) Above-ground utilities shall be designed to have the least adverse effect on visual and other aesthetic characteristics of the area. Interference with public uses and public access to the estuary shall be minimized.
- (D) After installation or maintenance of existing utility structures is completed, disturbed stream banks and aquatic and riparian vegetation shall be stabilized and restored (Refer to Riparian Vegetation Protection Standards, Section S4.237, and Shoreland Stabilization Section S4.238).

S4.230 Bankline and Streambed Alteration. Relignment of a stream bank or streambed, either within or without the normal high water boundary of the stream. All bankline and streambed alterations must comply with the following standards:

- (A) Adverse impacts on fish spawning, feeding, migration and transit, wildlife habitat, riparian vegetation, circulation patterns, salinity intrusion, water quality, sediment movement and distribution, erosion and accretion in adjacent aquatic areas, and other estuarine processes, habitats, and functions shall be evaluated and minimized.
- (B) An altered water course shall meander and maintain stream surface area as feasible. Alteration of sloughs, oxbows, marshes, and riparian vegetation shall be minimized.
- (C) Alignments should make maximum use of natural or existing deep water channels, but should not create pockets of stagnant water or other undesirable hydraulic conditions.

S4.220. Timber Propagation/Harvesting Standards. Timber propagation/harvesting in aquatic zones shall comply with the following standards:

1. In Conservation areas (primarily Sitka Spruce swamps), the Department of Forestry and local government shall allow only selective commercial timber cutting of no more than thirty percent of the merchantable trees in any ten year period of time: PROVIDED, that other timber harvesting methods may be permitted in those limited instances where the topography, soil conditions, and silviculture practices necessary for regeneration, make selective logging ecologically detrimental: and PROVIDED FURTHER, that clear cutting of timber which is solely incidental to the preparation of land for other uses authorized by these standards may be permitted. Disruption of drainage patterns, wildlife habitat and aquatic values shall be minimized, and logging roads and heavy equipment shall not be permitted in aquatic areas.

- (D) Excavation activities in stream bankline areas resulting in expansion of existing aquatic area shall comply with standards regulating excavation of shorelands for the creation of new water surface area, section S4.234.

S4.231 Dike. Dikes maintenance, construction, and erosion protection activities in aquatic and shoreland zones shall comply with the following standards:

- (A) The outside face of the dike shall be suitably protected to prevent erosion during new dike construction and during maintenance of existing dikes. Applicable standards for shoreline stabilization shall be met. (See Shoreland Stabilization Standards, Section S4.238). However, trees, brush and shrubs which jeopardize the dikes should be excluded from revegetation plans.
- (B) New dike alignment and configuration shall not cause an increase in erosion or shoaling in adjacent areas or an appreciable increase in seasonal water levels behind dikes. Channelization of the waterway shall be avoided. (Ref: State and Federal Requirements).
- (C) New diking of aquatic areas is subject to the standards for fill Section S4.235.
- (D) Where new dikes are shown to be necessary for flood protection due to the inadequacy or inappropriateness of land use management practices or non-structural solutions, new dikes shall be placed on shorelands and not in aquatic areas.
- (E) Dredging of subtidal estuarine aquatic areas as an activity necessary to obtain fill material for dike maintenance shall comply with standards for dredging, Section S4.232.

S4.232 Dredging. Proposals for a County permit for dredging and County review of state and federal dredging permit actions shall comply with the following standards:

- (A) Dredging in aquatic areas shall only be permitted if required for:
1. Navigation or navigational access;
  2. A permitted, review, or conditionally permitted water dependent use of aquatic areas or adjacent shorelands;
  3. An approved restoration project, as provided in section S4.218.
  4. Mining or mineral extraction, as provided in section S4.214.
  5. A permitted review, or conditionally permitted bridge footing excavation or utility foundation, as provided in section S4.220.
  6. Maintenance of existing dikes, tidegates, and tidegate drainage channels.

The dredging activities in estuarine aquatic areas shall be allowed only if:

7. A public need is demonstrated;
  8. No alternative upland locations exist;
  9. Adverse impacts are minimized.
- (B) When dredging is permitted, the dredging shall be the minimum necessary to accomplish the proposed use.

- (C) Erosion, sedimentation, increased flood hazard, and other undesirable changes in circulation shall be avoided in dredging and the disposal of dredged material in aquatic areas. Tidal marshes, tidal flats, and other wetlands shall not be adversely affected.
- (D) The timing of dredging and dredged material disposal in aquatic areas shall be coordinated with state and federal resource agencies, local governments, and private interests to ensure adequate protection of estuarine resources (fish runs, spawning, benthic productivity, wildlife habitat, etc.) and to minimize interference with commercial and recreational fishing activities. In general, dredging and dredged material disposal should occur during periods of adequate river flow to aid flushing of suspended sediments and downstream transport of materials introduced to aquatic areas due to dredging activities.
- (E) Adverse short-term effects of dredging and aquatic area disposal such as increased turbidity, release of organic and inorganic materials or toxic substances, depletion of dissolved oxygen, disruption of the food chain, loss of benthic productivity, and disturbance of fish runs and important localized biological communities shall be minimized.
- (F) Impacts on areas adjacent to the dredging site such as destabilization of fine-textured sediments, erosion, siltation, and other undesirable changes in circulation patterns, shall be avoided.
- (G) All relevant state and federal water quality standards shall be met by dredging and dredged material disposal activities (Ref: State and Federal Requirements Section).
- (H) In the evaluation of any new dredging project, adverse effects expected from the initial dredging activity and subsequent maintenance dredging must be evaluated.
- (I) Minor dredging of existing tidegate drainage channels and drainage ways is limited to the amount necessary to maintain and restore flow capacity essential for the function (the drainage service provided by the tidegate) of tidegates and to allow drainage and protection of agricultural and urban developed areas. Tidegate maintenance dredging does not include enlarging or extending the dimensions of, or changing the bottom elevations of, the affected tidegate drainage channel or drainage way as it existed prior to the accumulation of sediments or formation of a sediment blockage and subsequent construction of discharge flow capacity.
- (J) Dredging of subtidal estuarine areas as a source of fill material for dike maintenance, in all aquatic area designations, may be allowed upon the applicant's demonstration that:
1. Alternative methods of accomplishing dike maintenance are infeasible (i.e., dikes proposed for receiving dredging fill material are remote from upland sources of fill material and that land-based heavy equipment access to the dike area is not possible);
  2. Dredging in all cases will be limited to that necessary to maintain the dikes. Dredging as a source of fill material for dike maintenance does not include enlarging or changing the bottom contour of natural aquatic areas for navigation or any other aquatic area use;

3. Dredging will not disturb or excavate emergent vegetation, intertidal flats, or other adjacent intertidal estuarine resources;

4. Dredging as a source of fill material for dike maintenance will, in all cases, take place in subtidal aquatic areas, and shall be limited to the deepest sub-tidal aquatic area accessible to float-mounted dredging equipment. In narrow tributary areas of the estuary, dredging shall be limited to the deepest sub-tidal areas nearest the centerline of the waterway. In reaches of the estuary exceeding 200 feet in width, dredging shall be limited to subtidal areas greater than 80 feet distant from the waterward foot of dikes. The intent of this standard is to protect the other slope of dike structures from sloughing, maintain existing berms and shoal water immediately adjacent to dikes, and limit dredge excavations to subtidal areas below the level of effective light penetration.

5. Dredging will not be confined to localized areas of river bottom. All excavations as a source of fill material shall be lineally dispersed, along the entire dike maintenance area. Dredging shall not alter the existing contour of the river bottom such that deep trenches and pockets capable of stranding or impeding estuarine lifeforms will be created.

6. Dredging operations shall be consistent with state and federal resource agency conditions, the requirements of local governments, and concerns of private interests, to ensure that project timing and dredging conditions protect estuarine resources (e.g., fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).

(K) Dredging for mining or mineral extraction in aquatic areas shall only occur in aquatic areas deeper than 10 feet below MLLW. Where mining and mineral extraction in aquatic areas is necessary because no feasible upland sources of the material are present, the activity shall occur in aquatic areas deeper than minus 10 feet MLLW. In all cases adverse effects on significant fish and wildlife habitat and essential properties of the estuarine resource (e.g., dynamic geological properties, continued biological productivity, unique or endemic communities of organisms, species diversity) will be minimized.

(L) New dredging in Aquatic Conservation management units may be permitted only for:

- a. Aquaculture;
- b. High intensity water-dependent recreation;
- c. Minor navigational improvements;
- d. Mining and mineral extraction or as a source of fill material for dike maintenance;
- e. Active restoration;
- f. Bridge crossing support structure;
- g. Communication facilities
- h. Submerged cable, sewer line, water line, or other pipeline;
- i. Private or recreational moorages.

S4.233 Dredge Material Disposal. Dredge material disposal (DMD) and dredged material disposal site selection in aquatic and shoreland areas shall comply with the following standards:

- (A) Aquatic and shoreland disposal of dredged material shall be allowed only at approved sites identified in the comprehensive plan except if the disposal operation is part of an approved fill project or an approved flow-lane operation in development designated navigation channel areas.
- (B) Dredging Standards S4.232, numbers 3, 4, 6, 6, 7, and 8 shall apply in all instances of dredged material disposal;
- (C) Proposals for in-water estuary or ocean disposal of dredged materials shall:
  - a. Demonstrate the need for the proposed action and the availability and feasibility of alternative sites and methods of disposal that entail less damaging environmental impacts;
  - b. Demonstrate that the sediment size and chemical characteristics of the material proposed for in-water disposal is substantially the same as the substrate in the disposal area.
  - c. Indicate that the necessary water quality certification or a short-term exemption has been obtained from participating state and federal regulatory agencies (Ref: State and Federal Requirements Section);
  - d. Not be permitted in the vicinity of a public water intake;
- (D) Flow-lane disposal sites shall be in areas identified as low in benthic productivity and use of these sites shall not have adverse hydraulic effects. Long-term use of disposal sites in the estuary shall be allowed only when no feasible alternative shoreland or ocean disposal sites can be identified and the biological and physical impacts of flow-lane disposal are demonstrated to be insignificant. Flow-lane disposal is contingent upon demonstration that:
  - a. Dredged sediments are free from contamination;
  - b. Sediments introduced into the estuary will remain in suspension and continue downstream within the main navigation channel;
  - c. Adverse effects due to changes in biological and physical estuarine properties will not result;
  - d. Flow-lane disposal sites should be shown able to transport sediment down stream without excessive shoaling, interference with commercial or recreational fishing activities, undesirable hydraulic effects, or adverse effects on estuarine resources (fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).
- (E) Ocean disposal shall be conducted such that:
  - a. The amount of material deposited at a site is compatible with benthic populations, other marine resources, and other uses of the area;

- b. Interference with sport and commercial fishing is minimized;
  - c. Disposal is strictly confined to the designated disposal site(s);
- (F) Except for flow-lane disposal and beach nourishment, disposal of dredged materials inside the estuary shall be substituted for ocean disposal only when sea or weather conditions are a hazard to safe navigation for the dredging vessel;
- (G) Beach nourishment shall be conducted such that:
- a. Erosion or deposition downstream from the disposal site does not occur. Particular care must be taken that erosion of the dredged material does not result in adverse siltation in areas of emergent vegetation or other intertidal or shallow subtidal productive areas;
  - b. The volume and frequency of dredged material disposal is sufficient to maintain a stable beach profile. Dredged material shall be graded at a uniform slope and contoured to minimize juvenile fish stranding.
- (H) For land disposal:
- a. Surface runoff from disposal sites shall be controlled to protect water quality and prevent sedimentation of adjacent water bodies, wetlands, and drainage ways. Disposal runoff water must enter the receiving waterway through a controlled outfall at a location with adequate circulation and flushing characteristics. Underground springs and aquifers must be identified and protected;
  - b. Dikes shall be well constructed and form a sufficiently large containment area to encourage proper ponding and to prevent the return of dredged materials into the waterway or estuary. Containment ponds should be designed to maintain at least one foot of standing water at all times to further encourage settling of dredged materials. Outfall weirs should have proper crest heights (Ref: State and Federal Requirements Section).
- (I) Land disposal sites that are not intended for immediate subsequent use as development locations, including sites which will be re-used for dredged material disposal, shall be revegetated as soon as site conditions allow in order to retard wind and wave erosion and to restore the fish and wildlife habitat value of the site. Native plant species should be considered for revegetation of disposal areas; however, plant species and revegetation techniques approved by the Soil Conservation Service, the U.S. Army Corps of Engineers, and other participating federal and state resource agencies are appropriate.
- (J) Height and slope requirements: the final height and slope after each use of a land dredged material disposal site shall be such that:
- a. The site does not enlarge itself by sloughing and erosion into adjacent aquatic areas;
  - b. Loss of materials from the site during storms and freshets is minimized;
  - c. Interference with the view from nearby residences, scenic points, and parks is avoided.

S4.234 Excavation for Creation of New Water Surface Area. Excavation of shorelands to create new water surface and aquatic area contiguous with adjacent tidal and/or non-tidal waters.

- (A) Creation of new water surface area shall be allowed only in conjunction with navigation uses, water-dependent development, or as a restoration action.
- (B) Water quality degradation due to excavation to create new water surface area shall be minimized. Adverse effects on water circulation and exchange, increase in erosion and shoaling conditions, and introduction of contaminants to adjacent aquatic areas resulting from excavation of the area and presence of the new aquatic area will be minimized to the extent feasible.
- (C) Interference with existing navigational uses of the estuary shall be minimized.
- (D) Existing shoreland wildlife habitat shall not be destroyed and riparian vegetation shall be protected to the extent possible. New banklines shall be stabilized against erosion, preferably by vegetation. Plant species used for vegetative stabilization shall be selected on the basis of potential for containment of sediment and value for fish and wildlife habitat. (Refer to Riparian Vegetation Protection Standards, Section S4.237, and Shoreline Stabilization Standards, section S4.238).
- (E) Sediments and materials generated by the excavation shall be deposited on land in an appropriate manner. (Refer to Dredged Material Disposal Standards, section S4.233 item H, land disposal).
- (F) The maximum feasible amount of the new water surface area shall be excavated as an upland site, behind protective berms. The new aquatic area shall be connected to adjacent water areas as the excavation is completed. Excavation in this manner shall not result in channelization of the waterway.
- (G) Existing public access shall not be reduced, and increased public access to the water and recreational opportunities as part of the project are encouraged.

S4.235 FILL. The placement by man of sediment or other material (excluding solid waste) in an aquatic area to create new shoreland or fastland shall comply with the following standards:

- (A) The project sponsor shall present information demonstrating that impacts on the following will be minimized to the extent feasible:
  - 1. Navigation;
  - 2. Fish and wildlife habitats and essential properties of the estuarine resource (e.g., dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, species diversity);
  - 3. Water quality and circulation;
  - 4. Recreational and commercial uses of the estuarine resource.
- (B) A fill shall be the minimum necessary to accomplish the proposed use.

- (C) Where existing public access is reduced due to the proposed fill, suitable public access as part of the development project shall be provided; however, project fill requirements shall not be expanded in order to provide public access.
- (D) Fill in aquatic areas shall be permitted only if required:
1. In conjunction with a permitted review or conditionally permitted water-dependent use which requires an estuarine location;
  2. In conjunction with a permitted, review or conditionally permitted bridge footing or utility foundation;
  3. An approved restoration project;
  4. Navigational structures and improvements;
  5. Approach to low water bridges;
  6. Flood control structures and structural shoreline stabilization.
- In addition, filling in aquatic areas shall be allowed only if:
7. A public need is demonstrated;
  8. No alternative upland locations exist; and,
  9. Adverse impacts due to fill are minimized.
- (E) All fill sites in aquatic areas shall be surrounded and contained by appropriate dike structures. Outer dike slopes shall be stabilized to prevent redistribution of sediments. Refer to Dike Standards, S4.231 and standards for shoreline stabilization, section S4.237.
- (F) Fill in Aquatic Conservation Two management units is permitted only for the following uses and activities:
1. Maintenance and protection of man-made structures existing as of October 7, 1977;
  2. Active restoration;
  3. Bridge crossing support structures;
  4. Aquaculture, high intensity water-dependent recreation and minor navigational improvements;
  5. Flood and erosion control structures, if required to protect a permitted water-dependent use, and if land use management practices and nonstructural solutions are inadequate to protect the use.
- (G) Fill in Aquatic Conservation One management units is permitted only as part of the following uses and activities:
1. Maintenance and protection of man-made structures existing as of October 7, 1977;
  2. Active restoration;
  3. Bridge crossing support structures.

S4.236 Piling and Dolphin Installation. The driving of wood, concrete or steel piling in aquatic areas to support piers, docks or structures and for moorage of vessels, log rafts, and floating structures, or for other uses. A dolphin is a group of piling held together by steel cable and used for mooring vessels, log rafts or floating structures.

- (A) Piling and dolphin installation shall be permitted only in conjunction with a permitted, or conditional use for which no feasible upland sites exist.
- (B) Piling and dolphin installation shall be the minimum necessary to accomplish the proposed use.
- (C) The applicant shall present information demonstrating that the proposed piling or dolphin installation is designed and constructed to minimize adverse impacts on the following list:
  - 1. Navigation;
  - 2. Estuarine aquatic life and habitat;
  - 3. Water circulation and sediment transport;
  - 4. Water quality; and
  - 5. Recreational uses.

S4.237 Riparian Vegetation Protection. Because of the importance of vegetation adjacent to and bordering estuarine aquatic areas for maintenance of water quality and fish and wildlife habitat, and because such vegetation is an aesthetic and recreational resource, riparian vegetation shall be protected. All development uses and activities affecting riparian vegetation shall comply with the following standards:

- (1) Riparian vegetation resources are described in the County's comprehensive plan and identified on Columbia River Estuary Resource Base Maps. These resources shall be maintained through the use of protective setbacks, except where direct water access is required for water-dependent and water-related uses. Development shall be setback 50 feet from all identified significant wetland and biological habitat, and 30 feet from the shoreline unless a 50 foot setback is stipulated on the maps.

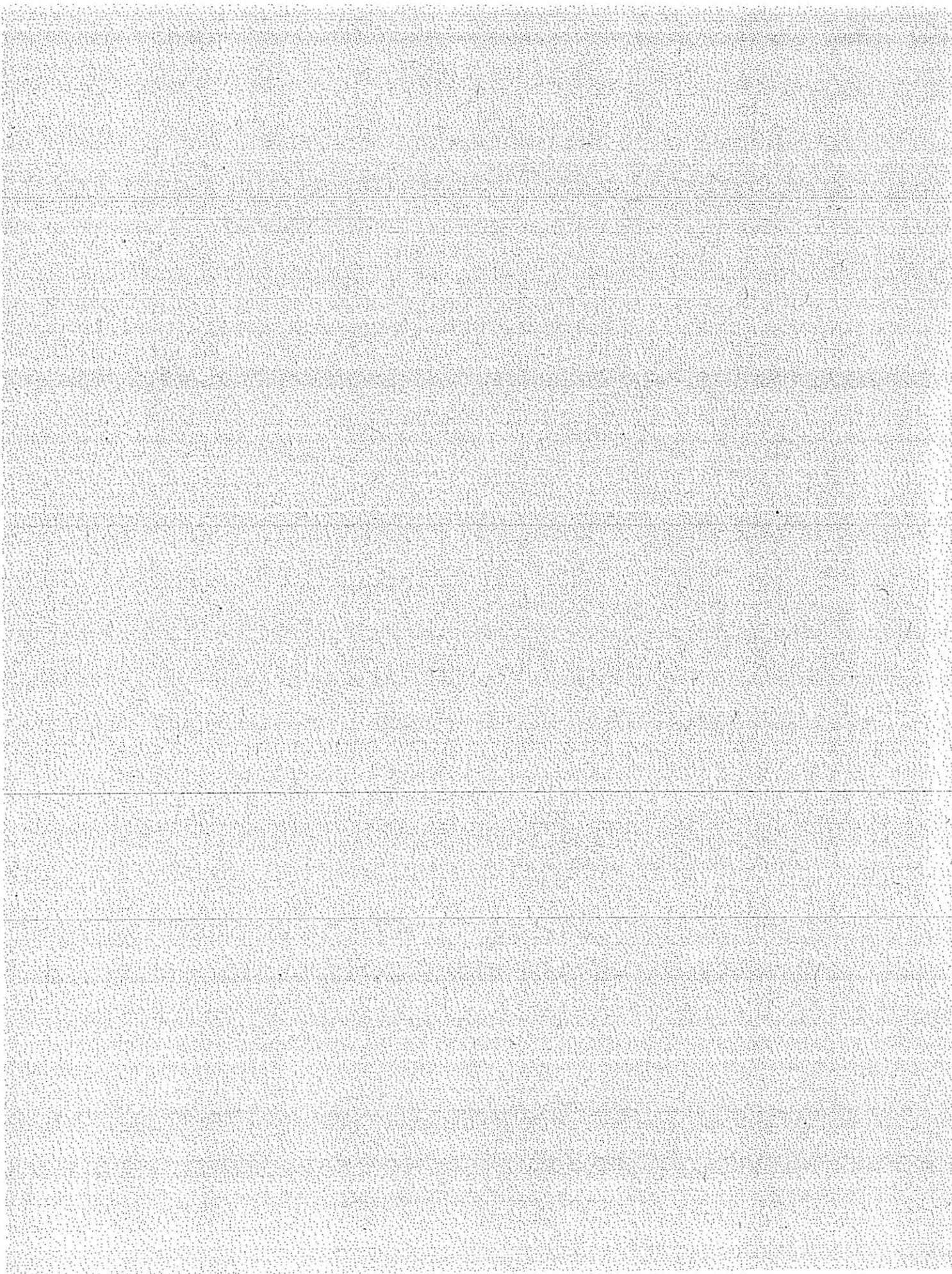
Because the riparian vegetation protection buffer in (a) and (b) above is a uniform distance of 50 or 30 feet, pasture land, land managed for agricultural crops, landscaped area or unvegetated areas which do not function as riparian vegetation may, in particular locations, be included in the protection buffer. Upon request, the County may undertake a site investigation to establish the extent of riparian vegetation requiring protection in a particular location.

- (2) Temporary removal of riparian vegetation due to construction or landscaping may be permitted subject to a revegetation plan approved by the County specifying: (1) temporary stabilization measures and (2) methods and timing of restoration of riparian vegetation. Native plant species should be considered for revegetation; however, plant species and revegetation techniques approved by the Soil Conservation Service, the U.S. Army Corps of Engineers, and other participating federal and state resource agencies are appropriate.

S4.238 Shoreline Stabilization. The protection of the banks of tidal or non-tidal stream, river or estuarine waters by vegetative or structural means. Land-use management practices and non-structural solutions to chronic erosion and flooding problems are preferred; however, water and erosion control structures, if demonstrated to be necessary, are allowed when designed to minimize adverse impacts on water currents and on-site and/or adjacent erosion and accretion patterns.

- (A) Plant species utilized for vegetative stabilization shall be selected on the basis of potential containment of sediment and value for fish and wildlife habitat. Trees, shrubs and grasses native to the region should be considered for vegetative stabilization, however, plant species and vegetative stabilization techniques approved by the Soil Conservation Service, the U.S. Army Corps of Engineers and other participating federal and state resource agencies are appropriate. Stabilization of dike slopes must not include vegetation (particularly trees) which jeopardize the dike. The planting of native, or other suitable, shallow-rooting shrubs, brush or herbaceous plants shall be encouraged.
- (B) Bank areas affected by stabilization activities should not have a finished slope any steeper than 2:1 (horizontal to vertical) unless the development sponsor provides justification for the necessity and feasibility of a steeper slope.
- (C) Appropriate engineering and construction practices shall be used in the placement of riprap, with regard to slope, size, composition and quality of material, excavation of necessary toe trenches, placement of gravel fill blankets, and operation of equipment in aquatic areas. A plan certified by a registered engineer shall be submitted to ensure sound engineering practices and compliance with federal and state construction standards.
- (D) Shoreline stabilization measures shall not restrict existing public access to public shorelines.
- (E) Shoreline stabilization measures shall be designed to minimize their impacts on the aesthetic qualities of the shoreline.
- (F) Shoreline stabilization shall not be used to increase land surface area. Where an avulsion has occurred, fill may be used to restore the previous bankline, so long as the corrective action is initiated within one year of the date of the avulsion. Any extension of the bankline into recognized or existing aquatic areas shall be subject to the standards for fill section S4.235. Disruption of tidal marsh, tidal flat and productive sub-tidal areas shall be minimized.
- (G) Construction of structural shoreline stabilization measures shall be coordinated with state and federal agencies and local interest to minimize the effects on aquatic and shoreland resources and habitats. Where structural shoreline stabilization is shown, to be necessary due to the inadequacy or inappropriateness of land use management practices or vegetative stabilization, protection of existing banklines with clean, durable erosion resistant material is allowed. No increase in existing shoreland or shall result upland from structural shoreline stabilization and protection activities.

- (H) As a shoreland stabilization and protective measure bulkheads shall be designed and constructed to minimize adverse physical effects (i.e., erosion, shoaling, reflection of wave energy or interferences with sediment transport in adjacent shoreline areas) resulting from the placement of such structural shoreline stabilization devices.
- (I) Emergency maintenance, for the purpose of making repairs or for the purpose of preventing irreparable harm, injury or damage to persons, property or shoreline stabilization facilities is permitted, not withstanding the other requirements in these standards and subject to those regulations imposed by the U.S. Army Corps of Engineers. (Ref: State and Federal Requirements).
- (J) Revegetated shoreline areas shall be protected from excessive livestock grazing or other activities that would prevent development of effective stabilizing plant cover.
- (K) Riprap in Aquatic Natural and Natural Shoreland management designations, and in Aquatic Conservation One designations, shall be allowed only if needed to protect uses existing as of October 7, 1977. Structural shoreline stabilization may also be used to protect, if demonstrated to be necessary, significant natural resources, historic or archaeological sites, and public facilities. Adverse impacts on water currents, erosion, and shoaling characteristics shall be minimized.
- (L) Installation of bulkheads is an appropriate means of shoreline stabilization in Conservation management units when limited to protection of aquaculture and/or high intensity water-dependent recreation.



S7.000 STATE AND FEDERAL REQUIREMENTS SECTION

Following are state and federal requirements that estuarine development proposals must address in addition to the policies and standards of local comprehensive plans. These requirements have been identified separately because state and federal agencies are responsible for their implementation. Local governments may refer to these requirements in commenting on estuarine developments. The "Ref: State and Federal Requirements Section" notations included in the Regional Policies and Shoreland and Aquatic Use and Activity Standards refer to the following materials. Where appropriate, state and federal statutes and guidelines complementing specific policies and standards are noted.

AGRICULTUREPolicy 20.1, #3

## Non-Point Sources, Generally

16 USC § 540 et seq., Soil Conservation and Domestic Allotment Act  
 33 USC § 1251 et seq., Federal Water Pollution Control Act  
 40 CFR, Part 122-123, Environmental Protection Agency  
 ORS 468, Pollution Control  
 ORS 634, Pesticide Control  
 OAR 340, Statewide Water Quality Management Plan  
 ORS 527, Insect and Disease Control; Forest Practices  
 OAR 629, Forest Practices Rules  
 ORS 561, Department of Agriculture  
 OAR 603, Pesticide Control

Non-point sources of pollution resulting from agricultural uses and supporting activities are regulated primarily through the statewide Water Quality Maintenance Plan (OAR 340.41-.51) implemented by DEQ and approved by EPA. The Forest Practices Rules applied to silviculture operations are intended to control introduction of pollutants to aquatic areas from non-confined sources by three mechanisms. First, the Department of Forestry is required to consult with all state authorities, and affected federal agencies, concerned with "the forest environment" where such expertise from such agencies is desirable or necessary (OAR 629.24.105). Second, silviculture operations must be conducted in full compliance with DEQ regulations pertaining to solid waste control and air and water pollution (OAR 629.24.106). Finally, OAR 629.24.107 lists types of forest operations for which advance written notification is required (see Policy 21.12D). The Soil Conservation Service actively comments on agricultural practices and may participate in control of silviculture operations resulting from determinations made by the Department of Forestry based on Forest Practices Rules notification procedures.

Note that the State Departments of Environmental Quality, Forestry and Agriculture regulate use of chemicals used in agriculture and forestry activities, including herbicides, insecticides, rodenticides, fertilizers and adjuvants (see below: Departments of Forestry, Agriculture and Environmental Quality).

## ° Department of Forestry

ORS 526, Forestry Administration and ORS 527, Insect and Disease Control; Forest Practices  
 OAR 629, Division 54, Forest Practices Rules

Oregon Department of Forestry applies administrative rules to regulate the handling, storage, and application of chemicals used in silviculture in order to protect the waters of the state from contamination. DOF requirements for protection of waterways and areas of open waters (including wetlands) are: (1) aerial application of chemicals must provide a buffer strip of at least one swath width untreated on each side of every Class I stream or area of open water, and (2) chemical applications made from the ground must leave untreated a buffer strip of at least ten (10) feet on each side of every waterway or open area of water.

AGRICULTURE (cont'd)

- ° Department of Agriculture      ORS 561, Department of Agriculture  
   ORS 634, Pesticide Control  
   OAR 603, Division 57, Pesticide Control

The Department of Agriculture has promulgated administrative rules pertaining to registration of individuals engaged in pesticide application, standards of competence for chemical application operators and general restrictions on pesticide uses, including pesticide application permits. Estuarine aquatic areas and wetlands are protected generally through water quality non-degradation policy contained in ORS 468, Pollution Control and relating to agricultural chemical applications restricted by OAR 603.

- ° Department of Environmental Quality      ORS 468, Pollution Control  
   ORS 634, Pesticide Control  
   OAR 340, Division 41, Statewide Water  
   Quality Management Plan: Beneficial  
   Uses, Policies, Standards and Treatment  
   Criteria for Oregon

The Department of Environmental Quality does not directly regulate application of agricultural chemicals, aside from requirements for instruction and licensing of commercial pesticide application activities, including dealers, consultants, and operators. DEQ relies on general statewide policy pertaining to maintenance of existing water quality and control of nonpoint sources of pollution (including agricultural runoff). DEQ relies on general statewide policy pertaining to maintenance of existing water quality and control of nonpoint sources of pollution (including agricultural runoff). DEQ implements policies and guidelines applicable to water quality in identified basin areas pursuant to maintaining the beneficial uses of the waters of each basin. OAR 340.41.205 sets water quality standards for the North Coast-Lower Columbia Basin, including restrictions on pesticides and organic toxic substances.

ESTUARINE CONSTRUCTION: PILING/DOLPHIN INSTALLATION, SHORELINE STABILIZATION AND NAVIGATIONAL STRUCTURES

Policy 20.8. #5

<p>Navigational Structures, Generally</p>	<p>33 USC § 401 et seq., Rivers and Harbors Appropriations          33 CFR, Part 320, Section 10 and 404, U.S. Army Corps of Engineers          42 USC § 4321 et seq., National Environmental Policy Act          40 CFR, Part 1500-1508, Regulations for Implementing the Procedural Requirements of the National Environmental Policy Act</p>
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The National Environmental Policy Act (NEPA) requires that any federal development proposal (i.e., any development proposal supported wholly or in part by federal funding), or privately sponsored project requiring licensing or permits issued by federal agencies, and potentially disruptive to the environment, be collaboratively evaluated by all affected agencies. Mandatory federal regulations for implementing the procedural requirements of NEPA are presented in 40 CFR, Part 1500-1508. Assessments of the impact of actions expected to significantly affect the environment are required to:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, briefly discussing reasons for eliminating any alternatives from detailed study.
- (b) Devote substantial treatment to each alternative considered in detail...so that reviewers may evaluate the comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the no action alternative.
- (e) Include appropriate mitigation measures not already included in the proposed action or alternatives.

As the principal (or lead) permitting agency regarding issues of waterway development, (e.g., navigational structures, docks, moorages, fills, etc.) the Corps of Engineers is responsible for assessing the environmental impacts of actions proposed for the waters of the United States (33 CFR, Part 320, Section 10 and 404). The Corps, therefore, is required by federal law to determine the range of reasonable alternatives to a proposed development action, concentrating on three primary objectives: (1) avoiding the impact by not taking action (i.e., permit denial), (2) minimizing impacts through other reasonable courses of action, and (3) rectifying, reducing, or compensating for the expected impact. Thus, in preparing an investigation of expected impacts with respect to a determined set of alternatives, the Corps must focus on means of avoiding or minimizing adverse impacts to the estuarine environment.

FISH AND WILDLIFE HABITATPolicy 20.10, #4

## Minimum Stream Flows

ORS 536, Water Resources: Irrigation,  
Drainage, Flood Control, Reclamation  
OAR 690, Water Resources Department

Principal authority for utilization and control of water resources in Oregon is held by the Department of Water Resources. Generally, water resource policies promulgated by the Department of Water Resources are to encourage, promote and secure the maximum beneficial use and control of water resources for domestic, municipal, irrigation, power development, industrial, mining, recreation, wildlife and fish life uses. Regarding maintenance of minimum perennial stream flows, Department of Water Resources policy declares that multi-purpose impoundment structures are preferred over single-purpose structures; upstream impoundments are preferred over downstream impoundments. In all cases protection of fishery resources and recreational assets is to be determining (ORS 536.310 (4), (5)). The Department of Water Resources requires that human consumption and wildlife and fisheries resources receive preference over industrial, irrigation and livestock consumption of water resources (ORS 536.310 (8), (12)).

Structures or works which do not give proper cognizance to multi-purpose water resource use, and which are not planned, constructed, and operated in conformity with the provisions of ORS 536.310, are declared to be prejudicial to the public interest (OAR 690.80.000).

Note also, pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 666 et seq.), before actions proposing the impoundment, diversion, or other control or modification of any body of water may be permitted consultations with the appropriate state and federal agencies exercising jurisdiction over affected resources are required.

Policy 20.10, #6

## Riparian Environments

16 USC § 661 et seq., Fish and Wildlife  
Coordination Act  
33 USC § 401 et seq., Rivers and Harbors  
Appropriations Act  
33 USC § 1251 et seq., Federal Water  
Pollution Control Act  
ORS 496, Application, Administration  
and Enforcement of Wildlife Laws  
OAR 635, Department of Fish and Wildlife

Federal and state resource agencies are required to coordinate review of development proposals and actions affecting public waters. Broadly, resource agency responsibility is reactive and limited to procedural response to proposed alterations of estuarine aquatic, shoreline, and riparian areas pursuant to the permit requirements of federal and state statutes (e.g.; Federal Section 10 and 404 permits issued by the Corps of Engineers and subject to review and conditional requirements applied by affected federal and state resource agencies. See

Riparian Environments, cont.

Standards Section, Industrial and Port Facilities, and Navigational Structures.) Recent state legislation, Chapter 720 of Oregon 1981 Laws addressing fish habitat improvement, provides policy initiative to the Oregon Department of Fish and Wildlife, establishing an active mechanism for conservation of privately owned riparian habitat. Chapter 720, at present uncodified and not complemented by administrative rule, allows for tax exemption of riparian environments adjacent to uplands where property taxation is assessed on the basis of intensive land use activities (i.e., riparian environments bordering intensive farm use areas and forest and rangelands). The intent of Chapter 720 is to protect riparian environments from development pressure by distinguishing the tax assessment of such environments from uplands utilized for economic or development activity. Riparian environments (defined as streams, and the adjacent vegetation communities which are predominantly influenced by their association with water; not to extend more than 100 feet landward of the ordinary high water line) may be identified by the Department of Fish and Wildlife and a tax exempt status established for such areas. In addition, an instream fish habitat improvement tax credit program is also established by Chapter 720. Tax exemption and tax credit programs apply only to riparian and instream areas outside urban growth boundaries. These programs are scheduled to commence in the fall of 1982.

FORESTRY AND FOREST PRODUCTS INDUSTRYPolicy 20.12; #3

## Stream and Riparian Habitat Restoration

Refer to Policy 20.10 #6 for discussion of stream and riparian environment permit authorities and the Oregon fish habitat improvement program.

Policy 20.12, #4

## Water Quality

ORS 526, Forestry Administration  
 ORS 527, Insect and Disease Control;  
 Forest Practices  
 OAR 629, Forest Practices Rules

The Oregon Department of Forestry requires written notification and approval of the following types of forest activities (OAR 629.24.107): harvesting of forest crops, road construction and operation, site preparation, application of insecticides, herbicides, rodenticides, fertilizers and adjuvants, treatment of slashing after completion of operations, and precommercial thinning. Further, the Department of Forestry has promulgated OAR 629.24.500-541, Forest Practices Rules-Northwest Oregon Region. The latter delineate the lands affected in northeast Oregon by the Forest Practices Rules and establish minimum standards and rules for: road location, design, construction and maintenance; harvesting design, including streambanks (Class I and II streams); requirements for felling and bucking practices; and, post harvest operations. Note that OAR 629.24.105 states that consultation between the Department of Forestry and other, affected resource agencies is necessary regarding "forest environment situations" where the expertise of such resource agencies would be appropriate. In addition, OAR 629.24.106 indicates that silviculture operations must be conducted in full compliance with Department of Environmental Quality regulations pertaining to solid waste control and air and water pollution (OAR 340). Procedurally, forestry officials review forest practice notifications and derive preliminary assessments; grading expected environmental impacts as low, moderate, or high.

FORESTRY AND FOREST PRODUCTS INDUSTRY cont'd

In the case of preliminary assessments anticipating moderate or high environmental impacts, the Department of Forestry establishes contact with the Department of Environmental Quality and other concerned resource agencies, pursuant to OAR 629.24.105 and .106, to determine means of accommodating the proposed forest activities.

SHALLOW-DRAFT PORTS AND MARINASPolicy 20.20, #4

## Water Quality

33 USC § 1251 et seq., Federal Water Pollution Control Act and Amendments of 1972  
 40 CFR, Part 122-125, Environmental Protection Agency  
 ORS 468, Pollution Control  
 OAR 340, Department of Environmental Quality; and OAR 340.41-.51, Statewide Water Quality Management Plan.

The Oregon State Department of Environmental Quality (DEQ) administers a federally approved water quality permit program. Thus, the Environmental Protection Agency (EPA) and DEQ coordinate their activities in applying the requirements of the Federal Water Pollution Control Act (FWPCA or as the amended Clean Water Act of 1977). Regarding marinas and related water quality issues, DEQ implements three administrative rules: OAR 340.14, Procedures of issuance, denial, modification, and revocation of permits; OAR 340.41, Statewide water quality management plan; and, OAR 340.45, Regulations pertaining to NPDES and WQPC permits. These statutes establish the authority whereby DEQ specifies the activities, operations, emissions and discharges which may be permitted in the design, construction and operation of marinas and mooring basins. Generally, EPA exercises oversight of DEQ regarding marina-related water quality issues, pursuant to Section 401 of the FWPCA. The result is a combined state and federal certification specifying requirements, limitations and conditions of marina activities and operations which must be met. For example, a "Spill Prevention and Control Countermeasure Plan" (SPCC Plan) is required if marina or mooring basin facilities include petroleum holding tanks with total capacity exceeding 1320 gallons. The SPCC plan must address containment measures and clean-up operations. Further, EPA specifies the allowable minimum conditions for water exchanges and residence time within marinas and mooring basins enclosed by protective breakwaters or other structures and landforms.

SIGNIFICANT AREAS: NATURAL, SCIENTIFIC, SCENIC, HISTORICAL, CULTURAL, AND ARCHAEOLOGICALPolicy 20.21, #2

## Historic Properties

ORS 97.740, Protection of Indian Graves  
 ORS 358, Museums; Preservation of  
 Historical Properties and Objects  
 OAR 730, Historic Preservation Officer

The Historic Preservation Officer of the Parks and Recreation Division is charged with review of all federally funded projects, or projects requiring federal permits, with ground disturbing potential. Review is concerned with protection of historic, archaeological and prehistoric properties and materials listed in state site files. The State Historic Preservation Officer maintains a dual archaeological and prehistoric site file inventory in addition to an inventory of Oregon sites listed in the National Historic Register (pursuant to Section 106 of the Federal Historic Preservation Act of 1966 and 36 CFR, Part 800 - Procedures for the Protection of Historic and Cultural Properties). The Historic Preservation Officer also reviews for compliance all state project proposals subject to the A-95 comment process established by the Intergovernmental Relations Division of the Executive Department (ORS 190). Generally, the Historic Preservation Officer first makes a determination if prudent and feasible alternatives to the proposed activities exist, such that historic or archaeological resources may be preserved. If alternative project sites are not feasible or capable of being accomplished, survey information must be provided such that historic or archaeological materials are protected to the maximum extent feasible.

Policy 20.21, #2

## Historic Site Review

ORS 273.705, Removal of Historical and  
 Other Valuable Materials  
 OAR - None

Pursuant to ORS 273.705, the Division of State Lands (DSL) requires permit review of all activities intending excavation or removal of archaeological, historical, pre-historical or anthropological materials from state lands or lands leased by the state. DSL consults with the Oregon State Museum of Anthropology in order to identify archaeological or historic sites and to establish permit conditions intended to protect the integrity of such sites. Permit approval is required for excavation or removal of artifacts or for other activities (e.g., construction, site grading and preparation for development purposes), which may alter the archaeological or historical materials located on or near the site.

WATER QUALITY MAINTENANCEPolicy 20.23, #1

## Non-Point Sources

16 USC § 540 et seq., Soil Conservation and Domestic Allotment Act  
 33 USC § 1251 et seq., Federal Water Pollution Control Act  
 40 CFR, Part 122-125, Environmental Protection Agency  
 ORS 468, Pollution Control  
 OAR 340.41-.51, Statewide Water Quality Management Plan  
 ORS 527, Insect and Disease Control; Forest Practices  
 OAR 629, Forest Practices Rules  
 ORS 568, Soil and Water Conservation  
 OAR 667, Soil and Water Conservation Commission

Collectively, federal and state oversight of water quality issues related to non-point pollutant sources (i.e., non-confined discharges as from agricultural and silvicultural uses, mine or petroleum-related sources of pollution, road construction, and urban runoff) is complex. Discernable waste and pollutants resulting from urbanized areas are regulated by the Department of Environmental Quality and the Environmental Protection Agency. Pollutants generated by agricultural and silvicultural uses (including chemical wastes and erosion materials), are, generally, regulated by DEQ, EPA, and the Soil Conservation Service working in conjunction with local Soil Conservation Districts. The Forest Practices Rules are the central authority whereby DEQ and SCS comment on the forest practices regulated directly by the Oregon Department of Forestry (Ref: OAR 629.24.106, Compliance with Rules and Regulations of the Department of Environmental Quality, and OAR 629.24.107, Types of Operations for which Notification Shall be required). Little federally owned forest lands are present in Clatsop County and regulations promulgated by the U.S. Forest Service are of little impact. The regulation of non-point sources of pollution relies on the interaction of state agencies together with federal authorities implementing broad oversight capabilities stemming from federal approval of state-operated permitting programs. Note that pollutant discharges from confined animal feeding operations and aquatic animal production facilities are classified as discrete or point discharges under the federally approved State Water Quality Maintenance Program, OAR 340.

STANDARDS

AQUACULTURE

Aquaculture Siting and Water  
Impoundments: Section 4.206

33 USC § 1251 et seq., Federal  
Water Pollution Control Act  
40 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 468, Pollution Control  
OAR 340.41-.51, Statewide Water  
Quality Management Plan  
ORS 536, Water Resources: Irrigation,  
Drainage, Flood Control, Reclamation  
OAR 690, Water Resources Department  
OAR 635, Department of Fish and Wild-  
life  
OAR 635.40, Private Salmon Hatcheries

The Water Resources Department is primarily responsible for determining the appropriateness of diverting estuarine or estuarine tributary waters to aquaculture facilities. Water Resources Department review of aquaculture facility proposals is coordinated with the Department of Fish and Wildlife (OAR 635.40) and the Department of Environmental Quality (OAR 340.41-.51). Diversion of water resources for aquaculture purposes must recognize the multiple-purpose requirements of state water resources policies declared in OAR 690.80 (see Fish & Wildlife Habitat Policy 20.10 #4)

The Department of Fish and Wildlife reviews all salmon hatchery or aquaculture proposals in light of expected impacts to the biological resources of the state (OAR 634.40). Further, all in-water structures required for aquaculture facilities (e.g., diversion structures, spawning channels, bank stabilization, wharves, docks, floats, etc.), must meet ODFW standards noted in the Department's Environmental Management Manual. Note that the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers (33 CFR, Part 320), have established guidelines for in-water structures that are similar to the standards used by the Oregon Department of Fish and Wildlife.

The quality of water discharged from aquaculture facilities is regulated by the Department of Environmental Quality by way of Oregon's federally approved Statewide Water Quality Maintenance Program, OAR 340 (see Water Quality Maintenance, Policy 9, #1). Note that water discharges from aquatic animal production facilities are classified as discrete or point pollutant discharges and minimum standards applied to such discharges are detailed in 40 CFR, Part 122 and Appendices B and C to Part 122.

INDUSTRIAL AND PORT FACILITIES

Water Quality Maintenance:  
Section 4.209

33 USC § 1251 et seq., Federal Water  
Pollution Control Act and Amend-  
ments of 1972  
40 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 468, Pollution Control  
OAR 340.41-.51, Statewide Water  
Quality Management Plan

The Oregon State Department of Environmental Quality (DEQ) administers a federally approved water quality permit program. Thus, the Environmental

(Industrial and Port Facilities, cont.)

Water Quality Maintenance, cont.

Protection Agency and DEQ coordinate their activities in applying the requirements of the Federal Water Pollution Control Act (FWPCA or as the amended Clean Water Act of 1972). DEQ and EPA have promulgated policy guidelines for the regulation of pollutant discharges from industrial and port facility sites (OAR 340.41-.51 and 40 CFR, Part 122-125 respectively). Generally, industrial and port activities require pollutant discharge permits controlling release of all process wastes and regulating surface runoff from process sites or bulk material handling areas (e.g., catchment basins and waste treatment facilities for runoff from materials storage, as with coal stockpiles). State statute establishes the authority whereby DEQ specifies the activities, operations and discharges which may be permitted in the design, construction and operation of industrial port facilities.

Note also that storage of significant amounts of toxic materials or petroleum products requires special permit oversight. EPA directives establish specifications, limitations and conditions for storage of such materials at port or shoreside facilities. A "Spill Prevention and Control Countermeasure Plan" (SPCC Plan) is required if port facility storage of petroleum products exceeds 1320 gallons. The SPCC plan must address containment measures and clean-up operations (see Shallow Draft-Ports and Marinas, Policy 4, #4).

Siting and Environmental Review of  
Industrial and Port Facilities:  
Section 4.209

16 USC § 661 et seq., Fish and Wildlife  
Coordination Act  
33 USC § 401 et seq., Rivers and Harbors  
Appropriations Act  
33 USC 1251 et seq., Federal Water  
Pollution Control Act  
42 USC § 4321 et seq., National Environ-  
mental Policy Act  
33 CFR, Part 320, Section 10 and 404,  
U.S. Army Corps of Engineers  
40 CFR, Part 1500-1508, Regulations for  
Implementing the Procedural Requirements  
of the National Environmental Policy Act  
OAR 340, Statewide Water Quality  
Management Plan  
OAR 635, Department of Fish and Wildlife

As the principal (or lead) review and permitting agency relating to issues of waterway development (i.e., any proposed development affecting the waters of the U.S., as with water-dependent industrial or port development), the Corps of Engineers is responsible for assessment of the environmental impacts resulting from industrial and port facilities sited in estuarine aquatic and shoreline areas. Federal permits issued by the Corps, pursuant to the Rivers and Harbors Appropriations Act, are required for works pursued in the navigable waters of the U.S. These permits are necessary for placing structures in or excavating from or depositing materials in such waters. The National Environmental Policy Act (NEPA) requires that any federal development proposal (i.e., any development proposal supported wholly or in part by federal funding) or privately sponsored project requiring licensing or permits issued by federal agencies, and potentially disruptive to the environment, be collaboratively evaluated by all affected agencies. Mandatory federal regulations for implementing the procedural requirements of NEPA are presented in 40 CFR, Part

(Industrial and Port Facilities, cont.)

Siting and Environmental Review of Industrial and Port Facilities, cont.

1500-1508. Assessments of the impact of actions expected to significantly affect the environment are required to:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, briefly discussing reasons for eliminating any alternatives from detailed study.
- (b) Devote substantial treatment to each alternative considered in detail...so that reviewers may evaluate the comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the no action alternative.
- (e) Include appropriate mitigation measures not already included in the proposed action or alternatives (see Estuarine Construction: Piling/Dolphin Installation, etc., Policy 20.8, #5

The Fish and Wildlife Coordination Act specifies the requirements for consultation between federal and state resource agencies in the review of development activities proposing to alter or control the waters of any stream or body of water. Consultation is required for projects involving navigation as well as shoreline alterations.

Thus, the Corps of Engineers must compile environmental assessments for development proposals affecting estuarine aquatic and shoreline areas and must include the expertise of all affected federal and state agencies in deriving assessment information. Generally, federal and state resource agencies have established detailed guidelines or departmental policies for review of development activities affecting aquatic and shoreline resources as a means of implementing the conditions of the Fish and Wildlife Coordination Act and the procedural requirements of NEPA. Agency guidelines and policies contain criteria intended to regulate generic types of development activities and uses (e.g., docks and moorages; bulkheads and seawalls; cables, pipelines and transmission lines; jetties and groins; lagoons and impoundments; etc.), and are the basis of coordinated assessment findings collected by the Corps resulting from the public notice comment process required for development actions proposed in the waters of the U.S. Following is a list of the most commonly referenced review criteria used by federal and state regulatory and resource agencies. These criteria may also be referred to as the "best management practices" advocated by each agency. Note that in some instances agencies have not entered policies of environmental review into public record and rely on internal memoranda detailing departmental policy.

Environmental Protection Agency F.R. Vol. 35, No. 84; F.R. Vol. 40, No. 173; 40 CFR, Part 122-125

(Industrial and Port Facilities, cont.)

Siting and Environmental Review of Industrial and Port Facilities, cont.

National Marine Fisheries Service	U.S. Department of Commerce, Doc. No. 003-020-00123-8, "Environmental Impact and Analysis and Response Program," and internal policy
U.S. Fish and Wildlife Service	F.R. Vol. 40, No. 123
U.S. Army Corps of Engineers	33 CFR, Part 320, Section 10 and 404
Oregon Department of Fish and Wildlife	Departmental "Environmental Management Manual," Wildlife Commission Policy, and internal policy
Oregon Division of State Lands	OAR 141.85, Rules of Issuance and Enforcement of Removal and Fill Permits
Department of Environmental Quality	OAR 340.41, Statewide Water Quality Management Plan
Energy Facility Siting	ORS 469, Energy Conservation OAR 345, Energy Facility Siting Council

The Energy Facility Siting Council and the Department of Energy (DOE) coordinate the regulation of siting, design, construction and operation of energy facilities, including thermal power, hydropower, geothermal power, or combustion turbine power plants with generating capacity in excess of 25,000 kilowatts, nuclear installations, high voltage transmission lines, large-scale solar collecting facilities, and petroleum, natural gas or other fossil energy pipelines. The Energy Facility Siting Council and DOE collaborate in the analysis of prospective energy facility sites, energy facility development proposals, and in facility construction, operation and monitoring. Note that the Energy Facility Siting Council is required to review energy-related development proposals for compliance with statewide planning goals administered by the Department of Land Conservation and Development (OAR 345.11, Standards for the Siting of Biomass and Fossil-Fuel Power Plants), and thus is required to review docks and shoreline transshipment provisions ancillary to such facilities.

LOG DUMP/SORT AREA (IN-WATER)

Log-Dump and In-Water Sorting Policy Section 4.211	ORS 468, Pollution Control OAR 340.41-.51, Statewide Water Quality Management Plan
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As the agency responsible for implementing the federally approved "Statewide Water Quality Maintenance Program," the Department of Environmental Quality has established policies for control of log handling in navigable waters of the State. "Log Handling in Oregon's Public Waters - An Implementation Program and Policy" was adopted by the Oregon Environmental Quality Commission in 1975, and revised in 1979. Thus, Commission approved DEQ policy functions in support of more general DEQ administrative rules relating to water quality.

(Log Dump/Sort Area (In-Water))

Log-Dump and In-Water Sorting Policy, cont.

Present DEQ policy requires that new wood processing facilities proposing to receive logs directly from public waters will not be approved without specific authorization by the Environmental Quality Commission. In general, such facilities will not be permitted by DEQ in cases where water quality, or other beneficial uses of state waters, would be jeopardized. New free-fall log dumps are not permitted, while existing free-fall log dumps must be replaced by equipment or practices providing controlled dumping of logs. Further, best practicable bark and wood debris controls, collection and disposal methods, as approved by DEQ, must be employed at all log dumps, raft building and sorting areas and millside handling sites. Existing log dumps and in-water sorting are to be controlled with regard to DEQ approved programs. DEQ policy indicates that, if necessary, log dumps and in-water handling will be phased out in order that water quality violations do not result from such activities.

LOG STORAGE (IN-WATER)

In-Water Log Handling and Storage	ORS 468; Pollution Control
Policy: Section 4.211	OAR 340.41-.51, Statewide Water Quality Management Plan

The Oregon Department of Environmental Quality has established in-water log handling guidelines pursuant to OAR 340, "Log Handling in Oregon's Public Waters (1979)" (see Log Dump/Sort Area (In-Water)).

DEQ policy requires that the inventory of logs stored in state waters, for any purpose, be held to the most feasible minimum volume and period. Storage exceeding twelve months requires approval by DEQ, and must be supported by evidence demonstrating the need for such storage, and that feasible alternatives to in-water storage are not available. In all instances of in-water log handling, the operating entity is responsible for clean-up and removal of sunken logs, and when use is discontinued all logs must be removed from the water and structures must be secured such that water quality impacts do not persist. DEQ policy requires a new application and approval of in-water log handling at sites in state waters where log handling activities have not occurred for a period of five years.

The DEQ requires that in existing storage areas where logs go aground on tidal changes or low flow cycles minimization of such log storage will be accomplished by:

- (a) Establishing a program to reduce tideland area impacted by loose log storage to a minimum. Affected industries are required to submit a program or plan to achieve reduced impacts within 120 days of notification by DEQ.
- (b) DEQ will not approve applications to the Corps of Engineers or the Division of State Lands for permits to place or recondition piling for log raft mooring unless the applicant provides information detailing measures taken to minimize impacts due to log grounding. DEQ will not support applications for replacement of piling in areas where logs go aground without presentation of substantial evidence that alternative feasible means of storage and alternative storage sites (including upland storage and handling) have been thoroughly evaluated.

LOG STORAGE/SORTING YARD (DRY-LAND)

Log and Wood Products Handling  
and Storage in Shoreline Areas:  
Section 4.212

ORS 468, Pollution Control  
OAR 340.41-.51, Statewide Water Quality  
Management Plan

The Oregon Department of Environmental Quality has established criteria for regulation of upland log and wood-product handling and storage sites located in shoreline areas, pursuant to OAR 340. "Log Handling in Oregon's Public Waters 1979" specifies that all "dry land" log storage, wood chip, and hog fuel handling and storage facilities located adjacent to waterways must be designed, constructed and operated to control leachates and prevent loss of bark, chips, sawdust and other wood debris into public waters. Note also that DEQ requires review and approval of any modification of present upland storage and handling facilities or plans for new facilities.

MARINAS

Water Quality in Marinas:  
Section 4.213

33 USC § 1251 et seq., Federal Water  
Pollution Control Act and Amendments  
of 1972  
40 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 468, Pollution Control  
OAR 340, Department of Environmental  
Quality, and OAR 340.41-.51, Statewide  
Water Quality Management Plan

As described in the section, Shallow-Draft Ports and Marinas, the Oregon Department of Environmental Quality has formulated a statewide water quality permit program and has authority, subject to federal oversight, to regulate water quality maintenance in the state. In practice, therefore, the Environmental Protection Agency and DEQ policies are complementary in application of the requirements of the Federal Water Pollution Control Act. Regarding marinas and related water quality issues, DEQ implements three administrative rules: OAR 340.14, Procedures for Issuance, Denial, Modification, and Revocation of Permits; OAR 340.41, Statewide Water Quality Management Plan; and OAR 340.45, Regulations Pertaining to NPDES and WPFC Permits. These statutes establish the authority whereby DEQ specifies the activities, operation, emissions, and discharges which may be permitted in the design, construction, and operation of marinas and mooring basins. In Oregon, EPA commonly exercises oversight of DEQ regarding marina-related water quality issues, pursuant to Section 401 of the FWPCA. The result is a combined state and federal certification specifying requirements, limitations and conditions of marina activities and operations which must be met. In particular, EPA takes the lead in specifying the minimum conditions for water exchanged and residence time within marinas and mooring basins enclosed by breakwaters or other structures and landforms. Final project design and construction receives a joint EPA/DEQ certification, but EPA stipulates specific project conditions.

MINING/MINERAL EXTRACTION

Leasing and Environmental Review  
(Exploration and Extraction):  
Section 4.214

33 USC § 401 et seq., Rivers and Harbors  
Appropriations Act  
33 USC § 1251 et seq., Federal Water  
Pollution Control Act  
33 CFR, Part 320, Section 10 and 404,  
U.S. Army Corps of Engineers  
40 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 520, Conservation of Oil and Gas  
ORS 632.10, Mineral Industries, General  
ORS 274,005-820, Submersible and Sub-  
merged Lands  
OAR 141.85, Rules for Issuance and  
Enforcement of Removal and Fill Permits

The Oregon Division of State Lands (DSL) is responsible for leasing all oil and gas resources underlying state-owned lands. Generally, tidal and submerged lands in the lower Columbia River are owned by the state, and in cases where such areas have been sold, granted or otherwise conveyed by the state, oil and gas resource rights have been retained. The Department of Geology and Mineral Industries (DGMI) regulates practices related to exploration and extraction of oil and gas in the state (OAR 632.10). The oil and gas exploration and extraction guidelines established by DGMI are included as conditions to the provisions of DSL leases. Although DGMI has the authority to establish rules regulating geological and seismic surveys on, and operations to remove oil and gas from submersible and submerged lands, within the estuary, no administrative rule has been promulgated pursuant to OAR 520.055, General Jurisdiction and Authority, Tidal Lands. However DGMI and DSL have coordinated departmental guidelines for exploration, "General Conditions Governing Permits to Explore Tide and Submerged Lands (1964)." Note also that DSL applies a dual drilling lease authority for submersible and submerged lands in the estuary. All submersible and submerged lands lying more than 10 miles easterly of the 124th West Meridian (in the vicinity of Smith Point) are subject to oil and gas leasing policies detailed in ORS 247.705-.860, while leasing of lands westerly of this line is controlled by ORS 274.551. In either case, DSL is required to consult with DGMI, the Department of Environmental Quality, and the Department of Fish and Wildlife, incorporating regulations and rules relating to best management practices applied by these departments for conservation of oil and gas resources, water quality maintenance and protection of fish and wildlife resources in all lease agreements and permits.

Further, exploration and extraction activities in waters of the U.S. may require permits issued by the Corps of Engineers, subject to review by involved federal agencies. Broadly, federal and state agencies comment on exploration and drilling leases concerning issues related to fill and removal activities, water quality impacts (e.g., well discharges, slush pits, sumps), and fish and wildlife habitat protection.

NAVIGATIONAL STRUCTURES

Siting of Navigational Structures  
and Environmental Assessment:  
Section 4.215

16 USC § 661 et seq., Fish and Wildlife  
Coordination Act  
33 USC § 401 et seq., Rivers and Harbors  
Appropriations Act  
33 USC § 1251 et seq., Federal Water  
Pollution Control Act  
42 USC § 4321 et seq., National Environ-  
mental Policy Act  
33 CFR, Part 320, Section 10 and 404,  
U.S. Army Corps of Engineers  
40 CFR, Part 1500-1508, Regulations of  
Implementing the Procedural Requirements  
of the National Environmental Policy Act  
40 CFR, Part 122-125, Environmental Pro-  
tection Agency  
OAR 141.85, Rules for Issuance and Enforce-  
ment of Removal and Fill Permits, Division  
of State Lands  
OAR 340, Statewide Water Quality Manage-  
ment Plan  
OAR 635, Department of Fish and Wildlife

Generally, aquatic area siting of significant navigational structures (e.g.; jetties, groins, and breakwaters) requires assessment of the environmental impacts expected from such activities and the uses necessary to their installation. As described in Industrial and Port Facilities, the Corps of Engineers is the lead review and permitting agency regarding issues of waterway development, including navigational structures, affecting the waters of the U.S., pursuant to the Rivers and Harbors Appropriations Act. Federal permits issued by the Corps are required for works proposed in the navigable waters of the U.S. These permits are necessary for placing structures in or excavating from or depositing materials in such waters. In addition, the National Environmental Policy Act and the Fish and Wildlife Coordination Act combine to mandate evaluation of any development proposal intending to alter, control or modify the waters of any stream or body of water by all affected federal and state resource agencies.

Federal and state resource agencies have established policies and guidelines for application of their authorities for review of estuarine aquatic area and shoreline development proposals. These review criteria are broad in scope and, generally, emphasize that navigational structures be designed and constructed, based on all feasible development alternatives, to protect fish and wildlife and associated environmental values. Further, navigational structures are reviewed with respect to potential interference with public access, creation of adverse sediment transport patterns, or other adverse effects on aquatic habitats. (See Industrial and Port Facilities for a list of the most commonly referenced review criteria used by federal and state regulatory and resource agencies.)

RESIDENTIAL USES

Water Quality Maintenance:  
Section 4.217

33 USC § 1251 et seq., Federal Water  
Pollution Control Act and Amendments  
of 1972  
40 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 468, Pollution Control  
OAR 340.41, Statewide Water Quality  
Management Plan

State and administrative rule OAR 340.41 establishes a system of regional water quality management plans. Oregon's federally approved water quality maintenance program provides the authority whereby the Department of Environmental Quality may specify the conditions under which discharges may be permitted to public waters (see policies under Water Quality Maintenance). Treatment of all sewage wastes is detailed in OAR 340.41.215, North Coast-Lower-Columbia Basin. While storm drainage systems may not require individual discharge permits, DEQ reserves the authority to regulate such discharges as sources of pollution to the estuarine system, based on policies of non-degradation of regional water quality criteria established for the North Coast-Lower-Columbia Basin (OAR 340.41.202). Thus, storm drainage systems are reviewed and may be regulated (i.e., discharges permits required) if the effluent or runoff results in degradation of regional water quality.

SOLID WASTE DISPOSAL

Siting of Disposal Facilities and  
Control of Runoff: Section 4.219

33 USC § 1251 et seq., Federal Water  
Pollution Control Act  
40 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 468, Pollution Control  
OAR 340.41, Statewide Water Quality  
Management Plan  
OAR 340.61, Solid Waste Management in  
General

As with water quality management the Department of Environmental Quality has formulated a system of solid waste management which fulfills the requirements of federal statute and has been programatically approved by the Environmental Protection Agency. OAR 340.61 promulgates DEQ policy and guidelines for solid waste collection, storage, and transportation. DEQ solid waste management guidelines are comprehensive in nature, in that criteria are set forth to control potential hazards to public health and safety and pollution of air and adjacent land and public waters. All solid waste disposal sites must have DEQ permit approval and cannot be substantially altered or expanded without permit review. Solid waste disposal site proposals must be supported by a feasibility study or environmental assessment detailing plans and specifications for site location and design (including plans for berms, dikes, surface drainage control, road access, waste water facilities, etc.), operational plans, and monitoring and reporting methods. OAR 340.61.040 describes conditions applied to landfills and material wastes deposited in approved landfill sites. Note that EPA exercises special oversight in the control of hazardous waste control, including specific requirements for underground injection of hazardous materials (pumping of hazardous materials to underground storage, see 40 CFR, Part 122, National Discharge Elimination System; Hazardous Waste Permit Program; and Underground Injection Control Program).

UTILITIES

Utilities and Pollutant Discharges: Section 4.220

33 USC § 1251 et seq., Federal Water Pollution Control Act  
40 CFR, Part 122-125, Environmental Protection Agency  
ORS 468, Pollution Control  
OAR 340.41, Statewide Water Quality Management Plan

The federally approved water quality management program implemented by the Department of Environmental Quality applies to all point source discharges from utilities, including waste water treatment plants and treated waste water outfalls (e.g., industrial discharges). OAR 340.41 specifies the operations and discharges criteria which may be permitted in construction, operation, and maintenance of these facilities. Section 340.41.215 specifically addresses the discharge limitations placed on utilities with outfall structures to public waters of the North Coast-Lower-Columbia Basin management area. Note that EPA reviews issues related to major outfalls and may participate in permit review of discharges expected to be potential sources of water quality degradation.

DIKES

Dikes Structures and Environmental Review: Section 4.231

16 USC § 661 et seq., Fish and Wildlife Coordination Act  
33 USC § 401 et seq., Rivers and Harbors Appropriations Act  
33 USC 1251 et seq., Federal Water Pollution Control Act  
42 USC 4321 et seq., National Environmental Policy Act  
33 CFR, Part 320, Section 10 and 404, U.S. Army Corps of Engineers  
40 CFR, Part 1500-1508, Regulations for Implementing the Procedural Requirements of the National Environmental Policy Act  
40 CFR, Part 122-125, Environmental Protection Agency  
ORS 541-605-.665, Removal of Material; Filling  
OAR 141.85, Rules for Issuance and Enforcement of Removal and Fill Permits, Division of State Lands  
OAR 340, Statewide Water Quality Management Plan  
OAR 635, Department of Fish and Wildlife

As with all structures affecting public waters, federal and state permits and procedural review of project proposals are required to construct and maintain dikes and flood control structures. The Standards sections for Industrial and Port Facilities, and Navigational Structures, outline the interaction of federal, and state statutes addressing placement of structures in or excavating from or depositing materials in public waters. Section for Industrial and Port Facilities also references the review criteria used by federal and state regulatory and resource agencies in assessing the effects of proposed uses and activities in aquatic areas. These review criteria apply to dike structures and are, generally, considered to represent resource agency policy interpretations of "good engineering" and "best management" practices.

DREDGING

Dredging and Water Quality Maintenance: Section 4.232

33 USC § 401 et seq., Rivers and Harbors Appropriations Act  
 33 USC § 1251 et seq., Federal Water Pollution Control Act  
 33 CFR, Part 122-125, Environmental Protection Agency  
 OAR 340.41, Statewide Water Quality Management Plan

All dredging operations in public waters are subject to federal and state permit standards. The Corps of Engineers is the lead permitting agency in all dredging-related matters, while specific permit review of the water quality effects of dredging is reserved for the Department of Environmental Quality and the Environmental Protection Agency. Commonly, the Corps focuses on matters concerning navigational requirements and issues dredging permits with water quality standards formulated by coordination comments received from DEQ and EPA. Thus, the physical aspects of volume of material excavated and project dimensions are controlled by the Corps, while water quality parameters intended to prevent the degradation of public waters are stipulated by DEQ certification, with oversight in some instances by the EPA. DEQ water quality criteria are put forth in OAR 340.41, Statewide Water Quality Management Plan. EPA water quality guidelines are presented in F.R. Vol. 38, No. 84, F.R. Vol. 40, No. 173, and 40 CFR, Part 122-125. Collectively, these criteria and guidelines set standards for organic, dissolved chemical, and sediment content of waters in the project excavation area and in locations of effluent discharge (i.e., settling pond outfall).

DREDGED MATERIAL DISPOSAL

Disposal Site and Water Quality Maintenance: Section 4.233

33 USC § 401 et seq., Rivers and Harbors Appropriations Act  
 33 USC § 1251 et seq., Federal Water Pollution Control Act  
 33 CFR, Part 320, Section 10 and 404, U.S. Army Corps of Engineers  
 40 CFR, Part 122-125, Environmental Protection Agency  
 OAR 340.41, Statewide Water Quality Management Plan

As described in Standards Section, Dredging, the Corps of Engineers is responsible for permitting of dredging operations pursuant to water quality provisions, or conditions of operation, attached by the Department of Environmental Quality. Effluent from dredged material disposal sites must be appropriate to water quality criteria established by OAR 340.41. Generally, DEQ (and EPA) review dredged material disposal plans for potential adverse effects due to dissolved constituents and sediments introduced to receiving waters. Upland disposal sites are required to contain dredged spoils for a sufficient period of time (often employing flow between a system of ponds or cells) such that suspended materials may settle and not be introduced to adjacent aquatic areas. This may entail specification of wier overflow heights, to maintain ponding residence time and ensure that the uppermost surface water is drained from the site, and dredged material disposal site water depths (pond depths). Further, effluent may contain dissolved materials not subject to pond settling, requiring control of dredging rates to maintain necessary mixing and dilution in receiving waters (see Dredging for Water Quality Criteria reference).

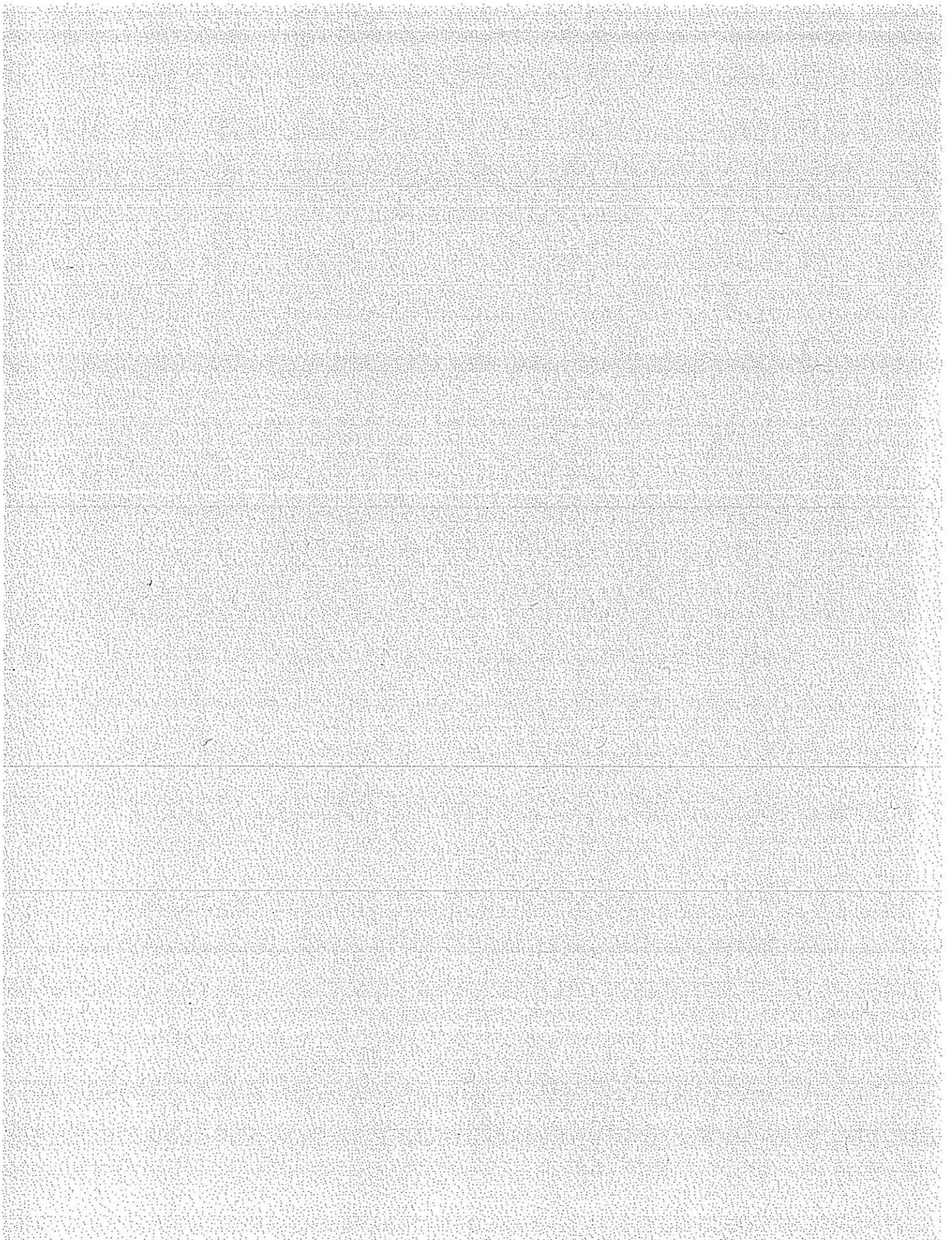
SHORELINE STABILIZATION

Emergency Fill Activities:  
Section 4.238

33 USC § 401 et seq., Rivers and Harbors  
Appropriations Act  
33 USC § 1251 et seq., Federal Water  
Pollution Control Act  
33 CFR, Part 122-125, Environmental  
Protection Agency  
ORS 541.605-.665, Removal of Materials;  
Filling  
OAR 141.85, Rules for Issuance and  
Enforcement of Removal and Fill Permits

Administrative Rule 141.85 applies to fill deposited as a means of bankline or shoreline stabilization. Emergency permits for fill as a shoreline control activity are issued by the Division of State Lands (DSL) if such an activity is immediately necessary to protect public safety and welfare due to unforeseen circumstances. DSL requires notification of the nature, location, and extent of necessary shoreline alteration within 24 hours of the action. Following a site inspection, a verbal determination is made by DSL in support of denial of emergency shoreline alterations. Standard removal and fill permits are required after the emergency situation has passed, with DSL reserving ultimate approval of the shoreline alteration as a permanent action.

As the principal permitting authority regarding actions affecting waters of the U.S., the Corps of Engineers has authority to temporarily permit fill activities if: (1) an unacceptable hazard to life or severe loss of property will occur if an emergency permit is not granted; and (2) the anticipated threat or loss may occur before a permit can be issued or modified under normal procedures. The Corps, coordinating with EPA, may grant emergency fill activities limited in duration to the time required to complete the authorized emergency action, not to exceed 90 days. Federal emergency fill authorizations must include conditions requiring restoration of fill or disposal sites. Such conditions may require removal of the fill and/or remedial actions to prevent erosion. Federal statute requires that emergency permits be in compliance with the emergency rules established by DSL.



III. NECANICUM ESTUARY (GOALS 16 AND 17)

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### III. NECANICUM ESTUARY INTRODUCTION

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The Necanicum River Estuary and Coastal Shorelands Element (Goals 16 and 17) of the Clatsop County Comprehensive Plan is comprised of several sources.

The Plan Element was developed by CTIC, the Cities of Seaside and Gearhart and Clatsop County.

The Necanicum Estuary Inventory. It was developed by Neal Maine of E-3 Awareness on contract to Clatsop County. This inventory has been updated for wetlands and riparian vegetation in the report Significant Shoreland and Wetland Habitats in the Clatsop Plains by Duncan Thomas (1982). These documents, together with the proposed Plan and zoning changes form the Necanicum Estuary and Coastal Shorelands Element of the Clatsop County Comprehensive Plan.

# THE NECANICUM ESTUARY PLAN

REVIEW DRAFT

JUNE

1979

Prepared By The  
Necanicum Estuary Committee  
And The Staff  
Of The  
Clatsop-Tillamook Intergovernmental Council  
(CTIC)

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Attachment: The Necanicum Estuary Map

THE NECANICUM ESTUARY COMMITTEE

CLATSOP COUNTY

Bob Westerberg, County Commissioner  
Joe Camberg, Planning Commission

GEARHART

Bill Berg, City Council  
Leo Sayles, Planning Commission  
Brook Robin, Planning Commission

SEASIDE

Joyce Williams, Mayor  
Dale Sanders, Planning Commission  
Jim Hurd, Code Enforcement Officer

AGENCY PERSONNEL

Warren Knispel, Oregon Department of Fish and Wildlife  
Bill Park, Division of State Lands

STAFF

Neal Maine, Estuary Consultant  
Mike Morgan, Coordinator  
John Pace, Planner  
Curt Schneider, County Planning Director  
Rainmar Bartl, CTIC Coordinator

2004 606 37E

THE NECANICUM ESTUARY PLAN

ESTUARINE AND SHORELANDS GOALS AND POLICIES

INTRODUCTION

The Estuarine Resources Goal requires that the Land Conservation and Development Commission classify Oregon's estuaries to specify the most intensive levels of development or alteration to be allowed within each estuary. In October, 1977 an Administrative Rule classifying the estuaries was adopted.

The intent of the classification system adopted is to:

1. Specify the most intensive level of development or alteration allowable within each estuary;
2. Direct the kinds of management units appropriate and allowable in each estuary;
3. Affect the extent of detail required and items inventoried for each estuary;
4. Affect the issuance of and conditions attached to permits by state and federal agencies;
5. Provide guidance for the dispersal of state and federal public works funds; and
6. Indirectly affect decisions concerning private investment in and around estuaries.

The Necanicum Estuary is classed a Conservation Estuary, which is defined in the Estuary Classification Rule as shown in (b) on the following page. The definition for a natural management unit is provided on the following pages because a conservation estuary must include natural management units, as well as conservation management units.